



**USAID**  
FROM THE AMERICAN PEOPLE



# USAID'S LEADERSHIP IN PUBLIC FINANCIAL MANAGEMENT **Information Technology for Tax Administration**

*Prepared by: Guillermo Jimenez, Niall Mac an tSionnaigh, and Anton Kamenov*

**February 2013**

Contract Number : EEM-I-00-07-00005-00

This publication was produced for review by the United States Agency for International Development. It was prepared by Deloitte Consulting LLP.

# Information Technology for Tax Administration

**Program Name:** USAID Leadership in Public Financial Management (LPFM)

**Sponsoring USAID Office:** USAID/Mission

**Contract Number:** EEM-I-00-07-00005-00      Task Order: 11

**Contractor:** Deloitte Consulting LLP

**Date of Publication:** February 2013

Authors		
Guillermo Jimenez Information Technology USAID/LPFM gujimenez@deloitte.com	Niall Mac an tSionnaigh Strategy USAID/LPFM nmacantsionnaigh@deloitte.com	Anton Kamenov Tax Administration USAID/LPFM akamenov@deloitte.com

## Disclaimer

The author's views expressed in this publication do not necessarily reflect the views of USAID or the United States Government.

# Table of Contents

<i>List of Acronyms and Abbreviations</i>	5
<b>ACKNOWLEDGMENTS:</b>	7
<i>Executive Summary</i>	8
<b>1. Background</b>	10
<b>2. Tax Administration and IT</b>	11
2.1. Objectives of the Tax Administration	11
2.2. The Role of IT in Tax Administration	12
2.2.1. Core Tax System	13
2.2.2. E-Tax System	18
2.2.3. Compliance Performance System	18
2.2.4. Management Information System	19
<b>3. The IT Solution Decision</b>	20
3.1. The IT Solution Landscape	21
3.2. IT as a Strategic Business Decision	22
3.2.1. Strategic Objectives	22
3.2.2. Cost-Benefit Analysis	22
3.2.3. Measuring Change with IT	25
3.3. Selection Guidelines	27
3.4. Sequencing of IT Interventions	29
<b>4. Comparative Assessment of Commercial-Off-The-Shelf and Custom-Built IT Systems</b>	30
4.1. Characteristics of COTS and Custom-Built Development	30
4.1.1. Custom-built Development	30
4.1.2. Commercial Off-the-Shelf Deployment	32
4.2. Key Decision Factors	33
4.2.1. Strategic Objectives	33
4.2.2. Requirement Identification – Implementation Complexity	34
4.2.3. Existing Capability Assessment	34
<b>5. Conclusions</b>	36
<b>6. Case Studies</b>	37
6.1. El Salvador (Custom-Built)	37
6.1.1. Background	37
6.1.2. Key Challenges	37
6.1.3. Implementation	37
6.1.4. Results Achieved and Lessons Learned	39
6.2. Bosnia and Herzegovina (Custom-Built)	40
6.2.1. Background	40
6.2.2. Key Challenges	40
6.2.3. Implementation	41
6.2.4. Results Achieved and Lessons Learned	42

<b>6.3. Egypt (COTS)</b>	<b>43</b>
6.3.1. Background	43
6.3.2. Key Challenges	43
6.3.3. Implementation	43
6.3.4. Results Achieved and Lessons Learned	44
<b>6.4. Georgia (Custom-Built)</b>	<b>45</b>
6.4.1. Background	45
6.4.2. Key Challenges	46
6.4.3. Implementation	46
6.4.4. Results Achieved and Lessons Learned	47
<b>6.5. Costa Rica (COTS)</b>	<b>47</b>
6.5.1. Background	47
6.5.2. Key Challenge	48
6.5.3. Implementation	48
6.5.4. Results Achieved and Lessons Learned	49
<b><i>Annex A: Sample of COTS Vendors and Products</i></b>	<b>50</b>

# List of Acronyms and Abbreviations

---

Acronym	Definition
BIH	Bosnia and Herzegovina
CIAT	Centro Interamericano de Administraciones Tributarias (Inter American Center of Tax Administrations)
COTS	Commercial off-the-shelf
CPC	Central processing center (Bosnia and Herzegovina)
CRM	Customer relationship management
CSMS	Case Selection Management System (El Salvador)
ERP	Enterprise resource planning
ETA	Egyptian Tax Authority
GBCR	USAID's Georgia Business Climate Reform (Georgia, 2005-2009)
GDP	Gross domestic product
IADB	Inter-American Development Bank
IMF	International Monetary Fund
ISO	International Organization for Standardization
IT	Information technology
ITMAS	Integrated Tax Management and Administration System (Egypt)
J-SIIT	Java Sistema Integrado de Información Tributaria (Java Integrated Tax Information System, El Salvador)
LTC	Large Taxpayer Center (Egypt)
MOF	Ministry of Finance (Georgia and Costa Rica)
MoST	USAID's Modernization of Salvadorian Taxation (El Salvador, 1991-1995)
OECD	Organization for Economic Co-operation and Development
PEFA	Public Expenditure and Financial Accountability
SIIT	Sistema Integrado de Información Tributaria (Integrated Tax Information System, El Salvador)
RS	Republika Srpska, Bosnia and Herzegovina
TAMP	USAID's Tax Administration Modernization Project (Bosnia and Herzegovina, 2001-2006)
TAP	USAID's Tax Administration Project (El Salvador, 2002-2004)
TAPR	USAID's Technical Assistance for Policy Reform (Egypt, 2002-2005 and 2005-2010)
TIN	Taxpayer identification number

Acronym	Definition
TPAR	USAID's Tax Policy and Administration Reform (El Salvador, 2005-2010)
USAID	United States Agency for International Development
VAT	Value added tax

## ACKNOWLEDGMENTS:

A number of persons contributed to drafts of this document. David Dod and Ron McMorran provided direction and, with Douglas Pulse, John Yates, Kevin Corcoran and Alicia Miller, commented on drafts. Others assisted with section inputs, including Petar Bosnič and Edin Čulov (Bosnia and Herzegovina) and Terry Murdoch (Egypt). This assistance is greatly appreciated. Errors and omissions should, of course, be attributed to the authors.

# Executive Summary

---

In an environment of continuous technological innovation and business change, tax administrations around the world use information technology (IT) solutions to meet operational and strategic needs. Modern technology solutions for tax administrations, although varied, comprise the same four main capabilities:

- A core tax system provides support, automation, workflow management, and authorization management to tax administration functions;
- An e-tax system provides information, education, and support to taxpayers and facilitates compliance and administration;
- A compliance performance system deploys risk-based procedures to detect and deter non-compliance; and
- A management information system facilitates the collection and dissemination of performance information to staff and management.

Although the capabilities of modern IT solutions for tax administration are similar, implementation approaches differ. Custom-built and commercial off-the-shelf (COTS) solutions are two examples of implementation approaches that can be used to highlight differences. Custom-built solutions, developed by vendors or in-house, are one-off solutions that accommodate specific and usually current business processes. They allow tax administrations more control over the solution, tend to have lower initial costs, leverage internal experience and systems, and may be relatively easily put in place component by component. Custom-built solutions, however, depend on internal expertise, which can be difficult to acquire or retain. With custom-built solutions, it may be difficult for tax administrations to keep pace with technological innovations. COTS solutions are ready, vendor-made, and transferrable solutions designed to accommodate leading practice in business processes. They provide cutting-edge technology with potentially shorter implementation timelines, are rigorously tested, share deployment costs among users, and, over time, can have a lower total cost of ownership than customized solutions. However, COTS solutions require leading practice and allow less control over functionality, support, maintenance, and intellectual property rights.

There are many ways in which IT can assist tax administrations. There are also varied implementation channels and, of course, many vendors. Choosing the appropriate IT solution is a difficult undertaking. Since IT implementation can be costly and may require organizational and process changes, the tax administration should treat IT as a strategic business decision. The tax administration should validate IT within its strategy and should analyze and quantify costs and benefits. The task of tax administrations is to collect the right amount of tax from the right taxpayer at the right time, but their interim strategic objectives can include achieving uniformity in applying tax laws, providing quality taxpayer service, improving compliance, or other. Each of these objectives calls for a different IT intervention. An appropriate cost benefit analysis is one that accounts for the total cost of IT ownership, including procurement, operational, and replacement expenses, and one that is constrained to the economic efficiency gains of IT implementation, including reductions in costs of administration and taxpayer

compliance. In a cost benefit analysis, tax administration officials can translate IT improvements into quantifiable benefits by treating IT as an input that impacts the volume, timeliness, and quality of activities and related processes and events to enable the tax administration to perform its tasks.

After validating IT within its strategy and performing a cost benefit analysis, the administration should follow an appropriate selection strategy, by identifying IT solution requirements, assessing the potential for leveraging existing systems, assessing the need for improvements to existing capacity, and evaluating solution options with respect to requirements, cost, conformity with strategic objectives, time to market, and other criteria.

In tax administrations looking at comprehensive IT implementations across all IT capabilities and tax administration functions, decision-makers often focus on the choice between custom-built and COTS solutions. In practice, a mixture of these two implementation extremes is possible. Although the solution strategy for all IT implementation should be as discussed above, three factors deserve emphasis when comparing custom-built solutions to COTS solutions: strategic objectives, requirements in terms of implementation complexity, and existing capabilities. In terms of strategy, the custom-built vs. COTS choice is a choice between cost and control. COTS solutions may be more cost effective, but require leading practice. Custom-built solutions can be aligned with current practice, but may prove costly in larger implementations. In terms of implementation complexity, COTS solutions become more appropriate as complexity and scale increase, whereas custom-built solutions are more appropriate with smaller or targeted system implementations. Since custom-built solutions rely less on leading practice, they can also leverage existing systems and capacity. With COTS solutions, in cases where adhering to leading practice requires change, the administration's capacity to manage change is fundamental.

For tax administrations that have limited funding and no IT capabilities, there is a recommended sequencing of priorities. The first priority should be to establish a comprehensive and integrated taxpayer registry to collect the basic information needed to manage taxpayers and to facilitate other tax administration functions. The next step should be to automate processing-intensive functions, such as form and payment processing and taxpayer accounting, to reduce costs of compliance and administration and to direct resources instead to compliance activities and taxpayer services. IT should then open interactive channels with taxpayers to encourage voluntary compliance and to enable the tax administration to collect and manage the information needed to effectively detect and deter non-compliance.

Case studies of comprehensive IT implementations in emerging and transitional economies are presented at the end of this document. These include examples of custom-built and COTS implementations, highlight various areas of IT intervention, and exemplify quantifiable process improvements and efficiency and revenue gains. These examples also highlight potential pitfalls and draw lessons learned, such as the need for proper sequencing, planning of tasks and related timing, and planning for and managing change.

# 1. Background

---

For the past three decades, USAID has provided assistance to tax administrations in many countries, with a focus on mobilizing public sector revenue and creating an enabling environment for private sector development. Since the mid-1990s, information technology (IT) interventions have become a central tenet of USAID's support. IT is increasingly important to tax administrations. In 2008, the OECD estimated that tax administrations spent at least 15 percent of their total budget on IT.<sup>1</sup> However, tax administrations in need of IT interventions face an increasingly complex IT solution landscape, with many areas of potential IT interventions, multiple approaches to implementation, and many vendors. IT remains costly and is often less successful than desired, as highlighted by the case studies at the end of this document. Nevertheless, IT is a crucial component of tax administration reform as it enables tax administrations to better gather and analyze information, to proactively manage workload and resources, to foster a cooperative engagement with taxpayers, and to standardize the treatment of taxpayers and thus facilitate the uniform application of the tax law.

The objective of this document is to provide guidance to USAID and other donors on the assessment of options for investment in IT capabilities in tax administrations. To provide context, this document includes a brief overview of the tax administration, including key objectives, functions, and business drivers. These are examined from an IT perspective to understand the value that technology provides. Based on this context, this document then describes and compares the spectrum of IT capability investment options, the advantages and disadvantages of different approaches, typical selection strategies, and the main factors that influence the IT selection process. Lessons learned are identified in several case studies.

---

<sup>1</sup> "Tax Administration in OECD and Selected Non-OECD Countries: Comparative Information Services (2008)", OECD Center for Tax Policy and Administration, January 2009.

## 2. Tax Administration and IT

---

The tax administration is the department of the government responsible for the management of tax obligations specified by the tax law.<sup>2</sup> Its primary task is to ensure that the right amount of tax is paid by the right taxpayer at the right time, providing the government with the needed revenue to deliver goods and services as planned. An administration that achieves this task is effective. An administration that does so at a reasonable, minimal cost to the government is efficient. In addition, for reasons beyond the scope of this paper, tax administrations are expected to impose minimal costs on taxpayers and maintain a business friendly and even-handed environment.

### 2.1. Objectives of the Tax Administration

Modern tax administrations have limited resources and recognize that effectively following up with the obligations of every taxpayer is a costly task. Rather than 'policing' tax compliance, modern tax administrations focus on three key objectives: facilitating voluntary compliance, selectively monitoring compliance, and selectively enforcing compliance.

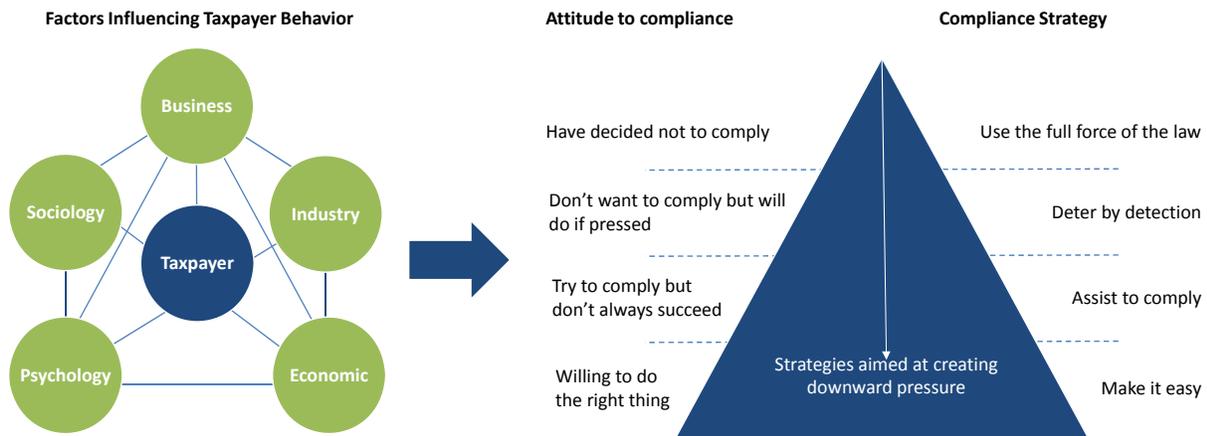
**Facilitating voluntary compliance:** Modern tax administrations proactively facilitate compliance by simplifying processes, providing information, education, and support to taxpayers, and directing their limited compliance monitoring and enforcement resources to the areas of greatest risk to revenues. They adopt a compliance risk management approach that recognizes a spectrum of compliance behavior and an opportunity to foster a cooperative relationship with taxpayers. This risk management approach is structured to systematically identify, assess, rank, and treat tax compliance risks, as in the figure below,<sup>3</sup> by segmenting taxpayers into compliance groups and developing different responses to the factors that influence compliance in each group. This approach recognizes that tax administrations must be thoughtful in how they deploy their limited resources. Rather than focusing on enforcing compliance throughout the compliance risk spectrum, tax administrations focus on enforcement in areas of greatest risk and facilitate voluntary compliance in remaining areas.

---

<sup>2</sup> Ward M. Hussey and Donald C Lubick, *Basic World Tax Code and Commentary*, Harvard University, International Tax Program, 1996.

<sup>3</sup> "Compliance Risk Management: Managing and Improving Tax Compliance", OECD, 2004.

Figure 1. OECD's factors influencing taxpayer behavior and the spectrum of taxpayer attitudes to compliance



**Monitoring compliance:** Tax administrations utilize information systems to monitor taxpayer accounts and an audit strategy to detect non-compliance. A highly visible audit program is essential to ensuring that taxpayers understand and are exposed to the consequences of non-compliance. An audit strategy that focuses on the areas of greatest risk to revenues not only increases the return on the use of limited audit and other compliance resources, but also facilitates voluntary compliance by reducing the intrusion of the tax administration into the affairs of compliant taxpayers.

**Enforcing compliance:** Traditionally, tax administrations have relied on recourse to legal remedies to enforce taxpayer compliance, which has been described as a "classic enforcement mentality, built upon the fundamental assumption that a ruthless and efficient investigation and enforcement capability will produce compliance through the mechanism of deterrence".<sup>4</sup> Today, tax administrations focus on facilitating and encouraging voluntary compliance. However, where appropriate, the full rigor of the legal system is brought to bear on taxpayers who do not comply, thereby instituting some level of uniformity in the application of the law and a perception of fairness among taxpayers.

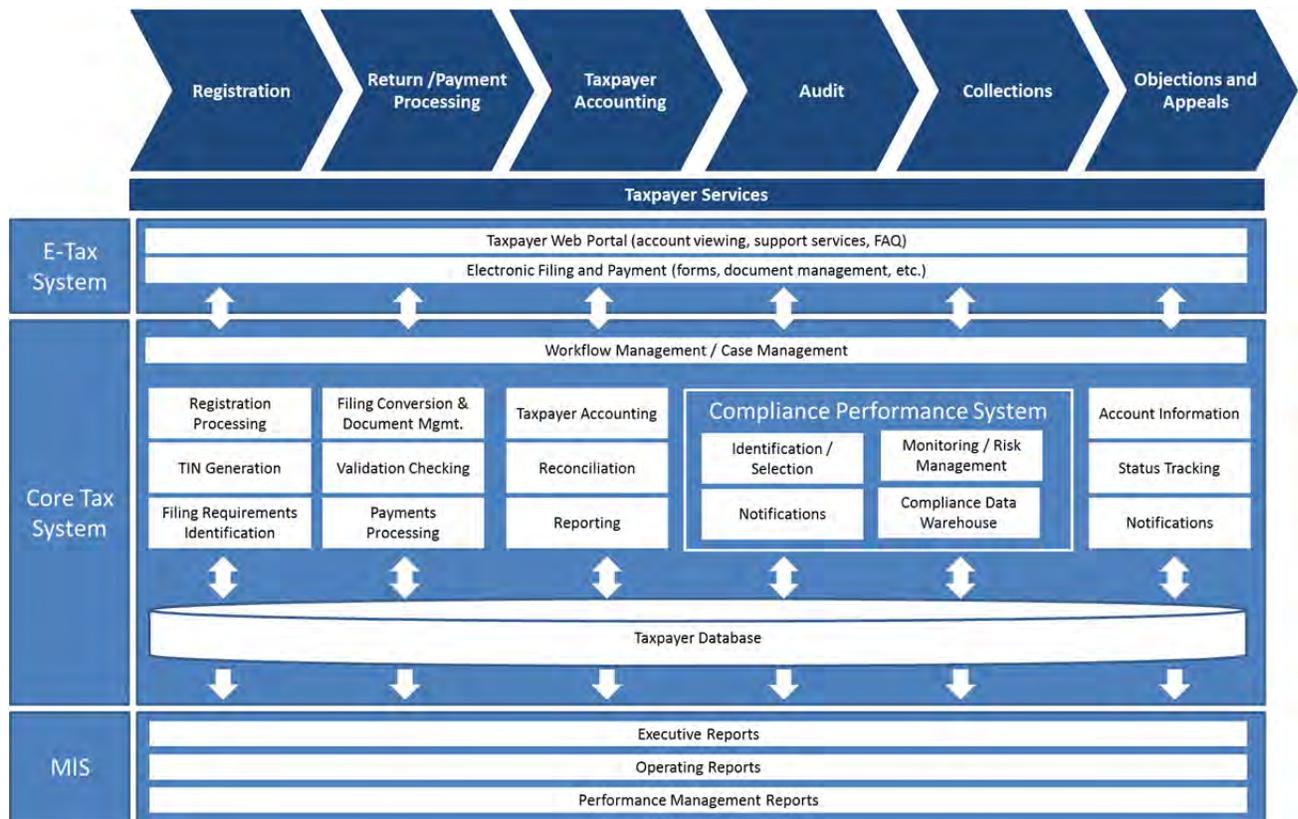
## 2.2. The Role of IT in Tax Administration

Historically, the most prevalent use of IT systems in tax administrations has been to underpin the core tax administration tasks of processing returns and payments and collecting relevant information. The 'core tax' component of contemporary IT systems continues to provide support for these tasks, enabling the tax administration to move away from heavy manual processing and to direct its resources to facilitating, monitoring, and enforcing compliance. Today, IT also facilitates voluntary compliance by opening multiple interactive and electronic channels with taxpayers. This component of modern IT

<sup>4</sup> Malcolm K. Sparrow, "Imposing Duties, Government's Changing Approach to Compliance", Greenwood Publishing Group, 1994

systems, dubbed the 'e-tax system', may include support for electronic registration, filing, payment, information dissemination, and other functions. With respect to compliance monitoring and enforcement, the 'compliance performance system' of modern IT systems provides support to the tax administration's audit and collections function in collecting and managing information to target areas, where non-compliance poses greatest risks to revenues. In addition, as with any organization, the 'management information system' (MIS) component of the modern IT solutions facilitates decision-making by getting the right information to managers and staff. This IT solution landscape for tax administrations is shown in the following figure and is further detailed below.

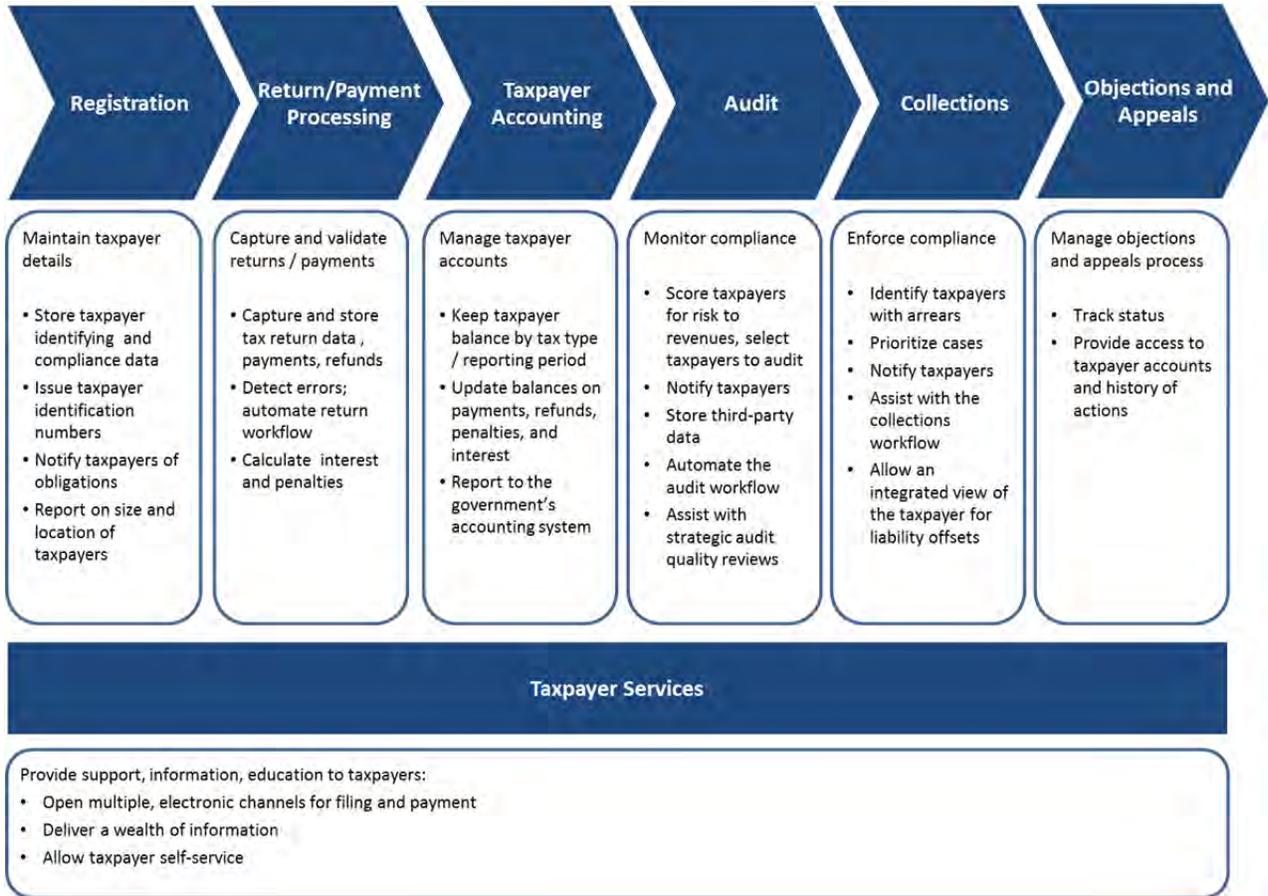
Figure 2. An illustrative IT solution landscape



### 2.2.1. Core Tax System

The core tax system is the central system of record in a tax administration and the primary enabler for automation and straight through processing. It provides technology support, at varying levels, to all functions of the tax administration: processing of registration filings and issuing taxpayer identification numbers (TIN); validating and processing returns and payments received through different channels; maintaining the taxpayer's accounts; providing tools to identify and pursue delinquent taxpayers; automating appeal tracking; and providing taxpayer service staff with access to taxpayer information to enable a better level of service to taxpayers, among others. The following are examples of the type of IT support to each of the tax administration's functions.

Figure 3. IT support to tax administration functions with the core tax system



**Registration:** Registration is the process, by which the tax administration collects basic taxpayer identifying information, such as names, addresses, and legal entity types. This information allows the tax administration to know who its taxpayers are, where they are located, and whether they are active or inactive. Modern tax administrations also collect compliance information, such as business activity types or estimated turnover, to plan future compliance activities. During registration, most tax administrations issue a unique TIN and a registration certificate, and provide the new taxpayer with information on his or her filing and payment obligations.

The basic registration functionality of a tax IT system includes the storing and maintenance of taxpayer identifying information, the automatic issuance of TINs and taxpayer certificates, and the automatic determination of taxpayer filing requirements. Effective registration with tax IT systems uses unique TINs to facilitate exchange of information between government agencies to ease the detection of non-compliance; integrates registration across taxes to allow for a single view of the taxpayer during audit or collections; centralizes the registration database to allow for effective non-compliance monitoring;

provides a single facility to the taxpayer to register for all taxes to simplify compliance; and interfaces with the e-tax system, allowing new taxpayers to register online.<sup>5</sup> A single centralized taxpayer registration database also enables proper planning, allowing the tax administration to rationalize staffing and resources based on the size and geographic location of the active taxpayer population. Many of these tasks would be impossible without IT. For example, an IT system can automatically verify that a newly issued TIN is, in fact, unique, while the same verification would be nearly impossible manually if the taxpayer population is large.

**Return, payment, and refund processing:** Filing and paying are the two primary obligations of the taxpayer. Returns and payments require significant efforts from the taxpayer and from the tax administration. Their smooth processing reduces costs to the tax administration, reduces risks to the flow of tax revenues, and increases certainty with the taxpayer, which improves the perception of fairness among taxpayers and facilitates voluntary compliance.

Tax IT systems that handle the processing of returns and payments must quickly and accurately capture and validate taxpayer data from paper and electronic documents to electronic transactions. For example, during paper return processing, tax administration staff will enter major transactions from the tax return into the tax system. During payment processing, payment transactions may similarly be entered into the system, although in most countries it is common to allow payments through financial institutions (banks). These are processed by the tax administration and reflected in the taxpayers' accounts electronically and automatically. Data integrity is a fundamental pre-requisite. The tax IT system usually allows for some form of data entry verification and return computation verification, automatically flagging exceptions. Where errors require staff involvement, the IT system facilitates the staff by automating the return handling process. All returns are archived electronically and are easily accessible during audit and collections. Return and payment data are used to automatically calculate liability, interest, and penalties. Since the data entry of taxpayer returns and payments remains one of the most labor intensive functions within the tax administration, an effective tax IT system incorporates functionality for electronic filing and payment, including payments through financial institutions.<sup>6</sup>

**Taxpayer accounting:** The tax administration maintains taxpayer ledgers with balances of taxpayer liabilities – tax, interest, penalties, refunds owed, and others – and records debits and credits to these balances from payments or refunds. Similarly to registration, proper taxpayer accounting enables other tax administration functions. Modern tax administrations maintain balances by tax type and reporting period, but allow a single look at the taxpayer across taxes for purposes of compliance or, perhaps, the offsetting of tax liabilities.

---

<sup>5</sup> Many systems in emerging countries are inhibited by a poorly designed, disparate approach to registration. Too often registration systems are specific to tax types, regimes, or ad-hoc structures. This creates obstacles for taxpayers and complicates the process for tax administrations.

<sup>6</sup> In most emerging countries, tax return and payment processing is either paper-driven or supported by tools that simply record data electronically as submitted. Supporting information, such as financial statements, are paper-based. Processing is heavily impacted by large volumes of filings during specific times and often results in 'acceptance' delays and in data transcription errors.

With IT, the taxpayers' accounts are timely, accurately, and automatically updated during the processing of returns, payments, refunds, and with the assessments of tax, interest, and penalties. All tax-related transactions are recorded in a formal accounting system for balancing, reconciliation, and reporting. Historic records for all tax liabilities, payments, penalties, or interests are stored electronically and are instantly accessible.

**Audit:** The role of the audit function is to monitor compliance by examining returns and supporting information. Modern tax administrations prepare an audit plan based largely on staffing levels and previous audit experience and attempt to select those returns for audit that pose the highest risk to revenues, thus subjecting compliant taxpayers to rare audit interventions, while making potentially non-compliant taxpayers fully aware of costs to non-compliance. Audits can be extensive and may include face-to-face interviews with the taxpayer, inspection of the taxpayer's facilities, financial ratio analysis, third-party data validation, and an inspection of books and records whereby sample transactions are "walked through" the entire bookkeeping process. The audit workflow is generally complex, where an auditor may decide not to pursue the audit, judging lack of risk to revenues, may forward the audited return for fraud investigations, or may complete the audit and request supervisor approval of audit results. Audit steps and results are kept in detailed audit reports for use in potential appeals and for occasional examinations for strategic audit quality reviews.

A basic tax IT system assists the tax administration, first, with the audit plan, by automatically quantifying of the risk that each taxpayer poses to revenues and by automatically selecting high-risk taxpayers for audit. The system may automate the audit case workflow and in some cases will do so fully, such as through the automatic forwarding of cases to auditors based on the auditors' skills and availability. The system also provides relevant return and other available information to the auditor during the actual audit and, in modern systems, may provide a view of taxpayer accounts that is integrated across taxes and tax periods. The rapid initiation of investigations in cases of potential taxpayer fraud is incorporated into the business and system processes. Audit reports are archived for easy access during objections and appeals and for strategic quality reviews. In modern systems, audit information is captured in the compliance database – discussed below – for future audits of the same or other taxpayers, since discovering pertinent information about one taxpayer, when auditing another, is possible. Finally, third-party validation is especially important, and the system may solicit information from a variety of third party sources in the verification process (*e.g.*, bank account statements, business transactions, insurers, and employer data including expense reports, among others).

**Collections:** Tax administrations enforce compliance by pursuing and obtaining or negotiating outstanding payments, initially through engagement with the taxpayer, and, where necessary, through legal enforcement. Modern tax administrations employ an integrated approach to collection enforcement and debt management, where the taxpayer is treated as a single entity for tax debts. This reduces the work load on the tax administration and simplifies interactions with the taxpayer. In addition, a cost-benefit based approach to collections, in which the modern administration prioritizes

collection potential before pursuing collection actions, can have a positive impact on the tax revenue stream.<sup>7</sup>

Accurate taxpayer accounting with IT can enable the collections process with the automatic identification of delinquent accounts and the automatic generation of relevant notices. In some countries, collections have been supported by automatic call center facilities that target delinquent taxpayers with calls to remind them of their taxation obligations. The collections case workflow is managed by documenting all collections actions taken and forwarding cases to appropriate officers and management. Information generated during the collections process is integrated into the compliance database for use in future collections or audit activities. Modern IT capabilities in the area of collections also allow for the automated prioritization of collections cases based on the potential of the case to produce revenue.

**Objections and appeals:** The taxpayer should be allowed to object the tax administration's decisions to the administration itself and to appeal these decisions outside the tax administration (e.g., through the courts).<sup>8</sup> This provides a recourse avenue to the taxpayer and plays a central role in establishing a perception of fairness and engendering voluntary compliance. Related processes are separate from compliance activities – audit and collections – for sufficient oversight to ensure that the tax administration follows the established legal and procedural framework uniformly across taxpayers.

Since objections and appeals are the only recourse actions available to taxpayers and are generated by taxpayers for specific cases, these require careful consideration and the opportunity for automation is limited. Many countries take a "manual" view of these processes. This said, IT can support the objections and appeals function by providing access to taxpayer account information, tracking the status of objection and appeal cases, and registering the results of appeals. In addition, the e-tax system can allow for the electronic filing of objections and can provide online information updates to the taxpayer with regard to the objection process.

**Taxpayer services:** Taxpayer services facilitate voluntary compliance by providing information, education, and assistance to taxpayers during filing, payment, collection, and other processes. Modern tax administrations provide support to taxpayers across all tax administration functions, tailor information to different types of taxpayers and taxes, provide both easily accessible and complex information, and use multiple channels, including the web, paper brochures, and telephone inquiries.

---

<sup>7</sup> For example, larger and more recent debts may be given priority over other collections cases, when the analysis indicates that these cases may have higher revenue potential. Risk-driven approaches to collections have received much attention recently. See for example "Management of Tax Debt: Twenty-sixth Report of Session 2008-09", The Stationery Office Limited, House of Commons, United Kingdom, 2009 and "Auditor General's Overview: Inland Revenue Department: Managing Tax Debt", Office of the Controller and Auditor-General, New Zealand, 2010.

<sup>8</sup> The internal reconsideration process followed during objections and the external appeal process are quite different and are usually handled by separate divisions in the organizational structure of the tax administration. For the purposes of this document, treating objections and appeals as a single tax administration function will suffice.

IT support to taxpayer services typically begins simply with the provision of online information to taxpayers or with the automated routing of taxpayer inquiries. The maintenance of a well-organized taxpayer web-portal, for example, with instructions and frequently asked questions, reduces inquiries and provides uninterrupted information to taxpayers. Many tax administrations have gone further, introducing e-tax systems. These are described below.

### 2.2.2. E-Tax System

The e-tax system offers electronic registration, filing, and payment, as well as education and information to taxpayers. Broadly, the e-tax system is a comprehensive internet portal<sup>9</sup> that forms a suite of secure self-service options to taxpayers, may provide a single point for information and actions, is typically available 24 hours a day and 7 days a week, and does not require intervention from tax administration staff. An e-tax system is not necessarily a standalone IT component. For example, the e-tax system must be integrated with the core tax system to provide the taxpayer with services, such as the ability to view account information and the status of refunds. The e-tax system is thought of as a separate component, as, unlike other components, it is 'taxpayer-facing'.

E-tax systems are often thought of solely as IT support to taxpayer services. It should be clear, however, that e-tax systems do more than provide information, education, and assistance to taxpayers. With components such as electronic registration and filing, they also reduce the cost of administering taxes.

### 2.2.3. Compliance Performance System

The compliance performance system supports the tax administration in identifying potential non-compliance, selecting for audit those taxpayers that pose high risk to revenues, prioritizing those collection cases that have high potential for obtaining revenue, tracking compliance cases from initiation to closure, and, for future planning, developing intelligence on areas (industries, geographical areas), where the level of non-compliance and fraud is systematically high.

Similarly to the e-tax system, the compliance performance system is not a standalone IT component. In fact, this system must be integrated with the core tax system, as it must draw on taxpayer information. The compliance performance system, however, is usually discussed separately, as it has functionality and information that is very specific to compliance monitoring and enforcement. For example, audit selection requires that each taxpayer is classified according to the risk that this taxpayer poses to the government's revenue stream – a task that cannot be done manually and that is also not used outside of audit and, perhaps, fraud investigations. In addition, audit risk-scoring and other activities used to detect and address non-compliance require the storing and use of extensive information – from

---

<sup>9</sup> Mobile phones have also become an important additional electronic service delivery channel that has grown rapidly over the past 5-10 years. The OECD previously reported that just over half of surveyed revenue bodies revealed the use of taxpayers' mobile phones for taxpayer service-related purposes. For the most part, the services offered were fairly limited and the volumes quite low. ("Survey of Trends and Developments in the Use of Electronic Services for Taxpayer Service Delivery", OECD Forum on Tax Administration: Taxpayer Services Sub-Group, March 2010).

taxpayer accounts, to historic information on compliance risks, activities, and results, to third-party data. This integrated 'compliance data warehouse' and the relative complexity of compliance process workflows justify treating the compliance performance system as a separate component.

#### 2.2.4. Management Information System

The management information system (MIS) facilitates the collection and dissemination of performance information throughout the tax administration. It plays a crucial role in the smooth operation of a modern tax administration by ensuring that staff and management get the appropriate reports at the right time.

Frequent and accurate reports can assist with identifying emerging performance and revenue risks and internal problems and provide management advance warning to develop an appropriate response. For example, in the area of collections, reports on the inventory of tax arrears, new arrears, and closed arrears help define whether there is too much new debt or whether there is too little production by the collectors. Management of the collections function can use these and other reports to determine how many collection cases can be addressed or put aside, determine if different methods of contacting taxpayers should be used, obtain additional staff, focus on a particular non-compliant sector, or decide whether staff need additional training.

Although the MIS relies on the taxpayer database as in the figure above, it is discussed here as a separate component of the IT system for two reasons. First, the MIS is very important to performance reporting and management. Second, in practice, the MIS normally extracts and analyzes data separately from the core tax system. This prevents transactions that require significant processing power, such as report retrieval, from competing against core tax transactions. For example, in federated system architecture,<sup>10</sup> an operational data store (ODS) – a database that integrates data from several sources with the purpose of further processing – can be used for online analytical processing activities (OLAP), such as data manipulation and reporting, while also integrating and standardizing data taxonomies from multiple, disparate sources.

---

<sup>10</sup> The federated system architecture is a decentralized system architecture, where several teams or business units share data in a semi-autonomous way – controlling certain elements of their corresponding data (e.g., registration information may be controlled independently of return processing information) – but where, despite autonomy, teams are expected to comply with certain common concepts or behavior during data processing (e.g., both registration and return processing describe taxpayers and affect the same taxpayer accounts).

### 3. The IT Solution Decision

---

The first examples of IT systems in tax administration can be traced back to the 1960s. Developed in-house, these were standalone applications, designed to support specific tax administration functions, and generally not integrated across tax types or functional areas.<sup>11</sup> Over the following two decades, tax IT systems began to occupy an increasingly central role in the operation of tax administrations and by the early 1980s the first integrated systems appeared.<sup>12</sup> These were custom-built and so were one-off solutions developed in accordance with the specific requirements of the tax administration. Built either in-house or by external providers, these systems had long and complex development cycles, high-risk implementations, and significant investment expense.

During the 1990s, the demand for integrated tax IT systems continued to grow and, as the 1990s drew to a close, commercial off-the-shelf (COTS) solutions became widespread. These were ready-made, rather than designed for specific needs, and typically based on leading practice. While they still required customization and investment expense, they were marketed as integrated and configurable to meet the varying requirements of modern tax administrations with reduced implementation timelines and investment costs.

In the early 2000s, COTS solutions expanded to incorporate enterprise resource planning (ERP) and customer relationship management (CRM) applications. Provided by ERP/CRM vendors such as Oracle, SAP, and Microsoft, these were marketed to tax administrations as all-encompassing solutions, providing the means not only to implement and automate common processes across taxes, but also to more effectively manage workload and resource distribution through workflow management applications and monitoring progress through enhanced management information systems.<sup>13</sup>

“The rapidly increasing pace of technological change will have a significant impact, positive and negative, direct and indirect, on Tax administration organizations. Information technology, which includes telecommunications and computerized systems, looks set to increase productivity substantially, with savings in time as well as money, while at the same time affording customers a better service. On the other hand, the human element is affected by technological changes in different ways, by making jobs more important for some, while posing a threat to others.”

*Source: CIAT Handbook for Tax Administration Organizations - July 2000*

---

<sup>11</sup> The U.K. Inland revenue's first computer system, planned in the 1960s to run nine computer centers across the country, implemented 'Centre I' in 1968. (Margetts, Helen, "Information Technology in Government: Britain and America", Routledge, 1999.)

<sup>12</sup> The EC VAT information exchange system (1993) and the Indonesia property tax system (1985) are discussed in Glenn P. Jenkins, "Information Technology and Innovation in Tax Administration", Kluwer Law International, 1996. Other cases are discussed below.

<sup>13</sup> Puerto Rico, for example, implemented PeopleSoft for taxpayer registration and management in 2004-2006.

Today, the pace of change in IT provides continuous innovation in systems development, including in tax administration systems. It is no surprise that modern tax administrations around the world use a variety of IT solutions to meet their technological needs. In 2010, the OECD reported that developed countries used, nearly universally, custom-built solutions for traditional revenue management functions, such as registration, collections, and audit, and a mixture of custom-built and COTS solutions for modern functions, such as online applications and reporting.<sup>14</sup> Emerging economies, on the other hand, used a mixture across all functions. While large, integrated tax IT systems are almost ubiquitous in OECD countries, however, they are less common in emerging economies,<sup>15</sup> where IT capability tends to reflect the maturity of the tax administration.

### 3.1. The IT Solution Landscape

IT systems enable modern tax administrations, providing the means to achieve strategic objectives through data management, process automation, and taxpayer engagement. If appropriately designed, tax IT systems can help tax administrations to effectively collect and store taxpayer information, to conduct analysis for targeted compliance activities, and to provide taxpayers with simple channels for complying with tax obligations.

There are a number of ways in which IT can benefit the tax administration, but the decision to implement IT is not always simple. While available solutions for comprehensive and integrated modern tax administration IT systems have similarities, with the typical components of the IT landscape, there are also differences. There are, for example, distinct implementation channels, such as custom-built and COTS solutions, that may influence the cost, time-to-market, and usability of the solution. There are various 'roadmaps' to the system, including piece-wise implementations – component by component – or full-scale implementations of all IT components across all tax administration functions. There is perhaps a simple, historical rationale for the fact that tax administrations in OECD countries use custom-built solutions for traditional functions and COTS solution for 'modern' ones. These administrations may have opted against full-scale implementations and chosen modern solutions to accommodate new activities and complement already present IT components for traditional functions. There are also, of

---

<sup>14</sup> Taxpayer Services Sub-Group, "Information Note: Tax Reference Model – Application Software Solutions to Support Revenue Administration in Selected Countries", OECD Centre for Tax Policy and Administration, Forum on Tax Administration, March 2010.

<sup>15</sup> In 2000, Arturo A. Jacobs stated that developing countries' "organization's information systems are still largely manual. At best, tax administrations in many developing countries count only on a smattering of computer equipment at a few office locations, much of it old equipment supported by outdated technology." ("Users' Standards for Integrated Tax Information Systems in Tax Administrations of Developing Countries", The M Group, 2000).

course, many vendors<sup>16</sup> and various potential areas for IT intervention. The purpose of the remainder of this section is to provide an approach to making the appropriate IT decision.

## 3.2. IT as a Strategic Business Decision

Although IT can clearly contribute to the tax administration's objectives, the decision to procure IT should not be taken lightly. IT solutions may require changes to the organization, processes, staffing roles, and staff skills. In addition, IT solutions are costly and will divert the administration's limited resources from other important activities, but may falter if not appropriate. Even if the implementation itself succeeds, an unfitting IT solution may have a short shelf-life and limited usefulness. The IT decision is thus a strategic business decision<sup>17</sup>, one that must conform with the tax administration's overall strategic objectives to ensure usability and the needed level of institutional capacity, and one that is preceded by a rigorous cost-benefit analysis to ensure that the administration's limited resources are spent wisely.

### 3.2.1. Strategic Objectives

The tax administration is not an IT provider and IT is simply an input that allows the tax administration to perform its tasks and achieve its objectives. Although the primary task of tax administrations is the same – to collect the right amount of tax from the right taxpayer at the right time – their interim strategic objectives can vary greatly: to achieve uniformity in applying tax laws; to provide quality service and taxpayer education; to improve targeted audit programs; or to develop effective managers. Each of these objectives calls for a different IT intervention. For example, uniformity in applying the law can be achieved through automated workflows that reduce discretion. Quality service and taxpayer education may call for an e-tax system or components thereof. Targeted audits require automated risk-scoring mechanisms or, perhaps, a compliance performance system. Effective management relies on a management information system.

Of course, long-term strategic plans would likely take a holistic approach to tax administration, addressing organization, taxpayer segmentation, staffing, facilities, functions, human and institutional capacity, integrity, and communications, as well as technology. In the medium term, however, IT interventions should conform to other programs and projects of the tax administration. It would be inappropriate, for example, to pursue the automation of audit workflows, if a subsequent organizational restructuring is expected to change the levels of audit reviews and approvals.

### 3.2.2. Cost-Benefit Analysis

The cost of IT implementation is relatively simple to define and quantify. Still, there are direct costs to IT, such as hardware, software, procurement, implementing, integrating, operating, training, and

---

<sup>16</sup> An illustrative list of vendors is provided in Annex A.

<sup>17</sup> "Buy vs. Build: Six steps to making the right decision", Dan Oliver, TechRepublic, 2002

replacement expenses, indirect costs, including staff time spent on requirement definition and other procurement activities, training, testing, and general downtime, while the solution is being deployed.<sup>18</sup> An illustrative list is provided below. This total cost is sometimes dubbed the 'total cost of ownership' of the IT solution.

The benefits of IT implementation can and should be translated directly into contributions towards the tax administration's tasks. First, with IT, the direct costs of administering the tax system may diminish. For example, data entry staff time will be reduced due to the introduction of e-filing, making the administration *more efficient*. In practice, it is more likely that resources – budgetary, staffing, or other – that become available to the tax administration after IT implementation would be placed into new uses. For example, with the introduction of e-filing, staff may be re-trained to provide education, support, and information to taxpayers. Second, the tax administration may become *more effective*. For example, e-filing reduces the number of keypunch errors made by tax administration staff during data entry. Third, benefits to taxpayers should be included, as the tax administration is not a profit making business, but an integral part of the government machinery. With e-filing, taxpayers may spend less time and money preparing, printing, and mailing paper returns, as well as less resources following up on the status of their filings, payments, and refunds. This means that the tax administration becomes *less intrusive* in the business environment. Fourth, the tax administration may become *more even-handed* in applying the law. A specific e-filing initiative may be complemented with automatic return checking and notifications, reducing staff checking and the corresponding discretion.

The following are illustrative quantifiable costs and benefits of IT implementation.

Figure 4. Illustrative costs and benefits of IT implementation

Illustrative costs	Illustrative benefits
<p>Procurement costs:</p> <ul style="list-style-type: none"> <li>• Hardware and software / licenses;</li> <li>• Staff time spent on procurement, implementation, integration, operation, testing, training;</li> <li>• Staff downtime.</li> </ul> <p>Operating costs:</p> <ul style="list-style-type: none"> <li>• Maintenance (e.g., backups, license tracking, security prevention / recovery, IT personnel time);</li> <li>• Infrastructure (floor space, electricity);</li> <li>• Internal and external audits;</li> <li>• Future training.</li> </ul>	<p>Effectiveness:</p> <ul style="list-style-type: none"> <li>• Higher revenues with more formal taxpayers, less fraud and evasion, or larger assessments.</li> </ul> <p>Efficiency:</p> <ul style="list-style-type: none"> <li>• Less staff time on core tasks.</li> </ul> <p>Better business and taxpayer environment:</p> <ul style="list-style-type: none"> <li>• Less taxpayer time spent on compliance;</li> <li>• Less staff time spent on non-compliance (involuntary errors).</li> </ul> <p>More uniform application of the law:</p>

<sup>18</sup> To simplify matters, the term 'opportunity cost' is not used. The government's staff labor and IT solution suppliers to government hardly operate in competitive markets and, hence, the opportunity cost of IT implementation does not necessarily reflect supply costs. Using opportunity costs, however, would necessitate that the social benefits of foregone tax administration actions be investigated, which, as discussed below, is difficult.

Replacement: <ul style="list-style-type: none"> <li>• Replacement, upgrade, or decommissioning expenses.</li> </ul>	<ul style="list-style-type: none"> <li>• Higher revenues.</li> </ul>
---------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------

It should become immediately obvious that the table above displays two types of benefits of inherently different nature. Efficiency and business environment improvements reduce economic efficiencies losses. In economic terms, with such improvements, both the tax administration and the taxpayer can be made better off without making either, or anyone else, worse off. Higher revenues, on the other hand, are simply additional transfers from the taxpayer to the government. In economic sense, a cost benefit analysis of changes in government operations should include only the first type of benefits. It is possible to argue that, when the government provides goods and services that would not be provided by the private sector due to externalities or transaction costs, higher revenues would similarly bring about efficiency improvements. This is, however, not always the case. A cost benefit analysis of IT improvements should be appropriately constrained to comparing procurement, operating, and replacement costs with improvements in administration and taxpayer efficiencies.

The following figure shows a simple estimate of the monetized benefits of unified business and tax registration in Georgia.

**Figure 5. Monetized benefits of unified business and tax registration in Georgia<sup>19</sup>**

92 GEL = average daily net profit of business in Georgia *43,000 businesses registered annually * 5 days saved by new procedures <hr/> =19.78 million GEL  1 day of accountant/lawyer work saved *45 GEL average daily salary <hr/> =1.935 million GEL  99,000 GEL in annual Tax Department personnel time saved  <b>Total annual savings = 21,814,000 GEL or \$12.4 million</b>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Not all inputs can be easily translated into quantifiable costs. For example, IT implementation may result in staff frustration. Similarly, not all improvements can be easily translated into quantifiable strategic outcomes. For example, third-party data matching can improve compliance monitoring and enforcement and will help institute a perception of fairness among taxpayers, improving voluntary

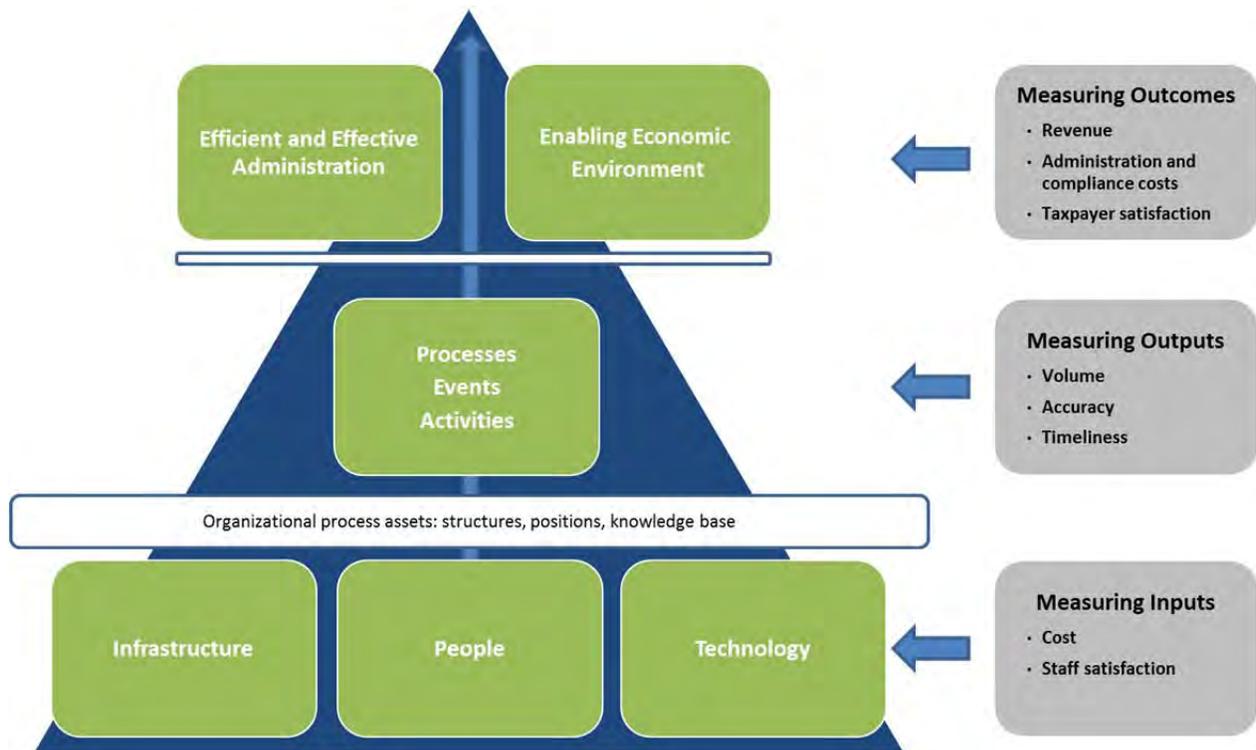
<sup>19</sup> Adapted from Mark Gallagher, "Designed for Results. A Case Study", Georgia Business Climate Reform presentation, USAID, December 2009

compliance and resulting in higher collections as well as in general taxpayer satisfaction. Difficulties in monetizing costs and benefits, such as staff frustration or taxpayer satisfaction, should not detract from the need for a cost benefit analysis. In some cases, tax administration officials can rely on the experience of other countries to develop general benchmarks. For example, a 2007-2008 Danish study found that taxpayers subject to third-party reporting and matching had evasion rates below 1 percent compared to 40 percent for taxpayers not subject to third-party reporting and matching.<sup>20</sup>

### 3.2.3. Measuring Change with IT

The following simplified strategic framework for tax administrations is presented to assist in both designing strategic goals and corresponding activities that are measurable and, during cost-benefit analysis, translating IT implementation into quantifiable benefits aligned with strategic goals. In practice, measuring success is done by collecting and reporting information according to the strategy and at various levels, including at the level of strategic outcomes, at the level of intermediate outputs, and at the level of activity inputs. In this strategic framework for tax administrations, technology is an input that drives strategic outcomes by contributing to the efficiency and effectiveness of activities and related processes.

Figure 6. Translating technology inputs into benefits



<sup>20</sup> Ugur Dogan. "Data Warehouse and Data Mining Tools for Risk-Management: The Case of Turkey", *Risk-Based Tax Audits. Approaches and Country Experiences*, Munawer Sultan Khwaja, Rajul Awasthi, and Jan Loeprick ed. The World Bank, 2011.

Examples of how technology (specifically, e-filing) translates into measurable improvements to activities and related processes and events as well as to measurable changes in outcomes are presented above.

It should be noted that measuring the outcomes of improvements in tax administration in absolute terms is reputedly difficult.<sup>21</sup> Typical quantitative benchmarks of tax administration performance include tax productivity – the ratio of the prevailing tax rate over the tax base, which may be GDP for income tax and the VAT – and the ratio of administrative costs to revenues. Both are partially deficient, as they measure the performance of the whole tax system, including policy and administration. In strategic planning for tax administrations, much attention is given to the remaining elements in the figure above.<sup>22</sup> Moreover, proper cost benefit analysis should be relative to the current state of the tax administration, reflecting the changes to inputs, related processes, and corresponding strategic outcomes.

The following figure lists illustrative measures of changes to processes and activities as a result IT improvements.<sup>23</sup> Although this figure is organized according to the typical tax administration functions, selected measures should cover both qualitative and quantitative aspects of the strategic objective at hand. For the purposes of a cost-benefit analysis, of course, qualitative measures should be translated into benefits, likely benchmarking the experience of tax administrations around the world. Quantitative benefits should be translated similarly, either through international benchmarks, using the historical experience of the tax administration, or using other national data.

**Figure 5: Illustrative Performance Measures for Tax Administration**

	<b>Illustrative quantitative measures</b>	<b>Illustrative qualitative measures</b>
Registration	Accuracy of taxpayer register / non-filing ratios Average time to complete new registration	Comprehensive and integrated system Sufficient information to allow routine functions (notices / follow up) Use of unique taxpayer identification number Single registration facility
Return and payment processing	Return / payment processing speed Return / payment processing backlog Average processing time Average number of days to issue a refund Return processing accuracy/ error rate Payment processing accuracy/ error rate	Multiple filing and payment channels Single payment arrangements across taxes Expedite return / payment procedures
Audit	Average assessment	Risk-driven audit

<sup>21</sup> Richard M. Bird and Jaime Vazquez-Caro, "Benchmarking Tax Administrations in Developing Countries: A Systemic Approach", International Studies Program Working Paper 11-04. Andrew Young School of Policy Studies

<sup>22</sup> Carlos Silvani and Katherine Baer, "Designing a Tax Administration Reform Strategy: Experience and Guidelines", IMF Fiscal Affairs Department Working Paper, 1997; "Guidelines for Fiscal Adjustment", Pamphlet No. 49, IMF Pamphlet Series,

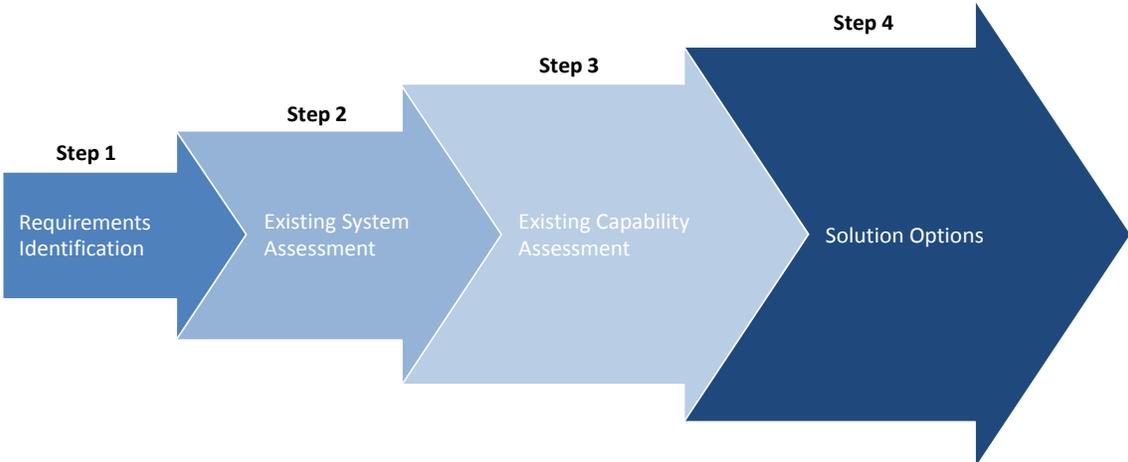
<sup>23</sup> Adapted from William Crandall, "Revenue Administration: Performance Measurement in Tax Administration", IMF Fiscal Affairs Department, June 2010.

	Audit quality assurance scores	Integrated audit Collection of compliance related data from third party sources or other audits
Collections	Outstanding debt to revenue ratio for recent debt / all debt Collection success rate	Integrated approach to collections Single taxpayer account and debt Cost-benefit approach to collections
Taxpayer accounting	Regularity of reporting Response time on senior official demands	Availability of information Monthly revenue reporting
Objections and appeals	Resolution rate Appeal case quality assurance scores	Separation of appeals from audit and collections Existing internal reconsideration processes and forma external appeal processes
Taxpayer services	Percentage of returns filed electronically Percentage of returns filed by paper Number of taxpayers assisted Number of advisory visits Number of educational seminars Average taxpayer wait time for service Average time to respond to written taxpayer requests Accuracy of responses provided Utility of visits and seminars from surveys	Multiple channels Accessible channels Existing general inquiry and specialist channels

### 3.3. Selection Guidelines

A simplified IT acquisition process of four steps is shown on the figure below. The tax administration can follow this or a similar process after validating the strategic business need for IT investment. The first step in this acquisition process is to identify the requirements for the solution. The second and third steps are to assess existing systems and capabilities. The last step is to review system solution options and identify the most appropriate one. These are detailed below.

Figure 7. Four-step IT acquisition assessment process



**Requirements identification:** A typical full-scale – across all elements of the IT solution landscape – tax IT system procurement comprises over three hundred requirements, including general technical requirements, specific technical requirements for each of the core tax administration functions, and a number of non-technical requirements related to security, user interface, and other. These are derived from the strategy and must comply with existing business rules (e.g., legislation), documentation and training needs, and the need to cooperate with other agencies, among other factors.<sup>24</sup> Attention to these is important, as future development, customization, testing, and piloting are the most time consuming and costly part of the implementation and would be streamlined with properly specified and detailed requirements.

**Existing system assessment:** Existing (legacy) systems should be assessed to understand if such systems can accommodate IT requirements and to identify the gaps between existing systems and future system needs.

**Existing capability assessment:** An assessment of existing capabilities, including previous development experience, should include the IT capacity of future users, the capacity of IT staff to develop and support the system, the need for modifications to existing structures and processes, and the ability of the tax administration to manage change. The latter is specifically important in larger implementations that may require wider institutional change.

**System options:** Solutions that satisfy the requirements should be researched and analysis completed based on requirements, including total cost of ownership and timing of implementation. The figure below presents an illustrative example of the decision criteria and the key questions that need to be answered when assessing system options.

Figure 8. Illustrative system selection decision criteria framework

Decision driver	Definition	Illustrative weight
Cost of ownership	How does each option compare against other options in terms of total cost?	15%
Core to business	How well does each option relate to the business direction, activities, and capabilities?	15%
Time to market	How quickly will the option deliver the solution and is this in line with strategic objectives and corresponding action plans?	15%
Degree of customization	How well does each option provide the needed functionality and how additional development is needed?	15%
Skilled resource availability	How much skilled resources are needed to develop or support each option and how much of these are available?	15%
Technology	How well does each option complement existing technology	15%

<sup>24</sup> "Make or Buy Decision Factors: World Bank Experience and Guidance Notes for Treasury Management System", Guidance Notes, E-Government Practice – ISG, The World Bank

compatibility	(e.g., architecture, infrastructure, security)?	
Intellectual asset strategy	How well does each option meet the intellectual property ownership needs or requirements of the administration?	5%
Exit strategy cost	How costly is it to exit each option?	5%

### 3.4. Sequencing of IT Interventions

Many tax administrations in emerging and transitional economies face limited funding. These countries must decide on a limited set of IT interventions and choose the activities and processes that are most suitable for IT and that have the greatest impact on achieving strategic objectives.

There are no "one-size-fits-all" solutions and the appropriate IT intervention depends on the existing capability and the specific strategy of the tax administration, among other factors. Where the tax administration has limited or no IT, however, the following sequencing of IT interventions is likely to be successful. First, the tax administration should use IT to support its comprehensive registration function. This is the foundation, upon which subsequent IT functions are built. It provides the tax administration with the basic information necessary to manage its taxpayers. Second, the tax administration should automate heavy processing and resource intensive functions, such as taxpayer accounting, filing, and return, payment, and refund processing. Efficiencies in these areas allow the tax administration to re-direct resources to more valuable revenue mobilization activities, such as risk-driven audit and cost-benefit driven collections, and will reduce the costs of compliance for taxpayers to enhance voluntary compliance. Third, IT should be used to enable compliance activities (e.g., a compliance performance system) and to further reduce the cost of compliance for taxpayers (e.g., an e-tax system that provides information, education, and support beyond simply allowing electronic filing and payment).

In the long-run, the tax administration should aim to implement integrated tax systems that support all functions and taxes with common case management and workflow applications. If revenues must be mobilized in the short-term, a comprehensive and integrated registration system and accurate taxpayer accounting, followed by systematic compliance programs are key.<sup>25</sup>

---

<sup>25</sup> Terry Murdoch, Ron McMorran, Anton Kamenov, and Johan van der Walt, "Tax Administration Reform: A Primer", USAID, 2012.

## 4. Comparative Assessment of Commercial-Off-The-Shelf and Custom-Built IT Systems

---

Custom-built and COTS solutions are at the two extremes of the implementation channel spectrum. The purpose of this section is to highlight the differences between the two and the key decision factors that impact the tax administration's choice of one or the other. The focus of the following discussion is on complete IT solutions for tax administration, with all elements of the IT solution landscape discussed above, as this is when the choice of custom-built vs. COTS solutions usually arises. In practice, the term 'COTS' may apply to a narrower solution, ranging from shared infrastructure and middleware to integrated core processing systems (registration, returns and payment processing), to shared analytics and integrated case management for compliance, and tax administrations can use a mixture of custom-built and COTS solutions for components of the comprehensive IT system.

### 4.1. Characteristics of COTS and Custom-Built Development

In reality, the distinction between custom-built and COTS can be difficult to discern. It is possible for a tax administration to purchase a COTS solution and to subsequently make significant alterations. The COTS solution would be tailored to such an extent that a custom development would have been a more appropriate solution. This, in itself, is not necessarily a barrier to implementation, providing the tax administration understands the extent of modifications, plans for the associated cost and time, and ensures that support arrangements are not impacted by extensive modification. Either option or a combination of the two can provide value to a tax administration.

#### 4.1.1. Custom-built Development

As above, in-house custom-built developments were widely employed as an implementation approach up until the late 1980s. From the 1990s to the present day, this approach has been widely reduced due to the complexity of implementation and the growing availability of external providers and products, among other factors, although this phasing out has been slower in emerging and transitional economies than in developed countries, perhaps due to the lack of funds, the need for flexibility, and even the biases of the IT staff. As tax administrations moved away from internal system development, the emphasis shifted to vendor provided alternatives. The shortcomings associated with in-house development, such as the lack of internal capacity, could be bridged by external providers with implementation experience and technology expertise.

Vendor provided custom-built systems have been implemented in a number of countries with varying success. A common approach to custom-built solutions is to implement them by component or module, which may be suitable for tax administrations with already existing technology, time constraints, limited resources, and a need for flexibility or for tax administrations that aim at quick revenue gains or cost reductions. The most significant benefit associated with custom-built systems is control. By planning

and implementing changes using internal or contracted IT resources, tax administrations are able to wholly own the development process, giving them influence over system design and implementation.

There are also disadvantages of the custom-built approach. There may be difficulties in defining business and technology requirements or in ensuring sustainable transfer of technology from the vendor to the tax administration.<sup>26</sup> This is sometimes the result of cost and time pressures and sometimes due to the lack of internal expertise within the tax administration – software development for a modern tax administration IT system with all key IT competencies would require knowledge in many areas, including databases, user interfaces, security, web services, and other. In addition, vendors may have limited local knowledge, which can inhibit progress, particularly in tax administrations unused to change. Finally, designing, custom-building, and implementing a full-scale – across all functions – tax administration IT system 'from scratch' takes many years.

**Figure 9. Advantages and disadvantages of custom-built IT solutions for tax administration**

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>▪ A solution tailored to the tax administration's structure and needs</li> <li>▪ Lower initial development cost and potential for more rapid initial implementation</li> <li>▪ Greater buy-in from counterparts as they have more control over the system and have ownership over design and implementation</li> <li>▪ Leverages internal expertise</li> <li>▪ Capitalizes on existing investments (e.g., leverages existing technology investments)</li> <li>▪ Internal control of enhancements and maintenance</li> <li>▪ Flexibility to make changes as needed to be responsive to needs, especially where procedures and requirements may not be well defined</li> </ul>	<ul style="list-style-type: none"> <li>▪ Dependency on availability of internal expertise (potential key person reliance, capacity issues, etc.)</li> <li>▪ Significant internal change/project management capability required for large information technology projects</li> <li>▪ Difficulty retaining key IT staff</li> <li>▪ Difficulty keeping pace with advanced technological change (including new technologies, security standards, etc.)</li> <li>▪ Difficulty enforcing best practice (e.g., integration across tax types)</li> <li>▪ Difficulty maintaining high documentation standards</li> <li>▪ Longer development time for full-scale implementation</li> </ul>

---

<sup>26</sup> See Barry Bozeman, "Technology transfer and public policy: a review of research and theory", School of Public Policy, Georgia Tech, Atlanta, Research Policy 29 (2000) 627-655 and David M. Haug, "The International Transfer of Technology: Lessons that East Europe Can Learn from the Failed Third World Experience", Harvard Journal of Law and Technology, Volume 5, Spring Issue, 1992

#### 4.1.2. Commercial Off-the-Shelf Deployment

COTS solutions – a response to the demand for the quick implementation of robust and sustainable tax administration systems – provide cutting edge technology and implementation expertise. COTS solutions are ready-made, transferrable, and generally designed to accommodate leading practice in business processes. A good COTS solution: provides for localization (natural language, currency); uses current technology; is improved by periodic releases; allows for multiple communication channels (e.g., web-enabled); allows input from multiple sources (keying, scanning, e-filing); is able to interface with external authorities (e.g., business registry and customs); allows for the centralized or decentralized implementation of individual functions; is modular, scalable, and maintainable; is well documented; and is hardware independent.

Most software companies issue new releases to comply with IT technological trends and so COTS solutions provide cutting-edge technology with potentially shorter implementation timelines, are rigorously tested, share deployment costs among users, often provide superior functionality and capabilities, and, over time, can have a lower total cost of ownership than customized solutions. There is also the potential to adopt new technologies, such as Software as a Service – a model of 'renting software' – and Platforms as a Service – a model of renting hardware, operating systems, and storage and network capacity.<sup>27</sup>

In general, COTS solutions provide some level of flexibility and are typically designed in a manner that facilitates some configuration for certain functions without incurring significant development costs (e.g., form design tools and workflow design tools simplify development; tax computations and audit selection criteria are housed in “rule engines,” easily accessible and configurable to local needs and legislation). Although COTS solutions are configurable to meet most of the requirements of a tax administration, some may require customization.<sup>28</sup> In practice, where there is high process variability or differences between current and leading practice, generic COTS offerings may not be fit for purpose and the costs to customize the COTS package can rival the costs associated with the development of a custom-built system. Key elements of process variability include a high degree of human intervention, complexity in business rules, and complexity in organizational relationships. Where the base level of tax

---

<sup>27</sup> Both would reduce upfront investment costs at the expense of ongoing fees. While this is an unproven approach today, this model may work with sufficient scale. These types of offerings become more attractive in austere environments where a large capital expenditure is not possible, but where an annual subscription agreement can be completed between donors and host countries. Since information would be stored in a "cloud", security and the confidentiality of taxpayer data is a concern.

<sup>28</sup> For the purposes of this paper, configuration is changing the workings of the system to conform to specific settings by using the functionality already provided to the user, without actually "programming." For example, a COTS solution may allow the design of tax forms for data entry of taxpayer returns with simple point-and-click operations. Customization means modifying the functionality of the system, perhaps through programming or data conversion.

administration technology is very low, COTS solutions can be attractive, as sometimes it makes more sense to start from scratch with a ready-made product.<sup>29</sup>

Figure 10. Advantages and disadvantages of COTS IT solutions for tax administration

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>▪ Higher quality, fully-integrated solutions</li> <li>▪ Built-in industry best practices for all IT competencies (core tax, management information, compliance performance system, and e-tax systems)</li> <li>▪ Reinforces best practices as the new system provides additional discipline over processes and procedures</li> <li>▪ Future development costs shared with other customers</li> <li>▪ Implementation track record</li> <li>▪ Cutting edge technology</li> <li>▪ Potentially shorter implementation timescales</li> <li>▪ Rigorous testing and deployment methodologies</li> </ul>	<ul style="list-style-type: none"> <li>▪ Customization required to meet local requirements, given variability of laws and procedures</li> <li>▪ Lack of buy-in with respect to changes in existing business processes, organization, and IT infrastructure by users and disputes with the vendor may lead to a failed implementation</li> <li>▪ Requires significant change management capability in absence of leading practice</li> <li>▪ Relatively high initial license and implementation costs</li> <li>▪ Vendor reliance for support and maintenance (i.e., external risk and potential cost issues)</li> <li>▪ Not component-wise (full package offered)</li> </ul>

## 4.2. Key Decision Factors

With respect to the strategic and selection guidelines discussed above, three decision factors are most significant to the choice between custom-built and COTS solutions. These are discussed below.

### 4.2.1. Strategic Objectives

Fundamentally, the decision between custom-built or COTS solutions boils down to a choice between being in the business of software development and maintenance or relying on established, albeit standard, solutions. In essence, this is a choice between cost and control.

In total cost of ownership terms, custom-built solutions may be cheaper for smaller tax administrations, particularly in consideration of licensing costs, whereas COTS solutions may be more cost effective for

---

<sup>29</sup> Will Rice, "Lessons Learned from Implementing a New Tax System in Trinidad & Tobago", Fast Enterprises presentation to the World Bank, November 2011.

larger implementations with a wider breadth of system requirements. COTS solutions may be appropriate where there is major tax administration reform across all tax administration functions that requires sufficient funding and commitment to reform and leading practice, as in the cases of Egypt and Costa Rica below. More often than not, COTS solutions in developing and transitional countries fail, because tax administration processes do not conform to leading practice and there is insufficient funding or inadequate management of change. A number of countries, such as El Salvador, Georgia, and Bosnia and Herzegovina below – the latter recently moved to a "hybrid" custom/COTS solution – have opted for piece-wise reform over time with proper prioritization of targeted custom-built IT interventions. In the long-run and on occasion, custom-built solutions may prove costly with short life-spans and multiple implementation efforts, as in El Salvador.

With respect to control and intellectual property rights, the tax administration usually owns the source code of custom-built development, whereas the vendor retains ownership for COTS products. Thus, if future customization is required, the tax administration may be locked in with the COTS vendor.<sup>30</sup>

#### **4.2.2. Requirement Identification – Implementation Complexity**

All modern tax administrations have the same core functions, such as registration, return and payment processing, audit, and so on. Even so, not all tax administration face the same level of IT implementation complexity. In the simplest case, the administration may be handling a single tax with a limited filing population and a single central tax office and processing center.<sup>31</sup> Given the low number of taxes (one) and the centralized staff and infrastructure, this is a tax administration relatively free from complexity. A COTS solution may not be suitable in this case, as many COTS solutions do not permit the scaling back of core revenue management functionality and are relatively inflexible in cost terms.

Complexity increases in conjunction with the number of taxes and the size of the geographic footprint. COTS solutions become more appropriate as complexity and scale increases, assuming conformity with leading practice. In addition, larger projects require a wider breadth of expertise – systems security, internet skills, document management, etc. – that is uncommon in internal IT departments. Custom-built solutions are more appropriate with smaller or targeted system implementations, where local knowledge and speed are important.

#### **4.2.3. Existing Capability Assessment**

Attention should be given to the assessment of organizational structures and processes against leading practice. COTS solutions are developed according to leading practice and organizations that conform

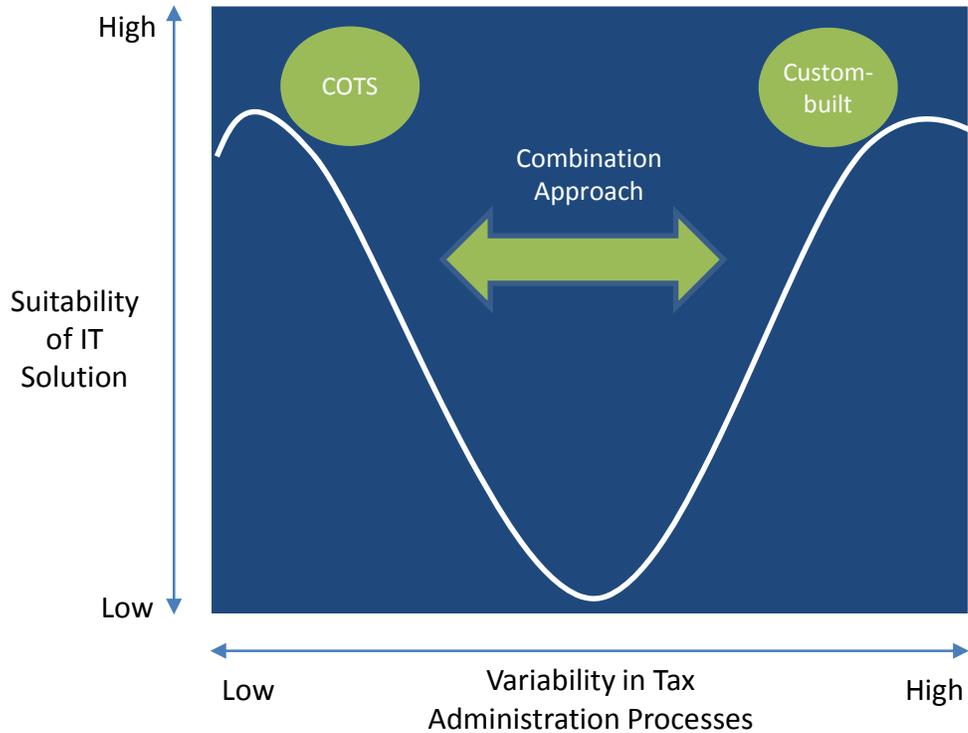
---

<sup>30</sup> "Make or Buy Decision Factors: World Bank Experience and Guidance Notes for Treasury Management System", Guidance Notes, E-Government Practice – ISG, The World Bank.

<sup>31</sup> Qatar is a country with a single tax, limited filing population, and a single tax office. Bosnia and Herzegovina, on the other hand, collects all major taxes and does so at different levels – national, entity, or region / municipality – and many offices. Fortunately, Bosnia and Herzegovina has a single tax administration law based on leading practice. El Salvador is another complex case of implementation (VAT), as the country attempted to connect all store registers directly to the TAS.

typically face reduced need for customization, incur lower implementation costs for COTS solutions, and have a better chance of success. Conversely, organizations that deviate significantly from leading practice are likely to encounter higher customization costs and longer implementation times. Excessive customization can, in some instances, blur the line between COTS and custom-built solutions. In cases where adhering to leading practice requires change, strong leadership support is fundamental and the administration's ability to manage and implement change must be considered.

Figure 11. System suitability spectrum



It is often the case in developing and transitional countries that processes and existing IT solutions are ad hoc, not well documented, or simply non-existent, in which case many IT implementations will falter. Processes and capabilities should be at least formalized and, perhaps, streamlined before the IT approach is validated and custom-built or COTS solutions are pursued. It could be argued that a COTS solution can and should be used to "enforce" leading practice. If so, IT must be a part of larger reform that depends very much on political will and change management, among other factors.

## 5. Conclusions

---

IT improvements will enable the tax administration to achieve its long-term strategic goals – to be effective and efficient in collecting the right amount of tax from the right taxpayer at the right time and to do so with minimal intrusion in the taxpayer's business and with a level of uniformity in the application of the law, taxpayer satisfaction, and voluntary compliance. However, the IT system landscape is quite complex and officials face difficult questions when considering IT investment decisions.

An appropriate approach to making the right IT investment decision is to treat IT investment as a strategic business decision, by ensuring that the IT implementation is a part of an overall development strategy and by performing a thorough cost benefit analysis. Following, a structured IT acquisition assessment process should be used to identify detailed requirements, complete an existing system and capabilities assessment, and review system solution options to identify the most appropriate solution. During this process, tax administrations should take a long-term transformational view to harness the full benefit of IT, with specific consideration given to items such as the development period, the total cost of ownership, and the future ownership of intellectual property rights.

Comprehensive integrated IT solutions for tax administrations comprise the same capabilities. A core tax system supports the core traditional revenue management functions – registration, filing and payment, etc. An e-tax system provides information, education, and support to the taxpayer. A compliance performance system assists with the implementation of the tax administration's risk-driven compliance strategy. A management information system collects and disseminates performance information throughout the tax administration. Although these components are similar across IT systems, the approaches that a tax administration can choose to implement IT can differ. For comprehensive IT solutions for tax administration, the usual discourse focuses on custom-built solutions, developed to satisfy the specific requirements of a tax administration, and COTS solutions, developed to implement leading practice and to be transferrable from one tax administration to another.

In practice, IT systems can be, and usually are, a combination of the custom-built and COTS approaches. Notwithstanding, a tax administration in an emerging or a transitional economy, in need of a comprehensive and integrated IT system, still faces a rather daunting decision: custom-built or COTS. Both have advantages and disadvantages. The steps to making the right choice are as with any other IT implementation, but three decision factors should be emphasized: the tax administration's strategy, the needed implementation complexity highlighted during requirement identification, and existing capability. As the case studies below show, custom-built solutions have consistently produced good results in emerging and transitional economies. This is likely due to the fact that these solutions are more suitable for piece-wise implementations and more easily customized to local needs and the absence of leading practice.

## 6. Case Studies

---

### 6.1. El Salvador (Custom-Built)

#### 6.1.1. Background

In 1990, El Salvador embarked on tax administration reform that has continued until today. During this period, a custom-built integrated tax administration IT system was put in place, funded by USAID and, to some extent, by the Inter-American Development Bank (IADB). Initial system development focused on traditional revenue management functions, such as registration and return processing, but later expanded to include modern functions, such as web-based taxpayer services and audit case management.

IT implementation in El Salvador was preceded by a number of policy reforms, including the introduction of VAT and the simplification of the income tax forms and processes in 1992, the dollarization of the economy in 2001, and major tax policy and administration reforms in 2004 that raised excise duties, bolstered income tax and VAT collection potential by eliminating loopholes, improved payment cross-checking and audit capabilities, and introduced more severe penalties for tax delinquencies.<sup>32</sup>

#### 6.1.2. Key Challenges

The initial challenge faced by tax administration officials in 1992 was the lack of locally available technology expertise to support the existing legacy systems to meet new requirements: the simplification of income tax forms and the introduction of VAT. In addition, potential improvements in registration and the integration of the VAT and income tax within IT, coupled with better audit capacity and the introduction of accounting standards, was seen as important to improving collections and curbing evasion and poor tax implementation.<sup>33</sup> Subsequent IT modifications were largely the result of the need for better revenue management data with fewer data entry errors, for verification of withholding amounts,<sup>34</sup> for higher quality data on taxpayer wealth, income, and financial and commercial transactions,<sup>35</sup> for additional capacity with more data to more concurrent users, and for additional functionality (e.g., web services).

#### 6.1.3. Implementation

El Salvador's tax administration pursued a custom-built solution through a series of reform projects. The USAID funded Modernization of Salvadoran Taxation (MOST) project, running between 1991 and 1995,

---

<sup>32</sup> IMF Consultancy Report No. 05/271, "El Salvador: 2004 Article IV Consultation—Staff Report; Staff Statement; Public Information Notice on the Executive Board Discussion; and Statement by the Executive Director for El Salvador", August 2005

<sup>33</sup> Mark Gallagher, "El Salvador's Tax System: Past and Future", USAID, October 1993

<sup>34</sup> "Tax Policy and Administration Reform Quarterly Report", USAID, June 2006

<sup>35</sup> "Tax Policy and Administration Reform Quarterly Report", USAID, April 2008

resulted in an overhaul of the tax administration landscape, including the replacement of the legacy tax mainframe system and the decentralization of computing. This project addressed the core aspects of tax administration IT and by 1994 the MOST team had developed a custom-built FoxPro based system that included VAT and income tax registration, return processing, payment processing through banks, and some basic audit selection tools. Over the course of this project, USAID also worked with the Ministry of Finance to change its approach to taxation, with a focus on measures to improve compliance.<sup>36</sup> In parallel, IADB provided support for the establishment of a Large Taxpayer Unit with an information technology department responsible for the design, development, and deployment of a separate custom-built tax administration system dedicated to large taxpayers.

In 1998 the tax administration initiated an IT integration program as part of an effort to combat a decline in tax revenues. By 2002 both systems had been integrated onto a single Linux based platform that used Informix as the database environment and PowerBuilder as the application language, replacing the MOST FoxPro system. The system facilitated increased processing requirements and eliminated the duplication of functionality. The new system, dubbed Sistema Integrado de Información Tributaria (SIIT)<sup>37</sup>, provided a single platform for taxpayer registration and returns processing with basic taxpayer accounting, archiving, and audit functionality.

By 2002 the new SIIT was suffering from hardware performance issues due to high data traffic and increased user demands. The Ministry of Finance requested further assistance, emphasizing the need for system modernization support and enhanced audit functionality. In 2002 USAID launched the Tax Administration Project (TAP), which deployed new hardware platforms and introduced an off-site system for field audits.

By the end of 2004 a raft of new tax measures increased pressure on tax administration operations and systems with additional compliance requirements, tighter controls on VAT, and new filing requirements. In 2005, USAID launched the Tax Policy and Administration Reform (TPAR) project aimed at further system modernization. Between 2005 and 2010 the TPAR project team replaced the SIIT system with a new version dubbed J-SIIT, which replaced Informix and PowerBuilder with Oracle and Java and provided increased data processing capacity and functionality to support web-based taxpayer services. An updated desktop client for tax officers and a Fiscal Compliance Call Center were included. The Fiscal Compliance Call Center comprised an automated system to call delinquent taxpayers, including stop filers, and remind them of their tax liability. A major focus of the TPAR project also was the complete redesign of the audit process, including the deployment of a Case Selection Management System (CSMS) that automated the risk-scoring audit selection process and the assignment of audit personnel to each case, rather than leaving such decisions to the discretion of tax officials, and monitored the progress of audit cases. A Taxpayer Assistance Call Center was also created to provide assistance, orientation, and legal guidance to taxpayers on their tax obligations.

---

<sup>36</sup> "USAID Assistance in Fiscal Reform, Tax Policy and Administration Reform in El Salvador", USAID, June 2006

<sup>37</sup> Integrated Tax Information System

#### 6.1.4. Results Achieved and Lessons Learned

As a result of IT implementation during TAP, the processing time for income tax returns fell from 4 hours to 40 minutes, the data entry process was completed 50 percent faster, and available storage space increased from 3GB to 75GB.<sup>38</sup> In 2004, El Salvador's Tax Authority stated that faster data processing strengthened its capabilities to maintain government revenue flows, and faster data loading speeds has resulted in 30 to 40 percent savings in database maintenance operations. They also pointed to the increased data storage facilities that allow data to be stored for up to 10 years on a safe and reliable platform.<sup>39</sup>

The impact of the CSMS audit system, after its initial implementation during TPAR in September 2009, has been dramatic. Between January and June 2010, during the first six months of full application of the CSMS, the tax administration completed more than 300 audits, detecting more than \$100 million in additional revenues, compared to \$50 million from audits for all of 2009.

The Fiscal Compliance Call Center implemented during TPAR saved the Ministry of Finance an estimated \$215,000 per month in operating expenses. It was also effective. Immediately after its introduction, in the first half of 2009, 2,685 stop-filers responded to the automated calls and resumed filing, compared to 917, who had responded to mailed reminder notices in the first half of 2008. The call center was able to deliver 34,721 robo-calls in 2009 as opposed to 3,495 letter notices in 2008. Prior to the launch of the center, the stop-filer program collected \$2.2 million per year. After the introduction of the call center, corresponding tax collections rose to \$3.12 million.

Service to compliant taxpayers also improved during TPAR. Prior to the launch of the Taxpayer Assistance Call Center, only 200 taxpayers per day were being served by an underequipped staff or four non-specialists. As of the time of this document, the tax administration assisted an average of 1,300 taxpayers per day in low season and 5,000 per day at peak times.

Historical tax revenue performance in El Salvador is somewhat indicative of the positive contribution of reforms, noting, of course, that reforms are not the only contributor to revenue gains and that IT plays only a limited part of the reform effort. During MOST, between 1991 and 1995, tax revenue as a percentage of GDP rose from 9.7 percent to 11.9 percent.<sup>40</sup> During the mid-1990s, when assistance from USAID ceased, there was a clear deterioration in revenue performance. Between 1996 and 2000 tax revenue as a percentage of GDP fell from 11.9 percent to 11.1 percent. By 2001 tax evasion was estimated to be as high as 34 percent.<sup>41</sup> In 2001, as USAID re-started its assistance through TAP, revenue performance began to recover and tax revenue as a percentage of GDP rose from 11.1 percent in 2001 to 13.1 percent in 2005. This trend continued through the TPAR project with tax revenue as a

---

<sup>38</sup> "USAID Assistance in Fiscal Reform, Tax Policy and Administration Reform in El Salvador", USAID, June 2006

<sup>39</sup> "IBM Informix Dynamic Server, Version 9.4 boosts revenues, improves business efficiencies", IBM, December 2004

<sup>40</sup> "USAID Assistance in Fiscal Reform, Tax Policy and Administration Reform in El Salvador", USAID, June 2006

<sup>41</sup> Ibid.

percentage of GDP reaching a peak of 14.2 percent in 2011. Approximately \$40 million of additional tax revenue was collected over the five years of the TPAR project.

TAPR invested \$5.2 million over five years, approximately \$3.5 million of which were in IT. A similar IT system could cost an estimated \$15 million. The system was made possible by the custom built approach, which allowed the development of the IT infrastructure in-house supported by appropriate, cost-effective and scalable technology solutions developed in collaboration with Salvadoran counterparts.<sup>42</sup>

It should be noted that IT development in El Salvador, first, appropriately prioritized IT interventions, starting with registration, followed by the integration of return and payment procession, and later focusing on risk-driven compliance and web based taxpayer services. However, while these programs can largely be considered successful, the development of three separate IT systems over a period of around 10 years should be construed as inefficient and likely indicates lack of proper planning – a lesson for future custom-built development projects.

## **6.2. Bosnia and Herzegovina (Custom-Built)**

### **6.2.1. Background**

Bosnia and Herzegovina (BiH) includes two largely autonomous entities – the Federation of Bosnia and Herzegovina (Federation) and Republika Srpska (RS) – and a self-governing district, Brčko. This complex political structure is supported by an equally complex tax administration infrastructure, within which each entity operates an independent tax administration founded on independent tax legislation.<sup>43</sup> USAID began providing assistance to Bosnia and Herzegovina in 1995 and initiated targeted tax administration reform in 2001, when, with the economy slowing down and customs revenues declining, tax administration had become increasingly important.

### **6.2.2. Key Challenges**

The primary challenge facing the newly formed state in the late 1990s and early 2000s was that the tax administration system was fundamentally weak. Tax office facilities were in poor conditions, hardware was antiquated, and a poor communications infrastructure inhibited co-operation between offices. Archives were poorly maintained, taxpayer registries were outdated, and compliance enforcement was erratic. From a taxpayer perspective, tax reporting was onerous and requirements were unclear – a matter that complicated both administration and compliance. Furthermore, tax offices were highly decentralized, leaving tax administration open to local influence and corruption. As a result, compliance

---

<sup>42</sup> In addition to increasing El Salvador's tax revenue, TPAR has been crucial to the country's fight against corruption and tax evasion. Since its establishment, the Anti-Corruption Unit has handled more than 1,200 complaints, led 300 investigations and provided evidence for the dismissal of 16 tax officials who were charged with misconduct; the Criminal Investigation Unit has collected more than \$14 million as a result of its investigations.

<sup>43</sup> "USAID Assistance in Fiscal Reform: Tax Modernization in Bosnia and Herzegovina", USAID, 2006

rates were low and tax evasion was rampant.<sup>44</sup> The innate political complexity presented additional problems. A central issue was that each of the independent entities operated under separate tax legislation, which made the co-ordination of tax administration efforts difficult.

### 6.2.3. Implementation

In 2001, USAID initiated the Tax Administration Modernization Project (TAMP), which operated in two phases: TAMP 1 (2001 - 2003) and TAMP 2 (2003 - 2006). The primary objective of TAMP was to assist in the modernization of tax processes to improve efficiency, reduce corruption, achieve more standardized taxpayer treatment throughout BiH, and bring the tax system closer to European Union standards. TAMP 1 activities focused on the operation of the tax administration. This phase designed a new set of business processes, a series of recommendations for automation, new system architecture, and human resource requirements for each of the three tax administrations. In an effort to avoid duplication of donor efforts, TAMP 1 did not address audit and enforcement functions, which were on the agenda of a separate European Union-funded assistance program.<sup>45</sup> TAMP 2 activities focused on assisting the three administrations to develop automated systems and to implement the new business processes designed during the TAMP 1, including a new taxpayer registration system, a centralized tax accounts database, centralized processing centers, and a microwave data communication network.

During TAMP 1, as a precursor to IT investment during TAMP 2, the three governments introduced tax administration laws that established the concepts of modern tax administration (self-assessment, taxpayer registration based on a unique taxpayer identification number, and centralized management oversight), and harmonized the tax legislative framework. In terms of IT, a decision was taken early on to leverage the highly skilled local IT workforce and to pursue custom-built solutions using open-source software for database management (Firebird) and licensed application development software for the user interface applications (Delphi)<sup>46</sup>.

The taxpayer registration system was addressed first starting during TAMP 1 and included a centralized tax database to facilitate the sharing of taxpayer information among the administrations for the first time. The new database effectively integrated three information sources: the taxpayer registry, the payments registry, and the return registry. Use of the same taxpayer identification numbering system throughout BiH made it possible to share tax account information among the tax administrations and the more than 120 tax offices countrywide, including cantonal and local/branch offices.<sup>47</sup>

TAMP also established Centralized Processing Centers (CPCs) to manage the large quantities of data flowing through the new systems from taxpayers. New technologies supported the centers, including: electronic scanning to upload paper filings; simplified and automated tax forms; automatic safeguards to

---

<sup>44</sup> "USAID Assistance in Fiscal Reform: Tax Modernization in Bosnia and Herzegovina", USAID, 2006

<sup>45</sup> Ibid.

<sup>46</sup> Repulika Srpska moved from Firebird and Delphi to Microsoft SQL and ASP .NET in 2005.

<sup>47</sup> "USAID Assistance in Fiscal Reform: Tax Modernization in Bosnia and Herzegovina", USAID, 2006

detect errors; and, automated programs to generate notices for late filing, stop filing, and other events. Significant cost savings were targeted. For example in the Federation, 55 different entity and cantonal tax forms were consolidated into five and then automated for CPC use.<sup>48</sup>

In support of the new centralized systems and Centralized Processing Centers, a Microwave Data Communications Network was also developed and implemented and connected all tax offices and the CPCs via a high-speed, low-cost network. This facilitated return processing, as individual declarations filed in one tax office could quickly be received, transferred to a CPC, entered into the system, and then posted to the taxpayer's account.

#### 6.2.4. Results Achieved and Lessons Learned

As a result of the new unique TIN-based registration systems and the complementary awareness campaigns, the number of registered businesses in RS and in the Federation increased. In RS, registered legal entities grew 12 percent from 2002 to 2003 and 18 percent from 2003 to 2004. In the Federation, taxpayer registration increased from 30,107 in 2001 to 87,766 in 2004, almost 300 percent. Partially attributed to this, sales tax revenues more than doubled and wage tax revenue grew by 8 percent in the same period.<sup>49</sup> Tax revenue as a percentage of GDP rose from 37.9 percent to 47.5 percent between 2001 and 2006.

Compliance interventions doubled between 2002 and 2004, resulting in a total increase in revenue of KM 104 million<sup>50</sup>. The establishment of the centralized tax accounts database and the introduction of basic applications for risk assessment and audit selection, enabled tax officials to make better targeted audits, enhancing their ability to collect revenues, and giving them heightened credibility in the eyes of taxpayers.<sup>51</sup>

\$12.76 million were invested over 5 years<sup>52</sup> in coordinated and appropriately sequenced reform efforts, passing similar legislation in the entities and addressing registration first and heavy processing second. Cost savings were obtained with open source software and a primarily local IT team.

---

<sup>48</sup> Ibid.

<sup>49</sup> Revenue Performance and Tax Administration Modernization in Bosnia and Herzegovina 2001 – 2004, Steve Rozner, Dželila Šahinagić, and Sandra Marjanović, May 2005.

<sup>50</sup> For comparison, KM 104 million is 2-3% of current BiH tax revenues. Historical data on collection levels are not available.

<sup>51</sup> Revenue Performance and Tax Administration Modernization in Bosnia and Herzegovina 2001 – 2004, Steve Rozner, Dželila Šahinagić, and Sandra Marjanović, May 2005.

<sup>52</sup> International Monetary Fund Statistics, 2012

## 6.3. Egypt (COTS)

### 6.3.1. Background

Since the late 1980s, USAID has provided more than \$80 million in technical and technology procurement assistance to the Government of Egypt (GOE) to reform its tax system, strengthen its institutional capacity to administer taxes, and build analytic capacity to design and implement tax and fiscal policy. USAID assistance in the area of taxes was provided primarily through the Public Finance Administration project (1989-1997), the Corporate Tax Project (1999-2004), the Technical Assistance for Policy Reform (TAPR) project (2002-2005), and the Technical Assistance for Policy Reform II (TAPR II) project (2005-2010). This case study focuses on the IT system procured, customized, and implemented during TAPR II.

In 2005 Egypt embarked on a dramatic reform effort that resulted in significant organizational and process change with the integration of the income, sales, and real estate tax departments into a single Egyptian Tax Authority (ETA). During the same year, Egypt also introduced a new Income Tax Law, eliminating most tax holidays, and revamped its legal framework for enforcing taxes. TAPR II assisted ETA with the revision of its executive regulations to reflect the relevant changes, the drafting of a complete guide to self-assessment, the setting up of Taxpayer Service Units in all district and regional tax offices, and the design of a new unified taxpayer identification number.

### 6.3.2. Key Challenges

The key challenges faced by the tax administration during TAPR II were: the introduction of a modern legislative framework for taxation, coupled with automation in enforcement and a focus on taxpayer services; the formalization of business processes and operating procedures; the integration of the sales, income tax, and real estate tax departments into a single tax authority, with consolidated functions and integrated IT systems, with over 60,000 employees from its predecessors, and without harmonized processes; and the establishment of the Large Taxpayer Center<sup>53</sup> with operations in several key locations in Egypt.

### 6.3.3. Implementation

To address the challenges above, a comprehensive IT strategy, including an approach for upgrading and unifying legacy IT systems for the ETA, was prepared. Following a subsequent request by the Minister of Finance and the approval of USAID, in November of 2006, TAPR II released a Request for Proposal for an Integrated Tax Management and Administration System (ITMAS). Two vendors submitted proposals that were evaluated in January 2007 by a joint committee from TAPR II, ETA IT, and functional staff.

---

<sup>53</sup> Egypt had originally set up a Model Customs and Tax Center, participation in which was voluntary, and which handled only taxpayers located in Cairo and classified as importers. The center was converted to a Large Taxpayer Center upon IMF recommendations. ("USAID Assistance in Fiscal Reform. Comprehensive Tax Reform in Egypt", USAID, June 2006).

Only one of the two vendors – Raya/Bull – was considered technically compliant, featuring Bull's e-ris comprehensive COTS solution. The Ministry of Finance had expressed a strong preference for an Egyptian prime contractor on the grounds that this would develop local capacity and promote sustainability. Raya, an Egyptian IT provider, was the prime contractor and system integrator, while Bull provided the solution and resources for system customization, installation, and training. A contract for approximately \$10.2 million was awarded and signed in early September 2007.

The implementation of ITMAS had three main phases:

- *Development of technical specifications:* TAPR II developed high-level business requirements and drafted detailed scoping documents, which were approved by ETA and signed by Raya/Bull. The business requirements and scoping were prepared as part of the project and were not provided as part of the request for proposal. This was done because ETA's business processes and procedures were insufficiently developed and documented at the time of tendering the system, but ETA still needed a new IT system to support the integration of the Sales and Income Tax Departments.
- *Design, development, testing, and pilot implementation:* ITMAS, based on Bull's e-ris COTS solution, was customized for ETA's taxpayer registration, return and payment processing, and revenue accounting processes. Following testing, these core modules were implemented and piloted in the Large Taxpayer Center (LTC) in December 2009, and subsequently extended to the Medium Taxpayer Center in early 2010.
- *Design, development, testing, and implementation:* ITMAS accommodated ETA's audit, objection/appeals, and enforcement processes. Following testing, these modules were installed and piloted at the Large Taxpayer Center (October 2010), the Medium Taxpayer Center, and subsequently rolled out to two new integrated tax centers in Port Said and Ismailia.

Given ETA's limited experience with integrated tax systems, the need to cleanse and prepare tax data for migration to the new system, and the need to prepare sites for the introduction of the system, the implementation took longer than anticipated and extended implementation by one year. In January of 2011, TAPR II reported that ETA had an integrated tax administration system that fully met its business requirements.<sup>54</sup> By the end of TAPR II, ETA had signed a Memorandum of Understanding with Raya/Bull to enter into a contract to provide continued support for the system for, initially, one year post-TAPR II.

#### **6.3.4. Results Achieved and Lessons Learned**

Overall, while the ITMAS project made considerable progress, there were issues during implementation, including a delay of over a year and modules with ongoing quality control problems. Given the complexity of the project, it is difficult to allocate the delay to any specific area or project stakeholder. Many factors likely contributed, including the possibility that the timeline was flawed from the outset. A number of lessons can be drawn.

---

<sup>54</sup> "Technical Assistance for Policy Reform II. Final Report", USAID, January 2011

- The initial budget for the system, \$10.2 million, was likely low, resulting in limited efforts in important areas, such as version control and documentation. The budget was comparable to that of implementations in smaller countries, such as Bulgaria, where similar systems had been installed, but years earlier.
- Using a local implementation contractor, rather than the vendor providing the solution and all the necessary resources for customization and implementation, created coordination and accountability problems.
- Rather than conforming business processes to leading practice, ETA requested changes to specific modules to accommodate current practices. For example, ETA requested changes to the workflow of the audit module to introduce higher level of audit result approvals. Moreover, current practices were not thoroughly documented, contributing to uncertainty and risk on the project.
- On a positive note, the formalization of processes and procedures during the implementation imposed discipline on the tax authorities and raised the level of professionalism of many of its employees, which prepares the groundwork for future reforms.

The TAPR II final report quoted the complexity of the project and the large number of individual, albeit inter-related, activities, as primary reason for delays. After the completion of TAPR II, ETA rolled back the system, using only the core modules implemented in 2009 and only in Cairo. Even for these functional modules, the expected significant improvements were not realized as the system was no longer centralized. Given that the new registration module was limited to Cairo, for example, meant that registration was no longer integrated.

The reform program undertaken in the TAPR II project as a whole had a positive impact on tax administration in Egypt. The most important reported improvements included: increased efficiency and effectiveness through the establishment of the ETA; reduced cost of administration and improved taxpayer perceptions through the introduction of self-assessment; improved taxpayer services through web services such as e-filing and query management, streamlined appeal procedures, and enhanced taxpayer education; and improved enforcement through the introducing random audit systems and appropriate deterrents.

## **6.4. Georgia (Custom-Built)**

### **6.4.1. Background**

In 2005, USAID initiated the Georgia Business Climate Reform (GBCR) (2005-2009) with the objective of transforming Georgia's business environment. A major part of this reform effort focused on tax legislation and tax administration reform, including tax IT. When the GBCR project began, USAID described the tax legislation and administration environment as having "nontransparent and unevenly applied tax and customs procedures — [that] together impose serious burdens on the business

community and undermine the development of orderly market and financial systems while depriving the [Government of Georgia] of revenue."<sup>55</sup> In addition, there was a multi-body system for compliance enforcement, where the tax department, Customs, and the financial police all shared responsibility, but had little or no communication and in effect operated independently, increasing the burden of compliance on businesses, which often endured multiple inspections in a single tax year. There were multiple websites published by the individual entities that often offered misleading and contradictory advice to the taxpayer. There was no forum for taxpayers to lodge complaints or objections. In the tax administration, there were no real functioning technology systems in operation, no internal workflow management applications, and no centralized reporting systems.

#### 6.4.2. Key Challenges

The key challenge in Georgia was the lack of a viable infrastructure both from legislative and IT perspectives. In effect, the tax administration lacked even the most basic human resource, organizational, and IT capabilities required for effective operations. Voluntary compliance was difficult, even for businesses that might have wished to comply: policies and legislation were weak; many tax administration employees were unskilled and untrained; specialist skills were unavailable; the financial police were feared; tax systems were antiquated, unfit for purpose, and unlicensed; tax processing was paper based; there was no legal basis for electronic communication between taxpayers and the tax administration; there was no integration of technology between tax, customers, and financial police systems; corruption was widespread; and there were no feedback channels for taxpayers.

At the time of the project inception, tax and customs administration were the leading reason for complaints by business. In effect, businesses did not know how to comply with undeveloped, non-sustainable tax procedures, and could not plan their activities in an environment that promoted excessive interpersonal contact and, consequently, led to corruption.<sup>56</sup>

#### 6.4.3. Implementation

A key first step was the establishment of the State Revenue Service, which united the tax administration, Customs, and the financial police within one agency under the Ministry of Finance (MOF). This included the establishment of a central IT department, with responsibility for the development and management of the tax administration's IT system. Concurrently, a program of legislative simplification and IT enhancement began, aiming to reduce the number of taxes, streamline and automate the filing process, and improve taxpayer services. The central IT department upgraded the existing tax IT hardware and software; reviewed business processes and began IT automation; developed modules for electronic tax services, including an electronic business registry, taxpayer online account access, online individual and property tax declarations, and electronic filing for business tax declarations; began electronic data exchange; set up an electronic tax lien database; completed a technology vendor discount initiative

---

<sup>55</sup> "Georgia: Opened for Business. Georgia Business Climate Reform Final Report", USAID, September 2009

<sup>56</sup> Statement of Work CLARITY – Business Environment Improvement Components

(working with Oracle and Microsoft to obtain discounts for purchases of licensed software); provided downloadable tax declaration forms for all taxes; developed a VAT invoice processing software module; developed a tax audit selection software module; and developed a central (to MOF) revenue reporting system.<sup>57</sup> In addition, IT staff were trained in key areas such as Oracle database management, database tuning, business processes documentation, etc., further embedding vital skills within the tax administration.

#### 6.4.4. Results Achieved and Lessons Learned

With the aforementioned advances, the tax administration saw a 121 percent increase in number of registered taxpayers from 2005 to 2008; and an increase 133 percent in the number of returns filed between 2005 and 2009.<sup>58</sup> Georgia climbed from 112th on the World Bank Doing Business 2006 survey to 11th in 2010. In the category of paying taxes, Georgia's rank rose from 160th to 64th in the same period. GBCR's final report stated \$100 million in annual monetized benefits. Approximately \$13 million were invested in the project, with which a disparate and barely functioning group of tax bodies were transformed into a centralized tax administration, which managed relatively sophisticated IT systems.

### 6.5. Costa Rica (COTS)

#### 6.5.1. Background

Although the United States provided significant economic and development assistance to Costa Rica between 1946 and 1995, approximating more than \$1.1 billion, the USAID mission in Costa Rica closed in 1996<sup>59</sup>. During 1946-95, USAID was the primary donor to the country for most of the period and supported efforts to stabilize its economy and accelerate economic growth through policy reforms and trade liberalization (1980s), as well as democratic policies, the modernization of the administration of justice, and sustainable development (1990s).<sup>60</sup> Since 1996, Costa Rica has benefited from regional USAID development programs.

During the 1980s and 1990s Costa Rica achieved substantial growth, but did so at the cost of significant increases in its net outstanding internal debt. The central government's domestic debt represented 15 percent of GDP in 1990 and reached 26 percent of GDP in 1997.<sup>61</sup> In 1998, Costa Rica embarked on tax policy reforms aiming at revenue mobilization, as well as simplification, reducing the existing

---

<sup>57</sup> GBCR project reports do not provide timeline or sequencing for these activities.

<sup>58</sup> "Georgia: Opened for Business. Georgia Business Climate Reform Final Report", USAID, September 2009

<sup>59</sup> U.S. Department of State. Diplomacy in Action "Background Note: Costa Rica"

(<http://www.state.gov/r/pa/ei/bgn/2019.htm>)

<sup>60</sup> The International Institute for Sustainable Development stated that "Costa Rica has been a pioneer in incorporating sustainable development into decision making at the national level", quoting progress in the early 1990s. ("Costa Rica Case Study. Analysis of National Strategies for Sustainable Development", International Institute for Sustainable Development, June 2004)

<sup>61</sup> Sonia Cavallo, "Tax Reform in Costa Rica", Development Discussion Papers, Central America Project Series, Harvard Institute for International Development, 2000.

multiplicative legal framework, repealing a number of provisions that eroded the tax base, and counteracting the revenue impacts of trade liberalization reforms from early 1990s and a number of recurrent and contradictory VAT and excise tax reforms introduced during 1990s.<sup>62</sup>

In 1999, after unsuccessfully attempting to adopt the Honduran IT system, the tax administration began to develop a custom-built IT system, launched the Sistema Integral de Información para la Administración Tributaria program,<sup>63</sup> and, in its 2000 strategy, identified the need for web-based modules for return filing and the re-deployment of hardware platforms. Later user satisfaction surveys, however, revealed a number of problems with the implementation. In 2006 MOF launched its New Integrated Model of Digital Tax initiative, citing not only the need to increase tax collections and minimize fiscal deficits, but also the need to combat tax evasion and corruption in the system.<sup>64</sup>

### 6.5.2. Key Challenge

The key challenges in the late 1990s in Costa Rica included the need to accommodate major tax policy reform and to mobilize revenue. In addition, as in El Salvador, Costa Rica needed to migrate away from its obsolete mainframe technology. Subsequent IT improvements were largely driven by the failure of previous IT implementation efforts.

### 6.5.3. Implementation

A number of COTS systems were identified and evaluated before the SAP Tax and Revenue Management system was chosen<sup>65</sup>. BearingPoint, Inc. and Grupo Asesor en Informática SA were contracted to support the request for proposal process, business process modeling, and project management. An ambitious two-year three-phase implementation plan was initiated.

- The first phase sought to implement core taxpayer accounting, taxpayer registration, payment and return processing, and taxpayer accounting for large taxpayers. This included approximately 1,500 taxpayers, and five taxes, including VAT and income tax.
- The second phase expanded the number of taxes to twenty two and included a collections module for the large taxpayer population.
- During the third phase the system roll out to all taxpayers was scheduled – estimated at 1.2 million taxpayers – and included the addition of audit selection functionality.

The first phase was completed successfully in one year and a new tax portal was operational and capable of processing the five selected taxes for the large taxpayers. The payment processing function

---

<sup>62</sup> Ibid.

<sup>63</sup> Integrated Information System for the Tax Administration

<sup>64</sup> Case Study. The Computer World Honors Program. 2009

(<http://www.cwhonors.org/CaseStudy/viewCaseStudy2009.asp?NominationID=193&Username=MsTRY>)

<sup>65</sup> It should be noted that the government had already implemented the SAP ERP Central Component in 2001 for government accounting.

worked well, with implementation enabled by pre-existing standard processes. In 2008, over 700 large taxpayers paid the five main tax types using the new system. Some issues did arise. For example, error checking during return processing was not operational, as the tax administration did not adopt the corresponding SAP Tax Officer Workbench module. The second phase was completed with less functionality than expected and additional implementation issues were noted, including higher than expected resistance to change by internal users; long and complicated approvals and formalization of user's requirements; and relatively inexperienced personnel from the COTS vendor on key functionality of the COTS modules being implemented. Project implementation was suspended and by 2011 the MOF was planning to continue the implementation with a redefined schedule and a new implementation partner.

A 2010 PEFA report<sup>66</sup> stated that the tax administration in Costa Rica had made progress with a new and modern set of technological tools that specifically allow taxpayers to perform a number of functions, including filing and payment from a distance, but also noted that information systems and taxpayer assistance were still weak, most non-computerized procedures were cumbersome and, to the extent that they have been incorporated into an IT system, not simple.<sup>67</sup>

#### 6.5.4. Results Achieved and Lessons Learned

At the end of the first phase, MOF cited considerable benefits, including reduction in administration and compliance costs, a reduction in errors, streamlining of internal business processes, and a reduction in the time to collect information from tax returns from days to hours. Obtaining key stakeholder commitment was the primary challenge and given the number of unsuccessful implementations pursued by Costa Rica, it is evident that proper planning and business process reform are key to successful COTS implementations.<sup>68</sup> Similarly to Egypt, the phased in approach for COTS implementation, where the implementation would be completed for large taxpayers first and rolled out to other offices at a later date, is likely to be unsuccessful if insufficient time and planning is given to the rollout.

---

<sup>66</sup> "Costa Rica: Informe Final de Desempeño de la Gestión de Finanzas Públicas (PEFA)", Ministry of Finance of Costa Rica / BID / The World Bank, October 2010

<sup>67</sup> The same report noted the lack of training of taxpayers in domestic tax and the prevalence, instead, of fraud prevention and fraud activities.

<sup>68</sup> It is interesting to note that, according to the aforementioned 2010 PEFA report, Costa Rica's government financial management information system, procured and implemented in a similar fashion in 2001, also is not fully integrated and operational. According to the report, numerous manual processes and lack of modern accounting principles threaten data integrity and the true reflection of the financial statements.

# Annex A: Sample of COTS Vendors and Products

Multiple vendors provide COTS software for tax administration. This section contains descriptions of some of those vendors and details of their offerings. This is not an exhaustive list of vendors, but represents a sample of some of the more established vendors in the market.

Vendor / product	Description of services	Sample implementations
<b>Bull / e-ris</b>	<ul style="list-style-type: none"> <li>• A company known for its hardware solutions.</li> <li>• In the last decade, expanded into tax administration.</li> <li>• Products include tax administration (e-ris) and customs.</li> <li>• Product components include: FlexStudio (interface management), FlexFlow (workflow management, FlexForms (form customization) and FlexRules (rules engine).</li> <li>• There is a rules engine called FlexRules.</li> <li>• Integration with other technologies can be managed using XML Web Services.</li> </ul>	<p>e-ris: Namibia, Zambia, Saudi Arabic, Morocco, and Egypt</p> <p>Previous versions: Botswana, Rwanda and Ethiopia</p>
<b>CRC Sogema / SIGTAX</b>	<ul style="list-style-type: none"> <li>• Known for international development projects with 25 years of experience in emerging markets.</li> <li>• Tax administration product is SIGTAS (Standard Integrated Government Tax Administration System)</li> <li>• SIGTAS is part of CRC Sogema’s public finance and tax reform portfolio.</li> <li>• SIGTAS has all of the core tax administration services including case management, audit, appeals and interest and penalty functionality.</li> <li>• SIGTAS can be implemented in a client-server architecture or a web environment.</li> </ul>	<p>Twenty countries on three continents and the Caribbean</p>
<b>Crown Agents / TRIPS</b>	<ul style="list-style-type: none"> <li>• International development company working in the public and private sectors.</li> <li>• TRIPS was introduced in 2003 and formed a small part of a much larger business.</li> <li>• Uses Oracle as its foundation and is considered more of a portable solution than a fully configurable COTS.</li> <li>• Includes integrated taxpayer view containing information from VAT, direct taxes, duties, permits, licenses and other taxes when all implemented.</li> </ul>	<p>VAT in Jordan, Ghana, Guyana, Philippines, Mongolia</p>
<b>Fast Enterprises /</b>	<ul style="list-style-type: none"> <li>• Developed in 1997, occupies a significant position in the U.S. tax administration marketplace</li> </ul>	<p>Approximately 15 US states, three Canadian</p>

<b>GenTax</b>	<ul style="list-style-type: none"> <li>• COTS solution, GenTax®, has a series of taxpayer services that allow account status viewing, filing and payment history, and file and pay online.</li> <li>• Supports core tax administration functions and is designed to support full configuration including returns, letters, penalties, interest, transactions, taxpayer types, workflow, screen layouts, window flow and more.</li> <li>• Developed on Microsoft technologies it can be adapted for client needs</li> </ul>	provinces and Trinidad and Tobago.
<b>Oracle / OETPM<sup>69</sup></b>	<ul style="list-style-type: none"> <li>• A global enterprise software company.</li> <li>• In 2006, Oracle purchased SPL WorldGroup.</li> <li>• Although SPL WorldGroup was focused on revenue and operations management for utilities, this was the beginning of Oracle’s commitment to developing a COTS solution for tax and revenue departments.</li> <li>• COTS solution is Oracle Enterprise Taxation and Policy Management and includes all the core tax administration functions.</li> <li>• Functionality includes: single taxpayer view, revenue legislation automation, business process configurability, upgrades, and self-service.</li> </ul>	Dutch TA, Vermont, Kentucky, and New Zealand in process
<b>SAP / TRM<sup>70</sup></b>	<ul style="list-style-type: none"> <li>• A global company with clients in 50 countries</li> <li>• With 300 customers worldwide, SAP can be considered a market leader in enterprise application software.</li> <li>• SAP provides a number of revenue and taxpayer solutions including services to implement, support, and maintain a tax administration system directly or through global partners.</li> <li>• COTS product is PSCD (Public Sector Collection and Disbursement)</li> <li>• PSCD includes all core tax administration functions</li> <li>• Functionality is divided into modules. At the core is SAP Tax and Revenue Management. Taxpayer registration and case management is added through SAP Customer Relationship Management. Taxpayer online services come from Taxpayer Online Services, SAP 2.0.</li> </ul>	Most recent Slovenia, Costa Rico, Pennsylvania, Zimbabwe, and Queensland
<b>TCS / DigiGov</b>	<ul style="list-style-type: none"> <li>• Estimated by some analysts to be the largest provider of information technology in Asia and the second largest provider of business outsourcing in India.</li> <li>• Located in 42 countries with more than 145 offices.</li> <li>• Primary focus for tax products to date has been India and North America</li> </ul>	13 state departments in India, Uganda

<sup>69</sup> Oracle Enterprise Taxation and Policy Management.

<sup>70</sup> Tax and Revenue Management.

	<ul style="list-style-type: none"><li>• COTS product is DigiGov which provides a comprehensive tax administration solution</li><li>• Functionality includes business process automation, controls on tax evasion, manual errors management, and a taxpayer service.</li></ul>	
--	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--