The DSA Project is implemented by Harvard University and funded by Development Cooperation Ireland (DCI), the Netherlands Minister for Development Cooperation and the United States Agency for International Development (USAID).
INTRODUCTION

To meet the government policy of implementing the accounts and budget reforms nation-wide and use the new Information Communications Technology (ICT) infrastructure, the government specified that the BIS/BDA IFMIS will be upgraded in Phase 4 to the Integrated Budget Expenditure (IBEX) System. According to the Government:

"IBEX will offer many benefits. It is based on an infrastructure that is highly scalable, meaning that the cost and effort of extending IBEX to more users is marginal. The application itself is run from one location, meaning that maintenance and support can be focused in one place rather than dispersed in many locations throughout a region. In addition, the application will be upgraded from a core, so that any upgrades or patches to the software will be available immediately to all locations. IBEX has been designed to be flexible and extensible meaning that additional functionality such as new reports can be added quickly and on the fly. A further advantage that IBEX offers is that budget and expenditure data will be real-time, meaning that budgets can be promptly prepared and accounts kept current."

BACKGROUND

The Decentralization Support Activity (DSA) Project has been working in Ethiopia since 1997. The project is providing technical assistance to the Government of Ethiopia in the areas of expenditure planning, budgeting and accounting reform.

Information systems and automation are an integral part of modern financial reform. They are instrumental in making the process more efficient and accurate as well as helping to institutionalize financial processes. In addition to the procedural reforms, the DSA Project is also building and deploying systems to automate this reform.

The DSA Project has developed two main applications that are an integral part of the reform process. These are Budget Information System (BIS) and Budget, Disbursement and Accounts (BDA). The DSA Project is currently upgrading these financial information systems in a project called IBEX (Integrated Budget and Expenditure System).

BIS and BDA are desktop applications that are capable of running in a networked computer environment.

BIS is a computer application that captures government budget data at the lowest level i.e., from budget submission forms of public bodies, and produce reports that are required at the different levels of the government budget preparation process.
BDA is used to record government financial transactions including all items of expenditure, revenue, disbursements, budget adjustments, etc. The BDA produces reports used in the day-to-day management of government accounts and yearly accounts closing procedures.

The BIS and BDA applications have currently been rolled out to all zones in the four largest regions in Ethiopia, namely Tigray, SNNP, Amhara, Oromia, as well as Benishangul/Gumuz, Addis Ababa and the Federal government. These applications currently manage approximately 95% of all public expenditure.

IBEX

In September 2003, the DSA Project conducted an externally-led assessment of the BIS and BDA systems. The assessment concluded that overall the information systems developed met user requirements and, in areas in which they had been implemented, greatly improved the efficiency and quality of the budget and accounts processes. The assessment however, determined several areas that could be addressed by an upgrade to the system.

The result of the assessment of the existing automated systems was the design of an upgraded financial management information system that provided a more robust and integrated solution for the automation of current and future financial reform procedures. The system that was designed and is currently being implemented is the Integrated Budget and Expenditure (IBEX) system. IBEX represents a truly integrated financial management system that addresses the core functions of financial management (Budgeting, Accounting and Disbursements) in the short term, and is flexible enough to allow for the inclusion of non-core functions in the future.

Learning from the lessons of other similar automation projects, and to comply with the unique requirements posed by the environment under which the reform is taking place, the choice was made to develop a bespoke system that would leverage the functionality developed in the existing systems, rather than try to adapt an unsuitable packaged solution. However, care was taken to develop IBEX using an extensible framework that would be adaptable to include future functionalities as may become necessary. The functional scope of the system (Budgeting, Accounting, and Disbursement) was not changed, as these still are the scope of the current reform being implemented by DSA.

IBEX upgrades the current automation as follows:

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2 The sustained success rate of integrated public management automation systems is very low, and two of the main reasons cited have been the excessive scope such systems and the inability of many packaged systems to respond to the unique requirements of their procedural and physical environment. See *Why government IFMS procurements so often get it wrong* by Michael Parry - ACCA International Public Sector Bulletin – Jan. 2005, pp. 4-7.
Scalability and Physical Integration

The IBEX system is implemented as a distributed, web-based application. The physical installation of the application hardware, software, data, security software etc. will only be at financial centers (for example: a BoFED). However, any subsidiary administrative unit that is networked with the center will be able to use the central application to execute their functions simply by using a web browser that connects to the financial center. This means that all distributed transactions actually occur on the centralized system, providing users with real-time or close-to real time information. Furthermore, maintenance and support can be focused in a few central locations rather than dispersed in many locations throughout the country, and any upgrades or patches to the software will be available immediately to all locations.

With the understanding that network access will become available to reporting units over time, import and export utilities will be developed to continue to allow non-networked reporting units to continue working with the BIS and BDA software, and import their data into the single IBEX system on a regular basis as they do with BIS and BDA today.

Security

IBEX utilizes a state-of-the-art physical and logical security framework to protect the in the system. A physical layer of redundant firewalls and separate physical networks prevents unauthorized access to the system data by hackers or other security thieves, while the logical security provided by an industry standard security product to provided authorized entry to the system and restricted access to users based on pre-authorized roles.

Data Integrity and Manageability

By unifying the data store for all application functions, IBEX eliminates the problems caused by multiple data stores. IBEX also upgrades to a full-scale database product which will handle the volumes of data present in the system for the foreseeable future.

Extensibility

Besides implementing the automation of the core financial management functions, IBEX exists as a framework for integration of financial functions in general. The application architecture means that addition of additional integrated financial modules or the addition of additional functions or reports within the existing modules is greatly simplified. The functional modules provided for by the current design are:

- Budget Module.
- Budget Adjustment Module.

3 By networked, it means that the reporting unit will have access to a data connection to the financial center. This data connection may be over the internet, via a private wide area network, or any other effective connection mechanism.

4 The security product chosen for this use is the SiteMinder access management application, provided by Netegrity.
Accounts Module.

Disbursements Module.

Usability

The IBEX application brings with it a redesigned interface that is intended to replicate what users are used to while improving interface controls where possible. In addition, the IBEX framework provides for dynamic internationalization which allows users to change the language of the application on the fly, and supports the addition of other language sets should they become necessary. Finally the application provides an extensible framework for both syntactic and semantic validation of user inputs and a consistent notification mechanism for managing erroneous user actions.

Reporting

The IBEX architecture has greatly simplified the process of creating additional reports for any of the modules it contains. In addition, because of the unified (integrated) data store, cross-functional reports that leverage data from multiple functions can be created.

Sustainability

Finally, as sustainability is a critical requirement of the reform being implemented by DSA, and a critical risk in many financial reform processes, IBEX is being developed in conjunction with the same local development firm that worked on the BIS and BDA applications and provides ongoing support for these applications, thereby deepening the institutionalization of the automation.

CONCLUSION

The IBEX system represents a significant upgrade from the current BIS and BDA financial management automation applications, to a financial management system designed to immediately provide integrated support for core functions of public financial management while supporting extension to non-core functions in the future. The solution is designed specifically to cooperate with the existing automated and manual systems with the understanding that a truly networked infrastructure environment will become ready over a period of time.

The IBEX application carefully fulfills the critical criteria for an integrated financial management systems implementation, by mitigating implementation risks, specifically meeting government requirements, narrowly defining scope to meet established timelines, and being implemented in the most cost-effective and sustainable manner.