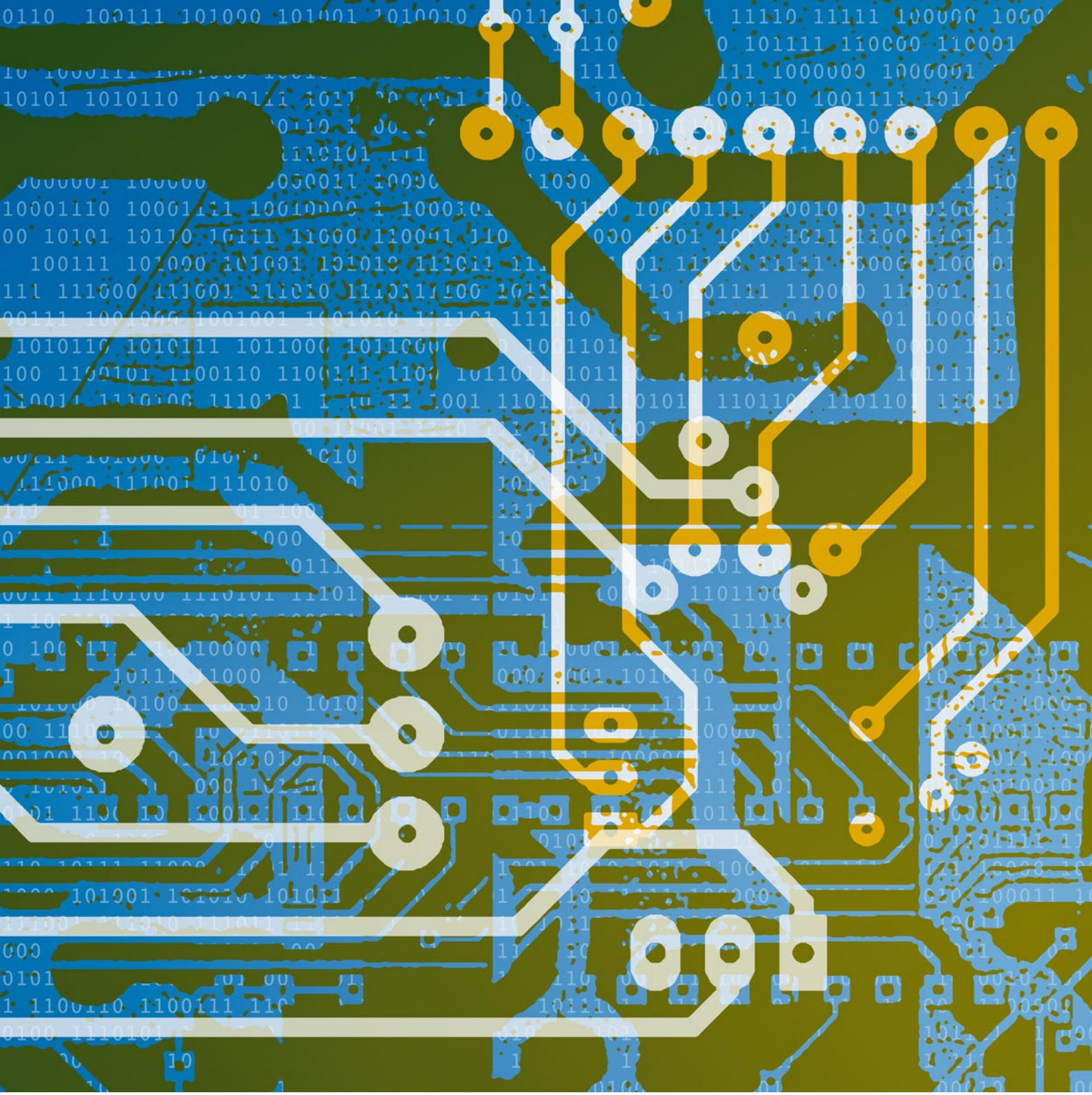

Information Technology in Tax Administration in Developing Countries

itc

KFW

Preface

Efficient and effective revenue collection is a key driver for financing development and strengthening good governance. Information technology (IT) has a great potential to improve revenue collection by automating processes, better servicing taxpayers and increasing compliance. Yet, the experience with implementing IT solutions in tax administrations in developed and developing countries alike is mixed. The study "Information Technology in Tax Administration in Developing Countries" explores the factors for successful tax administration modernization programmes and compares the most important integrated software solutions for tax administration. The study also offers an overview on the experience in 13 diverse developing countries with IT-based tax reform as well as activities from major donors active in this area. Finally, a set of key recommendations covering strategic, economic as well as technological dimensions help tax administrations to assess the readiness conditions of their own institution, to avoid frequent mistakes in planning and conducing such programmes and to take the necessary steps before, during and after IT implementation.

The study was commissioned by KfW in partnership with the GIZ Sector Programme for Good Financial Governance and was funded by the German Federal Ministry of Economic Cooperation and Development (BMZ). Several members of the International Tax Compact (ITC), in particular CIAT and the IMF, contributed with valuable comments on the terms and reference and earlier drafts of the study and shared their experience.

Initial material for the study has been produced by a consortium consisting of Adam Smith International (Lead Consultant: David Crawford) and C2D (Philippe Dadour). These drafts included the benchmarking of the different IT packages, the compilation of case studies and research on donor support. This material was later revised and amended by Hans van Deuren and Angela Kwok from PBLQ who also provided most content regarding the readiness conditions for implementing an ITAS (Integrated Tax Administration System) as well as for the conclusions and recommendations.

We hope that this study will help both tax administrations and donors to successfully design and implement future reform programmes and thus improve revenue collection in developing countries.

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Table of contents

Annexes

Acronyms and Abbreviations

ADB	Asian Development Bank
AFDB	African Development Bank
ANSD	Agence Nationale des Statistiques et de la Démographie
ASI	Adam Smith International
ASP	Application Service Provider
ASYCUDA	Automated System for Customs Data
AT	Autoridade Tributária de Moçambique (Mozambique Revenue Authority)
ATO	Australian Tax Office
AWS	Amazon Web Service
BA	Business Analyst
BI	Business Intelligence
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung
BPR	Business Process Reengineering
C2D	C2D Services
CARTAC	Caribbean Regional Technical Assistance Centre
CATA	Commonwealth Association of Tax Administrations
CEDSIF	IT division of the Ministry of Finance Mozambique
CFA	Committee on Fiscal Affairs'
CIAT	Inter-American Centre for Tax Administration
CIDA	Canadian International Development Agency
CIT	Corporate Income Tax
CMS	Customs Management System
COTS	Commercial Off-The-Shelf
DAC	Development Assistance Committee
DAF	Direção de Área Fiscal
DFID	Department for International Development
DGID	Direction Generale des Impots et des Domaines
DRM	Domestic Resource Mobilisation
EAC	East African Community
ECOWAS	Economic Community of West African States
ERCA	Ethiopian Revenue and Customs Authority
ERP	Enterprise Resource Planning
ETPM	Enterprise Taxation and Policy Management
EU	European Union
FAST	Fast Enterprises

GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GRA	Ghana Revenue Authority
GRP	Government Resource Planning
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
HCM	Human Capital Management
HR	Human Resources
ICT	Information and Communication Technology
IDB	Inter-American Development Bank
IFMIS	Integrated Financial Management Information System
IMF	International Monetary Fund
IOTA	International Organisation of Tax Administrations
ITAS	Integrated Tax Administration System
ITC	International Tax Compact
ITD	International Tax Dialogue
JUE	Janela Única Electrónica
KfW	Kreditanstalt für Wiederaufbau
LDC	Least Developed Country
LIC	Lower Income Country
LMIC	Lower Middle Income Country
LTO	Large Taxpayer Office
MEF	Ministry of Economy and Finance
MIC	Middle Income Country
MTO	Medium Taxpayer Office
OBIEE	Oracle Business Intelligence Enterprise Edition
OBR	Office Burundais des Recettes (Burundi Revenue Authority)
OECD	Organisation for Economic Cooperation and Development
OGC	Office of Government Commerce
OPA	Oracle Policy Automation
OTA	Oracle Tax Analytics
PAYE	Pay As You Earn
PIT	Personal Income Tax
PMI	Project Management Institute
PPP	Public Private Partnership
PRINCE	Projects in Controlled Environments
RCMS	Revenue Cycle Management System

RMS	Revenue Management System
RUC	Registro Unico de Contribuyentes
SARA	Semi-autonomous Revenue Agency
SARS	South Africa Revenue Service
SIGTAS	Standard Integrated Government Tax Administration System
SITRP	Specific Integrated Tax Reform Project
SOA	Service Orientated Architecture
SRA	Swaziland Revenue Authority
SUNAT	Superintendencia Nacional de Aduanas Y de Administracion Tributaria (Peru Revenue Authority)
TCO	Total Cost of Ownership
TIN	Taxpayer Identification Number
TMS	Transport Management System
ToR	Terms of Reference
TRA	Tanzania Revenue Authority
TRM	Tax and Revenue Management
UMIC	Upper Middle Income Country
USA	United States of America
USAID	United States Agency for International Development
VAT	Value Added Tax
VfM	Value for Money
VPN	Virtual Private Network
WAEMU	West Africa Economic and Monetary Union
WB	World Bank
WBS	Work Breakdown Structure

Executive Summary

Objective and content of the study

This study intends to give guidance to tax administrations and donor organisations regarding the design of support in the area of ICT. The study focuses on integrated ICT-based tax reform projects as opposed to isolated approaches regarding specific taxation types and covers concrete recommendations for the overall approach, the project components and the respective modes' of delivery. The study covers the most important Integrated Tax Administration Systems (ITAS) available in the market and draws lessons learnt from 13 diverse countries.

Chapter 1 gives an insight in the context, motives and objectives behind the study. It then goes on to describe the methodology used, followed by the products and countries in scope of this study.

Chapter 2 pays attention to all aspects of a tax administration's functions and describes how the functionalities of an Integrated Tax Administration System (ITAS) cover this. To benchmark the coverage in an objective way, the Australian Tax Office reference model is used. For each of its twelve products the benchmark is made and a short introduction of each solution is presented. The chapter is completed with a summary of the key findings of the analysis and a short presentation on the firms delivering the solution.

Chapter 3 focuses on the factors that should be taken into account when a tax administration is going to select an ITAS. Chapter 4 is focussing on the experiences of different countries in implementing IT systems in their tax administrations, as part of their reform programmes.

One of the main success factors for reform programmes is that several conditions are fulfilled, before implementing an ITAS. Chapter 5 gives an overview of the impact of implementing an ITAS and the conditions that should be in place, to increase the chance of success. These conditions are discussed per stage of the project: business process redesign, gathering requirements, procurement, realisation and implementation and finally, post-implementation and maintenance.

The document is closed by chapter 6, which provides an overview of conclusions and recommendations in relation to the implementation of an ITAS, as part of a tax administration's reform programme.

Main observations and conclusion of the study

Before starting or funding any modernisation programme, it is important to take into consideration that the implementation of information technology within organisations like tax administrations, is a complex and time consuming challenge. The main reason for this, is that modernisation programmes involve much more than simply introducing new information technology. Core questions that need to be dealt with are:

- What kind of an organisation does the tax administration want to become?
- What should the interaction with taxpayers look like?
- What is the relation with the wider governmental strategy?

Once there is clarity about these aspects and the tax administration's desired identity, new information technology is needed to support the reform.

The realisation and implementation of information technology is normally done via projects, established for this specific task. The way projects must be structured and incorporated within the existing organisation is well described in different best practices like PRINCE2. In practice however, it is very difficult to work in line with these practices. This is not only the fact in developing countries, but all over the world. It can therefore not come as a surprise that also in this study omissions in the different countries were found. Some of the issues are

related to the periphery of the project. Examples are a lack of commitment of senior management, a lack of mandate given to the project manager or the fact that managing a project is different from managing a line department. In addition to the external issues, the project has its internal pitfalls. The structure of a project is for instance often well described, but already after a short period of time, staff members tend to forget their roles. Also, project plans are too often regarded as a static document instead of a dynamic tool that helps to monitor progress. Additionally, in the project's start-up phase the tax administration often has a misplaced assumption that an external provider will solve all issues. In chapter 4, in which the in-depth country analyses are presented, some examples are provided of pitfalls and their impact.

Nowadays it is hard to imagine that ICT is realised without the support of external partners. This entails that the required ICT needs to be procured through increasingly complex tenders. The reason for this complexity is that the procurement is most of the time not restricted to products or commodities, but involves a complex combination of ICT-components, software, licenses and consultancy services. Such complex tenders are not a daily practice for tax administrations, which makes them quite risky. Only legal assistance is simply not sufficient to cover the complete area where support is needed.

This study presents a list of observations, based on the analyses of available ICT-solutions for tax administrations and the country analyses. These observations could serve as a useful "lessons learned" tool for tax administrations and donors. It would be important to include these lessons in the approach of their own programmes, preferably in the earliest phase of a modernisation project that includes an ICT-reform.

Observations in relation to ICT-solutions available in the market and the related selection process:

a) Processes of tax administrations are basically similar, but in practice it seems that each tax administration invents its own processes. Consequently there is no single ICT-solution in the market that is capable to fully meet the requirements of a specific tax administration.
b) A logical step before procuring an ICT solution, is to redesign the processes that need to be computerised. In practice this activity is missing or is taking place too late, namely during, instead of before realisation.
c) Expectations in relation to the possibilities of the proposed ICT-solution seem to be managed by potential suppliers' sales departments, instead of the responsible project that has to deliver.
d) The available functionality within ICT-solutions varies a lot. As a result, it is crucial that the requirements for the section of a product are based on the outcome of a high level business process redesign. The investments in scope of this study normally have a life-cycle of over 15 years. It is therefore important to take into consideration that functionality requirements increase in line with the growing maturity of a tax administration.
e) To get an overview of the functionality provided by the products in scope of this study, a comparison with the Australian Tax Office reference model is presented. A striking observation of the outcomes of this comparison, is that a high coverage of the reference model's criteria is no guarantee for a successful ICT-implementation. This is due to the fact that some of the ICT-solutions are complex to implement and require experienced IT departments.
f) The level of maturity of IT departments varies from very low to very experienced. However, in most of the analysed countries the maturity is far from sufficient. Consequently, external consultancy services were needed before and during the implementation of the ICT-solution. The consultancy services vary from hiring specific expertise to almost turn-key projects. The type of consultancy has a huge impact on the possibility of knowledge transfer and finally it can even end in a serious vendor lock-in.
g) It is a widespread misunderstanding that the functionality of an acquired ICT-solution is the success factor in modernising a tax administration. Starting the reform with a well performed high-level business process redesign, in line with the administration's strategy and vision, will probably be more successful. After selecting the solution that fits the majority of requirements, the new business processes can be defined. During this stage it is important to use, as much as possible, the best practices embedded in the solution acquired.

Observations related to the role of donors as part of the modernisation project:

h) Only a few donors have a global strategy when it comes to ICT for tax administrations. Most of the ICT related activities are embedded in larger tax and revenue administration reform programmes.
i) A mechanism for exchanging ideas and experiences between donors is missing, which might be the reason for the different approaches of country offices of donors in relation to ICT in tax administrations.
j) Another observation is that there is a general shift to the procurement of standalone ICT-systems for tax administrations. This is the result of the fact that beneficiary countries want systems to complement their existing situation. A precondition is that the tax administration is well organised and has good knowledge of the ICT-systems and their limitations.

Observations based on the country analyses:

k) The ICT-reform activities are in general part of more comprehensive tax reform programmes. These programmes focus on: taxpayer compliance, increased revenue, improved service delivery and creating accountability, transparency and integrity. When implemented well, the ICT-solution can support all these aspects.
l) The duration of implementing an ICT-solution takes in average about three years. However some countries need up to 16 years for their implementation.
m) The main challenges experienced by the countries are:
    - Limited or insufficient internal communication
    - Poor quality of specified requirements needed for procurement
    - Procurement process itself
    - Poor ICT-Infrastructure (network and power supply) which is often ignored until roll-out
n) Follow-up projects insufficiently build on what has been implemented previously.
o) Poor project design, which can be a major cause of a lack of success. For example, few World Bank projects include change management in their set-up. This is often due to the fact that ICT-experts are given the lead instead of technical experts from the functional areas.
p) The sequencing of project activities is often of a poor level.
q) Process mapping is frequently carried out entirely by ICT-consultants with insufficient consultation/selling skills. This is also the case with business process redesign and as a consequence there is resentment and limited support.

Observations related to the implementation of an ICT-solution and its impact on a tax administration:

r) Management focus is often too much on the realisation of the ICT-solution and not on the conditions that should be in place, to improve the chance of a successful implementation.
s) To meet the expectations of executive management and politicians it is important that the ICT-solution fits within the tax administration's strategy or the overall government's strategy.
t) It is important that already in the first stage the project is structured in such a way that it can indeed realise the outputs. The focus of the structure should not only be internal, but also on how the project is embedded in the standing organisation.
u) Part of the selection of an ICT-solution provider is to agree how the provider's team will be integrated in the project.
v) The budget and structure needed for the maintenance and post-implementation phase is often overlooked. As a tax administration normally operates in a changing environment, it needs to change its processes, interaction with taxpayers and products. Also new legislation will have its impact on the initial solution delivered by the project. Without a maintenance organisation and related budget, the ICT-solution will be outdated soon after the first roll-out.
w) The time and effort needed for adequate change management is often underestimated. Change management entails more than providing a one-off training on the new application. It also involves creating commitment of internal and external stakeholders, future end-users and management. Once it becomes clear that, for whatever reason, future changes will occur, the process of change management should start. In this early phase, communication and interaction contribute more to getting the final solution accepted, than providing a training in a later phase.

Main recommendations based on the study

The main objective of the study was to give guidance to tax administrations and donor organisations regarding the design of support in the area of ICT within a tax administration and wider. Understanding the scope and what actually happens during the implementation of an ICT-solution is the first step to success. Based on all information gathered during the study and also on the experiences of the consultants who worked on it, recommendations are provided for all relevant areas of the implementation of an ICT-solution, as part of a tax reform programme. Hereafter the most important recommendations are presented.

Recommendations in relation to ICT-solutions:

a) As the ICT-solution will become part of a larger ICT-environment it is important to define a so called optimal technical footprint. This footprint includes preferred (existing) hardware and other essential equipment. It is important to take into consideration the geographical spread of offices that need to be computerised. Another relevant input for this footprint is the availability of local supplies and expertise.
b) The tax administration's required effort to maintain the system, needs to be understood at an early stage, both in relation to expertise and required budget for the complete life-cycle of the ICT-solution.
c) There are two main scenarios to realise an ICT-solution. The first one is realisation through acquiring a so-called Commercial Off-The-Shelf-Solution (COTS). The second one is the realisation of an in-house system. The costs, benefits and complications of each option must be considered in detail. Relevant aspects are: scope of functionality, total costs of ownership, required technical platform and the existing capabilities within the IT department.
d) The requirements for the ICT-solution should be based on a business process redesign that is based on the tax administration's strategy. Later on, the functionality that becomes available by the selected ICT-solution, can be used for the detailed processes to be implemented.

Recommendations for creating the right conditions to increase the chance of success:

e) If there is no strategic plan in place, this should be realised before any steps are taken to implement an ICT-solution. Without such a plan, guidance is missing on what and how to implement.
f) Part of the project is to recruit competent, committed and dynamic leaders within the tax administration. They need to run the project and are responsible for the business implementation. If additional training is required to bring this staff to the right level, this is preferably done before, or otherwise not later than, the first stage of the project.
g) Besides recruiting management it is important that the project can be sourced with the required skilled staff. It is advisable to first undertake a capacity/needs assessment to get a clear picture of the staff and skills required. Considering the importance of the business process redesign, the role of the business analyst needs special attention.
h) In general, by splitting up the change initiatives in manageable "segments" rather than a "big chunk", the chance of success will increase.
i) It makes no sense to start the project without commitment for full funding by donors and the beneficiary government. A half implemented product is equal to nothing. If funding cannot be guaranteed for the full scope, it is recommended to reconsider the scope and break it down to logical functional areas, linked to the tax administration's strategic objectives.
j) Cohesion within the tax administration between those who develop and implement the reform and those who perform current operations, is an important condition to improve the acceptance of change.
k) When skills or experience are insufficiently available, it is advisable to make use of external expertise, both for assistance and for quality assurance.

Recommendations in relation to project structure and governance:

l) To avoid unrealistic expectations, it is important to have a detailed planning in place prior to system implementation. The planning must be based on the required deliverables and the effort required to realise them. Updating the planning based on actual results, is an on-going process.

m) Change management should have an explicit position within the project. A strategy on how the change is managed is key to the long-term success of the project.
n) Using a recognised project management methodology helps to bring structure in processes and procedures and to plan the right sequence of activities.
o) As most of the ICT-implementations will be part of a wider tax administration and policy reform, a holistic approach needs to be adopted.
p) At the start of the process measurable and achievable indicators have to be agreed, so it will become possible to monitor performance of the project and benefits to be realised.

Recommendations in relation to procurement of consultancy services and technical assistance:

q) The recipient government's procurement rules need to be analysed carefully as they vary in developing countries and can cause extensive delays in awarding a contract. If allowed and necessary, the procurement rules of the donor country can replace those of the recipient government.
r) The procurement and selection process needs to be rigid and transparent, preferably with an advisory or audit role of the donors involved.
s) Donor or bilateral support should be closely coordinated to avoid duplication and waste of effort.
t) The expectations of the new system are defined and documented in detail, as part of the tender process.
u) It is advisable to seek contact with other users of the solution that is being deployed. Preferably an onsite visit is included to review system expectations with the users' experiences.

Recommendations to manage the impact of an ICT-solution on a tax administration:

v) Senior management needs to be fully aware of what change management is and why it is important.
w) Every level in the tax administration should be involved in the tax administration's transformation.
x) Ownership needs to be created at all levels within the beneficiary administration.
y) A communication strategy needs to be developed for tax administration employees and for all other stakeholders.

Chapter 1

Introduction

This introductory chapter first sets the scene for the analysis of different IT systems for tax administrations and the experience of implementing such systems in developing countries. It states the context, motives and objectives behind this study. The chapter then goes on to describe the methodology underpinning the study, which draws on desk research, questionnaires, interviews and field visits to four selected countries. It then outlines the scope of the study and structure.

1 Introduction

1.1 Purpose of the study

This study intends to give guidance to tax administrations and donor organisations regarding the design of support in the area of ICT. The study focuses on integrated ICT-based tax reform projects as opposed to isolated approaches regarding specific taxation types and covers concrete recommendations for the overall approach, the project components and the respective modes' of delivery.

1.2 Methodology

The methodology of the study is based on a two phased approach:

First Phase: Desk Research, questionnaires and interviews (from a distance)

The first phase was based on a desk review. During this phase, existing programmes in thirteen developing countries were in scope. The overview drafted is based on background information, mostly already available in the public domain. As a follow up, primary source information was obtained from people close to the automation experience of each country.

In addition to the information coming from the users of the information technology in the different countries, it is important to get a better understanding of what kind of ICT-solutions are available in the market. For this reason, Application Service Providers (ASP) were identified, selected and contacted during the inception phase. This selection was based on preliminary research, which identified their products as Commercial Off-The-Shelf (COTS) solutions. After further research it was concluded that some of these solutions were non-COTS, although they are not necessarily portrayed as such by the provider.

The providers were contacted via a questionnaire (see Annex A), confirming and explaining the purpose of the study and to support the legitimacy of the request. Additionally, various emails and phone calls were necessary to follow-up the initial request.

Worldwide, tax administrations can be responsible for both domestic taxes and for customs related taxes/duties. The scope of this study is limited to the area of domestic taxes. Therefore one of the criteria for selecting a provider, was that its product should support the area of domestic taxes. Where the term “tax administration” is used in this study, it also refers to a tax authority, a tax agency or a tax department.

Second Phase: Field Assessment

After evaluation of the outcomes of the first phase, four countries were selected to gather additional documentation and to have interviews with the main stakeholders: taxpayers/representatives, suppliers, staff at different levels of the executing entity, other involved government institutions and donors.

These activities were not exhaustive, but were designed to provide an overview of the overall experiences with the most relevant systems across the world and to provide recommendations for future support. Selection of the four countries was based on geographical location and country type distinction (Middle Income Country (MIC), Lower Income Country (LIC), fragile/post conflict).

1.3 Product Scope

The selection of products was focused on Commercial Off-The-Shelf (COTS) solutions. The term COTS is commonly used in the field of information technology and it refers to software that is ready-made and available for sale, lease or license. This type of solution is usually seen as an alternative to in-house development of one-off software solutions. Typically, a COTS is highly configurable, which allows the solution to be tailored to the specific needs of a client. Configuration is normally much more efficient than modification of the data model or underlying source code of a solution.

An important motivation for a client to acquire a COTS, is the anticipated reduction of overall system-development and associated costs, a more manageable level of risks during implementation and reduction of the long-term maintenance costs.

The available literature points out that many people in the 1990's expected the Commercial Off-The-Shelf solution to be the panacea to reduce costs and time. However, this type of solution also entails disadvantages, such as an increased effort to integrate the software as part of the implementation.

In summary, the main characteristics of Commercial Off-The-Shelf solutions can be described as follows:

- The solutions are provided at a reduced cost and with a shortened delivery schedule
- The solutions are more reliable when compared to custom built software, as their reliability is proven by other organisations making use of them
- They are easier to maintain because the documentation of the systems is provided as part of the delivery
- They embody internationally accepted best practices
- The solutions are of a higher quality as competition improves the quality of the product
- The solutions are of a higher complexity because specialists within the industry have developed the software
- The development of the solution is driven by the market and not by the industry.

For the study, both COTS and non-COTS solutions were examined. Within this study the scope is limited to those COTS solutions that fit within the boundaries of the above definition. The awareness of this restriction is important since some Integrated Tax Administration Systems (ITAS) are marketed as Commercial Off-The-Shelf, whereas they are in fact not. Similarly, it is observed that a custom-made product for a specific country is sometimes marketed as part of the Commercial Off-The-Shelf, even though that is not strictly the case.

Based on the criteria mentioned before, the ITAS presented in table 1, were in scope of the first phase. This table also includes the (lack of) responses from the providers.

Table 1: Responses from ITAS Providers

Ref.	Status	Responses	Integrated Tax Administration System	Application service Provider
A	Complete questionnaire received	10	Tax & Revenue Management Solution	Oracle
			Fast RM	Fast Enterprises
			FreeBalance Accountability Suite	FreeBalance
			GesCoFisc	Consult Services Informatiques
			iTAX	GIZ and partner organisations
			RMS	Data Torque
			Revenue Premier	Revenue Solutions
			Tax and Revenue Management (TRM)	SAP
			TAGDEER	Estarta Solutions
			Tax Mantra & DigiGov	Tata Consultancy Services
			TRIPS	Crown Agents
B	Excluded from the study	1	MS Govern	Govern Software
C	Declined to participate	2	SIGTAS	CRC Sogema
			e-ris	Bull

The solution "MS Govern" is essentially a property tax solution focusing on managing owners and properties. The primary key is the property as opposed to a standard ITAS where the taxpayer is at the centre of the solution. The solution does not have a module to register taxpayers, to assess a VAT declaration, etc. For this reason, the solution was excluded.

Two providers formally declined to participate (CRC Sogema providing the SIGTAS system and Bull providing the e-ris system). As a reason for this, they mentioned that their product is deployed in developed countries where competition is fierce and hence, they could not afford making public any kind of information, which is also accessible to competitors. On the other hand, the small-to-medium sized service providers who already implemented their solutions in developing countries, were the quickest to respond.

In section 2.3.4 and annex C, detailed information is provided on the systems of the application service providers, which are included in the scope of the research.

1.4 Country scope

One of the requirements of the study was to compare the experiences of at least twelve different developing countries, which have undergone major tax administration reforms during the last five years, including their strengths and weaknesses. Among the countries to be assessed, the following six countries were to be included for sure: Uganda, Ghana, Zambia, Mozambique, Tanzania and South Africa.

For the first phase of the research, the team investigated tax reforms that have occurred in thirteen diverse countries over the last ten years, with a focus on their experience in computerising the tax administration. These countries are the following:

Bangladesh	Burundi	Ethiopia	Ghana
Mozambique	Nepal	Peru	South Africa
Swaziland	Senegal	Tanzania	Uganda
Zambia			

After evaluating the outcomes of the first phase, four countries were selected for a more in-depth evaluation of the programmes and their experiences with implementing the Integrated Tax Administration System. The countries selected were:

Mozambique
Peru
Senegal
Swaziland

1.5 Role of donors

As part of the study, the main e-government donors were reviewed, with specific reference to ICT within tax administrations. This work was undertaken through a series of interviews with the relevant donors and through desk-based research. Some of the donors in scope are: World Bank, Asian Development Bank, IMF, USAID, DFID and German Development Co-operation. An overview of the main e-government donors and facilitators can be found in Annex E. This Annex also provides information on each donor's main tax reform programmes of the last five years, which are ICT-focussed or include an element of ICT.

1.6 Reading guide

After the executive summary, chapter 1 presents an introduction on this study. This chapter gives an insight in the context, motives and objectives behind this study. It then goes on to describe the methodology used, followed by the products and countries in scope of this study.

Chapter 2 pays attention to all aspects of a tax administration's functions and describes how the functionalities of an Integrated Tax Administration System (ITAS) cover this. To benchmark the coverage in an objective way, the Australian Tax Office reference model is used. For each of its twelve products the benchmark is made and a short introduction of each solution is presented. The chapter is completed with a summary of the key findings of the analysis and a short presentation on the firms delivering the solution.

Chapter 3 focuses on the factors that should be taken into account when a tax administration is going to select an ITAS. Chapter 4 is focussing on the experiences of different countries in implementing IT systems in their tax administrations, as part of their reform programmes.

One of the main success factors for reform programmes is that several conditions are fulfilled, before implementing an ITAS. Chapter 5 gives an overview of the impact of implementing an ITAS and the conditions that should be in place, to increase the chance of success. These conditions are discussed per stage of the project: business process redesign, gathering requirements, procurement, realisation and implementation and finally, post-implementation and maintenance.

The document is closed by chapter 6, which provides an overview of conclusions and recommendations in relation to the implementation of an ITAS, as part of a tax administration's reform programme.

Chapter 2

IT systems for tax administrations and benchmarking of packages

This chapter first seeks to explain how ICT can support a tax administration and particularly its operational processes and provides a description of the main functions of a tax administration. It continues with providing a summary of the main ITAS and their providers. The chapter then goes on to describe the methodology of the ITAS benchmark and introduces the Australian Tax Office Capability Model as basis of the research. It then presents the ITAS survey results through a comparative table of the ITAS surveyed vis-à-vis the for a tax administration core components of the Australian Tax Office Capability Model. The chapter is concluded with a summary of the key findings of the analysis of each ITAS, with additional information on the Application Service Providers and their business models.

2 IT systems for tax administrations and benchmarking of packages

2.1 Business processes of a tax administration versus support by ICT available in the market

Before conclusions can be made of how adequately ICT can support a tax administration, it is good to identify what an ITAS should support. A tax administration, like all other public and private organisations, has at least two main types of processes that can be supported by ICT: the operational processes versus the supporting processes.

Examples of the supporting processes are: human resource management (HR)/payroll, knowledge management and financial accounting. It is generally accepted that these processes are of such a generic nature, that specialised products can be bought in the market. These IT solutions are considered a commodity and they are relatively cheap, due to the high number of clients. One step further of using this type of commodities per department, is to invest in shared services on a governmental level. In this way they benefit from supporting ICT services, which reduces the costs on the overall governmental level.

2.1.1 Main functions of a tax administration

The scope of this study is restricted to the Integrated Tax Administration System (ITAS), which is supposed to support the operational processes of a tax administration. These operational processes are listed below:

- Taxpayer registration: This process enables the administration to register taxpayers and their activities. This information enables the tax administration to create accounts by tax type and to establish relationships with taxpayers. In addition, relationships between taxpayers, such as family members or businesses and its managers or shareholders, can be made visible by using the registration functions. In developing countries this is a very critical process, as centralised base registers for citizens and companies are normally missing.
- Return process: This process allows the administration to receive declarations by paper or electronically. Normally this process also detects whether a return is a duplicate or a substitute. Some assessments are already made in this process to check the consistency and completeness of the information. The return process usually also comprises the detection of non-filers, including the necessary follow-up actions of this detection.
- Billing and collection process: Payments will be accounted according to the agreed distribution rules. As a result, the individual taxpayer account will be updated and the payment will be registered as revenue received. In addition to the main payment stream, additional processes are in place like: accrue, reverse and waive interest and penalties, management of payment plans and refunds. If necessary, support by notifications will be created and sent.
- Taxpayer accounting process: This process allows tax officers to get an overview of the financial relationship between the individual taxpayer and the tax administration.
- Online self-service: Especially in developing countries this is a crucial process to support taxpayers in fulfilling their legal obligations. As a consequence of missing a well organised post-mail facility and the long travel distances to a tax office or service point, an online self-service will help to improve taxpayers' compliance. This service allows taxpayers to create and update their identification data (within restrictions based on authentication), to view their accounts and returns and to search for generic information via a website or portal. This service can also be delivered to intermediaries, such as tax advisors and accountants.
- Revenue accounting process: On the level of the tax administration, this process allows to account the revenue per tax type, region, period etc., both for levied as well as actual amounts received. This information will be exchanged for reconciliation with the general ledger. On an aggregated level, all this information can be used in reporting and intelligence processes. Examples of intelligence processes are forecasting revenue and linking transactions to taxpayer accounts.

- Case management processes: These processes ensure work flow management via generic functionalities, in order to control the flows of data processes within the tax administration. In general, there are some main cases that are crucial for a tax administration, for example, (enforced) collection, audit, bankruptcy and appeal.
- Security process: This is a non-functional process, that is focused on user authentication, authorisation and logging of the critical transactions. In case of online communication with taxpayers, confidential information will be encrypted.

2.1.2 Available functionality in an ITAS versus functionality required by a Tax Administration

A modernisation and computerisation programme can cover different areas within a tax administration. It is important to understand which functionalities an ITAS has. To make this clear, a modified version of the ATO Capability Model is used. For more details about this model see section 2.3 and annex C.

Using this model makes it possible to separate the functionalities covered by the ITAS from those, which are part of the broader ICT exercise of computerising a tax administration. Based on the ATO Capability Model, four major dimensions for an ITAS were identified for this study:

1 **Dimension 1: to computerise generic tax processes that exist in any tax administration**
All ITAS products in scope include a broad range of functionalities, aiming to computerise tax processes. This includes electronic taxpayer services (e.g. online self-assessment by the taxpayer), payments and accounting modules. In general, all ITAS that are surveyed are more or less integrated systems that are built, using a modular approach.

2 **Dimension 2: data sharing**
A tax administration is part of a wider governmental organisation and acts within a country's society. It is therefore important to have the possibility to exchange data with other parties, like commercial banks, the central bank, the pension contribution fund, etc. Although this exchange functionality is part of computerisation projects, in practice it is necessary to tailor this type of services to each client's needs. It is important that an ITAS contains something like staging areas where data, based on selection/extraction rules, can be made available for sending or receiving purposes. As this component of the data exchange service needs to be developed for the specific project, it cannot be considered as part of a standard set of ITAS functionality. In other words, the onus is on the capability of the provider to deliver data exchange services, rather than on the ITAS itself.

3 **Dimension 3: technical considerations applicable in the context of specific countries**
Interconnectivity of tax offices often depends on the availability of technical infrastructure, rather than on the ITAS itself. The related challenges will differ per solution, because the reliability of the available network depends on whether a solution has a centralised or decentralised orientation. In all cases these challenges require hardware and specific expertise, which can be delivered by the ITAS integrator. In case additional or different infrastructure is needed for implementing the ITAS, this normally does not have an impact on the ITAS itself. These activities can therefore be done by a third party supplier. This is different in the case of, for example, replication. As this has an impact on the non-functional features of the ITAS, this cannot be done without involvement of the supplier of the ITAS.

The capacity and capability of the existing IT team to maintain an optimised network and hardware, can have substantial impact on the connectivity.

In the procurement process of an ITAS, the providers should be requested to specify the minimum hardware and telecom requirements for their product. The tax administration is then able to compare these specifications to what is available in the current IT environment or country and to consider the capacity of its IT team.

4 **Dimension 4: Tax Practices**

Customer care services is a philosophy that is increasingly being adopted by tax administrations. From the perspective of an ITAS, customer care can be part of the available functionality. The ATO Capability Model takes these practices into consideration as part of the client relationship management capability.

While all four dimensions are relevant in the context of the modernisation and computerisation of a tax administration, only the first dimension relates to the ITAS directly. Data sharing and technical considerations will be examined only in relation to the ITAS (rather than to the requirements or capacity of the tax administration). The ATO Capability Model is used as reference to examine the ITAS functionality and tax practices.

2.2 ITAS products available in the market

Although more ITAS products are available in the market, for this study the number is limited to the below twelve ITAS and their providers. The table also lists some additional information on the products. In Annex B, an explanation is presented on how to interpret the various columns.

Table 2: Summary of the main ITAS

No.	ITAS Name	ASP	Is a COTS?	Multiple Versions?	Majority of Sites Using Latest version?	Overall Install Base	In Developing Countries?	Use Third Party Integrators?	Only Products in Revenue?	Specialty: Tax Administration or Software?
1	Tax & Revenue Management Solution	Oracle	Y	Y	N	≥5	≤5	Y	N	Software
2	GenTax	Fast Enterprises	Y	Y	Y	≥5	≤5	Y	Y	Software Tax Administration
3	FreeBalance Accountability Suite	FreeBalance	Y	Y	N	≤5[1]	≤5	N	N	Software
4	GesCoFisc	Consult Services Informatiques	N	Y	N	≤5	≤5	N	N	Software
5	RMS	Data Torque	Y	Y	Y	≥5	≥5	N	Y	Software Tax Administration
6	iTAX	GIZ	N	Y	N	≤5	≤5	Y	Y	Tax Administration
7	Revenue Premier Enterprise	Revenue Solutions Inc.	Y	Y	Y	≥5	≤5	Y	Y	Software Tax Administration
8	SIGTAS	CRC Sogema	N	Y	N	≥5	≥5	N	Y	Software Tax Administration
9	TAGDEER	Estarta Solutions	N	Y	N	≤5	≤5	N	Y	Software
10	Tax and Revenue Management	SAP	Y	Y	Y	≥5	≥5	Y	N	Software
11	eTax (uses several names. In Uganda, eTax, other places: Tax Mantra)	Tata Consultancy Services	N	Y	N	≥5	≤5	Y	N	Software
12	TRIPS	Crown Agents	Y	Y	N	≥5	≥5	N	Y	Software Tax Administration

[1] FreeBalance is a COTS and is marketed as a government resource planning system with about 19 clients. However, it lacks a developed module for revenue management and none of the current implemented sites uses it for taxes.

2.3 Benchmarking ITAS solutions based on a tailored version of the ATO Capability Model

2.3.1 About the ITAS solutions researched

As with any other software, an ITAS can vary considerably, depending on its underlying technology, its development history, the requirements of a given client during implementation and even the provider. The findings of the research make it clear that for any given ITAS:

- Multiple versions can co-exist among different clients. That is true for both COTS and non-COTS solutions; and
- Major software development can be done specifically for one client. For example, the Oracle solution, although it is a COTS, was customised in accordance with the specific requirements of the tax administration of Mozambique.

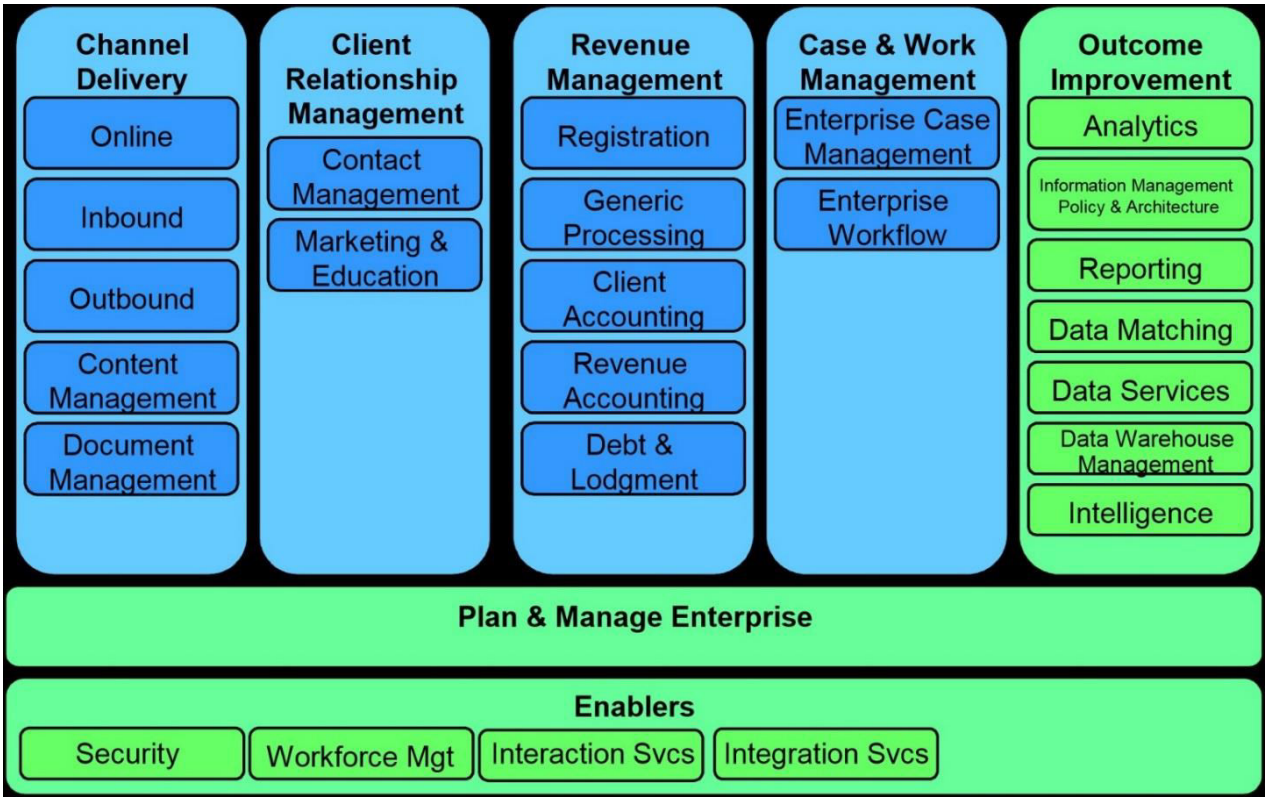
The research highlights when multiple versions of a solution exist, while the analysis is based on the latest commercially available version. The research focuses on the set of functionalities that are part of the "out-of-the-box" solution and not on a specific development that might have taken place in a specific country. It is important to keep in mind that no project is similar to one another and each project requires an appropriate IT intervention, depending on the existing capability and the specific strategy of the tax administration. For this reason, "out-of-the-box" is just a relative concept in relation to an ITAS.

While it might be interesting to understand what functionality was part of previous versions, these versions are not marketed or supported. Previous versions as well as specific developments for a country, are not readily available for implementation. This study therefore concentrates on the technical aspects of the ITAS available in the market and not on what is developed for a project in a given country. Tailor-made development, requirements, implementations, approaches or methodologies for specific countries are discussed in chapter 4 of this study.

2.3.2 The ATO capability model as a basis for the research

Annex A contains the questionnaire, that was sent to each of the providers involved in developing and implementing ITAS. The answers received create a better understanding of the functionality of each system. The questionnaire is based on the Australian Taxation Office (ATO) Integrated System. The figure below presents the ATO Capability Model.

Figure 1: The ATO Capability Model[2]



As already mentioned in section 2.1, this study is focusing on the specific operational processes of a Tax Administration. The ATO Capability Model is based on the Australian point of view and for that reason, is not always fully relevant for this study. The ITAS questionnaire that was used is derived from the relevant categories of the ATO Capability Model.

The questionnaire includes the definitions of the different capabilities and presents a set of related functionalities and their descriptions. By doing this, clear instructions were provided, to reduce the possibility of different interpretations by the providers. In addition, the following two documents were used as a reference when designing the questionnaire:

- Change Program Benefits Realisation Assessment, Final Report. CPT Global, Australian Taxation Office, June 14, 2012; and
- Tax Reference Model—Application Software Solutions to Support Revenue Administration in Selected Countries. Centre for Tax Policy and Administration, OECD, March 2010.

A supplementary set of questions entitled "Other ITAS Solution Evaluation Criteria" was enclosed to the questionnaire. Although no part of the ATO Capability Model, these questions could deliver added value as they provide extra technical background of the systems.

The results as presented in this chapter are mainly derived from the questionnaires. In some cases, additional third party information was used as well.

[2] Tax Reference Model—Application Software Solutions to Support Revenue Administration in Selected Countries March 2010 OECD/TCPA

2.3.3 The adaptions made to the ATO Capability Model to make it applicable for this research

At the highest level, the ATO Capability Model has four core capabilities: channel delivery, client relationship management, revenue management and case & work management. These are combined with the following supporting capabilities: outcome improvement, plan & manage enterprise and enablers. A definition of each of these capabilities, as well as the functionality comprising them, is presented in the questionnaire in Annex A. For a complete understanding of the ATO Capability Model, it is important to be aware of the following:

- Not all capabilities apply to all tax administrations. Certain features are only relevant in the context of the Australian model. For example, there are versions different from the one presented in figure 1, which include Superannuation Processing in the area of "Revenue Management". In general, this sub-capability is not a practice in developing countries and it is therefore not in the scope of this study;
- The ATO Capability Model encompasses a wide set of functionalities and ranges from ITAS critical features to support features. The model covers features that are not always the responsibility of tax administrations. A process like accommodation management, is part of the supporting processes and for this reason it is excluded from the study. Most of the tax administrations in developing countries focus more often on implementing the core-functions of the ITAS; and
- While it is tempting to have a single ITAS solution that covers the entire ATO Capability Model, in practice, this will not be the case. The study conducted by the Centre for Tax Policy and Administration (OECD; March 2010) clearly points to the fact that no single system covers all capabilities. The width of requirements of the ATO Capability Model is such, that it requires the integration of multiple solutions. For example, data warehouse management is usually not a function of the ITAS itself, because it makes cross references between groups of applications.

Based on these considerations, a selection is made out of the functionalities presented in the ATO Capability Model. The selected scope of evaluation is related to the main business processes of a tax administration as mentioned in section 2.1.1.

The general guideline is to start with computerising basic processes that allow the tax administration to identify its taxpayers and collect revenue from them. In a next phase, when sufficient data of reliable quality has been cumulated in the database, it makes sense to use more advanced tools such as analytics, intelligence or data warehouse. Lack of data or poor data renders the utilisation of such features useless. Another precondition for proper utilisation of these features, is the availability of required capacity amongst users. For example, auditors who do not understand the system, do not know how to interpret the data stored. The use of these features within the audit process requires skills of modern audit techniques.

The core processes have been scored in Table 3 in section 2.3.5 in order to reach a fairer comparison between the different systems.

The evaluation is based on the answers given by the providers in the questionnaires and phone interviews when applicable, as well as on publicly available documentation (brochures, case studies, presentation and website). It is not based on demonstrations or functional testing of the actual solution. Moreover, the evaluation relies on the interpretation of the questions by the providers. A more detailed analysis of the ITAS solutions is done in section 4.3 on the field assessments in the four selected countries. These are fundamental points to bear in mind when interpreting the results of the survey.

2.3.4 ITAS analysis

Tables 2 in section 2.2 and table 3 in section 2.3.5 facilitate the comparison of the various ITAS by providing an overview of the main characteristics of each solution and by indicating the level at which any given system meets the required capability.

The score on the ATO Capability Model (Table 3) sets a benchmark against which all ITAS can be compared. This could be interpreted to mean that the "best" system is the one with the highest score. While this might be true from the perspective of the capabilities of the ITAS, the selection of a system should be based on many more factors than simply the highest ATO score.

Table 2 outlines a variety of results and the ways how to interpret them. This stems from the fact that the various systems included in the survey, are themselves very different from one another. As might be expected, the products differ in history, technical platform and use. GesCo was for example developed for a French West African tax administration. Product development by the providers is an ongoing process. Some of the ITAS have been recently redesigned, while others are not really used as a COTS at all, but are in fact customised to the specific local situation. The latter will reduce the benefits of a COTS, simply because the solution can no longer be upgraded by the provider.

Also the volume of the install base differs from just a few to a high number. Another curious observation made is that more than one provider claims to have a specific tax administration to be part of its install base. One of the reasons for this is that some countries are phasing out one product and implementing another, sometimes even before the end of the normal life-cycle of a product.

Other important notices are:

- In some situations the assumed COTS is part of a larger suite of a public finance management solution, while others are dedicated ITAS systems.
- In the case of FreeBalance and GesCo, it seems that the products are not used as an ITAS, according to the definition used in this study.
- Some solutions specifically target developing countries, while others are oriented towards developed countries.
- There is quite a difference in the complexity of implementing and maintaining the solution.

2.3.5 ITAS Survey Results

The next table presents a comparative view of the COTS surveyed vis-à-vis a tax administration's core components as presented in the ATO Capability Model. For a full comparative view in which all ATO components are presented, reference is made to Annex C.

In order to determine the scores, each of the detailed functionalities was given a score, based on the extent to which the solution provides the capability in question. A total score was computed and transformed into a score between 0 and 3. The evaluation table below is based on a scale from 0 to 3 as follows:

0	No functionality
1	Very limited functionality
2	Functionality available with some limitations
3	Full functionality

Table 3: Comparison of the COTS surveyed with regard to the core tax processes part of the ATO Capability Model

Functionality	Tax & Revenue Mgt Solution (Oracle)	GenTax (FAST Enterprises)	Freebalance Accountability Suite (Freebalance)	GesCoFisc (Consult Services Informatiques)	RMS (Data Torque)	iTAX (GIZ)	Revenue Premier (Revenue Solutions)	SIGTAS (CRC Sogema)	TAGDEER (Estarta Solutions)	Tax & Revenue Management (SAP)	eTax (Tax Mantra) (Tata Consulting)	TRIPS (Crown Agents)
Channel Delivery	Delivers products and services through channels in a manner that meets client needs while achieving revenue administration and government objectives. Includes capabilities to support content, document and records management of inbound and outbound material.											
Online	3	2	2	1	3	0	0	1	2	3	2	3
Inbound	3	2	1	0	3	0	2	1	1	3	0	3
Outbound	3	3	3	0	3	2	3	2	2	3	1	3
Document Management	3	3	3	0	3	3	3	3	3	3	3	3
Client Relationship Management	Delivers the right experience at the right time through the right channel.											
For the study, this is not considered to be a core process of a Tax Administration												
Revenue Management	Enables clients (including tax intermediaries) to efficiently and effectively register, lodge/file and pay, and the revenue administration to recover the correct amount of tax and entitlement, whilst minimising the cost to the client.											
Registration	3	3	0	2	3	3	3	2	2	3	3	3
Generic Processing	3	3	0	2	3	2	3	3	3	3	3	3
Client Accounting	3	3	1	3	3	3	3	3	3	3	2	3
Revenue Accounting	3	3	2	3	3	3	3	2	1	3	3	3
Debt and Lodgement	3	3	0	3	3	3	3	2	0	3	2	3

Functionality	Tax & Revenue Mgt Solution (Oracle)	GenTax (FAST Enterprises)	Freebalance Accountability Suite (Freebalance)	GesCoFisc (Consult Services Informatiques)	RMS (Data Torque)	iTAX (GIZ)	Revenue Premier (Revenue Solutions)	SIGTAS (CRC Sogema)	TAGDEER (Estarta Solutions)	Tax & Revenue Management (SAP)	eTax (Tax Mantra) (Tata Consulting)	TRIPS (Crown Agents)
Case and Work Management	Delivers enterprise wide case and work management capability to support active compliance, provision of written advice, debt collection, triggering of inbound correspondence and exception processing.											
Enterprise Case Management	3	3	1	2	3	3	3	2	1	3	3	3
Enterprise Workflow	3	3	3	2	3	1	3	1	3	3	3	3
Outcome Improvement	Provides feedback on the client experience, effectiveness of risk treatments and other enterprise information to continuously improve the operations of the revenue administration and provides input to Case Management and Revenue Management capabilities to ensure appropriate and relevant treatment according to risk.											
Information Management Policy and Architecture	3	0	3	0	0	3	3	0	0	3	0	0
Reporting	3	3	3	3	3	3	3	2	2	3	2	3
Plan and Manage Enterprise	Provides the management processes and structure for running the day-to-day business of the revenue administration.											
For the study, this is not considered to be a core process of a Tax Administration												
Enablers	Additional capabilities that can be used by any of the other major functionality areas.											
Security	3	3	2	3	3	3	3	2	3	3	3	3
Interaction Services	3	3	2	1	0	3	1	2	3	3	1	3
Total (core functions only)	**45**	**40**	**26**	**25**	**39**	**35**	**39**	**28**	**29**	**45**	**31**	**42**

As a general conclusion, the analysis of each ITAS separately clearly points to the fact that the strengths and weaknesses of each system vary tremendously and depend on two very different factors:

- The technical assessment of the ITAS: The width of functionality when compared to the ATO Capability Model, the underlying technology used, the architecture of the software, etc.; and
- The application solution provider and the historical background leading to its development of the ITAS. Interesting questions to take into consideration, are:
    - Is the provider a dedicated software company, or does it have in-house tax expertise?
    - What was the business driver that led to the creation of the ITAS: a funding agency ready to cover the costs of individual customisations, an investment in the development of a state-of-the-art ITAS, or a re-investment in the ITAS in order to renew the ITAS for a better fit with a changing market?

The reader should keep these aspects in mind while reviewing the analysis of each ITAS and of its provider, as presented in Annex C.

2.4 Key findings benchmarking

In this paragraph, a summary is provided of the key findings of the analysis of each ITAS, with additional information on the provider and its business model. The evaluation is based on the results as presented in Table 2 and on the information provided by the providers.

Tax & Revenue Management Solution

ASP	**Oracle** is one of the largest multi-national consulting services providers in IT with a pool of more than 13,000 Oracle consultants worldwide. Oracle is first and foremost a pure IT software company. Oracle markets and uses multiple inter-operational pieces of software (up to 11) to form a solution and considers The Tax & Revenue Management Solution (TRMS) as its tax solution. Oracle prefers the utilisation of third party integrators for implementation, but the analysis tackles TRMS from the angle of Oracle.
Experience in developing countries?	Yes
Is it a COTS?	Yes
Analysis of the ITAS	
TRMS is composed of a defined set of applications and technologies, rather than a unique integrated system. Utilising multiple systems in a coherent manner is not necessarily a problem by itself, although it certainly adds to the complexity of the implementation, as specific links between different solutions have to be built. Additionally, Oracle does not actually conduct the implementation, utilising third party integrators instead. Therefore, these two factors combined, increase the level of risk of a TRMS implementation. In conclusion, Oracle can leverage numerous software in an interoperable fashion, as it is a global IT system provider. This might be an advantage for large organisations that want to leverage such a wide spectrum of computerisation possibilities to cover their entire operations, both tax and non-tax related. At the heart of the TRMS lies ETPM, which is the only component that is truly considered to have been built for a tax administration. From the experience in Mozambique, it can be concluded that it is an ITAS intended and more suitable for large and structured organisations, with a lot of capacity, that will be able to control and maintain it, although the experiences in Lesotho shows the opposite.	

GenTax

ASP	**Fast Enterprises, LLC (FAST)** was founded in 1997 in the USA. Today, it has a branch in Canada and over 350 employees providing software and information technology consulting services for government agencies involved in revenue management. FAST is the developer of the GenTax product and claims to have completed around 125 implementations at the city, county, state, provincial and national levels. FAST mentioned that it uses and intends to continue using third party integrators; the analysis tackles GenTax from the angle of FAST.

Experience in developing countries?	Yes, but limited
Is it a COTS?	Yes

Analysis of the ITAS

GenTax is a pure ITAS software, specifically targeting tax agencies. As a highly specialised ITAS it cannot leverage modules from other pieces of software it develops. As third party integrators are utilised, a risk factor is involved.

GenTax is defined as a highly configurable COTS and it is more configurable than an average ITAS. While high configurability means less intervention on the code (programming), which is positive, it also implies that the underlying business rules that can be configured, are also substantially more complex and require refined understanding of the solution and of the way it can be configured. When deploying such a solution in a developing country, it means that the maintenance of the system must be done by the ASP (as opposed to the IT team of the tax agency).

The wide install base (and more importantly the fact that all of them are still using the latest version of the system), along with results of the comparative table, clearly indicate that GenTax is mature software dedicated to revenue management. On the other hand, it should be noted that GenTax has just one implementation on a governmental level and very limited experience in developing countries.

The maturity of GenTax, its high configurability and the fact that it requires substantial implementation support, all lead to a market price in the upper bracket when compared to competitors. Consequently, Fast is targeting countries that are interested in acquiring a more advanced (expensive) solution. Countries such as Vietnam are considered to have ITAS acquisition budgets, adequate for the cost of GenTax. Similarly, developing countries have more capacity to adopt and integrate a solution of the level of complexity of GenTax.

In conclusion, GenTax is a dedicated COTS ITAS and FAST has a substantial install base, expertise and employee workforce, combined with its intention to move to new markets in developing countries. Consequently, this might be a software worth observing closely in the future, especially for countries already having some experience in the computerisation of their tax processes.

FreeBalance Accountability Suite

ASP	**FreeBalance** was founded as Linktek Corporation in Canada in 1984, as a privately held consulting firm specialised in financial software services for federal government. The company changed its name to FreeBalance in 1997. Today, it has about 150 employees. The fact that FreeBalance is deployed in 9 countries represents a substantial potential install base to rely upon for matters such as generating company revenue through licencing for upgrades. Moreover, since FreeBalance does not use third party integrators, it has developed substantial experience in developing countries over the years, as well as in post-conflict countries.
Experience in developing countries?	Yes
Is it a COTS?	Yes

Analysis of the ITAS

The FreeBalance Accountability Suite is a Public Financial Management system, which is currently deployed in 9 countries, mainly in the developing world. The FreeBalance Accountability Suite clearly states that it is a COTS and that its suite is modular and can be deployed in full or in part. However, one area that FreeBalance does not cover are the processes of a tax agency, although FreeBalance is considering the development of a revenue management module as part of its strategic roadmap. Compared with the definition, FreeBalance is in fact not an ITAS.

The score (on the ATO Capability Model) indicates the availability of modules that are required by the ATO Capability Model, even though there is no revenue management module. FreeBalance has the strength of a modular approach of a Government Resource Planning System, covering all financial areas of a government. In cases where tax agencies are independent from the Ministry of Finance (e.g. Rwanda Revenue Authority) and have to manage their workforce, payroll, etc., FreeBalance can be considered as an interesting option since it has the modules to computerise all of these processes.

In conclusion, the development of core mission-critical functionality for revenue management is a complex and major endeavour that requires substantial expertise which is very different from the rest of the financial processes of a government, such as expenditure management. This is further aggravated by the fact that FreeBalance is a software company and has no expertise in the tax area. In that sense, FreeBalance cannot be seen as a major contender in the ITAS market because it is not able to deliver a solution that is able to support the core business processes of a tax administration at this moment. If it will be a relevant player in the future remains hypothetical until the comprehensive development of revenue management functionality and its proper integration in the rest of the FreeBalance suite.

GesCo Fisc

ASP	**Consult Services Informatiques** is a French-based firm and is the ASP of GesCo Fisc (GesCo). Although the firm did complete the questionnaire, little information was made available on the firm itself at the moment of the study. The website (www.csigesco.com) also presents only a home page stating that the site is under construction. Currently, GesCo is not a COTS, it is tailored to the requirements of each client. During an interview, the ASP indicated that the business model of the software is still evolving according to investments made by clients.
Experience in developing countries?	Yes
Is it a COTS?	No
Analysis of the ITAS	
GesCo is built as a modular suite for Public Financial Management. Similar to FreeBalance, it is not a pure ITAS but rather intends to computerise a variety of financial processes such as payroll, expenditure and budgeting. Contrary to FreeBalance, GesCo does have a module specific for revenue management, but the only site where it is implemented is the Togo tax administration. Because of the limited install-base, GesCo cannot be defined as being a COTS. While GesCo's module for revenue management is an ITAS, the low score on the ATO Capability Model shows that the software is not yet mature and is lacking in depth. However, GesCo offers the advantage of a suite of modules for public finance management and governments that adopt the entire suite may see the integration between revenue management and other public finance management (e.g. budgeting, payroll, etc.) facilitated. The results on the ATO Capability Model also show that the functionality for non-tax related processes are lacking in both width and depth. Compared to FreeBalance, GesCo is a solution without clear roadmap and is developed according to what the clients are willing to pay. It has a much more limited install base, yet it does have an ITAS module, although a weak one. In conclusion, to be considered as a viable option, GesCo has to improve substantially in the medium term. It should also be taken into consideration that the ASP of GesCo is primarily a software organisation and potentially lacks the expertise in tax processes to further develop its solution.	

Revenue Management System (RMS)

ASP	**Data Torque Limited** is a Microsoft certified IT vendor that was founded in 1994 and is based in Wellington, New Zealand. Data Torque's key business focus is the delivery of fiscal management software for tax (RMS), Customs Management System (CMS) and a Transport Management System (TMS). The main install-base of RMS is in the Pacific islands, which was a natural market for Data Torque which is based in New Zealand. However, in more recent years, the firm started targeting Africa with current implementation in Swaziland. Data Torque has clearly expressed its interest to move to other developing countries. The fact that RMS' install base is growing, implies that more revenue will be generated through licencing for reinvestment in the software and upgrades. Moreover, since Data Torque does not use third party integrators, it has over the years developed substantial experience in developing countries.
Experience in developing countries?	Yes
Is it a COTS?	Yes
Analysis of the ITAS	
RMS is a dedicated COTS ITAS and is developed using the Microsoft framework. In 2010, Data Torque invested in its upgraded version (RMS7) to address some of the more acute problems found in developing countries, such as the capacity of RMS7 to function with minimal bandwidth for countries with poor telecoms. Several of its clients using old versions of RMS have been or are in the process of being migrated to RMS7. An interesting aspect of RMS7 is that it is database agnostic, meaning it can run on Oracle or SQL Server databases. The high score on the ATO Capability Model clearly mirrors the investments made in the redesign of the software, as it makes good use of modern technologies and covers multiple delivery channels and a client-centric approach. As a purely integrated system (as opposed to an interoperable suite of systems such as Oracle TRMS), RMS has one of the highest scores on the ATO Capability Model. Virtually all the main capabilities of the ATO Capability Model are covered by RMS7, as it is first and	

foremost an ITAS catering to tax administration mission-critical processes.

Also the fact that it is implemented in developing countries speaks in favour of RMS7, although, implementing this ITAS in a large developing country is a test that Data Torque still has to pass.

In conclusion, RMS7 is designed specifically for developing countries, contrary to many of the other solutions. The redesign of the system and the fairly wide install base of RMS7 are two major assets to support this ITAS as one of the major contenders in the ITAS market of developing countries.

iTAX

ASP	The first development of iTAX was done in 2000/2001 for the Tanzanian Revenue Authority (TRA) by the **Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH** (formerly GTZ) and experts from the German Tax Administration. Programmers from the TRA were involved in the development. Since 2003, this version is in use in all TRA offices nationwide in Tanzania. In 2007, the Philippines-Local Governments Units (LGU) version of the iTAX was developed based on the TRA one. This was done through a GIZ project and local programmers from the Philippines were integrated in the development team. Since then, iTAX is in use in 12 provinces in the Philippines. The Tanzania Local Government Authorities (LGA) version of iTAX is a tailor-made version developed by the same experts who developed the Philippines version and included some experts from the Computer Centre of the University of Dar es Salaam. The Tanzania-LGA version started in January 2012 and in May 2013, the Tanzania Prime Minister's Office decided that the nationwide rollout (164 LGAs) of this iTAX version would start as of July 2013. It is estimated that the number of experts that know this solution and the methodology used to implement it (directly conducted by GIZ staff, and through partner organisations) amount to approximately 50 people spread over Germany, Tanzania and the Philippines.
Experience in developing countries?	Yes
Is it a COTS?	No

Analysis of the ITAS

iTAX is an integrated software system that is specifically designed for a developing country context. Its modular system allows the administration of all types of taxes, on the national as well as subnational level. iTAX is not a COTS but rather a customised development that is developed by GIZ in close cooperation with the client country.

It should be noted that the ATO score highlights the gradual implementation of this ITAS and the fact that it was developed as an answer to requirements assessed in Tanzania and Philippines. Indeed, the core tax capabilities of the ATO Capacity Model ("Revenue Management") are well covered while more advanced capabilities such as "Outcome Improvement" have some noticeable missing components as they were not requested by local partners and hence, not developed. This approach of developing for a specific requirement is typical of non-COTS solutions where the focus is on what is needed by the client during implementation, rather than on what could be needed in the future by this client or other ones. In many aspects, the development of iTAX follows other non-COTS ITAS such as SIGTAS and GesCo Fisc.

In conclusion, iTAX is a customised ITAS and has a very limited number of implementations. However, it is important to recognise that 12 LGUs use it in the Philippines and up to 164 LGAs will be using it in Tanzania in the coming years. While the number of implementations is small, the size of the deployment of iTAX at local government level is large. iTAX remains a custom-made software especially built to meet specific requirements within determined implementation projects with a low score on the ATO Capability Model. As such, the adequacy of iTAX for other countries is probably limited and likely to require substantial customisation.

Revenue Premier Enterprise (RPE)

ASP	Incorporated in 1996 in the USA, **Revenue Solutions Inc. (RSI**) is a hybrid IT/Business consultancy and COTS software provider of Revenue Premier Enterprise (RPE). RSI focuses exclusively on government revenue, labour and child support. RSI has completed over 250 projects for over 35 agencies in the US at the federal, state and county/city level. Currently, RSI has 29 projects in approximately 17 state agencies, associations or private companies. RSI has no experience outside the USA but is willing to work internationally. RSI is currently working with some systems integrators (SI) to determine an approach. Although RSI generally works as the prime vendor, it has extensive experience in partnering with major systems integrators, including Accenture, Cap Gemini, CGI and Deloitte. RSI has extensive experience in benefits based engagements, where RSI is paid from the realised benefits of the implemented solution.
Experience in developing countries?	No
Is it a COTS?	Yes
Analysis of the ITAS	
RPE is a COTS dedicated to revenue management. It is composed of four primary modules: Integrated Tax Processor, Collections Manager, Audit Manager and Portfolio Warehouse. RPE is a Service Oriented Architecture (SOA) based n-tier system, which is highly configurable through several tools including a business rules engine, codes tables, a notice definition facility, workflow; case management and a tax form definition tool. The score on the ATO Capability Model is similar to the GenTax result. RSI clearly shows that it is a solid solution with an interesting width of capabilities regarding tax related processes. The weaknesses of the solution are mainly non-core revenue management processes and the only noticeable core area where RPE does not score well is the Online feature. However, RSI explained that the Integrated Tax Processor module currently has a portal component in development, which will meet this requirement. RPE is very similar to GenTax and both target the same market. Like GenTax, RPE is a mature software, it is highly configurable and the fact that it requires substantial implementation support, all leads to a market price in the upper bracket when compared to competitors. In conclusion, the wide install base of RPE and the fact that all of its client base is using or will be using the same version of the COTS, is a substantial asset compared to other ASPs. However, the install base is limited to a specific geographical area, with more or less similar customers. RPE has a strong solution and an interesting approach to utilising third party system integrators outside the USA. Although this can create opportunities, it could also increase risks. RSI's programme to qualify third party integrators in implementing RPE, is an important aspect to consider though. At this moment it is not clear how RSI is going to enter the market of developing countries. This market is new to them and the same goes for implementing the ITAS on a governmental level. Only once it is clear how RSI will approach these new challenges, it can become a contender in the market of developing countries, especially for countries with already some experience in the computerisation of their tax processes.	

SIGTAS

ASP	**CRC Sogema** was established more than 25 years ago. For years, it combined consulting services and software development with a total workforce of about 120 employees. In 2009, a spin-off of CRC Sogema created Sogema Technologies, which was responsible for the development of SIGTAS. Sogema Technologies has about 50 employees.
Experience in developing countries?	Yes
Is it a COTS?	No
Analysis of the ITAS	
SIGTAS started as a Canadian-funded initiative in the Caribbean in 1996 under the Eastern Caribbean Economic Management Program (ECEMP). SIGTAS was customised for the specific needs and requirements of each of the islands under the ECEMP. Through the years, the company kept applying the same business model, that is, customisation to the needs of the country and implementation with no licensing fees. This created a series of SIGTAS instances that were all, to a certain extent, different from each other. Hence, no site is similar to the other and none can have access to upgrades (as there is no upgrade path). The fact that the various functionalities developed in all these countries have not been centralised in a single version of the system, is probably part of the reason	

why this ITAS scores so low on the ATO Capability Model.

Over the years, CRC Sogema implemented SIGTAS in other countries and because of the many sites where SIGTAS was deployed, it grew rapidly to cover a wide variety of taxes and fees (property, motor vehicle, income tax and VAT). Nonetheless, this ITAS scores only 37 on the complete ATO Capability Model and 28 on the core processes, which is rather low for a solution implemented in so many countries. This could be due to the fact that this ITAS concentrated first and foremost on the most basic processes of a tax administration (e.g. registration) and did not evolve over time to cover more sophisticated processes such as taxpayer education capabilities. As the ATO Capability Model contains more requirements, the score for SIGTAS remains low. The low score could also be due to the fact that SIGTAS covers a variety of taxes, like property tax and motor vehicle tax. The ATO Capability Model does not include these and consequently, SIGTAS fails to distinguish itself in this respect.

SIGTAS runs on an Oracle platform, both database and development tools. It is still using Forms and Reports technology, which is now considered to be a rather obsolete platform that is less suitable to leverage internet technologies. Of the entire suite of SIGTAS modules, only the latest module, developed for taxpayer services (electronic filing) actually uses more modern technology and the ADF framework from Oracle.

Recently, Sogema Technologies has tried to create a new version of SIGTAS based on a COTS model and has started applying a licensing model, with the source code no longer remitted to clients. This new version still uses the same architecture and technology of the old version. It is the business model that changed, rather than a full re-writing of the solution. In any case, the success of this endeavour remains to be validated and the countries positioned to receive this new version, are Papua New Guinea, Nigeria and Liberia.

In conclusion, SIGTAS is not a COTS. The product is used as a starting point to develop a customised ITAS, built to meet specific requirements of countries. For this reason, it cannot profit from central developments to improve the product. Despite its extensive experience in developing countries, it has scored low on the ATO Capability Model and additionally makes use of somewhat obsolete technology. The adequacy of SIGTAS is therefore limited and likely requires substantial improvements

TAGDEER

ASP	**Estarta Solutions (Estarta)** is a Middle-Eastern regional IT provider funded by Microsoft, Cisco, Foursan Group and Tech Invest Com. Estarta focuses on delivering solutions to the public and commercial sectors on Microsoft and Cisco technologies. The overall client base of the company extends to the US and Europe, but is mainly concentrated in the Middle East.
Experience in developing countries?	Yes
Is it a COTS?	No

Analysis of the ITAS

TAGDEER is a revenue management system that stands for "Tax Application for Government Departments and External Entities Revenue". It is the result of a larger initiative where Microsoft, the Government of Jordan and Estarta collaborated to build a Public Sector Innovation Centre in Jordan. The install-base of TAGDEER is currently limited to 2 sites.

TAGDEER is a SOA based system using Microsoft.Net technologies. It is fairly configurable and includes a form (tax declaration) generator, a workflow engine, a business rule engine and a report designer. The software was specifically designed and built for developing markets and is multilingual, currently supporting English, French, Arabic and Kurdish.

In terms of capabilities covered, TAGDEER resembles GesCo. It has a very limited install base and it is therefore difficult to position it is as a COTS. Yet, when comparing the information provided in the underlying architecture and technological platform, it is striking to note that TAGDEER seems more sophisticated (SOA, business rule engines, etc.) and uses better standards. This might be the consequence of TAGDEER being a Microsoft and Cisco initiative and hence Estarta has access to more advanced expertise in software development.

The results of the survey are interesting as they show that the system is not yet mature, although it does cover several areas. For example, the "Channel Delivery" capability is a mission-critical area. TAGDEER touches almost all its categories, but for several of them does not cover them fully. On the other hand, it has some important weaknesses, namely "Debt Lodgement" and the "Outcome Improvement" capability. This is a clear indication that the standard requirements of a tax administration are not yet covered and that that expertise in tax processes might be lacking to develop a fully-functional and comprehensive solution.

In conclusion, TAGDEER is a fairly new ITAS with a limited install base. It benefits from the expertise of its strategic partners (Microsoft, Cisco), which is reflected in the design of the system that has all the characteristics of modern and flexible software. TAGDEER is developed specifically for the developing market and has the potential of becoming a viable solution. An interesting aspect of TAGDEER and its ASP Estarta, is that they are a Middle-Eastern initiative. Estarta is based in Jordan, TAGDEER is implemented in Iraq and Jordan and the solution operates in Arabic and Kurdish. This demonstrates knowledge of and sensitivity to the region's particularities which could be a differentiating advantage for any implementation in an Arabic-speaking country.

Tax and Revenue Management (TRM)

ASP	**SAP** is one of the major multi-national consulting services providers in IT with over 55,000 consultants worldwide. SAP is first and foremost a pure IT software company. The TRM solution is composed of a set of applications and technologies, rather than a unique integrated system. Taken separately, the various applications are widely used in various sectors and industries. Many of these applications are thus not developed for tax purposes, even though they interoperate with one another. SAP like other major IT providers, does not participate as the primary implementation vendor on implementation of TRM. TRM is mainly implemented by third party integrators, SAP simply adds expertise and resources where required. SAP prefers the utilisation of third party integrators for implementation, but the analysis tackles TRM from the angle of SAP.
Experience in developing countries?	Yes
Is it a COTS?	Yes
Analysis of the ITAS	
SAP's TRM solution is implemented in 16 sites worldwide and is well represented both in developed and developing countries. More importantly, according to SAP, all sites share the same version. This is important as it is a strong indicator that this ITAS is a COTS and it facilitates a continuous investment in the solution. On the other hand, SAP, like Oracle, benefits from the rest of the SAP Public Services Industry suite. If it was to answer to all the capabilities of the ATO Capability Model, SAP TRM would require about 19 applications. Without a detailed technical audit, it is not possible to describe the level of integration or interoperability of these various systems. However, SAP markets its solution as an integrated one. The majority of the applications are used at hundreds, if not thousands of client sites, within a wide variety of organisations and industry sectors. While this wide utilisation confirms that these applications are not tax-specific, it tends to confirm that it is a COTS with a high degree of flexibility. SAP receives the maximum score on the ATO Capability Model. This is made possible by making use of its full suite of applications to cover all possible areas. This interoperability of applications is not necessarily a problem although it usually entails a more advanced component of software integration to ensure seamless interaction. According to SAP, the majority of implementations are conducted by third party integrators and when needed, SAP can supplement the team of the third-party integrator with its own experts. These two factors combined increase the level of risk of a TRM implementation. On the technical side, TRM is a full SOA application. The current release of SAP is ECC6 and this release will be the same until 2020. Every 6 months, SAP provides new functionality via enhancement packs. On the other hand, SAP offers customers the possibility to request new functionalities on an annual basis via a tool called *Customer Connect*. Additionally, SAP has worldwide user groups for knowledge sharing. In conclusion, SAP is a typical global IT system provider and can offer a suite of applications used by numerous clients. Its organisation, the technology used for its applications and other factors such as regular upgrade releases, all indicate that the SAP ITAS is a true COTS solution. At the heart of this solution lies the TRM application itself. The success of the SAP strategy seems to be working including in less developed countries such as the Maldives or Zimbabwe. It remains to be seen what applications of the overall suite will be implemented in these countries. Usually their tax administrations have less complex requirements and it would be interesting to explore if the entire suite of applications is used or if only the TRM application is implemented.	

eTax (Tax Mantra)

ASP	Tax Mantra is a fairly recent ITAS developed by the **Tata Consulting** Services branch of the Tata Group. Similar to Oracle and SAP, it benefits from the full force of the IT branch of the Tata Group, involved in system development worldwide. Note that the assessment of this ITAS is based on information provided by the Uganda Tax Authority, which utilises eTax.
Experience in developing countries?	Yes
Is it a COTS?	No
Analysis of the ITAS	
eTax is clearly an ITAS using a modular approach. The relatively low score on the ATO Capability Model underlines that it is not yet a mature tax product. Fundamental tax processes (e.g. registration, case management) are rather well covered and interestingly, also the various capabilities under the category "Outcome Improvement".	

This ITAS scores very poorly in the categories "Channel Delivery" and "'Client Relationship Management" and there is clearly a gap in the functionalities related to interactions between tax authority and taxpayer community.

It is interesting to note that at least 3 African countries have adopted this ITAS. While the install base is still limited, it is a good indicator that it could become an alternative, provided the solution is further developed. However, the fact that the ITAS is customised for each site might, in the long term, prove problematic. A highly-customised solution implies that it is not a COTS. Consequently, this makes it difficult to continuously invest in the solution (through revenue generated by recurrent licences fees), to utilise multiple sites to develop new functionality and finally to create an upgrade path for all clients.

In conclusion, eTax is an ITAS that was recently developed and makes use of a rather modern technological platform. The fact that it has experience with developing countries is definitely a positive aspect, at least from an implementation perspective. However, the fact that it is not being developed as a COTS makes the long term sustainability of the solution – and of the version implemented at each site – questionable.

TRIPS

ASP	Formerly owned by the Crown Agents Foundation[3] as a limited company, **Crown Agents** is an international development company. Its main line of business is consulting and capacity building in public finance management, tax administration, customs management, trade facilitation and health system delivery.
Experience in developing countries?	Yes
Is it a COTS?	Yes

Analysis of the ITAS

TRIPS is now an integrated solution and includes:

- TRIPS Tax
- TRIPS Customs
- TRIPS Single Window
- TRIPS Integrated Revenue

TRIPS is described as a SOA based solution using XML as its messaging function. It is built on the J2EE (Oracle) platform and its object orientated design intends to maximise system adaptability and maintainability. TRIPS is configurable, has a rule engine driving the workflows and has specific integration capabilities enabling it to interface with third party systems.

Over time, Crown Agents developed various software versions. One of the previous solutions is called VIPS, a solution dedicated to VAT and deployed in VAT offices (at Customs or at a tax administration). Eventually, VIPS was abandoned and to some extent transformed into TRIPS. Publicly-available information on the implementation sites of Crown Agents in the taxation area do not differentiate between VIPS and TRIPS. Nevertheless, the "COTS version" category is the one under study for this assignment.

TRIPS is implemented in 6 countries, which creates an interesting install base for a fairly new system. It is also worth noting that the average profile of the countries adopting TRIPS show countries with more capacity such as the Philippines and Macedonia. That is particularly true when compared to, for example, RMS from Data Torque, which is targeting small countries for now.

The strong results of the survey illustrates that the current version of TRIPS is a new software, developed on a modern and robust platform. It has a high score on the ATO Capability Model which shows that TRIPS is a dedicated ITAS.

In conclusion, TRIPS is an integrated configurable solution and makes use of a modern technological platform. Its high score on the ATO capability model, combined with its wide presence in developing countries, makes it a solution that has to be considered.

[3] In a press release of 17 March 2015 Crown Agents announced the following: Crown Agents working with Techno Brain on trips™
We are pleased to announce a new agreement that will see Techno Brain Ltd, Africa's leading software and IT services company, acquire the **trips™** suite of integrated customs and revenue software. The suite currently forms the backbone of modern and efficient revenue systems in countries across the globe. Under this agreement the **trips™** core development team will transition to Techno Brain and form the nucleus of a new business unit of Techno Brain, headquartered in Sutton, UK.

Chapter 3

Selection of an ITAS

The focus in this chapter is on the selection of an ITAS. It first describes the changing market of the ITAS, due to among others more sophisticated processes, wider and larger computerisation projects in the taxation area and an increased reliance on systems. The chapter continues with explaining why the ASP should be considered as well, when selecting an ITAS. It then goes on to describe other factors affecting the selection of an ITAS.

3 Selection of an ITAS

3.1 ITAS, a changing market

From the results of the survey, it becomes clear that the market of the ITAS is changing rapidly. 15 years ago, this market was dominated by a limited number of application service providers, both in the developing and developed markets. At that time, specifically in the market of developing countries, the number of solutions was very limited. Historically, in-house developments were predominant, while the main areas of computerisation concentrated on basic processes such as returns and assessment. The more sophisticated processes such as case management and scoreboards, were less often covered by computerisation projects. Many projects were focused only on the computerisation of fragmented areas of the tax administration (e.g. a dedicated system for taxpayer registration) instead of proposing an integrated solution. As a result, many tax administrations still have a variety of systems that do not communicate with each other (e.g. in Yemen, four years ago, the tax administration had three entirely separate sub-systems). The computerisation efforts were mainly concentrated on a central level, often in the capital or in the biggest cities of the country, while very little was done on the provincial/state level.

Today, computerisation projects in the taxation area are much broader and have the corresponding larger budgets. The projects consider, as a fundamental prerequisite, an integration via the system to cover all areas of the tax administration. In addition, the client-centric approach triggered the development of an entirely new set of capabilities, focusing on the taxpayer community. The rise of Internet and the improvement of the telecom infrastructure in developing countries is removing an important barrier. Services to the taxpayer community are now part of any standard computerisation project (e.g. Mozambique, Barbados) as taxpayers increasingly have access to the Internet. Electronic payment and even mobile payment through smartphones (e.g. Rwanda) are becoming common practices. Additionally, more and more countries are starting to computerise regional levels of government (e.g. Ethiopia and Nigeria).

Nowadays, the reliance on systems is becoming more important, as they cover a larger number of processes whether back or front office and a larger number of users, both tax officers and taxpayers. Even in post-conflict countries, the speed of computerisation has increased. This is largely due to the reduced cost of hardware, faster deployment of telecom infrastructure and greater availability of IT expertise in all regions of the world. For these countries it is a real advantage that they do not have to deal with complex legacy systems. Iraq is a good example of computerisation in a post-conflict country, whereas this process in Afghanistan is much slower, although faster compared to projects conducted 15 years ago[4].

In parallel, for many IT firms it is easier to find future growth in the developing countries rather than in North America or Europe. Compared to 15 years ago, the market shows more tax administration solutions, some provided by well-known firms but others by a group of new players. Estarta Solutions is an example of a relatively new player in the market as the result of a regional initiative combining Microsoft and Cisco. Namibia has very recently selected a little-known Chinese company to develop its ITAS, Beijing CSS-CA Software Technology Co. Ltd. Data Torque has redesigned its RMS system, as they recognised a change in the market needs. Fast Enterprises, LLC and Revenue Solutions Inc. are examples of providers which are shifting their focus outside North America. Both have clearly indicated their intention to scale up operations outside their home market. GenTax is already implemented in Trinidad & Tobago, however cost may not have been an important factor at the time, since oil revenue was fuelling Trinidad's purchasing power. Much larger software companies such as Oracle, SAP and Tata are now targeting this market as well.

Although the argument may be somewhat speculative, it might be construed that the bigger the projects are to become, the more providers the market will attract and as result more options in terms of ITAS will become available. In parallel, it is beneficial to providers to produce more flexible and configurable solutions that can be deployed in multiple countries. Therefore a tendency is seen towards the emergence of COTS solutions. Examples of this are RMS

[4] Some of the differences between Afghanistan and Iraq could potentially be attributed to the very nascent and under-developed tax system and administration in Iraq, given its dependency on oil revenues, versus Afghanistan's more comprehensive (and therefore complex) tax system.

and TRIPS which have both been redesigned only a few years ago, so their providers could stay in the market with a more modern COTS. FreeBalance already has this position and is now looking for an opportunity to develop an ITAS module as part of its overall suite. Estarta Solutions claims to have a highly configurable ITAS with TAGDEER. The level of configurability is one of the most fundamental prerequisites for being able to develop a COTS business model. In many ways, the market of ITAS in the developed countries offers a good image (that is being dominated by large COTS solutions) of what the same market in developing countries could look like in a few years from now. On the other hand, the developing countries are not equal in their level of development and so there is still room for highly customised solutions.

3.2 The application service provider as a factor to consider when selecting an ITAS

This study focuses on the various systems from a user perspective and less on the technical aspects of software development by the provider. However, from the analysis as described in chapter 2, it becomes apparent that the internal capacity of the provider and its business model are a critical dimension that can affect the quality and the sustainability of the software. It is therefore important that besides the scoring of an ITAS on the ATO Capability Model, the provider is also part of the evaluation.

The internal organisation of the provider can influence various aspects: if and how the ITAS evolves and is being updated, the way patches are released, whether the system is documented, the response time of the support team when a defect is detected, etc. For example, a functionality can correspond to a capability of the ATO Capability Model, yet the underlying code might be unstable, leading to a system that is slow or that often crashes. An application service provider like SAP should have a very structured process of releasing updates to its applications, preferably every 6 months. Such a strict upgrade process guarantees that the ITAS evolves in time, which is fundamental considering that the life cycle of an ITAS is at least 7 years and often much more. In practice however, quite a few of the ITAS are lacking such an upgrade process. In fact, all of the ITAS are using an underlying technology, which has a life cycle of its own. The consequence of this is that the tax administration and the provider both are dependent on the support offered by a third party supplier on the versions used by the database and frontend. As new versions of the platform are released, old ones stop being supported. The consequence is that the tax administration has to invest in upgrading the platform of its ITAS, which can impact the ITAS itself.

Another aspect to be taken into account when selecting an ITAS, is the business model of the provider. There is great diversity among the providers surveyed. Some are explicit IT firms with no specific expertise in tax administration, whereas other explicit IT firms have advanced expertise in tax administration (e.g. Data Torque, Fast, and RSI). The remaining group is a mix of consulting firms and software developers (e.g. Crown Agents, CRC Sogema). While consulting firms bring expertise in tax administration, a COTS solution fundamentally requires an IT organisation and the two business models are very different. Another complicating factor is that some providers do not conduct the implementation themselves, but use third party integrators. This implies that the capacity of a third-party integrator can have an impact on the actual implementation. This aspect becomes crucial when comparing for example, Oracle TRMS with Data Torque. The sustainability of Oracle TRMS depends on Oracle itself and its capacity and interest to invest continuously in its ITAS. However, by using third-party integrators, the success of the implementation of TRMS, has nothing to do with skills and expertise of Oracle, but is dependent on the capability of that third-party integrator. This is significantly different from Data Torque, which both develops and implements its RMS solution.

In other words, while the ITAS in theory may answer the need of the tax administration, the usage of third-party integrators for implementation purposes is an uncertainty factor that might lead to difficulties, or even failure. Some providers mentioned that they have programmes to qualify and train third-party integrators before authorising them to conduct an implementation. While this is an interesting approach, it remains to be seen if and to what extent such a program indeed leads to a qualified third party integrator that can maintain the expertise of its implementation teams.

3.3 Other factors affecting the selection of an ITAS

The survey clearly shows that Oracle and SAP, two global IT providers, have the best fit between their solution and the ATO Capability Model. They are able to provide a solution that covers all areas of an organisation, from its core tax processes, data warehousing capability, to the back office and human resources. Both providers are able to do this by using many interoperable systems instead of one. Indeed, Oracle uses up to 11 applications while SAP uses up to 19 systems. The majority of these systems are in fact applications used in multiple industries and are not specifically developed for the tax sector. In fact the following principle applies: Use a commodity if it fits and specific functionality if required.

This approach means that, although Oracle and SAP have their core tax application deployed in a relatively limited number of sites, they use proven solutions for the less tax-specific areas. These solutions are deployed in hundreds, if not, thousands of sites. The consequence is that both providers benefit from a very large install base, which allows them to continuously invest in their software. In turn, this facilitates the adoption of a development approach where the systems are highly flexible COTS.

Paradoxically, the survey shows that beyond global IT providers, the bulk of the ITAS solutions are built by providers considering revenue management software as a specialised product. In that category, the survey clearly shows that RMS, TRIPS, RPE and GenTax have the best fit between their solution and the ATO Capability Model. For this group of systems, providers often consider themselves as an ITAS specialist opposed to Oracle and SAP, which are viewed by them as generalists. They market their ITAS by using the message they have the best possible solution specifically for tax related processes. In that context, they consider the non-tax related processes as irrelevant to the ITAS and these should be covered by other software. In other words, the objective of the ITAS is to computerise the mission-critical processes of the tax administration only.

This opposition between “pure” ITAS providers and global IT providers is in line with the origin of the ATO Capability Model itself. This model is a reflection of the Australian Taxation Office (ATO) which is a mature and complex organisation in a developed country. ATO is managing both the tax and non-tax related processes, which resulted in the fact that the IT related costs of the organisation required hundreds of millions of dollars over many years. Tax administrations in developing countries are usually less sophisticated in terms of number and complexity of processes. Many tax administrations are still mainly trying to computerise basic tax processes, often for the first time. Hence, only parts of the ATO Capability Model apply to them and for that reason global solutions such as Oracle and SAP tend to lose their advantage of being able to computerise all tax and non-tax related processes. This gives more specialised and integrated ITAS, that are often less expensive, a better starting point in a business case.

At this moment, there is no clearly dominating solution from the market perspective. If the install base is used as an indicator of choice, then SIGTAS (22 sites) would be the best ITAS in the developing market. However, as presented in previous sections, SIGTAS is not a COTS solution and in fact has one of the worst scores of all ITAS surveyed. All the implementations are customised and each site uses a different version of the software. At this moment, the Caribbean countries using SIGTAS are actively seeking a replacement under Canadian assistance, in conjunction with the IMF and World Bank (SEMCAR Project). It could therefore be concluded, that the current install base is not necessarily an indicator that reflects the quality of the solution. Additionally, when examining the historical record of the rationale in choosing a particular system, decisions may have been skewed due to the preferences of the funding agencies or donors. In the situation of SIGTAS, it is clear that it was implemented so widely because of the support of the Canadian International Development Agency.

The lesson that can be learned is that one should not focus only on those ITAS which score high on the ATO Capability Model, when interpreting the results. The architecture and the platform of the solution with the depth of the functionality, are also important. A solution with a poor architecture or an outdated platform, makes difficult progress. Conversely, a solution with a robust architecture and a modern platform can very rapidly complete its missing features and become an option of choice. This type of comparative assessments are not explicitly reflected in the ATO Capability Model. TAGDEER is an interesting example of a product, that at this moment does not cater to all

the capabilities of the ATO Capability Model, but that could potentially be turned into a COTS and become an ITAS of choice.

Additionally, while a COTS solution has some advantages over a custom-made solution, there are other factors which may lead to tax administrations making a different choice. Some examples are:

- Having the source code is for some countries a prerequisite. A COTS solution usually does not accommodate sharing the source code as it represents the investment of the provider and its intellectual property. Some countries will accept to place the source code in a trust account;
- Some tax administrations see the implementation of an ITAS as an opportunity to develop and build the capacity of their IT team. If the IT team needs to work on the application, they will need the source code to get their staff trained on the data model of the system. This approach was adopted during the development of iTAX where the software was developed by programmers from Germany, Tanzania and the Philippines. For the same reason as mentioned before, a COTS solution does not accommodate that; and
- Unfortunately, many tax administrations see the implementation of an ITAS as a one-time event. The assumption is that a customised solution can accommodate that, while the main advantage of a COTS solution is to provide an upgrade path in time. However, this requires recurrent budgets, which are usually not included in the implementation budget.

The available capabilities in a country are also a factor to be considered, during the selection of the solution. For example:

- Level of computerisation at the moment the project starts. Three years ago, the tax administration of Burundi launched an initiative to procure a system, while at the time they operated in an almost purely manual setting. Contrary to this example, Lebanon has been using an ITAS for twelve years and the system is now at the end of its life cycle. The acquisition and implementation of a new ITAS by Lebanon, implies a very different reality and environment than Burundi, in terms of computer literacy, capacity to maintain the databases, etc.;
- Vietnam, Benin and Afghanistan are three very different countries in terms of capacity. The tax administration of Vietnam is currently in a lengthy process of acquiring an ITAS. The process is hefty and the requirements numerous. Only very large IT firms with very wide install-base are invited to bid. Benin is at an earlier stage of development, compared to Vietnam. Although Benin is a fairly stable country, a solution like Oracle or SAP might be too complex for the capability of its tax administration's IT team. Afghanistan on the other hand, is a post-conflict country and that poses specific challenges such as a deficient telecom infrastructure. Additionally, some ITAS providers are not keen on operating there for security reasons;
- Some countries are computerising only very limited numbers of areas of their tax administration. A good example of this is Benin, where only the registration process is computerised. In such a case, a COTS solution might not be appropriate and it would be better to consider a quick in-house development, requiring only a small budget. The last option was chosen in Sierra Leone and they consequently avoided the long process of procurement and realisation.

Finally, as in all computerisation projects it is important to consider beforehand what the tax administration is trying to achieve and what its needs are. Based on this, the match can be made with the relevant processes of the ATO Capability Model. For example:

- Is it the first computerisation project that the tax administration is conducting? Experience with past projects is a good indicator of the capacity of the tax administration to introduce a new, more complex or comprehensive ITAS;
- Is the tax administration ready to computerise management processes and hence introduce modules such as analytics and data warehouse capability? Too often, first time computerisation projects focus on basic operations (registration, assessment, payments and audit) and fail to look beyond these initial processes for more analytical (and probably high value-added) tax administration processes; and
- Does the ITAS need to integrate with other systems now or in the near future? For example, Nigeria intends to deploy a call centre at the Joint Tax Board to cater to the requests of taxpayers and tax officers. Ethiopia has implemented fiscal cash registers to track VAT transactions at the point of sale.

All these reflections lead to the conclusion that the selection of an ITAS should be guided by the requirements of the computerisation project, based on the strategic objectives of the tax administration. Acquiring a COTS solution is a multi-million dollar investment and the price range of the solutions surveyed, varies tremendously. For this reason, the available budget is also a major dimension to consider. Tax administrations must compete in the market for IT talent, which can be a challenge as civil service pay scales are often insufficient. While a donor-funded computerisation project can afford the expertise, the sustainability of the computerisation effort is questionable when the project ends.

As discussed earlier in this study, the selection of an ITAS is not straightforward and systems cannot be considered as being "one-size-fits-all". Lessons can be learned from the type of clients that the providers currently have. As an indication, GenTax and RPE are probably more suitable for a country like Vietnam rather than Benin or Burundi. From a commercial perspective it is crucial for a provider to have presence in these countries, as this market is very different from the one of developed countries. Larger provider such as Oracle, SAP, Tata and even Crown Agents can deliver solutions more suitable for a country like Vietnam. This observation is based on the scale of implementation of a solution like TMRS or SAP, versus the local resources and expertise they require, to be implemented and maintained in a sustainable way over time.

There is even still room for non-COTS solutions as some countries may prefer this option for numerous reasons, as previously stated. For example, since 2009, Barbados has developed two fully custom-made tax solutions. One was developed for the Inland Revenue Department and the other for the Value Added Tax (VAT) and Excise Department.

Overall, the market can be divided into four main categories:

- Large modular systems delivered by global IT firms, usually with a heavy technological footprint (Oracle, SAP, Tata) and a corresponding need for maintenance;
- Large dedicated ITAS solutions based on a COTS model, which are fairly complex to maintain but that are highly configurable. At this moment, the providers of this type of products (GenTax, RPE) are not really present in developing countries. In their responses to the survey they indicated that this part of the world is their target market for the coming years;
- Small to medium-size IT firms with dedicated ITAS solutions based on a COTS model. These solutions (RMS, TRIPS) are potentially more flexible and can be deployed faster than the two previous categories; and
- Small to medium-size IT firms that have dedicated ITAS non COTS solutions (GesCo, Estarta).

The last two categories are more widely implemented in developing countries, while the first two categories have their main market in developed countries.

It is recommended that donors that are willing to engage in this type of projects, participate in a conference room demonstration by the ITAS provider, as part of the software tendering process. Despite the insight provided by the questionnaire, a demonstration is certainly the best way to validate the expectations created by the provider. Such an exercise could be organised through a conference room, using a standardised demonstration script that all vendors would abide by.

Chapter 4

Country experience in implementing systems in tax administration

This chapter looks at the experience of different countries in implementing IT systems in their tax administrations. It starts with providing an overview of the 13 countries and describing the methodology for assessment. The chapter continues with providing key findings, based on the experiences in IT based tax administration reforms of the thirteen countries. It then narrows the focus by zooming in on the 4 selected countries: 1) Mozambique, 2) Peru, 3) Senegal and 4) Swaziland. This section starts with explaining the criteria for selecting the 4 countries and describes the methodology used for the in-depth analysis. The chapter then goes on to describe the analysis of each of the 4 countries and concludes with an overview of the results of the 4 countries visited.

4 Country experience in implementing IT systems in tax administration

4.1 Key findings from a desk study of 13 countries

For this part of the research, tax reforms were investigated that occurred in 13 diverse countries over the last ten years. The focus was on their experience in computerising the tax administrations. The following countries are in scope of this study:

Bangladesh	Burundi	Ethiopia	Ghana
Mozambique	Nepal	Peru	South Africa
Swaziland	Senegal	Tanzania	Uganda
Zambia			

The methodology used for assessing the experience of the tax administrations was to assemble and summarise publicly available information and to combine that with primary source information, provided by experts closely associated with the computerisation. To analyse each country in an objective and comparably way, a detailed questionnaire was developed, based on questions specified at the start of the study.

Annex F summarises all the information gathered from the 13 countries. The main point of the summary is to identify the general themes and trends that are common to the countries studied.

In this paragraph key findings are provided, based on the assessment of the experiences in IT oriented reforms, within the tax administration of the 13 countries. More background information on each country, including the detailed responses to the set of questions, can be found in Annexes F and G.

Type, objectives and targets of the reform
In the majority of countries, specific integrated tax reform projects were implemented. In many cases these were part of or linked to a wider E-government strategy. The objectives and goals of the reforms almost exclusively focussed on the whole tax administration. Bangladesh seems to be an exception, as the focus was primarily on ICT-capacity development without process reform or human resource development. The reforms all included the implementation of self-assessment and computerisation of procedures.

The following objectives of the reform were generally recurring:

- Raise more revenue
- Improve internal organisation
- Ensure greater accountability, transparency and integrity
- Improve taxpayer compliance
- Improve service delivery to taxpayers

Components
In nearly all countries the routine procedures, from registration through to objections/appeal, were the subject of computerisation. In Burundi the focus has been on designing and implementing a new organisation structure, including the related new and improved procedures. For the cases of Ghana and Mozambique it is noted that also extensive business reengineering has been carried out.

Implementation time frame
For the majority of reforms, the time used from initial set-up till full functionality, was claimed to take around 3 years. The tax administration in Burundi is still in the early stage of its modernisation and it is expected to take approximately 6 years. Also in South Africa (6 years), Tanzania (5-10 years) and Ethiopia (10 years) it has taken longer than the general average. Nepal constitutes the major outlier with 16 years and its implementation is still ongoing, perhaps reflecting its very gradual custom-built efforts. Duration in itself does not provide any relevant information,

as duration is influenced by so many aspects, e.g. the scope, possibility to reuse process designs, available IT infrastructure or procurement and contractual issues/procedures.

Level of transformation
If transformation is interpreted as the level of achievement of the reform objectives, then in most cases it was either high or too early to tell. South Africa stands out with a very high level of transformation, contrary to Ghana and especially Bangladesh, where the level of transformation can be considered as low.

Challenges
The challenge that was most frequently mentioned, lies in the area of change management and the related internal resistance to change. Other challenges that were experienced in more countries include:

- Limited internal communication
- Quality of requirement specification
- Procurement process
- Weak national infrastructure such as electricity and network

Rollouts involving other tiers of government
Almost no rollouts involve other tiers of government, although some move has been made to have local government collect taxes on behalf of the central government. Especially in the following cases other organisational levels were involved:

- Burundi: Tax collection operation is decentralised with point of service in each of the 15 provinces.
- Ethiopia: At the national level the federal tax administration has already completed the integration of its branches and also integrated with its regional head offices, which are implementing SIGTAS by themselves.
- Ghana: The Domestic Tax Division has a total of 68 offices across the country and these offices will be integrated
- Mozambique: 24 DAFs (Direção de Área Fiscal), 31 collection posts, and all the regional and the main headquarters are part of the rollout of the new system.
- Nepal: All tax administration functions are decentralised and this is done through regional offices via a single centralised system.
- Peru: The change project will centralise the programming of strategies and actions through centralised IT infrastructure with decentralised execution and operations in SUNAT local offices.
- Senegal: The system is being rolled out to local tax offices. One of the main challenges faced by the project is that the rollout to the regions has faced difficulties due to unstable electricity supply.
- South Africa: SARS has nine provinces, four processing centres, four call centres and 50 branches, but the organisation is run in a centralised fashion (decentralised processing and centralised decision making).
- Swaziland: Decentralisation to all SRA service centres (6 currently).
- Uganda: All tax offices are integrated and can share taxpayer information as part of the rollout of the system.

Donor support
Donor support for ICT-reforms in the tax administrations of these countries has varied from cherry picking to almost unlimited support for major installations. The latter approach has often been based on political considerations and perceived success of early phases. The issue that surrounds this is how “success” is being assessed. Revenue gains tend to dictate the approach taken by donors, but this is not necessarily a good criteria of sustainability and often ignores natural growth.

Poor monitoring by donors affects success. It seems that only in a few situations the donors really engage with recipients and gain an understanding of the local situation. This becomes evident in the phase after the implementation of systems, when donor funds are still available for support and maintenance contracts. In the other situations it is observed, that once the initial donor support has gone, many implementations are left in the hands of the system provider.

Other observations

a) Communications and physical infrastructure are often ignored until rollout. This delays system start-up and causes implementation plans to run close to or over project end dates, which results in compromised rollout.
b) There is often a failure of follow-on projects to capitalise on what has been implemented previously. Sometimes, project implementers ignore previous work completely and begin all over again (often for purely commercial reasons, for the benefits of the contractor).
c) There is often a poor project design. For example, few World Bank projects include change management in their set-up, often because ICT experts are given the lead role, rather than technical experts from the functional areas. This can be a major cause of a lack of success.
d) Frequently, there is poor project sequencing. For example, data cleansing is forced upon local staff as rollout begins. It would be a better practice if data cleansing is used as a means of introducing change, in a much earlier phase. Late planned data cleansing will cause project delay, as staff lacks understanding and it additionally causes stress when staff is being asked to hurry.
e) Process mapping is often carried out entirely by ICT consultants, with insufficient consultation/selling skills. The consequence is, that there is only limited buy in and resentment. Once end-users start to have doubts, the chance of a successful implementation is being reduced. Process mapping needs to involve tax administration specialists and has to be undertaken together with the future end-users. It is important to identify "process owners" within the tax administrations, who can take the lead in this process.

4.2 Overview: in-depth studies of Mozambique, Peru, Senegal and Swaziland

4.2.1 Criteria for selection of the four countries

As a follow-up of the investigation of the country experiences as presented in section 4.1, a selection was made of four countries that were visited for the study. The objective of these visits was to perform an on-site in-depth analysis, focussing on the experiences with ICT in tax administrations. This part of the study also seeks to identify the possible pitfalls during the implementation of an ITAS and consequently pinpoint recommendations for donors and funding agencies, interested in investing in similar projects. To gather the relevant input for the study, meetings were scheduled with both the tax administrations and donors (in case funding donors were involved).

The selection of the tax administrations was based on the fact that they represent a diversity of ITAS solutions, procurement approaches, implementation methodologies and financing mechanisms. The table below presents the four selected countries with their tax administration and the underlying reasons for the selection:

Table 4: Countries selected for the in-depth analysis

	Country	Location	Reasons for Inclusion
1.	Mozambique	Southern Africa	• Example of a large modular system implementation by a global IT firm (Oracle), in a developing country; • Non-English speaking example; and • Tax Administration reforms financed through a Common Fund.
2.	Peru	South America	• Upper middle income country; • Modern tax administration; • Preparing to purchase a new COTS system; and • Non-English speaking example.
3.	Senegal	West Africa	• Considered a good implementation; • Non-COTS system; and • Non-English speaking example.
4.	Swaziland	Southern Africa	• Relatively new system in operation; • Example of an implementation by a small to medium-size IT firm with a dedicated ITAS COTS solution; and • Extremely fast installation and operation.

The detailed review of each country can be found in Sections 4.3.1 (Mozambique), 4.3.2 (Peru), 4.3.3 (Senegal) and 4.3.4 (Swaziland).

4.2.2 Methodology used for the in-depth analysis

A one-week visit was organised to each of the four countries. The objective of the research was to investigate the ITAS currently in use or being implemented. It was even more important to find out whether the ITAS selected met the expectations and whether it complemented future and strategic plans.

A standard questionnaire was utilised for each country (see Annex H) in a series of interviews and meetings with a variety of stakeholders. As the questionnaire is exhaustive, not all questions were necessarily applicable to all tax administrations. This structured approach to data collection helped to get a detailed understanding of the operations of the tax administrations. In addition, it provided some insight on how the ITAS was selected and implemented. During each visit, the questionnaire was supplemented by a demonstration of the ITAS itself. The main objective of this demo was to validate and complement the information provided by the organisation.

Scope and limits of the research

A fundamental issue was raised earlier on in the study: should best practices, risks and recommendations be identified from the strict point of view of the implementation of the ITAS as an IT tool? Or should all this be analysed from a broader perspective, including factors such as the legal framework, the competences and skills of tax officers and the interaction with the taxpayer community?

While this research is not about a comprehensive tax reform, many factors will influence an ITAS implementation. The case of the Swaziland Revenue Authority (SRA) is an example of this. Although the SRA was initially very satisfied with the implementation of the Revenue Management System (RMS), it later on realised that a business process reengineering would have allowed them to further leverage the solution. They therefore decided to proceed with such an exercise after implementation of the system. The impact of this late decision is that the ITAS now needs to be modified to align with the newly designed processes.

The tax administration of Peru (SUNAT) is currently in a transition phase. At this moment it does not utilise a single ITAS, but has a number of in-house built solutions. These systems evolved organically and were part of a major computerisation initiative dating back to 1992. Today, these systems are still in use and the process of acquiring a new ITAS has been launched. Hence, the information gathered for Peru is mainly about its current systems, but also takes into account, what has been done in preparation for the acquisition of a new system.

4.3 Findings of the in-depth case studies

The information gathered during the visits to the four tax administrations is presented in the next sections. The objective is to provide a general picture of these organisations and their current stage of implementation of ITAS. The different ITAS solutions are also compared in terms of their functionality, as set off against the Australian Tax Office (ATO) Capability Model

4.3.1 Country Analysis: Mozambique

4.3.1.1 Origin and evolution of the system

Autoridade Tributária de Moçambique (AT) is established in 2006 as a result of the merger of the Domestic tax administration (DGI) and the Customs Department (DGA). The organisation employs a total of 4,000 officers out of which approximately 2,500 work in DGI and the remainder works in DGA. As a follow up of the reorganisation, a strategic plan for AT was developed, which triggered the decision to replace the IT systems as part of a reform. This was initiated in order to increase the tax revenue, which was one of the top priorities of the organisation.

AT has approximately registered 2,600,000 citizens and companies as taxpayers. Less than 10% of them actually file or pay taxes. The reason for this huge gap can be found in the fact that a citizen needs a tax registration number to open a bank account or to get access to telecom facilities, via a communication provider.

Taxpayers are managed through 32 regional offices, Direção de Área Fiscal (DAFs), across Mozambique. In addition, there are 39 collection posts (Postos de Cobrança), which are accommodated in an office and 33 mobile collection posts. Taxpayers can receive only limited services in a collection post. At this moment, 55 of the offices and all the regional and main headquarters, are part of the rollout of the new system. The remaining locations, including the mobile collection posts, will for the time being maintain a fully manual process, due to a lack of infrastructure (specifically power supply and networking issues). In these situations, the declarations will be transported to a computerised DAF, where they will be processed in the ITAS.

The DAFs that are included in the rollout, share a centralised database, which is hosted in two data centres in Maputo.

4.3.1.2 Current situation

The acquisition of the COTS is part of a comprehensive reform. This reform programme includes a complete reengineering of all operational core processes. One of the objectives of the reengineering is to reduce the compliance cost of a taxpayer. Other objectives are to broaden the tax base and to substantially increase revenue collection through the modernisation of services to taxpayers.

In the strategy document of AT, it was indicated that the decision to buy a COTS solution was based on the assumption that it would entail less work for implementation. However, it is now recognised that the business requirements and processes needed, were neither clearly understood nor documented and that the capabilities of the different ITAS options were inadequately explored.

After an international bid to acquire software, Oracle's Enterprise Taxation and Policy Management system (ETPM) was selected in 2009. The delivery of the product was planned to take place through a local partner, Escopil. At that time, the project was placed under the supervision of the Ministry of Finance, of which the tax administration is a part.

After the acquisition phase, no real development activities were started. At the end of 2010, due to lack of progress, the project was put directly under responsibility of AT. At the same time, AT started to develop a so-called conceptual model, to be used as a reference for the processes to be designed. Based on this model, the internal team of business analysts started to design new processes for taxpayer registration. As this was completely new to them, AT hired two part-time consultants from PBLQ HEC, a Dutch consultancy firm.

Before starting actively with the development of the ITAS, Escopil was dismissed in order to eliminate the "man-in-the-middle". This happened in the second half of 2011 and from then on the IT division of the Ministry of Finance (CEDSIF) was assigned as the agency responsible for developing the new system. As part of this changed approach, 10 onsite international consultants were provided by Oracle. Some of them had a full-time attendance, while others were assigned to the project on a part-time basis.

As a result of all the problems of the previous period, the new project team had to re-plan the deliverables, resulting in the following schedule:

Project schedule (based on information provided by AT)

Phase	Estimated Deployment
Registry	3rd trimester 2013 - 1st trimester 2014
VAT/Simplified Tax and common processes	1st trimester 2014 - 3rd trimester 2014
Income Tax and Company Tax	1st trimester 2015
Other taxes	2nd trimester 2015 and onwards

In November 2013 the first module was made available to 55 of the 71 offices. It contained the registration of taxpayers and the information needed to manage the levying process. At the moment of the study, the actual levying, payment and collection processes were still processed by the legacy system, which is a previous version of TRIPS. As part of the migration strategy, the legacy systems make use of the new ITAS as far as it concerns taxpayer information. A taxpayer portal will be realised by a separate project. At the moment of the visit, internet payments were not possible as agreements with the Central Bank of Mozambique and the commercial banks were not finalised yet.

System walk-through

The system that is currently being implemented and that is partly in use is ETPM. The product contains a number of customisations under the Oracle suite of applications, mainly using Java language. While implementation was intended to start in 2009, the actual development activities started in October 2011. As a result, only the registration module was in production at the beginning of 2014 and it is being used to:

- Create and update registry entries;
- Query taxpayer information; and
- ETPM is connected by interface to the legacy systems, so the updated registrations are used in the daily operations.

It was indicated that only one external interface was developed, namely to the governmental budget system. The main reason for this is that, for example, a registrar does not exist in Mozambique and also the Chamber of Commerce is lacking a computerised registration. Interfaces to the commercial banks are planned as soon as the agreements with these banks are finalised.

As a consequence, the walk-through included only the registration of taxpayer information, which still entails a substantial number of manual steps.

The process starts with the taxpayer filing a registration declaration in triplicate, with the supporting documents sent to the local tax office (DAF). Once it is received, the customer service officer searches for the taxpayer and if he/she is already registered in the system, the officer completes the information and confirms the changes. At this step, basic validations (such as mandatory phone numbers checks) are performed and changes are clarified.

Conversely, if the taxpayer does not exist in the new system but exists in the legacy one, the tax officer manually re-creates the record of the taxpayer in the new ITAS by copying each data field from the old system.

Any change to the data can be confirmed by the tax officer, except if it is a modification of the economic activity in which case it requires the approval of a supervisor. Once the data has been captured, the system allows the officer to print a letter of acknowledgement that has to be given to the taxpayer. After the declaration has been processed, it is archived locally for further reference.

User Interface and functionality

The user interface shown is the typical web based front-end of the application from Oracle. As it is only available to a select number of officers (approximately 250 out of 2,500 in DGI) and only one module is currently available (registry), it is too early to say whether it has been a success or not.

Internet Services

At this time, the implemented functionality of the ITAS has no facilities for online services, although such services are planned. So far, only the institutional web page (www.at.gov.mz) and the project blog (www.e-tributacao.blogspot.com) are online. A supplier for the taxpayer portal is procured in 2014 and the project of realisation will start in 2015.

In the meantime, AT is working on an interim solution, e-Declaração, which can be used by large taxpayers to file and pay via internet. This solution will be realised in cooperation with a selected number of commercial banks.

It is important to note that the website of AT only allows users to search for legislative information, to print forms that need to be handed in at offices and to find contact information of AT. The website seems to be inadequately maintained and contains dead links, so it may not be as helpful to taxpayers as it was originally envisioned. The renewal of the website is part of the realisation of the taxpayer portal.

Links with Other Systems

Currently there are only linkages with the legacy systems of AT regarding registry information and with the budget system of the government. More interfaces are planned but the tax administration is facing issues with the IT capacity of third party providers such as the electoral office. For 2015 it is planned to finalise the fundamental discussions with the commercial banks and the Bank of Mozambique. Hereafter, tax payments via a bank and the exchange of information from banks to AT, can be realised.

Business Analysis

It is important to notice that the project has between 10 to 15 business analysts, of which two are external consultants working on a part-time basis. Together they are committed to analyse, define, design and test the functionality of the system. In addition, they are also responsible for implementation and training of the regional offices.

4.3.1.3 Expected situation

Both AT and CEDSIF have indicated that in the following two years the focus will be on realisation and implementation of VAT, Simplified Tax, Company Tax and Income Tax. In addition, it is important to notice that common processes such as payments, collection, penalties and audit will be implemented as generic processes, which will be used for all tax types. These common processes are planned to be implemented in parallel with VAT and Simplified Tax. Once all of this is covered by the end of 2016, the focus will be on the remaining taxes (such as mining).

It was also indicated that in the following five years, CEDSIF intends to take full ownership of the solution, which may allow the tax administration to deal with issues in a better and faster way.

Both AT and CEDSIF stated that the choice for ETPM was made after an international tender, unfortunately without having defined the requirements. As a result, approximately between 30% and 50% of the original solution had to be modified to suit to specifications of the taxpayer registration process. It needs to be noted that it is often difficult to understand if modification is configuration, traditional development or a combination of both. However, each type of modification has a significantly different impact on the workload. Configuration can sometimes be done in minutes, while traditional programming can take weeks or even months.

4.3.1.4 Observations

A priori, the setup of the project may need to be reviewed as it is divided between two distinct areas in which the communication channels are not well established. Although both are part of the Ministry of Finance, the business team of the e-Tributação project is part of AT while CEDSIF is a unit subordinated to the Ministry of Finance. As a consequence, no unified control exists and interaction between the different areas of the project seems difficult.

One of the biggest technical challenges for the project is the fact that Oracle's ETPM is using a proprietary language called Java. This requires the developers to undergo extensive training before they are able to undertake changes. As a consequence of the tight schedules and a difficult relation with Oracle though, the management of CEDSIF had decided to delay the training of local staff until the situation improves. This forces the organisation to employ a team of approximately four Oracle consultants, to carry out the required alterations on the ground.

4.3.2 Country Analysis: Peru

4.3.2.1 Origin and evolution of the system

Established in 2002, the Superintendencia Nacional de Aduanas y Administración Tributaria (SUNAT) is an autonomous public institution responsible for the collection of all taxes in Peru. These taxes represent 78% of government revenues (US$44 billion per annum). The tax administration started the computerisation of its processes in 1993. Most of the original ITAS, called SIRAT, is still operational. The software was written more than 20 years ago by the IT staff of SUNAT. The development was based on the specific requirements of SUNAT. SIRAT consists of several applications with a varying degree of integration. Due to the age and architecture, it now suffers from slow response time, system overload and crashes. SIRAT has seen a partial revamp in 2002 and was called RSIRAT from that moment onwards. As an interim solution, some applications of RSIRAT are being re-written using Java, while waiting till a new system is acquired.

Although officers of SUNAT are satisfied with the results yielded by the ITAS, they recognise that in order to achieve the strategic objectives, it will be necessary to streamline processes and accommodate a new, modern ITAS. One of the challenges is to increase the Tax-to-GDP ratio from 14% to 18% in three years.

The Strategic IT Plan is at the moment being updated, to reflect the decision to replace the legacy systems. There is an internal debate about the question whether the strategy should adopt:

- Buying a COTS solution and internally customise the product so it can accommodate for all processes in the organisation; or
- Building a solution in-house and probably acquire pieces of software to support specific functionalities, such as a workflow management system.

4.3.2.2 Current situation

All the tax offices except one located in a remote area (Iquitos Region), are connected to a data centre in Lima. It is expected that this last office will be connected by optic fibre in 2016. Due to the architecture of the ITAS, each office needs a separate server. When a taxpayer moves to another area, its tax file must therefore be manually transferred to the server of the corresponding tax office. Disaster recovery of data is provided by a mirrored server located in Lima, some 10 km distant from the operational location. Oracle tools provide an instant backup. Contingency plans are being developed in case of a catastrophic failure at the operational centre. The reason for this is that, even though back-ups are in place, there is no process for operational recovery.

The IT department employs about 450 staff (3.75% of the total of SUNAT) and has a budget of US$ 45 million (7.04% of the total budget). This budget excludes IT salary costs. From the budget, US$ 2.5 million per year is spent on various licence fees. SUNAT does not actively manage nor track its software licences for compliance or under-utilisation. In 2013, approximately US$ 20 million was spent on hardware replacement. For budgeting purposes, the life cycle of personal computers is set on 3 years, while for servers it is 5 years.

SUNAT is allowed to hire IT staff autonomously with the restriction that the Ministry of Labour is informed of the decision. The government sets the wage scales and special permission is required for variations. Although salaries are stated as being competitive in the market, SUNAT still has a high staff turnover. It is estimated that 50% of IT staff are long serving while the other half changes continuously. As an incentive to retain its staff, SUNAT provides vehicles to senior management, clothing allowances, productivity allowances, etc.

If the discussion about making or buying a new ITAS results in the decision to acquire a COTS solution, one of the requirements will be that the supplier must have a service office in Lima. Necessary modifications need to be done by this service office. In this way, SUNAT tries to anticipate resolving its turnover problem.

The present procurement process to acquire a COTS solution is considered to be too long and complex. There are also concerns about the possible consequences once a donor becomes involved. It is expected that its procurement rules will further complicate the process and delay the acquisition of a new ITAS. SUNAT states that they are able to develop a new system themselves, in case it is decided not to buy a COTS system. However, they recognise that external expertise would be required to assist the change management strategy.

SUNAT has sent an invitation to specific COTS suppliers and provided them with a “wish list” for the future. This list includes the requirement that the selected vendor should provide the source code of the ITAS. Vendors were also asked to indicate the items on the list that are covered by their system. According to SUNAT, only Bull and Oracle have indicated their willingness to provide the source code.

System walk-through

SUNAT presented two of its current processes, which is e-filing and payment order generation and management. This presentation also showed current limitations. The application was initially built in-house as a monolithic application in Informix 4GL language. In 2002-2003 the software was heavily updated by using Borland’s Power Builder. During the last five years, new functionalities were created using Java and an n-tier architecture. These features mainly consist of the parts that are accessible to the taxpayer, such as the electronic notification centre.

Where tax officers and taxpayers are required to complete similar processes in the system, there is a noticeable difference in the look and feel due to the change in the technologies used. For this reason, they are characterised independently. The solution as chosen by SUNAT contains redundant functionality, which has a negative impact on maintenance. This issue worsens, as the technologies differ for each environment.

Internal User Interface and functionality (RSIRAT, SIRAT)

It is clear that the software in use, evolved organically to respond to the challenges faced by SUNAT. As a result, it has become an ITAS with a long list of options, to execute almost all the tasks required. The underlying technical platform requires the user to install a client application, which according to SUNAT officers, cannot run with a version of Windows later than Vista. The impact is that SUNAT is forced to downgrade the version of Windows in new machines (Windows 8.1) to Vista. This situation entails a series of operative problems, but even worse, once Microsoft stops supporting Vista, the problems will become similar as is currently the case with Windows XP. This is a good example how ITAS are dependent from underlying platforms. When for some reason, these are not upgradable, critical business processes could be jeopardized.

Although most of the processes of SUNAT are supported by the ITAS, these processes still require a large volume of manual intervention. The ITAS does not provide an integration of the various processes. As a consequence, it is possible to start multiple processes for the same taxpayer, in parallel. This problem results in redundancy of work, taxpayers receiving various and contradicting documents and ultimately a deterioration of SUNAT's image. A pilot project in the city of Tacna and Arequipa to solve this problem, was started in November 2013. The purpose of this pilot was to combine the outstanding amounts in a single document. At the time of the interview, no assessment could be made of this new initiative.

The walk-through demonstrated that some workflow management was available. For example, partial payment agreements have an automated control built in and upon failure, it sends the case over to the enforcement section.

When a taxpayer agreed to utilising the electronic notification system, he can find the required notifications as plain PDF documents in an integrated notification centre. These documents are produced and posted by the related processes. This software is accessible to the taxpayer using a web interface. This service is a Java n-tier solution, built in-house by SUNAT. For all taxpayers that have not indicated their agreement with the notification centre, the system automatically routes the notifications using paper mail.

The present ITAS shows a generic role access mechanism, for managerial tasks. This potentially means that all supervisors sharing the same role, have access to the same information. The system is divided into multiple databases with automated replication during the night. All databases, except the Iquitos regional database, are physically in Lima. The supervisors can create case portfolios, as audit or collection, from the system and assign them to tax officers for further action.

The system is missing risk management functionality. Cases are selected by auditors based on the largest and most recent amounts. SUNAT mentioned that the quality of data has to improve significantly, before a risk management functionality can be used.

External user interface

SUNAT provides a single access point to all online functionality, available on their web page (www.sunat.gob.pe). The authentication takes place by the taxpayer, using a Tax Identification Number (Registro Unico de Contribuyentes), a user name and a password. To avoid identity issues, taxpayers have to register themselves as users in one of the offices, to gain access to the system. All public access to the application uses secured transactions (https).

Once the taxpayer is logged in, the system shows the available options as links. For example, in the case of return filing, the system allows two basic methods: one using a downloadable windows application, called PDT and one using an online web page. Regarding e-filing, SUNAT allows the taxpayer to file amendments, but with one restriction: the taxpayer has to follow the filing method of the original return.

Desktop application (PDT)

This method involves the installation of an in-house built Visual Basic application on the computer of the taxpayer. This application supports the creation of a number of returns and administrative forms, including income and value added taxes. The taxpayer has to complete the information, after which the system creates an encrypted zip file that can be used to file the return. The taxpayer can either use the web interface (SOL) or submit an external storage device or a USB drive to a financial institution.

The PDT infrastructure is designed to help the taxpayer in the completion of the return, while ensuring the security and consistency of the information sent. However, due to technological constraints, it does not validate created documents and returns against the SUNAT database.

Online filing

Contrary to the previous method, a full e-filing system was created independently. This solution does the calculations by itself and allows SUNAT to check information, as the user enters the information on the return form. Once the taxpayer has completed and saved the return in the system, he/she is able to access the inbox (called "bandeja") to create a payment slip, which can be used to make a payment via the online Gateway provided. It is important to note that the taxpayer can make changes at any point, until the payment is made.

It is worth mentioning that SUNAT does not enforce the filing of tax returns at the time of tax payment and as a consequence, taxpayers can make partial payments. Additionally, SUNAT relies on the financial system of the treasury to process payments, which means SUNAT does not have cashiers to register payments. Similarly, SUNAT allows the submission of returns through banks and the banks use software provided by the tax administration.

Links with other systems

The current ITAS uses data from external sources to support its operations, including:

a) Financial institutions to process payments and garnish bank accounts in the case of enforced collection;
b) Public notaries; and
c) Companies in the utility sector.

SUNAT intends to start utilising IBM I2 as a gathering, intelligence and analysis tool. This tool will integrate various external data sources such as airlines, immigration, utility services, banks and electoral information. The U.S. Embassy has donated the licences, so the system can be used in an effort to fight money laundering and drug cartels.

Business analysis

SUNAT considers its 250 business analysts as one of the strengths of the organisation, which allows SUNAT to expand in an organised manner. Each of the different modules of the ITAS has its dedicated business analysts. This role was created during the original ITAS implementation in the 90's and grew organically over time. Business analysts report to the IT department, which supports operations in all areas of SUNAT.

4.3.2.3 Expected situation

SUNAT is currently engaged in a modernisation project to increase its Tax-to-GDP ratio from an initial 14% in 2011 to 18% in 2016. As part of this project, a number of changes are being considered, including the creation of new software as a service platform. This platform will cover all of the major areas of the tax administration, including domestic tax, customs and the internal administration processes. The project was expected to make significant progress prior to the presidential elections of 2016. The project is scheduled as a two phased plan. The first phase will be a short term programme that needs to resolve existing errors. The second phase will be a longer term programme that will entail the creation of a new IT system or the acquisition of a COTS solution.

As a consequence of the need for new software solutions, that should replace the existing ones, officers produced a "wish list" that was handed over to providers, to obtain information about their systems. Companies including Oracle and Bull offered demos of their solutions and SUNAT is currently analysing the different systems. These vendors were apparently selected through an internet search, but it could be significantly expanded to include other vendors. The "wish list" did not have the benefit of in-depth research.

It is the understanding of the management of SUNAT that no COTS system will fit the organisation requirements completely and that it is feasible to have a mixed solution. This includes a locally developed core application, on top of a well-known industry proven software, for modules such as a workflow manager. Part of its plan includes the development of a new risk management unit, supporting the selection of both audit and compliance cases. The creation of this unit is still in the design phase. The objective is to optimise time and effort and to move away from the current general selection strategy.

In order to address the long-term goal, SUNAT is creating smaller projects, which are assigned to different officers across the organisation. The most advanced of these projects is the Human Resources Component, which is currently being procured. It is designed to be stand alone, although the plan is to have it connected with the rest of the systems.

It is interesting to notice that SUNAT has a three-year contract with a local company to deal with new features on the current systems. This contract was awarded to mitigate the problems associated with hiring consultants and their short turnover rate.

4.3.2.4 Observations

SUNAT is aware that the current system does not accommodate modern IT demands and that the stability of the system is problematic. Using internal resources, key programmes are being re-written in Java and Informix. In addition, an ambitious series of IT initiatives are discussed and in some cases, are already in the early stages of implementation. In scope of these initiatives are compliance/collections, enforced collection, audit, e-invoices and risk management.

Recently, the head of the IT department has been replaced. At the same time, a re-evaluation of the IT modernisation vision and the IT strategic plan took place. During this management transition, SUNAT is at a crossroads with regard to future plans. There are three scenarios: replacing the system with a COTS solution, realising a customised solution that would be built in-house, or following a third alternative of building the core system in-house and acquiring other modules from a provider, as required.

There are risks inherent to each scenario and during the field visit, discussions focused on three issues:

- How a technological approach can help the government achieve its objective of raising tax revenue to 18% of GDP by 2016;
- The way taxpayer compliance can be increased by producing a consolidating account for taxpayers; and
- The lack of critical examination of underlying legislation and administrative procedures.

As the customs system is being modernised with in-house programming, SUNAT could benefit from a detached critical review of prior in-house programing initiatives and project management. By doing this, they can determine the capacity to successfully implement a quality product in the short timeframe that has been indicated (by 2016).

Although the current IT system has problems, they are not insurmountable. SUNAT could benefit from a more conventional approach to implement a replacement of its current system by:

- Mapping all processes and procedures;
- Critically examining processes and procedures with the aim of reducing, consolidating and simplifying them;
- Reviewing legislation to accommodate process and procedural changes that are identified;

- Formally consulting with stakeholders;
- Developing a comprehensive strategic plan for SUNAT that internally assigns timeframes and responsibility for tasks;
- Creating a comprehensive set of requirements that is aligned with the strategic plan;
- Addressing the current stability of the system through a comprehensive plan, that is undertaken as a separate project from the system replacement initiative; and
- Considering the merits and costs of alternate IT architecture, database design and programming that may better serve SUNAT's future needs.

An IT investment budget has not been determined but an approximate range of US$20 – US$30 million is the initial estimation. This would be a relatively large IT effort that could benefit from a more conventional planning and preparation path. This detailed preparation, including business cases for both scenarios, would probably extend the implementation phase of the system for both an in-house or highly modified COTS solution, well after the current 2016 target.

A detailed system specification at the start of the project is essential to the success of the management of the project and its cost control. In the event that a COTS solution is selected, SUNAT should consider the extent of the modifications required, as this will directly affect costs, time and the possibility of change-order delays.

SUNAT is seeking to implement a risk based approach to determine audit and collection priorities. This initiative is however in the early stages. During this early phase, there could be considerable benefit for SUNAT to study risk systems that have been implemented in other countries.

Change management is critically important. SUNAT is a large organisation serving a diverse taxpayer population and the difficulty of deploying a new system should not be underestimated. Although the new system is still in a very early stage, SUNAT should not forget to plan and allocate sufficient resources for change management.

4.3.3 Country Analysis: Senegal

4.3.3.1 Origin and evolution of the system

The Standard Integrated Tax Government Tax Administration System (SIGTAS) is a single, multi-module and wide-ranging information system, that has been implemented in the Direction Générale des Impôts et des Domaines (DGID). SIGTAS is designed to computerise all the processes of a tax administration. This is the opposite of a number of applications that support specific tax processes as seen in more developed countries. For this reason, the product is heavier, more complex and more tightly integrated. It is widely recognised that SIGTAS contributed to the modernisation of processes at the DGID, despite the complexity of the system and the difficulties throughout its implementation.

The level of satisfaction with SIGTAS depends on whom you ask and it varies from "satisfactory" to "unsatisfactory". Low satisfaction stems from what is seen as excessive system rigidity, manifested by a lack of flexibility to adapt functionality to local requirements. Low satisfaction also arises from what is being perceived as high cost of acquisition and maintenance of the ITAS. That said, during the acquisition of SIGTAS a "total cost of ownership" analysis was not conducted.

Despite the lack of a full-fledged survey of user satisfaction, one can generally associate certain levels of satisfaction with certain groups of individuals, depending on the topic being discussed. For instance:

- **Reporting**: Managers tend to be satisfied with the ease of reporting, which is experienced as an improvement compared to the legacy system.
- **Training:** Business users and IT staff agree that the quality of training was generally acceptable, but that the amount of training was below of what should have been delivered during the project.

- **Flexibility:** Business users sometimes report that the system lacks flexibility. It is often the case that such feedback can be traced to an incompatible procedure or a business process that is not being supported adequately by the ITAS. It could also derive from the fact that they are unaware of or feel uncomfortable in using the ITAS functionality.
- **Cost of acquisition:** Some senior officials feel that the cost of acquisition is high. However, the system acquisition process was not based on an international request for proposal, so it is difficult to know whether an equivalent ITAS solution could have been acquired at a lower price. Comparison with other countries can provide a certain baseline, but even such information is not readily available to most observers.

In conclusion, the above illustrates that the main or overriding theme that is being discussed, also tends to influence the general appreciation of the system by the respondent.

There are certain data-related and organisational issues that are barriers to the successful rollout of the full set of system features, some of which are gradually being resolved by the DGID. Among these problems is the frequently occurring issue of duplicate taxpayers, as well as the prevalence of inaccuracies in tax account balances. Both matters are further discussed in a later section.

4.3.3.2 Current situation

Internally, senior management insisted throughout the implementation of the ITAS, that all problems encountered would be resolved by the IT team. That was indeed the case, albeit gradually. Tax officers at the headquarters and in the tax offices in the vicinity of Dakar, now understand that information technology is here to stay and that the DGID will never return to the previous manual procedures. Most tax officers are now eager to see the system assist them in all their daily tasks and they quickly notice when there are tasks that still have to be performed manually. This is because the system and its accompanying procedures still have to be fine-tuned to integrate certain manual procedures, which were considered lower priorities during initial implementation.

In remote district offices, tax officers have not yet developed a sense of ownership of SIGTAS, as the rollout to the regions has faced difficulties due to an unstable electricity supply. The tax officers tend to misinterpret the current network connection problems as being SIGTAS functionality issues. Their lack of ownership of the ITAS solution is worsened by the fact that remote offices believe that DGID headquarters gets allocated most resources, with little left for them.

Externally, the DGID has actively informed taxpayers of its on-going computerisation strategy, and quest for efficiency and effectiveness. DGID has demonstrated this by signing a “Performance Contract” with the Ministry of Economy and Finance (MEF). The contract outlines specific performance indicators and targets for the DGID, while the MEF in return commits to extending specific budgets, to allow the DGID to achieve these objectives. Part of this arrangement is the computerisation of operations, through the continued deployment and maintenance of the ITAS.

There is consensus throughout the management of DGID, that tax evasion is less likely to occur, due to the tighter integration of IT with tax administration processes. This perception is a result of a significant taxpayer awareness campaign that has been deployed over the past two years. This campaign included open-door events, a new DGID website, media messages and the creation of a taxpayer services and front-desk cashing service, based on a first-come first-served approach. Taxpayers still face old-style hurdles and slow timeframes in certain procedures, such as filing for and obtaining tax credits, but these are being ironed out gradually. It is the perception of taxpayers that now the DGID is computerised and they have been registered, they will remain in the system of DGID for the long term and may be confronted by future compliance initiatives.

Due to the fact that e-Payment was not yet available, taxpayers did not adopt e-filing when it was introduced two years ago. Missing the integral benefit, the taxpayers were still forced to go to the tax administration to make their payments.

System walk-through

SIGTAS is highly customised to requirements of each country. As a result, there are as many different SIGTAS versions, as there are countries using the system. The SIGTAS version used by Senegal dates back to 2006, with the first tax office (the LTO) using it in June 2007. This version is a web-enabled version, meaning that the screens are displayed in a web browser, but the development platform is not a modern internet-friendly one. The only exception is the eTax Services module, which is developed using Oracle JDeveloper, a modern software development platform.

The entire SIGTAS suite of modules was implemented in Senegal, but three modules have not yet been used. The SIGTAS modules include registration, assessment, cashing, collection, payment agreements, objection eTax Services and administration. The three models that are not yet in use are: audit, property tax and motor vehicle tax. The possible implications of not using the audit module are discussed later on in this section.

User Interface

The back office interface is a standard SIGTAS interface that resembles client server software, which is not optimised from a modern software aesthetics perspective. All back office modules use the same standard interface, facilitating the transfer of officers from one department to another and enhancing the learning curve to a certain degree.

Internet services

The SIGTAS system includes an online module called eTax Services, offering electronic filing for all tax types. It is an efficient and user-friendly module. Currently, it is only being used by 13 large taxpayers, due to concerns relating to the lack of transparency of tax account balances. The module will soon offer electronic payments as well.

The eTax Services module allows the taxpayer to make partial changes to basic registration information, but does not allow for electronic registration or Taxpayer Identification Number (TIN) issuance, as this is not part of the tasks of the DGID. Initial registration and the issue of TINs happens at the Agence Nationale des Statistiques et de la Démographie (ANSD). The current strategy of ANSD is to implement an online one-stop-shop, so it is likely that electronic registration may become possible through this new service. The development of an interface to send new TINs to the DGID, should be part of that project.

Links with other systems

At the moment of the visit no interfaces were operational between SIGTAS and any internal or external (banks, treasury, customs) system. An interface was developed with customs and a second interface was developed with the Ministry of Transportation. Simply the fact that these systems have not yet been implemented, makes the interface unused. Developing and implementing interfaces are considered to be a priority by the DGID.

In order to enable ePayment, the DGID has succeeded in negotiating a data transfer protocol with the banking sector. Three of the 27 banks have accepted the ePayment protocol and will be taking part in the process. The other banks requested a delay of a few months in order to organise themselves in accordance with the ePayment standard.

Although not a real interface, it is good to mention that a data warehouse is maintained by the tax administration in an SQL Server 2012 database. The data warehouse integrates data from commercial banks, treasury, customs, property contracts, SIGUIL (legacy) system and SIGTAS. According to future plans of the DGID, taxpayers' financial statements will be included in the data warehouse. The data model and data extraction took more time than expected by the DGID.

Business Intelligence (BI) is considered to be a component of the ITAS solution. While a prototype solution already exists for a few years, it was not kept up to date with the upgrades of the mission-critical database. The platform therefore needs to be upgraded to become compatible with the current ITAS platform. The development and implementation of BI remains a priority for the DGID.

Business analysis

The key stakeholders within DGID agree that a permanent team of professional business analysts early in the project, would have facilitated the implementation of the ITAS. This team's involvement would also have contributed to mitigating some of the resistance in the organisation. Despite the ongoing need, the tax administration is not successful in recruiting and retaining talented business analysts. The reason for this is that this position is generally regarded as a job on an entry-level. Furthermore, officers who accept to become a business analyst lose their performance-based remuneration and as a result, are effectively penalised for taking the position. Consequently, all members of this specific team which was created during the ITAS implementation, have been promoted, leaving the DGID without a dedicated, full-time team of business analysts.

The long implementation and the reluctance to change was aggravated by the relatively short time given to the DGID to validate requirements and a critically review of change processes and procedures. The absence of a dedicated business analyst team during the initial stage resulted in the DGID not expressing its requirements sufficiently. Additionally, the extent of the necessary changes during implementation overwhelmed the capacity of DGID. In retrospect, the DGID would have proceeded differently. It will use this experience for future system implementation efforts, to yield better results in terms of mapping system functions to specific DGID requirements.

4.3.3.3 Expected situation

A new organisational structure has been approved and is expected to be implemented in the near future. Part of the change is the transformation of the IT unit from a "Bureau de l'Informatique" into a full-fledged "Direction de l'Informatique". The goal is to reinforce the position of IT as a fundamental device of the tax administration in Senegal.

The Asian Development Bank is providing support in the area of off-line e-filing. The project will allow taxpayers to obtain tax declarations electronically and to complete them in a PDF file off-line. The taxpayer will be able to either print the declaration, along with a two-dimensional bar code, or to send it by email to the tax administration. In case of printing the declaration, it will be scanned by the DGID after delivery and the data will be uploaded to SIGTAS. The budget for this project is 600M XOF (1.3m USD).

4.3.3.4 Observations

The Ministry of Economy and Finance maintains a matrix of strategic reforms that it intends to implement. The matrix is sent to key organisations and donors, including the Asian Development Bank, the European Union and the West Africa Economic and Monetary Union. For potential donors it is highly relevant to review the matrix when planning their support programmes for Senegal.

The electrical supply will need to be stabilised, in order to secure a successful rollout of the system across the country. In certain cases, the buildings in which the tax offices are accommodated need to be renovated, as serious issues like leaking roofs, are hampering IT deployment.

Governmental procurement procedures are slow. Although funding is available to the DGID, purchasing and installing spare parts in a timely manner is a challenge, which negatively impacts the maintenance of SIGTAS, particularly in district tax offices.

Impact of implementation of eTax Services

The deployment of e-Filing and e-Payment is seen as one of the most important objectives for the DGID. Prior to implementing this functionality, each Large Taxpayer Office (LTO) account and a certain number of Medium Taxpayer Office (MTO) accounts will need to be individually and comprehensively reviewed to rectify any errors in the tax account balances. The cause of these errors often results from inaccurate opening balances, loaded in the system from the onset. In that sense, the implementation of eTax Services is considered to be an engine which forces the DGID to clean up SIGTAS.

Taxpayer registration

What seems to be a common issue in developing countries is the registration of taxpayers and also in Senegal, this is a serious issue. As a matter of policy, the IT department has constantly tried to convince tax officers to perform all their duties using SIGTAS. However, the module that has encountered the most resistance by tax officers was the registration module. The predominant reason for this are the frequent electrical outages in offices outside the capital city. As a result, officers needed to find a way around the system to complete registrations.

In addition, the legacy system ("SIGUIL") only contained 40% of the total number of taxpayers. When SIGTAS was initially implemented, only a small number of these taxpayers (large taxpayers) were transferred, as the migration strategy began with the computerisation of the LTO. When other tax offices started to use SIGTAS, they could not find their taxpayers in the system due to the lack of a comprehensive conversion. As a result they created new registrations, causing duplicate taxpayers when the data conversion from the legacy system occurred later.

Although some duplicate taxpayers resulted from the conversion process, the problem escalated because of the quarrel between tax centres on the "ownership" of certain key taxpayer files. The reason for this is that offices were assessed, according to the revenue they collected. This led to TINs being issued through a procedure that was implemented as a temporary measure from the onset, but which was never halted. This measure was designed to accelerate the initial launch of the system, while dealing with exceptional cases. However in practice, once tax offices discovered that temporary TINs were allowed, they registered certain key taxpayers as temporary TINs, even though they were already registered in another tax centre.

Another reason for duplicate taxpayers is a lack of training or a lack of duly completed registration forms, causing certain officers to make categorisation mistakes between individuals, sole proprietorships and businesses. SIGTAS at that time, did not allow searching simultaneously in the three types of taxpayers to determine if a taxpayer was already registered.

Finally, typing errors on the TIN occurred because the new TIN needed to be manually captured in SIGTAS by the officer. This problem has yet to be addressed through the implementation of an automated interface between the TIN database ("NINEA") and SIGTAS.

The key solution to the duplicate taxpayer issue was developed and implemented by the DGID themselves. They developed a new and simple inquiry screen, allowing users to check the existence of a given taxpayer anywhere in SIGTAS, prior to registering them as a new taxpayer. While more advanced and powerful systems are available to track and resolve duplicate taxpayers, the above solution is a logical and useful starting point.

The tax administration has now forbidden the issuance of temporary TINs, which was the primary source of the duplicate taxpayer problem. While the number of such temporary TINs is high (approximately 10,000), the DGID has started clearing them in collaboration with each tax office. With the registration module being the heart of the system, any inconsistencies, errors, incomplete information and duplicates, cause significant problems.

Finally, the DGID has added other key functionalities, including the capacity to transfer taxpayers from one tax office to another, the capacity to change parameters on a tax account, the ability to change a taxpayer type from business to individual and the capacity to change the TIN that is associated with a particular taxpayer.

Reporting

Key reports are in place and are being used, such as the Arrears Aging Report, which prints over 130 pages for VAT arrears at the LTO. A new non-filer report was developed by the DGID and added to SIGTAS in response to user requests. It provides more detailed, strategic information about each non-filer, such as the last filed period, which was unavailable in the standard non-filer report delivered with SIGTAS.

Property tax

The implementation of property tax in SIGTAS still needs to be done. Property owners pay this type of tax directly to the treasury instead of to the tax administration. While the property tax assessments are issued by SIGTAS, there is no interface between the system of the treasury and SIGTAS. As a consequence, there is no guarantee that property tax payments are correctly posted to the account of the taxpayer, possibly leading to an incorrect outstanding balance on that account. While this is currently not a significant problem, it will become a critical issue when more properties are loaded into SIGTAS. The legacy property tax administration system is still entirely manual. Property information is only available on paper copies of leases and other documents. A conversion process is ongoing, but only 900 out of a total of 100,000 properties are currently in the staging database, ready for conversion into SIGTAS. It is a slow process as each owner must be identified and specified in the property registration record, including its TIN. DGID will only register property in the staging database when complete information is received from its colleagues, relating to changes in the lease of public property. For the private sector, an extensive property survey needs to be conducted, since an exhaustive inventory of properties does not exist. The IT department currently awaits approval to create appropriate software to manage the property survey process.

Data warehouse

The tax administration also intends to upgrade the data warehouse by re-establishing its compatibility with the current ITAS platform. The DGID intends to use business objects to create business intelligence dashboards.

Motor Vehicle Tax

Finally, implementing the Motor Vehicle SIGTAS module and wider links between the ITAS and internal and external systems, are also seen as significant future IT initiatives. At this moment, the development of the motor vehicle module still needs to be finished. DGID had to make several changes to the module and to render it fully operational, there is still more work to be done.

Change management

While certain changes have been introduced successfully by the DGID, change management issues are expected to arise in the upcoming implementation of new functionalities of SIGTAS. As an example, the introduction of the Audit module, introduces a risk-based approach. In practice this will prove to be difficult, in light of the current culture of conducting comprehensive rather than risk based audits. The integration of risk-based selection criteria within SIGTAS, is likely to require intensive effort and specialised expertise in order to be implemented successfully.

Significant attention to change management is necessary to resolve organisational issues to improve compatibility with the best practices embedded in the ITAS. For example, the cashiering function at headquarters was implemented in such a way, that taxpayers are required to pay at the cashiers dedicated to a particular tax office. There is an opportunity for the administration to be organised in a more efficient manner and allowing the ITAS to properly account for payments.

In conclusion, the full benefit of ITAS has not been realised since not all SIGTAS modules are yet being implemented. Considerable additional effort needs to be made on change management to ensure the successful implementation and the full realisation of the benefits of an ITAS.

4.3.4 Country Analysis: Swaziland

4.3.4.1 Origin and evolution of the system

The trigger for implementing the new COTS system was an aging mainframe system, created in the 1980's, which did not have the attributes necessary to administer a modern tax system. The Government IT Services office attempted to develop a new system internally, but it was evaluated as a failure and was therefore stopped. Taking into account this experience, the management of the Swaziland Revenue Authority (SRA) changed its strategy of in-house development, especially with the forthcoming implementation of a new VAT law. As a start, an external consultant was contracted with the help of the African Development Bank. The activities consisted of a high level mapping of processes, designing a project based on the PRINCE2[5] methodology, drafting a tender for the acquisition of a new system and providing a "sanity" check for SRA management every six months. The investment in the new system itself was funded by the Government of Swaziland, without donor assistance.

It was preferred to acquire a COTS system:

1. That could be deployed with minimal configuration, facilitating a quick implementation;
2. Which has already proven itself in another administration;
3. That could be used with the IT platform most common in Swaziland, so it would be easier to find local IT capacity if needed; and
4. That could be backed up by a provider, which could maintain the software for the next decade.

The three finalist vendors were invited to Swaziland to demonstrate their systems. In a timeframe of 1 week, they were provided with pre-determined cases to demonstrate the capability of their system. One vendor declined to attend. During the process, SRA officials noted, that the terminology used in one of the two remaining systems, was not "tax"-terminology. This vendor was also unable to complete one of the pre-determined tasks satisfactorily. The final factor evaluated, was the total cost of ownership (TCO) for the system over an extended period. In this regard, there was "a very significant" difference between the two systems.

Based on the technical proposals, financial proposals and an analysis of the TCO, Data Torque was awarded the contract. The SRA team met with the support team of another administration, where the system was installed. Additionally, a visit was arranged of the Data Torque headquarters in New Zealand.

4.3.4.2 Current situation

The procurement process took approximately three months and the implementation was divided into the stages as detailed hereafter. The first stage, Taxpayer registration and VAT registration, was achieved within three months after starting. At the time of the visit, over 60% of the total functionality was implemented and the focus was on data cleansing. This had to take place prior to migrating the information from the legacy system to Data Torque's RMS, in order to use modules such as audit and debt management. Due to the fundamental change of methodology, only balances would be transferred to the new system. As a result, the legacy system had to remain active for the purpose of determining the various transactions, which contributed to the balance entered into RMS.

[5] PRINCE2 is a project management methodology. It was developed by the UK government agency Office of Government Commerce (OGC) and is used extensively within the UK government as the de facto project management standard for its public projects (http://www.prince-officialsite.com).

Stages of the RMS implementation (source SRA)

Stage	RMS Modules
Stage 1	• TIN/VAT Registrations
Stage 2	• Integration with Automated System for Customs Data (ASYCUDA) • VAT Returns Processing • VAT Payment • VAT Taxpayer Accounting • VAT Revenue Accounting • VAT Refunds
Stage 3	• VAT Refunds • RMS Common Cashiering • Taxpayer Accounting • Revenue Accounting • Taxpayer Enquiries
Stage 4	• Taxpayer Enquiries • VAT Audit/Investigation Tools • VAT E-Tax • Income Tax Pay As You Earn (PAYE) processing/Provisional Taxes
Stage 5	• Income Tax/PAYE returning processing • Advanced Auditing • Income Tax/PAYE returning processing
Stage 6	• Debt Management • Objections • Withholding Taxes • TIN

Stage 1 was developed over a period of approximately 3 months. The planning of the other stages were uncertain, resulting in SRA feeling the need to hire an external consulting firm to re-do the business processes designs and another external consultant for change management. The impact of this was that there was no longer a clear start and end date for the next stages. Insufficient training, which had to be repeated, complicated the planning process even more.

During the implementation, SRA officers faced what they called “pleasant surprises”, as the system contained additional features, which they were not aware of. The overall level of satisfaction with the system within the SRA and other stakeholders appears to be very high.

Nevertheless, the head of the implementation project stressed that the main problem was the lack of a comprehensive change management plan. The SRA had the intention to implement changes by using a series of training sessions. The number of resources necessary for change management and the time involved, was underestimated though. For this reason, SRA engaged an additional external consultant to assist them to cope with the change management process.

The implementation is achieved with a small team based in Swaziland (two IT officers) and a support team located in New Zealand provided by Data Torque. The last has access to the local servers over a Virtual Private Network (VPN) in order to deploy changes and updates. In practice, all requests are redirected to New Zealand and the local team interacts only with the modules provided by Data Torque. Data Torque not only provides the software and its maintenance, but is also responsible for the training of local trainers in relation to the tools provided. SRA is currently engaged in Stage 6 of the implementation plan, which has its main focus on data cleansing from the legacy system.

System walk-through

The system in use is RMS by Data Torque. It is a client-server ITAS running on Microsoft Terminal Services, hosted in Swaziland, using Microsoft SQL Server and the Microsoft platform (C#/.Net 2010). A web module, called RMS Web, is under construction. This module will allow electronic filing and information sharing.

The system provides tax officers with the functionality to support their operations including registry, returns, payment, case management and account facilities. It is important to mention that there is currently a separate project, to acquire a document management system that will be linked to RMS in the future.

User interface

RMS has a look and feel consistent with modern Microsoft Windows applications. This is a fundamental change from the terminal mainframe based look of the legacy ITAS. SRA officers have shown the consultants two modules: browse taxpayer and returns processing.

- Browse taxpayer
  This module shows all information about the taxpayer, including its registry information, returns filed and accounting status. It is a lean and easy to understand module that is well organised and has enough information to allow officers to quickly understand the situation of a taxpayer. Some other functionalities, like the failure to file, has to be done using a special report module.
- Returns processing
  This module has been designed to allow officers to lodge and enter returns filed by taxpayers and it has provisions for both automatic and manual assessments. The manual assessment is intended for cases that may require an in-depth analysis prior to their submission to the taxpayer account. The system allows returns to be replaced, in which case the new one will be marked “ACTIVE” and the old ones will be marked “INACTIVE” and kept for further reference.
  It was observed that upon receipt, the first activity of the data entry officer is to verify that the information is sufficient and adequate and if it is not, they have to call the taxpayer for rectification. If the return is to register a taxpayer, then the data entry also queries the current IT systems and the legacy systems to verify whether the taxpayer was already registered. It is additionally verified whether a validation against the registrar or the electoral office was conducted.

  In all cases, the system shows three columns for numerical values in order to determine errors easily: “Return”, “Calculated” and “Difference”. Any difference greater than a threshold of 50 Rand is highlighted for correction. It is important to notice that officers cannot mark the return as “Correct” if one or more lines are highlighted. In such a case the return cannot be processed to the taxpayer account, but can be saved, resulting in the creation of a “Return processing exception case” for further review.

Internet services

SRA is in the process of implementing a Web interface for external users like taxpayers. This will also be provided by Data Torque. Its key feature will allow taxpayers to file returns and forms online.

At the moment, the SRA is internally devising an e-filing strategy. At the moment of the visit, a number of different options were under consideration such as forcing all or specific groups of taxpayers to file online, or allowing taxpayers to file online without making it compulsory.

Links with other systems

RMS produces payment information for ASYCUDA++, which constitutes the only external link at the moment. It is expected that a tender will be launched shortly for a document management system that should link to RMS.

SRA officers are aware that a lot of work has to be done with regard to creating external links, but they did not have the time yet to engage with other organisations to formalise the exchange of information. When resources permit, it will be part of a future update.

Business analysis

SRA relies on Data Torque and external consultants to provide the in-depth business analyses. A small team at SRA engages with Data Torque on this issue.

4.3.4.3 Expected situation

During stage 4, SRA hired the services of Deloitte South Africa to analyse and reengineer the processes that were already being deployed by Data Torque. This exercise resulted in a series of change orders for RMS, which will be implemented in two extra created stages of the work plan.

4.3.4.4 Observations

Significantly, the SRA management emphasised that change management was the largest obstacle to a smooth implementation. The extent of resources necessary was not taken into account during planning and as a result they were underestimated.

Where Data Torque differs in its approach from other COTS providers is that the IT function to support the system is not in-country, but is located at the headquarters of the ITAS provider. All system changes are initiated through a change order system and are programmed in New Zealand. Similarly, troubleshooting is also done remotely. In this regard there is no transfer of knowledge to the SRA to maintain the system. Due to the arrangement made, there is also no need for SRA to retain IT staff to support the system. This situation can result in serious vendor lock-in.

The RMS system is based on Microsoft products. For SRA this has a significant advantage since local Microsoft trained people are readily available. Compared to other solutions that use for example Java and Oracle, where a lack of locally trained persons can occur, this may result in substantial cost savings.

The RMS system was largely implemented without the necessity of major changes. This resulted in both cost savings to the SRA and rapid implementation of modules, e.g. it took approximately 3 months to implement the registration module. At this moment it is unclear if the process redesign planned for stage 7 and 8, will result in a drop back regarding the positive progress made in the first stages. These stages need to prove the level of flexibility as scored in the ATO Capability Model.

4.4 Overview of the results of the four countries visited

4.4.1 Overview of the four countries visited

The table on the next page presents an overview of the main characteristics of the countries that were visited. This is important as it places some of the subsequent results in context.

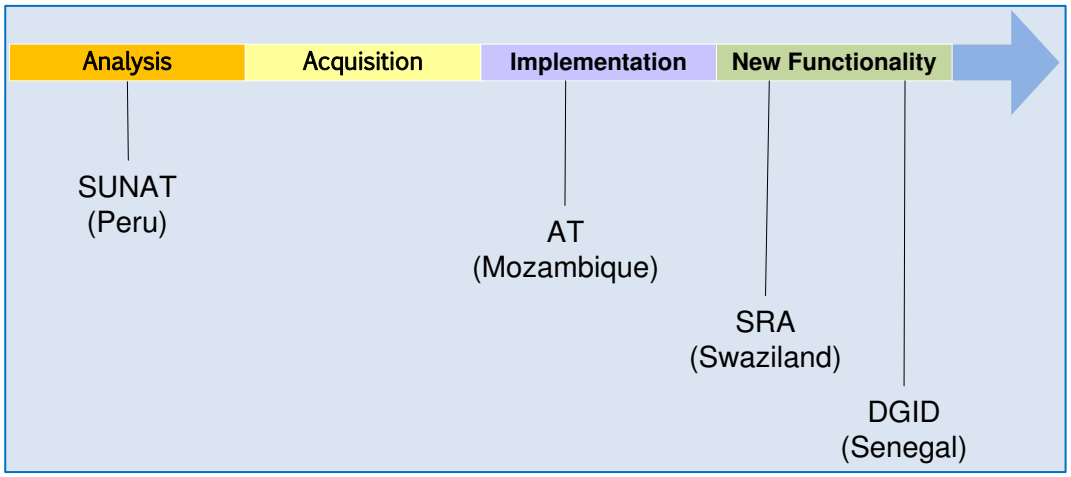
Table 5: Overview of countries visited

Description / Country	Peru	Mozambique	Senegal	Swaziland
General				
Type of Agency	Tax Administration	Tax Administration	tax administration	Tax Administration
The agency can undertake structural reforms by itself (as opposed to needing approval from central government).	Yes	No	No	Yes
The agency is depending on central government to hire personnel.	No[6]	No	Yes	No
The pay scale is independent from that from the central government.	Yes[7]	No	No	Yes
Organisation of tax agency (taxpayer segmentation, functional, by tax type)	By tax type, and then along functional lines	By taxpayer size (LTO, MTO); then along functional lines	By taxpayer size (LTO, MTO); then along functional lines	Along functional lines
Number of employees	12,000 approx.	2,500 in tax (out of 4,000)	907	200
Specific to the ITAS Modernisation				
Type of ITAS Implementation (through an e-Government initiative, a specific project, etc.)	Specific Project	Specific Project	Specific Project	Specific Project
Type of Reform Engaged (Gradual, Reengineering)	Gradual	Reengineering	Reengineering	Reengineering[8]
Investment Costs	N/A	N/A	N/A	N/A
Maintenance Cost (projected)	US$45 million per year	N/A	N/A	Included in initial contract
Specific to the ITAS				
ITAS Provider	In House	Oracle	CRC Sogema	Data Torque
Name of the ITAS	SIRAT/RSIRAT	Tax & Revenue Management Solution	SIGTAS	RMS
COTS system	No	Yes	No	Yes
The system version is shared with other organisations.	No	No	No	Yes
Use of Third party integrators	No	No[9]	No	No
Maintenance Period (projected)	N/A	N/A	N/A	5 years

[6] In reality it is completely independent, but it has to inform central government when new staff is recruited.
[7] Changes have to be approved by the Ministry of Finance though.
[8] The project underwent a second reengineering phase after the implementation started.
[9] In the case of Mozambique, the product was bought through a third party, but in 2011 the contract was revoked as this firm was not delivering added value. From that point onwards, Oracle was contracted directly.

It is important to note that all four tax administrations visited, were in different stages of progress with respect to the implementation of their ITAS. Thus, the challenges that are identified in this report correspond to the relevant stage of implementation at each organisation. This sheds light on the challenges that a tax administration can face at each of the main stages. The following figure depicts the stage, in which each tax administration was at the moment of the visit.

Figure 2: Stage of implementation of each ITAS



In Peru, SUNAT is in the early stage of analysing the various ITAS options it has. This process has recently been halted and revised due to the change in the structure of the information technology department. SUNAT intends to replace its legacy system with a new ITAS. The decision whether the system will be built in-house or will be procured as a COTS solution, is still open. As part of this process, documents are being produced which contain the requirements of internal users. The IT department has sent a "wish list" of features to potential ITAS providers. During the visit, the current situation was under review by the new management. As a consequence, while the figure presents Peru as being in the analysis phase, this study draws on both the implementation of its old legacy system that is still in use, as well as the early work being done for the new ITAS.

In Mozambique, the project was delayed due to fundamental problems with the provider. As AT lacked knowledge on how to develop the ITAS itself in a way that it would meet the requirements of the tax administration, the real start of the project was delayed with almost two years. Consequently, while the international procurement process was concluded in 2009, the first module was only deployed in the third trimester of 2013.

In Swaziland, the SRA was ahead of its implementation schedule and is planning to include several new functions. During the past year, the management of SRA hired an external consulting firm to review workflows and procedures. Based on the findings, adjustments to the system were necessary to align it better with the improved organisational structure and revised workflows. During interviews, management indicated general satisfaction with the ITAS and some "pleasant surprises" due to the extensive functionality of the COTS system.

In Senegal, DGID introduced the system at a rather accelerated pace. The implementation was further complicated by a high rate of turnover in the implementation team, difficulties with electrical supply and the high number of tax types and processes, that were to be computerised using the ITAS. The system is operational for the past six years. The DGID is currently implementing more advanced functionalities and resolving data-related matters of concern, such as questionable tax arrears that were converted from legacy systems. This will all clear the way for more optimal usage of the ITAS and improved leveraging of its entire suite of functions. New modules, such as web filing and electronic payments, will soon be implemented to enable the DGID to continue adopting a client-centric philosophy and provide improved services to its taxpayers.

4.4.2 Level of utilisation of ITAS

During the desk research the study was focused on the capabilities of the ITAS according to the ATO Capability Model. The research revealed the different functionalities offered by the various providers.

The observations during the site visits give an indicator of what ITAS functionalities can support, based on realistic implementation in a developing country. Table 6 presents the difference between the score of each ITAS on the ATO Capability Model presented in chapter 2, versus what actually has been implemented. The ATO score of Peru (SUNAT) is not included, because the tax administration has an in-house built solution that was not part of the analysis of the COTS solutions. Furthermore it should be noted that Mozambique is not comparable to either Swaziland or Senegal as the tax administration is still in the beginning of the implementation phase of its system. For this reason, a lot of functionality is not in scope of the increment implemented.

Explanation of scoring system

	ATO Score	Implementation
0	No functionality	Available functionality not (yet) implemented
1	Very limited functionality	Limited Implementation of available functionality
2	Functionality available with some limitations	Available functionality implemented except some features
3	Full functionality	Available functionality fully implemented

Note: a score of 3 on ATO with 1 for the country means the ITAS meets the functionality of the ATO requirement entirely, but it is barely implemented in the country. Conversely, a score of 1 on the ATO with 3 for the country means the ITAS has little functionality corresponding to the ATO requirement, but it is fully implemented in the country.

Table 6: Review of each system

Functionality/ ITAS-Country	Tax Revenue & Management (Oracle)		In-house System		SIGTAS (Senegal)		RMS (Data Torque)	
	ATO Score	Mozam-bique	ATO Score	Peru	ATO Score	Senegal	ATO Score	Swaziland
Channel Delivery	Delivers products and services through channels in a manner that meets client needs while achieving revenue administration and government objectives. Includes capabilities to support content, document and record management of inbound and outbound material.							
Online	3	0	N/A	0	1	3[10]	3	0
Inbound	3	0	N/A	0	1	3	3	0
Outbound	3	0	N/A	0	2	3	3	0
Contract Management	3	0	N/A	0	0	0	3	0
Document Management	3	0	N/A	0	3	3	3	3

[10] Although the functionality is implemented, the effective use by taxpayers is extremely limited. Only 13 taxpayers make use of this functionality

Functionality/ ITAS-Country	Tax Revenue & Management (Oracle)		In-house System		SIGTAS (Senegal)		RMS (Data Torque)	
	ATO Score	Mozam-bique	ATO Score	Peru	ATO Score	Senegal	ATO Score	Swaziland
Client Relationship Management	Delivers the right experience at the right time through the right channel.							
Contact Management	3	0	N/A	0	1	3	3	0
Marketing and Education	3	0	N/A	0	0	0	3	0
Revenue Management	Enables clients (including tax intermediaries) to efficiently and effectively register, lodge/file and pay, and the revenue administration to recover the correct amount of tax and entitlement, whilst minimising the cost to the client.							
Registration	3	3	N/A	2	2	3	3	3
Generic Processing	3	0	N/A	2	3	3	3	3
Client Accounting	3	0	N/A	2	3	3	3	3
Revenue Accounting	3	0	N/A	2	2	3	3	1
Debt and Lodgement	3	0	N/A	2	2	3	3	1
Superannuation processing	3	0	N/A	2	0	0	3	2
Case and Work Management	Delivers enterprise wide case and work management capability to support active compliance, provision of written advice, debt collection, action of inbound correspondence and exception processing.							
Enterprise Case Management	3	0	N/A	0	2	1	3	3
Enterprise Workflow	3	1	N/A	0	1	3	3	3
Outcome Improvement	Provides feedback on the client experience, effectiveness of risk treatments and other enterprise information to continuously improve the operations of the revenue administration and provides input to Case Management and Revenue Management capabilities to ensure appropriate and relevant treatment according to risk.							
Analytics	3	0	N/A	1	1	3	3	3
Information Management Policy and Architecture	3	0	N/A	0	0	0	0	0
Reporting	3	1	N/A	2	2	3	3	0
Data Matching	3	0	N/A	0	0	0	3	0
Data Services	3	0	N/A	0	3	2	3	3
Data Warehouse Management	3	0	N/A	1	0	0	3	3
Intelligence	3	0	N/A	1	1	3	3	0

Functionality/ ITAS-Country	Tax Revenue & Management (Oracle)		In-house System		SIGTAS (Senegal)		RMS (Data Torque)	
	ATO Score	Mozam-bique	ATO Score	Peru	ATO Score	Senegal	ATO Score	Swaziland
Plan and Manage Enterprise	Provides the management processes and structure for running the day-to-day business of the revenue administration.							
Workforce planning and Development	3	0	N/A	0	0	0	3	0
Employee policy and Services	3	0	N/A	0	0	0	0	0
Accommodation management	3	0	N/A	0	0	0	3	0

Comparing the results of the scoring against the ATO Capability Model versus observations onsite, it becomes apparent that there is a substantial gap between the capacity of the ITAS (as they are marketed) and its degree of implementation. Two possible explanations for this situation are:

- The tax administrations in scope of this study have not yet completed the implementation phase and some of the functionalities are still to be deployed. For example, RMS allows for online filing, but the SRA is still in the testing phase of this function; and
- There is a lack of progress within the modernisation project. It is important to realise that the scoring in table 6, does not say a lot about the ITAS, but probably more about the capability of the project to manage a smooth implementation. The more complex an ITAS is, the more expertise will be needed to implement it in a correct way. For example, Mozambique acquired quite a complex ITAS, but was lacking good business models to make the ITAS suitable for its processes.

While SIGTAS offers limited functionality in certain areas when scored on the ATO Capability Model, Senegal was able to deploy this fully. Logically these observations provide an indicator that highly complex software will be more difficult to implement, or simply that Senegal has been implementing new modules since 2006. It is an important lesson that having the proper conditions in place, that take into account the local circumstances, will help to achieve a successful ITAS implementation.

Beyond the technical aspects of the ITAS (what functionalities it has and whether they are implemented), several factors influence the successful implementation of the ITAS. The site visits were helpful in shedding light on this matter. These factors can be considered as the readiness conditions for a successful implementation of an ITAS. For more information about these conditions, reference is made to the next chapter.

Chapter 5

Readiness conditions related to the implementation of ITAS in a Tax Administration

This chapter looks at the impact of an ITAS implementation on a tax administration. The focus is not on how an ITAS helps the organisation, but on what should be organised within the organisation to create the conditions for a successful implementation of the ITAS. It starts with providing an overview of readiness conditions sorted by perspective: Strategy, Organisation, Project Management/Change Management and External. The chapter concludes with an overview of the readiness conditions of the four countries visited and an analysis per perspective.

5 Readiness conditions related to the implementation of ITAS in a Tax Administration

5.1 General impact of implementing an ITAS

It is a common opinion that an ITAS will make life easier, as it will substitute the majority of high volume manual work. Another expected positive effect, is that the control on an organisation will improve, once everything is computerised.

However, deploying and utilising an ITAS also includes some tough challenges, which are not limited to the implementation phase only. Consequently, from a managerial perspective the introduction of an ITAS adds extra complexity to the organisation. For the implementation of an ITAS on a high level, three stages are recognised:

- 1st stage is the Business Process (re-)design resulting in business requirements, which are the starting point for the procurement of the ITAS and the required consultancy
- 2nd stage is the realisation of business processes and the IT solutions to support them
- 3rd stage is the post-implementing and maintenance phase. Both the business process designs and the realised IT need to be maintained, to keep them synchronised with changes in strategy and legislation.

Each stage has its own readiness conditions, but the implementation of the ITAS as a whole also has generic readiness conditions. The readiness conditions have to be considered from the viewpoint of each stage and within each stage, the following perspectives on readiness are considered: strategy, organisation, project management/change management and external. In the next sections the readiness conditions are presented per stage and per perspective. They have been compiled following the site visits, by taking into account best practices in IT in general and in the tax area specifically and by drawing on the experience of the consultants.

5.2 Readiness conditions related to the stage of business process redesign, requirements of the Tax Administration and procurement

Regardless of the decision of the tax administration to either build an ITAS itself or to acquire a COTS, it is important in all situations to start the project with a comprehensive analysis of the business processes. This analysis should be followed by drafting the requirements for an ITAS implementation, on the basis of a business process redesign. Based on these requirements, the discussion on developing or purchasing, can start. Another important input for this discussion, is the availability of the capabilities necessary for a homemade solution or buying a COTS. It is expected that even in the situation of a homemade solution, procurement will be needed for tooling and additional consultancy.

5.2.1 Strategy

Alignment with the strategy of the tax administration

The selection of an ITAS must be in line with the overall strategy of the tax administration. For example, the objective of uniformly applying the law could imply computerising workflows to reduce or eliminate human interpretation of the tax law. The aim of improving taxpayer service could entail implementing a system with online electronic services, which are available to taxpayers 24/7. Similarly, the focus on non-compliance as part of an audit programme requires the introduction of risk scoring mechanisms. It is clear that different strategic objectives require different functionalities. Although a tax administration that is modernising may require them all, it may decide to implement the functionalities at different times. For example, the administration might have a strategic plan covering several years, starting with improving taxpayer services and finishing with more sophisticated risk mechanisms.

Alignment with the strategy has to be guaranteed before, during and after the acquisition stage of the ITAS, since it will guide the choice and sequence of implementation of the various features.

Alignment of the legal framework with modern practices

The utilisation of functionalities leveraging modern technologies can require a modification of the legal framework. For example, electronic filing requires that the electronic return is recognised as a legal document, with the force of law with a non-repudiation mechanism. Without the proper legal backing, such a feature cannot be introduced. Modification of the legal framework can be a lengthy process and has to take place before the implementation.

Availability of infrastructure and network

The availability of an infrastructure and network can have a substantial impact on the budget and the capacity of the project team and the IT department. A different work plan is required to implement the ITAS throughout the regions instead of in one central location. A decentralised deployment requires the availability of a regional network as well as the acquisition of hardware for regional offices and staff. It also means a bigger team of trainers, trainees, etc. The rollout strategy plan is part of the transition from the existing situation to the desired one. How the transition should proceed is input for the selection and acquisition stage, since it will influence the tender instructions to ITAS providers, as well as the resources required internally. In general it is not desirable to be in the situation too long, of running the new ITAS in parallel with the legacy one.

Availability of recurrent budget

Recurrent budget is important throughout the ITAS life-cycle and it is an important dimension affecting all stages. It should be noted that the involvement of donors at all stages is often a key ingredient for a successful implementation. A single donor involved over a long period of time can bring stability in the financing plan.

Too often ITAS implementations are viewed as a one-time project with no recurrent budgets. The consequence is that it is not possible to leverage what has already been implemented, to add new functionality, to deploy to additional tax offices, or to train new employees.

TCO Analysis

The analyses of the Total Cost of Ownership (TCO) of an ITAS, is a technique that can be used to determine which solution is the most profitable from an overall perspective. The TCO does not only take the acquisition costs into account, but also all the recurrent costs such as maintenance, required hardware, the expenditures related to the technological platform and the requirements for any new staff.

5.2.2 Organisation

Business process redesign and requirements

The implementation of a new ITAS has the potential to modernise operations fundamentally as it embodies best practices. Unfortunately, the lack of a business process redesign exercise is one of the most cited reasons for shortcomings of the implemented ITAS. A generally accepted paradigm is that business processes should be leading an ITAS-implementation and not the other way around. Process reengineering therefore already starts before realising the requirements. Before implementation, processes should be defined at a high-level. For example, does the tax administration want to offer a taxpayer service and if yes, what kind and what is it trying to achieve?

The importance of the next step is also often underestimated, which is the step of identification and description of business requirements. These govern the functionalities that will be introduced, as well as other implementation activities. Business requirements are often too general or vague, leading to confusion between the tax administration and the ITAS provider. Equally, very detailed business requirements are not advisable as well, as these could complicate the operational description of a given functionality. Business requirements have to be defined at the selection and acquisition stage and are part of the terms of reference of the tender documents.

Organisational structure redefinition

The implementation of a new ITAS implicates conducting tax processes in a more modern way. As a consequence, new tasks are created while some disappear and others are transformed. In turn, job descriptions have to be updated, which can have a significant impact on the organisation. Ideally, the organisational structure should be redefined before the implementation of the ITAS, as part of a general organisational strengthening effort. Realistically such an exercise effects the implementation, as the department gains a better understanding of the capabilities of the ITAS. In fact, the organisational structure should be dynamic and not static in time.

5.2.3 Project management and change management

Championship of the project

Even before the implementation of a new ITAS, it is obvious that it will have fundamental consequences on all aspects of tax management and therefore it is expected to generate a lot of resistance. It will be necessary to obtain the support of a champion very high up in the hierarchy of the organisation, as it lends credibility to the implementation and mobilises stakeholders that do not fall under the control of the tax administration itself. Logically, the head of the tax administration is the champion although some countries have chosen the Minister of Finance, as a clear signal.

Operational and effective project governance structure

A project governance structure has to be established, preferably before, but not later than during the selection and acquisition stage and throughout the implementation. Meetings should take place on a regular basis to address issues promptly, as they arise. Management by exception is normally not considered to be a best practice for this type of practices, because it does not show the required commitment of the responsible management.

Utilisation of a structured methodology for the project

Implementations often fails because the ITAS provider uses improper project management methodologies. Recognised and structured implementation methodologies, such as Prince2 or Project Management Institute (PMI), are necessary and the preferred methodology should be part of the tendering documents.

Active change management

As operations will change fundamentally, internal resistance is to be expected. Change management is therefore a key factor in the successful transformation of an organisation. A variety of activities can be conducted, such as: identifying the business units/stakeholders/staff that will be most impacted, delivery of workshops and internal communication activities.

Change management should start already at the selection and acquisition stage. Too often, staff only finds out about a new ITAS when the implementation is already well underway. When employees are involved at a prior stage, for example, during gathering the business requirements or when demos are given by the ITAS suppliers, resistance could already be addressed earlier.

Availability of business analysts

Business analysts are key in developing the needed internal capacity to carry out the implementation of the ITAS and the underlying changes. Business analysts are employees that understand the tax processes in combination with the utilisation of software. They are mainly concerned with the way the ITAS will be used from a process perspective. As a result, they play a predominant role in any business process redesign exercise.

Business analysts should be involved during the definition of business requirements, as part of the selection and acquisition stage of the ITAS. Later on, they should be paired with the team of the ITAS provider, so the required knowledge can be transferred.

Availability of project team

The implementation of an ITAS can have a time span of several years. It requires the mobilisation of significant materials and human resources. It also involves mobilising a variety of stakeholders, internal and external. Consequently, the tax administration should have a dedicated team assigned to the project, with sufficient authority to carry out its mandate and reporting directly to the champion of the project. The core of the project team should already be in place during the selection and acquisition phase.

Competences and capabilities of tax officers and managers

The implementation of a new ITAS often comes with new management techniques such as management by exception or result-based management. More fundamentally, a new ITAS impacts day-to-day operations using a software solution, which might be a substantial change for tax officers. The capabilities of tax officers and managers should be assessed during the selection and acquisition stage.

Availability of independent advisory services

The implementation of a new ITAS entails new practices. Internally, the exposure and knowledge of these new practices is often lacking. Hence, external and independent advisory services become relevant for three different reasons:

- To ensure that the implementation process is in line with best practices
- To ensure that the implemented processes are in line with best practices
- To provide the necessary skills, that are lacking in the organisation.

External and independent advisory services are required during the selection and acquisition stage (e.g. how to develop the business requirements) and during implementation (e.g. how to implement an effective taxpayer services unit).

5.2.4 External

Involvement of stakeholders

The implementation of an ITAS impacts other (parts of) organisations such as customs, treasury, the central bank, etc. In some cases, data is exchanged (e.g. VAT credits from customs to the tax administration) or revenues are reported in a different manner. To achieve a successful implementation, it is necessary to mobilise stakeholders that are not directly under control of the tax administration. Ideally, the involvement of all stakeholders starts at the selection and acquisition stage.

Communication campaign to the taxpayer community

ITAS are no longer limited to the back office of tax administrations. The implementation often comes with online services accessible to the taxpayer community. Additionally, as processes are modernised and changed, the compliance activities of the taxpayers are better defined and can be enforced. Finally, efforts to modernise revenue management brings more transparency and accountability. For all these reasons, there should be a communication campaign targeting the taxpayer community, as part of an ITAS implementation. The objectives are to communicate to taxpayers what their new responsibilities and roles are and what new services are available to them (electronic services, taxpayer service, unit, etc.). An additional, more general aim is to convey the message that the government

is indeed putting efforts in modernising revenue management, to improve the level of confidence that taxpayers have in the tax administration.

A communication strategy should be defined, planned and then executed throughout all stages of the ITAS project.

5.3 Readiness conditions related to the stage of realisation of an ITAS and business implementation

This stage is normally the most visible part of the implementation of an ITAS. Although it is becoming a general opinion that the stages of business process redesign, gathering the requirements and procurement, are probably more important for success, the focus of management is still mainly on the stage of realisation and implementation.

This is probably due to the fact that most of the budget is linked to realisation and implementation and the same applies to the duration of activities of this stage. It is important to realise that readiness conditions of this stage, need to build on the conditions shaped in the previous stage. If this is not possible, it will be a risk and cause delays during the realisation and implementation of the ITAS.

5.3.1 Strategy

Alignment with the strategy of the tax administration

Alignment with the strategy had to be ensured during the acquisition stage of the ITAS, since it will guide the choice and sequence of the implementation of the various features. This alignment has to be monitored and updated throughout the implementation, as well as afterwards. Post-implementation alignment is fundamental as the priorities evolve, requiring new changes to be realised in the ITAS.

Availability of infrastructure and network

During the stage of realisation it is important to permanently check the availability of infrastructure and network, as it will have a substantial impact on the budget and capacity of the project team and the IT department, to carry out the deployment of the ITAS. The scope should be extended to the infrastructure required for realisation and testing and also for the rollout to the offices.

5.3.2 Organisation

Business process redesign and requirements

Part of the implementation activities is detailing and documenting the processes, which are supported by the ITAS. As the ITAS is replacing a significant volume of manual activities, the ITAS functionality itself becomes part of the processes. For example, modern ITAS have workflow engines, which are defined based on the desired processes. An example of such a workflow engine is, that if a refund of more than US$ 5,000 requires two levels of approval, the engine will assign the case for approval to those users with the right level of authorisation.

5.3.3 Project management and change management

Championship of the project

Once the effects of the implementation of the new ITAS become visible, resistance against the change will increase. Especially the support of a champion, very high up in the hierarchy of the organisation, will become more important

then. If this support is lacking, the chance of success will decrease significantly, as the attention of project management will shift from realisation to communication.

Operational and effective project governance structure

The implementation of a new ITAS requires many decisions that will affect the direction of the project as well as how processes will be conducted in the future. Improper or delayed decisions can have far reaching impacts such as lower revenues.

Utilisation of a structured methodology for the project

When the project has chosen a proper implementation methodology, which is agreed with the ITAS provider, it is important to act accordingly.

Active change management

The change management activities that have started during the selection and acquisition phase need to get a follow up. Now that details become clearer, change management will be able to focus on a more detailed level of the impact by the new ITAS.

Availability of business analysts

As the business analysts understand the tax processes much better than the ITAS provider, it is important that both parties are paired with each other so the required knowledge is transferred both ways. To become independent from the provider it is important that the team of the ITAS provider transfers knowledge to the business analysts, about the functional utilisation of the software.

Availability of agents of change

Agents of change are often managers and future super-users within the tax administration. They are internal champions at an operational level, mobilising other staff members to adhere to the transformation of the organisation and the new ITAS. They often bring credibility to the implementation as they are involved in day-to-day operations. The identification of agents of change should take place at the onset of the implementation stage.

Availability of trainers

The utilisation of a new ITAS combined with new processes and new job descriptions, requires substantial training of employees. Consequently, it is important that the tax administration develops an internal capability of training and trainers.

Availability of project team

The core of the project team should already be in place during the selection and acquisition phase and will grow in size throughout the implementation phase.

Competences and capabilities of tax officers and managers

The implementation of a new ITAS involves an impact on day-to-day operations, by using the software solution. The capabilities of tax officers and managers should be developed based upon their specific needs, during implementation.

Availability of independent advisory services

During implementation, external and independent advisory services are required (e.g. how to implement an effective taxpayer services unit), but it could also be very effective to assign them the role of independent quality assurance (QA). If Independent QA is an ongoing process from start to finish, which will help in discussing measures to get back on track. An independent QA consultant should review the whole scope of business needs, process redesign, IT realisation and business change and last but not least, needs to make recommendations on how to organise a project. Advice should be given in a proactive way, instead of reporting about failures afterwards.

5.3.4 External

A tax administration will never act as an isolated organisation and interaction with external parties is a common practice. Contacts with taxpayers is obvious, but also (commercial) banks, treasury and other (semi-) governmental organisations are crucial stakeholders for a well-functioning tax administration. The introduction of ICT opens a new world of exchanging data, which can be used for improving compliance and audit.

Involvement of stakeholders

As the implementation of an ITAS impacts also other (parts of) organisations, it is important that the involvement of all stakeholders stretches throughout implementation. This will increase the level of acceptance, but the realisation of interfaces to the applications of these stakeholders also requires both managerial and operational cooperation.

Communication campaign to the taxpayer community

The communication strategy defined and planned at the beginning of the project, must be executed throughout all stages of the ITAS project.

5.4 Readiness conditions related to the stage of post-implementation and maintenance

This stage has the longest duration of all three, as this is the stage in which the ITAS will be used in the daily operations of the tax administration. From a business case perspective, this is the period in which the intended benefits of the ITAS implementation can be harvested. It is rarely explicitly stated, but when an IT solution is implemented, it has become an essential part of the operational processes of the tax administration.

Due to the fact that operational processes and legislation are changing all the time, the ITAS has to change too. Another important observation is, that when an organisation reaches a higher level of maturity, this will lead to an additional demand for changes and consequently, a necessity to improve the ITAS used. As a result, both the business processes and the implemented ITAS need ongoing maintenance. When a maintenance organisation is in place, it is possible to manage all these changes in small steps and thereby guaranteeing continuity, instead of having a large project every 5-7 years with a huge impact on the organisation.

5.4.1 Strategy

Alignment with the strategy of the tax administration

During the post-implementation phase it is fundamental to have alignment with the strategy, as the priorities evolve, which will require changes to the ITAS.

Availability of infrastructure and network

The availability of a suitable infrastructure and network are important for the use of the ITAS. In general, the life-cycle of the required infrastructure will be much shorter than the ITAS itself. Newer versions of the ITAS may require upgrading of the infrastructure. For these reasons, it is important that the IT department already starts in an early phase with life-cycle management of the needed infrastructure.

Availability of recurrent budget

Too often ITAS implementations are viewed as a one-time project with no recurrent budgets. The consequence is that it is not possible to leverage what has already been implemented, to add a new functionality, to deploy to additional tax offices, to train new employees, or to meet any subsequent extra costs. It is therefore important that already during the realisation stage, also a maintenance organisation is established. If such an organisation is not available, the impact is that all investments done in the previous stages, will lose their value for the organisation very quickly. Consequently, the availability of recurrent budget is crucial.

5.4.2 Project management and change management

Active change management

Even in this stage when the implementation seems to be finished, change management is still very important. Besides "after sales", the group of users can increase as a consequence of extending the rollout. In this stage also new functionality can be added to the functionality, which was part of the initial project delivery.

Availability of business analysts

After the project is closed, the ITAS provider will often stop its activities. From a functional perspective, the business analysts are the ones who guarantee the continuity of system support in-house. They are capable to do this by having the knowledge of both the tax processes and the utilisation of the software.

Availability of agents of change

It is important that agents of change will stay part of the organisation, as changes will still be realised after the implementation, although less frequently. The time they need to spend to this role, will decrease.

Availability of trainers

The utilisation of an ITAS combined with the processes requires continuous training of employees throughout the life-cycle of the ITAS. The target group will become more diverse than it was in the project stage. This has consequences for the training to be given, namely refresher courses and training for new employees, or employees who change positions.

Availability of project team

When the project is closed, some of the resources that were part of the project (e.g. business analyst), need to be placed on permanent positions, to ensure continuity of support to the ITAS.

5.4.3 External

Communication campaign to the taxpayer community

The communication strategy as defined and planned at the beginning of the project, must be executed throughout all stages of the ITAS project. When the project is closed, it is important that the communication in relation to the ITAS, becomes part of the standing organisation.

5.5 Readiness conditions related to the IT department

The IT team needs to acquire the knowledge, skills and capabilities to support the implementation of the ITAS. The scale of the required capabilities is subject to numerous factors. For example, an implementation with a regional deployment requires a larger IT team and specific competencies with network administration. Similarly, if the selected ITAS uses a technology that is unknown to the IT team, then training will be necessary.

The capabilities of the IT department should be reviewed during the selection and acquisition stage. Based upon this analysis, the capabilities should be improved during the implementation stage. Depending on the decision whether the tax administration is to maintain the IT environment itself, training and knowledge transfer has to be part of the project.

5.6 Key findings

As indicated in the introduction of this chapter, the impact of an ITAS implementation on a tax administration is not only linked to the benefits, but even more importantly, to how a tax administration needs to organise itself, before, during and after the implementation. As mentioned in the previous sections, the readiness conditions are crucial for a successful implementation and for that reason they can be considered preconditions.

5.6.1 Scoring on the readiness conditions for ITAS implementation per country

Based upon the conditions as described in the previous sections, it is possible to define a readiness score per country, in scope of the in-depth analyses in chapter 4.

Table 7: Readiness of each country for ITAS implementation

Readiness Condition	Mozambique	Peru	Senegal	Swaziland
Strategy				
Alignment with the strategy of the tax administration	3	0	3	3
Alignment of the legal framework with modern practices	2	2	2	3
Availability of infrastructure and network	1	2	2	3
Availability of recurrent budget	3	0	3	3
TCO Analysis	0	3	0	3
Organisation				
Business requirements definition	0	0	2	2
Organisational structure redesign	2[11]	0	2	0
Business process reengineering	1[12]	0	2	1

[11] The organisational structure redesign happened before the e-Tributação project started, so it was not part of it, but it happened as fulfilling a precondition

[12] As explained in section 4.4.1 this activity happened, but was not executed before but during the realisation of the ITAS

Readiness Condition	Mozambique	Peru	Senegal	Swaziland
Project Management and Change Management				
Championship of the project	2	0	3	3
Operational and effective project governance structure	3	3	2	3
Utilisation of a structured methodology for the project	3	3	2	3
Active change management	1	0	1	3
Availability of business analysts	3	3	2	0
Availability of agents of change	2	3	1	3
Availability of trainers	2	3	2	2
Availability of super users	0	3	2	0
Availability of project team	3	3	3	3
Competences and capabilities of IT team	1	3	1	0
Competences and capabilities of tax officers and managers	1	2	2	2
Availability of independent advisory services	3	3	3	3
External				
Involvement of stakeholders	0	3	2	0
Communication campaign to the taxpayer community	3	3	2	3

Key for readiness table

0	Does not meet the readiness criterion
1	Barely meets the readiness criterion
2	Meets the readiness criterion with some limitations
3	Fully meets the readiness criterion

The following sections present some examples relating to the readiness conditions. The objective is not necessarily to explain each result, but simply to highlight some of them with concrete observations.

5.6.2 Strategy

All the organisations under study show a tight alignment between the ITAS implementation and the strategy of the tax administration. While this is a key readiness condition, on its own it is not enough to yield comprehensive results. In fact, the ITAS implementation often serves the definition of the strategy, which may explain why in all cases, the strategy of the tax administration is aligned with the ITAS.

Regarding the legal alignment, the results vary, mostly because of the complex processes necessary to pass a law through parliament. Political factors are important, Mozambique for example stated that it could count on the full support of its Parliament. During the ITAS implementation project, Senegal succeeded in enacting a law, integrating modern principles such as compound interest into its legal framework and configuring the ITAS accordingly.

The infrastructure for the deployment of the new ITAS, varies from country to country and is sometimes incoherent. For example, Swaziland has sufficient hardware and a fairly reliable network, but some regions in Peru currently have unreliable connectivity. Mozambique still has a significant number of offices that do not meet the infrastructure requirements. As for Senegal, unstable electrical supply in remote district offices has created difficulties for the rollout. This consequently led to the misinterpretation among some tax officers that the network connection problems resulted from the functionality of the ITAS.

With the exception of Peru, which is only starting its acquisition, all tax administrations indicated to have sufficient budget for the implementation and support of the solution, in the coming years. Nevertheless, utilisation of the total cost of ownership (TCO) tool, is poorly known. Although Swaziland carried out a TCO analysis during its ITAS implementation, it was not used to evaluate the various ITAS at the acquisition stage. Similarly, such an analysis was not conducted in Mozambique or Senegal and there are no plans to do so in the near future.

5.6.3 Organisation

Mozambique has not adequately defined its business requirements prior to the acquisition of the ITAS, which resulted into problems with the scope of the project, during the implementation phase. There seemed to be a disconnection between the business processes to be implemented and what the solution could offer.

Swaziland offers an interesting example on business process redesign. Business requirements were well defined, but no business process redesign exercise was conducted during the selection and acquisition phase. The consequence is, that while the ITAS is already implemented, Swaziland is trying to conduct its business process redesign only now. Although this exercise started too late, a disconnect was discovered between the ITAS and the processes of the SRA. Consequently, additional work is needed to modify the ITAS in such a way, that it fits the required workflow.

All four tax administrations indicated that they did not redefine the organisational structure as part of the ITAS implementation. However, in the situation of Senegal, significant reorganisation of the department has occurred in parallel of the ITAS deployment. This reorganisation consisted of the recent creation of the Medium Taxpayer Office (MTO) and of several new district offices. In Mozambique the organisational structure was redefined before the ITAS implementation, mainly based on recommendations from IMF.

5.6.4 Project management and change management

In all four countries, the implementation of the ITAS is spearheaded by a project team[13], with defined roles and responsibilities. This includes Peru that is currently in the inception phase for its new ITAS. All four tax administrations have indicated that they control the implementation by using committees. These committees are chaired by the head of the administration. In most of these organisations, the definition and role of a formal 'champion' varies.

The ITAS providers do not always utilise recognised implementation methodologies. In Swaziland, the ITAS provider used Prince2, while in Senegal the ITAS provider used an in-house methodology.

All countries indicated that one of the main challenges the tax administration faced, is a lack of knowledge and expertise to carry out a change management plan. The tax administration of Peru indicated that they will be seeking support for the future ITAS as they recognise that change management poses a major risk. In the situation of Swaziland it was indicated that retrospectively, they would have focused more strongly on change management and that this involves more than just training sessions. In Mozambique, even though the project just implemented the first module, they indicated that change management is a significant area of concern.

With regard to the availability of business analysts, the tax administrations of Peru, Mozambique and Senegal stated to have a team of full time staff assigned to this position. However, they were very concerned about the capability of the team. Senegal also observed a high turnover rate in the team of business analysts during and after the project. Swaziland indicated that, although having a team locally, the majority of work that needs to be done by business analysts, is outsourced to the headquarters of Data Torque in New Zealand. Outsourcing will increase the dependency of the supplier though, also in the future.

[13] The level of knowledge and competence of the members of the project teams was not analysed.

In Peru, Mozambique and Senegal all projects have internal trainers. In Peru, they are part of a government owned entity called INDESTA. In Swaziland, the development of trainers has not yet occurred and for now the project relies on the provider to take care of those services. There are plans in place to develop this capacity in the future.

Super users only exist in Peru and Senegal. Swaziland indicated not to have any of them and Mozambique indicated that there are officers with specific privileges to the taxpayer registration module.

All four countries indicated substantial difficulties with familiarising themselves with the required knowledge and skills in all required areas (IT technicians, tax officers and managers). They were working on resolving the situation, but they recognise it is a complex and long term endeavour. The lack of IT skills was a serious issue in both Mozambique and Swaziland and the approach to resolve the issue, was different. Mozambique delayed the training and hired external consultants, while Swaziland simply outsourced most of the technical work to its ITAS provider.

Finally, all four organisations have external and independent advisory services in place. Peru utilises the advisory services of the Inter-American Centre of Tax Administrations (CIAT), while Swaziland uses the services of independent consultants as well as Deloitte (South Africa), to both control the pace of the project and reengineer the business processes. Mozambique uses the services of the firm PBLQ (The Netherlands), which is delivering two tax administration specialists, funded from the common donor fund.

5.6.5 External

At present, Peru is involving stakeholders in the new ITAS. Swaziland is currently testing interfaces with other governmental institutions. Mozambique plans to have external interfaces, but has not yet started. An important issue to consider, is the way in which stakeholders are involved. Too often interfaces are left to other institutions to deal with and they fail to achieve their stated objective. Senegal provides a good example, as interfaces were developed but are not yet used, because the corresponding stakeholder was insufficiently involved and is not yet committed to enable the data exchange.

All four tax administrations organised communication campaigns targeting the taxpayer community. In all cases, tax administrations recognise that the importance of communication is often underestimated and needs to be substantially increased. Additionally, they recognise the necessity to have a coordinated and structured approach to communication, rather than being reactive.

Chapter 6

Overall conclusions and recommendations for Tax Administration as well for donors supporting ITAS implementations

This chapter provides practical recommendations for tax administrations considering a modernisation of their organisation which includes an IT reform, as well as for donors supporting these processes. The recommendations are structured in line with the different areas that are part of such a modernisation. Each section ends with a conclusion and related recommendations. The following topics are discussed successively: 1) impact of a new ITAS on the existing IT environment, 2) how the IT reform is embedded in the overall modernisation activities, 3) implementation strategy and support practices, 4) guidance in the make-or-buy decision, 5) guidance in relation to the procurement process, 6) risks and mitigation strategy in relation to this type of projects and finally 7) how to monitor whether the project has given value for money. The chapter is concluded with 8) some findings on the role of donors.

6 Overall conclusions and recommendations for Tax Administrations as well as for donors supporting ITAS implementations

It is important to be aware that the implementation of an ITAS within a tax administration is a complex and time consuming project. The main reason for this is that modernisation programmes involve much more than simply introducing new technology. Questions that need to be dealt with are:

- What kind of an organisation does the tax administration want to become?
- What should the interaction with taxpayers look like?
- What is the relation with the wider governmental strategy?

Once there is clarity about these aspects and the desired identity of the tax administration, new information technology is required to support the process of change.

The realisation and implementation of information technology is normally done via projects, established for this specific task. Different best practices, like Prince2, describe comprehensively the way projects must be structured and incorporated within the existing organisation. However, in reality, it is very difficult to work in line with these practices. This is not only the fact in developing countries, but all over the world. It can therefore not come as a surprise that that also in this study, omissions were found in the different countries analysed. Some of these omissions are related to the periphery of the project. Examples are a lack of commitment of senior management, a lack of mandate given to the project manager and the fact that managing a project is different from managing a line department.

Besides the external issues, projects have their internal pitfalls. In many cases the structure of the project is drafted well, but already after a short period of time, staff members tend to forget their roles. Also, project plans are too often regarded as a static document instead of a dynamic tool that helps to monitor progress of the project. Additionally, in the starting phase of projects, tax administrations often have the misplaced assumption that an external provider will solve all issues for them and that they only play a minor role.

All these issues are easy to detect, but not so easy to solve, because they are partly linked to the culture of the organisation.

Nowadays it seems unimaginable that an ITAS is realised without the support of external partners. This implies that for implementing an ITAS, procurement has to be done. The scope of the procurement will differ, depending on the make-or-buy decision. However, even in the case of a homemade ITAS, consultancies on different areas and IT tooling will be needed.

In the following sections the different areas, relevant for most of the ITAS implementations, will be discussed.

6.1 The optimal technical footprint and functional architecture of an ITAS

ICT is the most costly part of a new ITAS to be implemented. This is not limited to the ITAS as an application, but also to the required infrastructure as PCs, servers and network will require a substantial budget.

In addition, often non-ICT infrastructural investments are needed. For example, a datacentre building with air-conditioning and generators as a fall-back for unreliable electricity supply, is crucial to guarantee the continuity of support to the tax offices.

A so-called optimal technical footprint for the implementation of an ITAS varies from one tax administration to another and between one ITAS and another. In general, a large number of factors will affect the decision on which system should be selected. Prior to acquiring a new ITAS, these factors need to be considered fully as they will influence the needed budget and ultimately the choice of system. The following factors are important to take into consideration:

- In most tax administrations where an ITAS will be implemented, other software will be running on existing platforms[14]. In this situation a "preferred" platform can be a reality. Existing hardware and software can still have a technical or economical remaining lifetime. The decision to stop using them has impact on the project costs. Besides this financial aspect, also the available skills of current staff is an important factor. The experiences of these people is based on the existing (preferred) technologies. Acquiring an ITAS that is able to run on known technology, will reduce costs for training and will also use the remaining capacity of existing infrastructure.
- If an ITAS is chosen that is not able to run on existing or known hard- and software, it should be realised that knowledge and skill transfer will become an important activity during the realisation and implementation stage. These skills are needed during the realisation stage, but more importantly during the post implementation and maintenance stage. If these skills are not acquired during the project phase, a serious vendor lock-in occurs. When the required skills are not available locally, it might have to be procured internationally. The costs of support and training per type of platform can vary significantly, depending on how it is embedded in the ITAS, but also per region.
- During the selection of an ITAS it is important to realise that some of the ITAS can run independently of a platform, sometimes even on open source products. Other ITAS require a specific platform, which can result in specific hard- and software and related skills. All this will have an impact on the total cost of ownership and should be part of the business case, the terms of reference and the evaluation of the proposals.

Looking at the four tax administrations that were analysed in-depth for this study, it is observed that the above factors are often intertwined and influence each other. For example, in Swaziland management wanted a fast solution, involving minimal staff. In other words, their short term strategy was not geared towards building capacity internally nor was it to deploy to the regions. As a result, the tax administration selected RMS and outsourced all related maintenance and support activities to Data Torque, which is headquartered in New Zealand. Consequently, the project did not build its capabilities and if they do not take any measures, it will end up in a serious vendor lock-in.

The tax administration of Mozambique recognises that no assessment has been conducted, before the acquisition of Oracle's ETPM. This ITAS uses a modern technological platform and hence requires advanced skills, which are hard to find locally. This forced the tax administration to rely on a team of overseas consultants to initiate the customisation and implementation of the solution. In addition, it had to launch a training programme for its own staff, to become able to maintain the ITAS in the near future.

Most of the developing countries face a fundamental problem with the lack of communication infrastructure in remote regions, which primarily affects the connectivity. Nowadays, most of the ITAS products are browser based, which requires an internet connection between the local offices and the centralised datacentre. When a suitable internet connection is not in place, it requires an intermediate solution. In Peru, the tax administration was forced to have a separate server and database for the Iquitos region. There are plans to extend the fibre-optic network to that region, but these will not be deployed before 2016-2017. In Mozambique, 16 of the offices and all mobile offices will remain purely manual, due to the lack of regional communication infrastructure. This situation is aggravated by the fact that Oracle's ETPM, as a modern solution, requires a centralised server, meaning that regional offices have to be connected to the central system through a network. The alternative scenario chosen for these specific offices, is that all communication with taxpayers that was done by paper, will be transported to a computerised regional office, where they will be processed in the system.

[14] A platform is a combination of hardware and software (operating systems and data bases) that are needed before an ITAS can be installed.

Senegal is an example of a country, which did not have a preferred platform and the selection of the ITAS led the tax administration to embrace Oracle technology. Although no analysis was done prior to the acquisition of the ITAS, this has not proven a problem, as Oracle resources can be secured in the country. However, as a result, the IT team needs to invest time and effort in monitoring data and software quality and in finding and resolving issues accordingly, either by themselves or in collaboration with the ITAS supplier.

Conclusion and recommendation

In conclusion, the optimal footprint depends on the context in which the tax administration operates, its priorities, the already available technologies and the technological requirements imposed by the ITAS.

By making a business case in a very early stage of the project, the costs of the ITAS needs to be estimated and this is including all related technology investments. The necessity of a good analysis of the optimal technical footprint is based on the fact that it will be responsible for the most significant part of the required budget.
Having this analysis done will help in the discussions and decisions to be made, in the stage of procurement. As it is not possible to predict the future, it is preferable to have some scenarios based on different technology solutions. This will help to determine and compare the positive and negative impacts of each solution on a long term. When defining an optimal technical footprint for an ITAS, it is recommended that:

- An analysis is made of the current platform in terms of technical and economic status of its lifecycle;
- The level of maturity of IT staff is evaluated, in relation to the current platform;
- The availability is analysed of hardware and other essential equipment at remote locations;
- Any preferred technology platform, at the level of the tax administration and/or government, is identified;
- The availability of local supplies in relation to the preferred platform is verified; and
- At an early stage, the level of system maintenance required for the ITAS, is understood by the tax administration.

All this information is input for the business case that has to be made as part of the first stage of the project.

6.2 ICT reforms as part of the strategic plan of a tax administration

ICT reforms as an isolated activity are rare and doomed to fail. As an ITAS is embedded in operational processes of a tax administration, it is important to have a clear understanding of the strategy, vision and the way forward of the organisation. All this will be based on the corporate strategic plan and on its defined implementation.

A common pitfall is to consider the strategic plan as an academic exercise, or a request for technical assistance/new technology. Using the strategic plan as a guidance for all activities in a coming period, will give direction to new initiatives, programmes and new operational policies, including how they can contribute in achieving the desired benefits. Donors can play a role in relation to the strategic plan, namely by assisting the tax administration in preparing it.

The preparation of such a strategic plan can take many months, but the importance is that it will become the foundation for all future activities. The activities to create the strategic plan do not stop after the initial version is presented, simply because it should be considered as a “living document”. A decision to implement new IT solutions, can be the reason to reconsider the statements as previously presented in the plan. Doing this, it is important that as part of a holistic approach, the following considerations are taken into account:

- Reviewing timeframes to determine whether they are still realistic;
- Ensuring that all important components are included and sequenced appropriately;
- Confirming that capable and sufficient resources are available;
- Gaining a broad recognition of support for the strategic plan; and
- Checking that there is strong senior management support.

During the process of creating the strategic plan and elaborating it in a way that the required operational activities can be determined, it is advisable that the tax administration bases its activities and directions on best practices, wherever possible. This will help to reduce risks, streamline operations, reduce costs, realise revenues, improve taxpayer service and provide other less quantifiable benefits. The strategic plan should present the goals and objectives for each functional area of the tax administration, but also what the interaction with taxpayers should look like.

All this information will support in describing the expectations for the new IT system, including the impact on legislation and internal processes. A high level outline on how these changes will be accomplished, should become part of the strategic plan.

This is an important phase, in which donors should assess the financial and managerial capability of the tax administration to support the modernisation, including the IT solution that will support it. The assessment must cover the complete expected lifecycle. For example, a computerisation project is known to have failed, because there was insufficient budget for consumable items, i.e. paper and cartridges, to print receipts.

There is an ongoing discussion on whether officials should make a study visit to advanced IT solutions in western countries, to experience what a properly functioning system is capable of. The statement that the legislation of developing countries do not require such “sophisticated” solutions is open for discussion. The legislation in developing countries is often based on similar principles as in developed countries. This is the result of support by IMF, WB or bilateral support. As a result, the complexity of the legislation is more or less similar.

It is important to realise that the investments resulting from a strategic plan, like an ITAS, are investments with a long life cycle, probably far longer than ten years. The enormous speed of economic growth in developing countries impacts the required functionality of an ITAS, during the lifecycle of the product. This is causing a dilemma between what is needed in the short term and what is needed in the longer term. However, there are restrictions of limited budgets or reasonable timeframes. It all boils down to a timing issue of ”what can be realised when”, based on the growing needs of the tax administration. All involved parties need to realise that it will be a revolution rather than an evolution. As a matter of fact, the developing countries do not have the luxury to take 50 years for developing from a paper-based tax administration to a paperless one, as the western world did!

Taking the above into account, it is important to manage expectations when organising study tours. What is not needed today, can be needed within five years’ time. The main conclusion is that IT solutions need to be flexible and should be implemented in line with the growth or development of the tax administration, including its tax legislation, business processes, human resources issues, timeframes and the life cycle funding requirements.

Conclusion and recommendation

In conclusion, it is important to be aware that an ITAS is just an enabler for desired business changes and the strategy and vision of a tax administration are therefore very important. Both must give guidance to the activities of a modernisation project, if applicable including the implementation of a new ITAS. Modernisation of a tax administration is not about technology, but about behaviour, staff with adequate knowledge, fair legislation, integrity, interaction with taxpayers, making use of generic governmental investments and finally, effective and efficient processes.

The strategic plan and vision need to be clear before the tax administration can start its computerisation. Strategy and vision must describe the desired situation from a business perspective, but with a realistic assumption of how an ITAS should support the new organisation. Based on these documents, business processes can be designed on a high level, resulting in the requirements for acquiring an ITAS. These requirements are also a result of activities. It is observed that specifically the phase, which should lead to drafting the right requirements, is often missed. Another observation is, that the operational teams are not able to write the requirements down from a future perspective and/or in a structured way.

For this reason it is important that a business process redesign is part of the modernisation project, in line with the strategic plan and vision. When strategy and vision are not in place or not updated, it will hardly be possible to make a comprehensive design of the new organisation. Consequently, the results of the business process redesign will serve as input for the requirements of the ITAS to be acquired. Following this approach, will shorten the implementation timelines and create the ability to control the total cost of ownership. The whole process of creating new business designs is the starting point for business change management, as a crucial success factor of implementation.

Before designing a project for implementing an ITAS, it is strongly recommended that the following issues are satisfactorily addressed as part of a strategic plan, in order to enhance success:

- Sustained political commitment and support at the highest level;
- Competent, committed and dynamic leadership within the tax administration;
- A clear vision for the future state of the tax administration, with well-articulated strategies;
- The desired changes are scheduled in manageable increments, rather than a "big bang", as the latter will stretch capacity beyond limits;
- A plan and commitment to bring legislation in line with the reform proposals;
- Initiatives to develop executives, middle management and other institutional capacity;
- Adequate resources, funding and cash flow arrangements, all based on a business case;
- Accountability, based on corporate governance and management structures and processes;
- Good project management and budgeting processes, with appropriate external oversight and supervision;
- Staff and external stakeholder involvement and strong communication, from the start;
- Cohesion within the tax administration, between those developing and implementing reform and those performing current operations;
- Appropriate use of technical assistance; and
- An adequate plan to ensure ownership of the reform process throughout the organisation.

6.3 Tried and proven implementation and support practices

One of the main observations of the country evaluations is that considerable time and effort should be devoted “up front” to the examination of the business processes, before planning and tendering a new system. Without this prior examination, delays and budget overruns will most likely be the consequence. This risk is not unique for developing countries, but the impact is much more visible due to the lack of funding for remedial measures.

In Peru, the tax administration is in the early stage of planning the replacement of the current IT system, so it could still benefit from this approach. However in Swaziland, this critical examination only occurred after realisation had started. As a consequence, additional change orders had to be placed with the ITAS provider, presumably causing a cost escalation.

During the visits, one of the most important issues observed, was the apparent disconnect between the presentations made by the ITAS vendors and the reality of the necessary changes and system capability during implementation. During the pre-sales the vendors were overdrawing the possibilities of their product, or were not transparent about the possibilities of the ITAS and what additional tooling is needed, to cover the complete set of requirements. This poor expectation management by the potential providers led to a feeling of underachievement and dissatisfaction with the actual services delivered.

In Mozambique, the tax administration started the project without simplifying and redesigning its processes in a proper way, which is one of the reasons for delay during implementation. Interaction with the vendor to discuss expectations was far from optimal, so the desired results could not be achieved. Consequently, the tax administration hired external consultants on the business side, to mediate with the supplier and to introduce best practices on a business process level.

Another risk of a COTS, is that it does not fit in the geographical or organisational structure and procedures of the tax administration. Most of the ITAS are built, based on the principle "time-and-place independent". Time and place independent work implies that it is possible to process activities, independent of a specific location or business hours. If the tax administration does not allow this, adjustments in the ITAS are required. In Senegal for example, the cashiers for payments are organised geographically by office, even though a computerised system has the capability to process payments from any taxpayer, regardless of the location of registration.

For all tax administrations, change management is one of the most important issues. In the majority of interviews, respondents indicated that there was a lack of understanding of what change management is about. As a result, the tax administrations were not able to plan the needed activities effectively, leading to insufficient funding and time being devoted to this aspect.

Change impacts individuals and they need to know the consequences for their daily work and what is expected of them during the change programme. It is therefore important for staff to have transparency on how they will be evaluated and what success or failure will entail.

Conclusion and recommendation

Two preconditions are essential for the success of the implementation of an ITAS:

- A clear view on what is needed to realise the benefits of the modernisation, on both a strategic and an operational level
- A professional organisation that is able to realise the business processes and that is capable to implement the required IT solution, to support this.

Structure and procedures during the full implementation process are no guarantee for success, but without it, the chance of success will be reduced to almost zero.

Best practices in the area of project management, like Prince2 or PMI, will help to structure the project and the internal processes and procedures. It is often very difficult to work in line with these methodologies though. The reason for this is the lack of experience in the area of project management, on the scale of an ITAS implementation. Additionally, executive management often refuses to work according to the principles, by either not fulfilling their role or by not giving the required mandate to the project manager, for delivering the results.

It is crucial to have commitment from executive management and an intrinsic belief in the importance of the benefits, realised by the project.

Based on the observations and conclusions, the following is recommended when implementing a COTS solution:

- Before procurement starts, it is important to create a business process redesign based on best practices, instead of copying the existing situation;
- The business process redesign must result in requirements, that represent the expectations of the new system;
- The requirements are defined and documented in detail, as part of the tender process;
- Contact is made with other users that deployed the ITAS, preferably with a site visit to review the system expectations, versus the experience of an existing user;
- There is full awareness of the resources required for implementation and maintenance. This should include the number of IT staff and the skills they need to possess;
- The capability of the tax administration to effectively handle change management, is critically examined.
- External and independent advisory services should be procured, in order to oversee ITAS implementation; and
- There should be strong commitment from internal financing sources and donors regarding financing, including adequate contingency funds.

With regard to change management in relation to the implementation of a new ITAS, the following is recommended:

- The process of change management needs to start before the procurement process is launched;
- Senior management should be fully aware of what change management is and why it is important;
- Every level in the tax administration must be involved with the transformation of the organisation;
- Ownership needs to be created at all levels within the tax administration;
- A communication strategy needs to be developed for internal and external stakeholders; and
- A cultural diagnostic study needs to be undertaken, to determine the readiness of the organisation to adopt change.

6.4 In-house solutions versus off-the-shelf software

Once the tax administration has decided to implement a new ITAS and the requirements are clear, the next key decision is whether to build it in-house or to procure a COTS solution from a commercial provider. This decision is normally referred to as the Make-or-Buy decision.

In general, building the ITAS in-house takes a longer time than purchasing a COTS solution, as it has to be built from scratch. In addition, an in-house effort will inherently involve a higher risk, since the processes in a COTS system have presumably already been proven and they should also be aligned with best practices. The in-house option requires the tax administration to organise a major internal capacity for software development (including programmers, analysts, database managers and experts). This internal capacity also has to be retained during the life-cycle of the ITAS, though with a smaller volume. The decision to develop an in-house solution versus acquiring a COTS is often made on the basis of emotional, rather than objective criteria. These emotions are driven by previous experiences with internal or external providers. The following table provides an objective comparison between both scenarios.

Table 8: In-house solution versus COTS - benefits and limitations

In-house Solution	COTS
Benefits	**Benefits**
• Offers maximum flexibility in software features (if developed properly) • Can be tailored fully to the requirements of the tax administration (if developed properly)	• Offers a large set of features and functionality • Based on a sound structure and implementation of best practices • Possibility to rely on a vendor to provide assistance for future needs • Possible related software is available to add future functionality or to upgrade.
Limitations	**Limitations**
• Offers no reference for a tax administration with immature processes • Requires a larger development team than alternatives • No prior system documentation or user resources • Requires significant involvement of the user organisation, because the business process designs need to be detailed according to the user needs • Due to lack of business engagement and environmental challenges, significant delays and cost escalation can occur • Solution is often IT dominated and not focused on business needs.	• Depending on the volume of configuration needed, long timeline for implementation, resulting in a resource intensive project • If adequate evaluation criteria are missed during the tender, it can result in an unnecessarily complex product • Depending on the effectiveness of knowledge transfer, it can require expensive on-going vendor support • Extensive customisation will result in budget overruns • Extensive customisation increases cost of future vendor support • Implementation of a COTS system can be difficult in developing countries, because it usually requires availability of technical preconditions • Budget for maintenance is essential, otherwise the ITAS will be out of date already after a few years.

In-house Solution	COTS
Conclusion	Conclusion
• In general in-house development is rarely appropriate for developing countries, often resulting in an incomplete, unsustainable and/or overly complex system • As a result of cost escalation on the IT side, the remaining budget and timeline for capacity building and change management, will decrease	• If available, COTS systems are usually the preferred option as they represent a smaller technological risk than an in-house built solution • A less focus on the IT aspects of the ITAS allows the tax administration to focus on the business related aspects of modernising practices (business process redesign, change management, capacity building, etc.).

Since the market currently offers a number of COTS solutions with varying sets of functionality, tax administrations have several COTS alternatives to in-house building. This may not have been the situation in the past, but in recent years various new ITAS COTS systems have become available. New parties are entering the market even today, but on the other hand, some of the current players cease their activities, like Crown Agents did in 2015. It is consequently uncertain how the continuity of support will be guaranteed.

Opting for a COTS does not mean that an out-of-the-box or turn-key solution can be implemented, without additional work to be done. All require some degree of modification to suit the needs of the specific tax administration. When evaluating a potential COTS solution as opposed to an in-house development, some basic factors must be looked at:

- The scope of the potential functionality of the solution. The more required functionality available within the COTS, the easier the implementation will be. This includes also the possibility to parameterise the ITAS, which results into a faster response to changes. Generally, if a COTS system satisfies more than 70% of the requirements of an organisation, it is the preferred option;
- The total cost of ownership should include the comparison of all costs of both scenarios of the Make-or-Buy options: acquisition, additional IT investments, operation and maintenance of the solution throughout the complete life cycle of the solution;
- The technological platform should be adequate to support new processes such as electronic taxpayer services. Such functionality is exposed to the web and is not secured by the firewall of the organisation. If a tax administration does not have the skills to ensure the security of web applications, it will need to acquire this specific expertise.
- The Make-or-Buy decision should not be based on what skills are available internally, but rather on what is required for the new processes, in line with strategy and vision. Most of the COTS solutions have a generic set of features embedded in the product, so specific expertise will not be needed, or at least in a lower volume;
- The results of a capability assessment done within the IT department can dictate the Make-or-Buy decision. Indeed, the “Make” option requires major software development, calling for substantial IT capacity in several technical areas (architecture, system analysis, programming, database management, etc.). Unless the tax administration is ready and able to heavily invest in its IT unit, the COTS system should be preferred; and
- Level of knowledge of best practices is crucial for either the Make-or-Buy decision. The implementation of a new ITAS is often an opportunity to realise the support of modern tax processes and to introduce new practices. These processes should be reflected in the ITAS. Consequently, building an ITAS in-house requires not only excellent software development capabilities, but also a full grasp of what state of the art tax processes are and how they should be translated into the software. In developing countries, this comprehension of state of the art practices is often lacking and therefore, the “make option” becomes even more risky.

Conclusion and recommendation

The discussion on whether an in-house solution is preferred over a COTS, or the other way around, seems to be a never-ending story all over the world. In general, IT departments overestimate their capabilities to develop a complex product as an ITAS. On the other hand, COTS providers often lack the profound understanding of the requirements of tax administrations in general and of the specific conditions in the country. The only way to end this impasse is to make a business case, in which both scenarios are analysed. This analysis should not be limited to financial aspects, but should also include non-tangible issues, such as improving skills of staff and potential impact on compliance of taxpayers per scenario. It is advisable that such a business case is made with the support of an external consultant, independent from the IT department and parties that have commercial relations with ITAS suppliers.

The following list of aspects should be taken into consideration when discussing the make-or-buy decision and the underlying business case:

- A comprehensive overview of costs and benefits of each scenario (In-House or COTS), must be considered in detail;
- If choosing a COTS solution, the following factors should be considered:
  - The available scope and functionality of the optional system, compared to the required functionality. This will indicate the volume of needed customisation;
  - The total cost to purchase the system and any subsequent support and maintenance contracts (total cost of ownership);
  - The underlying (required) technological platform, compared to what is already available within the tax administration; and
  - The existing capabilities of the IT department of the tax administration, to be able to maintain the system after the project phase.
- If choosing an in-house solution, the following factors should be considered:
  - The level of knowledge and understanding of state of the art practices within the tax administration;
  - The level of experience to translate these state of the art practices into a comprehensive set of business process models, that needs to be computerised;
  - The Total Cost of Ownership: The cost to design, build and maintain the system, including external consultancy in all phases of the project;
  - The underlying technological platform within the tax administration and how this relates to the new desired situation; and
  - The existing capabilities of the IT department of the tax administration to build and maintain such as system.

6.5 Methods for contracting consulting services and technical advice

6.5.1 Procurement vs legislation

Government procurement rules can vary widely per country. When a project is funded by donors the complexity of procurement will increase, as the procurement rules of a donor often become part of the procedures. Procurement rules of international donors are examined in many legal studies and are infused with complexity. In the home country of a donor, rules are further complicated by the WTO Agreement on Government Procurement. The purpose of this agreement is to ensure that national government procurement legislation, regulations, procedures and practices are more transparent and do not protect domestic products or suppliers, or discriminate against foreign products or vendors.

This combination of procurement rules can cause extensive delays in awarding a contract. Even when a mixture of rules is applied, potential suppliers experience a lack of transparency during the selection process, simply because they do not understand the evaluation criteria in relation to the products and services requested. Another issue is that the contract negotiation process may not be well-defined. Discussions about taxes are frequently part of these

negotiations. Additionally, suppliers often have had a negative experience dealing with a government, which is notoriously slow in paying for goods and services provided.

All of this makes potential bidders hesitant to submit an offer, resulting in the fact that tax administrations do not receive the best fitted solutions in price and effectiveness.

6.5.2 Scope of the products and services to be procured

Besides the formal aspects, it is important to acknowledge that the procurement of an ITAS solution is in fact not only about the procurement of IT. The scope of the procurement is almost always about a mix of hardware, software licences and consultancy. It is critical to find the right balance between these components. Often missing in the scope of procurement are the services and investments needed during post-implementation and maintenance. If the procuring entity will not be able to perform the post-implementation and maintenance activities and if these expenditures are not part of the tender, the whole modernisation is doomed to fail.

Furthermore, a disturbed balance between hardware, software licences and consultancy will result in an incorrect evaluation of the bids and finally in a failure of the project. Another aspect of procurement is that the team of the selected firm needs to integrate into the project. This means that culture, procedures and project management methodologies need to be harmonised, so one coherent team can be created. Although it is difficult to make these aspects tangible, it will contribute to success or failure.

For the above reasons the procurement of an ITAS is a challenging activity, especially when the tender tends to a turnkey solution or a mixture of products and services. In these cases, the methodology of a competitive dialogue[15], can help. For the procuring party, competitive dialogue makes it easier to confirm that "all necessary elements" are in place before bids are submitted, resulting in more robust tenders. Active dialogue should prevent possible misinterpretation by either the tenderer or the client and hence cost escalation in a later stage. For bidders, the process provides a better flow of information, together with the opportunity to test the requirements of the client, through a progressive development of their proposal.

6.5.3 Technical support and the impact of how donors operate on the modernisation project

Another aspect that can have a negative impact on success of a project, is when several donors are active in one modernisation programme at the same time. If multiple donors pursue parallel tax projects, it has maximum potential for fragmentation, inconsistency and elevated transactions costs. Nonetheless, some aid agencies favour stand-alone arrangements, as some recipients do. In countries where one bilateral tax programme is dominant, co-ordination is not much of a problem. The bigger issue is the need for co-ordination in establishing a coherent division of labour, when multiple donors choose to support the tax system.

The reason for this is that a tax process, in general, is a so called chain of processing, from the moment a taxpayer hands in the tax return, to the moment the taxpayer fulfils the related financial obligation. This chain is an integrated process. If individual links are funded by different donors it can lead to diverse solutions, simply because each link needs to be tendered separately or needs to be realised through a dedicated project. Realisation of a processing chain needs to be planned, according to a logical sequence[16].

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[15] The process of "competitive dialogue" allows the procuring party to discuss different options with bidders before selecting a solution. It can only be used in certain particularly complex contracts, where technical solutions are difficult to define or where discussion of the best legal or financial structure is needed. Normally, the competitive dialogue procedure can only be used when the open and restricted procedures are not suitable for the procurement. Note that the "competitive with negotiation procedure" also allows dialogue with bidders, prior to submission of final tenders.

[16] See also OECD (2012) "Tax and Development: Aid Modalities for Strengthening Tax Systems".

Even worse than a lack of donor co-ordination is the tendency of donors to push certain products, without having a good understanding of what is needed, based on a decent analysis of requirements. In general, this is very ineffective and therefore also very inefficient.

Conclusion and recommendation

There is no "best" approach to conduct a major tax reform or implementing a new ITAS. Consequently, donor programmes should be customised to fit country-specific economic, structural, cultural and political conditions. Although the emphasis of a project may be on computerisation, a more holistic approach is highly recommended as the quality of the tax system, that encompasses both tax policy and tax administration, is one of the pillars of state-building and good governance.

Worldwide, the cost of acquiring computer hardware has decreased dramatically, but in the developing countries they are still significantly higher than in the western world, as a result of transport and import duties. Even with these decreasing costs, some countries struggle to afford and maintain hardware. The cost of a modern data centre and the software that runs an ITAS, are still expensive. There are technical solutions such as turning to the private sector to lease space in a world class data centre, but there are possible legal impediments. For example, tax legislation almost universally contains secrecy provisions and for governments it is a sovereignty issue that tax data remain in the country. The creation of a shared data centre on a governmental level, could be a solution. This will reduce costs and it will also make optimal use of scarce expertise.

Once an ITAS is acquired, the ongoing operational IT support is expensive. Countries often do not address their in-house human capacity issues. Wages are either too low to attract the necessary talent, or this talent might not be available. Foreign assistance from commercial vendors does not offer a solution, as many countries consider this to be too expensive due to airfares, accommodation and what they consider, high fee rates. The result of a lack of appropriate technical support will be, that the IT system is losing its solidity, is plagued with problems and the revenue of the country becomes a risk.

When considering different methods, through which consulting services and technical assistance are contracted, it is recommended that:

- Recipient government procurement rules are analysed carefully as they vary in developing countries and can often cause extensive delays in awarding a contract;
- The procurement and selection process needs to be rigid and transparent;
- Contract dispute and resolution processes need to be well defined;
- In large procurement cases, the procurement processes of donors should be used rather than the ones of beneficiary countries, if possible;
- Any donor bilateral support needs to be closely coordinated with other support, to avoid duplication of effort;
- Donors should refrain from pushing IT solutions that are not based on a decent analysis of requirements;
- Twinning programmes should be developed in order for countries to share experiences;
- Donor programmes must be customised to fit country-specific economic, structural, cultural and political scenarios; and
- A holistic approach needs to be adopted – ITAS implementation needs to be part of wider tax administration and policy reforms.

6.6 Other risks and associated mitigation strategies when implementing an ITAS

Implementing an ITAS is a project with risks, identical to any other modernisation project, in which an IT solution is involved. For this reason some generic risks, including the mitigation strategies, are presented in the following sections. During the phase of the in-depth country analyses of this study, many of the listed risks, became a serious issue. In fact, all the risks mentioned are linked to the readiness conditions as discussed in chapter 5. Not having these conditions in place at the right time, automatically results in the risks presented.

6.6.1 Lack of skilled staff

Each stage of the modernisation process, including ITAS implementation, will require sufficient capacity and capabilities within the tax administration. In practice it is often clear that there is insufficient internal capacity to cope with the challenges that the ITAS imposes. Depending on the stage of the project, these shortages will become visible in the area of IT, business analysts, tax officers and managers alike in the respective areas of expertise. Before the start of the project, human resource planning is therefore crucial, but also as an ongoing process in all other stages of the project.

When gaps occur during the resourcing process, the following mitigation measures could help:

- For permanent positions, the tax administration should identify local staff and provide them with training, even if this implies sending them abroad to complete technical certifications; and
- For temporary positions such as consultants, the tax administration should pair them with local staff in order to ensure a maximum transfer of knowledge.

6.6.2 Loss of trained resources

When an organisation invests in the capabilities of its staff, the result is that the value of the individual staff member increases. These employees, trained in specific skills, find better paid jobs in the private sector or they make a next step in their career within the tax administration. Although frustrating, it is a fact of life in all organisations. It is important to explore why people make a next step. There are many positive and negative triggers for people to make a change in their career. When working conditions and salary within the public sector, are not aligned with the realities of scarce IT resources, it can be one of the reasons for a high turn-over in staff.

Measures to mitigate these risks are:

- Be aware that trained people will change from position easier, so when calculating the number of training participants, include this effect in the number of staff to be trained;
- Offer employees conditions and a salary that can compete with the private sector, to avoid losing them, once they are trained;
- Create career opportunities within the tax administration or government for business analysts, database administrators and other specialist positions, with a more attractive responsibility and remuneration; and
- If the high turn-over of staff is not related to a specific group, it is important to do a culture-check within the project. There might be problems between management and staff, which have to be resolved to keep staff committed to the project.

6.6.3 Unrealistic planning

The implementation of an ITAS is a complex process and too often executive management has unrealistic expectations in terms of how fast the solution can be deployed. In some cases there are time restrictions for the funding of the project by donors. If these restrictions are becoming leading in the planning of the project, it will jeopardise the implementation as a whole and will ultimately reduce the return on investment.

Because inadequate planning is related to unrealistic expectations, it is important to manage these expectations. This will mitigate the risks in the planning area and the project plan can be made based on the products to be realised and the related effort. The following activities will support this process:

- During the ITAS selection and acquisition stage, due diligence to other countries that had similar projects and workshops on large IT projects, should be ensured. The participants should include upper management, as they are the ones setting the expectations;
- The involvement of third party advisors that have participated in similar projects, can also be a good risk mitigation strategy, as they can provide examples of potential hurdles; and
- Project plans should have clear deliverables and milestones. The plan should be based on a work breakdown structure (WBS). In project management, WBS is a deliverable-oriented decomposition of a project into smaller components. A WBS also provides the necessary framework for detailed cost estimating and control, along with providing guidance for schedule development and control.

6.6.4 Inaccurate information from legacy system/methodology

One of the main reasons for starting the implementation of an ITAS, is that the existing situation does not support tax administration activities in an adequate way. In almost all situations the impact is, that the existing data is of poor quality. This inaccurate information from the legacy systems can jeopardise the proper utilisation of the new ITAS. Migrating data from the legacy systems to the new ITAS is a delicate activity, which needs to be prepared in a proper way, as the migrated data will be the starting point of the new situation. The principle of "rubbish in – rubbish out" is a serious risk.

The following mitigation activities will reduce the risks of data migration:

- In an early stage of the project, an analysis should be conducted of the data quality in the legacy system. It is too often assumed that data will be converted or the conversion of data is forced, without considering its quality;
- When the quality of data is too poor, it is better to start without a conversion;
- When it is decided to have a data conversion, the project should structure a sub-project specifically aimed at cleansing legacy data, prior to the conversion; and
- Before the converted data is loaded in the live environment of the new ITAS, a dress-rehearsal[17] is required. Based on the assessment of the results of this activity, executive management has to give the final go, before the conversion of data in the production environment can start.

6.6.5 Lack of funding for maintenance and post-implementation phase

In this study, this risk has already been mentioned several times, as it is one of the most important reasons why the initial investments do not result in the expected benefits. The maintenance of processes and its supporting ITAS, triggered by new insights or legislation, are crucial to generate the desired long term benefits. These post-implementation changes also have impact on training and communication. Both tax administrations and donors underestimate the consequences of a lack of funding to finance these activities. As a result, new functionalities cannot be deployed, new patches on the core system or additional tooling are not integrated and the overall knowledge and hence utilisation of the ITAS, decreases with time.

[17] Ideally, a deployment plan including a migration of data, should be tested in an environment that is a replica of the live environment. A factor that can increase the organisational requirements of such an exercise, is the need to synchronise the data in the test deployment environment with the data of the live environment, with minimum disruption to live operation. This type of testing is commonly referred to as a "dress rehearsal".

To avoid this risk, it is important that the costs of maintenance and post-implementation are part of the business case at the moment of the initiation of the modernisation project. The following mitigation activities are recommended:

- A business case needs to be made for the entire life-cycle of the solution, based on a total cost of ownership analysis;
- Funding for this entire life-cycle should be considered at the onset of the ITAS selection and acquisition stage;
- If donors are not willing or capable to finance the post-implementation stage and maintenance, it is important to verify the commitment and financial capability of the beneficiary government, to finance it; and
- Planning of the transition between the implementation and the post-implementation phase should be done carefully, to ensure momentum is not lost and required resources are allocated.

6.6.6 Lack of business process redesign exercise

Too often ITAS implementations are started as IT projects and are implemented without business process redesign. The assumption that an ITAS is able to guide a modernisation process, is a misunderstanding about the role of IT in an organisation. Modernisation of a tax administration is not about technology, but about behaviour, staff with adequate knowledge, fair legislation, integrity, how to interact with taxpayers, how to make use of generic governmental investments and effective and finally efficient processes. All this provides input for the business process redesign that should be conducted, before a selection of the most appropriate ITAS can take place. If this exercise does not happen in a proper way, it will lead to a major disconnect between the business processes and the ITAS, hence creating discrepancies and a variety of interpretations of how to conduct a process or interpret data, etc. This ultimately leads to poor data in the system and underutilisation of the ITAS.

For this reason a business process redesign can mitigate the risks by using the following recommendations:

- The business process redesign exercise should be conducted during the selection and acquisition stage and subsequently during the implementation stage, to streamline processes and to ensure that the revised processes are reflected in the ITAS;
- Once the mapping and reengineering is completed, any change to the procedures should be registered and the documents should be adjusted accordingly, prior to implementation of the ITAS;
- The changed processes should be documented in working instructions, which are available to the officers that conduct the processes. These instructions should be as explicit as possible to avoid misunderstandings;
- Documents should always be approved by the management of the tax administration in order to formalise them.

6.6.7 Poor change management

The tax administrations in scope of this study indicated that one of the main problems they face, is the lack of knowledge on how to change the work paradigm within their existing workforce. In other words, while a new ITAS is deployed, change did not occur in the way the employees thought about their work. This in turn, creates resistance and leads to underutilisation of the ITAS. Although change management promotes the involvement of end users as early as possible in the process of change, this also entails a big risk. As these officers have a leading role in the design of the new processes, in the worst case scenario the ITAS could be configured according to the processes that existed in the legacy situation. The following actions can be taken to mitigate these risks and to improve change management:

- Involve external consultants to discuss with staff the issues that they experience in their daily operations. Analyse the reasons behind these issues together with the consultants and try to find alternatives, integrating best practices;
- Engage staff early with change management workshops, allowing employees to participate in the definition of business requirements and other activities, in order to ensure internal buy-in;
- Determine the capacity of each officer and determine a transition path for his/her career;
- Identify and train agents of change and reward them publicly to compel other officers to join in; and

- Address resistance issues in a proactive manner, before they become a problem.

6.6.8 Lack of established project structures

As the implementation of an ITAS is a large and complex project, the lack of a skilled project team and a project methodology, results in the absence of a structure carrying the project. From a theoretical perspective, seven pre-conditions should be in place before starting a project:

a) Business case approved by executive management
b) Description of roles and responsibilities within the project
c) Understanding of the lessons learned from previous projects
d) A project plan including sourcing, based on products instead of only activities
e) Principles on how to control the project
f) Tolerances related to given mandates
g) Definition of the work that should be done within the project organisation.

Not having these pre-conditions in place will lead to the situation that decisions cannot be made and progress becomes difficult and dependent on staff, taking the initiative of making ad hoc decisions. To mitigate these risks the following activities are required:

- Start developing the project team (business analysts, super users, etc.) at the very beginning of the ITAS selection and acquisition stage and additionally identify a project champion, a project manager and a project governance structure; and
- Request for technical assistance or ask the ITAS provider to use recognised implementation methodologies such as Prince2, which may help defining the structures that should be in place to handle the implementation process.

6.6.9 Conclusion and recommendation

Starting a project like the implementation of an ITAS, is a challenging activity. One of the main reasons why this is so difficult, is the simple fact that such a large and complex project, only appears once every fifteen or twenty years. As a summary of the previous sections, it is recommended that appropriate mitigation strategies are developed against the following risks:

- Lack of skilled staff – capacity/needs assessments and skills audits should be undertaken to ensure the right staff is employed in sufficient numbers;
- Loss of trained resources – introduce appropriate incentives to ensure trained staff remain within the tax administration;
- Unrealistic planning – detailed planning must take place prior to system implementation, using lessons learned from other countries;
- Inaccurate information from legacy system – the quality of existing data needs to be analysed before it is transferred to the new system;
- Lack of funding for support and maintenance – sufficient funding should be provided to support the system after implementation;
- Poor change management – managing change correctly is key to the long term success of the ITAS;
- Lack of business process redesign exercise – business processes need to be reviewed alongside implementation of the ITAS; and
- Lack of established project structures – implement the ITAS using a recognised project management methodology.

6.7 Achieving value-for-money investments through ICT-based reforms

6.7.1 Type of benefits that should be assessed

The implementation of an ITAS as part of a modernisation project, requires significant funding by the tax administration and in many cases, donors. In the business case that has to be developed, both costs and benefits are estimated. To monitor if the assumed benefits are also realised, it is advisable to assess the benefits of the changed processes and the implemented ITAS. An example of how to monitor and assess the value-for-money (VfM) can be found in the three E's methodology of the UK Department for International Development (DFID). The three E's are:

- Economy - Input into the ITAS system;
- Efficiency - Capability of the ITAS to improve the speed and quality of previously manual processes;
- Effectiveness - Outcomes from utilising the ITAS system.

One criteria for ensuring VfM is the unit cost of software licences and the cost of external technical support and maintenance (staff days). The table in Annex I provides some other indicators that can be used to assess the performance of ITAS solutions.

The three E's methodology has an internally oriented focus. However, an ICT-supported reform can contribute to the realisation of a goal of good (financial) governance and can therefore have a lot of impact outside the tax administration. It is therefore important to bring in scope possible further benefits, as:

- Simplification of processes and procedures, which significantly reduce compliance costs for businesses and individuals;
- Improved taxpayer compliance, enabling the tax administration to collect a larger percentage of the collectable tax base;
- Increase the accountability and transparency of the tax administration;
- Make the tax administration more effective, which should lead to significant increases of tax revenues; and
- Minimise the risk of unavailability of the systems, as a result of repeating system failures.

6.7.2 The way benefits can be assessed

In practice, it is often difficult to assess the benefits of an envisaged project.

Establishing the standards to be achieved and the means to monitor progress, should be the first step. This activity must be part of the strategic plan of the tax administration. When the standards are clear, the second step is to establish a baseline that constitutes the basis for future assessments. For example, improvements in transparency, simplification, better service and reduced waiting times can be monitored through a statistically representative survey of taxpayer attitudes and awareness of the tax system.

A generic observation is that organisations tend to direct their effort and resources to accomplish what is being assessed and conversely, effort and resources are shifted away from that, which is not being assessed. For this reason, caution is required during the process of setting performance standards and in deciding on how to monitor progress.

When monitoring the performance of the tax administration, all key tasks should be in the scope of this monitoring process. The evaluation of the monitoring results versus the standards set, should happen on a regular basis, with corrective actions being taken as required. Doing this is important to assess progress, not only for the tax administration as the main responsible party, but also for possible donors. A regular assessment is crucial as it:

- Ensures that the persons responsible for implementing the strategic or operational tasks are held accountable;
- Provides a management tool to assess the performance of units and individuals;

- Enables management (and donors) to objectively assess the need for corrective action, when goals are not being reached;
- Provides a mechanism for shifting the performance focus away from simple revenue measurements, like money collected, to all of the major operational issues and not only the computerisation; and
- Supplies objective information, which can be used to review and, if necessary, modify plans.

Defining criteria to monitor is not an easy task. Some general guidelines for defining the criteria are:

- Assessment criteria should not be too simplistic;
- Ideally, assessment criteria should cover both qualitative and quantitative aspects of the task; and
- The criteria should include:
    - Quantities or volume of output;
    - Quality of the output;
    - Timeliness; and
    - Monetary values.

When developing performance reports, the objective should not be to compile a comprehensive set of indicators but rather, to concentrate on a selected, small number, which are meaningful and can be produced with reasonable accuracy. The starting point can be to determine the reliability of the data that is currently produced.

Choosing indicators and setting performance targets, will be affected by many factors such as: policy, governance, the stage of development, the state of the economy, taxpayer behaviour, the quality of the tax legislation, corruption and the effectiveness of the tax administration itself. For a developing country that is implementing e-filing as part of a new computerisation effort, it may for example not be realistic to set a 90% e-filing target. If the target is set too low, it might be too easy to achieve and the tax administration could perform below potential. If it is set too high, it may be demoralising to staff, especially if the target is impossible to achieve, due to challenges that are beyond its control.

The most commonly chosen high level indicator is the Tax-to-GDP ratio, as an indicator of the tax system performance. This choice is based on the common availability of revenue and GDP data, however it is dependent on the measurement of GDP and the reliability and accuracy of recording revenue.

The effect on taxpayers, due to changes in procedures and computerisation efforts, is another indicator that is frequently used. Has there been a reduction in the burden on taxpayers, waiting at a tax office? Has the time been reduced to register a taxpayer, to file a tax return or to receive a refund?

Assessments are important to verify whether there has indeed been an improvement in the quality of information, such as the percentage of returns filed with errors. For example, if one of the main features of a new system is e-filing resulting in paperwork reduction, there are several indicators that may be important, including a reduction in data entry workload that could free resources. Typical performance indicators include:

- Total net revenue collected by tax type, compared to forecast;
- Total expenditures compared to approved budget;
- Ratio of costs to collections (multi-year to determine a trend);
- Filing and payment compliance rates (multi-year to determine a trend); and
- Taxpayer satisfaction surveys.

Other indicators can also be taken from the Tax Administration Diagnostic Assessment Tool (TADAT) that was recently developed by the IMF and several bi- and multilateral donors[18].

[18] See www.tadat.org for a full set of indicators of the assessment tool.

Conclusion and recommendation

For an organisation like a tax administration it is important to have an insight in its performance, both internally and externally. To assess the performance it is common to use a dashboard where the performance indicators are presented. These indicators will cover financial versus non-financial areas as effectivity versus efficiency.

Modernisation projects including the implementation of an ITAS, are often triggered by a poor or at least insufficient performance of the tax administration. On a longer term, the large investment should give a boost to the performance of specific areas, or to the tax administration as a whole. Before and during the phase of the project, an estimate of performance improvement is part of a business case. The outcome of this business case will show whether the investment is worth making, or in other words, if there will be value for money. If the outcome is positive, a project can start. If the outcome is negative, alternatives need to be examined.

Although a business case needs to be updated once and a while, it remains an estimate based on assumptions. It is therefore important that during and after the project has finished, assessments are done to verify if the assumptions and estimates are becoming reality. To make the improvements visible, it is essential to find out which of the indicators show an upwards trend in their scores. Depending on the type and scope of the modernisation project, additional indicators will be used, to present the score on specific targets related to the project.

If a tax administration does not make use of performance indicators, it is crucial to establish a baseline already in the earliest phase of the project. Baseline are crucial to make a useful business case. Without a business case, it will be much harder or even impossible to monitor and control the modernisation project.

To ensure value for money when running a modernisation project, including the implementation of an ITAS, it is recommended that:

- Measurable and achievable indicators are agreed at the start of the process, to monitor the performance of:
  - The (specific area of the) tax administration;
  - The ITAS after implementation; and
  - The contractor in the case of a COTS solution.
- Timescales for implementation should be agreed with contractors prior to commencement of work, with appropriate financial penalties for late delivery/poor performance.

6.8 Role of donors

Through desk-research and interviews, the main e-government donors were reviewed, with specific reference to ICT within tax administrations.

One of the findings is that few donors have a global strategy when it comes to ICT for tax administrations and that an integrated approach is lacking. Much of the ICT work that takes place is contained within larger tax and revenue administration reform programmes. It either focusses on the computerisation of administrative processes or support to general IT services within administrations. A mechanism for exchanging ideas and experiences between donors' country offices is lacking, which might account for the differing approaches to ICT in tax administrations.

Another observation is that there is a general shift to the procurement of standalone ICT systems for tax administrations, as beneficiary countries want systems to complement the already developed processes. This newer approach leads to increased influence of the system providers and tax administrations should be encouraged to take greater ownership of their reforms. This requires the tax administrations to be well organised and to have a good level of knowledge of the ICT systems and their limitations. One approach to effectuate this, is to involve an independent third party that oversees the implementation of the ICT system, on behalf of the tax administration and the donor.

A. Questionnaire for ITAS Suppliers

Adam Smith International & C2D Services Inc.	
Name of ITAS Solution	
Name of software development firm	
List of countries or jurisdictions where the software is implemented and still in use, ALL versions included	
List of countries or jurisdictions where the CURRENT version of the COTS version is implemented and still in use	

Functionality	Definition	Included	Description of specific system properties
Channel Delivery	Delivers products and services through channels in a manner that meets client needs while achieving revenue administration and government objectives. Includes capabilities to support content, document and records management of inbound and outbound material.		
Online	Supports interactive channels for the community, providing both static content and transaction services. Interactive channels include:		
	Portals		
	Web sites		
	Web services for integration into external applications		
	Secure messaging (email) services		
	Search services across web sites, and		
	Calculators		
	Other (please describe)		

Inbound	Supports predominantly non-interactive inbound channels for the community and other government agencies. Includes:		
	Inbound paper processing for forms and white mail, including image Capture, Optical Character Recognition and key capture		
	Inbound fax processing		
	Inbound bulk file and message handling		
	Secure messages from portals		
	Indexing, classification and routing of client requests		
	Inbound email (general email addresses only)		
	Automated inbound phone services for simple transactions		
	Key data capture for bulk forms that are not imaged.		
	Other (please describe)		
Outbound	Supports non-interactive outbound channels for the community. Includes:		
	Outbound material, including forms, letters and marketing/education material		
	Outbound delivery to paper, secure messaging, email and SMS channels		
	The naming, addressing, cc copying, merging, sorting, formatting, storing and printing of personalised mail items, and		
	Outbound bulk file and message handling.		
	Other (please describe)		
Contract Management	The enterprise functionality for initiating, approving, storing, maintaining and publishing approved content for informational, transactional, interpretative and correspondence products, including marketing and education material.		
Document Management	The Document Management capability provides the ability to store and retrieve electronic versions of documents and manage the retention and destruction of electronic records in accordance with legislative requirements.		
	Applies to client-related documents		
	Applies to administrative material (e.g. internal documents).		

Client Relationship Management	Delivers the right experience at the right time through the right channel.		
Contact Management	Provides client contact management services, in particular for the phone channel. Includes:		
	Interactive Voice Recognition (IVR) and Computer Telephony Integration (CTI) for staff-operated phone services		
	Integrated view of client, and		
	Tracking, recording, escalation and monitoring of client contact.		
	Other (please describe)		
Marketing and Education	Provides marketing, communication and education services, including:		
	Campaign management		
	Tax code integration		
	Other (please describe)		
Revenue Management	Enables clients (including tax intermediaries) to efficiently and effectively register, lodge/file and pay, and the revenue administration to recover the correct amount of tax and entitlement, whilst minimising the cost to the client.		
Registration	Provides client registration services. Includes:		
	Individual and non-individual registration		
	Registration and maintenance of tax professionals and all other intermediaries		
	Endorsement of charities and deductible gift recipients		
	Tax type/role registration and lodgement/filing cycle determination		
	Client data quality management		
	Client relationships and linkages		
	Client preferences		
	Client search		
	Identity strength		
	Data extracts for external agencies		
	Support for the privacy of sensitive taxpayers		
	Other (please describe)		

Generic Processing	Provides lodgement/filing and payment processing for all tax products, using a generic approach that can support new products. Includes:		
	Tax product business rule processing		
	Form generation		
	Instalment arrangements		
	Tax product risk processing		
	Generation of account postings		
	Generation of outbound communications (e.g. notice of assessment)		
	Payment processing		
	Other (please describe)		
Client Accounting	Provides account management services for all clients and all tax products. Includes:		
	Client account maintenance		
	Interest and penalty imposition and remission		
	Refunds and disbursements		
	Other (please describe)		
Revenue Accounting	Provides summarisation, reconciliation and reporting for revenue accounts. Includes:		
	Maintenance of revenue accounting information on an internal General Ledger		
	Providing users with direct access to revenue accounting information		
	Reconciliation of revenue accounts to bank statements, and		
	Reporting of revenue		
	Other (please describe)		
Debt and Lodgement	Identifies, creates and auto-actions cases where a client has either failed to lodge/file or failed to pay. Includes:		
	Initiate auto-recovery actions		
	Identify and create debt and non-lodgement case		
	Action debt and non-lodgement case		

	Process update transactions from data matching processes		
	Due date deferrals		
	Payment arrangements		
	Legal and prosecution details		
	Other (please describe)		
Case and Work Management	Delivers enterprise wide case and work management capability to support active compliance, provision of written advice, debt collection, actioning of inbound correspondence and exception processing.		
Enterprise Case Management	Supports enterprise-wide case management Includes:		
	Case management, assignment, tracking, administration and reporting		
	Case triggering including default assessments, amendments, penalty & interest, form letters, etc.		
	Update of case plans		
	Operational procedures' integration		
	Other (please describe)		
Enterprise Workflow	Supports enterprise-wide work management of exceptions from operational systems and triggering correspondence. Includes:		
	Work item creation		
	Work allocation		
	Work triggering		
	Work reporting		
	Escalation		
	Segregation of duties		
	Workflow administration		
	Other (please describe)		
Outcome Improvement	Provides feedback on the client experience, effectiveness of risk treatments and other enterprise information to continuously improve the operations of the revenue administration and provides input to Case Management and Revenue Management capabilities to ensure appropriate and relevant treatment according to risk.		
Analytics	Provides analytical models to support case selection and the risk and market segment treatment of clients. Includes:		

	Creation and maintenance of analytical models		
	Regular update of risk and segment information for operational systems		
	Provision of case selection candidates for processing		
	Other (please describe)		
Information Management Policy and Architecture	Information Management Policy and architecture covers the development of information models and the overall management of information within the revenue administration		
Reporting	Provides a corporate reporting capability including transactional, management and ad hoc reporting to support operational management and continuous improvement. Includes:		
	Report generation		
	Report distribution		
	Other (please describe)		
Data Matching	Provides services for matching and interpretation of data from multiple sources		
Data Services	Provides data quality and data conversion capability		
Data Warehouse Management	An integrated and centralized data storage and access capability organized specifically for end-user reporting and analysis		
Intelligence	Supports gathering, storing and interpretation of data from the community to assist in case identification and selection		
Plan and Manage Enterprise	Provides the management processes and structure for running the day-to-day business of the revenue administration.		
Workforce planning and Development	Development and implementation of workforce policy & plans to address resource supply & demand.		
	Learning needs analysis and development/procurement & delivery of appropriate learning products and solutions		
	Other (please describe)		
Employee policy and Services	Incorporates a wide range of services, including:		
	Employment policy & advice		
	Recruitment, personnel, appointments		
	Performance management		

	Industrial relations		
	Organisational health/workplace safety & health		
	Workplace diversity		
	Other (please describe)		
Accommodation management	Accommodation procurement & management		
Enablers	Additional capabilities that can be used by any of the other major functionality areas.		
Security	This capability ensures that corporate systems and data are secure from unauthorised access. Includes:		
	Security for internal systems to prevent unauthorised staff access		
	Security for external facing systems to prevent unauthorised access by clients		
	Logging of any unsuccessful attempts to access the systems by staff or clients		
	It also includes ensuring the security of the systems themselves from malicious or criminal attack, particularly from the public internet.		
	Other (please describe)		
Workforce Management	Provides management of the revenue administration‘s workforce, in particular focusing on the information required for workflow management. Includes:		
	Engagement and termination processing		
	Skills management		
	Holiday management		
	Other (please describe)		
Interaction Services	A system capability that provides the services, patterns and templates required to develop User Interfaces that comply with the revenue administration‘s User Interface standards, branding rules, legal requirements (e.g. adherence to the Web Accessibility Guidelines for the disabled).		
	Also includes fraud prevention and control logging		
	Other (please describe)		
Integration Services	A system capability providing all services involved in supporting integration between		

	the revenue administration's applications. Broadly this covers three types of integration:		
	Interaction layer integration – seamless in-context navigation between user interfaces in the applications		
	Service layer integration – standard Enterprise Application Integration		
	Data layer integration – replication of data between master and slave databases		
	This capability is also responsible for transaction audit logging		
	Other (please describe)		
Other ITAS Solution Evaluation Criteria			
Technical Specifications	Technical characteristics of the ITAS that secure the state-of-the-art technical backbone of the solution. Includes:		
	Effective access controls to identify and authenticate users (incl. a strong password for authentication)		
	Password expiration		
	Encryption of username and password		
	Encryption of sensitive taxpayer data		
	Secure audit trails on key data		
	Log of system activity		
	System audit controls (reversals only, no deletion of transactions through time)		
	Proven compatibility with an automated testing of new releases in a Staging environment		
	Multilingual capacity		
	Configuration management		
	Software version control		
	Patch management		
	Error handling / error messages		
	Performance: Throughput, expected Response time for queries and		

	updates		
	System Availability		
	Recoverability		
	Support for contingency planning (and for modern backup infrastructure as a minimum)		
	Availability of Data Flow Diagram		
	Availability of Entity-Relationship Diagram		
	Availability of a database schema		
	Application Data (storage in RDMBS vs in documents)		
	User-defined Fields (flex-fields)		
	Browser Based		
	Template-based open interface tables for data import		
	Standard Platform: Interoperability & Compatibility		
	Real-time, local (LAN)		
	Real-time, distributed (WAN)		
	Offline (Data Replication)		
	Interface with specialised hardware devices (e.g. bar code and document scanners, receipt printers)		
	Other (please describe)		
Maintenance & Continuous Improvement	Factors allowing for the protection of the investment in the IT solution through its constant maintenance and improvement. Includes:		
	Defect reporting mechanism		
	Issue or defect resolution tool		
	Maintenance and upgrades		
	User group forum		
	User improvement suggestions mechanism		
	Other (please describe)		

B. How to interpret the columns of the overview of the COTS

Is a COTS?	Specifies whether or not the ITAS is indeed a COTS solution. This is based on the definition of a COTS as described in 1.3.
Multiple Versions?	The ITAS might have more than one version implemented. This column has to be interpreted in conjunction with the previous column: A COTS that has multiple versions usually provides for an upgrade path A non-COTS that has multiple versions implies that no upgrade path exists. Rather, a new version is created for each new client, as well as for or existing, long-time clients.
Majority of Sites Using Latest version?	Is an indication that an active upgrade path is available to clients and that they do indeed successfully adopt it. From a technical point of view, having all clients on the same version is easier to maintain.
Overall Install Base	World-wide install base of the ITAS in both developing and developed countries. Takes into consideration that a province or state (such as a US state) is a separate site. An ITAS with less than 5 sites is considered to have a limited install base. Although this is not an indication of the quality of the software, it is an indication that the small number of clients is a limiting factor in the continuous investment in the COTS. Typically, maintaining a COTS requires a rather large number of clients amongst which the cost of the software (and of its continuous improvement) is spread (refer to 1.3 for the definition of a COTS).
In Developing Countries?	Install base specific to developing countries. Some solutions are implemented in developed countries. Knowing that the challenges in developing countries are different, is an indication of the awareness of the ASPs to these factors.
Use Third Party Integrators	Some ASPs implement their ITAS using their own team. Others strictly use third-party integrators or have a mixed approach of implementation with their team, combined with the use of third-party integrators.
Only Products in Revenue?	While all ASPs are software developers, some are general software developers where revenue management is only one field that they cater to and the ITAS is therefore just one product amongst many others. Conversely, some ASPs focus on only one specific field (revenue management) and therefore on, revenue management-related product. Note that 'revenue management-related' refers to the fact that some ASPs develop tax and customs systems. Since customs is also a revenue management system and shares some functional aspects with domestic tax management, it is considered as part of the same 'Revenue' specialty.
Specialty: Tax Administration or Software?	Refers to the specialty of the ASPs. Some ASPs consider the development of an ITAS as a piece of software. In these cases, the development is led by IT rather than tax professionals. This does not preclude them from having tax professionals in their teams. Conversely, some ASPs have a more important background in tax. Some even started in the field of tax modernisation and then moved into its computerisation, or offer tax modernisation services separately from the ITAS. In some cases, ASPs have both types of expertise. Note that this is applicable to ASPs and does not extend to third party integrators.

C. Comparison of the COTS surveyed with regard to the full ATO Capability Model

Functionality	Tax & Revenue Mgt.' Solution (Oracle)	GenTax (FAST Enterprises)	Freebalance Accountability Suite (Freebalance)	GesCoFisc (Consult Services Informatiques)	RMS (Data Torque)	iTAX (GIZ)	Revenue Premier (Revenue Solutions)	SIGTAS (CRC Sogema)	TAGDEER (Estarta Solutions)	Tax & Revenue Management (SAP)	eTax (Tax Mantra) (Tata Consulting)	TRIPS (Crown Agents)
Channel Delivery	Delivers products and services through channels in a manner that meets client needs while achieving revenue administration and government objectives. Includes capabilities to support content, document and records management of inbound and outbound material.											
Online*	3	2	2	1	3	0	0	1	2	3	2	3
Inbound*	3	2	1	0	3	0	2	1	1	3	0	3
Outbound*	3	3	3	0	3	2	3	2	2	3	1	3
Contract Management	3	0	3	0	3	2	0	0	0	3	0	3
Document Management*	3	3	3	0	3	3	3	3	3	3	3	3
Client Relationship Management	Delivers the right experience at the right time through the right channel.											
Contact Management	3	2	0	2	3	2	2	1	0	3	0	3
Marketing and Education	3	3	0	0	3	3	3	0	2	3	0	3
Revenue Management	Enables clients (including tax intermediaries) to efficiently and effectively register, lodge/file and pay, and the revenue administration to recover the correct amount of tax and entitlement, whilst minimising the cost to the client.											
Registration*	3	3	0	2	3	3	3	2	2	3	3	3
Generic Processing*	3	3	0	2	3	2	3	3	3	3	3	3
Client Accounting*	3	3	1	3	3	3	3	3	3	3	2	3
Revenue Accounting*	3	3	2	3	3	3	3	2	1	3	3	3

Functionality	Tax & Revenue Mgt.' Solution (Oracle)	GenTax (FAST Enterprises)	Freebalance Accountability Suite (Freebalance)	GesCoFisc (Consult Services Informatiques)	RMS (Data Torque)	iTAX (GIZ)	Revenue Premier (Revenue Solutions)	SIGTAS (CRC Sogema)	TAGDEER (Estarta Solutions)	Tax & Revenue Management (SAP)	eTax (Tax Mantra) (Tata Consulting)	TRIPS (Crown Agents)
Debt and Lodgement*	3	3	0	3	3	3	3	2	0	3	2	3
Superannuation processing	3	0	3	0	3	0	0	0	0	3	0	3
Case and Work Management	Delivers enterprise wide case and work management capability to support active compliance, provision of written advice, debt collection, triggering of inbound correspondence and exception processing.											
Enterprise Case Management*	3	3	1	2	3	3	3	2	1	3	3	3
Enterprise Workflow*	3	3	3	2	3	1	3	1	3	3	3	3
Outcome Improvement	Provides feedback on the client experience, effectiveness of risk treatments and other enterprise information to continuously improve the operations of the revenue administration and provides input to Case Management and Revenue Management capabilities to ensure appropriate and relevant treatment according to risk.											
Analytics	3	3	0	0	3	2	3	1	0	3	2	3
Information Management Policy and Architecture*	3	0	3	0	0	3	3	0	0	3	0	0
Reporting*	3	3	3	3	3	3	3	2	2	3	2	3
Data Matching	3	3	3	0	3	0	3	0	3	3	3	3
Data Services	3	3	3	3	3	0	3	3	3	3	3	3
Data Warehouse Management	3	3	3	3	3	0	3	0	2	3	3	3
Intelligence	3	3	3	3	3	3	3	1	2	3	3	3

Functionality	Tax & Revenue Mgt.' Solution (Oracle)	GenTax (FAST Enterprises)	Freebalance Accountability Suite (Freebalance)	GesCoFisc (Consult Services Informatiques)	RMS (Data Torque)	iTAX (GIZ)	Revenue Premier (Revenue Solutions)	SIGTAS (CRC Sogema)	TAGDEER (Estarta Solutions)	Tax & Revenue Management (SAP)	eTax (Tax Mantra) (Tata Consulting)	TRIPS (Crown Agents)
Plan and Manage Enterprise	Provides the management processes and structure for running the day-to-day business of the revenue administration.											
Workforce planning and Development	3	0	3	0	3	3	2	0	0	3	1	0
Employee policy and Services	3	0	2	3	0	1	0	0	0	3	1	0
Accommodation management	3	0	3	0	3	0	0	0	0	3	0	0
Enablers	Additional capabilities that can be used by any of the other major functionality areas.											
Security*	3	3	2	3	3	3	3	2	3	3	3	3
Workforce Management	3	0	3	3	3	2	0	0	1	3	3	0
Interaction Services*	3	3	2	1	0	3	1	2	3	3	1	3
Integration Services	3	3	3	2	3	2	3	3	3	3	3	3
Total	**87**	**63**	**58**	**44**	**78**	**55**	**58**	**37**	**45**	**87**	**53**	**72**

* Tax critical/core component/function

D. Analysis of each ITAS and ASP

This Annex analyses each ITAS and presents additional information on the ASPs. While not directly within the scope of the study, some insight on the ASPs and their capacity is gathered. The capability of the ASPs themselves can be used as:

- An indication of the sustainability of the ITAS through time, for example, the capacity for the ASP to generate revenue through licensing and hence invest continuously in the life cycle of the software. Additionally the capacity of the ASP to provide a reliable upgrade path for existing clients using its solution, etc.; and
- An indication of the capacity to deliver services relating to the computerisation of a tax department, such as data sharing and other technical considerations like database replication.

For each ITAS, initial analysis is also done using the results from Table 2 in the main document. The analysis is supplemented and put into perspective with the additional information gathered on the ASPs and their business model. The evaluation is based on the answers provided by the ASPs in the questionnaires, phone interviews, as well as publicly available documentation (brochures, case studies, presentation and website) and not based on a demonstration or on functional testing of the actual solution. Furthermore, the evaluation relies on the interpretation of the questions by the ASPs.

As a general conclusion, the analysis of each ITAS separately clearly points to the fact that the strengths and weaknesses of each system vary tremendously and depend on two very different factors:

- The technical aspect of the ITAS itself: The width of functionality when compared to the ATO Capability Model, the underlying technology used, the architecture of the software, etc.; and
- The ASP itself and the historical background leading to its development of the ITAS: is the ASP a dedicated software company, or does it have in-house tax expertise? What was the business driver that led to the creation of the ITAS: A funding agency ready to cover the costs of individual customisations, an investment in the development of a state-of-the-art ITAS, a re-investment in the ITAS in order to renew the ITAS for better adequacy with a changing market, etc.?

The reader should keep these two aspects in mind, while reviewing the analysis of each ITAS and of its ASP.

A. Enterprise Tax Management

Name of ITAS	Tax & Revenue Management Solution consists of: Oracle Enterprise Taxation and Policy Management (ETPM) Oracle ETPM Self Service Oracle Tax Analytics Oracle Policy Automation Oracle OBIEE Oracle WebCenter Content Oracle Documaker EE Oracle Identity and Access Management Suite Oracle Enterprise Data Quality Oracle SOA Suite Plus Oracle Database
Name of ASP	Oracle
List of countries or jurisdictions where the software is implemented and still in use, ALL versions included	Dutch Tax Administration (Belastingdienst) North Carolina Department of Revenue Vermont Department of Revenue Kentucky Department of Revenue Large Australian Federal Agency* Lesotho Revenue Authority

	Mozambique Ministry of Finance *To comply with the customers security policies, we do not use the agency name
List of countries or jurisdictions where the CURRENT version of the COTS version is implemented and still in use	Lesotho Revenue Authority Mozambique Ministry of Finance

General Background of the ASP

Oracle is one of the largest multi-national consulting services providers in IT with a pool of more than 13,000 Oracle consultants worldwide. Oracle is first and foremost a pure IT software company.

The Tax & Revenue Management Solution (TRMS) is composed of a defined set of applications (ETPM, ETPM-Self Service, OTA, etc.) and technologies (WebCenter etc.), rather than a unique integrated system. Oracle does not participate as the primary implementation vendor on implementation of TRMS. Its preferred approach to implementation is to work with a diverse global group of partners and to provide supplemental expertise services via Oracle Consulting.

Since Oracle prefers the utilisation of third parties for implementation, it is important to consider that the analysis tackles TRMS from the angle of Oracle. Indeed, one should keep in mind that the capacity of a third party integrator is an unknown variable and certainly varies from one integrator to the other.

Analysis of the ITAS

The number of sites where TRMS is implemented is relatively limited. At national level, only four countries have implemented TRMS, or are in the process of implementing the system. In developing countries, only two countries have adopted it, with Mozambique still being in the process of implementation.

While Oracle considers TRMS as its tax solution, core components are considered to be ETPM (core tax processes such as registration, assessment, etc.), Oracle Policy Automation (OPA), Oracle Tax Analytics (OTA), Oracle Business Intelligence Enterprise Edition (OBIEE), SOA suite and Oracle database. Nonetheless, Oracle markets and uses multiple pieces of software (up to 11) to form a solution. In that sense, while ETPM is an integrated and COTS system, the overall TRMS resembles more to an inter-operational IT suite of software with specific links that have to be built between them. However, it is important to note that not all the implementation sites use all the TRMS suite of software. For example, Mozambique uses 10 of them while Lesotho only uses 8. Similarly, while the solution is marketed as a COTS, one has to note that only two sites use what is considered by Oracle to be the COTS version; the rest of the sites use other versions.

This interoperability can be seen in the responses to the questionnaire: While the TRMS scores the maximum points on the ATO Capability Model, it is obvious that this is made possible by leveraging a variety of Oracle products that have not necessarily been developed for the tax area. For example, for the capability for 'Workforce planning and Development', the answer provided is that the *PeopleSoft Resource Management* software is used to provide a complete visibility for the workforce, from profiling to resource scheduling and usage analysis. Similarly, for the capability entitled 'Intelligence', the answer is to utilise *Oracle Business Intelligence Enterprise Edition Plus (OBIEE+)* as a comprehensive business intelligence platform delivering a full range of analytic and reporting capabilities. In fact, many of the areas that are in the periphery of the fundamental tax administration processes, are covered by non-tax systems.

Utilising multiple systems in a coherent manner is not necessarily a problem by itself, although it certainly adds to the complexity of the implementation, as specific links between different solutions have to be built. However, one should keep in mind that Oracle does not actually conduct the implementation, utilising third party integrators instead. Therefore, these two factors combined increase the level of risk of a TRMS implementation.

The number of sites using Oracle TRMS is fairly limited. In developing countries, only Lesotho and Mozambique provide an experience of implementing such a large and complex system. The Oracle ETPM, which lies in the heart of TRMS, implementation in Mozambique offers an interesting case to study as the ITAS was purchased in 2009, but the real realisation and implementation activities of the ITAS did not start before mid-2011. The implementation is still on-going. It required a number of external consultants (at the peak about 10 staff, but not all of them were full-time on the project) tailoring the system and has led to both budget and time increases. This experience may be an indication that implementing Oracle TRMS in a developing country is a complex endeavour requiring external resources, with in-depth product knowledge. For this reason it is probably an ITAS intended and more suitable for large and structured organisations with a lot of capacity that will be able to leverage it and maintain it, but the experiences in Lesotho shows the opposite.

In conclusion, Oracle can leverage numerous software in an interoperable fashion, as it is a global IT system provider. This might be an advantage for large organisations that want to leverage such a wide spectrum of computerisation possibilities to cover their entire operations, both tax and non-tax related. At the heart of the TRMS lies ETPM, which is the only component that is truly considered to have been built for tax administrations. The success of the strategy of pushing a suite of interoperable systems remains to be proven, especially in countries with limited capability to take ownership and maintain a complex system architecture.

B. Fast RM

Name of ITAS	GenTax
Name of ASP	Fast Enterprises, LLC
List of countries or jurisdictions where the software is implemented and still in use, ALL versions included	United States (20 states) Canada (3 provinces) Trinidad and Tobago Royal Malaysian Customs Service (underway) Republic of Poland (underway)
List of countries or jurisdictions where the CURRENT version of the COTS version is implemented and still in use	United States (20 states) Canada (3 provinces) Trinidad & Tobago

General Background of the ASP

Fast Enterprises (FAST) was founded in the USA in 1997. Today, it has a branch in Canada and over 350 employees providing software and information technology consulting services for government agencies involved in revenue management. FAST is the developer of the GenTax product and claims to have completed around 125 implementations at the city, county, state, provincial and national levels.

It is important to note that Fast mentioned that it uses and intends to continue using third party integrators. While the analysis tackles GenTax from the angle of Fast, one should keep in mind that the capacity of a third party integrator might be different from Fast and that it certainly varies from one integrator to the other.

Analysis of the ITAS

GenTax is a pure ITAS software specifically targeting tax agencies. GenTax is defined as a highly configurable COTS. The system is used to administer a wide variety of tax, revenue and unemployment insurance programmes. The main market of GenTax is the USA and Canada where it has a wide install-base. Trinidad and Tobago is the only implementation in a developing country. However, FAST has clearly indicated that it intends to position itself in developing countries, with two new implementations underway.

With such a background, one could expect a higher score on the ATO Capability Model. However, looking at it more closely (refer to Table 3 in Task 2 for the details of the ATO Capability Model), the 'Plan and Manage Enterprise' capability is the main weakness of the system. Yet, from the standpoint of the development of an ITAS, it is not considered a revenue management function and is usually catered to through other systems. Hence, this result is consistent with the fact that Fast develops a highly specialised ITAS and cannot leverage modules from other pieces of software it develops (for example, Oracle and SAP have extensive suites of modules for Workforce Planning and Development that are not part of the ITAS, for both the private and public sectors. They can easily leverage modules from other software to integrate them into the ITAS).

The wide install base (and more importantly the fact that all of them are still using the latest version of the system), along with results of the comparative table, clearly indicate that GenTax is mature software dedicated to revenue management.

An important finding is the fact that GenTax is a highly configurable system, more configurable than an average ITAS. Having said that, while high configurability means less intervention on the code (programming), which is positive, it also implies that the underlying business rules that can be configured, are also substantially more complex and require refined understanding of the solution and of the way it can be configured. That can be an important aspect to consider when deploying such a solution in a developing country, as it means that the maintenance of the system must be done by the ASP (as opposed to the IT team of the tax agency).

Another important dimension to consider is the fact that GenTax has a wide install-base at the city, county, state and provincial levels. While GenTax is also deployed at national level, one can consider the solution as being more geared towards the needs of sub-national layers of government.

The maturity of GenTax, its high configurability and the fact that it requires substantial implementation support, all lead to a market price in the upper bracket when compared to competitors. Consequently, Fast is targeting countries that are interested in acquiring a more advanced (expensive) solution. Countries such as Vietnam are considered to have ITAS acquisition budgets adequate for the cost of GenTax. Similarly, developing countries have more capacity to adopt and integrate a solution of the level of complexity of GenTax.

At this moment, Fast Enterprises, LLC has just one implementation experience on a governmental level and just very limited experience in developing countries. Having this in mind, statements that all sites of the install base make use of the latest version of the COTS, are less relevant than after first time reading.

In conclusion, the fact that GenTax is a dedicated COTS ITAS and that FAST has a substantial install base, expertise and employee workforce, combined with its intention to move to new markets in developing countries, indicates that this might be a software worth observing closely in the future. This is especially the case for countries already having some experience in the computerisation of their tax processes.

C. FreeBalance Accountability Suite

Name of ITAS	FreeBalance Accountability Suite
Name of ASP	FreeBalance Inc.
List of countries or jurisdictions where the software is implemented and still in use, ALL versions included	Version 6 was released in 2007 with updates from v6.1 through v6.5. Version 7 was released in 2010. Afghanistan (v6.5) Antigua (v6.5) Canada - numerous departments running from v6.x to v7 Kyrgyz Republic (v7) Liberia (v6.5) and (v7) Palestine Authority (v6.5) Panama (v7) Timor Leste (East Timor) (v7) Uganda (v7)
List of countries or jurisdictions where the CURRENT version of the COTS version is implemented and still in use	Kosovo Timor-Leste Uganda Other countries are in various stages of upgrading to Version 7

General Background of the ASP

FreeBalance was founded as Linktek Corporation in 1984 in Canada, as a privately held consulting firm specialized in financial software services for the federal government. The company changed its name to FreeBalance in 1997. Today, it has about 150 employees.

The fact that FreeBalance is deployed in 9 countries represents a substantial potential install base to rely upon for matters such as generating company revenue through licencing for upgrades. Moreover, since FreeBalance does not use third party integrators, it has over the years developed substantial experience in developing countries, as well as in post-conflict countries.

Analysis of the ITAS

The FreeBalance Accountability Suite is a Public Financial Management system. It defines itself as a Government Resource Planning (GRP) system. Its aim is to provide a suite of modules that can computerise all financial dimensions and processes of any given Ministry of Finance. While its main strength is expenditure management and budgeting, the suite has a number of peripheral modules such as Human Resource Management, Payroll and Procurement. The FreeBalance Accountability Suite is currently deployed in 9 countries, mainly in the developing world. FreeBalance is also implemented in several municipalities and other government departments in Canada and the US. With respect to the definition, FreeBalance is in fact not an ITAS.

The FreeBalance Accountability Suite clearly states that it is a COTS and that its suite is modular and can be deployed in full or in part. However, one area that FreeBalance does not cover is revenue management. It does cater to minor revenue streams such as fees usually collected at Treasury or in other areas in the government, but does not cover the processes of a tax agency. On the other hand, the development of a revenue management module is considered by FreeBalance as being part of its strategic roadmap.

Consequently, it is important to interpret the score of FreeBalance on the ATO Capability Model (and the underlying results in Table 5) in light of the fact that it is a GRP aiming at computerising all financial areas of a government. Indeed, FreeBalance has several modules except for the one relating to revenue management. Hence, the score (on the ATO Capability Model) indicates the availability of modules that are required by the ATO Capability Model, even though there is no revenue management module. For example, 'Plan and Manage Enterprise' is almost fully developed in FreeBalance. This is interesting when compared to GenTax, which scores higher on the ATO model. Conversely, it also means that if FreeBalance would develop a revenue management module as part of its suite, then it would directly benefit from substantial features already developed in other areas. For example, FreeBalance has an Enterprise Workflow engine that cuts across its suites of modules. If the revenue management module is indeed built, it would directly benefit from such a functionality, although for now this feature does not take into consideration any future revenue management module.

This modular approach of a GRP covering all financial areas of a government is a strength that FreeBalance has. Indeed, some tax agencies are independent from the Ministry of Finance (e.g. Rwanda Revenue Authority) and have to manage their workforce, payroll, etc. FreeBalance can then be considered as an interesting option since it has the modules to automate all of these processes. This is the very reason why FreeBalance scores well in the category entitled 'Plan and Manage Enterprise', contrary to the other ITAS.

In conclusion, the development of core mission-critical functionality for revenue management is a complex and major endeavour that requires substantial expertise which is very different from the rest of the financial processes of a government, such as expenditure management. This is further compounded by the fact that FreeBalance is a software company and has no expertise in the tax area. In that sense, FreeBalance cannot be seen as a major contender in the ITAS market because they are not able to deliver a solution that is able to support the core business processes of a tax administration at this moment. If it will be a relevant player in the future will remain hypothetical, until the comprehensive development of revenue management functionality and its proper integration in the rest of the

FreeBalance suite.

D. GesCoFisc

Name of ITAS	GESCO FISC
Name of ASP	Consult Services Informatiques
List of countries or jurisdictions where the software is implemented and still in use, ALL versions included	Central African Republic Togo
List of countries or jurisdictions where the CURRENT version of the COTS version is implemented and still in use	ITAS is not a COTS. Each country has its own version.

General Background of the ASP

Consult Services Informatiques is a French-based firm and is the ASP of GesCo Fisc (GesCo). Although the firm did complete the questionnaire, little information was made available on the firm itself at the moment of the study. The website (www.csigesco.com) also presents only a home page, stating that the site is under construction.

Currently, GesCo is not a COTS. It is tailored to the requirements of each client. During an interview, the ASP indicated that the business model of the software is still evolving according to available investments made by clients.

Analysis of the ITAS

GesCo is built as a modular suite for Public Financial Management. Its main market is French-West Africa. Similar to FreeBalance, it is not a pure ITAS but rather intends to computerise a variety of financial processes such as payroll, expenditure and budgeting. However, the main difference with FreeBalance stems from the fact that GesCo has a module specific for revenue management. The only site where it is implemented is the Togo Tax Department. However, GesCo is to be implemented in the near future in the Central African Republic.

Because of the limited install-base, it is difficult for GesCo to be defined as a COTS. However, one must be cautious as a limited install-base does not automatically imply the system is poorly designed or has limited configurability. Indeed, by definition, a COTS implies that the cost of development is supported by a wide install-base of customers which ensures a steady stream of licence revenue and hence investment in the system to make it increasingly flexible and configurable. However, it is still possible to have a COTS system that is robust and flexible, although it has a very limited install base.

While GesCo's module for revenue management is an ITAS, the low score on the ATO Capability Model shows that the software is not yet mature and is lacking in depth. For example, the 'Channel Delivery' capability is almost non-existent. This finding makes sense, since the Togo Tax Department - which is the only operational site for the revenue management module of GesCo - does not offer these services to its taxpayers. This is also in line with the limited install-base of this solution.

On the other hand, since GesCo is a suite of modules for public finance management, governments that adopt the entire suite of modules may see the integration between revenue management and other public finance management (e.g. budgeting, payroll, etc.) facilitated. This advantage has to be weighed against the shortcomings of its ITAS module.

However, the results on the ATO Capability Model point to the fact that even the functionality for non-tax related processes are lacking in both width and depth. A comparison with FreeBalance, another public finance management suite, sheds interesting light: FreeBalance has a deeper suite of modules with a methodology that is more robust and a wide install-base, yet the revenue management module is completely absent. On the other hand, GesCo is a solution without clear roadmap and is developed according to what the clients are willing to pay for. It has a much more limited install base, yet it does have an ITAS module, albeit a weak one.

In conclusion, to be considered as a viable option, GesCo has to improve substantially in the medium term. It might also be considered that the ASP of GesCo - Consult Services Informatiques – is primarily a software organisation and potentially lacks the expertise in tax processes to further develop its solution.

E. RMS

Name of ITAS	Revenue Management System (RMS)
Name of ASP	Data Torque Limited
List of countries or jurisdictions where the software is implemented and still in use, ALL versions included	Cook Islands Ministry of Finance and Economic Management (RMS7) Kiribati Ministry of Finance and Economic Development (in progress) Samoa Ministry for Revenue (RMS7) Solomon Islands Ministry of Finance (RMS7 and TMS in progress) Swaziland Revenue Authority (RMS7) Tuvalu Ministry of Finance (RMS5)

	Tonga Ministry of Revenue (RMS5, RMS7 pending) Vanuatu Department of Customs and Inland Revenue (RMS7)
List of countries or jurisdictions where the CURRENT version of the COTS version is implemented and still in use	The current version is RMS7 which is installed at: Cook Islands Ministry of Finance and Economic Management Kiribati Ministry of Finance and Economic Development (in progress) Samoa Ministry for Revenue Solomon Islands Ministry of Finance Swaziland Revenue Authority Vanuatu Department of Customs and Inland Revenue Tonga Ministry of Revenue (in progress) Further new installations are pending.

General Background of the ASP

Data Torque is a Microsoft certified IT vendor that was founded in 1994 and is based in Wellington, New Zealand. Data Torque's key business focus is the delivery of fiscal management software for tax (RMS), Customs Management System (CMS) and a Transport Management System (TMS).

The main install-base of RMS is in the Pacific Islands. This was a natural market for Data Torque which is based in New Zealand. However, in more recent years, the firm started targeting Africa with an implementation currently taking place in Swaziland. Data Torque has clearly expressed its interest to move to other developing countries.

The fact that RMS' install base is growing, implies that more revenue will be generated through licencing for reinvestment in the software and upgrades. Moreover, since Data Torque does not use third party integrators, it has over the years developed substantial experience in developing countries.

Analysis of the ITAS

RMS is a dedicated COTS ITAS and is developed using the Microsoft framework. In 2010, Data Torque invested in its upgraded version (RMS7). The development was made specifically to address some of the more acute problems found in developing countries, such as the capacity of RMS7 to function with minimal bandwidth for countries with poor telecoms. Several of its clients using old versions of RMS have been or are in the process of being migrated to RMS7. An interesting aspect of RMS7 is that it is database agnostic, meaning it can run on Oracle or SQL Server databases.

The high score on the ATO Capability Model clearly mirrors the investments made in the redesign of the software, as it makes good use of modern technologies and covers multiple delivery channels. Interestingly, specifically for Channel Delivery and Client Relationship Management, RMS7 has an integrated Content Management System that extends its capacity to interact with taxpayers and provide them with services. These are particularly interesting capabilities as an increasing number of tax agencies are adopting a client-centric approach.

In short, as a purely integrated system (as opposed to an interoperable suite of systems such as Oracle TRMS), RMS has one of the highest scores on the ATO Capability Model. Virtually all the main capabilities of the ATO Model are covered by RMS7. The ones that are missing concern supporting functions. This can be interpreted as a reflection of the fact that RMS7 is first and foremost an ITAS catering to tax administration mission-critical processes.

The strong results on the ATO Capability Model and the fact that it is implemented in developing countries, speak in favour of RMS7. Other ITAS such as GenTax and Revenue Premier do not have the same experience in implementing software in developing countries as Data Torque. Conversely, implementing RMS7 in a large developing country is a test that Data Torque has yet to pass.

In conclusion, RMS7 is designed specifically for developing countries, which is not the case with many of the other solutions. The redesign of the system and the fairly wide install base of RMS7 are two major assets to support this ITAS, as one of the major contenders in the ITAS market of developing countries.

F. iTAX

Name of ITAS	iTAX
Name of ASP	GIZ and partner organisations
List of countries or jurisdictions where the software is implemented and still in use, ALL versions included	Tanzania Revenue Authority (TRA) Tanzania Local Government Authorities (LGA) Philippines Local Government Units (LGU)
List of countries or jurisdictions where the CURRENT version of the COTS version is implemented and still in use	iTAX is not a COTS but a customised software system developed by GIZ in close cooperation with a partner country. There are therefore no distribution channels available for this system.

General Background of the ASP

iTAX is an integrated software system that is specifically designed for a developing country context. Its modular system allows the administration of all types of taxes, on the national as well as subnational level. However, iTAX is not a COTS but rather a customised development that is developed by GIZ in close cooperation with the client country. It uses an open source database (Ingres) and involves the gradual development of several of the modules, based on specific needs of a country's tax administration system.

iTAX was first developed as a cooperation project between the Tanzanian Revenue Authority (TRA) and GIZ. It was then deployed in one province of the Philippines, also with the support of GIZ.

The first development of iTAX was done in 2000/2001 for the TRA by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH (formerly GTZ) and experts from the German Tax Administration. Programmers from the TRA were involved in the development. Since 2003, this version is in use in all TRA offices in Tanzania nationwide.

In 2007, the Philippines-LGU version of the iTAX was developed, based on the TRA one. This was done through a GIZ (formerly GTZ) project. Development was outsourced to GFA Hamburg. Local programmers from the Philippines were integrated in the development team. Since then, iTAX is in use in 12 provinces in the Philippines.

The Tanzania-LGA version of iTAX is a tailor-made version developed by the same experts who developed the Philippines version and including some experts from the Computer Centre of the University of Dar es Salaam. The Tanzania-LGA version started in January 2012 and was supported by a Business Process Analysis (BPA). Since April 2013 the software is installed in 5 pilot locations in Tanzania including the district of Dar es Salaam. In May 2013, the Tanzania Prime Minister's Office (PMO-RALG) decided that the nationwide rollout (164 LGAs) of this iTAX version would start as of July 2013.

It is estimated that the number of experts that know this solution and the methodology used to implement it (directly conducted by GIZ staff and through partner organisations), amount to approximately 50 people distributed in Germany, Tanzania and the Philippines.

Overall, iTAX remains a customised and very limited implementation with a number of shortcomings in several of its modules.

Analysis of the ITAS

iTAX is a tax administration software, developed with the financial support of the GIZ both as an initiative to develop a tax software (as it was needed) and to build software-development capacity locally. Indeed, in both the cases of Tanzania and the Philippines, local software developers were involved in the iTAX projects.

iTAX is not a COTS but rather a customised development that spun over more than 10 years and involved the gradual development of several of the modules. Each of the three implementations (TRA, Philippines-LGU, Tanzania-LGA) uses a different version. It is interesting to note that the starting point of each new implementation is the previous version: for the Philippines, the iTAX-TRA version was used and for the Tanzania-LGA, the iTAX-Philippines was used.

It should be noted that the ATO score uses the most advanced version of iTAX and does not reflect the capabilities of all three versions. Nonetheless, this score highlights the gradual implementation of this ITAS and the fact that it was developed as an answer to requirements assessed in Tanzania and the Philippines. The core tax capabilities of the ATO Capacity Model ('Revenue Management') are actually well covered, while more advanced capabilities such as 'Outcome Improvement' have some noticeable missing components ('Data Matching', 'Data Services' and 'Data Warehouse Management'). This conclusion is also supported by the comments of the iTAX expert, who completed the questionnaire and who pointed out that these features could be added to iTAX, although they were not requested by local partners and hence not developed. This approach of developing for a specific requirement is typical for non-COTS solutions where the focus is on what is needed by the client during the implementation, rather than what could be needed in the future by this client or other ones. In many aspects, the development of iTAX follows other non-COTS ITAS such as SIGTAS and GesCo Fisc.

In conclusion, iTAX is a customised ITAS and has a very limited number of implementations. However, it is important to recognise that 12 LGUs use it in the Philippines and up to 164 LGAs will be using it in Tanzania in the coming years. While the number of implementations is small, the size of the deployment of iTAX at local government level is large. iTAX remains a custom-made software specifically built in response to specific requirements, within determined implementation projects with a low score on the ATO Capability Model. As such, the adequacy of iTAX for other countries is probably limited and likely to require substantial customisation.

G. Revenue Premier

Name of ITAS	Revenue Premier Enterprise (RPE)
Name of ASP	Revenue Solutions Inc. (RSI)
List of countries or jurisdiction where the software is implemented and still in use, ALL versions included	RPE modules (one to many of the four major modules - Integrated Tax Processor, Audit Manager, Collections Manager and Portfolio Warehouse) are installed or are being installed in 12 US States (CT, GA, IN, MA, ME, MO, NC, NM, NV, RI, SC, VT) and one association (MultiState Clearinghouse).
List of countries or jurisdictions where the CURRENT version of the COTS version is implemented and still in use	All US states are or will be running the latest version in 2013.

General Background of the ASP

Incorporated in 1996 in the USA, Revenue Solutions Inc. (RSI) is a hybrid IT/Business consultancy and COTS software provider of Revenue Premier Enterprise (RPE). RSI focuses exclusively on government revenue, labour and child support. RSI has completed over 250 projects for over 35 agencies in the US at the federal, state and county/city level. Currently, RSI has 29 projects at approximately 17 state agencies, associations or private companies.

Although RSI generally works as the prime vendor, it has extensive experience in partnering with major systems integrators, including Accenture, Cap Gemini, CGI and Deloitte, to name a few. Also worth mentioning, RSI has extensive experience in benefits based engagements, where RSI is paid from the realized benefits of the implemented solution.

Analysis of the ITAS

Its software product for revenue management, RPE, was developed over a 12 year-period and is used in 13 state agencies as well as in 25 counties. RSI, as a company, has not yet conducted a project outside the USA but is willing to work internationally. Specifically, it is looking at:

- Developed countries/states that are modernizing/replacing their existing tax systems which may be 'stove pipe' based by tax type or functional component but not integrated; and,
- Developing countries that are building/replacing their entire tax/revenue infrastructure with new solutions as large complex projects.

RSI is currently working with some systems integrators (SI) to determine an approach. One approach is for the SI to be a reseller. For example, a SI would be the prime contractor and system integrator reselling RPE and responsible for implementing the software. RSI would provide the RPE software and, until the SI is fully trained, both product expertise and business acumen. RSI would provide software upgrades, maintenance (e.g. software patches) and support, as well as baseline product changes for international requirements.

RPE is a COTS dedicated to revenue management. It is composed of four primary modules: Integrated Tax Processor, Collections Manager, Audit Manager and Portfolio Warehouse. RPE is a Service Oriented Architecture (SOA) based, n-tier system which is highly configurable through several tools, including a business rules engine, codes tables, a notice definition facility, workflow, case management and a tax form definition tool.

The score on the ATO Capability Model is similar to the GenTax result. RSI clearly shows that it is a solid solution with an interesting width of capabilities regarding tax related processes. The weaknesses of the solutions are mainly non-core revenue management processes such as 'Plan and Manage Enterprise' capability, 'Contract Management' and 'Workforce Management' which are not ITAS core functions. The only noticeable core area where RPE does not score well is the Online feature. However, RSI explained that the Integrated Tax Processor module has a portal component currently in development, which will meet this requirement.

This level of configurability implies that RPE implementation projects are of large scale. RPE is very similar to GenTax and they both target the same market. Like GenTax, RPE is a mature software. It is highly configurable and as it requires substantial implementation support, this leads to a market price in the upper bracket when compared to competitors[19].

In conclusion, the wide install base of RPE and the fact that all of its client base is using or will be using the same version of the COTS is a substantial asset when compared to other ASPs. However, the install base is limited to a specific geographical area, with more or less similar customers. RPE has a strong solution and an interesting approach to leveraging third party system integrators to move outside the US. Although this can create opportunities, it can certainly increase the risk as third party integrators do not necessarily have the same level of mastery in using and implementing RPE. RSI's programme to qualify third party integrators is therefore an important aspect to consider. At this moment it is not clear how RSI is going to enter the market of developing countries. This market is new to them and the same goes for implementing the ITAS on a governmental level. Once it is clear how RSI will approach these new challenges, they can

[19] As a reference point and according to information provided by RSI, in the US state market, projects range from $25m to over $100m $USD (and more for the largest states). The states vary in size from: the smallest, for example, Rhode Island with 1 million residents with 500,000 individual taxpayers/25,000 businesses collecting $1B USD in tax revenue; to medium, such as South Carolina with 3.5 million residents with 1.8m individual taxpayers and 75,000 businesses collecting $10B USD in tax revenue; to top fifteen states like Massachusetts with over 6 million residents, 3.3m individual taxpayers/125,000 businesses collecting $20B USD in tax revenue. Generally, in the US, state tax agencies administer between 20 and 50 tax types which fund about 85% of a state's budget. The agency budgets range from $12m to $100+m USD with personnel staff levels of 250 to 1200 (or 5000 in the case of California). This information is probably similar (in terms of order of magnitude) to other ASPs involved in similar markets (developed countries).

become a contender in the market of developing countries, especially in countries with already some experience in the computerisation of their tax processes.

H. SIGTAS

Name of ITAS	SIGTAS
Name of ASP	CRC Sogema
List of countries or jurisdictions where the software is implemented and still in use, ALL versions included	Afghanistan, Anguilla, Antigua, Belize, British Virgin Islands, Dominica, Ethiopia, Grenada, Kosovo, Lebanon, Liberia, Madagascar, Mali, Nigeria, Papua New Guinea, Senegal, St. Kitts & Nevis, St. Lucia, St. Vincent, Rwanda, Timor-Leste, Turks & Caicos
List of countries or jurisdictions where the CURRENT version of the COTS version is implemented and still in use	ITAS is not a COTS. Each country has its own version.

General Background of the ASP

CRC Sogema was created more than 25 years ago. For years, it combined consulting services and software development with a total workforce of about 120 employees. In 2009, a spin-off of CRC Sogema created Sogema Technologies which was made responsible for the development of SIGTAS. Sogema Technologies has about 50 employees.

Analysis of the ITAS

SIGTAS started as a Canadian-funded initiative in the Caribbean in 1996 under the Eastern Caribbean Economic Management Program (ECEMP). At the time, CRC Sogema was selected to develop it. The approach was to customize SIGTAS for the specific needs and requirements of each of the islands under the ECEMP and then to implement it. There were no licencing fees for the country acquiring SIGTAS and the tax department would receive a copy of the source code.

Over the years, CRC Sogema implemented SIGTAS in other countries, some implementations being funded by CIDA while others by different funding agencies or countries' own funds. Because of the high number of sites where SIGTAS was deployed, it grew rapidly to cover a wide variety of taxes and fees, from property tax, to motor vehicle tax, to more traditional taxes such as income tax and VAT. Nonetheless, this ITAS scores only 37 on the complete ATO Capability Model and 28 on the core processes, which is rather low for a solution implemented in so many countries. One possible explanation resides in the fact that throughout the various implementations, this ITAS concentrated first and foremost on the most basic processes of a tax authority (e.g. registration) and did not evolve over time to cover more sophisticated processes such as taxpayer education capabilities. As the ATO Capability Model encompasses more requirements, the score for SIGTAS remains low. Another possible explanation for this low score is that some of the strengths of SIGTAS cover a variety of taxes, namely property tax and motor vehicle tax. While many other ITAS do not cover these two tax types, the ATO Capability Model also does not include them and consequently, SIGTAS fails to distinguish itself in this respect.

Through the years, the company kept applying the same business model, that is, customisation to the needs of the country and implementation with no licensing fees. As time passed by, this created a series of SIGTAS instances that were all, to a certain extent, different from each other. Indeed, there are as many versions of SIGTAS as there are countries using it. Hence, no site is similar to the other and none can have access to upgrades (as there is no upgrade path). Kosovo forms an interesting case: in 2009, the tax department had a 10-year old version of SIGTAS and wanted to upgrade to the latest version.

To do so, a project was launched where the old version was basically replaced by the latest version of the system and again, Kosovo-specific customisations were made in the new version, rendering it immediately non-standard, in a certain way. The fact that the various functionalities developed in all these countries have not been centralised in a single version of the system, is probably also part of the reason why this ITAS scores so low on the ATO Capability Model.

SIGTAS runs on an Oracle platform, both database and development tools. Since its creation, it has been using Forms and Reports technology. The most recent versions of SIGTAS still use Forms and Reports which is now considered to be a rather obsolete platform that is less suitable to leverage internet technologies. Of the entire suite of SIGTAS modules, only the latest module, developed for taxpayer services (electronic filing) actually uses more modern technology than the ADF framework from Oracle.

Recently, Sogema Technologies has tried to create a new version of SIGTAS based on a COTS model and has started applying a licensing model, with the source code no longer remitted to clients. This new version still uses the same architecture and technology (Forms &

Report) of the old version. It is the business model that changed, rather than a full re-writing of the solution. In any case, the success of this endeavour remains to be validated. The countries positioned to receive this new version are Papua New Guinea, Nigeria and Liberia.

I. TAGDEER

Name of ITAS	TAGDEER
Name of ASP	Estarta Solutions
List of countries or jurisdictions where the software is implemented and still in use, ALL versions included	Jordan Iraq
List of countries or jurisdictions where the CURRENT version of the COTS version is implemented and still in use	ITAS is not a COTS. Each country has its version.

General Background of the ASP

Estarta Solutions (Estarta) is a Middle-Eastern regional IT provider funded by Microsoft, Cisco, Foursan Group and Tech Invest Com. Estarta focuses on delivering solutions to the public and commercial sectors on Microsoft and Cisco technologies. The overall company's client base extends to the US and Europe, but is mainly concentrated in the Middle East.

Analysis of the ITAS

TAGDEER is a revenue management system that stands for 'Tax Application for Government Departments and External Entities Revenue'. It is the result of a larger initiative where Microsoft, the Government of Jordan and Estarta collaborated to build a Public Sector Innovation Centre in Jordan. This centre aims to produce added-value solutions to serve governments in the region. The install-base of TAGDEER is currently limited to 2 sites.

TAGDEER is a SOA based system built using Microsoft.Net technologies. It is fairly configurable and includes a form (tax declaration) generator, a workflow engine, a business rule engine and a report designer. The software was specifically designed and built for developing markets. It is multilingual and currently supports English, French, Arabic and Kurdish.

In terms of capabilities covered, TAGDEER resembles GesCo. Similarly, TAGDEER has a very limited install base. It is therefore difficult to position it is as a COTS. Yet, when comparing the information provided on the underlying architecture and technological platform, it is striking to note that TAGDEER seems more sophisticated (SOA, business rule engines, etc.) and is built using better standards. This might be due to the fact that TAGDEER is an initiative of Microsoft and Cisco and hence Estarta has access to more advanced expertise in software development.

The results of the survey are interesting as they show that the system is not yet mature, although it does cover several areas. For example, the 'Channel Delivery' capability is a mission-critical area. TAGDEER touches almost all its categories, but for several of them does not cover them fully. This being said, it has some important weaknesses, namely for Debt Lodgement and in the 'Outcome Improvement' capability. This is a clear indication that the standard requirements of a tax administration are not yet covered. This is normal for software that is not yet widely implemented although the fact that Estarta is basically a regional IT provider funded by large IT organisations (namely Microsoft and Cisco), is also an indication that expertise in tax processes might be lacking to develop a fully-functional and comprehensive solution.

In conclusion, TAGDEER is a fairly recent ITAS with a limited install base. However, it benefits from the expertise of its strategic partners (Microsoft, Cisco). This is reflected in the design of the system that demonstrates all the characteristics of modern and flexible software. Furthermore, it is developed specifically for the developing market. In many ways, TAGDEER has the potential of becoming a viable solution. Another interesting aspect of TAGDEER and its ASP Estarta, is that they are a Middle-Eastern initiative. Estarta is based in Jordan, TAGDEER is implemented in Iraq and Jordan and the solution operates in Arabic and Kurdish. This demonstrates knowledge of and sensitivity to the region's particularities that could be considered as a differentiating advantage for any implementation in an Arabic-speaking country.

J. Tax and Revenue Management

Name of ITAS	Tax and Revenue Management (TRM) system is part of the SAP Public Services Industry solution and consists of: SAP TRM SAP Taxpayer Online Services Solution (optional solution enhancing TRM) SAP CRM Campaigns Management component (marketing and education purposes) SAP CRM Customer Interaction Centre SAP Records Management For additional call centre functionality it SAP Customer Interaction Centre is fully Integrated with SAP CRM Business Communication Management SAP Business Rules Framework (rules engine) SAP Business Objects Data Services SAP Business Process Management and SAP Policy Management SAP Migration Workbench SAP Financial Credit Management (for taxpayer profiling) SAP Interactive Forms SAP Public Sector Collections and Disbursements (PSCD) which uses the SAP Financial Contract Accounting (FICA) as its platform SAP Account Maintenance and SAP GL SAP Enhanced Collections Management SAP CRM Case Management SAP Business Information Warehouse SAP HCM Workforce Planning and Analytics (human resources management) SAP Enterprise Learning/ SAP Learning Solution SAP NetWeaver Identity Management 7.0 and SAP Authorisation Management (security and access management)
Name of ASP	SAP
List of countries or jurisdictions where the software is implemented and still in use, ALL versions included	Australia Belastingdienst, Aruba Gobierno del Estado de Guanajuato (Guanajuato State Government) Authority HM (Her Majesty's) Revenue & Customs Luxemburg Maldives Revenue Authority Mauritius Revenue Queensland Office of State Revenue Slovenia DURS South African Revenue Services Vietnam Department of Taxation Zimbabwe Revenue Authority State of Florida, Department of Revenue State of Massachusetts, Department of Revenue State of Michigan, Department of Treasury State of Pennsylvania
List of countries or jurisdictions where the CURRENT version of the COTS version is implemented and still in use	Australia Belastingdienst, Aruba Gobierno del Estado de Guanajuato (Guanajuato State Government) Authority HM (Her Majesty's) Revenue & Customs Luxemburg Maldives Revenue Authority

	Mauritius Revenue Queensland Office of State Revenue Slovenia DURS South African Revenue Services Vietnam Department of Taxation Zimbabwe Revenue Authority State of Florida, Department of Revenue State of Massachusetts, Department of Revenue State of Michigan, Department of Treasury State of Pennsylvania

General Background of the ASP

SAP is one of the major multi-national consulting services providers in IT with over 55,000 consultants worldwide. SAP is first and foremost a pure IT software company.

The TRM solution is composed of a set of applications and technologies, rather than a unique integrated system. Taken separately, the various applications are widely used in an array of sectors and industries. Indeed, TRM itself is part of the SAP Public Services Industry solution. For example, *SAP HCM Workforce Planning and Analytics* which is used in conjunction with TRM, is an application used to manage human resources regardless of the industry. In other words, many of these applications are not developed for tax purposes, albeit interoperate with one another.

SAP like other major IT providers, does not participate as the primary implementation vendor on implementation of TRM. SAP TRM is mainly implemented by third party integrators – SAP simply adds expertise and resources where required. Since SAP prefers the utilisation of third parties for implementation, it is important to consider that the analysis tackles TRM from the angle of SAP. Indeed, one should keep in mind that the capacity of a third party integrator is an unknown variable and certainly varies from one integrator to the other.

Analysis of the ITAS

SAP's TRM solution is implemented in 16 sites worldwide and is well represented both in developed and developing countries. More importantly, according to SAP, all sites share the same version. This is important as 1) it is a strong indicator that this ITAS is a COTS; and 2) it facilitates a continuous investment in the solution.

On the other hand, SAP, like Oracle, benefits from the rest of the SAP Public Services Industry suite. If it was to answer to all the required capabilities of the ATO Capability Model, SAP TRM would require about 19 applications. Without a detailed technical audit, it is not possible to describe the level of integration or interoperability of these various systems. However, SAP markets its solution as an integrated one. Nonetheless, the majority of the applications are in fact used at hundreds, if not thousands of client sites, within a wide variety of organisations and industry sectors. While this wide utilisation confirms that these applications are not tax-specific, it tends to confirm that it is a COTS with a high degree of flexibility. It would be virtually impossible to have a customised solution to each of the many hundreds or thousands of clients.

On the ATO Capability Model, SAP scores the maximum score. This is due to the fact that SAP leverages its full suite of applications to cover all possible areas. This interoperability of applications is not necessarily a problem although it usually entails a more important component of software integration to ensure the various applications interact seamlessly. However, according to SAP, the majority of the implementations are conducted by third party integrators and when needed, SAP can supplement the third-party integrator's team with its own experts. Nonetheless, these two factors combined increase the level of risk of a TRM implementation, especially as third-party integrators are usually an unknown factor.

On the technical side, TRM is a full SOA application. The current release of SAP is ECC6 and this release will remain the same until 2020. SAP provides new functionalities via enhancement packs on a regular basis (every 6 months). On the other hand, SAP offers customers the ability to request new functionality on an annual basis via a tool called *Customer Connect*. Finally, SAP has worldwide user groups for knowledge sharing.

In conclusion, SAP is a typical global IT system provider and hence can leverage a suite of applications deployed to numerous clients. Its organisation, the technology used for its applications and other factors such as regular upgrade releases, all point to the fact that the SAP ITAS is a true COTS solution. At the heart of this solution lies the SAP TRM application itself. The success of the SAP strategy seems to be working, including in less developed countries such as the Maldives or Zimbabwe. It remains to be seen what applications of the overall suite are implemented in these countries. They usually have less complex requirements, so it would be interesting to explore if the entire suite of applications is deployed or if only the TRM application is implemented.

K. eTax (Tax Mantra)

Name of ITAS	eTax (also referred to as Tax Mantra)
Name of ASP	Tata Consulting
List of countries or jurisdictions where the software is implemented and still in use, ALL versions included	Tata Consulting has done more than 15 tax framework implementations in India, 7 implementations in US states and in three African countries (Kenya, Uganda and Zambia)
List of countries or jurisdictions where the CURRENT version of the COTS version is implemented and still in use	ITAS is not a COTS. Each country has its version.
General Background of the ASP	
Tax Mantra is a fairly recent ITAS developed by the Tata Consulting Services branch of the Tata Group. Similar to Oracle and SAP, it benefits from the full force of the IT branch of the Tata Group involved in system development worldwide. Note that the assessment of this ITAS is based on information provided by the Uganda Tax Authority, which utilises eTax.	
Analysis of the ITAS	
eTax is clearly an ITAS using a modular approach. However, the relatively low score on the ATO Capability Model underlines the fact that it is not yet a mature tax product. Nevertheless, fundamental tax processes (e.g. registration, case management) are rather well catered to. Interestingly, the various capabilities of the category 'Outcome Improvement' are also well covered. This is surprising as this is an area that is often neglected. There is clearly a gap in the set of functionalities related to interactions between the tax authority and the taxpayer community. Indeed, this ITAS scores very poorly on features belonging to the categories of 'Channel Delivery' and 'Client Relationship Management'. Again, this is a good indicator that the solution still has to add functionality in order to get more comprehensive. Like many other ITAS, eTax falls short for non-tax related functionalities. It virtually has no functionality under the category 'Plan and Manage Enterprise'. As mentioned before, this is often the case for ITAS because the underlying processes are precisely not tax related. It is interesting to note that at least 3 African countries have adopted this ITAS. While the install base is still limited, it is a good indicator that it could become an alternative, provided the solution is further developed. However, the fact that the ITAS is customised for each site might, in the long term, prove problematic. Indeed, a highly-customised solution implies that it is not a COTS. Consequently, this renders difficult the continuous investment in the solution (through revenue generated by recurrent licences fees), the leverage of multiple sites to develop new functionality and finally the creation of an upgrade path for all clients. In conclusion, eTax is an ITAS that has recently been developed and is hence using a rather modern technological platform. The fact that it has experience with developing countries is definitely a positive aspect, at least from an implementation perspective. However, the fact that it is not being developed as a COTS renders the long term sustainability of the solution – and of the version implemented at each site – questionable.	

L TRIPS

Name of ITAS	TRIPS	
Name of ASP	The Crown Agents for Oversea Governments and Administrations Limited	
List of countries or jurisdictions where the software is implemented and still in use, ALL versions included	Angola Isle of Man Guyana Cayman Islands Kyrgyzstan Philippines Jordan Macedonia	Bahamas Ghana Jamaica Lesotho Mongolia Jersey Mozambique Sierra Leone[20]
List of countries or jurisdictions where the CURRENT version of the COTS version is implemented and still in use	Cayman Islands Philippines Mongolia	Ghana Macedonia Kyrgyzstan

[20] An older version of only the VAT module was given for the start-up of VAT in the expectation of developing a market for TRIPS. However, it was decided that a less complex, locally programmed MS Access program would be more suitable as an interim measure.

General Background of the ASP

Owned by the Crown Agents Foundation as a limited company, Crown Agents is an international development company. Its main line of business is consulting and capacity building in public finance management, tax administration, customs management, trade facilitation and health system delivery.

Analysis of the ITAS

TRIPS is now an integrated solution and includes:

- TRIPS Tax
- TRIPS Customs
- TRIPS Single Window
- TRIPS Integrated Revenue

TRIPS is described as a SOA based solution using XML as its messaging function. It is built on the J2EE (Oracle) platform and its object orientated design intends to maximise system adaptability and maintainability. TRIPS is configurable, has a rule engine driving the workflows and has specific integration capabilities enabling it to interface with third party systems.

Over time, Crown Agents developed various software versions. One of the previous solutions was called VIPS, a solution dedicated to VAT and deployed in VAT offices (at Customs or at a Tax Department). Eventually, VIPS was abandoned and to some extent transformed into TRIPS. Publicly-available information on the implementation sites of Crown Agents in the taxation area do not differentiate between VIPS and TRIPS. That can be seen in the second and third lines of the table above: in the 'All versions included' category, countries such as Mozambique are cited while in the category 'COTS version', it is not. In fact, Mozambique has been engaged since 2009, in the implementation of Oracle ETPM at its tax department.

This precision is important to avoid confusion. Nevertheless, the 'COTS version' category is the one under study for this assignment. TRIPS is implemented in 6 countries and that constitutes an interesting install base for a fairly new system. It is also worth noting that the average profile of the countries adopting TRIPS is leaning a little more towards countries with more capacity such as the Philippines and Macedonia. That is particularly true when compared for example, with RMS from Data Torque, which is targeting small countries for now.

The strong results of the survey reflect the fact that TRIPS is a new software developed on a modern and robust platform. It has a high score on the ATO Capability Model which shows that TRIPS is a dedicated ITAS. The main weakness of TRIPS is in the 'Plan and Manage Enterprise' capability, which as mentioned before is not considered as part of the core features of any ITAS.

In conclusion, the fact that Crown Agents is both a consulting firm and the ASP of TRIPS, combined with its wide presence in developing countries, makes it a solution that has to be considered.

E. Mapping of donors and facilitators

1. Introduction

A review has been undertaken of the main e-Government donors, with specific reference to ICT within tax administration. This work has been undertaken through a series of interviews with the relevant donors and through desk-based research. A review has also been done of some of the key "influencers" regarding ICT within tax administrations.

This annex also provides information on the main tax reform programmes for each donor over the last few years, which have been ICT-focussed or have included an element of ICT.

Summary of Key Donors and Facilitators

Donors	Summary
ADB	Global ICT strategy ICT in tax administration included within strategy but varies between individual countries
AFDB	ICT is part of reform programmes No centralised strategy/approach Down to individual country offices to design programmes (decentralised)
BMZ (KfW + GIZ)	Key donor in tax administration reform KfW – Provides financing for ICT as part of its programmes. New programming in the area of ICT in tax administrations GIZ – Employs ICTs in developing countries as a tool to enhance effectiveness in various fields including tax administration. Currently researching the development of a global ICT strategy that will also look at automation within tax administrations
Former CIDA	No centralised strategy/approach Down to individual country offices to design programmes (decentralised) Considerable change taking place within the administration
DFID	Key donor in tax administration reform ICT is part of reform programmes No centralised strategy/approach Down to individual country offices to design programmes (decentralised)
IDB	Key donor in tax administration reform Supports automation in several Central and South American countries No centralised strategy approach but uses lessons learned from other work in the region to support its projects
USAID	Key donor in tax administration reform ICT is part of reform programmes No centralised strategy/approach Down to individual country officers to design programmes (decentralised)
WB	Key donor in tax administration reforms Major provider of projects that include purchase of ITAS solutions including hardware and software Size of programmes considerably greater than those of other donors Utilises lessons learned and exchange of information between country programmes
Facilitators	**Summary**
ATAF	Provides a forum for its members (from African countries) to discuss/debate current topics in taxation Allows for exchange of ideas and sharing of lessons learned
CATA	Provides a forum for its members (Commonwealth countries) to discuss/debate current topics in taxation Allows for exchange of ideas and sharing of lessons learned Facilitates technical assistance between its members
CIAT	Provides a forum for its members (mostly Central, South American and Caribbean countries) to discuss/debate current topics in tax Allows for exchange of ideas and sharing of lessons learned Facilitates and is actively involved in providing technical assistance between member countries
IMF	Key influencer in tax administration reform

	Involved in ICT in tax administration in conjunction with donors – provides technical assistance
ITC	The International Tax Compact (ITC) is a global informal platform supporting the establishment of better tax systems that allow partner countries to increase domestic revenues and fight tax evasion and inappropriate tax practices more effectively. As an action- oriented platform, the ITC brings together a broad variety of development partners, including policymakers, experts, academics and civil society leaders working in the field of development and taxation. Promotes exchange of ideas, sharing of lessons learned and research. The ITC secretariat is currently hosted by GIZ
ITD	The International Tax Dialogue (ITD) is a collaborative initiative involving the EC, IDB, IMF, OECD, UK-DFID and World Bank Group to encourage and facilitate discussion of tax matters among national tax officials, international organisations, and a range of other key stakeholders. CIAT, ATAF and the UN also work with the ITD.
IOTA	Provides a forum for its members (mostly European and "neighbour" countries) to discuss/debate current topics in tax Supports technical assistance programmes between its members

Based on the research it is apparent that few donors have a global strategy when it comes to ICT for tax administrations. Whilst many have a formalised approach to their tax work (and in many cases to their work with regard to eGovernment), there does not appear to be a joined approach between the two. Much of the ICT work that takes place is contained within larger tax and revenue administration reform programmes and either includes the automation of some or all of the administrative processes, or support to general IT services within administrations. Few donors focus on the purchase of systems, with the majority concerned with providing technical assistance support.

Many donors have decentralised their operations over the last decade – individual programmes are developed at the country level, responding to the demands/needs of the beneficiary country. There do not seem to be many mechanisms in place where country offices of donors can exchange information/lessons learned, which perhaps accounts for the differing approaches/experiences to ICT in tax administration between countries. One exception to this is the experience of GIZ and the development of its ITAX system. Originally developed for the Tanzania Revenue Authority, the system was replicated for the Philippines Tax Office. GIZ was able to use the same experts to install the system in the Philippines, so they were able to bring the lessons learned from Tanzania. This seems to be a very sensible and logical approach to the implementation of automated systems in tax administrations. However, GIZ is unique in that it has its own system and is implementing tax reform programmes. There are some global forums, such as the International Tax Compact (ITC), the International Tax Dialogue (ITD) and the IMF's Topical Tax Fund that do undertake some exchange of ideas and experiences.

As highlighted in the study, there is a general shift to the procurement of standalone ICT systems for tax administrations. There seems to be a general wish of beneficiary countries to want systems to complement their already developed processes (i.e. many have gone through previous reforms and are keen to automate existing processes or replace outdated technologies). Donors appear to be supportive of this approach as they are financing the majority of these procurements. This new approach gives considerable powers to the system providers. They are no longer providing a system as part of an agreed technical assistance programme, but instead are able to control the process and lead the reforms.

The shift to this sort of approach stems from the donors encouraging the tax administrations to take greater ownership of their reforms. However, this requires the recipients to be well organised and to have a good level of knowledge of these systems (and their limitations) rather than being controlled by IT sales people. One approach to counter this is to employ an independent third party that oversees the implementation of the IT system on behalf of the tax administration and the donor. This will give the donor the confidence then that the system provider is working with the tax administrations' best interests at heart. The third part can provide the donor with updates and regulate the activities of the service provider.

2. Summary of main e-government donors and facilitators

a) Asian Development Bank (ADB)

The Asian Development Bank (ADB) published its ICT Strategy in 2003, which focuses on three main goals:

- Create an enabling environment through policy improvements, public institution strengthening and relevant infrastructure provision;
- Build human resources for ICT literacy and professional skills; and
- Develop ICT applications and information content through ADB-supported projects and activities.

Between 2000 and 2012, the ADB allocated $14.45 billion to projects with ICT components.

"Rapid advances in ICT have created tremendous opportunities for economic and social gains in the world's poorest areas. A key infrastructure of knowledge-based economies, ICT is a driving force for rapidly growing new sectors including electronics and software development, business process outsourcing and various internet services".[21]

Asian Development Bank			
Country	**Project**	**Dates**	**Description**
Bangladesh	Strengthening Governance Management Project	2010	To improve transparency and accountability of public service delivery in tax and land record administration in Bangladesh with the help of ICT. Online filing of tax returns. Digitized land records management system in selected districts. Improved access to tax and land information in specialized information and service centres.
	Supporting Governance Management Project	2010	To improve transparency and accountability in tax and land record administrations. ICT skills training.
Bhutan	Developing a Revenue Administration Management Information System	2011	To enhance fiscal space to implement the government's 10th and 11th 5-year plans. Web-based automated Revenue Administration Management Information System (RAMIS).
	Strengthening Audit Resource Management	2010	To increase accountability and transparency of public accounts. Audit resource management information system.
Pacific Rim Countries	Public Finance and Financial Management Reforms	2011	To increase fiscal effectiveness in national and sub-national governments; its expected outcome is deepened financial management reform at both levels of government. Study on the reform of Social Insurance Fund management, including the expansion of computerized management information systems (MIS).
India	Mizoram Public Resource Management Program	2009	To help the state government of Mizoram (SGM) to create fiscal space by (i) enhancing tax and non-tax revenue measures and rationalizing expenditures; (ii) bringing about service improvements in two key sectors (health and education) in a cost-effective manner; (iii) ensuring better debt management; (iv) reforming the state pension system; and (v) restructuring public sector enterprises, including through closure, as needed. Equipment, technology and other resources for: • Land Revenue Computerisation; • Tax Information Management System.
	Assam Governance and Public Resource Management Sector	2008	To achieve improved financial flexibility of GOA through controlled deficits and better fiscal management. It is

[21] http://www.adb.org/sectors/ict/main

Asian Development Bank			
Country	**Project**	**Dates**	**Description**
	Development Program (Subprogram II)		expected to contribute to economic growth through greater investments in social and economic infrastructure, leading to employment opportunities and ultimately social peace and harmony. Integrated Government Financial Management Information System (IGFMIS)
	Assam Governance and Public Resource Management Sector Development Program (Program and Project loan)	2004	Program Loan: To enhance growth and ultimately reduce poverty by reducing Assam's fiscal and revenue deficits on a sustainable basis through fiscal and governance reforms that (i) stabilize state finances; and (ii) establish the foundation for effective utilisation, prioritisation and reorientation of public expenditures. Project Loan: To enhance ASG's capacity to accomplish the policy and institutional reforms under the programme. Public financial MIS: reliable and comprehensive employee and pensions data, treasury and payments IT procurement and state-wide uniform procurement standards.
Kyrgyz Republic	Business Process Reengineering and Change Management for Tax Administration Modernisation	2007	To upgrade State Committee for Taxes and Collections (SCTC) staff skills in basic and advanced ICT, reengineer SCTC business processes and implement SCTC change management programme. Database MIS Network infrastructure Website
	Institutional Strengthening and Capacity Building for Tax Administration Reform	2007	To upgrade SCTC staff skills, regularly set and monitor SCTC staff performance objectives and provide information and customer services to taxpayers to promote voluntary compliance and reduce compliance costs. Advanced ICT training
	Preparing the Reform and Modernisation of Revenue Administration Project	2005	To support the Government's goal of increasing revenue collection by modernizing revenue administration, the project preparatory technical assistance will design a strategy and action plan focusing on investment in ICT, reorganisation and training. Strategy and action plan Change management
Philippines	Support to Local Government Revenue Generation and Land Administration Reforms	2011	To allow participating LGUs use improved land management and administration systems, including property valuation and taxation innovations, to generate increased local government revenues. Automated or electronic systems; ICT skills training and capacity building workshops;
Sri Lanka	Supporting the Fiscal Management Efficiency Project	2011	To support the PMU in reengineering business processes to align with the applications for RAMIS and ITMIS. It will also assist in preparation of the Request for Proposals for selection of the application and vendor for the RAMIS and ITMIS. As-is study and functionality analysis for introducing internally acceptable RAMIS and ITMIS; Architecture definition and design for RAMIS and ITMIS, and improvement of ICT environment from legal, regulatory and institutional perspectives; Support for selecting vendors for RAMIS and ITMIS during the bid process
	Institutional Strengthening of Fiscal Management Institutions (Project loan)	2004	To support the key institutions responsible for public finance across various activities in order to improve fiscal performance. To support the implementation of the policy component under the Fiscal Management Reform Program

Asian Development Bank			
Country	**Project**	**Dates**	**Description**
			(FMRP). Integrated IT development plan; ICT master plan; MIS; ICT-enabled system; ICT skills training; Resource mobilisation for IT requirements; ICT legal framework
Tajikistan	Strengthening Public Resources Management Program	2011	To strengthen public resource management in Tajikistan through improved tax policy and administration, more effective and efficient social safety net programmes and improved public financial management. IT strategic plan; Pilot for electronic submission of tax returns
	Tax Administration Modernisation and Governance Enhancement	2005	To contribute to poverty reduction and private sector development through (i) improved efficiency and governance of the Tax Administration and (ii) enhanced revenue collection for poverty reduction and sustainable economic growth. Business process reengineering; Change management for tax administration

b) African Development Bank (AFDB)

The African Development Bank does not have a specific strategy with regard to ICT in tax administrations. As with other donors, its focus is on individual country programmes rather than on a group-wide strategy. The AFDB has an ICT Operations Strategy[22], which supports ICT sector development across Africa. This is a booming industry and the Bank invests considerable amounts of money supporting its growth. Whilst this strategy does not specifically focus on ICT in tax administrations, there is some crossover. It promotes the use of mobile phones across the continent, which are beginning to be used for the payment of taxes and invests in taxpayer awareness and education programmes.

c) German Federal Ministry for Economic Cooperation and Development (incl. KfW & GIZ)

The Federal Ministry for Economic Cooperation and Development (BMZ) conducts political dialogue with partner countries of German Development Co-operation and commissions implementing agencies (KfW and GIZ among others) for the execution of its projects. These organisations then work with project executing agencies selected by the government of the partner country. In addition to funding tax projects in the partner countries, implemented by KfW and GIZ, BMZ also initiated the International Tax Compact (ITC) as a global informal platform. ITC supports the establishment of better tax systems that allow partner countries to increase domestic revenues and fight tax evasion and inappropriate tax practices more effectively (see ITC under "Facilitators").

On behalf of BMZ, KfW provides grants and loans to fund investment projects and reform programmes in the framework of German Financial Development Cooperation. In this role, KfW is funding individual ICT-related tax reform projects, e.g. financing of a data warehouse for the Uganda Revenue Agency. At the same time, KfW is also supporting broader programmes that specifically aim at ICT-based tax reforms, as in the case of Mozambique, or basket funds that contain ICT-components as part of an overall Public Financial Management reform programme. KfW also implements the German general budget support. In this context, the achievement of domestic revenue targets is often a financing condition of the German financial cooperation.

Like KfW, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH also supports the German Government in achieving its objectives in the field of international cooperation for sustainable development. However, GIZ does not provide large hardware implementations (like KfW), but offers technical assistance

[22] "Review of the Bank's ICT Operations Strategy & Action Plan for the Medium Term 2012-2014", African Development Bank, May 2012

focusing on capacity and organisational development instead. GIZ is currently implementing approximately 14 tax reform projects globally, including three regional programmes in Africa.

GIZ has supported the development of the iTAX system in Tanzania and continues to provide technical assistance in that field at the subnational level. Subsequently, the system has also been implemented in the Philippines and the same experts were involved in the implementation of both systems.

As with other donors, GIZ's work is demand driven and they do not have a specific strategic approach to ICT in tax administrations. However, GIZ, on behalf of the BMZ, is currently working on an ICT-focused sector strategy.

KfW			
Country	**Project**	**Dates**	**Description**
Benin	Investment project as part of the PFM-programme	Since 2011	Introduction of a unique Tax ID-number
Mozambique	Co-financing of tax administration reform basket fund	Since 2009	Among others Automation/ICT-based tax administration reform
Rwanda	Co-financing of Public Financial Management basket fund	Since 2009	Support to Ministry of Finance and revenue authority through the PFM-basket fund
Uganda	Support to the tax system reform programme	Since 2010	Setup of a Data Warehouses at the Uganda Revenue Authority
GIZ			
Country	**Project**	**Dates**	**Description**
Nepal	Revenue Administration Support Project	since 2009	Support to the tax administration: Software support and IT management, support to consolidation of ICT and interconnectivity, Support to provision of online services (e.g. online registration and filing), support regarding data security
Ukraine	Development of administrative capacity in the area of public finance	since 2011	Support to the tax administration with regard to the implementation of risk-based audit through IT solutions/ automation
El Salvador	Support to Fiscal Policy in El Salvador	since 2010	Support to the tax administration in the area of risk analysis and the development of an IT solution, provision of hardware for audit units

d) Former Canadian International Development Agency (CIDA)

Similar to other donors, CIDA (now part of Ministry of Foreign Affairs, Trade and Development Canada) has a global ICT strategy, but this does not specifically refer to tax administration reform. CIDA's country offices determine their own country programmes, based on the specific needs of the country. CIDA uses ICT to improve and modernise public sector administration systems, including taxation. CIDA often provides funds to multilateral programmes and includes ICT as part of its larger tax administration reform programmes.

CIDA is currently undergoing considerable change and the structure and focus of the organisation going forward has not yet been clearly defined. It is unclear if it will continue to work within the area of tax administration reform and modernisation.

CIDA			
Country	**Project**	**Dates**	**Description**
Africa	Africa Regional Technical Assistance Centres (AFRITAC) - Phase III	2011-2015	CIDA's support to the Africa Regional Technical Assistance Centres (AFRITACs) facilitates economic growth in Africa by strengthening the ability of national and regional public institutions to manage public finances. The AFRITACs respond to requests from the governments of 44 African countries for macroeconomic technical assistance and training in areas such as central banking, monetary and exchange rate policy, tax policy and administration and financial statistics. Assistance is delivered through diagnostic and technical missions, regional workshops and policy and programme development support.
Caribbean	Caribbean Regional Technical Assistance Centre - Phase III	2008-2010	Results as of March 31, 2011 (end of project) include: five countries have introduced simpler and more efficient value-added taxes (VAT); six countries are modernizing their customs systems and procedures using risk management techniques resulting in trade facilitation; eight countries have adopted public financial management reform action plans; two countries have adopted a global approach to fiscal management, including developing medium-term targeted fiscal frameworks. CARTAC also supported bank supervision and bank stress testing in the Eastern Caribbean Currency Union (ECCU - eight countries) and three other countries, insurance supervision in the ECCU and supervision of credit unions in one country. CARTAC assisted the ECCU and Guyana to update the calculation of their national accounts.
	Economic Management in the Caribbean	2010-2014	The project aims to enhance economic management in the Caribbean region by improving revenue generation (tax and customs), and implementing sustainable medium-term fiscal and budgetary policies, reorienting budget expenditure towards more effective and efficient programmes. In addition, improved cash and debt management would help to reduce both financing costs and risks. The project is designed to achieve these objectives through the provision of policy advice, technical assistance and selected information technology (IT) investments by the World Bank with the assistance of the International Monetary Fund (IMF). Regional cooperation is expected to result in better opportunities to develop flexible and sustainable IT systems, that support modern responsive tax and customs departments and public financial management (budget preparation and treasury execution), that ensures stewardship over revenues and control over expenditures.
Ethiopia	Support Facility for the Public Sector Capacity Building	2007-2012	Support to the Public Sector Capacity Building Programme. Technical assistance included supporting the purchase, installation and configuration of a COTS solution for the tax administration
Haiti	Revenue Generation - Technical Assistance	2008-2015	The Revenue Generation project supports the Haitian government's ability to generate revenue. It provides technical assistance to improve the customs and tax institutions in Haiti. The technical assistance and equipment provided by this project help to modernize the Customs Administration and the Tax Administration, enabling an increase in government revenues.
Indonesia	Tax Administration Reform Program	2003-2009	Provision of assistance to the Directorate General of Taxation in the Ministry of Finance of Indonesia to develop and implement reforms designed to increase the accountability, transparency, effectiveness and efficiency of the tax administration system. The project is helping the Directorate General of Taxation to increase revenue collection, establish and strengthen the

CIDA			
Country	**Project**	**Dates**	**Description**
			management of taxpayer offices and conduct strategic planning.
Kenya	Transparency in the Extractive Sector	2013-2015	Ensuring compliance to the Extractive Industries Transparency Initiative (EITI). Providing technical assistance to the government and industry stakeholders in the areas of reporting and monitoring revenues and royalties generated by the extractive sector
	Strengthening Public Financial Management - 2013-2014	2013-2014	The project trains and advises tax officials in the areas of compliance, taxpayer services and the management of natural resource sector revenues.
	Public Financial Management Reform	2008-2012	Working with the Kenyan government to develop a budget framework consistent with government priorities and policies; improving the quality of government records and procurement practices; strengthening revenue and tax systems and improving the effectiveness of audits.
Mali	Support for the Mobilisation of Internal Resources (PAMORI II)	2009-2017	The project aims to make the Government of Mali less financially dependent on foreign aid by building the revenue mobilisation capacities of two government tax administrations: the Directorate General of Taxation (DGI) and the National Directorate of Land Registry and Cadastre (DNDC). This enables Mali to make progress in terms of increased revenue, tax fairness and transparency in tax management. The project is based on Canadian technical assistance, and favours an approach that includes four means of intervention: training, strategic design, internal communication, and equipment.
Tanzania	Extractive Industries Transparency Initiative in Tanzania	2011-2012	This project aims to increase transparency and accountability in the mining, oil, and gas sector by helping the Government of Tanzania meet the global standards set by the Extractive Industries Transparency Initiative (EITI). The EITI requires that extractive companies disclose the tax and royalty payments they make to the government and that the government discloses the revenues it collects from these companies. The reconciliation of the payments must be independently verified and the reports widely distributed.

e) Department for International Development (DFID)

Following discussions with DFID, it is clear that they do not have a specific approach when it comes to ICT in the context of Tax Administrations. DFID has undertaken a large amount of research on the impact of ICTs within developing countries (in terms of how it helps with general communication, the promotion of good governance and the engagement of a country's citizens). However, whilst the research mentions some ICT within tax administration, there is no clear strategy that has been adopted.

DFID's approach to ICT in tax administrations is at an individual programme level (i.e. it is contained within programmes of tax administration reform, rather than a standalone programme or some part of a wider ICT-led country or regional strategy).

DFID is a major contributor to tax reform in developing countries. Between 2006–07 and 2010–11 DFID spent approximately £97 million on helping to improve revenue collection.[23]

[23] Written evidence provided by DFID to the International Development Committee (http://www.publications.parliament.uk/pa/cm201213/cmselect/cmintdev/130/130we11.htm)

DFID			
Country	**Project**	**Dates**	**Description**
Afghanistan	Tax Administration Reform	2011-2015	Rollout of SIGTAS system to regional tax offices
	Strengthening Tax Administration	2007-2012	Procurement and implementation of SIGTAS
Bangladesh	Tax Administration—Capacity and Taxpayer Services (TACTS)	2007-2015	Reform of the National Board of Revenue (NBR) to enable the Government of Bangladesh to establish an efficient and trustworthy tax administration and achieve improved voluntary tax compliance Supporting ICT intervention for better functioning of the Large Taxpayer Unit (LTU) – review of existing Income Tax Management System (ITMS) with a view to upgrading its functionality as much of it has become obsolete.
	Reforms in Revenue Administration (RIRA)	2002-2008	
Burundi	Trademark East Africa—Burundi Programme	2010-2012	Support to the creation of the Office Burundais des Recettes (OBR) Procurement of SIGTAS system
Sierra Leone and Liberia	Support for National Revenue Authority	2005-2012	Support to the National Revenue Authority (NRA) Procurement of a VAT processing systems (this is actually provided by Crown Agents and is an older version to the TRIPs system)
Uganda	Support to the Uganda Revenue Authority (URA)	2000-2011	Support to the implementation of the eTax system from TATA consulting
Uganda	Oil Taxation Capacity Building Programme	2012-2015	Support to the implementation of a new eTax module for oil and gas

f) Inter-American Development Bank (IDB)

The IDB has supported a number of South American countries as they automate their tax processes, particularly around the issue of electronic invoicing, which is now moving to web-based systems. Whilst ICT in tax administrations is important for the IDB, it has no clear strategy. It is not possible to replicate this type of work, given the different size of countries they are dealing with and the different structures that exist within each country.

There are still many issues with regard to tax administration in central and South America and whilst reforms in some countries have been considerable (e.g. Brazil, Argentina and Mexico), many countries are still not focusing on tax administration reforms (there is a tendency to think that developing ICT within tax administrations can fix their problems).

g) International Monetary Fund (IMF)

The IMF has been active in the area of ICT in tax administrations for more than twenty years. In the early 1990s, COTS solutions did not exist and instead bespoke systems were built locally. The IMF was actively involved, supporting ICT in tax administrations in a number of countries.

The IMF continues to take an interest in ICT in tax, but from a more strategic view. The COTS solutions available are expensive and this requires donor support (the IMF sees itself as an implementation partner but leaves the procurement of systems to donors). The IMF helped countries procure systems in the past, but has not been involved in this in the last 10 years. The IMF never finances reforms in its own right; it only provides technical assistance and advice.

ICT has a major role to play in tax administrations. Generally, there has been a move towards a COTS system rather than bespoke systems. There are two notable exceptions, which are the Seychelles and Gambia. They have decided to build their own systems, but the IMF has recommended them to buy a system. Customs

administrations would not consider to build a system (nearly all administrations use COTS systems), but some tax administrations want to build their own system to ensure it meets their exact needs.

The IMF does not endorse any system as it is their view that the majority of systems have similar functionality.

What is required (and this is not always done) is that major business process reengineering (streamlining) takes place prior to the implementation of new systems. The IMF's view is that you should only be looking to customise solutions at the margin and there should not be a need/desire to do more than 20% customisation of a COTS solution. Cost is a factor when countries are choosing a COTS system, but it is important to look at the system price and post implementation support – do they want to be dependent on a particular vendor in the future? If countries need local capability to support/enhance the system, then that has major cost implications for the tax administration.

The IMF often partners with other donors in tax administration reform programmes. It undertakes diagnostic missions (which can include ICT expertise) and then offers IT expertise to support business process reengineering and the tendering process.

h) United States Agency for International Development (USAID)

USAID is one of the leading donors of tax administration reforms. Its focus has been on mobilising domestic revenues and developing the business enabling environment within countries. Although it considers ICT to be a core theme of its support to tax administration reforms, it does not have a joined-up strategic approach to ICT. USAID does not have a central strategy for tax reform. Its operations are decentralised and it depends on the individual country missions to design programmes for countries.

For tax reform, USAID uses three main contractors, which have provided most of the technical assistance over the last 10 years. It has knowledge contracts with the three contractors and they are responsible for developing working papers on best practice in tax administrations, including automation.

USAID has undertaken its own research of the options that are available to develop IT capabilities in tax administrations. They have produced a document[24] that looks at the value that ICT provides and the options that are available to tax administrations.

USAID			
Country	**Project**	**Dates**	**Description**
Afghanistan	Trade and Accession Facilitation (TAFA) Project	2009	USAID Economic Governance project (EGGI) is working with the GIRoA tax department to: Train tax officers in Herat, Jalabad, Mazar and Kandahar provinces; Develop the structure and training at medium-sized taxpayer offices
Armenia	Tax Improvement Program	2012	Improved Tax Administration and Tax Payer Services through ICT Utilisation: The contractor will assist the SRC to sustainably adopt, utilize and manage information and communications technology (ICT) to improve its capacity to administer taxes, deliver taxpayer services and increase tax payer compliance. Implementation of personified record keeping of pension contributions and unified tax: The Contractor is working with SRC to create the IT database and record-keeping system for pensioners for the funded and public sector pension schemes.
Bosnia and Herzegovina	Tax and Fiscal Project (TAF)	2003	Continued implementation of the unified system for the registration and collection of social contributions (Unified Collection System); Simplification of cumbersome tax payment processes

[24] USAID's Leadership in Public Financial Management(LPFM): Information Technology for Tax Administration, February 2013

USAID			
Country	**Project**	**Dates**	**Description**
			Development of new business processes for risk-based audit selection and for the pursuit of stop-filers. Design and development of a software application to automate stop-filer identification. Creation and training of Fiscal Policy units in the Ministry of Finance; Fiscal policy unit staff are currently able to design some policy simulation models.
Egypt	Technical Assistance for Policy Reform (TAPR)II	2005	The customs and tax components of the TAPR II Project assisted MOF implementation of Egypt's model Income Tax Law and strengthened the legal framework for enforcing taxes, resulting in a substantial increase in the number of taxpayers Completed implementation of a new tax administration system in 2010 Improved operating efficiency through improved automated and systematic approaches to tax administration; Reorganized the tax administration: Created a large taxpayers unit, integrated income and sales taxes departments. Introduced units to deal with medium and small taxpayers with differentiated approaches to tax administration Rollout of new tax management and administration system to medium taxpayer centres (27) and nationwide in 2013
El Salvador	Tax Policy and Administration Reform (TPAR)	2011	TPAR advisors helped tax admin (DGII) to deploy and implement a new customized IT system, including tools and techniques to conduct rigorous & fair audits. To improve tax revenue mobilisation, FPEMP helped the MOF and tax admin (DGII) to: Create up to date, consistent and clean taxpayer records Improve audit selection and reduce tax evasion levels Enhance in-house capacity building and training for tax admin staff Enhance private sector outreach to promote tax compliance Rollout of a modernized government financial management information system
Jamaica	Promote, Renew, Invigorate, Develop, and Energize (PRIDE)	2010	USAID activities aim to control corruption and evasion, improve revenue adequacy, decrease donor dependence and improve efficiency of tax and customs administration. In the Tax area, USAID PRIDE Project: Developed a Fully Costed Modernisation Implementation Plan - for all functional areas of the new tax administration organisation to transition to SARA. Pilot tested the previously reengineered business processes (by PRIDE) for the four core tax operations areas of Taxpayer Services, Returns Processing & Revenue Accounting, Audit and Collections. Prepared outlines for the required IT interfaces between TAJ and Customs, Cashiering, and Taxpayer Registration Number systems to support design of a new IT system for TAJ.
Jordan	Fiscal Reform II	2009	In the Tax area: Expanding taxpayer services, e-filing and information outreach Identifying costs of complying with tax legislation for Jordanian businesses and addressing those regulations that place a great burden on taxpayers Modernizing IT applications to improve data storage and security, audit selection, debt collections and automated reporting.
Kosovo	Support Tax Administration of Kosovo (TAK)	2010	One-stop shops established for tax/business registration Introduced e-filing and working on e-payment introduction Strengthen TAK management through development of tools,

USAID			
Country	**Project**	**Dates**	**Description**
			information and rigorous performance measurement
Nepal	Tax Reform	2011	Deployment of IT system in the Inland Revenue Department to facilitate payment of taxes – first through commercial bank branches and eventually online. Expand tax network by conducting a feasibility study for e-linking with house and land tax registration department, Department of Vehicle registration, Kathmandu Municipality and Nepal Rastra Bank for activities relating to financial institutions.
Philippines	Millennium Challenge Account – Philippines Threshold Program	2011	Tax administration reform component of MCC Millennium Challenge Compact started in 2011 Reengineer virtually all tax administration processes to within new tax administration Build institutional capacity at Bureau of Internal Revenue (BIR) to enhance reengineered tax administration
South Sudan	CORE I	2006	An integrated Ministry of Finance capacity building project has been helping to build the Tax Department from scratch Pilot use of a commercial bank for payments of tax and customs liabilities will be used by the 10 largest taxpayers and by selected clearing agents at one border post. Same approach may be expanded for payment of immigration fees in Juba.
West Bank / Gaza		2010	Facilitation of tax reporting and paying through computerisation, introducing the self-assessment reporting, and implementation of online information and functions; and Public outreach activities designed to increase information to taxpayers, increase taxpayer understanding of tax policies and improve taxpayer confidence in the MoF's performance and systems.

i) World Bank (WB)

The World Bank Group is one of the largest donors in tax administration. It has approximately 100 tax related projects (60 of these are funded by the World Bank and the remainder are IFC countries). The World Bank's focus in relation to tax is on Latin America, Europe and Asia. It does not have many tax related projects in Africa and has only limited work in the Middle East.

Current large projects in the area of ICT in tax administration include work in Bangladesh, Vietnam and Indonesia. These are high value programmes (some in excess of $50 million) and include not only the procurement of ITAS but also the implementation of related ICT hardware and software and the associated tax policy and administrative reforms (e.g. the development of laws, organisational restructuring, HR, process reengineering and change management).

The World Bank's programmes are very much demand driven – there is no centralised strategy regarding ICT in tax administrations and it is up to individual country offices to design appropriate programmes. Beneficiaries are heavily involved in the design of programmes.

Within the tax thematic group, there is a strong emphasis on the exchange of information and the sharing of lessons learned. When new programmes are developed, the Bank looks at the experiences in other countries to see what can be learned from these. A recent example of this was in Vietnam where the tax administration was experiencing difficulties with regard to the implementation of the ITAS, which was financed under a World Bank programme. They requested additional help from the World Bank and it was able to facilitate a workshop, bringing together experts from different countries to share experiences and lessons learned from other implementations.

The World Bank's commitment to focus on ICT in tax administration will continue into the future.

WB			
Country	**Project**	**Dates**	**Description**
Armenia	Tax Administration Modernisation Project	2012	The development objective of the Tax Administration Modernisation Project for Armenia is to modernize Armenia's tax administration in order to (i) increase voluntary tax compliance, (ii) reduce tax evasion, (iii) reduce compliance costs; and (iv) increase administrative efficiency. There are four components within the project of which the third component is Information Technology (IT) infrastructure and system modernisation. This component will upgrade the Information and Communications Technology (ICT) in the SRC in order to develop a comprehensive and integrated tax management system. This component will unify IT support for all business functions, improve telecommunications and connectivity, strengthen information exchange with other agencies and augment other technological infrastructure necessary to create an efficient and effective environment for tax operations and management. It will also significantly improve reliability and availability of information and business intelligence, making full use of data management tools (data mining, data warehousing and data exchange facilities).
Bangladesh	BD: Economic Management TA Programme (EMTAP)	2004	Support to the NBR and its departments for modernizing revenue administration. Overseeing the development of a comprehensive ICT strategy, management of ICT systems across various taxes, supervising ICT contracts and ensuring the security and maintenance of existing ICT resources. Assessment of ICT needs of NBR to move towards a new and modem tax administration, based on a new functional design and technical architecture that support improved functions and processes
El Salvador	Fiscal Management and Public Sector Performance Technical Assistance Loan	2009	Strengthen the institutional capacity of specific government processes and agencies to increase the effectiveness and efficiency of revenue and expenditure management and enhance accountability and transparency in the public sector. Strengthening institutional capacity and equipment of tax collection agencies as well as the development and acquisition of Information and Communication Technology (ICT) solutions to enhance existing public financial management and transparency systems
Ghana	e-Ghana	2006	The objective of the e-Ghana Project is to assist the Government in generating growth and employment, by leveraging information and communication technology (ICT) and public-private partnerships Includes an unorthodox compensation arrangement for the vendor which is dependent on revenue mobilisation results
Indonesia	Project for Indonesian Tax Administration Reform (PINTAR)	2009	The Tax Administration Reform Project (PINTAR) for Indonesia aims to: a) increase taxpayer compliance by increasing the efficiency and effectiveness of the Directorate General of Tax (DGT); and b) improve good governance in tax administration by strengthening transparency and accountability mechanisms. Increasing the efficiency of taxpayer data collection and management. This component aims at improving taxpayer registration, returns processing, taxpayer accounts management, documents management and Information and Communications Technology (ICT) infrastructure. Strengthening compliance management operations. This component will increase the efficiency of selected core operational functions of the tax administration. It will concentrate on: a) tax audit, introducing risk-based audit

WB			
Country	**Project**	**Dates**	**Description**
			selection, reforming business processes for desk and field audit, computerizing processes supporting the tax audit function and improving the audit planning and monitoring process; and b) arrears collection, in particular enhancing the arrears monitoring system, reforming business processes for arrears collection and enhancing the collection enforcement ICT system. The fourth and final component of the project is project and change management. This component will support the management of the project through technical assistance, in particular a change management programme including improving internal and external communications and feedback surveys, familiarisation and specific transition training.
Kazakhstan	Kazakhstan - Tax Administration Reform Project (JERP)	2010	The development objectives of the Tax Administration Reform Project for Kazakhstan are: (i) to reform and strengthen the tax administration in order to improve the level of voluntary taxpayer compliance with tax regulations; (ii) to enhance effectiveness to fight tax evasion; and (iii) to increase administrative efficiency and reduce the potential for corruption. The information technology (IT) infrastructure development component will finance: (a) capacity building in organisation and management of the IT modernisation; (b) development of integrated tax management system; (c) development of integrated data warehouse; (d) development of concept, architecture and applications for data processing centres (DPC); (e) development of voice and data networks; (f) development of call centre; and (g) development of video-conferencing facilities
Liberia	Economic Governance & Institutional Reform-Additional Financing	2011	The project assists with strengthening public financial management through improving revenue administration by covering the cost overrun of the installation of an integrated tax administration system. Support to the installation of an integrated tax administration system (ITAS) in the BIR by providing equipment hardware, software, technical assistance and training
OECS Countries	OECS E-Government for Regional Integration - St. Vincent & the Grenadines (APL 2)	2009	The objective of the E-Government for Regional Integration Program for St. Vincent and the Grenadines Second Adaptable Program Loan Project is to promote the efficiency, quality and transparency of public services through the delivery of regionally integrated e-government applications that take advantage of economies of scale. There are three components to the project, the first component being horizontal e-government interventions. The objectives of this component are to: a) strengthen and harmonize national and regional e-government processes, operational Information and Communications Technologies (ICT) platforms and frameworks; b) to promote more efficient regionally-based ICT development and strengthen capacity, and c) to provide an enabling environment to achieve public administration objectives in a globally competitive context and to better serve citizens, businesses and consumers in the region. The second component is the vertical e-government interventions. The objective of this component is to harmonize and improve key e-government systems by focusing on specific interventions in core areas of public finance. Design, development and implementation of Tax e-filing system Development of Interfaces for SIGTAS-to-SmartStream (SS)

WB			
Country	**Project**	**Dates**	**Description**
			and ASYCUDA World-to-SIGTAS Hardware and software for Tax sub-component implementation
Romania	Revenue Administration Modernisation Project	2013	The development objectives of the Revenue Administration Modernisation Project for Romania are: 1) to increase effectiveness and efficiency in collection of taxes and social contributions; 2) to increase tax compliance; and 3) to reduce the burden on taxpayers to comply. There are four main project components: The first component of the project is institutional development. This component will support the development of a modern organisation and management structure, instil a strategic focus, emphasize the importance of integrity, rationalize the organisation structure to increase National Agency for Fiscal Administration (NAFA's) effectiveness and strengthen human resource management through targeted professional training and technical assistance. The second component of the project is increasing operational effectiveness and efficiency. This component would streamline business processes and work-flows, and invest in the modernisation of core information Technology (IT) systems to take full advantage of the possibilities offered by automation in NAFA's back office operations, as well as in the interaction with taxpayers and contributors. The third component of the project is taxpayer services and corporate communication. This component will finance activities aimed at modernizing taxpayer services; implementing mechanisms for transparency and accountability. The fourth component of the project is coordination and management. The project will have a Project Management Unit (PMU) well-integrated into NAFA's headquarters management structure, which is responsible for day-to-day implementation of the project
Vietnam	Tax Administration Modernisation Project	2007	The objectives of the Vietnam Tax Administration Modernisation Project (TAMP) are to assist the general department of taxation (GDT) in strengthening governance in tax administration and to increase the level of voluntary compliance with the tax system by improving the effectiveness, efficiency, transparency and accountability of the tax administration. Procurement and implementation of a proven Integrated Tax Administration Information System-ITAIS. Procurement, installation and testing of IT hardware and system software, e-tax applications and a pilot data warehouse

j) Commonwealth Association of Tax Administrators (CATA)

CATA is not a donor and does not have a common approach to tax administration or a comprehensive ICT strategy. CATA is seen as an organisation that provides a common forum for its members to exchange ideas.

CATA is unable to provide technical assistance to its members, although they often ask for it. Recently, CATA has started to engage with other donors and organisations to see what assistance it can provide to its members.

CATA hosts one to two forums every year and given the number of topics on tax, ICT in tax administrations is only really covered about once every decade. Many CATA members still see ICT as the key to solving their tax administration problems and need technical assistance to understand the need for tax administration reform prior to automation.

k) Inter-American Centre for Tax Administration (CIAT)

CIAT's mission is to encourage and facilitate cooperation between the tax administrations of their member countries. It is involved in the exchange of knowledge, best practices and lessons learned across all areas of tax administration. One of these is use of technology and members share their experiences, knowledge and even their systems with each other.

CIAT's work takes place in two ways:

- Forums, seminars and workshops where CIAT members exchange ideas about what they have done/are planning to do. An example of this is in the area of electronic invoicing. A working group has been established for 6 years to share experiences. Based on the experiences of other members, Mexico changed its approach to electronic invoicing as it was not collecting all of the relevant data and there were compliance issues. Now it has full information of all electronic invoices.
- It facilitates direct technical assistance between member countries – Brazil, Argentina, Mexico and Chile have had considerable successes in ICT implementation and common languages in the region allow them to transfer skills and knowledge to others.

CIAT previously supported its own ITAS solution (called Tax Solutions) in its member countries.

Different member countries have different approaches when it comes to ICT in tax administration. There are, however, some common themes:

- Greater transparency in exchange of information has been a driver to move things forward in terms of ICT in tax administration;
- There is a move to reduce the digital gap between taxpayers – e.g. in the implementation of electronic invoice systems in Latin America, all countries have developed ways in which small taxpayers can undertake electronic invoicing, without needing to invest considerably in systems. To encourage the use of IT, some countries give electronic payment systems free of charge to small taxpayers; and
- Taxpayers are also driving the reform process – they want to know what they owe/are due and are therefore pushing for more computerisation.

The main challenges that CIAT members are facing, include:

- Pressure to improve service delivery, but they lack capacity to do so;
- HR is a major challenge to maintain up to date knowledge – the brain drain of tax administration staff to the private sector is considerable;
- Problems with data quality – credibility issues for tax administrations; and
- Issues of contracts with system vendors and country procurement systems.

In general, there is a need amongst member countries to align their ICT strategy with the strategy of their tax administration.

l) International Tax Compact (ITC)

The ITC is an initiative to strengthen international cooperation with developing countries, with the objective of enhancing domestic resource mobilisation. The ITC aims to promote effective, fair and efficient tax systems and to combat tax evasion and inappropriate tax practices on a global scale.

The ITC consists of development partners (both bi-lateral and multilateral organisations), policy makers, academics and other interested parties working in taxation in developing countries.

The idea behind the ITC is to combine strengths, expertise and resources in the areas of tax and development. By encouraging dialogue and sharing of experiences, the ITC can support tax reform in developing countries in parallel with other development partners.

m) International Tax Dialogue (ITD)

The International Tax Dialogue (ITD) is a forum for dialogues created by the IMF, the OECD and the World Bank in 2002. Its main focus is to encourage and facilitate discussion of tax matters between tax officials, regional tax organisations and international organisations.

One key aim of the ITD is the sharing of information to avoid the duplication of efforts between members. Steering committees are held twice a year as well as other conferences. The ITD also maintains a website that acts as a platform for members to share ideas and experiences.

The ITD is positioning itself as a central reference point for information relating to tax reforms throughout the world and as a facilitator for discussions between tax professionals.

n) Intra-European Organisation of Tax Administrations (IOTA)

IOTA is a non-profit organisation with a focus on Europe and covers all aspects of tax administration reform. It currently has 46 members from Europe and neighbouring countries (the latest member is Kazakhstan).

IOTA hosts a series of workshops (approximately 24 per year) to look at issues within tax administration. The workshops are tailored to the specific needs of its members. The majority of topics focus on issues regarding taxation within Europe. IOTA is a small organisation and is therefore not able to offer technical assistance to its members. Its focus is on facilitating dialogue through sharing of experiences.

F. Summary of country experience findings

(i) Type of country (MIC; LIC; LDC; fragile / post conflict)	The countries range from upper middle income (South Africa and Peru) to several least developed/low income countries. The countries are a good representative sample within this range.
(ii) Type of reform (part of a general IT reform/ e-government strategy or specific integrated tax reform project) and its background	In most countries it was a specific integrated tax reform project, in many cases this was part of, or linked to, a wider e-government strategy.
(iii) Institutional environment, structure and supervision framework	Predominantly Semi-autonomous Revenue Agencies (SARAs), with some examples of ministry directorates/departments. Includes a large federal entity which has a wide range of regional revenue authorities. Good representative sample of institutional environment types.
(iv) Objectives and targets of the reform (qualitative and quantitative, including number of staff, clients, procedures etc.)	The objectives and targets of the reform were almost exclusively the whole tax administration. Specific numbers of staff, clients and procedures were very hard to establish in every case. The reforms were all concerned with achieving self-assessment and they all included automation of procedures. A general pattern that could be detected from the feedback, is that the reforms were designed to: • Raise more revenue • Increase efficiency • Integrate disconnected parts of the tax administration • Improve taxpayer service and customer orientation • Improve accountability and transparency
(v) Description / type of system introduced or expanded (e.g. COTS, internally developed, degree of customisation; maintenance in-house	All COTS with the exception of Bangladesh and Nepal, whose automations were custom-built. In most cases the COTS were configured and tailored specifically to the local context in question. In the case of Tanzania's ITAX, the Tanzania Revenue Authority considers the development to have been done locally, although the system is described as COTS[25].
(vi) Components, procedures, services developed / changed (including ICT-providers)	In almost all cases all routine procedures from registration through to objections/appeal were the subject of automation. In most cases all domestic taxes have been included.
(vii) Reform rollout strategy (policy reform, procedures, tax base expansion, IT, HR, comms, change mgt.), including analysis of the approach: waterfall, iterative, cloud-based service etc.	It was difficult to obtain consistent responses on this issue. Broadly speaking there was acknowledgement that the reforms included policy, business process reengineering, IT and change management. The strategy in most cases was based on pilots first, usually in LTOs or specific offices, e.g. HQ.
(viii) Market of providers (monopoly/competition/open source?)	All COTS were acquired through competitive tenders. Nepal and Bangladesh used local firms to custom-build after competitive procurement processes.
(ix) Investment costs (software and hardware, training) and maintenance costs (incl. ownership/ copyright of the system)	Consistent answers were very hard to obtain and respondents were unsure which costs to include/exclude in their responses. In other cases the costs were unknown. A comparison based on the figures is therefore not advisable. South Africa was much higher than other countries at US$300mn, with the next highest estimated at US$54mn (Burundi), other high estimates were US$20mn (Ghana) and US$15mn (Nepal), all others were below that in the range of US$2.2-8mn.
(x) Effectiveness as evidenced by revenue performance and lower compliance costs	Ranges from minimal in the case of Bangladesh, to a very highly effective in most others. In some cases it was considered too early to tell. In most cases the respondents believed their automations had resulted in lower compliance, burdens and increased revenue.
(xi) Cost-benefit relation of the reform (broad qualitative comparison)	Consistent responses to this question were difficult to obtain, as there are numerous different ways to interpret 'costs' and 'benefits'. In a few cases it was considered unclear, unknown or too early to tell, but overall respondents were convinced the benefits heavily outweighed the costs.
(xii) Time from initial set-up until full functionality	Most countries implemented in 1-3 years, Tanzania took 5-10 years, and Nepal was a complete outlier with 16 years, perhaps reflecting its very gradual custom-built efforts.
(xiii) Customer focus including usability / user friendliness with respect to internal and	Responses to this were widely varied, presumably because it is difficult to measure or summarise usability. Some respondents focused on the web based interface,

[25] Note: Using the definitions for COTS we have in this report, strictly speaking iTax is not a COTS solution.

external clients (dependent on available information)	others to the ease of using the system to administer taxes. In all cases except Bangladesh there was a clear view that usability was an improvement on legacy systems.
(xiv) Degree of decentralisation (to what degree were local tax authorities integrated?)	Decentralisation implies the trickling down of executive authority, whereas integration might just mean that local tax authorities are using integrated systems of some description. In most cases the question was interpreted to mean the degree of integration rather than decentralisation as such. In a few cases there were no local tax offices to speak of, so the question was irrelevant, in most others full integration had either been achieved or was being implemented.
(xv) Interoperability / integration regarding other relevant applications as well as resulting analytical capability (integrated / cooperating solutions for the registry customs, other fees etc.)	Aside from Bangladesh where no interoperability exists, all other countries have some level of integration with other applications. Generally speaking the use of a TIN underlies integration with customs and fees, and there is often integration with a motor vehicle registry, company registry, social security/pensions and sometimes the banking system.
(xvi) Complexity of know-how required and needs regarding capacity development	In most cases the know-how required was considered to pose a serious challenge in the context of low staff capacity. In a few cases the challenges were considered quite modest.
(xvii) Quality of after sales service and type of approach regarding capacity building	This question was taken to mean the after sales service provided by the vendor, including capacity building. In almost all cases this was considered good, or at least satisfactory.
(xviii) Security of data and operating systems, privacy	Considered very important in all cases and is either good or satisfactory in almost all cases. It is however considered a major weakness in Bangladesh and Senegal is seeking improvements.
(xix) Level of transformation	If transformation is considered as the level of achievement in connection with the reform objectives specified in iv, in most cases it was either high or too early to tell. The level of transformation in Bangladesh was considered low.
(xx) Sustainability of the system (e.g. regarding HR, maintenance, scalability, adaptability / platform independence, complexity)	Sustainability was almost exclusively considered good, or in-hand. Specific details were hard to identify, but respondents mentioned business processes and HR reform in addition to the new systems, as well as support contracts with vendors.
(xxi) Impact on promoting transparency / limiting corruption	With only minor exceptions, considered to have a strong or very strong impact.
(xxii) Challenges (e.g. change mgt., system design / quality of requirement specifications, procurement/contracts, decision making delays, rollout model, staff rotation, internal champions/ownership)	Change management and managing internal resistance to change were general themes. Other challenges included: • sufficient political commitment • weak national infrastructure • insufficient ownership of reforms • system design • staff turnover • procurement.
(xxiii) Plans for the future	Varies considerably depending on the country. In most cases there is still much work to do to consolidate and/or rollout reforms further.
(xxiv) Summary of relative strengths and weaknesses	Difficult to generalise, but on the whole strengths tended to be the systems themselves and the plans for implementing them. whereas weaknesses relate to a low HR capacity.

G. Country by country assessment

The sub-sections below first provide background information, which is mostly information already available in the public domain and secondly primary source information obtained from people close to each country's automation experience.

1. Bangladesh

Background

DFID has been key promoter of revenue reform through two projects, RIRA1 and RIRA 2, (Reform in Revenue Administration). RIRA 1 ran from 2002-2005 and RIRA 2 from 2006-2008. The key outputs were the creation of a Large Taxpayer Unit (initially limited to income tax) within a function-based organisation. In terms of ICT implementation, an in-house system was developed using local resources, called ITMS (Income Tax Management System), which has many gaps. Key gaps include registration/de-registration of taxpayers, which is done centrally in another part of the National Board of Revenue (NBR) and the absence of an audit module. Although the NBR does not collect revenue, its focus is limited to tracking of submission of returns and payment of taxes, which is received by the central bank (directly or via a nominated nationalised bank). The LTU office receives a copy of the deposit slip (challen) sometimes up to six months later. The main focus of RIRA1 and 2 was on advisory services and DFID provided around £5-6mn in each phase. The current project, TACTS, Tax Administration Capacity and Taxpayer Services, is likewise very narrowly focused on LTU, CIC (Central Intelligence Cell, created under RIRA1) and Internal Audit and Capacity building through training. The project does not include any substantive implementation component and is mainly advisory. The budget is £7mn.

In addition, IFC, ADB and IMF are involved in supporting parts of the modernisation programme, but there is no consistency or dialogue between the different donors. For instance, IFC supported the launch of application on e-payment in May 2012, but so far it is yet to reach a turn-out of 1%.

Primary source information

Population (2012): 154,695,368	Bangladesh
(i) Type of country (MIC; LIC; LDC; fragile / post conflict)	LDC/LIC.
(ii) Type of reform (part of a general IT reform/ e-government strategy or specific integrated tax reform project) and its background	There is a general 'Digital Bangladesh' government initiative. In addition the Tax wing of NBR – National Revenue Board which also includes Customs and VAT – has undertaken several initiatives independently. This includes e-payment, e-submission of returns and taxpayer registrations. These initiatives were undertaken almost independently of each other and communication leaves room for improvement
(iii) Institutional environment, structure and supervision framework	The three revenue wings operate under a board, which has an external head. Although there is some operational cooperation, all modernisation plans are conceived and implemented individually.
(iv) Objectives and targets of the reform (qualitative and quantitative, including number of staff, clients, procedures etc.)	Primarily ICT capacity development without process reform or human resource development.
(v) Description / type of system introduced or expanded (e.g. COTS, internally developed, degree of customisation; maintenance in-house	All are locally developed systems.
(vi) Components, procedures, services developed / changed (including ICT-providers)	Taxpayer registration, return submission and e-payment.
(vii) Reform rollout strategy (policy reform, procedures, tax base	Tax base expansion is the main focus. No change management or HR development.

Population (2012): 154,695,368	Bangladesh
expansion, IT, HR, comms, change mgt.), including analysis of the approach: waterfall, iterative, cloud-based service etc.	
(viii) Market of providers (monopoly/competition/open source?)	A limited number of local firms. Selection through competitive tender.
(ix) Investment costs (software and hardware, training) and maintenance costs (incl. ownership/ copyright of the system)	Unknown.
(x) Effectiveness as evidenced by revenue performance and lower compliance costs	Minimal according to anecdotal accounts. Impossible to verify because there is no data base and effective revenue analysis function.
(xi) Cost-benefit relation of the reform (broad qualitative comparison)	Unknown. Safe to say that benefits are unclear.
(xii) Time from initial set-up until full functionality	Ranges from 1-3 years.
(xiii) Customer focus including usability / user friendliness with respect to internal and external clients (dependent on available information)	Updating of internet based system has been limited and usability is considered weak.
(xiv) Degree of decentralisation (to what degree were local tax authorities integrated?)	Only central revenue taxes are covered by the systems in use.
(xv) Interoperability / integration regarding other relevant applications as well as resulting analytical capability (integrated / cooperating solutions for the registry customs, other fees etc.)	Some interoperability but generally the reforms in each area have started from scratch. This is no coherent strategic plan and no stable management.
(xvi) Complexity of know-how required and needs regarding capacity development	Modest. ICT use in Government remains very low.
(xvii) Quality of after sales service and type of approach regarding capacity building	Unknown.
(xviii) Security of data and operating systems, privacy	Data security is a major weakness. There is no monitoring of what data is being collected, who uses that data and for what purposes it is used.
(xix) Level of transformation	Very early stage of transformation.
(xx) Sustainability of the system (e.g. regarding HR, maintenance, scalability, adaptability / platform independence, complexity)	Because each system operates in isolation in the absence of a coherent plan, system sustainability is poor.
(xxi) Impact on promoting transparency / limiting corruption	Minimal impact so far.
(xxii) Challenges (e.g. change mgt., system design / quality of requirement specifications, procurement/contracts, decision making delays, rollout model, staff rotation, internal champions/ownership)	Political commitment to having a transparent system, but in practice there seems to be no commitment to strategic, end to end reform at the political level. There may be entrenched interests that do not want a completely transparent, fully automated revenue system.
(xxiii) Plans for the future	Various levels of modernisation plans exist, but there is no single plan that supersedes the others.

Population (2012): 154,695,368	Bangladesh
(xxiv) Summary of relative strengths and weaknesses	The systems have been developed without asking the hard questions, reviewing processes and organisational structure or a strategic commitment to having a transparent and user-focused system. The different systems are therefore very limited in what they can achieve in terms of effective revenue administration.

2. Burundi

Background

The Burundi Revenue Authority, Office Burundais des Recettes (OBR), was created in 2009 through a merger of the customs and tax administrations. The SARA model that has been adopted in Burundi is in line with international best practice and is the approach adopted throughout the East African Community (Kenya, Tanzania, Uganda and Rwanda) in the last 15 years.

Donor assistance for the OBR has been provided through TradeMark East Africa, which has funded technical assistance in tax and the automation of the tax function, with the installation of the SIGTAS system. Despite some impressive developments within the OBR from a technical and functional perspective, the automation of the tax administration has not been as successful. Numerous system errors have delayed the implementation. Additionally, corporate issues with the manufacturer implied that although the system is implemented, its functionality is extremely limited and staff within the OBR did not have sufficient training on the system. OBR is now committed to replacing SIGTAS with an alternative COTS solution.

Primary source information

Population (2012): 9,849,569	Burundi
(i) Type of country (MIC; LIC; LDC; fragile / post conflict)	LDC/LIC Burundi is a small, landlocked country, which has been severely damaged by civil war and sanctions. Economic growth was significantly poor in the early part of the decade but it achieved average growth of 4.5% from 2006 as fighting diminished and peace returned to most areas[26]. Burundi is the poorest of the EAC Partner States with a GNI per capita of US$150 compared to a world average of US$11,174 and an average of US$468 among the other EAC Partner States[27]. According to the Burundi statistics institute, real GDP growth rate for 2012 will reach 5.2 %, while inflation rate should reach 7.9% according to the World Bank. While BIF 550 billion (US$ 346.5 million) revenue is planned in 2012, this growth and share of public resources in budget will not be enough to fund Burundi's planned public investments. The budget aid (i.e. general budget support) will drop from US$120m in 2011 to US$66m in 2012. A strong revenue authority is therefore key for Burundi. (Extract of Trademark East Africa Burundi Business Plan 2012).
(ii) Type of reform (part of a general IT reform/ e-government strategy or specific integrated tax reform project) and its background	In 2009 and with the support of the government of the UK through its Department for International Development (DFID), the Government of Burundi set up the Office Burundais des Recettes (OBR), a semi-independent revenue authority to professionalize tax administration in Burundi. Burundi had the vision of being the first Francophone country to have a revenue authority. All the other Francophone countries use the old format where the department of taxes and Customs falls under the ministry of finance. Creation of the OBR is also part of a wider strategy addressing the needs for Burundi to harmonize its laws and procedures with all other state members of the East Africa Community (EAC). OBR's IT strategy is based on a top down approach with focus on four layers: • New and improved legislation • New and improved processes, rules and administrative procedures • Modern software solutions supporting best practices, and • Modern, secure and reliable IT infrastructure. The integrated tax system project is only one of many projects with the objective of supporting the business reforms. Following its formation in 2010, OBR has taken several reform measures to modernize tax administration in Burundi. The reforms included restructuring the OBR along functional lines, modernizing the tax laws, procedures, automating processes including ASYCUDA (Automated System for Customs Data) for customs, SAP's Enterprise Resource Planning (ERP) for budget and account consolidation, RCMS (Revenue Cycle Management System) for tax payments consolidation and reporting on revenue collection. On the tax administration side, there are some fragmented systems such as taxpayer registration, VAT return processing and basic Excel

[26] IMF expects 4.2% (real) economic growth in 2011; and 4.5-4.8% next year owing to strong construction, coffee and hotel sectors
[27] Doing Business 2011 / Economy profile

Population (2012): 9,849,569	Burundi
	systems for other types of taxes which do not provide adequate management reports.
(iii) Institutional environment, structure and supervision framework	With the technical assistance of Trademark East Africa, the main donor, OBR is implementing a modern revenue collection agency based on International Monetary Fund advice. OBR is a semi-autonomous institution under the Ministry of Finances. OBR reports to a Board of Administrators including representative of the Civil Society, Business Community and Public sector. OBR is working closely with Ministry of Finance and other stakeholders in the private and public sectors to modernize the tax laws. All the laws seek to harmonize the tax environment of Burundi with best international and regional practices and they work to dramatically improve the business environment in Burundi.
(iv) Objectives and targets of the reform (qualitative and quantitative, including number of staff, clients, procedures etc.)	OBR has 4 major strategic objectives which are: • Revenue maximisation; • Enhancement of taxpayers' compliance; • Developing a competent and effective organisation; and • Developing effective control systems and procedures that promote taxpayer service. More details about objectives and targets are defined into OBR's 5 years CORPORATE PLAN (2012-2016). http://english.obr.bi/images/stories/download/Corp-Plan%202012-2016.pdf In 2012, OBR was counting 2794 taxpayers, 468 large and 2326 small and medium. The informal sector is still high. In 2013, a new direction has been added to look for the registration of the micro taxpayers which are evaluated to approx. 6000.In 2012, OBR had 630 employees. More information on staff, clients and procedures are described into OBR ANNUAL REPORT 2012. http://english.obr.bi/images/stories/download/ANNUAL_REPORT_2012.pdf?ml=4&mlt=system&tmpl=component
(v) Description / type of system introduced or expanded (e.g. COTS, internally developed, degree of customisation; maintenance in-house	In 2010, OBR signed a contract with CRC Sogema for the supply and installation of the SIGTAS software. The 'go live' for the initial phase was in November 2011. The SIGTAS version 2 was implemented and it was advertised as an integration of previous customised versions into a single core system. In December 2012, OBR management terminated the contract with CRC Sogema. OBR is currently preparing a public tender for a new commercial off-the shelf package ITAS (Integrated Tax Administration System) to replace the SIGTAS software. From Sept 2011 to March 2012, OBR implemented Oracle JDEdwards ERP system to manage Finances, HR & Payroll, Procurement and Fix Assets. The project has been completed in time and within budget. From March 2012 to May 2013, OBR upgraded ASYCUDA++ to the ASYCUDA World version which is now in production. ASYCUDA is interfaced with the ERP to push the payment information. During 2012, the IT team has developed and deployed a Web based payment receipt system named RCMS connected to the Financial modules of the ERP. Complementary to the ERP and integrated with it, a Business Intelligence module allows Commissioners and Directors to look at revenues by period, location, department and type of tax with capacity to compare with previous periods.
(vi) Components, procedures, services developed / changed (including ICT-providers)	In 2012, a team of HR specialists has developed and deployed a new organisation structure based on recognized worldwide best practices. Also, since 2010, a team of short-term and long-term Technical Advisors specialists in the domain of customs, tax, audit, finances, investigations, procurement, communication and information technology has assisted OBR management designing and implementing new and improved procedures. Their role includes also training, knowledge transfer and coaching on a day to day basis.
(vii) Reform rollout strategy (policy reform, procedures, tax base expansion, IT, HR, comms, change mgt.), including analysis of the approach: waterfall, iterative, cloud-based service etc.	An IT infrastructure implementation project has been conducted independently of the various software projects. A modern IT infrastructure based on the virtualisation technology allows multiple software applications to simultaneously share centralized computational and data storage resources available from a primary and a secondary data centre configured for disaster recovery. OBR services are decentralized throughout 20 points of services in Bujumbura and within the country. Policy reforms are done in advance of system development.
(viii) Market of providers (monopoly/competition/open source?)	Competitive bids. Public or on invitation tenders open to East Africa Community for equipment and to international market for Software, Technical Advisors and specialized training, done in West Africa, India and Europe.

Population (2012): 9,849,569	Burundi
	Tenders for software applications included software license plus consulting services required to implement a turnkey solution. This includes installation, business analysis, personalisation, configuration, testing, training and documentation. Additionally, second year support and update services were included. Hardware infrastructure which includes network, servers, uninterruptable power supply (UPS), workstations, printers and telecommunication services were procured through multiple tenders. Vendors were responsible to deliver the equipment, the installation and training. Advisors have been involved in change management, preparation of tender and technical assistance during the course of equipment installation and software implementation. Technical assistance was tendered separately from IT software and hardware. This also included technical tax, customs and HR advice as well as IT and procurement support.
(ix) Investment costs (software and hardware, training) and maintenance costs (incl. ownership/ copyright of the system)	Approx. US$18 million for phase 1: 2009-2012. Approx. US$30-36 million planned for phase 2: 2013-2017. The budget is divided per the following categories: • Enhancement of taxpayer's compliance level; • Developing a competent and effective organisation; • People; • Work infrastructure; • Electricity; • Software systems for core business including licences; • IT systems; • Effective Internal control, systems and procedures; • Short and long term technical advisors; and • One stop border posts.
(x) Effectiveness as evidenced by revenue performance and lower compliance costs	Since its inception the OBR has demonstrated tremendous progress with a revenue collection that has virtually doubled, going from BIF 301 billion (US$ 192.6m)in 2009 (the last year of the old regime) to BIF 527 billion (US$ 337.3m) in 2012. This strong revenue growth is the result of greater fiscal discipline resulting from measures and reforms adopted by the OBR to maximize revenue, enhance taxpayer's compliance by developing a competent and effective organisation and developing effective control and procedures promoting taxpayer service.
(xi) Cost-benefit relation of the reform (broad qualitative comparison)	Highly cost effective, despite problems with SIGTAS.
(xii) Time from initial set-up until full functionality	OBR is still at the early stage of its modernisation. The start was slow with only one consultant for the first 6 months in 2009. The automation has started in 2011 and should be completed by 2017
(xiii) Customer focus including usability / user friendliness with respect to internal and external clients (dependent on available information)	This is one of OBR's strategic objectives and is central to the reforms.
(xiv) Degree of decentralisation (to what degree were local tax authorities integrated?)	OBR Head office is centralized in Bujumbura. Tax collection operation is decentralized with point of service in each of the 15 provinces. The ITAS servers and database will be centralized in Bujumbura with web access in each POS.
(xv) Interoperability / integration regarding other relevant applications as well as resulting analytical capability (integrated / cooperating solutions for the registry customs, other fees etc.)	The integration is already done between ASYCUDA World, the ERP and some tax system. OBR has early adopted a unique Tax Identification Number (TIN) for all taxpayers and importers.
(xvi) Complexity of know-how required and needs regarding capacity development	The complexity of know-how to be mastered by OBR employees can be considered as high. Evolving from a manual paper system to a modern effective and efficient IT based operation requires considerable planning, training and willingness for change from the part of the employees. The technical assistance provided by short term and long term specialized advisors providing coaching and hands-on training has been proven very efficient to maximize knowledge transfer and capacity building at the business level.
(xvii) Quality of after sales service and type of approach regarding	Each contract includes an obligation for knowledge transfer activities with the purpose of ensuring sustainability of the solution implemented. This includes functional and technical

Population (2012): 9,849,569	Burundi
capacity building	training, post implementation onsite technical assistance, annual technical remote support
(xviii) Security of data and operating systems, privacy	The server's equipment is located into secured rooms. OS Linux, Oracle database, CISCO Firewall, Corporate antivirus are insuring a first level of defence at the network and the server layer. OBR is planning a second level of defence at data, perimeter and policies & procedures layers. Privacy is managed in line with international best practice but there is no privacy law in place at the moment.
(xix) Level of transformation	OBR modernisation programme includes multiple level of transformation executed in phases.
(xx) Sustainability of the system (e.g. regarding HR, maintenance, scalability, adaptability / platform independence, complexity)	OBR modernisation programme has been established with sustainability in mind. Maintenance of the system is undertaken by the OBR IT department with technical support from an international IT advisor.
(xxi) Impact on promoting transparency / limiting corruption	OBR has led the fight against corruption throughout the Burundian civil service. This is one of the top priorities of the Commissioner General. OBR is continuously promoting transparency at every level of its operations. Revenue collection results are available on OBR website. A transparent recruitment process based on competencies coupled with strong internal audit has reduced internal fraud and collusion. Taxpayer's database and computerized transactions provide tools to auditors to detect tax avoidance. Taxpayer education programme has increased their knowledge about their rights and obligations.
(xxii) Challenges (e.g. change mgt., system design / quality of requirement specifications, procurement/contracts, decision making delays, rollout model, staff rotation, internal champions/ownership)	Long procurement cycle. Long delivery and implementation cycle. Weak national infrastructure such as electricity and network. Financing phase 2
(xxiii) Plans for the future	Phase 2 planned for 2013 - 2017
(xxiv) Summary of relative strengths and weaknesses	A detailed SWOT analysis has been undertaken by the OBR. In summary, this includes: <u>Strengths:</u> • Quasi-autonomous status and flexibility in decision making • Support from key stakeholders (government, business community, development partners such as TMEA) • Introduction of ASYCUDA ++, ASYCUDA World SIGTAS & ERP systems • New VAT, Tax on Direct Income & Tax procedures laws • Experience in planning and executing targets and deadlines • Recruitment of new staff, that will be trained based on the values and ethics of OBR • Establishment and strict application of staff Code of Conduct • Improved office layout and IT environment • VAT refund procedures improved • Existence of simplified and speedier procurement procedures for projects funded by donors • New unique revenue receipts with added security features. • Technical assistance from EARA. <u>Weaknesses:</u> • Negligent behaviour and corrupt tendencies remain amongst some officers • Resistance to change amongst some staff • Inadequate skills in ICT amongst staff and limited number of ICT literate staff • Poor working conditions • Inadequate systems and procedures, especially in domestic taxes • Lack of tax offices in some regions • Management and operational manuals that are incomplete or non-existent • Large informal sector difficult to reach • Lack of reliable statistical figures • Excessive bureaucracy • Old fashioned revenue collection systems and procedures • Focus on day-to-day operational activities rather than on long term strategic aims • Internal communications deficit

Population (2012): 9,849,569	Burundi
	• No Business continuity process and data recovery procedure yet in place • Language barrier in English • Complex and long public tendering procedures • Code of Conduct and the terms and conditions of service need to be improved and HR procedures need to be modernised More details on OBR's 5 years Corporate Plan (2012-2016) can be found here: http://english.obr.bi/images/stories/download/Corp-Plan%202012-2016.pdf

3) Ethiopia

Background

Ethiopia has benefitted from a range of technical assistance in relation to tax administration. The Ethiopian Revenues and Customs Authority (ERCA) has received assistance from:

- Public Sector Capacity Building Programme (PSCAP), a multi-donor fund that has provided technical assistance across the Ethiopian Civil Service between 2004 and 2012. A key focus has been on supporting ERCA in tax and customs related technical programmes; and
- Her Majesty's Revenue and Customs (HMRC) under a DFID-funded contract. HMRC provided technical assistance to ERCA through a series of short term interventions and training programmes in tax and customs topics between 2008 and 2012.

The SIGTAS programme has had a number of specific objectives:

- To improve the implementation of human resource management and development activities (build a development taskforce);
- Build a development friendly information system;
- To upgrade customers education and communication;
- To enhance customer service delivery and support;
- To boost law compliance; and
- To increase revenue.

The system has been rolled out throughout Ethiopia. Ethiopia operates a federal tax system: at the federal level the tax authority has the power to raise and collect taxes. At the regional level, individual regional revenue authorities also have the power to raise and collect taxes. The SIGTAS system is being implemented at both federal and regional levels.

Primary source information

Population (2012): 91,728,849	Ethiopia
(i) Type of country (MIC; LIC; LDC; fragile / post conflict)	LDC/LIC.
(ii) Type of reform (part of a general IT reform/ e-government strategy or specific integrated tax reform project) and its background	Integrated tax reform.
(iii) Institutional environment, structure and supervision framework	Semi-autonomous federal revenue and customs authority (ERCA) organised into 25 directorates and 32 branches. There are also 11 separate regional revenue authorities.
(iv) Objectives and targets of the reform (qualitative and quantitative, including number of staff, clients, procedures etc.)	Improve service to taxpayers Improve internal tax administration by streamlining various operations Enhancing information security, processing and sharing Improving taxpayer compliance Enhancing revenue performance
(v) Description / type of system introduced or expanded (e.g. COTS, internally developed, degree of customisation; maintenance in-house	SIGTAS version 2. Customised to meet Ethiopian laws, regulations and procedures.
(vi) Components, procedures, services developed / changed (including ICT-providers)	Registration, Return Processing, Collection, Case Management, Objection Case Management, Audit Case Management, Refund Processing; Procedures for each of the operations.
(vii) Reform rollout strategy (policy reform, procedures, tax base expansion, IT, HR, comms, change mgt.), including analysis of the approach: waterfall, iterative,	Procedures BPR, IT, HR. The method followed for IT implementation can be described as waterfall as each stage has to be completed before the next begins.

Population (2012): 91,728,849	Ethiopia
cloud-based service etc.	
(viii) Market of providers (monopoly/competition/open source?)	Competition for procurement of the ITAS and associated implementation support and maintenance. Technical support for implementation of the system (e.g. training) provided by the system manufacturer. Other technical assistance provided under DFID twinning programme and the PSCAP programme.
(ix) Investment costs (software and hardware, training) and maintenance costs (incl. ownership/ copyright of the system)	Total of US$7.1mn over nine years which included installation and initial training and maintenance costs (not including licences).
(x) Effectiveness as evidenced by revenue performance and lower compliance costs	Extremely effective in increasing revenue performance. There has been a steady increase since the introduction.
(xi) Cost-benefit relation of the reform (broad qualitative comparison)	Highly cost effective.
(xii) Time from initial set-up until full functionality	10 years.
(xiii) Customer focus including usability / user friendliness with respect to internal and external clients (dependent on available information)	It is user friendly, depending on the background of users. Those with better academic background and exposure to IT use it with comfort, while others have more difficulties.
(xiv) Degree of decentralisation (to what degree were local tax authorities integrated?)	At the national level the federal tax authority has already completed the integration of its branches and also integrated with regional tax authority head offices, which are themselves implementing SIGTAS.
(xv) Interoperability / integration regarding other relevant applications as well as resulting analytical capability (integrated / cooperating solutions for the registry customs, other fees etc.)	Interfaces have been developed for Customs, Ministry of Finance and National Bank. Online access for certain data has also been developed for the Ministry of Trade.
(xvi) Complexity of know-how required and needs regarding capacity development	It is a huge challenging area. Much effort is still required to develop the required capacity
(xvii) Quality of after sales service and type of approach regarding capacity building	There is a support agreement with the developer which is renewed annually. Training is conducted yearly to enhance the capacity of IT staff, as well as the rest of the users.
(xviii) Security of data and operating systems, privacy	The authority runs its systems from a single data centre, which is controlled by authorized personnel only. Privacy is protected by law and the operational system complies with it.
(xix) Level of transformation	High. Internal tax administration automation for all taxes except the head office functions Internet filing for all taxes Online messaging related to specific taxes Online payment through banks (not yet operational due to certain legal issues)
(xx) Sustainability of the system (e.g. regarding HR, maintenance, scalability, adaptability / platform independence, complexity)	Management of the IT system is mainly done by internal staff and sustainability is ensured through capacity building and maintenance services.
(xxi) Impact on promoting transparency / limiting corruption	Powerful tool in promoting transparency through enabling auditing, fast and precise reporting mechanisms and easy information sharing capacity.
(xxii) Challenges (e.g. change mgt., system design / quality of requirement specifications, procurement/contracts, decision making delays, rollout model, staff rotation, internal champions/ownership)	Among internal staff there is strong resistance to change, in relation to the modernisation as a whole. Management has now introduced a change management programme for ERCA.

Population (2012): 91,728,849	Ethiopia
(xxiii) Plans for the future	Head office functions are to be covered. Security systems will be enhanced, infrastructure and applications will be further modified.
(xxiv) Summary of relative strengths and weaknesses	Strengths • Government commitment to modernizing the tax administration and introducing modern technology • Strong IT organisational unit to manage systems which will ensure sustainability • Strong management support in implementing the systems Weaknesses • Lack of qualified manpower in certain areas • High resource requirement for the implementation • Great challenges in the area of change management in terms of staff acceptance of the system/reforms

4) Ghana

Background

In 1998 Ghana's parliament passed a law to create a Revenue Agencies Governing Board (RAGB) to oversee three revenue agencies: the IRS, the CEPS and the VAT Service, which were operating independently of each other. In late 2009 a bill was passed to merge the three bodies into a single entity that would be known as the Ghana Revenue Authority (GRA).

The IRS administration remained without computerisation until 2006 when the Tanzania Revenue Authority (TRA) signed an agreement to hand over the TRA's software (i.e. Integrated Tax Administration System (iTAX) to Ghana's tax administration. In 2008 it was observed that, as there were three independent bodies responsible for revenue administration, the exchange of information between them was 'seriously deficient'[28].

The National Information Technology Agency (NITA) was established in 2008 as the ICT Project Implementation arm of Government. Since its creation it has built a fundamental ICT architecture, working with a US$40 million World Bank loan, US$150 million Chinese EXIM Bank loan, including a US$30 million concessionary bit and in 2012 another €37 million concessionary loan from the Danish Government.

NITA used the government's 30% shares in Vodafone to gain access to the National Fibre Optic Backbone that was in the possession of Vodafone to build a Multiple Layer Switch and WIMAX (Worldwide Interoperability for Microwave Access) networks to connect all Municipal and District Assemblies (MDAs) during the first phase of their e-government project. This network is designed to reach districts and remote communities via several different means. This includes direct last mile fibre optic connectivity, high capacity microwave links, VSAT access through the Ministry of Finance and Economic Planning (MoFEP) VSAT network and leased terrestrial circuits from local telecoms and ISPs (internet service providers). The GRA uses this e-governance network to transport information online from districts to the regions and from regions to the national office.

In May 2009 Ghana received a credit from the World Bank towards the cost of the e-Ghana project. The government of Ghana decided to apply part of the proceeds towards the design, financing, building, operation and transfer to a Public Private Partnership (PPP) of an e-government application for the Revenue Generating Agencies. An ambitious PPP financing model was created for this project, whereby the remaining costs of the project will be paid for from the expected increased tax revenues. In the financing model it is forecast that the remaining costs will amount to just 2% of the net revenue gain over a five year period.

Subsequently, Crown Agents was sub-contracted to GCNet for the World Bank-funded e-Governance project in Ghana for the automation of the Domestic Tax Revenue Division (DTRD) of the GRA. During 2010, Crown Agents' staff delivered a series of Best Practice IT requirements workshops for key tax personnel within the newly-formed GRA, covering a comprehensive suite of tax modules from taxpayer accounting and risk analysis through to debt management. In December 2011, the Crown Agents TRIPS module for taxpayer registration was implemented and from January 2012 to the end of September 2012 the Ghana Revenue Authority registered and re-registered all taxpayers in the country, as the taxpayer registration system was cleaned and validated.

In 2012 a Tax Administration Bill, which pursued to consolidate the common procedures of all the tax laws, was introduced as part of the e-Governance reforms to streamline the administration of taxes.

Primary source information

Population (2012): 25,366,462	Ghana
(i) Type of country (MIC; LIC; LDC; fragile / post conflict)	LMIC.
(ii) Type of reform (part of a general IT reform/ e-government	This is part of a whole-of-government strategy which includes a specific integrated tax reform project (implemented by GCNET) as well as other e-government initiatives.

[28] Christian von Soest, Donor Support for tax administration Reform in Africa, German Development Institute 2/2008 page 5

Population (2012): 25,366,462	Ghana
strategy or specific integrated tax reform project) and its background	
(iii) Institutional environment, structure and supervision framework	The Ghana Revenue Authority (GRA) constitutes three divisions: the Domestic Tax Revenue Division, Customs Division and Support Services Division. Each of these Divisions is headed by a Commissioner. The GRA is headed by a Commissioner General and governed by a Board.
(iv) Objectives and targets of the reform (qualitative and quantitative, including number of staff, clients, procedures etc.)	The objectives of the GRA as presented in the GRA Act are: • Provide a holistic approach to Tax and Customs Administration • Reduce administration and tax compliance cost and provide better services to taxpayers • Promote efficient collection of revenue and the equitable distribution of tax burden and ensure greater transparency and integrity • Ensure greater accountability to government for the professional management of tax administration • Improve information linkage and sharing information among the Divisions of the Authority • Provide a one-stop service for taxpayers for the submission of returns and payment of taxes • Provide common tax procedures that enable taxpayers to be governed by a single set of rules The GRA's published targets include: • 30% growth in Registered taxpayers by 2014 • Debt stock reduced by 20% annually till 2014 • Decrease cost of collection with 10% between 2012 and 2014 • Increase on-time filing and payment with 20% annually
(v) Description / type of system introduced or expanded (e.g. COTS, internally developed, degree of customisation; maintenance in-house	The Total Revenue Integrated Processing System (TRIPS) COTS solution is being developed to automate the Domestic Tax processes. It is part of an ICT Public Private Partnership between the Ghana Government and GCNet supported by the World Bank. This is a COTS product but has been customised for the purposes of the GRA. The project is known as the eGovernment project (eGov). The GRA will take full ownership of the system within four years, including maintenance. Prior to this, support and maintenance is provided by GCNET. Previously, GCNet was contracted by government to provide a customs management system in a similar PPP arrangement.
(vi) Components, procedures, services developed / changed (including ICT-providers)	The components of the system are: Registration, Returns processing, Exemptions, Taxpayer accounting, Revenue accounting, Refunds, Revenue collection, Enforcement/Debt management/Compliance, Objections and appeals, Audit and visit, Risk analysis, MIS (data warehousing – DTRD, Customs & third party information); and Case management (business management tool). Extensive Business Reengineering has been carried out to determine domestic tax processes and the requirements of the GRA.
(vii) Reform rollout strategy (policy reform, procedures, tax base expansion, IT, HR, comms, change mgt.), including analysis of the approach: waterfall, iterative, cloud-based service etc.	The GRA's Modernisation Plan is underpinned by its strategic priorities contained in the Authority's Strategic Plan. There are seven thematic areas in the Modernisation Plan. • Infrastructure Development and Management; • Customer Service Delivery and Stakeholder Engagement; • Human Resource Management; • IT Service Delivery; • Organisational Development and Strategic Management; • Revenue Integration and Modernisation; and • Infrastructure Development and Management. The building of a new image and the creation of the right ambience through renovations, building of new structures, improved furnishing and other internal decorations. The implementation of the ITAS, TRIPS (Crown Agents) is part of a Public Private Partnership (PPP) between GCNet and the Ministry of Communication, with clear goals and objectives. The work under this PPP includes the design, building and operation of the system, including appropriate hardware and software. The system is being introduced in a phased approach, first at large tax offices (12 sites) and then a rollout to medium and small offices.
(viii) Market of providers (monopoly/competition/open	The Modernisation programme employs a mixed set of providers. The eGov project is a Public Private Partnership between the Govt of Ghana and GCNet. GCNet's partner is Crown Agents

Population (2012): 25,366,462	Ghana
source?)	(that is providing the TRIPS system for the project) and GCNet is responsible for the associated software and hardware. This is a partnership arrangement between GCNET and Crown Agents – there was no tendering process to find an appropriate subcontractor. GRA has also employed in-house capability to progress with the reform. This programme falls under the Government's overall ICT programme managed by NITA, but is run by GCNET and the GRA.
(ix) Investment costs (software and hardware, training) and maintenance costs (incl. ownership/ copyright of the system)	The World Bank support to the eGov project is $US20 million. The maintenance contract under the PPP is for a three year period.
(x) Effectiveness as evidenced by revenue performance and lower compliance costs	It is too early to tell how effective the integrated system is.
(xi) Cost-benefit relation of the reform (broad qualitative comparison)	The high degree of manual processing within an organisation as large as the GRA makes service delivery very inefficient. The organisation also lacks accurate and timely information for decision making. The ability to process the taxpayer holistically considering both domestic tax and customs transactions, greatly enhances audit and tax avoidance and fraud investigations. These benefits will transform the Authority to a level that will justify the cost. The automation of functions within the GRA will allow it to operate in a more efficient and effective manner, reducing processing time of tax returns and thereby offering a better service to its customers. Improved risk management and audit capabilities will allow it to better identify those who are evading tax. As of November 2013 the system was successfully handed over to the GRA. The system has contributed to an increase in tax revenue and has enabled the GRA to identify and stop fraudulent activity.
(xii) Time from initial set-up until full functionality	Range from 1-3 years.
(xiii) Customer focus including usability / user friendliness with respect to internal and external clients (dependent on available information)	Internal clients are currently the User Acceptance test group and the first offices according to the rollout plan.
(xiv) Degree of decentralisation (to what degree were local tax authorities integrated?)	The Domestic Tax Division has a total of 68 offices across the country, 15 Medium Taxpayer offices (MTO) and 53 Small Taxpayer Offices (STO). Each is headed by an Office Head. The MTO Heads report to a Deputy Commissioner for MTO. The STO Heads report to a Senior STO Head within their zones, who in turn reports to the Deputy Commissioner for STO. These offices will be integrated.
(xv) Interoperability / integration regarding other relevant applications as well as resulting analytical capability (integrated / cooperating solutions for the registry customs, other fees etc.)	The TRIPS system will integrate with the Customs system (which is the only external source) through the Tax Identification Number. A Data Warehouse is to be created as part of the GCNet project and information to be mined using a Business Intelligence tool. These will be located at the GRA headquarters.
(xvi) Complexity of know-how required and needs regarding capacity development	Extensive capacity building is required to operate a demand driven IT department which is part of national service provider. In-house technical knowledge in data warehousing, data centre operations, service centre operations and project management is low and training in these areas is needed. Computer literacy within the GRA is generally low, which is one of the reason why the project was outsourced.
(xvii) Quality of after sales service and type of approach regarding capacity building	The Private Partner, GCNet, is providing some IT training. However, more training is needed in order to sustain the professionalism required to operate the system effectively.
(xviii) Security of data and operating systems, privacy	Data security is provided adequately by the system. However there is a need to sensitise staff on data security issues, particularly the impact of not adhering to policies.
(xix) Level of transformation	Early stage of transformation.
(xx) Sustainability of the system (e.g. regarding HR, maintenance, scalability, adaptability / platform independence, complexity)	All plans are in place for a sustainable system. The business processes have been reengineered with active participation of GRA staff. There is a full time eGov project team headed by a Project Manager. The eGov project is also part of the wider GRA Modernisation Programme. Consequently, other ongoing projects such as Performance Management, Training and Change Management are all

Population (2012): 25,366,462	Ghana
	reviewed periodically to identify dependencies and synergy.
(xxi) Impact on promoting transparency / limiting corruption	The system will have a great impact on transparency and limiting corruption when it is fully implemented.
(xxii) Challenges (e.g. change mgt., system design / quality of requirement specifications, procurement/contracts, decision making delays, rollout model, staff rotation, internal champions/ownership)	There have been challenges with all the identified areas: Change Management, System Design, requirement specification, decision making delays, staff and internal champions/ownership. There is a lack of communication with staff in the GRA on the overall reform programme.
(xxiii) Plans for the future	Focus on the rollout of the TRIPS system. Focus on delivering the projects in the GRA Modernisation Plan (2012-14). In 2014 there will be a review of plans to develop the Strategic Plan for 2015-18. Crown Agents/GCNET handed over the TRIPS system in November 2013 although they are still providing support and maintenance assistance.
(xxiv) Summary of relative strengths and weaknesses	Strengths: • Integration has formed a wide resource pool of highly skilled technical staff. • Existence of a uniquely identifying number for taxpayers. • The successful segmentation of taxpayers into Large, Medium and Small taxpayers which allows efficient targeting of services to taxpayers. • Existence of a strategic plan with clearly defined vision, mission and goal statements as well as identified projects. • PPP Approach: this has allowed the Government to have a greater say as to the design and implementation of the system (rather than being more restricted under pure donor financing). Weaknesses: • Inadequate funds, physical infrastructure and other logistics to meet the operating and capital expenditure. • Inadequate staff training and development in most operational areas of the tax administration and supporting services resulting in mediocre performance. • Ineffective flow of communication across the organisation, leading to alienation and loss of coordination. • GRA is an aging organisation with many staff indifferent and/or resistant to change.

5) Mozambique

Background

Autoridade Tributária de Moçambique (AT) is the organisation that resulted from the merger of the Domestic Tax Department (DGI) and the Customs Department (DGA) in 2006. The organisation employs a total of 4,000 officers out of which approximately 2,500 work in DGI and the remainder works in DGA.

AT has approximately registered 2,600,000 citizens and companies as taxpayers, out of which less than 10% are active (i.e. those that file or pay taxes). The reason for this huge gap can be found in the fact that a citizen needs to have a tax registration to open a bank account or to get connection to a cell phone provider.

Taxpayers are managed through 32 agencies, Direção de Área Fiscal (DAFs), across Mozambique. In addition there are 39 collection posts (Postos de Cobranca) which are accommodated in an office and 33 mobile collection posts. A taxpayer can receive only limited services in a collection post. 24 DAFs, 31 collection posts and all the regional and the main headquarters are part of the rollout of the new system. The remaining locations, including the mobile collection posts, will maintain a fully manual process due to lack of infrastructure (specifically power supply and networking issues). Here, the declarations will be transported to a computerised DAF and processed over there in the ITAS.

A strategic plan for AT was developed, which ultimately led to a decision to replace the IT systems in 2008. This was initiated in order to increase the tax revenue, which was one of the top priorities of the organisation. An IMF report in 2009[29] stated:
"Although data from tax returns are entered in the IT system, the data are then used manually (for example, to follow up on late filers or non-filers). This is due both to technical limitations in the systems themselves and to the design of the operational procedures in use. Thus the IT system provides very limited support to the core functions in tax administration."

In 2009 it was announced by the Ministry of Finance that Oracle Enterprise Taxation Management had been selected to replace what was described as an inflexible, paper-based taxpayer registration process. The Government expected the new software to help increase efficiency and effectiveness of tax collection and improve taxpayer service to further drive an increase in taxpayer registrations. This was part of a larger e-governance initiative, which would also include implementation of government resource planning and customer relationship management (CRM) systems.

The announced plan envisaged Oracle Enterprise Taxation Management to provide a single view of taxpayer data and all transactional history. This single view would enable citizens and corporations with a self-service portal for online registration.

Prior to 2009 every area of the tax administration used computer applications in the daily course of business but almost all interaction with taxpayers relied on paper documents, error-prone manual inputs of data into the IT systems and physical movement of hard-copy files for processing and approvals. This manual process was evident from tax declarations, payments, customs clearances, refund claims and case management for appeals. The future vision of the tax administration is to rapidly transform to a modern system of e-taxation, including electronic declarations, electronic payments through commercial banks and the introduction of an automated single window (ASW) for customs clearances.

Primary source information

Population (2012): 25,203,395	Mozambique
(i) Type of country (MIC; LIC; LDC; fragile / post conflict)	LDC/LIC

[29] IMF - Evaluation of Reforms in Tax Policy and Administration in Mozambique and Related TA—1994–2007 para 190

Population (2012): 25,203,395	Mozambique
(ii) Type of reform (part of a general IT reform/ e-government strategy or specific integrated tax reform project) and its background	Since 1996 the Government of Mozambique has been implementing fiscal, legislative and customs reforms. In 2002, with the introduction of new income taxes, an interim system for revenue collection was developed, aimed at setting up conditions for the Directorates responsible for the collection of internal taxes. These Directorates used the same platform, ensuring that once the new system was introduced on a long term basis for this area, information is duly structured at the beginning of the operation. Parallel to the introduction of this system a diagnostic study was conducted on the current phase of technological development in the area, which came up with the following conclusions: • Development of ICT in a non-harmonized manner and non-aligned with the currently recommendable standards; • Existence of various scattered and non-integrated systems; and • Systems based on differentiated technologies, requiring several HR Specialist training courses, thus increasing among others, its complexity to be managed. The diagnostic study recommended the preparation of an Information Technology Master Plan (PDTI) for both the Tax Directorate and Customs Directorate. Mozambique Revenue Authority was established by Law 1/2006 of 22 March, with a mission to collect proceeds for the State. In 2007 AT approved the PDTI as a strategy of work and it admitted that it could be updated as the IICT had developed worldwide. In assuming the implementation of the agreement as is in the PDTI, two systems were developed, namely: 1. At the level of international trade there is a public / private partnership underway aiming to implement both a Single Window and a Customs Management System. 2. In the area of internal taxes the Project on e-Taxation was approved, for which an electronic platform named ETM (*Enterprise Taxation Management*) was purchased, through competition in 2008. According to the PDTI, customs management system and internal taxes management system must both be integrated among them and by force of the e-Government strategy these must be integrated with other Mozambican Government systems.
(iii) Institutional environment, structure and supervision framework	Autoridade Tributária (AT) is responsible for Internal taxes and Customs. For Internal taxes they run the e-Tributação project and for customs they use Janela Única Electrónica (JUE), which is a PPP. The information in this list is related to the e-Tributação project. AT is part of the Ministry of Finance. The IT is delivered by CEDSIF, which is the IT Department within the Ministry of Finance for all departments of the ministry. The Executive steering committee is shared by AT and the relevant parties have a place in this committee. On the AT side there is a business team responsible for business analysis, interfaces and UAT and also for IT needed for the solution on the offices of AT. The IT development and infrastructure (Datacentre) is the responsibility of CEDSIF. Besides the internal organisation, there are regular meetings with the donor countries who partly fund the project via a basket-funding
(iv) Objectives and targets of the reform (qualitative and quantitative, including number of staff, clients, procedures etc.)	In accordance with the AT Strategic Plan, the strategy defined in order to achieve the objectives mentions “modernize business processes of the Tax Administration through the implementation of ICT and the maintenance of existing systems in operation”. The project of modernisation of the Autoridade Tributária de Moçambique (AT) is focused on creating conditions for maximizing the collection of State Proceeds, facilitation of legitimate trade and improvement of the business environment. In the Strategic Plan, *e*-Tributação is said to be one of the key AT initiatives. According to AT Strategic Plan, its vision is to become a “reference nationally and internationally in the provision of first class services, in collection of revenue and in the promotion of the economy and society”. The following strategic objectives were identified: • Increase revenue collection in a sustainable manner; • Modernize and strengthen the Tax Administration; • Develop ICT within the scope of the IT Master Plan which will enable improving the management of tax processes; • Simplify procedures for payment and declaration of taxes, which in turn will reduce the taxpayers compliance cost, consequently broaden the tax base and substantially increase revenue collection in view of the modernisation of the tax administration services; • Substantially improve collection, control, inspection and tax management; • Substantially improve the accounting and speed up the release of State Revenue; • Reduce administrative costs inherent to the management of State Revenue; and • Make available (management, operational, tactical and strategic information) for timely

Population (2012): 25,203,395	Mozambique
	follow up, inspection and control of all processes. The number of staff within domestic taxes is approximately 900. Because the whole process starts with BPR, all procedures need to be renewed.
(v) Description / type of system introduced or expanded (e.g. COTS, internally developed, degree of customisation; maintenance in-house	Commercial off the shelf, which needs to be configured and tailor-made plug ins added where necessary. The solution needs to replace the legacy. Maintenance needs to be transferred from supplier to IT organisation
(vi) Components, procedures, services developed / changed (including ICT-providers)	The solution is based on Oracle's ETPM solution, including the needed additional Oracle products to make it work with the business environment. The licenses are delivered by Oracle and also Oracle consultancy delivers consultants to support CEDSIF during development and deploying. Oracle was contracted following an international tender. Hardware for Datacentre and local offices is delivered by regional suppliers after a regular tender. The business team of AT is supported by consultants from PBLQ HEC from the Netherlands. Selection took place after closed tender procedure. All other activities are executed by own staff of AT and CEDSIF
(vii) Reform rollout strategy (policy reform, procedures, tax base expansion, IT, HR, comms, change mgt.), including analysis of the approach: waterfall, iterative, cloud-based service etc.	The rollout is based on a phased approach; First step is hardware, business process related to taxpayer registration (done) including the needed IT support. Second phase under construction is VAT and an integrated tax for VAT and income tax for small taxpayers (under construction). The next release will be income tax and corporate tax and the last release will be for the remaining revenues. Each release contains an end to end solution so declarations, tax calculation and collection. In parallel there is a project for a customer contact centre including a taxpayer portal functionality. The characteristic of the approach is more or less waterfall although introduction of agile aspects are introduced to speed up the process.
(viii) Market of providers (monopoly/competition/open source?)	An international tender was undertaken. Hardware for Datacentre and local offices is delivered by regional suppliers after a regular tender. The business team of AT is supported by consultants from PBLQ HEC from the Netherlands. Selection took place after closed tender procedure. All other activities are executed by own staff of AT and CEDSIF
(ix) Investment costs (software and hardware, training) and maintenance costs (incl. ownership/ copyright of the system)	Over US$20 million over the duration of project (estimated at 4 years).
(x) Effectiveness as evidenced by revenue performance and lower compliance costs	First implementation is launched in January, so no figures are available. The effectiveness will be monitored on the basis of available business cases for each implementation; externally also by IMF
(xi) Cost-benefit relation of the reform (broad qualitative comparison)	See (x)
(xii) Time from initial set-up until full functionality	The strategic plan was from May 2010. Before the strategic plan there were a lot of investigations like site visits and the creation of conceptual models. First realistic activity in the project was early 2011, first rollout was end of 2012. Expected next release is end 2013.
(xiii) Customer focus including usability / user friendliness with respect to internal and external clients (dependent on available information)	AT started at the beginning of 2013 with a campaign to internal and external parties and stakeholders to create 'buy-in' for the solution. After the rollout of the pilot, the staff of the pilot were able to comment on the solution and in some case this resulted in change requests. The support of external consultants within AT is focused on helping it become more customer focused. Taxpayers are able to access online services through a single sign-in located on the AT's website.
(xiv) Degree of decentralisation (to what degree were local tax authorities integrated?)	AT is a centrally managed organisation for internal taxes and Customs. It has around 50 branches all over the country, which are managed by their own directors. Each local offices is responsible for all internal taxes. The custom offices are responsible for duties and the VAT related to import and export. For both, the new modernisation means a change from decentralized to centralized browser based IT solutions which results in investments in the WAN.
(xv) Interoperability / integration regarding other relevant applications as well as resulting	ETPM itself is an integrated solution for Taxpayer registration, levying, risk analyses, tax payments, collection and in use with some other tools also for communicating to taxpayers and reporting and analysis. All internal taxes will be supported by this system.

Population (2012): 25,203,395	Mozambique
analytical capability (integrated / cooperating solutions for the registry customs, other fees etc.)	Integration with the JUE is in the planning, which means that Customs will make use of the taxpayer registration of ETPM and that also payments registration and accounting per taxpayer will take place in ETPM. JUE is ahead in time on e-Tributação, so this means that they had to create some temporary functionality. For both solutions it is/was needed to interface with commercial banks, a functionality which wasn't in place in the legacy. Also both need to interface with the governmental budget application. JUE is doing this temporarily paper based and ETPM will do this automated, first for internal taxes and after interfacing with JUE, also for duties.
(xvi) Complexity of know-how required and needs regarding capacity development	Because the project covers the modernisation of the whole internal tax department the complexity is huge. Knowledge of all actual processes is needed and the capability to work on a BPR regarding the available predefined functionality in ETPM is an unknown approach. Also working with an external service provider like Oracle is new and because of the lack of transparency how they do this, support is needed. For this reason the contract with PBLQ HEC is going to be extended for the second time.
(xvii) Quality of after sales service and type of approach regarding capacity building	Unknown yet, because project is running Capacity is partly built through classic training, but mostly by training on the job
(xviii) Security of data and operating systems, privacy	This is in accordance with international best practice.
(xix) Level of transformation	At this moment the level is very classic. Taxpayers have to go for everything to a local office. In the functionality proposed, taxpayers can change (partly) their registration. They will also be able to make use of e-filing their declarations and can do their payments via the offered channels of the commercial banks. Via the portal Taxpayers will be able to consult their status about registration, previous declarations and payments and open balance on their account. They will also be able to see the status of refund requests.
(xx) Sustainability of the system (e.g. regarding HR, maintenance, scalability, adaptability / platform independence, complexity)	The system itself is scalable and more or less platform independent (you have to realize that ETPM is an integrated solution that needs to integrate with the middle ware layer). To maintain the system by own staff means a lot of investment in skill training during the project phase. The system itself is quite transparent but this is relative to who is looking at it. To configure the system in a correct way, in-depth knowledge about the database structure and also the tax processes is needed.
(xxi) Impact on promoting transparency / limiting corruption	The impact will be enormous. A lot of decisions that are made in person at this moment will be taken over by the system. Also a lot of other manual transactions will be automated without manual interference. Additionally, the possibility to track trace history will increase a lot. For internal control it will be possible to control from Maputo instead of always being on site, which makes work more efficient. Also the possibility to work via a risk-based approach with logged risks in to dos will help.
(xxii) Challenges (e.g. change mgt., system design / quality of requirement specifications, procurement/contracts, decision making delays, rollout model, staff rotation, internal champions/ownership)	Detailing the plans in a way that all different actions are linked together so the dependencies can be managed Limited internal communication Managing the external service provider, in reality there are 3 parties: AT, CEDSIF and Oracle CEDSIF has no professional contract management Getting the functional requirements on the right detail level Technical infrastructure within Mozambique which has a crucial impact on a browser based solution
(xxiii) Plans for the future	Further integration with the JUE system, although everybody is aware of the different characteristics of internal taxes and customs. Further integration with the taxpayer call/contact centre Maybe even to make use of the solution for taxes for the municipals
(xxiv) Summary of relative strengths and weaknesses	<u>Strengths:</u> • Commitment on top management level • Project is absolutely willing to proceed and being successful • Awareness that it is a difficult journey they started. <u>Weaknesses</u>: • Like in most of the tax authorities, projects of this size are uncommon so most of the activities that need to be done are relatively unknown • Managing dependencies between parties but also on infrastructure

6) Nepal

Background

In the early 1990's the tax administration only had one workstation that was essentially used as a typewriter with a memory. Under USAID technical assistance, it was planned to introduce VAT in 1995 and the first rudimentary system to track returns and payments was written in FoxPro for DOS. Due to elections the VAT implementation was delayed until 1997. In 2001 the original FoxPro system was re-written with donor assistance in an Oracle platform. Similarly, the computerisation of the income tax was initiated in 1998 with the development of the tax registration module in FoxPro.

The Inland Revenue Administration was created in 2001 following the merger of VAT and Income Tax Administrations and responsibility for Excise Tax was transferred from Customs to the new tax administration. By 2001 there was a fully computerized VAT administration with a common registration module for VAT and income tax. The major components of IRD's existing ICT infrastructure (comprising of the mainframe, midrange, personal computer (PC) and local area network (LAN) platforms) were implemented in 2000/01.

The income tax collection module was implemented in 2003 and the income tax assessment module came into force in 2004. At present, field offices (Inland Revenue Offices) enter data related to Income and VAT and transmit the information to the department in Kathmandu. The department (headquarters) validates the batches transmitted by the field offices, posts the data into the taxpayers' accounts and transmits the outputs back to the field offices.

The Inland Revenue Department has recently introduced e-TDS, an internet based system which allows access to any withholders, parties being withheld and tax officers.

Excise duties, have not been computerised and are still being administered manually using a ledger book which has remained unchanged for almost a century.

The Inland Revenue is in the process of introducing web-based applications and a comprehensive ICT architecture connecting all Inland Revenue Offices (IRO). E-filing has been used for more than 90 percent of VAT returns, simplifying compliance processes, providing information and reducing processing costs.

Web-based applications for taxpayer registration and filing tax returns have been developed with a growing number of taxpayers submitting their tax returns online. An online revenue reporting system is yet to be developed, but a centralized networking system has been established with all IROs and the LTO being connected to the web-based revenue collection system.

Automated System for Customs Data (ASYCUDA) is being re-introduced after an initial failed implementation in the mid-1990s. The current version is being implemented in a phased manner. This system was implemented on an experimental basis at Tribhuvan International Airport (TIA) customs office in May 1998. ASYCUDA was extended to four other major customs offices – Birgunj, Bhairahawa, Biratnagar and Kakarvitta - in 2000. The plan is to extend coverage to other major customs offices, Krishnanagar and Tatopani, at which point ASYCUDA will cover more than 95% of the total volume of international trade.

In the current Strategic plan the stated IT objectives for 2012 to 2016 are:

- Outsource specialized services and maintenance for an effective ICT system;
- Develop an integrated ICT system so that a compatible national system with international standards is maintained;
- Prepare software for taxpayers to access their own online accounts;
- Introduce e-banking systems for tax payment;
- Launch an e-payment system and develop capabilities of different stakeholders;
- Install all required amenities for fully-fledged e-governance;

- Regular auditing and management of ICT system to international standards;
- Maintain and improve ICT software and hardware regularly to make it customer-oriented and internationally compatible;
- Establish Disaster Recovery Centres in a secured environment;
- Link the ICT system with other Government agencies to share information for quicker action on relevant data; and
- Apply petals (web-based network) to expand the networking of the like-minded individuals and professionals in the country and abroad.

Primary source information

Population (2012): 27,474,377	Nepal
(i) Type of country (MIC; LIC; LDC; fragile / post conflict)	LDC/LIC.
(ii) Type of reform (part of a general IT reform/ e-government strategy or specific integrated tax reform project) and its background	Integrated tax reform project. VAT was first introduced in 1997 with full automation. New version of VAT system was implemented in 2001 on Oracle platform. Since then Joint Registration System for VAT, Income Tax and Excise Duty was implemented. Income Tax system was implemented in 2009. E-filing of VAT, Income Tax and Excise Returns was implemented gradually. Now more than 95% of filing is done via Internet. Collection module was implemented in 2010. Risk Engine was also developed and implemented. In March 2013 an integrated web based Tax System was developed and the implementation is in process. This system integrates more than 14 applications, developed in the last fifteen years, into a single web based application.
(iii) Institutional environment, structure and supervision framework	Inland Revenue Department (IRD) administers Income Tax, VAT, Excise Duty, other taxes/fees and non-tax revenue. IRD is centrally located in Kathmandu. There are field offices throughout the country: 1 Large Taxpayers Office, 22 Inland Revenue Offices and around 22 Taxpayer Service Offices. IRD has a Deputy Director General (ICT), under whom there are 2 Directors and 8 IT Officers. ICT section monitors and supervises two outsourced companies, one for hardware and another for software/applications.
(iv) Objectives and targets of the reform (qualitative and quantitative, including number of staff, clients, procedures etc.)	Primary objective of the project was to increase the efficiency of the IRD. At present, the automated system manages around 70,000 VAT Payers and 700,000 Income Tax Payers. Another objective was to reduce the incidence of contact between Taxpayers and Tax Officers in order to reduce the possibility of corruption. This has been achieved by the fact that at present more than 95% of returns are filed via Internet.
(v) Description / type of system introduced or expanded (e.g. COTS, internally developed, degree of customisation; maintenance in-house	Applications implemented: • VAT system • Joint Registration • Income Tax System • Revenue Accounting System • Risk Engine • E-filing of TDS • E-filing of VAT • E-filing of Income tax • E-filing of Income Tax Self-Assessment • E-filing of Excise return • Activity recording of Excise Duty Payer • Excise Sticker Management System • Internal Monitoring System • Diplomatic VAT refund System All above applications were custom-built by local vendors in Nepal. Regular maintenance of both application and hardware has been outsourced to two local vendors. The main database is hosted in Linux and the WEB application database is hosted on windows. There was a move to Linux because it was found to be more stable and could manage memory

Population (2012): 27,474,377	Nepal
	more efficiently. The Oracle 10 G platform is used (previously Oracle 8 and Oracle 9i were used). Originally Oracle was used in Windows, but as they started to move to web application it started to demand more and more memory to manage concurrent access (more than 1000 sessions at a time). The Windows restriction on memory forced them to move to Linux. They have found that oracle in Linux is more stable.
(vi) Components, procedures, services developed / changed (including ICT-providers)	All previous manual procedures related to Income Tax, VAT and Excise Duty were automated. See explanation to criterion (v) above for examples of automated procedures
(vii) Reform rollout strategy (policy reform, procedures, tax base expansion, IT, HR, comms, change mgt.), including analysis of the approach: waterfall, iterative, cloud-based service etc.	System related functions across the country are managed centrally. Policy reform also was done in parallel to system development. Both waterfall and iterative approaches were used during development. Originally only a VAT system was developed. Since then they have kept on modifying the system regularly to address changes in business rules. They have now developed an Income Tax System, e-systems, excise systems and many more. Initially they used the waterfall approach, but once they had a functioning system they used the iterative method to manage new requirement and business rule changes. This approach was successful
(viii) Market of providers (monopoly/competition/open source?)	Vendors for the system development/maintenance were selected through competitive bidding process. There was/is no monopoly in the market. Oracle was purchased directly as per the developer's recommendation. The initial tender was for application development. Once the application was ready for implementation, the hardware and database were procured as per the developer's recommendation. An initial two year maintenance was bundled in the development tender. Then a tender for maintenance was issued annually for one or two years. The initial developer is actually still maintaining the application since it is difficult, if not impossible, for other parties to maintain the system. As far as hardware maintenance is concerned, a tender is issued every year
(ix) Investment costs (software and hardware, training) and maintenance costs (incl. ownership/ copyright of the system)	US$15-20 million. Around US$100,000 for maintenance of the application and a similar amount for hardware. There are no licensing cost except for anti-virus and other fringe applications, since the system is owned by the IRD.
(x) Effectiveness as evidenced by revenue performance and lower compliance costs	IRD has been able to increase the revenue collection by at least 30% per year during the last 15 years, with little increase in staff numbers.
(xi) Cost-benefit relation of the reform (broad qualitative comparison)	Very high benefit. Automation has enabled IRD to administer the increasing number of taxpayers and the increasing amount of revenue with very little increase in staff numbers.
(xii) Time from initial set-up until full functionality	Initial automation was started with VAT in 1997 and development of an integrated automated system for three main taxes: Income Tax, VAT and Excise Duty. It has been completed in March 2013 and its implementation is ongoing.
(xiii) Customer focus including usability / user friendliness with respect to internal and external clients (dependent on available information)	IRD is the most e-savvy government office in Nepal. All functions are performed using IT system. • All VAT returns are submitted using e-system (around 80000 returns per month) • All Income Tax estimated returns are submitted using e-System. (around 100000 per year) • All Income tax returns are submitted using e-system. (around 200000 returns) • Registration for all VAT, Income Tax and excise is done via e-system. • Permit request for excise and all management of excise permit done via web system. • All excise returns is submitted via e-system. • Activity of manufacturers handling physically controlled excise goods such as liquor, beer, cigarettes etc. is monitored by web based application.
(xiv) Degree of decentralisation (to what degree were local tax authorities integrated?)	All tax administration functions are decentralized and done through field offices via a single centralized system.
(xv) Interoperability / integration regarding other relevant applications as well as resulting analytical capability (integrated / cooperating solutions for the	The integrated tax system is developed on Service Oriented Architecture and is compatible with Government's initiative of Enterprise Architecture.

Population (2012): 27,474,377	Nepal
registry customs, other fees etc.)	
(xvi) Complexity of know-how required and needs regarding capacity development	Professional vendors developed the system and have been maintaining and training the end users with great success.
(xvii) Quality of after sales service and type of approach regarding capacity building	Maintenance contracts have been concluded with the vendors, who developed the system. They deliver formal training and on-the-job training to the end users. Both after sales service and ability of the end users to use the system, are good.
(xviii) Security of data and operating systems, privacy	OS Linux and Windows have been used and are considered secure.
(xix) Level of transformation	High: High level of e-service available to taxpayers. All functions of IRD performed using Application. Increase in analytical capacity. Increase in monitoring capabilities. Increase in efficiency and decrease in error. Increase in Taxpayer's confidence.
(xx) Sustainability of the system (e.g. regarding HR, maintenance, scalability, adaptability / platform independence, complexity)	Regular maintenance and necessary up-grading of all aspects of the system have been outsourced to local vendors, which has improved the sustainability of the system.
(xxi) Impact on promoting transparency / limiting corruption	Reduced contact between taxpayers and tax officers, automated case analysis and selection etc. have resulted in increased transparency and less corruption.
(xxii) Challenges (e.g. change mgt., system design / quality of requirement specifications, procurement/contracts, decision making delays, rollout model, staff rotation, internal champions/ownership)	The biggest challenge was to keep the tax officers trained and competent in use of applications, due to frequent staff transfers.
(xxiii) Plans for the future	Implementation of e-payment of taxes. Review of the Integrated Tax System, under implementation now, in two years' time and its continuous improvement. Linking the system with other stakeholders such as Customs, Department of Revenue Investigation, Department of Anti- money Laundering, etc. Creating a database from different information sources to increase the net tax.
(xxiv) Summary of relative strengths and weaknesses	Being developed locally, any changes required due to changes in business rule are incorporated in the system very quickly.

7) Peru

Background

Established in 2002, the Superintendencia Nacional de Aduanas y Administración Tributaria (SUNAT) is an autonomous public institution responsible for the collection of all taxes in Peru. SUNAT is responsible for the collection of 78% of government revenues (US$44 billion per annum) and it started the automation of its processes in 1993. Most of the original ITAS, called SIRAT, is still operational. The software was written by SUNAT IT staff based on their own specific requirements more than 20 years ago. SIRAT is composed of several applications with a varying degree of integration. Due to age and architecture, it now suffers from slow response time, system overload and crashes. SIRAT underwent a partial revamp in 2002 and from that moment onwards was called RSIRAT. As an interim measure and until a new system is acquired, some applications of RSIRAT are being re-written using JAVA. A Strategic IT Plan was written but is now in the process of being re-written to reflect the decision to replace the current system.

Although it is noticeable that officers of SUNAT are satisfied by the results yielded by the ITAS, they recognise that in order to achieve their strategic objectives, including increasing the Tax to GDP ratio from 14% to 18% in three years, it will be necessary to streamline processes and accommodate a new, modern ITAS.

As a consequence, there is currently an internal debate within SUNAT on the computerisation strategy that should be adopted:

- Buying a COTS system and implementing internally the changes required within the new framework to accommodate for all processes in the organisation; or
- Building a solution in-house, and probably acquire specific pieces of software to support specific functionalities, such as a Workflow Management System.

Primary source information

Population (2012): 29,987,800	Peru
(i) Type of country (MIC; LIC; LDC; fragile / post conflict)	UPMIC
(ii) Type of reform (part of a general IT reform/ e-government strategy or specific integrated tax reform project) and its background	Specific integrated tax reform project.
(iii) Institutional environment, structure and supervision framework	SUNAT reports to the Ministry of Economy and Finance but has technical and financial autonomy. It has the following organisational structure: National Superintendence of Internal Tax National Superintendence of Customs National Superintendence of Internal Administration
(iv) Objectives and targets of the reform (qualitative and quantitative, including number of staff, clients, procedures etc.)	The change project is called "Compliance Improvement Program" (PMC for its acronym in Spanish) and its comprises the following aspects: • Compliance Control • Automated and Integrated Collection • Taxpayer Risk Management • Auditing Management The objectives of the reforms are the following: Prepare SUNAT to achieve its ambitious future goals, e.g. 2016 tax revenue should be 18% of GDP. Optimize debt recovery through improved collection processes under the principles of centralisation, integration and automation, increasing the productivity of the debt collector and achieving a sustained diminution of the total debt to pay. Optimize the auditing process though the improvement of the support tools, with an automation of the tasks of customer selection and audit programming; aiming to increase the coverage of the audit measures. Improve the quality of the services that are offered to the taxpayer, making declarations easier and increasing the number of channels available.

Population (2012): 29,987,800	Peru
	Provide the appropriate tools to incorporate taxpayer risk management in all the SUNAT business processes, allowing the tax administration to optimize the usage of resources with the help of information analysis.
(v) Description / type of system introduced or expanded (e.g. COTS, internally developed, degree of customisation; maintenance in-house	The system to be introduced will be defined after a benchmark to be performed between the options and the solutions available. Preliminary research shows that the introduction of a COTS system would reduce the risk related to the project and would help to deliver functionality to the end user in a shorter period of time. However, this research also shows that there is a gap between the functionality that the internal user currently has and the functionality offered by the COTS packages evaluated.
(vi) Components, procedures, services developed / changed (including ICT-providers)	Registration Declaration Auditing Collection Taxpayer Services
(vii) Reform rollout strategy (policy reform, procedures, tax base expansion, IT, HR, comms, change mgt.), including analysis of the approach: waterfall, iterative, cloud-based service etc.	The rollout will imply many steps: • Law modification • Internal processes definition • New IT architecture • New system to support the core processes of the Tax Administration • Development /acquisition of satellite systems Regarding the approach for the implementation, SUNAT currently has a software development methodology (called MDSI) within which stages are very similar to a waterfall approach.
(viii) Market of providers (monopoly/competition/open source?)	Competition. The main providers evaluated are the following: SAP (Tax and Revenue Management) Oracle (Enterprise Tax and Policy Management) Bull (e-Ris) RSI (Revenue Premier) Also the option to custom build was evaluated. So far no-one has been selected.
(ix) Investment costs (software and hardware, training) and maintenance costs (incl. ownership/ copyright of the system)	The following costs have been identified as part of the project: • Internal staff to perform the initial process modelling • Internal staff to perform project management • Hardware costs associated with the new software (e.g. new ITAS to support core business) • Licensing cost of the ITS to implement • Base software licensing (e.g.: databases, application servers) • Hardware / software cost of the custom developed systems • Maintenance cost of the whole platform The IT department has a budget of US$45 million, which excludes IT salary costs. This budget is for investment in IT systems and annual maintenance. US$2.5 million per year is spent on various licence fees and approximately US$20 million was spent on hardware replacement in 2013.
(x) Effectiveness as evidenced by revenue performance and lower compliance costs	Expect to increase revenue as a proportion of GDP from 16% to 18% by 2016.
(xi) Cost-benefit relation of the reform (broad qualitative comparison)	Expect to recover the investment in a short time period. The automation of the process in the main dependencies should produce an important revenue increase to justify the project.
(xii) Time from initial set-up until full functionality	The amount of time required for a project of this nature is very varied. The usual approach is to start with a module or a particular tax type. Taking these considerations into account, the project implementation duration will be at least three years.
(xiii) Customer focus including usability / user friendliness with respect to internal and external clients (dependent on available information)	Customer focus will include: • Include more attention channels for the taxpayers (including social networks); • Improve the usability of the current means for declaration. The forms currently available for this process should be simplified; • Increase the capacity of the current infrastructure for electronic payment in order to guarantee availability in peak days (improve scalability);

Population (2012): 29,987,800	Peru
	• Process integration between the integral tributes and customs revenue (regarding the following processes: Registration, Declarations, Collection and Recovery Management and Auditing); • Implement business intelligence techniques in the relationships with the taxpayer, debt collections and taxpayer audit; • Provide flexibility to implement business rules changes; • Process redesign to use a single view approach; and • Provide end-to-end automation to the taxpayer audit process.
(xiv) Degree of decentralisation (to what degree were local tax authorities integrated?)	SUNAT is decentralized, even regarding the IT infrastructure. The databases used by SUNAT dependency are completely autonomous. The change project will centralize programming of strategies and actions through centralized IT infrastructure with decentralized execution and operations in SUNAT local offices.
(xv) Interoperability / integration regarding other relevant applications as well as resulting analytical capability (integrated / cooperating solutions for the registry customs, other fees etc.)	The current process are currently integrated with the tax administration: • Customs • Social Security • Public Sector Pension • Control of trade and traffic of specific goods (e.g.: goods that could be destined to drug trade or illegal mining)
(xvi) Complexity of know-how required and needs regarding capacity development	It will vary depending on the staff in question. There is a problem with high staff turnover and restricted career options for some staff, which means institutional knowledge can be lost.
(xvii) Quality of after sales service and type of approach regarding capacity building	Most of the providers under consideration are world-class companies with specialists who can help to build capacity. It is expected that the provider should have a presence in Peru in order to develop on-site services.
(xviii) Security of data and operating systems, privacy	Each system under consideration has its own security mechanism and can be integrated with other authentication / authorisation platforms. SUNAT is considering the use of digital signatures to guarantee the authenticity of documents and give them legal value.
(xix) Level of transformation	The following services will be transformed with the new project: • Electronic declaration; • Electronic invoicing; • Electronic mailbox for communications with the tax administration; • Payments through the web portal; • Presentation of payment plans requests through the web portal; and • Filing tax returns.
(xx) Sustainability of the system (e.g. regarding HR, maintenance, scalability, adaptability / platform independence, complexity)	SUNAT is planning a series of measures to guarantee sustainability of the system. These are part of SUNAT's overall implementation strategy which include the training and development of staff both as system users and as administrators. SUNAT's strategy is to obtain the source code data for the system that it procures so that it will be able to maintain it and modify the system based on future needs.
(xxi) Impact on promoting transparency / limiting corruption	All the packages under consideration have the capacity to generate an audit trace that could be used in further automated fraud detection procedures.
(xxii) Challenges (e.g. change mgt., system design / quality of requirement specifications, procurement/contracts, decision making delays, rollout model, staff rotation, internal champions/ownership)	Change management Procurement IT software methodology
(xxiii) Plans for the future	Develop a new process model for the tax administration Develop a new IT architecture Improve the current IT organisation structure and process model Replace the legacy systems with new software
(xxiv) Summary of relative strengths and weaknesses	<u>Strengths</u>: • Professionals with deep knowledge of the tax processes. • The introduction of changes is supported by top level management of the tax administration and by central government • The tax administration has financial autonomy to implement these reforms.

Population (2012): 29,987,800	Peru
	Weaknesses: • HR model does not allow recruiting talented people from the private sector and keeping them in the institution for a long time • Capacity for software procurement and acquisitions is low • End users are resistant to change

8) Senegal

Background

The Office for Modernisation and Computerisation of the General Directorate of Tax and Cadastre (Direction Générale des Impôts et des Domaines, DGID) has a team of 40 staff dedicated to information technology both from a business and a technology standpoint. The DGID does not have power to allocate and reallocate budgets across revenue administration functions and does not have powers to negotiate and set conditions of service for staff. That said, as in all organisations, staff can be assigned to different job categories (classes). The DGID can therefore categorise some of its key IT staff in accordance with existing public service classes and HR procedures, to reflect the complexity of their job responsibility and the importance of their retention for the organisation, thereby motivating their performance and level of service.

What is most interesting to note in the case of Senegal, is the signing of a performance agreement (Contrat de performance) between the Ministry of Economy and Finance and the DGID, providing for increased budget autonomy for the DGID, in exchange for a certain level of service provided by the DGID. The contract spanned the 2009-2011 period. Measurable objectives were outlined in the performance agreement and a committee was created to oversee and monitor the DGID's performance in light of the outlined performance indicators.

In terms of tax reforms and modernisation, in 2005 African Development Bank documents[30] indicated that the Government of Senegal had plans to procure the Standard Integrated Government Tax Administration System (SIGTAS) software with CIDA Financing. The Project Appraisal further notes that CIDA would also support the modernisation of the cadastral survey and since the SIGTAS software does not contain cadastral survey applications, its activities were covered by the Bank and will, for that reason, be complementary to those funded by CIDA. However, what ultimately occurred, was that SIGTAS was funded by the country's own funds, starting with the LRF (Loi rectificative des finances) of 2005, which secured initial funding for the project[31]. SIGTAS was implemented during a three-year period (2006 to 2009). CIDA granted Senegal a licence to operate SIGTAS and obtain a copy of its source code at no charge. CIDA also funded cadastral census activities that occurred in 2010[32], in the context of Senegal's cadastral modernisation project, entitled PAMOCA (Projet d'appui à la modernisation du cadastre).

The three-year SIGTAS implementation project was a wall-to-wall implementation of all SIGTAS modules, to computerise all tax administration processes, from taxpayer registration to tax assessment through to auditing, including cashing, collection, refunds and objection. The project covered all 41 tax types, including standards taxes such as Value-Added Tax, Personal Income Tax and Corporate Income Tax, as well as seven (7) different types of property-based taxes.

In 2008 the priority measures for the tax administration with regard to IT were to:

- Extend by end-December 2008 the tax management software (SIGTAS) to all taxes for all Dakar collection centres; and
- Develop the interface between the information systems of the three tax revenue collecting offices (DGID, customs and the Auditor General) so that it was fully operational by February 2009.

The ambitious reform of the tax system, which started with the first phase (2006-2009), continued in 2012. The stated aim of the reform is to have a simpler, more transparent and efficient tax system and reduce tax exemptions in favour of a general regime with a better incentive structure. The technical work on the reform of the General Tax Code (CGI) was started in 2007 and continued thereafter and a broad consultation, involving a diversity of persons, was conducted.

[30] Appraisal Report Cadastral Survey Modernisation Support Project Republic of Senegal, African Development Bank, 2005
[31] Review of public expenses in Senegal, Développements Récents et les Sources de Financement du Budget de l'Etat, World Bank (2006)
[32] DGID internal news bulletin No 08 (October 2010)

The modernisation of the tax administration is therefore ongoing[33] in Senegal. As part of the implementation of the tax administration modernisation plan, a large enterprise directorate was created. The taxpayer registration procedure has also been improved, with technical assistance from IMF.

These reforms are expected to facilitate the management of taxpayers and also promote the exchange of computerized data between the DGID and the other units of the Ministry of Economy and Finance. Modernisation of tax procedures continued in mid-2012, with the implementation of online procedures. A new platform (scheduled to be introduced by January 1, 2013) should enable taxpayers registered in the SIGTAS to submit their tax declarations online. Online payments are expected to be introduced by end-2013. A close cooperation between all relevant offices as well as financial institutions (at least one, nation-wide), will be needed to implement this measure.

Primary source information

Population (2012): 13,726,021	Senegal
(i) Type of country (MIC; LIC; LDC; fragile / post conflict)	LDC/LMIC.
(ii) Type of reform (part of a general IT reform/ e-government strategy or specific integrated tax reform project) and its background	Specific integrated tax reform project as part of e-government strategy.
(iii) Institutional environment, structure and supervision framework	General Directorate of Taxes, a directorate within the Ministry of Economy and Finance.
(iv) Objectives and targets of the reform (qualitative and quantitative, including number of staff, clients, procedures etc.)	Automation of procedures of tax and land administration, transparency, modernisation of the services (More than 100 procedures; staff = 1.000; clients = more than 500.000 persons).
(v) Description / type of system introduced or expanded (e.g. COTS, internally developed, degree of customisation; maintenance in-house	SIGTAS, but customized considerably. Maintenance both in-house and outsourced.
(vi) Components, procedures, services developed / changed (including ICT-providers)	Registration, Return Processing, Collection, Case Management, Objection Case Management, Audit Case Management, Refund Processing and Procedures for each of the operations.
(vii) Reform rollout strategy (policy reform, procedures, tax base expansion, IT, HR, comms, change mgt.), including analysis of the approach: waterfall, iterative, cloud-based service etc.	Policy reform, procedures streamlining through implementation of an integrated IT solution and change management Conversion of taxpayers and tax accounts from a legacy system Gradual implementation starting with the Large Taxpayers Organisation (June 2007), with rollout to remaining tax offices thereafter
(viii) Market of providers (monopoly/competition/open source?)	Sole-sourced to one supplier, following a feasibility study Obtained a copy of the source code
(ix) Investment costs (software and hardware, training) and maintenance costs (incl. ownership/ copyright of the system)	Approximately US$10mn.
(x) Effectiveness as evidenced by revenue performance and lower compliance costs	Positive impact on revenue and taxpayer control.
(xi) Cost-benefit relation of the reform (broad qualitative comparison)	Cost effective.

[33] Country Staff Report 2012 - IMF

Population (2012): 13,726,021	Senegal
(xii) Time from initial set-up until full functionality	Initially 3 years. Second phase currently ongoing.
(xiii) Customer focus including usability / user friendliness with respect to internal and external clients (dependent on available information)	The system is user-friendly for both internal and external clients.
(xiv) Degree of decentralisation (to what degree were local tax authorities integrated?)	The system is being rolled out to local tax offices. One of the main challenges faced by the project is that the rollout to the regions has faced difficulties, due to unstable electricity supply.
(xv) Interoperability / integration regarding other relevant applications as well as resulting analytical capability (integrated / cooperating solutions for the registry customs, other fees etc.)	Interoperability with customs and other fees is being developed.
(xvi) Complexity of know-how required and needs regarding capacity development	Moderately complex. Training was needed for IT department staff in the new system and there was an issue with retaining the best IT staff. DGID now recognizes that if it had established a permanent team of professional business analysts early in the project, they would have facilitated the implementation of the ITAS and contributed to mitigating some of the resistance to change across the organisation.
(xvii) Quality of after sales service and type of approach regarding capacity building	The after sales service provided was considered good by DGID in terms of providing support and maintenance for the system. Now that the programme has finished, there are issues with the development of some modules and DGID has to rely on its own IT department to fix them.
(xviii) Security of data and operating systems, privacy	Improvements are required to ensure the full security and privacy of data. DGID management has concerns regarding the quality of original taxpayer account data loaded into the system. This means progress with the implementation of modules such as risk management, is taking longer as data needs to be verified.
(xix) Level of transformation	Significant amount of transformation was required during the programme. Prior to the implementation of SIGTAS many processes were manual and as such there was a steep learning curve for all staff.
(xx) Sustainability of the system (e.g. regarding HR, maintenance, scalability, adaptability / platform independence, complexity)	Sustainability needs to be improved regarding HR and maintenance of the network. Recruiting and retaining skilled IT staff has been difficult.
(xxi) Impact on promoting transparency / limiting corruption	Large impact because it removes discretion from many areas of tax administration.
(xxii) Challenges (e.g. change mgt., system design / quality of requirement specifications, procurement/contracts, decision making delays, rollout model, staff rotation, internal champions/ownership)	Change management and managing resistance to change.
(xxiii) Plans for the future	Improve related infrastructure, e.g. the quality of building environment, electrical equipment etc.
(xxiv) Summary of relative strengths and weaknesses	Existing development plan is strong, but human resources are quite weak.

9) South Africa

Background

In 2007 the SARS began a modernisation programme that is aimed at transforming both tax and customs over 5-7 years. The first phase of the modernisation programme concentrated on the income tax assessment process and witnessed significant improvements for taxpayers and practitioners with 34% of returns processed within 48 hours in 2008, compared to only 1.6% a year earlier. It also saw a phenomenal increase in electronic filing for submission of returns with more than one million e-filed returns submitted, compared to only 35,000 in the previous year.

Other fundamental changes that were introduced in 2007/08 included a move away from issuing refund cheques to electronic payments. A scanning solution was introduced during that period and there are now plans to move to a paperless operating environment in the foreseeable future.

There are a number of benefits that have been realised as a result of the scanning process:

- 3.8 million individual tax returns were processed automatically;
- A million returns were received electronically or scanned electronically; and
- Nearly two million taxpayers received their assessments quicker than in previous years, especially those who submitted electronically (15 days average turnaround time compared to 41 days for manual submission).

The new assessment process, which increased the number of electronic submissions, enabled SARS to exceed targets set for processing returns during peak and non-peak periods. The introduction of computerisation in the processing of returns has assisted operations to address the increased volumes with fewer staff and service and turnaround times on returns were improved. This resulted in the effective processing of 34% of returns within two days and 96% of returns within 90 days.

The reengineered income tax process resulted in many efficiency improvements within operations. It also offered the opportunity to improve the quality dimension of income tax processing. Processing data via electronic channels has very little human interaction and generally capturing has much less transcription errors. To improve the quality of physically captured data, the data capturing channel was reconfigured to provide for 100% double capture, with a third party verification. This ensured a greater accuracy when transposing data from paper to digital.

2007/08 also saw the establishment of a central service offering for information requirements and management reporting from a single source. This enabled detailed data analysis and data analytics in support of business and modernisation initiatives. It additionally led to enhancements of human resource support services by designing and integrating automated processes and completion of 37 initiatives aimed at improving effectiveness of business operations and management capabilities.

As the modernisation programme progressed into 2010/11 there were more changes:

- Implementation of a new Customs risk screening system to enable more precise risk targeting and selection, as well as to facilitate legitimate trade;
- Reduction of the burden of manual data capturing in the VAT environment, building on the framework developed for Personal Income Tax (PIT) through eFiling;
- Improved engagements with taxpayers and traders through, for example, optimising the contact centres and the deployment of self-help channels; and
- Implementation of a single registration capability for Tax and Customs to significantly improve the ease of doing business with SARS.

SARS has specifically mentioned that the modernisation programme begun in 2007 is not simply about the introduction of technology. Interventions were needed to deepen SARS's understanding of taxpayer behaviour and how compliance can be facilitated optimally. Coupled with this was the need to fundamentally reengineer the

business processes in order to simplify the way SARS does business and to ensure staff is adequately trained to enable them to cope with new demands.

Primary source information

Population (2012): 51,189,307	South Africa
(i) Type of country (MIC; LIC; LDC; fragile / post conflict)	UPMIC
(ii) Type of reform (part of a general IT reform/ e-government strategy or specific integrated tax reform project) and its background	Major business transformation programme across the tax and customs operations, underpinned by reengineered business processes and new technology platforms.
(iii) Institutional environment, structure and supervision framework	SARS, a tax and customs agency forming part of National Treasury. SARS is governed by the Public Financial Management Act.
(iv) Objectives and targets of the reform (qualitative and quantitative, including number of staff, clients, procedures etc.)	Large scale transformation programme aimed at automating outdated business processes in order to significantly improve service to taxpayers. As the tax gaps narrow (improve enforcement), volumes are increasing significantly, but the organisation wanted to use the same capacity in the administration of tax and customs.
(v) Description / type of system introduced or expanded (e.g. COTS, internally developed, degree of customisation; maintenance in-house	A blend of solutions i.e. COTS (SAP – for own and revenue accounting as well as HR and procurement [ERP], Interfront Customs Border Solution – for Customs Administration [e.g. declaration processing, tariff and cargo management etc.]). Custom developed front-end solutions, e.g. eFiling, e@syfile, Service Manager (Branch platform incorporating case management capability), Advance Tax Processor [ATP]. Legacy mainframe applications – part of the Income Tax systems date back to 15 years but have a huge amount of embedded IP, which was preserved by front-ending these solutions with modern front-ends. The development was carried out by a blend of niche system development companies and internal IT resources. SARS also appointed a lead systems integrator to bring it all together.
(vi) Components, procedures, services developed / changed (including ICT-providers)	The modernisation focused on high volume and highly manual business processes first (e.g. Personal Income Tax, Pay As You Earn [PAYE]) and Value Added Tax.
(vii) Reform rollout strategy (policy reform, procedures, tax base expansion, IT, HR, comms, change mgt.), including analysis of the approach: waterfall, iterative, cloud-based service etc.	A blended approach – Iterative following the waterfall in each iteration. SARS firmly beliefs that a project should not take longer than nine months to deliver and will therefore scope solution accordingly. SARS favours quick implementation in order to assess impact of solutions in the field and gathers lessons learned and input from taxpayers for the next phase. Implementation is a blend of reengineered business processes accompanied by modernized technology. Once the solutions have been extensively tested in the quality Assurance Lab, they are rolled out into the environment. Each project is accompanied by an internal and external (if appropriate) communication campaign, as well as by internal training and change management interventions.
(viii) Market of providers (monopoly/competition/open source?)	Solutions architecture was split across a number of core vendors. This gave SARS the ability to enjoy specific supplier's strengths without having all its eggs in one basket. In general SARS does not subscribe to open source but rather aligns itself to best in class technologies from reputable vendors.
(ix) Investment costs (software and hardware, training) and maintenance costs (incl. ownership/ copyright of the system)	+/- US$300mn over a six year period. This amount covers application software licenses, hardware, networking infrastructure, software service providers, systems integrator, equipment rollout as well as training, communication and change management.
(x) Effectiveness as evidenced by revenue performance and lower compliance costs	Risk engines have generated significant savings. Despite the investments in modernisation the cost income ratio has improved from 1.2 (R1.20 of cost for every R100 collected) to now just above 1 (R1 of cost for every R100 collected).
(xi) Cost-benefit relation of the reform (broad qualitative comparison)	See immediately above.
(xii) Time from initial set-up until full functionality	Six years.
(xiii) Customer focus including usability / user friendliness with respect to internal and external	SARS philosophy is to deliver user friendly, intuitive systems based on the latest GIU technology, mobile application etc. to increase reach.

Population (2012): 51,189,307	South Africa
clients (dependent on available information)	
(xiv) Degree of decentralisation (to what degree were local tax authorities integrated?)	SARS was formed from a number of local tax authorities which have now been combined into one national tax agency. The customs administration function now also forms part of SARS. SARS has nine provinces, four processing centres, four call centres and 50 branches, but the organisation is run in a centralized fashion (decentralized processing and centralized decision making).
(xv) Interoperability / integration regarding other relevant applications as well as resulting analytical capability (integrated / cooperating solutions for the registry customs, other fees etc.)	The architecture is built in such a way that most of the applications are integrated according to the end-to-end process. Therefore, there is a certain level of interoperability between SARS applications. All cases are processed on Service Manager (these cases can be generated by a number of other systems, i.e. cases can be generated from the Risk Engine if certain criteria of the rule engine are not met).
(xvi) Complexity of know-how required and needs regarding capacity development	Modernisation required detailed understanding of the intricacies of the customs and tax business processes and the existing system, which knowledge could only be found within a few subject matter experts. This scarce skill/knowledge was then blended with the recruitment of professionals who had prior experience in developing and implementing modernized solutions. There is also a transfer of skills from the vendors to internal resources to ensure continued improvement of the solution after the modernisation programme.
(xvii) Quality of after sales service and type of approach regarding capacity building	All systems are now operated by the IT department within SARS. Modifications are made to the systems in-house as necessary.
(xviii) Security of data and operating systems, privacy	Security is an extremely important factor in the modernisation of SARS solutions and thus SARS employs world class organisations in the provision of security solutions for access, identity, transaction, data and application security.
(xix) Level of transformation	Very high.
(xx) Sustainability of the system (e.g. regarding HR, maintenance, scalability, adaptability / platform independence, complexity)	Modular, scalable systems. A blend of approaches based on vendor type and solution type.
(xxi) Impact on promoting transparency / limiting corruption	An example is that SARS case management capability does not allow staff to select cases they wish to work on. Instead they will be presented with cases based on rules, embedded in the system.
(xxii) Challenges (e.g. change mgt., system design / quality of requirement specifications, procurement/contracts, decision making delays, rollout model, staff rotation, internal champions/ownership)	Challenges include managing change within SARS and communicating change effectively within the organisation. The way in which SARS sources and procures equipment and services is also a continuous challenge to ensure value for money.
(xxiii) Plans for the future	SARS is reaching the end of the modernisation process, but it is of critical importance not to discontinue the programme totally.
(xxiv) Summary of relative strengths and weaknesses	<u>Strengths:</u> Focused leadership which is driven to deliver on a regular basis, because decisions are taken at the top of the organisation; executive buy-in is easily achieved. SARS successes have led to many other government agencies seeking their help in modernizing their businesses. The strategy is to assist those departments whenever there is experience or systems which can easily be shared, e.g. call centre technology, document scanning and management. SARS approach has been to reengineer business processes end-to-end, eliminating any hand-offs. The implication of this has been the development of a highly modular, but integrated set of application components. <u>Weakness:</u> Change has been intense over the years and this has led to fatigue.

10) Swaziland

Background

The impetus for changing to the new COTS system was an aging mainframe system created in the 1980s that did not have the attributes necessary to administer a modern tax system. Significantly, the Government IT Services office had attempted to develop a new system internally but it was deemed to be a failure and was abandoned. Due to this failed attempt, management of the Swaziland Revenue Authority (SRA) did not wish to continue to divert its focus from managing the tax system to again attempting to self-develop a new system, especially with the looming implementation of a new VAT law. The acquisition of the new system was funded by the Government of Swaziland without donor assistance. Services of an external consultant were nevertheless obtained with the help of the African Development Bank to do a high level mapping of processes, design a project based on the PRINCE2[34] methodology, draft a tender for the acquisition of a new system and to provide a "sanity" check for SRA management every six months.

The preference was for a COTS system that could be: (1) deployed with minimal configuration and therefore a quick implementation could be achieved; (2) fully proven in another jurisdiction; (3) used with the IT platform that was most common in Swaziland (so it would be easier to find local IT capacity if needed); and (4) backed up by a provider that could maintain the software for the next decade.

Three finalist vendors were invited to Swaziland to demonstrate their systems during a week. In this period the vendors were each provided with pre-determined cases to demonstrate their system capability. One vendor declined to attend. During the process SRA officials noted that the terminology used in one of the two remaining systems was not "tax" terminology and this system was unable to satisfactorily complete one of the pre-determined tasks. The final determining factor was the total cost of ownership (TCO) for the system over an extended period. In this regard, there was "a very significant" difference between the two systems.

Based on the technical proposals, financial proposals and an analysis of the TCO, Data Torque was selected as the finalist. A visit to the Data Torque headquarters in New Zealand was arranged and the SRA team met with the support team of another jurisdiction, where the system was installed. DataTorque commenced its engagement in Swaziland in November 2011. The contract includes support to the new automated system for the first five years up to 2017.

The Integrated Revenue Administration System (IRAS) development project is divided into six stages namely:

- stage 1: Taxpayer Identification Number (TIN)/VAT Registration;
- stage 2: VAT Returns Processing, VAT Cashiering, VAT Taxpayer Accounting, VAT Revenue Accounting, Refunds;
- stage 3: Revenue Management System Common Cashiering, Taxpayer Accounting, Revenue Accounting, Compliance Activities;
- stage 4: Taxpayer Enquiries, VAT Audit/Investigation Tools, VAT E-Tax, Document Location;
- stage 5: Income Tax/PAYE returns processing, E-Tax [Income Taxes]; and
- stage 6: Electronic Payment, Objections and Appeals, Advanced Auditing Tools.

In early 2012 a comprehensive data cleansing and migration strategy was developed and implementation was on-going throughout the year. The activities involved include Masterfile, assessing, PAYE, refunds and returns filing. Thereafter, clean data will be migrated into the IRAS. A deliberate decision was taken to prioritise activities that were essential to support VAT implementation, which commenced in April 2012.

A further development of IRAS was the development of the TIN. The TIN Registration Form was designed and made accessible to taxpayers via the SRA website for registration. The TIN is a number that will be used on any official

[34] PRINCE2 is a project management methodology. It was developed by the UK government agency Office of Government Commerce (OGC) and is used extensively within the UK government as the de facto project management standard for its public Project (http://www.prince-officialsite.com).

documents relating to the taxpayer on all associated tax obligations. The TIN will be used for all tax types and is used to produce a 360 degrees view of a single taxpayer.

The rollout of the SRA ICT network in major offices in the Manzini/Mbabane corridor and some distant sites, was completed. A Microsoft-based converged communication tool (Microsoft Lync) was rolled out in all SRA-networked sites. This tool allows access to corporate email with presence alert, direct document sharing and collaboration and chat and phone functionality linked to email. The tool also facilitated a reduction of communication costs in the organisation.

The rollout of the Automated System for Customs Data (ASYCUDA++) at all the commercial sites and five of the non-commercial sites was achieved in 2012. The focus was on minimising leakages by comparing data with trade partners. The development to align the systems to permit data exchange for reconciliation purposes is on-going. Technical assistance has been secured to support the operationalisation of all modules of this system.

Primary source information

Population (2012): 1,230,985	Swaziland
(i) Type of country (MIC; LIC; LDC; fragile / post conflict)	LMIC.
(ii) Type of reform (part of a general IT reform/ e-government strategy or specific integrated tax reform project) and its background	Introduction of an IRAS Programme for modernizing tax collection. The Department of Taxes had been running a system developed internally by the Government Computer services. When SRA benchmarked the system against desired functionality, it could only provide about 27% of the functionality, hence the drive to replace it. Also, it was tax type centric and had no functionality to support VAT. Taxpayers had a number of tax type identity numbers, whereas the IRAS taxpayers have one identity for all tax types, the TIN.
(iii) Institutional environment, structure and supervision framework	Ministry of Finance, Governing Board, Executive Committee, SRA Portfolio Board Committee chaired by the Commissioner General. The SRA is a semi-autonomous revenue authority.
(iv) Objectives and targets of the reform (qualitative and quantitative, including number of staff, clients, procedures etc.)	The objective was to maximise the collection of revenue and to automate mundane operations so officers could focus on value adding activities such as conducting audits, introduction of workflow mechanisms and simplification of processes in order to reduce errors and make compliance easier for tax payers. The system supported the introduction of VAT and it will support introduction of self-assessment for Company Tax. Project staff of 17 officers, taxpayer base of 15,000 business, Domestic Taxes staff is about 250 officers.
(v) Description / type of system introduced or expanded (e.g. COTS, internally developed, degree of customisation; maintenance in-house	RMS is an off-the-shelf system developed by Data Torque of New Zealand.
(vi) Components, procedures, services developed / changed (including ICT-providers)	TIN registration, Return Processing (PAYE, VAT, Income Tax etc.), e-Tax, Document Location, Management Dashboard, debt management, Compliance activities.
(vii) Reform rollout strategy (policy reform, procedures, tax base expansion, IT, HR, comms, change mgt.), including analysis of the approach: waterfall, iterative, cloud-based service etc.	Project delivered in stages, first delivery being IT infrastructure, processes and Standard Operating Procedures, staged modules aligning to tax cycle. Change management integrated in all stages.
(viii) Market of providers (monopoly/competition/open source?)	Open tender process.
(ix) Investment costs (software and hardware, training) and maintenance costs (incl. ownership/ copyright of the system)	US$ 5 million.
(x) Effectiveness as evidenced by revenue performance and lower	RMS has lowered compliance costs; reduced paper based processing, automated reports, improved taxpayer information management.

Population (2012): 1,230,985	Swaziland
compliance costs	
(xi) Cost-benefit relation of the reform (broad qualitative comparison)	See above, highly cost effective.
(xii) Time from initial set-up until full functionality	April 2011 to June 2014.
(xiii) Customer focus including usability / user friendliness with respect to internal and external clients (dependent on available information)	RMS is user friendly, has a web-based user interface, self-assessment capability, e-Tax and taxpayer assistance functionality
(xiv) Degree of decentralisation (to what degree were local tax authorities integrated?)	Decentralised to all SRA service centres (6 currently).
(xv) Interoperability / integration regarding other relevant applications as well as resulting analytical capability (integrated / cooperating solutions for the registry customs, other fees etc.)	RMS can integrate to other systems i.e. ASYCUDA for Customs, ACCPAC for finance. Could be integrated to the Registrar of companies and motor registrar.
(xvi) Complexity of know-how required and needs regarding capacity development	Training delivered by the system provider on the system, training on business operations, ICT/support training, Training of taxpayers on e-Tax and self-assessment.
(xvii) Quality of after sales service and type of approach regarding capacity building	Support contract with vendor, internal training on RMS.
(xviii) Security of data and operating systems, privacy	User profiles created in the system and segregation of duties provided for. The system is behind firewalls. Internal security is provided by domain controllers.
(xix) Level of transformation	High. e-tax, Taxpayer assistance module, self- assessment, filing through email, call centre
(xx) Sustainability of the system (e.g. regarding HR, maintenance, scalability, adaptability / platform independence, complexity)	System runs on a windows platform, it is a configurable/customisable system, personnel trained to support the system, service level agreements available for system maintenance.
(xxi) Impact on promoting transparency / limiting corruption	Promotes evidence-based revenue administration (availability of audit trails).
(xxii) Challenges (e.g. change mgt., system design / quality of requirement specifications, procurement/contracts, decision making delays, rollout model, staff rotation, internal champions/ownership)	Slow rate of adoption by officers/taxpayers, deviations from initial specifications, inconsistency in use of automated processes, delays in rollout and data inconsistencies from legacy system.
(xxiii) Plans for the future	Ensure high availability of system, extensive change management, review of effectiveness of processes, introduction of access using mobile devices.
(xxiv) Summary of relative strengths and weaknesses	Strengths: RMS is user friendly, scalable and can be customized Weaknesses: RMS is an off-the-shelf, high establishment costs

11) Tanzania

Background

The Tanzania Revenue Authority is a SARA which became operational in July 1996. The computerisation of the TRA has an interesting history, with the first computers being used in the Ministry of Finance in the mid-1960s, which were only operational when foreign experts were available[35]. In the late 1960s political events caused foreigners to leave Tanzania and the computer systems ceased to function with the result that the Government incurred heavy financial losses. This resulted in a ban on the importation of computers and peripherals which lasted until 1984. Subsequent to removing the ban on computers, the donor community became heavily committed to providing information technology to the TRA and created a problem with a multitude of information systems introduced by different donor projects. Anecdotal information suggests there were 14 different software systems which could not be linked to each other. At this stage of early computerisation the introduction of information technology and taxpayer identification numbers was not coordinated. This diversity produced three different systems of taxpayer identification numbers which were unrelated to each other, which led to the obvious conclusion that the donors tended to exacerbate problems of internal cohesion and exchange of information.

iTAX has been developed as a cooperation project between the Tanzanian Revenue Authority (TRA) and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH as a partial solution to some of the foregoing problems. It was introduced in 2004 and it is an integrated system that allows the administration of all taxes, on a national as well as a local level. The modular system is an open source database, which can handle all types of taxes. iTAX currently supports the revenue authority in registration, assessment, collection, accounting, debt management, auditing, tax monitoring and reporting. In addition, the TRA now accepts electronic payments and electronic filling of returns.

Due to poor conventional landline infrastructure, some TRA networks are provided by mobile phone companies. These are not only cheaper than the land based telephone systems, but also convenient as they only require transmitters and booster stations and they do not suffer from copper theft vandalism.

The TRA created a Directorate of Information and Communication Technology (ICTD) which had the responsibility of managing ICT usage in all tax operations. Currently, the ICT systems are the Integrated Tax Administration System (ITAX), Taxpayer Identification System (TIN), Computerized Motor Vehicle Registration System (CMVRS), Customs Administration System (ASYCUDA++) and Computerized Drivers' License System (CDLS). Other support systems for the TRA departments are Integrated Financial Management System (EPICOR), Integrated Payroll, Human Resources System (PEODESY), TRA Messaging System (e-mail) and other legacy applications.

In a dissertation by Chatama an earlier survey of the Large Taxpayer Unit was cited[36]. In 2009 88.8% of the interviewees agreed that the introduction of computerized systems has shortened the former lengthy manual procedures and sped up the processing of tax returns, while reducing errors in return processing and assessing. 100% of large taxpayers also agreed that processing time and responding to their queries had been shortened. It was also determined that in the case of large taxpayers, 100% of taxpayers and their tax consultants (firms) prepare tax returns using a computer and 41.7% submit them via internet filing. Additionally, large taxpayers no longer pay cash with 91.7% of taxpayers and consultants choosing to pay through Tanzania Interbank Settlement System TISS and the remaining 8.3% pay through Electronic Fund Transfer EFT.

Primary source information

Population (2012): 47,783,107	Tanzania
(i) Type of country (MIC; LIC; LDC; fragile / post conflict)	LDC/LIC.

[35] Yuda Julius Chatama, The impact of ICT on Taxation: the case of Large Taxpayer Department of Tanzania Revenue Authority, Developing Country Studies, www.iiste.org

[36] Victor-Nyambo, G.T. (2009), "The role of information and communication technology (ICT) in Taxation: the case of Large Taxpayer Department Tanzania Revenue Authority", MBA dissertation, Mzumbe University.

Population (2012): 47,783,107	Tanzania
(ii) Type of reform (part of a general IT reform/ e-government strategy or specific integrated tax reform project) and its background	Specific integrated tax reform project as part of a tax modernisation programme.
(iii) Institutional environment, structure and supervision framework	The TRA is a Semi-Autonomous Revenue Authority.
(iv) Objectives and targets of the reform (qualitative and quantitative, including number of staff, clients, procedures etc.)	The TRA wants to modernise its processes and systems in order to better deal with its customers (taxpayers) who are becoming more sophisticated. Its target is to increase the revenue to GDP ratio to 19.9% by 2018. It wants to develop its staff so that they focus on accountability, integrity and professionalism.
(v) Description / type of system introduced or expanded (e.g. COTS, internally developed, degree of customisation; maintenance in-house	Integrated Tax Administration System (ITAX) developed and maintained in-house from 2000 to 2007 in conjunction with GIZ.
(vi) Components, procedures, services developed / changed (including ICT-providers)	The iTax system includes modules in: Registration, Assessments, Collections, Accounting, Audits, Refunds, Objections & Appeals and Case Management.
(vii) Reform rollout strategy (policy reform, procedures, tax base expansion, IT, HR, comms, change mgt.), including analysis of the approach: waterfall, iterative, cloud-based service etc.	The rollout strategy has focused on tax base expansion, changes in operational procedures and making changes to supporting IT systems.
(viii) Market of providers (monopoly/competition/open source?)	There was an initial competition and the ITAX system was selected. The ITAX system was developed in partnership with GIZ and the same system was then used in the Philippines.
(ix) Investment costs (software and hardware, training) and maintenance costs (incl. ownership/ copyright of the system)	Approximately US$8 million was invested by GIZ in the development and initial maintenance of the system.
(x) Effectiveness as evidenced by revenue performance and lower compliance costs	Effectiveness has increased due to improved revenue collection through simpler payment system which encourages taxpayers to pay their taxes (e.g. the ease of using e-filing rather than manual filing).
(xi) Cost-benefit relation of the reform (broad qualitative comparison)	The system has been reviewed as cost effective given the improvements in the efficiency of the TRA processes as a result of its implementation.
(xii) Time from initial set-up until full functionality	5-10 years. The system is fully operational.
(xiii) Customer focus including usability / user friendliness with respect to internal and external clients (dependent on available information)	It has a user friendly interface that facilitates the support of core revenue processes. Mobile enabled features of the system allow taxpayers to have easy access to information.
(xiv) Degree of decentralisation (to what degree were local tax authorities integrated?)	Centralized system that caters for central government inland revenues, but it has a module to support administration of local taxes.
(xv) Interoperability / integration regarding other relevant applications as well as resulting analytical capability (integrated / cooperating solutions for the registry customs, other fees etc.)	Registry operations fully integrated with read only interface to Customs and Motor Vehicle Registry applications.
(xvi) Complexity of know-how required and needs regarding capacity development	Requires highly skilled and trained people who have balanced knowhow of technology and its application to solve business problems.
(xvii) Quality of after sales service	In-house developed system in conjunction with GIZ with no after sales service support.

Population (2012): 47,783,107	Tanzania
and type of approach regarding capacity building	
(xviii) Security of data and operating systems, privacy	Both data and operating systems are secure and private. Data is stored securely by the IT department at different sites.
(xix) Level of transformation	Electronic filing of tax returns and tax payments.
(xx) Sustainability of the system (e.g. regarding HR, maintenance, scalability, adaptability / platform independence, complexity)	Initially the system proved to be reliable. However, the changing demands of the TRA as it becomes a more modern organisation, have shown some weaknesses in the system. It lacks 'future proofing' compared to other COTS solutions, for example integrating with other government systems.
(xxi) Impact on promoting transparency / limiting corruption	The system has had some impact on limiting corruption but no analysis has been done on the actual effects. Transparency has greatly improved in the TRA over the last ten years and this is due to more streamlined procedures (linked within the implementation of ITAX and greater accountability of staff).
(xxii) Challenges (e.g. change mgt., system design / quality of requirement specifications, procurement/contracts, decision making delays, rollout model, staff rotation, internal champions/ownership)	Challenges experienced have included the quality of requirement specifications, delayed procurement procedures, issues with internal capacity building.
(xxiii) Plans for the future	Replacement of ITAX with a more advanced COTS tax administration system. The system has been running for ten years and there are now more sophisticated systems on the market that can better serve Tanzania's needs. A more advanced COTS solution will allow greater integration with other government systems including customs. There is currently no funding associated with this.
(xxiv) Summary of relative strengths and weaknesses	Strengths: • Integrated taxpayer account – provides a holistic taxpayer view • Improved registration – ensures unique taxpayer registration • Detailed revenue collection reports as per actual collections Weaknesses: • Not interfaced with tax revenue collecting points • Low system utilisation due to incomplete / non-functioning and malfunctioning modules including some risk management modules

12) Uganda

Background

The Uganda Revenue Authority (URA) is responsible for the administration of all direct and indirect taxes within Uganda. The URA has its own IT department, but this capability is supplemented by private companies that provide technical support in IT hardware and software.

In 2008 it was reported[37] that the processing of taxpayer data showed mixed success, after donor support had strengthened accounting and internal processing systems. This early computerisation limited the ability of tax officers to be arbitrary when dealing with taxpayers. However, it was observed that further development in the area of information processing seemed to have stagnated although in 2001, a DFID report noted that future development "will depend on the more comprehensive adoption of modern information technology throughout the URA". At that time there was an uneven development of computerised systems, with direct taxation lagging behind customs and VAT. By 2005 the URA was only beginning to use cross-checking to identify tax evaders and to enforce registration and tax compliance.

Donor support to the URA was instrumental in the computerisation effort but once again it was remarked in a 2005 report that these efforts have not been sustained after the initial investments were made[38]. One explanation for this is that donors are not always aware of the considerable costs of running these complex systems (e.g. ongoing maintenance, licence costs and training), after the initial purchase.

In June 2008 it was announced that Tata Consultancy Services (TCS) won a contract to design and install an integrated tax administration system. The new system would manage all domestic taxes and duties for the URA, including income tax, value-added tax, withholding tax and other excise duties with the intent of increasing the level of tax compliance in the country, broadening the tax base and providing efficient services to taxpayers. The new system would also help URA to scrutinize tax returns more effectively and improve compliance level, by having a single and integrated view of the taxpayer and provide increased convenience for taxpayers. Financial support worth approximately US$15mn was provided by DFID, the Netherlands, Belgium and Uganda.

During the project, a suite of applications has been developed for realising and monitoring key activities of a tax administration including registration, returns, payments, assessment, taxpayer accounts, audit, compliance, objections, appeals and investigations. The TCS-developed system incorporates best international practices, with security features on a highly secure platform accessible only to select users. TCS has also assisted the URA in business process reengineering, capacity building and change management to improve and optimize the business processes. The new integrated system is intended to reduce IT and operational costs and processing cycle times, while also improving fiscal transparency and financial accountability. During implementation it has been rolled out in phases to every tax office in Uganda.

As part of the new system a taxpayer portal has been created, which acts as the interface of the URA with taxpayers, ensuring 24/7 availability. The citizen portal will bring transparency by giving taxpayers online access to all the information pertaining to the URA and how it administers all the taxes. The taxpayers will be able to make applications online, track the application status and make e-payment through the citizen portal.
TCS is also providing a Human Resource Management System (HRMS), Document Management System (DMS) and Case Tracking System (CTS) as part of the project scope. HRMS would cover all aspects of HR function through the lifecycle of an employee. DMS is intended to create a digitized repository of all the important documents along with an efficient document storage and retrieval. The CTS will create a central repository for managing information triggered by various events that can originate from the system and from other sources and channels.

[37] Christian von Soest, Donor Support for tax administration Reform in Africa, German Development Institute 2/2008 page 22
[38] Jalia Kangave (2005). Improving Tax Administration: A Case Study of The Uganda Revenue Authority. Journal of African Law, 49, pp 158
http://www.jstor.org/discover/10.2307/27607945?uid=3739448&uid=2129&uid=2&uid=70&uid=3737720&uid=4&sid=21102288426137

Primary source information

Population (2012): 36,345,860	Uganda
(i) Type of country (MIC; LIC; LDC; fragile / post conflict)	LDC/LIC.
(ii) Type of reform (part of a general IT reform/ e-government strategy or specific integrated tax reform project) and its background	Integrated Tax Reform
(iii) Institutional environment, structure and supervision framework	SARA
(iv) Objectives and targets of the reform (qualitative and quantitative, including number of staff, clients, procedures etc.)	Enhance Taxpayer Compliance
(v) Description / type of system introduced or expanded (e.g. COTS, internally developed, degree of customisation; maintenance in-house	COTS customized to fit concept of operation.
(vi) Components, procedures, services developed / changed (including ICT-providers)	New system installed by Tata Consulting Services. Registration, filing, assessment, payment, accounting, objections, appeals.
(vii) Reform rollout strategy (policy reform, procedures, tax base expansion, IT, HR, comms, change mgt.), including analysis of the approach: waterfall, iterative, cloud-based service etc.	Phased: beginning with one small taxpayer office and one medium taxpayer office, followed by the LTO together with the rest of the MTO and finally the rest of the offices.
(viii) Market of providers (monopoly/competition/open source?)	Competition.
(ix) Investment costs (software and hardware, training) and maintenance costs (incl. ownership/ copyright of the system)	US$15mn.
(x) Effectiveness as evidenced by revenue performance and lower compliance costs	Year on year increase in the revenue target (since 2010) has been a trillion shilling (US$ 390 million) and these targets have been met. Domestic Taxes has consistently met the internal and external targets since deployment. Queues are reduced and about 40% of business is transacted at night.
(xi) Cost-benefit relation of the reform (broad qualitative comparison)	Highly cost effective.
(xii) Time from initial set-up until full functionality	Three years.
(xiii) Customer focus including usability / user friendliness with respect to internal and external clients (dependent on available information)	Once the user is competent in one process, other processes follow the same pattern. Usability is straightforward.
(xiv) Degree of decentralisation (to what degree were local tax authorities integrated?)	All tax offices are now integrated and can share taxpayer information as part of the rollout of the system.
(xv) Interoperability / integration regarding other relevant applications as well as resulting analytical capability (integrated / cooperating solutions for the	The system is web based and is integrated with other systems across government including customs and the Ministries of Finance and Trade. In line with the growth in the extractive sector in Uganda, the system is also developing links with the Ministry of Energy and Mineral Development to ensure that this sector is properly taxed.

Population (2012): 36,345,860	Uganda
registry customs, other fees etc.)	
(xvi) Complexity of know-how required and needs regarding capacity development	Learning how to operate the system takes time. Once the help materials/directions are studied and the basic system functions are understood, all other tasks are relatively straightforward given the consistency with which the various features have been designed. Training materials are available which help to complement the process.
(xvii) Quality of after sales service and type of approach regarding capacity building	Good. Support is on-site and off-site.
(xviii) Security of data and operating systems, privacy	Security is by design, Firewalls General, Web and application.
(xix) Level of transformation	High.
(xx) Sustainability of the system (e.g. regarding HR, maintenance, scalability, adaptability / platform independence, complexity)	Maintenance and support contracted for five years.
(xxi) Impact on promoting transparency / limiting corruption	Introduces process visibility.
(xxii) Challenges (e.g. change mgt., system design / quality of requirement specifications, procurement/contracts, decision making delays, rollout model, staff rotation, internal champions/ownership)	Managing change within the organisation is a challenge with resistance experienced to the new system. The URA is working hard to show that the ICT reforms will assist tax officials in their work.
(xxiii) Plans for the future	Implement oil tax module.
(xxiv) Summary of relative strengths and weaknesses	No significant weaknesses have been identified by the URA. There is some concern from donors that there might be too much reliance on the one system. The main strengths are that it is an end to end solution which reduces compliance costs for taxpayers. For the new oil tax module, independent advisors have been contracted to work with the URA to ensure they get the best possible system for their needs.

13) Zambia

Background

In 2004 the ZRA implemented an ITAS, which merged the old VAT software (VIPS) with the database of the Taxes Division. The acquisition of software was financed to a large degree by DFID. IT experts from the ZRA were also engaged in customising this information technology to match the authority's needs. Subsequently in February 2009, the ZRA made an application to the Investment Climate Facility for Africa[39] for financial support in implementing an Integrated Tax Administration System with E-Registration, E-Filling and E-Payment options.

Under the application, the Government of Zambia contributed US$13.3mn to the project, while the ICF contributed US$2.2mn. The application was approved with the project implementation being divided into two Phases. Phase I was to implement activities aimed at improving overall communication and customer service, while Phase II would focus on the implementation of the ITAS. It is unclear what other donor assistance is being provided in this regard, however the US Treasury under USAID funding is known to have a team of advisers working with the ZRA on change management and other issues associated with the introduction of the new system. There is also a smaller DFID project that began in late 2012, which is converting and scanning tax files into a new digital system.

Phase I of the project ran from July 2010 to March 2011 and included the following activities:

- recruitment of consultants as project and communication advisors;
- procurement of the tax administration software;
- procurement and implementation of a call centre;
- development and implementation of a communication strategy; and
- training
  - ZRA staff on customer services
  - ZRA staff on call centre management
  - Taxpayer education in all Domestic Taxes Offices.

Phase II of the project is focusing on implementation of the Integrated Business System, capacity building, knowledge transfer between IT vendor and ZRA IT team, sensitisation campaign and taxpayer education on the new electronic system and the new tax procedures. As part of this phase a new ITAS has been purchased and is currently being installed. Tata Consulting is implementing its eTax system in the ZRA under the Tax Online programme.

Primary source information

Population (2012): 14,075,099	Zambia
(i) Type of country (MIC; LIC; LDC; fragile / post conflict)	LDC/LMIC.
(ii) Type of reform (part of a general IT reform/ e-government strategy or specific integrated tax reform project) and its background	Upgrading and taking advantage of advancement in technology and the need to improve the way that ZRA operates. This is part of a wider e-government strategy. The development of a single window will further enhance the role that ZRA plays in revenue collection and trade facilitation.
(iii) Institutional environment, structure and supervision framework	ZRA is a SARA ultimately under the Ministry responsible for Finance and Planning. The ZRA reports to an independent Governing board.
(iv) Objectives and targets of the reform (qualitative and quantitative, including number of staff, clients, procedures etc.)	The objectives of the reform are to: • Enhance the efficiency of tax collection within the ZRA including the improved detection of tax evasion and the promotion of taxpayer compliance • Improve accountability and transparency in tax collection processes • Reduce the cost of doing business • Allow easy access to the system by taxpayers (as it is web-based, the system allows taxpayers access 24 hours a day) • Maximize revenue collection by increasing productivity and service delivery
(v) Description / type of system	• ASYCUDA World is an off-the-shelf system but will require some degree of customisation to

[39] Source – ZRA tender documents, ZRA website

Population (2012): 14,075,099	Zambia
introduced or expanded (e.g. COTS, internally developed, degree of customisation; maintenance in-house	meet ZRA needs • The eTax system is for the administration of Income Taxes, Domestic VAT and Property Transfer Taxes, Mineral Royalty
(vi) Components, procedures, services developed / changed (including ICT-providers)	• Hardware and software had to be purchased • New procedures had to be developed to support the online features of the new system including e-register, e-file, e-payment and e-statements • Legislation had to be amended to provide for acceptance/recognition of e-documents in court of law in case there is a dispute
(vii) Reform rollout strategy (policy reform, procedures, tax base expansion, IT, HR, comms, change mgt.), including analysis of the approach: waterfall, iterative, cloud-based service etc.	The rollout strategy focused on the following areas: • Reengineering of procedures to support the new system • Creation of new processes • Development of a change management strategy to support the introduction of the new system • Training of staff in the use of the system • Stakeholder engagement to ensure the upcoming change is understood in terms of the benefits both to the ZRA and taxpayers • e-management of the system
(viii) Market of providers (monopoly/competition/open source?)	The ITAS was procured through an international tender and a three year contract was awarded to Tata Consulting Services to implement their eTax system.
(ix) Investment costs (software and hardware, training) and maintenance costs (incl. ownership/ copyright of the system)	The cost for most of the hardware and software are born by GRZ. Cooperating partners have provided support in capacity building issues including change management.
(x) Effectiveness as evidenced by revenue performance and lower compliance costs	High.
(xi) Cost-benefit relation of the reform (broad qualitative comparison)	There has been a reengineering of processes. Repetitive processes have been removed. Accountability is placed on the taxpayer through self-assessment so that they take responsibility for their returns and declarations. The cost of compliance reduction.
(xii) Time from initial set-up until full functionality	Two years.
(xiii) Customer focus including usability / user friendliness with respect to internal and external clients (dependent on available information)	Good. It is a platform for users to e-register, e-file and e-pay and also to obtain e-statements among other things.
(xiv) Degree of decentralisation (to what degree were local tax authorities integrated?)	A segmented approach is in place in ZRA. This is to say taxpayer segments have been established e.g. Larger Taxpayer, Medium and Small and Taxpayer offices to ensure tax policy, administration and solutions are tailor made to suit taxpayer needs. Under the Large Taxpayer Office, further segmentation has been done to deal with the requirements of the Mining Sector, Financial Sector and Telecommunications Sector. A unique Taxpayer Identification Number is used by taxpayers for tax matters which provides an audit trail across tax types and taxpayers have one account to refer to for all tax matters.
(xv) Interoperability / integration regarding other relevant applications as well as resulting analytical capability (integrated / cooperating solutions for the registry customs, other fees etc.)	eTax and ASYCUDA World have the capability to not only collect taxes, duties and fees but also for e-register, e-file and e-payment and also to obtain e-statements. There is also room for interface between the two systems and the banks systems to support e-payment.
(xvi) Complexity of know-how required and needs regarding capacity development	The eTax system is advanced and as such the learning curve will be steep, especially given the relatively basic systems that the ZRA has been using to date. A significant amount of training and staff development is included in the overall programme.
(xvii) Quality of after sales service and type of approach regarding capacity building	These are inbuilt in the sales contract. The contract also provides for skills transfers for both the eTax system and ASYCUDA World.

Population (2012): 14,075,099	Zambia
(xviii) Security of data and operating systems, privacy	The eTax system has advanced data security built in.
(xix) Level of transformation	This will be major because of the changes to the way returns are received and processed. The electronic filing of returns by taxpayers will require training to staff in terms of handling the information. Processes had to be changed in order to move on from manual processes.
(xx) Sustainability of the system (e.g. regarding HR, maintenance, scalability, adaptability / platform independence, complexity)	The new system will provide an electronic platform for taxpayers which will alter the way they pay their taxes. The system will allow ZRA staff to better manage taxpayers. Staff will be fully trained in the system over the three year programme ensuring its sustainability.
(xxi) Impact on promoting transparency / limiting corruption	The inbuilt capacity for the system to provide audit trails and segregate functions improves transparency and reduces the appetite for corruption.
(xxii) Challenges (e.g. change mgt., system design / quality of requirement specifications, procurement/contracts, decision making delays, rollout model, staff rotation, internal champions/ownership)	The main challenge is change management. The electronic filing of tax returns and other online features is a significant change for the ZRA. In order to meet the challenges of change management, technical support from cooperating partners was obtained to ensure this was appropriately dealt with. Other challenges include designing an appropriate system for the ZRA. This has been supported by technical assistance to ensure the system is appropriate. In addition, dedicated funds have been set aside for stakeholder engagement and taxpayer education so that all stakeholders, including taxpayers, understand the issues surrounding the ICT reforms and the expected changes to ensure there is no resistance.
(xxiii) Plans for the future	Future focus will be on continuing the response to demands of the business in respect of tax administration for purposes of reducing the cost of compliance, encouraging compliance and securing revenue. This will require further system development and acquisitions.
(xxiv) Summary of relative strengths and weaknesses	The ICT reforms will enable taxpayers and stakeholders to access information and conduct their transactions without visiting ZRA offices. This will reduce the cost taxpayers incur to queue, process a declaration or make a payment. Having access to account statements means taxpayers can raise follow-up issues with the tax authority in case information is inaccurate or requires amending. Stakeholders need to obtain access to internet facilities to transact, which is a relatively new phenomenon for many people in Zambia and will require widespread education of taxpayers.

H. Country in depth analysis questionnaire

Definition	Mozambique	Peru	Senegal	Swaziland
How long did the procurement process take (from the definition of the technical specifications to the start of the implementation)?	6-Months to 1 year (Mozambique rules) - international tender	The process did not reach that point except for the Human Resources Software, which is currently open.	No procurement process was defined and followed. The software firm conducted a feasibility study, which was followed by the implementation project. Technical specifications were only developed for the functions that were added to the system, during the project.	2 months: from Nov 2011 to Dec 2011
What was the time from initial setup until full functionality?	Not finalised yet. Only NUIT (Registry) is implemented.	SIRAT/RSIRAT are systems that were originally developed during the nineties and as a consequence, current officers did not inform them.	3 years, with a follow-up project currently under way	Contract started in Jan 2012 or Dec 2011. For Registration it took 4 months. In April it was up and running.
Was there a business requirements definition phase?	The business requirements definition phase is done by AT, with the support of two consultants	For the current system (circa 1992) a business requirement phase was conducted although not all the processes got documented. At present, a business requirement definition phase was carried out and it is being executed by the functional areas.	Yes - both for the ITAS and the data warehouse	Yes, however during the implementation it became clear that additional work had to be done. This part is done by consultants
Did it take place before the implementation of the ITAS, during or after?	It was done after the acquisitions, but before the implementation	Before	Before and after, in both cases. It is important to mention that there was no acquisition	Before and after.
Was it planned for from the onset of the ITAS implementation?	Yes	Yes	Yes	Yes
Do you have tax processes that are not automated? If so, why? (is it because the system cannot cover them or for another reason)	Yes Audit/ risk management, all others are either supported by the legacy systems or by the new ITAS. Principle of fading out – fading in.	No, all major processes are automated. Only a small quantity of minor processes remain untouched, although plans exist to	Yes - audit. But more importantly, we know of several processes that are currently conducted outside the ITAS (e.g. Prop. Tax, Valuation,	60%, on target with work plan - ahead of schedule

Definition	Mozambique	Peru	Senegal	Swaziland
	At the moment of the visit he levying and collection processes were still supported by the legacy.	automate them	risk, audit)	
Do you have tax types that are not automated? If so, why? (is it because the system cannot cover them or for another reason)	Yes, car vehicle tax, oil and mining tax, inheritance tax and stamp tax	None	Partially - property cashing. However, note that Senegal has many tax types that are integrated within the ITAS - how many?	Yes
Was there a business process reengineering exercise that accompanied the implementation of the ITAS?	Yes, the modernisation project is based on a comprehensive reengineering (it is ongoing right now). Some changes to the act were introduced and they were all approved.	Yes, although it was planned as a basic revision of all processes.	Process streamlining accompanied the implementation. However, a BPR project was also conducted after the implementation project, (coordinated by the IMF Advisor) and ended last year.	Yes, once done at the beginning by an outside consultant - ADB funded - and once after stage 4 was completed done by Deloitte. They are currently in the process of evaluating the changes suggested by Deloitte which may necessitate change orders (with a cost) by Data Torque.
Did it take place before, during or after the ITAS implementation?	Before and during (still ongoing)	Before	In parallel	Yes but the SRA engaged a more in depth study at later stages
Was the business process reengineering exercise planned as part of the ITAS implementation?	Not at the moment of acquisitions, but soon after one realised that it was really needed	Yes, it is part of the PMC	Yes	Yes, at a top level mapping
Were procedures documented? Have they evolved and if so, has their evolution been documented?	The procedures related to the legacy system and its processes were only partly documented. During the BPR they evolved to the desired new situation. They are documented in the new business models, which are the basis for developing the ITAS. This was done by AT's business analysts with the support of PBLQ's consultancies	Yes, but the process is still ongoing	Documented and improved over time - particularly where issues existed (such as Registration) - procedures were improved through in-house development of new inquiry functions	Yes
If documents exist, are they being used and updated?	The new business models are used as the basis for development. So	Yes (the IT officers make an special note in which the legacy	Yes	Yes

Definition	Mozambique	Peru	Senegal	Swaziland
	they are the input for the solution designs for the ITAS. Also these documents are available.	documents are neither used or updated)		
Does the organisation have processes that flow between organisational sections, such as taxpayer registrations with pre-audit requirements or integrated Tax Agency flows (audit compliance)?	Yes	Yes	Partially (e.g. annual turnover is inscribed in the registration profile but could serve Audit, and when eRegistration is used to change certain registration data, it sets off a flag for validation)	Yes, the SRA is moving towards a functional approach. As new modules are installed further process flows will be implemented.
How is the Tax Agency organised (by Tax Type, by Process, by taxpayer size, a mix)?	By tax size (UGC, DAFs), below that level by the functional organisation (tax type, collection, audit)	Top level organisation is organised in a tax type fashion (Customs, Tax), below that level the organisation is functional.	By tax size (LTO, MTO), then geographical for the remaining TPs.	Functional Organisation
Was this a consequence of a planned reorganisation exercise?	It was created in 2006 as the merger of DGI and DGA	It was a consequence of organic growth. In 1992 both the Tax Agency and customs were merged into the SUNAT.	Yes. MTO is new (1 year old), as are several new district offices - increases in # of offices and employees (400 to 800)	
Was the reorganisation planned as part of the ITAS implementation?	No	No	No	The organisational change was triggered by the introduction of VAT and ITAS was attributed to that implementation.
Does it meet the organisation's needs? Are there any major hurdles, or unsatisfied organisational requirements?	Yes, it met the requirements of the organisation	According to the IT officers, it does meet the current needs of the organisation.	It met needs, but more functionality is being added to continue automating processes.	Yes
Does the organisation have business analysts (BAs)?	Yes	Yes	Not anymore because they all got promotions. IT has business knowledge (at the head and deputy-head level), but there is no official BA team. They understand that they need one, but not sure they can compete for and retain	Yes

Definition	Mozambique	Peru	Senegal	Swaziland
			resources, unless they make the BA job more senior, or hire juniors as BAs	
How many officers are assigned? Are they assigned full-time or part time?	Project (15 full time)	Around 250 (150 in Tax, 100 in customs)	There is no official BA team	6 Full time
Did the position exist prior to the ITAS implementation?	No	Yes, although they grew organically from 1992	No	No (created due to the VAT introduction)
What was their impact on the ITAS implementation?	At the beginning it was hard for them to think more out of the box instead of duplicating the existing situation. This was one of the main reasons to hire external consultancy to support them in this process.	Decisive	Significant positive impact, the extent that all the business analysts received promotions after the project ended.	ITAS is in early stages, too soon to evaluate
Are there Super-users?	No (but only the Registration module is operational at the time of the visit)	No	Yes. They are tax officers. They work in tax centres. They are strong ITAS users. But they do not perform QA on new development. However, if there is a bug they will report it.	Yes, they are being trained now, due to reassignments over the years
How many officers were trained in that position? Are they assigned full-time or part time?	None, AT prefer to use the business analyst to perform this role, which has an impact on their availability for their work on the project itself	None	They were trained as trainers - approx. 20 (2 per tax centre)	20-25 (part-time) due to organisation's size
Did the position exist before the ITAS implementation?	No	No	The position does not exist officially. It is an ad-hoc status.	Yes, but the officers were reassigned, they are now starting again to train for the position.

Definition	Mozambique	Peru	Senegal	Swaziland
What was their impact on the ITAS implementation?	N/A	N/A	Facilitated change management and acceptance	None, as they are being trained, problem was with change management.
Are there any trainers?	Yes	The Tax Agency has an autonomous school called INDESTA, which trains officers and taxpayers and can select teachers from the SUNAT pool of officers	The trainers are in fact the Super-users. They train new or transferred employees on request.	Yes, Data Torque did the trainers training
How many officers are assigned to the position? Are they assigned full-time or part time?	Project (17 part time)	Around 70	Among the super-users, six are particularly talented in training.	15 (part-time)
Did the position exist before the ITAS implementation?	No	Yes	The legacy system was too lenient and allowed any transactions to occur, so training was not much of an issue.	No, Data Torque is supposed to do it, but it was not completed (plans exist for additional 3 weeks of training by Data Torque).
What was their impact on the ITAS implementation?	They support the offices and collected feedback about the acceptation of the product. Part of this was gathering change request at the offices	Yes	They assisted in the go-live of each site	No impact yet
Was training included in the ITAS implementation?	Yes	For the legacy system, it occurred in the 1990's	Yes	Yes
For whom?	All business users and for developers at CEDSIF for the IT component	As the original training happened so much time ago, officers do not recall the specifics of it.	All business users (including Audit, and senior management)	Key officers
Was it continuous over time?	No, however regarding the delay the question is whether the IT component was not too early.	As the original training happened so much time ago, officers do not recall the specifics of it.	No - initial, then ad-hoc	2 weeks
Did it include the IT staff?	Yes	As the original training happened so much time ago, officers do not	Yes	Yes

Definition	Mozambique	Peru	Senegal	Swaziland
		recall the specifics of it.		
Was it sufficient and adequate?	No, regarding timing. For the business users still refresh trainings happened In relation with new functionality to be implemented.	As the original training happened so much time ago, officers do not recall the specifics of it.	Persons were trained on features that they weren't using right away, so then they lost interest & skills	The training is still on-going so no definite answer was given
Did the training programme continue after the implementation was completed?	On going	N/A, although later INDESTA took over	Only during the rollout of the solution to the tax centres	The training is still on-going so no definite answer was given
How is staff trained after being incorporated in the organisation?	For IT, it is not being considered a priority but will be performed by ORACLE. For users, on the other hand, it is being handled locally by internal leaders.	Courses at INDESTA	Via super-users	Basic training provided, included RMS, they send recruits to Pretoria for further training.
How is staff being trained after a change of their job descriptions?	No special training is given	Courses at INDESTA	Via super-users	Training is provided on RMS and Domestic and Customs if required.
Is there an IT unit?	Yes, but at the Ministry level (CEDSIF)	Yes	Yes	Yes
How many officers are assigned to it? Are they assigned full-time or part time?	*It seems that the answer is only focused on the e-Tributação project.* 9 (full time), consultants (5 full time), 5-7 (part time), architects and testers (5-10 part time)	Around 450 (a duplication in the last years)	11 IT team members: 7 permanent IT specialist, and 4 contractors. Out of the 11, there are 5 who are capable of developing source code on the ITAS platform.	IT 20 full time (1contrated on site) / Project 2 full time
Is staff turnover an issue, within the IT unit (including any BA team)?	No	No	Turnover is not a problem with the technical specialists. However, we have not managed to attract nor maintain a full-time team of Business Analysts.	Yes
Did the unit exist before the ITAS implementation?	No (internal resources were requited out of the existing IT department, however later they	Yes	Yes	It started at Oct 2010 and the project stated in Oct 2011

Definition	Mozambique	Peru	Senegal	Swaziland
	had to get people with specific skills)			
What was its impact on the ITAS implementation?	They thought it was easy with some training - later they discover that people were not meeting the criteria and schedules were delayed.	Decisive as they have to provide input	Enabled the DGID to acquire and maintain technical knowledge in-house, on the ITAS' technical platform	Done by Data Torque in New Zealand
If there is an IT department, is it possible to fix ITAS errors in-house? Would it be possible to build extensions and plug ins in-house or does it require an intervention by the ITAS supplier?	Yes	Yes, they actually built most of the software in use in-house.	Capable yes, but we do not do it because it is the vendor's responsibility. However, if they are high-risk matters, they will do it themselves.	No, under contract Data Torque is responsible and problems are resolved in New Zealand.
Was it necessary to hire DBAs?	Yes	Yes	No - existing DBA	This function is provided by Data Torque in New Zealand.
Was it necessary to hire programmers?	Yes	Yes	No - existing staff saw their skill sets increased	This function is provided by Data Torque in New Zealand.
Was it necessary to hire network administrators?	No	Yes	No - but technicians had to be hired to maintain the network, as it grew during the rollout of the ITAS	This function is provided by Data Torque in New Zealand.
Was it necessary to hire system analysts?	Yes	Yes	No	This function is provided by Data Torque in New Zealand, although a team was assembled locally.
Did the officers get the training on the tools and methodologies in use to bring them up to speed with the new ones?	Yes (as they implement the modules)	No	Yes - Forms, Reports, Weblogic, DB	This function is provided by Data Torque in New Zealand.

Definition	Mozambique	Peru	Senegal	Swaziland
What were the triggers that determined the change to the former state of the system (legislation changes, tear and wear of the old methodology, envisioned savings on resources, simple update to electronic means, necessity of increasing revenues, transparency)?	The initial tender was placed by a different team of Officers and details of their motivations were not kept.	The goal of increasing the tax pressure from 14% in 2011 to 18% in 2016, and the wear out of the current system, which was initially developed in 1992.	Need to purchase modern ITAS to replace legacy system (SIGUIL) - that said, legislative changes were introduced (e.g. new compound interest rules, etc.)	VAT determined time and pace, but they had a pre-existing problem with legacy software (mainframe system) so they decided to buy a COTS. Government services had tried previously tried to build a custom system and effort was abandoned.
Was the third party integrator in charge of system customisation, or was their scope of work limited to delivering implementation services?	From 2007 to 2011 the project was stalled. They brought Oracle expertise but it was not enough. The project was not started until 2011.	No	No third party integrator was involved in the project.	No, other systems other than RMS
How would you qualify the level of knowledge of the application by the resources of the third party integrator?	Escopil did not have the correct knowledge, which was the main reason to skip them as the man in the middle.	No	No third party integrator was involved in the project.	No third party integrator was involved in the project.
Do you know if they were supported by the manufacturer of the ITAS? How, or to what extent?	Escopil was supported by the manufacturer but this did not result in the requested performance	No	No third party integrator was involved in the project.	No third party integrator was involved in the project.
Do you see any added-value in having a third party integrator? Would you have preferred to deal with the software manufacturer directly - or inversely, would you have preferred to deal with a third part integrator, instead of dealing directly with the manufacturer? Do you think this would have made a difference?	No	No	N/A	No

Definition	Mozambique	Peru	Senegal	Swaziland
How did the Tax Agency arrive to the decision to make an ITAS in-house or to buy it from a provider?	Study of viability and they already had experiences locally which told them that it was better to buy outside and customise.	It is still being analysed. IT officers mark that there is a line of thinking within SUNAT that says that no software will fit completely.	A feasibility study was conducted by the software firm and the conclusion was that the country's ITAS needs could be catered to through a proper adaptation of the vendor's system. A decision was then made to proceed with the project on this basis and in light of the system's success in neighbouring Mali.	They wanted to focus on tax collection so they did not want to have people disrupted from their normal task. They wanted a system that was tested and proven before. Government services had tried previously tried to build a custom system and effort was abandoned.
What options were considered in making such a decision?	SAP, TRIPS	Build in-house, Oracle, Bull, IBM (along with Sogima)	N/A	Tax Solution built in-house/SAP and adapt it/ORACLE and adapt it /Data Torque. Vendors were invited and Oracle withdraw.
Now, after the fact, how was the impact of that decision on the overall process?	It is very difficult in the beginning to know how it is going to be, without the business models.	SUNAT got complete freedom to maintain and implement, however the 'organic grow' render them with a huge system that may be too difficult to maintain and because most of core is in an old technology, some features are simply not possible.	The system is implemented and a project is currently underway to add functionality to it and deploy electronic services through the web. The DGID therefore maintains an active relationship with the software vendor and continued to involve it in the organisation's computerisation projects. Support is therefore continually available, on the ITAS.	Data Torque was cheaper and it used the correct tax terminology (SAP referred to taxpayers as "partners")
Did the Tax Department foresee risks involved in the upcoming change?	Yes, they have the risk of not mapping all the full functionality of the tool and detailed business requirement missing	Internal organisation instability	The project was foreseen as being important and requiring significant input from DGID management and key employees. However, such involvement was not secured from the onset, which created unforeseen obstacles to success.	Yes (with the supplier, software, internal)
If so, how were those risks mitigated?	None devised	They are trying to partner up with an international entity: IADB	DGID management got involved gradually and assigned key employees to the project, including a team of Business Analysts. This	Risk with the supplier (escrow), software (tax software, using a Microsoft platform), the internal

Definition	Mozambique	Peru	Senegal	Swaziland
			lifted obstacles and secured the achievement of the main objectives by the end of the implementation project.	one (change management)
It the system working as expected? Did the risk materialise?	No, they are finding a issues in the implementation	The system is working as designed, however there are issues regarding the underlying technology which creates numerous problems.	The system is operating as expected, despite certain functions still needing to be fully implemented. Some issues will be gradually ironed out and these final functions will be implemented. However, no business analysts remain associated with the project, so the risk of a lack of involvement by management and process owners may again become an issue, as the system ages.	Change management was a bigger issue than it was foreseen.
Did other, unforeseen, risks appear?	Yes, in the beginning it was not clear which tools were in scope of the contract, and what the impact was of the tools out of scope. This resulted in disappointments and frustration.	Low compliance to official schedules	Unstable power and similar infrastructure matters created unforeseen issues with the implementation.	Complexity of change management. SRA recognised this and brought in an outside consultant.
Was not owning the source code an issue?	Yes (The customisation of the functionality itself is owned), but the ownership of the ETPM source code will stay at Oracle	Yes, they have to have the source code	A licence to have and modify the source code for its own purposes was granted to the DGID, by the software firm, upon delivery of the ITAS.	Yes
Is putting it in escrow acceptable?	Yes, but that still doesn't give access to the source code	Not considered by SUNAT	N/A	It was resolved that way.
During implementation, was the ITAS implementation sponsored/led by the IT department/staff, or rather by	IT		IT staff and business analyst unit. A committee of managers was also formed to oversee deployment efforts to tax centres	Project management came from IT, but the decision making was functional.

Definition	Mozambique	Peru	Senegal	Swaziland
functional staff (e.g. managers, Audit officers, Business Analysts)?				
Was the IT managed by the tax department's IT section, or by a central government IT team (e.g. IT from Ministry of Finance)?	Central Government (Ministry of Finance)	SUNAT has its own IT section	Tax dept IT	Internal
Which recognised methodology was used (if any) for the implementation (e.g. PRINCE 2)	Prince 2	PMI compliance	Software firm's methodology	Prince 2
Which major hurdles or obstacles were encountered during the implementation and what were the lessons learnt?	It is better to have detailed business requirements before acquisition; to have a better cost estimates; establish a holistic approach about what the system should do	They are too late for the schedule they considered	DGID was allowed too little time to validate requirements, during the implementation. DGID did not express its requirements sufficiently. Regional offices have the impression that HQ gets all resources, so they resist implementation efforts. Also, the electricity problems adds to the problem of adoption in the regions. eFiling was developed three years ago, but never adopted by TPs because there was no ePayment, so they still had to go to the tax office to pay, so they filed as well.	People and their unwillingness to adapt to change.
What would the Tax Agency do differently, if it could start from the beginning/ what major lessons were learned?	Define business requirements before acquisition	Due to recent internal changes, they are in the process of assessing the lessons learnt and how to proceed with a new IT solution.	Communication with stakeholders should be improved - both internally and vis à vis the business community. Project governance should be a team effort rather than limited to a few people. A number of champions of change should be identified and attached	First acquire an in-depth understanding of change management

Definition	Mozambique	Peru	Senegal	Swaziland
			to the problem. Persons who were genuinely convinced of the benefits should be invited to become implementation team members - and should not be assuming indirect financial penalties for abandoning their regular jobs during the project. Also, stronger emphasis on change management. Also on contracting, outcomes should be measurable, monitored and evaluated to ensure quality delivery of the application and deliverables. Not enough training, or type of classical training no longer applicable, insufficient to ensure sustainability of skills in the long term. Invest more human resources into the project and into the IT team.	
What was missing or may need to be changed?	Normal process of improving (they are happy with what they have)	Integrated Current Account, centralised systems	See above	Change management was underestimated.
What is the level of satisfaction towards the change?	Not possible to determine as it is at early stages of implementation	Change management is a major topic and SUNAT officers consider that they may need help in the future.	Varies: from satisfied to rather low satisfaction. Low satisfaction stems from what is seen as system rigidity, i.e. lack of flexibility to localise functionality to local requirements. Low satisfaction is also related to what is perceived as being high cost of acquisition and maintenance of the ITAS.	Medium level now, it is increasing gradually
What are the shortcomings of the methodology?	Due to the fact that only one module was implemented it is too early to tell.	Due to recent internal changes, they are in the process of assessing the how they will handle Change management in the future.	Related to training, both business and IT resources	None so far.

Definition	Mozambique	Peru	Senegal	Swaziland
How much time did the resources in charge of implementing the ITAS spend on site, at the Tax Department? Was their onsite presence sufficient?	Due to the fact that only one module was implemented it is too early to tell.	As the implementation happened over 20 years ago, there are no certain information about resources utilized at that time.	An expatriate Business Analyst was assigned by the software vendor to spend 18 (uninterrupted) months onsite. In addition, short-term missions by various other team members reinforced the ITAS implementation effort. The onsite presence was of fair length, although a larger (or more stable) BA team on the Client side may have improved the results of knowledge transfer.	ITAS was implemented using SRA full time resources in conjunction with Data Torque.
What is the impact on promoting transparency / limiting corruption?	Due to the fact that only one module was implemented it is too early to tell.	As the implementation happened over 20 years ago, there is no information about the underlying situation.	Taxpayers actually understand that the new technology implemented at the DGID has made it much harder to evade taxes. That said, they were afraid to come forward during the tax amnesty because they could be targeted in the future.	Still analysing the impact. SRA acknowledged it removed opportunities for corruption (e.g. now tax clearances have to be automatic and before they were manual).
What is the level of transformation (being defined according to the types of services established: provision of tax system information via the internet, filing of tax returns, tax payments, email-communication, real-time access for taxpayers to specific taxpayer information, personalisation capabilities, e-services offered to taxpayers, supporting mobile/remote revenue body staff).	Due to the fact that only one module was implemented it is too early to tell.	As the implementation happened over 20 years ago, there is no information about the underlying situation.	More and more on the net, hand held out to non-net TPs via PDF filing & barcoding (internal efficiency and error reduction). There seems to be a legislative matter to resolve on e-communication. Most revealing is the transparency issues that came out of the eTax implementation & "bay window" effect of TP accounts - it's painstaking clean-up efforts, but very positive, in terms of enforcing trust in the TP-TA relationship	Too early to tell, still in implementation phase.
Was your system a COTS or in-house built?	COTS	In-house built	A product that is customized for each country	COTS

Definition	Mozambique	Peru	Senegal	Swaziland
What are the differences with the core ITAS system?	No information - Oracle is making changes directly.	As the software was built in-house, this question is not applicable.	Additional features and functionality was added to satisfy the DGID's requirements.	None, it is the stock implementation
What was the main reason that motivated your decision?	International Bid was won (SAP, Crown Agents, Oracle)	Organic Growth since 1992	Legacy system outdated	SRA wanted a proven software off-the-shelf.
Did you have a significant in-house software development capacity? Did you have to scale it down, or on the contrary, develop it?	Yes	Yes	Reasonable in-house development capacity, with skills re-converted to the new Oracle development platform.	No (all programming is being done overseas in New Zealand by a support team)
What was the customisation (for COTS) or development (for in-house) period? Was it shorter or longer than planned?	Far longer	As the software was built in-house, this question is not applicable.	The customisation required 3 years, which was roughly 30% more than originally planned.	As it is the stock implementation, it took the time expected, and in some areas even shorter.
What percentage of the 'core' COTS was compliant with the business rules in use in the Tax Agency?	50%-70%	As the software was built in-house, this question is not applicable.	70%	100%
Was the Total Cost of Ownership (TCO) concept used in the decision-making of acquiring a COTS or developing an in-house system?	The initial tender was placed by a different team of Officers and details of their motivations were not kept.	The original implementation was during the 90s and due to the time elapsed, there is no information about the decision making process of this ITAS.	N/A	Yes, SRA used PRICE 2 methodology.
Was the licence cost a decisive factor?	The initial tender was placed by a different team of Officers and details of their motivations were not kept.	Yes	No, since no licence fee was charged for the COTS at the time. A licence fee was more recently charged for the electronic services module, but this fee is not a decisive factor overall, for the ITAS project.	Yes, it was lower than other options.
Is there a recurrent budget for licences, for training, etc.?	Training is handled directly at the AT level. Licences are being handled by CEDCIF at the Ministry	Yes, IT has its own budgeting (around US$45 million per year)	For licences: approx. 30% of the entire IT budget.	Yes, it is being budgeted over time.

Definition	Mozambique	Peru	Senegal	Swaziland
	of Finance.			
Does the Tax Agency own the source code for the current implementation of the COTS? Was it an important factor in your decision?	No	Yes, it was built in-house	The Tax Agency has a copy of the ITAS source code	No (but in escrow)
What is the system maintenance scheme? Is it being secured by an external provider, or is it taken care of internally? Does the Tax Agency have access to new releases and bug fixes of the COTS?	Provided by Oracle	Maintenance is being done by SUNAT directly, with the help of a company hired on a 3 years contract to do the programming.	Ongoing support agreement with the ITAS vendor	Everything goes to New Zealand, however the hardware remains in SRA responsibility.
Is the maintenance scheme still active? If not, why?	Yes	Yes	Yes	Yes
Is it possible to configure the system? (via base tables or administration pages; workflow engine to configure processes, report engine to configure reports as needed)?	Configurable with a proprietary language (Java for ETPM) and tables	Yes	Yes	Yes, using pages but they cannot change code
Do you consider the ITAS and its underlying platform to be stable and performing? Do you have a lot of downtime? Bugs? Other technical issues?	Yes	The software was created in 1992 and less people had access to it. As a consequence internal computers are running on MS Vista due to compatibility issues and serious problems of performance are affecting the system.	Since upgrade to 11g yes for ITAS. eTax is stable	Yes, but there is a change management issue.

Definition	Mozambique	Peru	Senegal	Swaziland
Is the technological platform of the application suitable for deployment in the regions (remote deployment using pure web-based technology) and electronic services (e.g. epayment)?	In basis the technical platform is suitable (we based technology), however the reliability of power and internet services do have its negative impact.	Although it was deployed in the past regionally, currently all servers are hosted in Lima, besides the one that serves the region of Iquitos due to communication problems (these problems may be solved by 2015 due to a project that it is near execution by a Telecommunications Company named TELEFONICA)	Yes - the problem is with the stability of the electrical supply. Electrical instability is ruining equipment and procurement rules are preventing them from rapidly replacing equipment - which implies that they do not stock critical spare parts.	Yes, they allow that.
How was the QA managed?	PBLQ provided, Testing is done by Oracle CEDSIF and AT, according the principles of technical tests to User testing	Each IT section with programmers has its own QA area.	By the software vendor, with acceptance testing conducted by the DGID	Tested, but reality proved the necessity for some change orders.
Was the ITAS delivered with a full set of documentation (user guide, configuration guide, recovery-guide, etc.)?	Yes	The ITAS was built in-house. Notwithstanding with that, officers indicated a general lack of original documentation that now is being solved.	Documentation was delivered	Yes
How was the evaluation of the solution conducted during the procurement stage? By a committee, by an independent third party, etc.?	A committee	Research	A committee evaluated the feasibility study report submitted by the software vendor, and made the decision to proceed.	A committee
Did you receive a demo of the ITAS before or during the evaluation stage and/or acquisition?	The initial tender was placed by a different team of Officers and details of the decision making process are not available	The ITAS was built in-house during the 90s and no information about the decision making process is available now.	Yes	Yes, as part of the procurement they invited ORACLE, SAP, and Data Torque and ask for examples in a live environment.
Did you visit a site where the ITAS was already implemented and operational, prior to or as part of the evaluation stage and/or acquisition?	The initial tender was placed by a different team of Officers and details of the decision making process are not available	The ITAS was built in-house during the 90s and no information about the decision making process is available now.	Yes, Mali was visited, and the system observed in operation.	Yes the Project Manager went to New Zealand and met with another user country support team.

Definition	Mozambique	Peru	Senegal	Swaziland
What are the future plans for the system (upgrades, additional modules, replacement)?	in 5 years they will be out of Oracle	Obtaining a new ITAS	Upgrade DW platform, implement Audit, add risk reports and automate risk assessment, ePayment	2 stages remaining
Is an upgrade path for the system already defined?	They are planning to implement still the originally planned functionality and in parallel a taxpayer portal which is linked to ETPM will be implemented.	Yes	Yes - Implementation of Web modules, and development of additional functionality needed by the DGID	Data Torque update software often (they don't move technologies)
Was the IT and functional team sufficient for the ITAS implementation?	No	Yes	No - More resources would have been useful	No
Was hardware an issue? (sufficient hardware, or performance)	Yes, with the participation of other projects	No, although it was mentioned that the legacy software is running from 1992 and therefore was not designed for today's hardware	No - but lack of stability of electrical supplies was a problem, as was the length of the procurement cycle for purchasing spare parts	No
Did you have to buy hardware as part of this ITAS implementation?	Yes	Yes	Yes - However, there is a significant issue with stocking equipment, which currently lies in corridors of relatively public areas of the building	No
How did you deploy the software in the regions (outer districts)?	Is still ongoing	Originally each region has its own server and database, which would sync over night with the central database used to select audit cases. Right now, it operates in the same way but the regional servers are located in Lima, with the exception of Iquitos)	Over the government's Fibre Optic network	They all use the same software

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Was the state of the network an impediment to deploying the solution in the regions? How did you resolve this matter (database replication, VPN, other)	In some areas, yes	For the legacy system it was, right now it is only for Iquitos and it is expected to be solved by 2015. The solution is to allow regions to have autonomous databases that would sync at night.	No - electrical supply is the problem	Network was very slow, now it is fast. Government owns fibre optic throughout the country.
Did you have teams (trainers, IT, Business Analysts) dedicated to computerising the regional tax centres?	No, they travel if necessary to the site	No	Yes - 2 persons per tax centre	No, they have a centralised help desk.
Was capacity building of the tax centres in the regions a more acute issue than centrally, or were the skill sets and competency levels of staff similar?	Still ongoing	No	Change management is a significant issue, compounded by uncertain system performance because of instability of electrical supply and instability of ITAS prior to 11g upgrade	No
Are there interfaces with other government systems (HR, accounting, Treasury, customs, etc.)? Please identify them.	Yes, with the legacy system and Governments' budget system	Yes. Interfaces with the registrar are already implemented and in use. In the future they are planning to implement a specialised software to help them recover information. Reconciliation with the treasury is being done every day since 1994.	Not in production. Two have been developed. Planned for near future	No interfaces with treasury. They upload information from ASYCUDA.
Are there interfaces with organisations/private organisations (private-commercial banks, chamber of commerce, others)? Please identify them.	No	Yes, Banks, public notaries and utility companies are included	No	No
Are/were there legal or organisational stumbling blocks to introducing some features (e.g. electronic payment)?	They have some changes to be made, but the Parliament is seen as very keen to change laws. The law however is more modern than the current operation of AT. By	No	Not for ePayment, but for transmission of eDocs.	Yes, VAT law was new and conformant with modern IT requirements however the Income Tax presented some challenges and is in the process of being

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	example e-payments and e-filing will be no issue			revised.
How were they solved?	Like for taxpayer registration the needed changes will be proposed	Due to recent internal changes, the new managers of IT are in the process of analysing these topics.	It will require legislative change	The proposed legal changes to old tax laws - in process.
Describe the system architecture (components, technology) at a high level?	Oracle Database, ETPM (a Java derivative), Oracle Weblogic Server, SOA services (with Data Integration), different report software	Client/Server software with the core written for INFORMIX with a database per region. New developments (RSIRAT) are being handled as an n-tier Java Software over Oracle databases.	N-tier architecture, database server, apps servers, and a separate and isolated database for eFiling purposes (which is constantly emptied to avoid vulnerability to hacking)	Microsoft SQL Server, .NET, Terminal services using a Fat Client (Client Server), with very good connectivity.
How are these upgrades conducted (e.g. release by the supplier)?	By Supplier	All maintenance is being handled directly by SUNAT.	DGID conducted the upgrades by themselves.	By release of the supplier by VPN from New Zealand
What technology was used for the ITAS?	Cobol, Java, Oracle Db	For the legacy system, informix, later Oracle and Java in a n-tier system	SIGTAS operates on an Oracle platform: Initially, the database was version 9i, now upgraded to 11g and migrated from Windows to Oracle RAC on Unix. We now have better performance.The apps server was initially Oracle IAS, but soon moved to Weblogix serverAs for the screens, we tried to move from version 9 to “Forms under Weblogix”, but had to interrupt and stay at Forms 10 – since then, the problems have been overcome and we should be finalising the upgrade soon. In the past: Manual load balancing. Now, we are moving to automatic load using RAC, which will come into play as we upgrade to “Forms under Weblogix”	Client-Server software based on a Microsoft Platform (.Net/C#)

Definition	Mozambique	Peru	Senegal	Swaziland
Was this technology dictated by the tax department when the ITAS was procured?	No	No	This technology was new to the DGID - it was required to operate the ITAS	It was an internal decision based on availability of resources and proven concept.
If you had to change technology to adjust to the COTS' technology, how did you acquire internal knowledge of this technology (training, certification, etc.)?	Training	SUNAT uses an in-house software.	Yes - Oracle was new (legacy was on Clarion) - training was received as part of the ITAS implementation project	Training by Data Torque
Did this pose a problem or was it seen as an opportunity to modernise?	It was a problem	It is an opportunity to modernise as Informix is used in a monolithic schema	Opportunity to close a door on obsolete technology and move on.	It was an opportunity to modernize
Are you able to cope with the evolution of this technology versus the internal knowledge of this technology by the IT team?	It is too early to tell	Yes	Was not easy to keep upgrading over the years. Need training before embarking on a new platform. Need to benchmark (gather lessons learnt from other countries)	It is too early to tell. In any way Data Torque provides most updates and support directly.
How would you describe (and how was/is managed) the security of data and operating systems, privacy	Business Rules and Oracles DB schemas	Due to internal changes on SUNAT, there is a team trying to assess it.	During a recent riot, one of the DGID tax offices was targeted and badly damaged.	It is being managed directly by Data Torque.
Is there a disaster recovery mechanism in place?	Local Server cluster and two datacentres in Maputo	No, although they have two server rooms which are fully autonomous 10 km away. Future plans include proper recovery management.	They do. But there is much room for improvement, including eventually moving the LTO out of the headquarters, and making headquarters & LTO mutual relief sites.	SRA do have a recovery site (IT officers are not aware of details)
Was it implemented as part of the implementation project, or afterwards? If it was implemented afterwards, what reasons motivated you to put it in place?	No	No	Implemented as part of the implementation project.	It was implemented during the implementation of the solution.

I. Measuring performance of an ITAS solution

The table below provides some indicators that can be used to measure the performance of the implementation of an ITAS solution, including the use of it.

Tax Admin Function	Economy	Efficiency	Effectiveness
Taxpayer Registration	• Number of new registrants	• Average time to complete the registration process	• Increase in the number of taxpayers included in the tax system
Tax Filing	• Number of stop-filers by tax type • Number of non-filers by tax type	• Late penalties assessed • Average time to resolve non-filer case	• Reduction in the overall number of stop-filers and non-filers
Taxpayer services	• Written correspondence • E-mail • Internet site hits	• Average time to respond to taxpayer enquiries	• Increased satisfaction of taxpayers with the ITAS/the tax administration
Returns processing and payment	• Number of returns processed, by tax type • Number of refunds issued, by tax type • Number of payments processed (manually and electronic) • Total value of payments processed	• Percentage of returns e- filed compared to paper filed • Average processing time • Average number of days to issue a refund • Payment processing accuracy/error rate	• Return processing accuracy/ error rate
Arrears collection	• Total value of arrears collected • Total number of collection cases closed • Total number of taxpayers contacted • Total resources (person years) assigned	• Average age of collection cases • Percentage of cases resolved within a specified number. of months	• Average annual collection of arrears per person year

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