MINISTRY OF FINANCE
PLANNING AND ECONOMIC DEVELOPMENT

ACCOUNTANT GENERAL'S OFFICE

THE IFMS JOURNEY
2003 - 2020

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FOREWORD

Government seeks to have excellent and sustainable public financial management that enables social economic transformation. Several reforms have been pursued to-date with the aim of attaining value for money in the management of public resources as a basis for improved service delivery.

The primary objective of Government's PFM reform programme is to improve the efficiency and effectiveness of financial management processes, with the goal of enhancing the quality of public service delivery in Uganda. Prior to the implementation of PFM reforms, the Government's fiscal management processes were characterized by several loopholes and weaknesses. To address many of the weaknesses, Government adopted reform strategies aimed at promoting economic growth while ensuring that critical fiduciary risks were minimized.

Key to the achievement of these reforms was the establishment of an *Integrated Financial Management system (IFMS)*, a process that commenced in 2002. Significant progress in strengthening the PFM systems and other related business processes re-engineering have impacted the efficiency and effectiveness of government operations, changing how we work and think about financial management. Am especially pleased by the leaps and bounds that have been made in financial literacy brought about by IFMS through various training and support programs. Am also cognisant of the challenges encountered in the implementation and growth of IFMS as well as the efforts made in generating solutions.

Enhancements to PFM systems have been made possible by a conducive environment covering a robust PFM legal and regulatory framework, enhanced capacity of PFM staff, strong leadership and ownership of the these reform, effective training initiatives, dedicated support team and collaboration amongst key stakeholders.

As government processes and procedures become more advanced, so do systems which must continuously evolve to meet this challenge. Government continues to consolidate and strengthen financial reforms while steadfastly advancing into a future that will undoubtedly be heavily reliant on digital technology which offers an unparalleled tool to re-design public service, engage the public and reconfigure the relationship between citizens and their government.

This document provides an insight into implementation of systems and what it takes to maintain financial management systems. While by no means exhaustive, it is sufficient to provide an understanding of the direction in which government is moving as far as financial management is concerned. It has been well worth the effort as IFMS has paved the way for multiple financial management reforms, including the *Treasury Single Account Framework* among others

ACRONYMS

No	ACRONYM	MEANING
1	AACG	Application Access Controls Governor
2	AES	Advanced Encryption Standards
3	AIMS	Academic Information Management System
4	AIRTEL	Air Telecommunications
5	BBS	BOU Banking System
6	BI	Business Intelligence
7	BOU	Bank of Uganda
8	CCG	Configurations Control Governor
9	DC	Data Centre
10	DMFAS	Debt Management and Financial Analysis System
11	DTU	Data Termination Unit
12	EBS	E-Business Suite
13	E-CASH	Electronic Cash
14	EFMP II	Economic and Financial Management Programme II
15	EGI	Electronic Government Infrastructure
16	EGP	Electronic Government Procurement
17	E-REG	Electronic Registration
18	E-TAX	Electronic Tax
19	FAQ	Frequently Asked Questions
20	FY	Financial Year
21	GFS	Government Finance Statistics
22	GRC	Governance Risk and Compliance
23	HP	Hewlett Packard
24	IFMS	Integrated Financial Management System
25	iOS	iPhone Operating System
26	IoT	Internet of Things
27	IPPS	Integrated Personnel and Payroll System
28	IT	Information Technology
29	IWAY	iWay Africa
30	KPMG	Klynveld Peat Marwick Goerdeler
31	LAN	Local Area Network
32	MTN	Mobile Telephone Network
33	NAV	Navision
34	NBI	National Backbone Infrastructure
35	NBS	Network Based Services
36	NITAU	National Information Technology Authority - Uganda
37	OS	Operating System
38	PBS	Programme Based Budgeting System
39	PCG	Preventive Controls Governor
40	PFM	Public Financial Management
41	PMT	Project Management Team
42	PPDA	Public Procurement and Disposal of Public Assets Authority
43	SOD	Segregation of Duties
44	STP	Straight Through Processing
45	Sub-TSA	Treasury Single Sub-Account
46	TCG	Transaction Control Governor
47	TSA	Treasury Single Account
48	TSC	Treasury Service Centre
49	UAT	User Acceptance Testing
50	UETCL	Uganda Electricity Transmission Company Limited
51	UI	User Interface
52	UPS	Uninterruptible Power Supply
53	UTL	Uganda Telecom Limited
54	VPN	Virtual Private Network
55	WAN	Wide Area Network

1 INTRODUCTION

1.1 IFMS

1.1.1 The Integrated Financial Management System

The availability of information is a prerequisite for economic and financial management improvement. The Government of Uganda had historically faced major problems of inaccurate, untimely, and inappropriate budget and accounting information. This was characterized by manual and semi-automated systems, inadequate systems for collection and tracking of revenue, backlog of un-reconciled bank accounts, lack of a uniform *Chart of Accounts* that complied with *Government Finance Statistics* (GFS), endemic budget overruns, ad-hoc and uncoordinated IT acquisitions; and non-compliance with international public sector accounting standards.

Government commissioned a *Fiscal Management Systems Study* (FMS) that took place between October 2001 and April 2002. *Ernst & Young* Consultants undertook the FMS study. The study aimed at developing a framework of the principles and standards for the introduction of government wide IT based *Fiscal Management Systems* that would meet current and future needs. The consultants prepared and submitted an *Information Technology Architecture and Plan* (ITAP) report detailing the recommended business and information processes as well as the *User Requirements Specifications* and proposed technology options.

Following a selection process closely supervised by GoU and the World Bank, a contractor, *M/s Hewlett Packard* (HP) was contracted to implement the IFMS. HP was assisted by a number of sub-contractors among them *Oracle Systems Limited*, *Computech Uganda Ltd*, *Venture Communications Group Ltd* and *RPC Data Ltd*. A turnkey concept was adopted where GoU held one supplier (HP) responsible and accountable for all the deliverables including those of the sub-contractors. HP was responsible for the supply, installation, integration, testing, commissioning and providing the related support services for the IFMIS solution under this arrangement. The costs for IFMS implementation were financed with assistance from the *World Bank* and other *Development Partners*. GoU also allocated *counterpart funds* in the budget to support the IFMS implementation.

Government's commitment to elimination of financial malpractices and wasteful public spending is set out in various PFM strategies, which recognise that achieving overall PFM improvements requires a combination of the suitable policy changes, political commitment to reforms and the design and implementation of appropriate systems and tools to enable better outcomes from the government policies.

The IFMS was set up with these main objectives.
1. Improving fiscal management, thereby achieving timely, accurate financial information for Local and Central government.
2. To ensure transparency and accountability in the handling and use of public resources.
3. To strengthen the Government financial management processes and provide better expenditure controls.
4. To enhance operational effectiveness by improving data quality and making it available for use and sharing.
5. To standardize and automate Government financial management processes, reducing redundant tasks.
6. To maximize the cost effectiveness of the expenditure of public funds.
7. To improve revenue management.

The Uganda Integrated Financial Management Information System (IFMS) replaced all stand-alone legacy Financial Management Systems in MALGs and DFPs.

2   IFMS OPERATION

2.1   IFMS MODULES

IFMS bundles many essential financial management functions into one *Oracle based software suite*. The Oracle E-Business Suite provides a set of financial applications used by government that encompasses all key business processes. These applications are grouped into "*suites*", defined as sets of common, integrated applications designed to execute specific business processes. Oracle Financials encompasses closely related financial modules of *Purchasing, Accounts Payable, Accounts Receivable, Cash Management, Fixed Assets* and *General Ledger*.

The key business processes enabled by the Financial Applications include:

i.   *Procure-to-Pay* business process flow involving activities such as procurement, purchasing, making payment to Suppliers and subsequent accounting.

ii.   *Order-to-Cash* business process flow involving activities such as Customer Orders, Order fulfilment, receiving payment from Customers & subsequent accounting

INTEGRATED FINANCIAL MANAGEMENT SYSTEM - MODULES
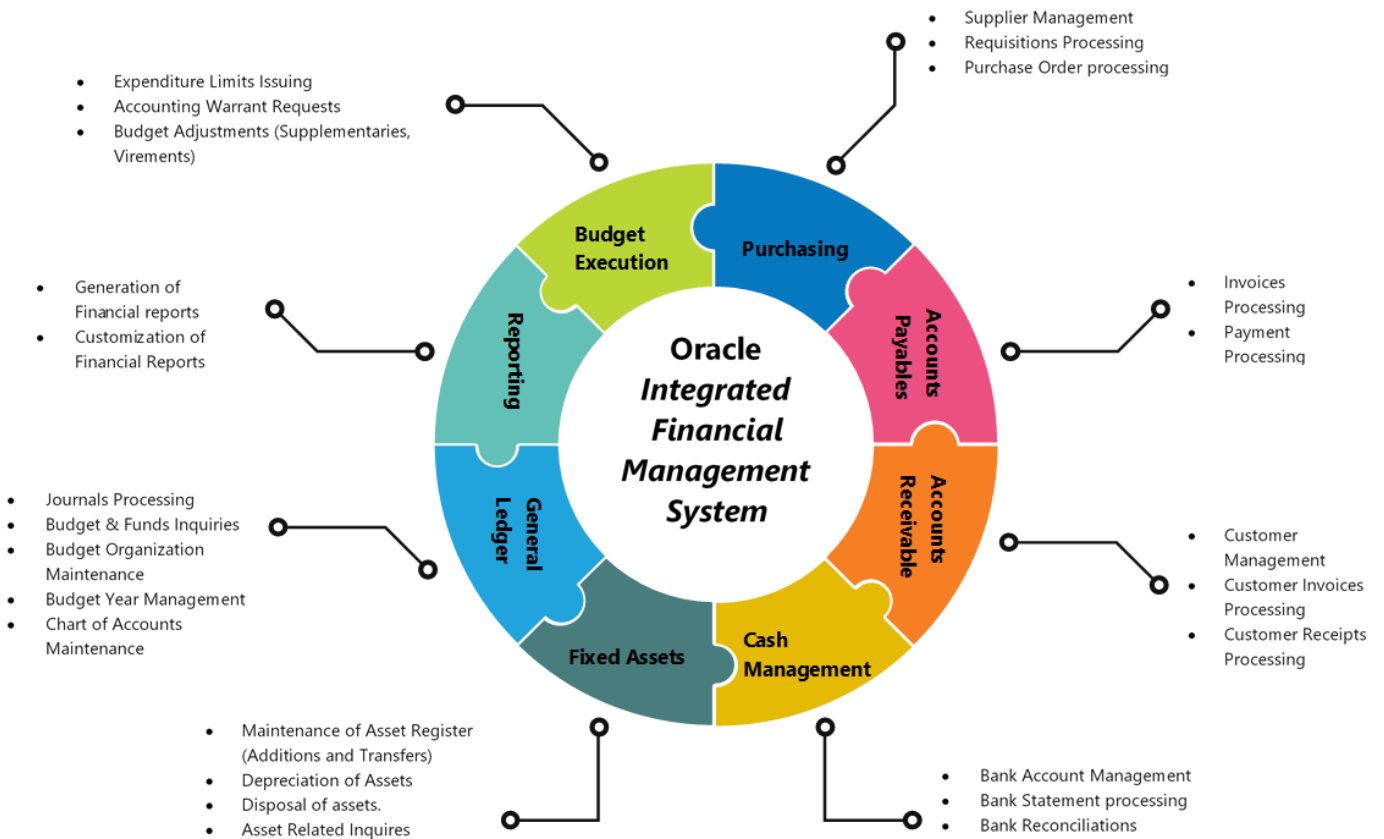
Diagram 2.1-1 IFMS Operation - Modules

2.2   IFMS DATA LINKS

IFMS data is transmitted using a complex network that includes multiple Servers (A Central Server as well as a server in each of the government entities), Switches, Routers and Virtual Firewalls. IFMS uses telecommunication services from primarily 3 service providers. These are *MTN*, *UTL* and *AIRTEL*. Government of Uganda (GoU), through NITA-U, is also implementing the National Data Transmission Backbone Infrastructure and e-Government Infrastructure (*NBI/EGI*) project to connect all major towns across the country including Government Ministries, Departments, Agencies and Local Governments via an optical fiber cable network so as to reduce the cost of public administration, support delivery of secure

e-Government services as well as enhance use of government systems and communications services in the country. Flow of data over a WAN is shown in *Diagram 2.2-1*

**TYPICAL SITE SETUP
TO
IFMS DATACENTER**
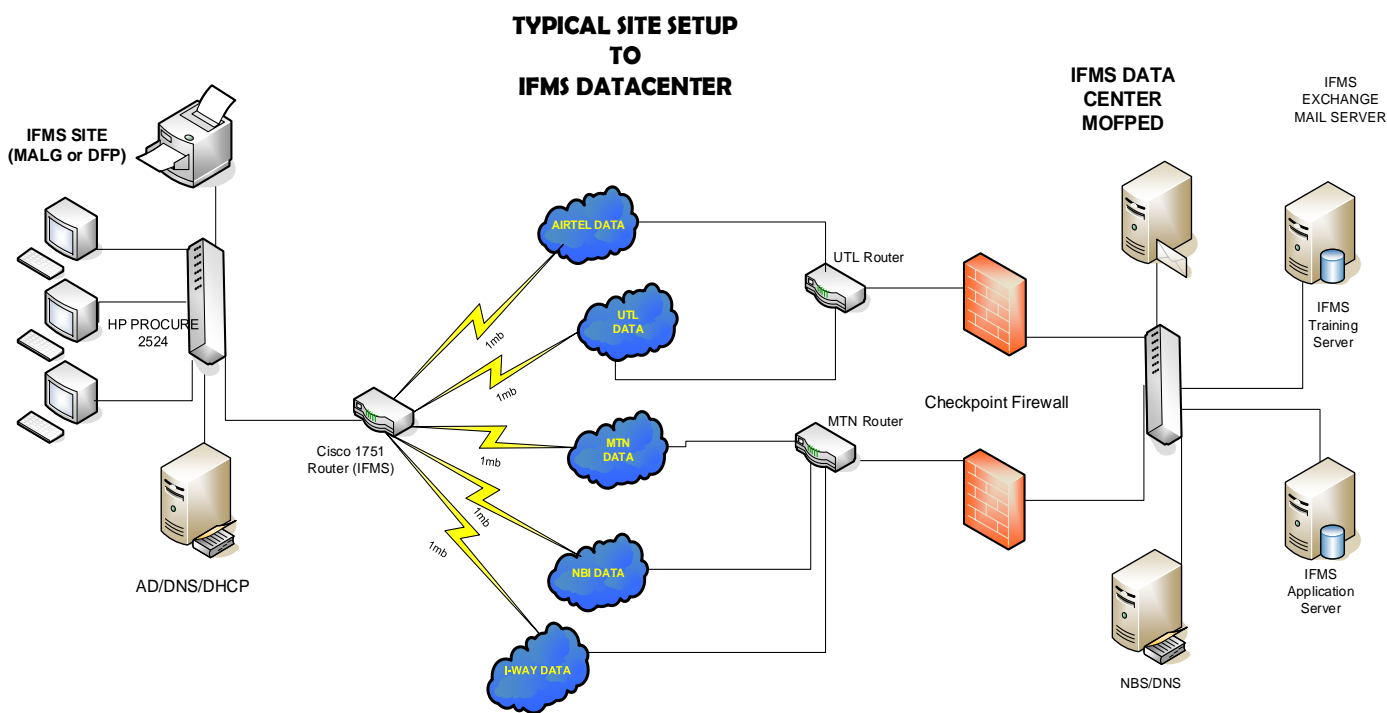
Diagram 2.2-1 IFMS Data flow

KEY	
AD	Active Directory
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name Service
NBS	Network Based Services

3 BRINGING UP AN IFMS SITE

3.1 PRE-REQUISITES FOR IFMS

3.1.1 Infrastructure Readiness

A key determinant in the preparation for setup of IFMS is the complexity of infrastructure. This is also driven by the number of users in the government entity and the needs of the various stakeholders. A set of guidelines is followed for assessment and preparation of all the sites. These guidelines provide a generic framework for various aspects of site preparation.

These aspects include:

    i.   Equipment requirement and layout planning

    ii.   Electrical requirements

    iii.   Air-conditioning requirements

    iv.   Fire prevention, detection, and suppression

    v.   Prevention of water leakage

    vi.   Physical security

These guidelines are applicable to sites expected to house varying capacities of equipment and can be suitably tailored based on the specific hardware and network components that are installed.

3.1.2 Survey Process and Reporting

Various government entities are visited for site assessment to understand the infrastructure in place and gain a perspective of requirements in terms of computing equipment to be installed and the physical environment in which it will operate. Detailed specifics to be considered for site selection include:

    i.   The server room should be placed on a block that has the most IFMS users with minimal access by general public and irrelevant personnel.

    ii.   The generator cage should be located within a distance not exceeding **60m** away from the server room (dependent on site).

    iii.   The office blocks to be connected should not exceed **80m** from the server room.

    iv.   Where the block distances involved exceed **100m**, the number of users should be sufficient (more than 2) to justify the extra costs involved in extending the network.

    v.   There should be sufficient floor loading capability for server equipment.

    vi.   Uniform room air distribution system should be maintained in the server room.

    vii.   The server room shouldn't be close to dangerous goods storage, mechanical shock, excessive vibrations and high fire and flood risk areas.

    viii.   To eliminate the effect of electromagnetic interference, the server room should be located away from generator room.

3.1.3 Other Feasibility Measures

Staffing Levels

IFMS forms the transactional backbone of all major functions of the government entity, integrating accounting and finance, procurement, payments, revenue, and cash management as well as other major business functions into a single comprehensive system.

The successful operation and security of IFMS leans on sufficient staffing levels to ensure all functions are allocated the necessary officers while the segregation of duties principal is respected. Optimal staffing levels for IFMS operations are indicated below:

IFMS USERS AND ROLES			
No.	USERS	ROLE ON IFMS	NO. OF OFFICERS
1	Accounting Officer	Final Approver of all procurements and payments	1
2	Deputy Accounting Officer	Head of Administration Department and Accounting Officer Alternate	1
3	Functional Heads (Finance/Accounts, Procurement, Planning, Human Resource, Audit)	Review, Advise and where applicable approve records or transactions.	As required
4	Heads of Department	Initiating Requisitions and Approving Payments	As required
5	Accountants	Preparing Invoices, Bank Reconciliation	As required
6	Procurement Officers	Preparing Local Purchase Orders	As required
7	Stores Officer	Receiving and verifying procured goods and services	1
8	Human Resource Officer	Reviewing and Processing payrol	1
9	Cashier	Preparing Sales Invoices and Receipts	1
10	IT Officer	Monitoring and Maintenance of the System	1

Table 3.1-1 IFMS Users and their roles

Electric Power

Deploying an operationally cost-effective and reliable IFMS requires an electric power source and infrastructure that promotes and facilitates use of systems. Alternative power solutions can be rather costly or require highly specialised skills to install and maintain. Connectivity to the *National Power Grid* is the most cost effective and therefore preferred option.

Road Networks

A good and reliable transport network remains vital to implementation of systems given that all equipment is delivered by road. Where roads are either in poor condition or are totally impassable (especially during the rainy season), there is a possibility of hindering delivery timelines as well as impeding support activities.

3.2 THE IMPLEMENTATION PROCESS

3.2.1 Project Plan

Prior to embarking on any IFMS related implementations, a *Project Plan* is drawn up. Project planning plays an essential role in helping guide stakeholders, sponsors, teams, and the project manager through the various project phases. Planning is needed to identify desired goals, reduce risks, avoid missed deadlines, and ultimately deliver the agreed results.

3.2.2 Sourcing for Service Providers and Procurement of Equipment

Sourcing for a Service Provider in the implementation process follows the guidelines and procedures set out by the **PPDA Act of 2003**. The law is also complimented by Regulations, Guidelines, Forms and Standard Bidding Documentation. These serve to assist the procuring and disposing entities and providers of services, supplies and works in carrying out procurement and disposal processes. The process of sourcing for a service provider is highlighted in *Diagram 3.2-1*:
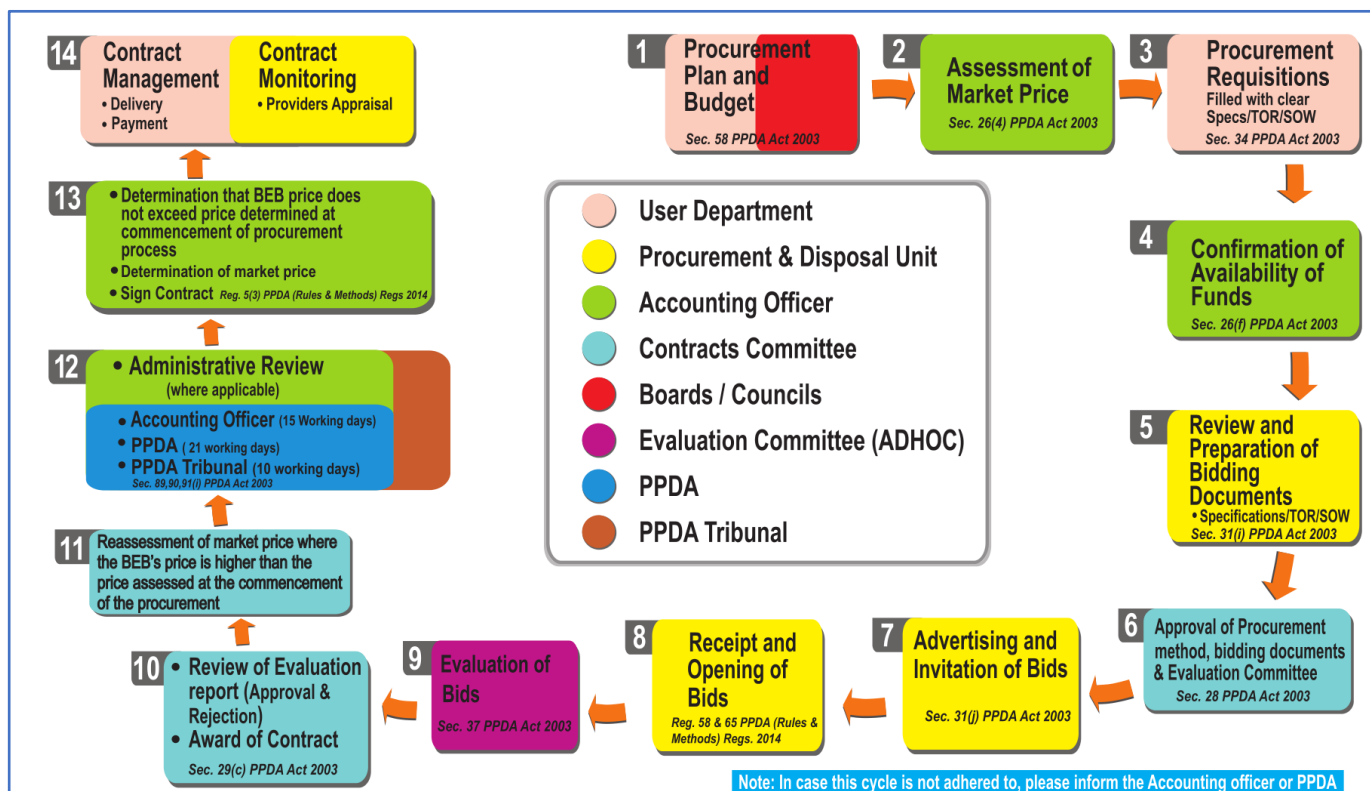
Diagram 3.2-1 IFMS service provision procurement process

Part of what is required of the Service Provider (stipulated in the bid guidelines) is the *Procurement*, *Configuration*, and *Installation* of all computer equipment (Turnkey) in the entities targeted for IFMS rollout.

3.2.3 Site Preparation

This includes all works carried out to ensure that the entity is well equipped to operate IFMS. These are outlined below.

No.	SITE PREPARATION ASPECT	NOTES
	SITE PREPARATION FOR IFMS	
1	Server Room Refurbishment	This includes any required renovation of the room designated as the server room (floor tiling, burglar proofing and making it air tight).
2	Networking	All offices occupied by IFMS users and equipment are connected to the central server though a wired network. Routers and switches also form part of the network for connectivity of multiple users to a single server.
3	Power Installations	This includes installation of the generator and all necessary electrical wiring as well as *genset* installations (equipment that carries out the generation of electricity).
4	Access Controls	Installation of biometric systems for additional security in accessing the server room.
5	Air Conditioning	Every server room is equiped with air conditioning units to ensure that the server maintains optimal operating temperatures for consistent performance.
6	Telecom Links	Eash site is linked to a central server hub in Ministry of Finance through telecommunications networks. Telecom links equipment is connected to the server at each site.
7	Installation of Computer Equipment	All IFMS users are provided with a computer that meets the required specifications to operate IFMS. These computers are installed at each user's work station already pre-configured for IFMS use.
8	Other Equipment	This includes printers (each site is provided with a central printer for IFMS related printouts) and UPS units to safeguard the computer in the event of power outages.

Table 3.2-1 Site preparation works

3.2.4 Master Data Gathering

Master data represents the entity's critical information that gives context to business activities and transactions, answering questions like who and what, guiding the creation of transaction categorizations, groupings, and hierarchies. Master data is non-transactional in nature and contains information about customers, products, employees, materials, suppliers, and vendors. Master Data collected for each entity prior to implementation of IFMS includes:

   i. *Employees* – all employee data including their names, TINs, positions, and bank account details *(bank name, account name and account number)*
   ii. *Pensioners* – all pensioners that receive their remuneration from the entity are uploaded on IFMS (bank name, account name and account number)
   iii. *Suppliers* – supplier data collected and uploaded includes names, TINs, applicable tax (or an indication of tax exemption where applicable), bank account details (*bank name, account name and account number*), telephone numbers and email addresses
   iv. *Customers* – customer data includes names, billing address and TINs, telephone numbers and email addresses
   v. *Bank Accounts* – the entity's operational bank accounts which must adhere to applicable financial guidelines
   vi. *Revenue Sources* – all possible sources of cash inflows (non-tax revenue) from third parties are also collected and uploaded on IFMS
   vii. *IFMS Users* – details of all officers to be provided with IFMS login access are collected including names, roles in the entity, contact numbers

NB: All Data collected is reviewed for completeness and accuracy. The Accounting Officer of each entity must officially endorse this data before its uploaded on IFMS. Once the entity has gone live on IFMS, all subsequent data is created on IFMS using the systems built-in avenues for creation and approval of data (e.g. E-registration)

3.2.5 Systems Setups / Configuration

Systems configurations encompasses all changes or updates made to IFMS that allow for a government entity on the rollout schedule to carry out their financial operations and reporting. The setups are largely standard given the uniformity of most government processes and procedures. However, on some occasions, there are additional setups required to mirror the unique operations of a specific entity. System setups fall primarily in *2 categories*:

Common Application Setups

The setups include all aspects of creating the government entity on IFMS (with the vote number as the unique identifier) as well as generating login credentials for all officers that will be using IFMS. It is at this stage that all security protocols are also activated. These setups also include enabling the entity access support such as generating login credentials to support tools (*service desk tool* and *mobile application*), creating IFMS email addresses for each user and activating access to peripheral systems (*E-Registration* and *E-Cash*).

Functional Setups

The setups are generally carried out at a modular level for the 6 IFMS operations modules allowing for transacting on IFMS i.e. budget execution, procurement of goods and services, receipting of non-tax

revenue, processing of invoices and payments, maintenance of the asset registers, reconciliation of transactions with the bank and all aspects of financial reporting.

3.2.6 User Acceptance Testing

User Acceptance Testing is the process of verifying that IFMS operates as intended for each respective entity. UAT is the last phase of the IFMS testing process. During UAT, the intended users test the software to make sure it can handle all required tasks in real-world scenarios and in accordance with specifications. UAT is one of the critical project procedures that must occur before IFMS go-live. In addition to User acceptance testing being a valuable quality assurance exercise, it also plays a key role in promoting future productivity and encouraging adoption of IFMS. Conducting user acceptance testing also demonstrates that the government proactive and responsive attitude to the needs of IFMS users.

3.2.7 Training

User Training is a key component of IFMS implementation, ensuring that the all officers that will be making use of the system are well equipped to so. Implementing a new system in government can be a big change for many employees. A new or upgraded solution will include new functionalities, tools and processes that allow for additional productivity in the long run and reduce human errors. Training, therefore, ensures that the required skills to effectively use IFMS are transferred. Training is carried out before the system officially goes live giving officers a chance to acclimate to any new processes. This will also help with any resistance coming from employees who are resistant to change.

No.	TRAINING ASPECTS	NOTES ON TRAINING
	TRAINING OF IFMS USERS	
1	Introduction and Overview to IFMS	All users are provided with a general introduction to IFMS
2	The Government Chart of Accounts	All users are given a detailed session on the government Chart of Accounts (used for recording transactions in the entity's general ledger) for all transactions on IFMS
3	Navigating IFMS	All users are given a thorough interactive walkthrough of IFMS. This session is geared towards familiarizing users with the IFMS interface and how to interact with the system.
4	Budgeting	The entity's planners and accountants are trained on how to prepare and execute budgets on IFMS
5	Purchasing	All Heads of Department are trained on initiating the departments requisitions for goods and services. All procurement officers are also given the skills needed to process Local Purchase Orders (LPOs)
6	Accounts Payable	Accountants are trained on processing of invoices for payment
7	Accounts Receivable	All Cashiers are trained on generating customer sales invoices and receipting any funds received by the entity
8	Cash Management	Accountants are trained on reviewing bank statements and reconciling those statements on IFMS
9	Fixed Assets	Accountants are also trained on managing the Fixed Assets register on IFMS
10	General Ledger	Heads of Accounts and Accounts are provided with the necessary training to make use of the General Ledger module for financial adjustments and inquiries.
11	Preparing Financial Statements	Heads of Accounts and Accounts are provided with the necessary training to prepare the complete set financial statements from IFMS as well as generate non financial information.
12	Using the Service Centre	All users are taught how to get assistance if and when they encounter a problem when using IFMS (and other systems) as well as making general inquiries. Users are walked through the various Service Centre tools at their disposal.

Table 3.2-2 User training

3.2.8 Commissioning

Commissioning involves the systematic process by which all equipment installed at government entities, scheduled for change over to IFMS, are tested to verify that they function in accordance with operational requirements. In addition, test runs are carried out on IFMS to establish accessibility to the central server and system speed. This exercise provides assurances that the site is ready for go-live. A report is prepared after each site commissioning, confirming readiness, or highlighting any aspects of site preparation that need to be revisited along with the timeframes within which all identified issues should be addressed.

3.2.9 Change Management

Right from inception of IFMS, change management has been a vital part of implementing systems in government. Change Management is a structured approach to ensuring that any changes in daily financial operations of government entities are thoroughly and smoothly implemented, subsequently achieving the lasting benefits of change. The focus is on the impacts of a change in systems (or introduction of a new system), particularly on people and how they, as individuals and teams, move from their existing mode of operation to primarily using IFMS. The benefits of change management include:

Benefits to Government
   i.   These sessions help government respond faster to stakeholders' concerns.
   ii. Helps government assess the overall impact of switching to IFMS.
   iii. Officers' productivity and performance increases when they feel supported and understand the change process.

Benefits to Individuals
   i.   Effective change management supports a smooth transition from the old system (or manual operations) to IFMS while maintaining morale and productivity.
   ii. Provides management and staff support by addressing their concerns regarding changes.
   iii. It offers an accurate perception of the change.
   iv. Minimizes resistance to IFMS and increases employee acceptance of the system.
   v.   A carefully planned approach to change reduces stress and anxiety.
   vi. Change management reduces disruptive aspects and emphasises positive opportunities in the change process (such as additional IT skills to be gained etc).

3.2.10 Going Live

Go-live is the time at which IFMS is officially made available for the entity to use. Before scheduling the IFMS go-live, all key stakeholders are consulted to ascertain consensus that the entity is ready to go-live on IFMS and that the suggested date and time is convenient for them and the entity's users.

A checklist is developed considering all IFMS components that need to be in place to ensure smooth operations. This checklist helps to ensure no vital issues have been overlooked. In this phase, three tasks are executed simultaneously:
   i.   Compiling the list of final items to be addressed.
   ii. Ensuring all the entity's users are furnished with their respective usernames and passwords as well as details on how to get help when the solution goes live (support arrangements).
   iii. Verifying that all users have received the mandatory core training to ensure that they are ready to go and are well equipped to use the new system.

iv.   Ensuring that communication links are in place prior to go live helps prevent any unforeseen challenges (such as network outages) during the process. Telecom companies are notified of the go-live date to ensure that the links are switched on prior to that date.

Once there's high confidence for IFMS production readiness, the go-live date is confirmed and communicated to the entity. Key stakeholders are invited to attend the go-live session. These include all users in the entity, top management, and political leaders.

4   THE GROWTH PATH

4.1   IFMS SITES AND IMPLEMENTATION TIMELINES

4.1.1   Timelines (Pilot and Rollout)

A phased implementation approach was adopted. The implementation commenced with the pilot phase covering 6 Ministries and 4 Local Governments on 1st July 2003 and run through to 2004.

No.	CENTRAL GOVERNMENT	LOCAL GOVERNMENT
1	Ministry Of Finance, Planning And Economic Development	Bushenyi District
2	Ministry Of Agriculture Animal Industry And Fisheries	Jinja District
3	Ministry Of Lands Housing And Urban Development	Lira District
4	Ministry Of Lands Housing And Urban Development	Kampala City Council
5	Ministry Of Education And Sports	
6	Ministry Of Health	

Table 4.1-1 IFMS pilot sites

Some of the key implementation principles applied were:

 i. Central Acquisition and Management of the system
 ii. Decentralised ownership of data
 iii. Adoption of a Turnkey Concept

In the Pilot phase, IFMS implementation focused on the following aspects:

 i. Budgeting, Purchasing and Commitment Accounting,
 ii. Payments Processing
 iii. Cash and Revenue Management
 iv. Accounting and Reporting (General Ledger)

Following the successful implementation of the pilot phase, Government of Uganda formally signed off the pilot phase in April 2005 and consequently entered into contract with HP to extend the implementation to the remaining 12 Ministries, additional 9 Local governments and a Disaster Recovery Centre.

In the first rollout phase, IFMS implementation mirrored the pilot phase also focusing on the key financial management aspects of Budgeting, Purchasing, Payments, Cash Management and General Ledger (Reporting).

IFMS ROLLOUT PATH
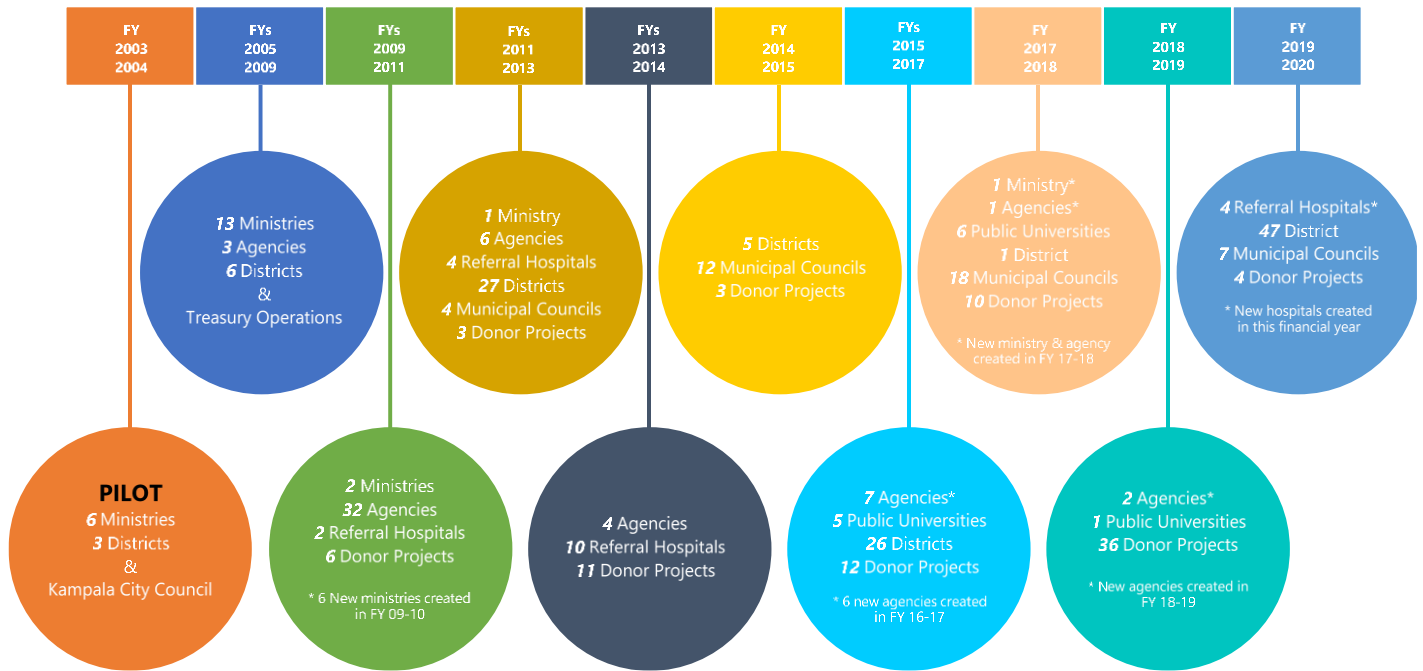
Diagram 4.1-1 IFMS Piloting and Rollout

4.2 SITE STATISTICS

To-date IFMS is fully operational in a total of **340** government entities. 19 Districts[1] remain operating a hybrid mode of IFMS. A hybrid form allows for the following financial operations to be carried out on IFMS:

  i.   Budget Execution
  ii. Payment processing of Salaries, Pension and all transfers to Lower LGs, Schools and Health Centres
  iii. Partial Bank Account Reconciliation

Procurement, Revenue Management, Fixed Assets Management are carried out using the entities manual systems. The rollout process is expected to be concluded in financial year 2020-2021[2] with any subsequent entities created automatically starting off with an established financial management system.

No.	CATEGORY	SECTION	NO. ON IFMS
	GOVERNMENT ENTITIES ON IFMS		
	FEBRUARY 2020		
1	Ministries	Central Government	23
2	Agencies	Central Government	56
3	Referral Hospitals	Central Government	20
4	Public Universities	Central Government	12
5	Districts	Local Government	115
6	Municipal Councils	Local Government	41
7	Donor Funded Projects	Projects	73

Table 4.2-1 IFMS implementation statistics by vote category

Category Ratios

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[1] Subject to availability of funds
[2] Based on the number of districts in existence as of 1st July 2020

4.3 USERS GROWTH PROFILE

The matrix of IFMS users is influenced by the implementation of IFMS in any given year and is constantly changing considering factors such as *Staff Recruitment*, *Transfers* and *Retirement*, among others.
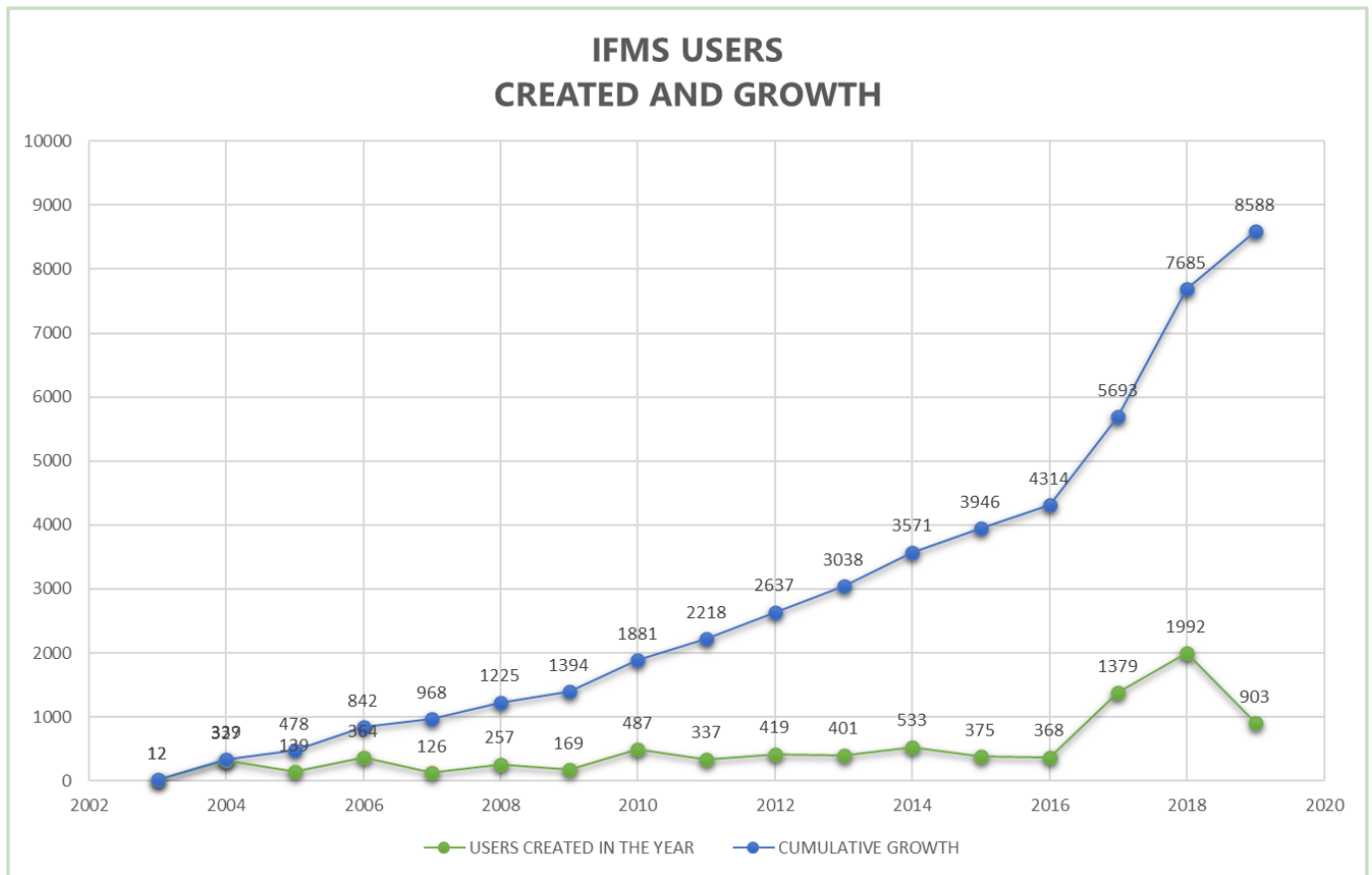
Graph 4.3-1 Growth of IFMS users

4.4 PROCESS ENHANCEMENTS

The IFMS has undergone several enhancements through personalisation, customisation, and extension of functions and features to meet the changing business requirements of government. These enhancements fall in primarily 2 categories:

4.4.1 Functional Enhancements

Functional enhancements relate to the enrichment of IFMS functionality. These enhancements are triggered by either user requirements gathered via various avenues of user feedback including the service centre, recommendations from audit, or by identified operational and reporting needs of government. Additional features are developed for IFMS through one of 3 ways:

i. *Personalization -* Making changes to the User Interface (UI) from within the E-Business Suite Form/Page.

ii. *Extension -* Making changes to the programmable (i.e. PL/SQL or Java) elements of the E-Business Suite form/page.

iii. *Customization -* Creating new forms/pages using Oracle provided tools (i.e. Oracle Forms and JDeveloper 10g with OA Extension).

4.4.2 Software Enhancements

Software enhancements mainly relate to ensuring that IFMS is operational at optimal capacity. This is achieved by regularly updating IFMS with the latest available firmware that adds security and resolves any identified system bugs. Like all major software, IFMS (which runs on Oracle EBS) has also gone through

major upgrades that bring new features, add stability to the system and guarantees availability of critical support as older versions of Oracle EBS lose active support.

APPLIED ENHANCEMENTS (2006 – 2020) and PLANNED ENHANCEMENTS (2021 – 2022)

Functional and Software
1. *Database upgraded from version 8i to version 9i* to keep in tandem with Oracle's Support Policy. Premier support for the 8i database version ended in December 2004

2006

Functional
1. Shifted from *Cheque to EFT* Payments to provide a fast, convenient, reliable, and secure form of making domestic payments.

2007

Functional
1. Introduced *Straight Through Processing for Salary payments to government employees*. This significantly reduced salary payment times by eliminating the use of employee schedules provided to various commercial banks, shifting to processing instructions to commercial banks for direct crediting of employee accounts

2008

Functional
1. *EBS Application upgrade from release 11.5.8 to 11.5.10* in adherence to Oracle's Support Policy.
2. *Database Upgrade from version 9i to version 10g* in adherence to Oracle's Support Policy. Premier support for the 9i database version had ended in July 2007

2009

Functional and Software
1. Implementation of *IFMS in DFPs* commenced
2. *Migrated both databases and applications from HP PA-RISC servers to Itanium Servers* to address end of life and support for HP PA-RISC and compatibility concerns for newer Oracle technologies on this older HP platform

2012

Functional and Software
1. *Introduced the Treasury Single Account for Central Governments* through which all payments are drawn for effective management cashflow management.
2. *EBS Application upgrade from 11i to 12* adhering to Oracle's Support Policy. Implemented Oracle RAC to enhance availability and scalability of IFMS.
3. *Activated Oracle Payments* for enhanced security of all payments processed on IFMS.
4. *Database Upgrade from version 10g to version 11g* in adherence to Oracle's Support Policy.

2013

Functional
1. *Decentralization of Wage Processing on IFMS* to allow for granular control of payments, availing the Accounting Officer the ability to control all Wage payments for their respective entities.
2. *Introduced Forex Straight Through Processing* to enable swift processing of payments to recipients offshore directly from IFMS

2014

Functional
1. *Introduced the Treasury Single Account for Local Governments* through which all payments are drawn for effective management of government cash resources.
2. *Heads of Accounts activated in payments approval hierarchy* to enhance financial accountability and transparency.
3. *Fixed Assets Module enabled on IFMS* to cater for Asset Acquisition and Management on IFMS

2015

Diagram 4.4-1 Enhancements to IFMS

Planned 2022
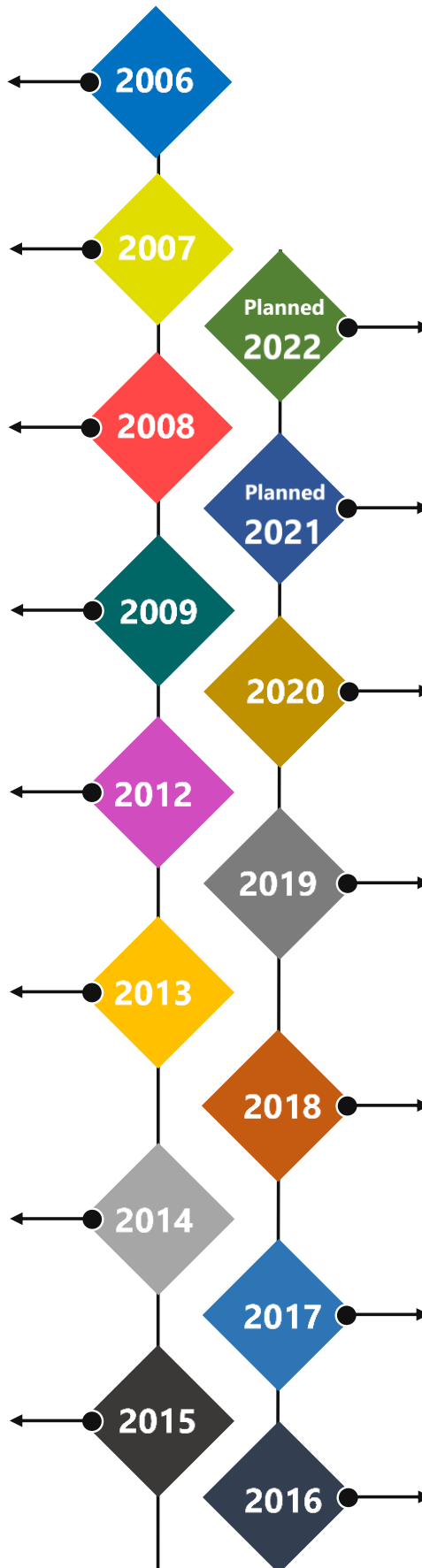
Functional and Software
1. *Upgrade EBS Application from 12.1.3 to 12.2.8*.
2. Introduce a *Multi-Currency Treasury Single Account*. Migrate *Oracle EBS Application from the HP Itanium Servers to the VXBLOCK*.
3. Enhanced *Disaster Recovery Solution and Business continuity solution* at the DRS.

Planned 2021

Functional
1. *Develop Information Dashboards* for Management for quick access to system data.
2. *Enhancement of the Chart of Accounts* to reflect present and future government needs.
3. *Introduction of Electronic processing for all government procurement*

2020

Functional and Software
1. *Enabled preparation of Financial Statements directly from IFMS* facilitating the ease and timeliness of financial reporting.
2. *Phase One of Electronic Payments Gateway* to complement URA Revenue Collection

2019

Functional and Software
1. *CG Heads of Department* activated for requisitioning & approval of payments on IFMS
2. *Executed Phase One of E-LPO Notifications* on IFMS
3. *Developed an IFMS interface with AIMS* to auto-capture revenue collected by Universities.
4. Launched the *TSC Mobile Application on Android*
5. *Database upgrade from version 11g to version 12c* in adherence to Oracle's Support Policy

2018

Functional and Software
1. *Activated the Petroleum Fund* to separately identify Petroleum Revenue.
2. *Migrated all Tier 2 entities to Tier 1* to streamline financial reporting.
3. *LG Heads of Department* activated for requisitioning & approval of payments on IFMS
4. Launched the *IFMS Audio Video reference guides*.
5. *Implemented HTTPS for IFMS* for enhanced security
6. *Developed an IFMS interface with PBS to synchronize budgets* on PBS for execution on IFMS.

2017

Functional and Software
1. *Created a Road Fund Ledger* to separately identify funds dedicated for Road Management.
2. *Introduced E-CASH Payments* to ease the process of disbursing small, irregular amounts of cash.
3. *Introduced GRC tools* for detailed system monitoring and enhancement of system controls.
4. *Migrated the database from Itanium Servers to the VXBLOCK* to cater for growing IFMS operations. Implemented database firewall & Audit Vault for additional IFMS database security.
5. *Developed an interface with NSSF E-Collections system* for validation of NSSF payments on IFMS.

2016

Functional
1. *Introduced Appropriation-In-Aid on IFMS* for recognition and expenditure of all Non-Tax Revenue collected by entities on IFMS

4.5 KEY REFORMS FACILITATED BY IFMS

PFM Systems (IFMS in particular) have given rise to several reforms that would have otherwise been impossible or extremely difficult to implement. As such, several financial management reforms are deeply intertwined with IFMS. Some key reforms are:

4.5.1 Electronic Payments

IFMS has made government payment processing safe, reliable, and cost-effective through the introduction of electronic payments moving away from cheques in 2007. The scale of government payments means that improvements in the way government payments are processed can have a significant positive impact in the overall reliability, as well as significant savings for the government itself as a result of reduced transaction costs (not only for the government but also the recipients of government payments and taxpayers) Through IFMS and the TSA, government has been able to fully automate the processes related to government payments. Payment requests made by government entities are verified, recorded, accounted for, and released automatically.

4.5.2 Straight Through Processing

IFMS facilitated *Straight Through Processing* of payments in 2008, which has significantly decreased the time lag in processing of payments. Where in the past, payments were made to a single account in a bank accompanied by a schedule with instructions to credit each recipient's bank account, STP allowed for embedding all payment details within an EFT instruction so recipients' accounts could be directly credited.

4.5.3 Treasury Single Account

IFMS has made it possible to implement a Treasury Single Account which was achieved in 2013. A TSA can be defined as a unified structure of government bank accounts enabling consolidation and optimum utilization of government cash resources. A TSA is a prerequisite for modern cash management and is an effective tool for the government through Treasury to establish oversight and centralized control over government's cash resources. It provides several other benefits and thereby enhances the overall effectiveness of a public financial management (PFM) system.

4.5.4 Decentralisation of Payroll Payment Processing

Following the Public Finance Management (PFM) Reform Strategy (2011/12 - 2016/17), the government of Uganda decentralised the management of the public payroll and salary processing system in 2014. This was aimed at addressing deficiencies such as consistent delayed payments of salaries, persistent wage shortfalls, errors and inaccuracies arising from the management of a centralised payroll. In addition, the process of correcting errors and inaccuracies on the centralised payroll was lengthy leading to constant reports of non-existent employees. IFMS facilitated the decentralisation process, allowing for each officer on the payroll to be individually and uniquely identified on the system.

4.5.5 Heads of Department control over their cost centre budgets

Historically, invoice processing has been solely the domain of the accounting department. Heads of Department played a mostly non-existent or small role in the allocation of budget funds for expenditure. IFMS has enabled configuration that enforces allocation of budget control to each respective cost centre head (Head of Department). They are now tasked with initiating and approving expenditure against their department's budget.

4.5.6 Automatic Generation of Periodic Financial Statements

Information from IFMS general ledger module is used in the preparation of government entities' financial statements. The Statement of Financial Performance, Financial Position, and Cash Flows all make up some of the key financial statements generated from IFMS. Successful implementation of IFMS combined with effective internal controls, provides assurance that the data being extracted from the system is both current

and accurate. Financial statements that are prepared using integrated data directly the general ledger provides reliable information necessary to perform the efficient audits.

4.5.7 Activation of a Fixed Assets Module

Reliable documentation of fixed assets is necessary for forecasting and maintaining government's financial records. Fixed assets are often subject to wear and tear during usage and tend to deteriorate over time. In addition, manual asset management faces challenges such as endless paper trails with updating of asset records being tedious and time-consuming, inconsistent records owing to the lack of a central system to record asset information. Managing government fixed assets manually is quickly becoming an ancient practice and digital options such as IFMS have made it possible to easily track asset acquisition and depreciation.

4.5.8 Electronic Purchase Orders

An electronic purchase order is the same as a traditional purchase order, except that it is not placed on paper. It is a digital document that outlines the line items in an order, the terms, and conditions that must be adhered to, pricing, delivery, and other information you'd expect to find on a PO. The paperless process saves time and money. IFMS transmits all of your purchase orders electronically to all government suppliers in real-time. This way they can easily access LPOs online and may acknowledge orders faster.

4.5.9 Electronic Tracking of Appropriation-In-Aid 2016

Appropriations in Aid (AIA) refers to *Non-Tax Revenue* (NTR) that a Government entity is authorized to retain (rather than immediately surrender to the Consolidated Fund). This revenue offsets related expenditure in the current financial year. Traditionally these funds have been collected and immediately spent at source. This has presented challenges of potential misrepresentation of collections received by government entities especially when, at reporting, expenditure by these entities does not much revenue collected. Usually this stems from errors in revenue recognition which was largely manual (before IFMS) or incidences of attempted fraud. Commencing in 2016, all revenue collected from government entities was captured on IFMS, transferred to the consolidated fund and released quarterly to the entity through a cash limit up to the amount collected and remitted.

4.5.10 Electronic Cash Transacting

The E-Cash platform is a mobile commerce platform, accessed through a secure web portal. The purpose of the platform is to eliminate physical cash transactions in government especially to recipients of one-off payments and therefore not captured in systems as regular government suppliers/employees. All E-Cash Payments are initiated on IFMS and are eventually settled through the E-Cash Platform ensuring that the entire process is electronic. This fosters efficiency and convenience in execution of payments to beneficiaries, ensures transparency of the pay-out process, enhances ability to track cash pay-outs, eliminates fraud or loss of money due to theft or careless handling of physical cash and provides faster and accurate processing of accountability reports for pay-outs.

4.5.11 Governance, Risk and Compliance Measures

Implementation of IFMS has eased the execution of many security, auditing and compliance related requirements where it's necessary to enforce governance, minimize risk and be complaint as per government policies. GRC is one such tool, that runs through IFMS, which caters all such needs. GRC is a solution that manages government processes for greater efficiency, controls of user access to reduce risk and track data changes to increase financial integrity.

4.6 INTERFACING WITH OTHER SYSTEMS

Interfaces are used in IFMS (Oracle Applications) to integrate with external systems. These interfaces are mainly used to either transfer data from IFMS to another government system or into IFMS from another government system. Interfaces play a key role in facilitating data sharing with other government systems.

4.6.1 Building Interfaces

Interface Development follows a 4-step process

1. *Identifying the interface required -* Analysis of the secondary system and the context in which it relates to IFMS.
2. *Defining the required data sharing parameters and interface operation -* Documentation of data sharing and information flow requirements.
3. *Developing and testing the Interface –* Development and testing using simulation on a test environment (a production clone).
4. *Deploying the Interface –* Deployment and activation of interface on the production environment.

IFMS INTERFACES WITH OTHER GOVERNMENT SYSTEMS

UGANDA REVENUE AUTHORITY
Download of Tax and Non-Tax Revenue into IFMS from E-Tax system. Upload of all tax payments made on IFMS into E-Tax System.

UGANDA REVENUE AUTHORITY
Registration and verification of Suppliers and Employees. Download of Supplier and Employee data into IFMS

BANK OF UGANDA
Bank Statements Download into IFMS. Upload of Payment Files into BBS and access to Data on Successful and Failed Payments

PUBLIC PROCUREMENT AND DISPOSAL OF PUBLIC ASSETS AUTHORITY
Download of government procurement data into IFMS for payment processing and reporting on commitment. Upload of payment data into EGP

PUBLIC UNIVERSITIES AND TERTIARY INSTITUTIONS
Import of student payments into IFMS and access to university bank revenue collections.

MINISTRY OF FINANCE (TREASURY SERVICES DIRECTORATE)
Collation of data relating to government debt (Recording, Disbursement and Servicing) with an overall picture of debt stock of in Uganda.

NATIONAL SOCIAL SECURITY FUND
Verification of NSSF contributions made by government entities on IFMS with the E-Collections system for accuracy and completeness of data.

MINISTRY OF FINANCE (BUDGET DIRECTORATE)
Download of Approved Budget and Budget Adjustments into IFMS from PBS. Upload of outturns from IFMS into PBS for reporting on Budget Performance.

MINISTRY OF PUBLIC SERVICE
Upload of Payroll files from MoPS to the IFMS after verification by HR.

Diagram 4.6-1 IFMS interfaces with other systems

4.7   PHYSICAL INFRASTRUCTURE

The Physical features of the IFMS consist of the *Primary Data Centre (Production)*, *Secondary Data Centre (Disaster Recovery)* and Site installations (*MALGs, Universities, Referral Hospitals* and *DFPs*).

4.7.1   Data Centre Infrastructure

The Current Ministry of Finance IFMS network has a *Hub* and *Spoke star Network* with a central *Main Data centre* and one *Disaster Recovery site*. The Main Data Centre houses *2 Core Routers* that interconnect all existing IFMS remote site routers using a *Leased Line Connection*. *2 Firewalls* are used at the Data Centre to protect the internal network from external attacks*.* These firewalls are configured in *High Availability State* (Active/Standby) for failover capabilities by ensuring that one is active at any given time.

The Data Centre houses the following equipment:

1. Production Servers (2 Applications, 2 Database)
2. 1 each of *Training*, *Testing* and *Development* Servers
3. Enterprise Storage
4. 4 Fibre Channel Switches to connect the servers in (1) and (2) to the Enterprise Storage
5. 1 Network Based Services (NBS) and 1 Exchange using Windows 2012 Operating System
6. 2 switches which interconnect different servers and segments in the entire IFMS network
7. 2 Fibre Core Switches connecting all the WAN fibre links
8. 2 distribution switches interconnecting DC Routers and Firewalls

4.7.2   Site Infrastructure

Each government entity (site) with IFMS has a *Router* and a *Switch* on the Local Area Network (LAN). Each remote site router has *2 active WAN connections* from *2 different Network Service Providers* (each with a *1mbps of bandwidth)* configured to allow for failover capabilities and increase on the availability of the application servers to the entity. This increases the WAN performance and drastically reduces the probability for single point of failure. To enhance on the security for the data cross the WAN connections, strong site-to-site virtual private networks *(VPN Tunnels)* are configured on all site routers using *Advanced Encryption Standard (AES)* for data protection, confidentiality and integrity as well as data encryption. The equipment at a typical site consists of the aforementioned *Local Area Network (LAN)* and other related accessories:

Server Room Equipment

1. 1 Server
2. 1 Router
3. 1 Switch
4. 1 UPS
5. 1 Data Termination Unit (DTU)
6. 2 Racks (1 for hosting the server and the second for hosting the router, switch and DTU)
7. Reinforced Door with Keypad Lock

Office Equipment

1. Workstations and UPSs (1 for each Workstation) for all users at the entity . *Now shifted to a Central UPS arrangement*.
2. Printers (1 Laser and 2 Dot Matrix)

Others

1. Structured cabling using Cat 6 or higher
2. 1 Stand by Generator to provide backup power supply
3. Air Conditioning System

4. 2 Manual Fire Extinguishers

4.8 DATABASE MANAGEMENT

IFMS operates on an underlying Database of *Version 11g R1 (11.1.0.7)* running off a *Linux operating system* at both Production and Disaster Recovery Sites. The database has evolved through several iterations since 2004.

No.	DATABASE UPDATES	BRIEF	YEAR OF APPLICATION
	DATABASE CHANGES **2006 - 2019**		
1	Database Upgrade from Version 8i to Version 9i	This upgrade was necessary to keep in tandem with Oracle's Support Policy. Premier support for the 8i database version ended in December 2004	2006
2	Database Upgrade from Version 9i to Version 10g	This upgrade was necessary to keep in tandem with Oracle's Support Policy. Premier support for the 9i database version had ended in July 2007	2009
3	Migrated Databases from HP PA-RISC Servers to Itanium Servers	This was mainly to address end of life / end of support for HP PA-RISC and compartibility concerns for newer Oracle technologies on this older HP platform	2012
4	Database Upgrade from Version 10g to Version 11g	This upgrade was necessary to keep in tandem with Oracle's Support Policy. Premier support for the 10g database version ended in December 2010	2013
5	Migrated Database from Itanium Servers to the VXBLOCK	To provision optimal processing capacity for the growing IFMS operations while also consolidating infrastructure to host other systems in the Ministry to minimize hardware proliferation	2017
6	Implemented Database Firewall & Audit Vault	To further secure both proactively and reactively the IFMS database as well as a robust feature for facilitating systems audits	2017
7	Database Upgrade from Version 11g to Version 12c	This upgrade was necessary to keep in tandem with Oracle's Support Policy. Premier support for the 11g database version ended in 2015 and waiver for additional cost of such support ended in December 2018	2019

Table 4.8-1 Database updates

There are no envisaged major changes expected on both the Applications and Database until 2022.

4.9 APPLICATION MANAGEMENT

IFMS operates on *Oracle EBS Applications' Release R12 (12.1.3).* The application has also advanced through several versions over the years to provide additional features, take advantage of better support arrangements and improve on security.

No.	APPLICATION UPDATES	BRIEF	YEAR OF APPLICATION
	APPLICATION CHANGES **2006 - 2020**		
1	EBS Application upgrade from release 11.5.8 to 11.5.10	This upgrade was necessary to keep in tandem with Oracle's Support Policy.	2009
2	Migrated Application from HP PA-RISC servers to HP Itanium Servers	This was mainly to address *end of life / end of support* for HP PA-RISC and compartibility concerns for newer Oracle technologies on an older HP platform	2012
3	EBS Application upgrade from Release 11i to a newer R12	This upgrade was necessary to keep in tandem with Oracle's Support Policy. Premier support for Version 11i EBS ended in 2010	2013
4	Implemented HTTPS on the application	Enhance IFMS security through encryption of data transmittion all the way from the end user	2018
5	Migrated Oracle EBS Application from the HP Itanium Servers to the VXBLOCK	The Oracle Database was migrated from the HP Itanium Servers to the VXBLOCK Server in 2017 as first phase. The next phase is to migrate the Oracle EBS application from the remaining HP itanium servers to the VXBLOCK	2020

Table 4.9-1 Software application updates

The next major change to IFMS application is expected to take place in 2022 with a significant upgrade to the last stable release of R12 (12.2.8)

5 STAYING AFLOAT (SYSTEM MAINTENANCE)

5.1 EQUIPMENT STATISTICS

		IFMS EQUIPMENT STATISTICS 2004 - 2020					
	EQUIPMENT	CENTRAL GOVERNMENTS			LOCAL GOVERNMENTS		
No.	EQUIPMENT	MDAs (79)	HOSPs (20)	UNIVs (12)	DISTs (115)	MUNIs (41)	TOTAL
1	Computers (Approx. 14 Per Site)	1106	280	168	1610	574	3738
2	Network Printer (1 Per Site)	79	20	12	115	41	267
3	UPSs (1 for Each Worksation)	1106	280	168	1610	574	3738
4	Generators (1 Per Site)	79	20	12	115	41	267
5	Fire Extinguishers (2 Per Site)	158	40	24	230	82	534
6	Servers (1 Per Site)	79	20	12	115	41	267
7	Routers (1 Per Site)	79	20	12	115	41	267
3	Switches (1 Per Site)	79	20	12	115	41	267
4	Racks (2 Per Site)	158	40	24	230	82	534
5	Air Conditioners (2 Per Site)	158	40	24	230	82	534
6	Data Termination Unit (1 Per Site)	79	20	12	115	41	267
7	Dot Matrix Printers (2 Per Site)	158	40	24	230	82	534

Table 5.1-1 IFMS equipment statistics

5.2 PHYSICAL EQUIPMENT MAINTENANCE

Government, through the Accountant General's Office, has made arrangements to ensure that all IFMS equipment is well maintained through regular servicing, repair of damaged equipment and replacement when obsolesce is reached.

5.2.1 Maintenance Agreements

Maintenance of IFMS Equipment is largely contracted out to third parties to benefit from the expertise of specialised service providers thereby resulting in efficiency by ensuring all critical equipment is operating optimally. Maintenance is mostly on a *Quarterly* basis covering the following:

a. All *Server Room Equipment*
   i. Regular cleaning of servers, Data Termination Units.
   ii. Checking that all Software Programs are UpToDate
   iii. Ensuring Routers are still within support structures of CISCO

   Where faulty equipment is identified, the Service Provider repairs or replaces this equipment.

b. All *Computers*, *UPSs*, and *Network Printers* provided to each entity for IFMS. However, central maintenance of the Computers runs for *only 1 year* when this equipment is still under *Service Providers Warranty*. After the 1 year, maintenance and replacement of faulty computers is decentralised, and the responsibility is passed on to the entity which then incorporates any anticipated maintenance and replacement costs in the annual budget.

c. All Dot Matrix Printers are currently maintained by the respective government entity. However, these are gradually being phased out with the shift towards electronic government transactions.

d. All Generators and Air Conditioning Equipment.

e. All Fire Extinguishers. These are also maintained for the one year when this equipment is under *Service Provider's Warranty* after which the responsibility is passed on to the entity and these costs are incorporated in the entity's annual budget.

All Telecom companies that provide GOU with connectivity services for IFMS are contractually obligated to maintain on an ad hoc basis all telecommunication equipment needed to ensure that the network is up and running within the contract specified deliverables. This includes *Satellite* equipment provided.

5.2.2 Memoranda of Understanding

A memorandum of understanding (MoU) is an agreement between the Accountant General's Office and any government entity when implementing IFMS, given the mutual interest in ensuring a successful implementation of IFMS. The MOU:

i. Establishes procedures for delivery and official acknowledgement of receipt for all IFMS related facilities including and not limited to all equipment installed at the Site.
ii. Establishes a policy for the control, maintenance, and safeguard of all installed equipment.
iii. Establishes a policy for the apportionment of a budget for recurrent costs related to the IFMS.
iv. Agrees on roles and responsibilities of the Parties in the IFMS implementation.

5.3 SYSTEM SOFTWARE MAINTENANCE

5.3.1 System Monitoring

System monitoring comprises the use of hardware and/or software tools to keep track of system resources and performance. Among the management issues regarding use of system monitoring tools are resource usage and privacy. Government employs several software tools to carry out comprehensive monitoring of government systems (including IFMS) which includes:

- Monitoring the health and performance of all network devices in real time through various protocols (i.e. *Monitoring critical network metrics such as packet loss, errors, and discards, monitoring the health of device hardware, the quality of WAN links* and s*ending alerts based on set thresholds)*.
- Server Monitoring (i.e. *the status, availability, health, and performance of both physical and virtual servers*)
- Log management, auditing, and IT compliance management for SIEM (*Security Information and Events Management*). Checking on logs from servers, applications, and perimeter devices such as routers, switches, firewalls.
- Securing the network by *automating patch deployment* for Windows, Mac, Linux, and other Third-Party Applications.
- Deploying Software to all the endpoints within the network.
- Managing *software and hardware assets* within the network and *tracking license and warranty details*.
- Automating *operating system image deployment* on Windows computers, along with the *installation of required drivers and applications* using OS deployment.
- Real-time *auditing of windows servers* and *active directory activity*. *Tracking the Logon/Logoff, Schedule to track events* like RADIUS Logon, *Terminal Services Activity*, *Logon Duration* and *Logon History*. Tabs are kept on Audit related processes by *Tracking Windows Schedule jobs*.
- Automatic *device backup* changes and detailed information on all *network devices configuration status and changes*.
- *Log analytics and configuration management software* for network Firewall security devices.
- Analysing the usage and effectiveness of the firewall rules.
- Observing configuration changes to firewall rules.
- Internet activity Monitoring
- Network Security Monitoring
- VPN monitoring

- Compliance monitoring
- Network Traffic and Bandwidth Monitoring

System Monitoring is currently carried out using *Zoho Tools* that include *OP Manager, AD Audit Plus, Event Log Analyzer, Desktop Central, Network Configuration Manager* and *Firewall Analyser. Cisco ASA Firewall* facilitates point to point VPN Services as well as website publishing.

Traffic between the internal and external networks including internet access and filtering is also actively controlled to prevent intrusion and threats. This is currently being carried out using *Check Point Firewall.* All database activity is monitored and tracked for security and compliance, generating database security alerts and automated database vulnerability discovery using *Imperva*.

Governance Risk and Compliance

GRC tools are IFMS Application specific tools that continuously monitor, enforce, and optimize government processes to prevent prohibited or suspicious activities. By monitoring critical setups and user access, they ensure adherence to government policy by identifying control breaches as soon as possible.

Database Alerts

Oracle Database includes a built-in alerts infrastructure for notification of impending problems with the database. Alerts can also be created and configured. These events may be collected by the Audit Vault or the Database Firewall. Alerts are rule-based and triggered when certain set conditions are met. Alert severity can also be defined. Alerts can also be configured based on audit records sent by the firewall. They can also be configured as email push notifications to specific officers.

5.4 SYSTEMS SUPPORT

5.4.1 On Site Support

A dedicated system support centre was setup in the Accountant General's Office. This centre is currently manned by 23 officers. On go-live of IFMS, each government entity is provided with a minimum of 2 weeks on-site support. The support officer(s) is resident at the entity to provide support and on-site training as well as addressing any emerging issues, thereby ensuring a smooth transition and faster adoption of IFMS. In addition, any government entity is entitled to ad hoc support on request.

5.4.2 Remote Support

IFMS Support is also provided through other avenues such as telephone, email, and other remote utilities. This is may be initiated by the user or support centre as the need arises.

5.4.3 Training

The Accountant General's Office runs a comprehensive training program that ensures all users are equipped to operate IFMS and carry out their duties with efficiency and effectiveness (*Refer to 3.2.7 for details on Training*).

5.4.4 Treasury Service Centre

Central Service Centre

A Central Treasury Service Centre was setup in the Accountant General's Office. This TSC serves as a central support core through which all issues, challenges encountered, and inquiries related to IFMS and other systems are routed for resolution and responses. It acts as a liaison between system users and the support structure tasked with ensuring all aspects of the IFMS and other systems are running smoothly. It also handles dissemination of key information such upgrades, feature enhancements, reminders for actioning on processes as well as planned and unplanned system downtime (for maintenance and troubleshooting).

Regional Service Centres

10 Regional Centres were created as regional support hubs to ease access to systems through extension of the network across several regions at specific locations identified as regional centres, thereby facilitating service delivery. The primary purpose of a *Regional Centre* is to provide a convenient facility for all government officers to access the IFMS and other government systems while serving as a hub for provision of technical systems support.

These centres are:

REGIONAL TREASURY SERVICE CENTRES		
No.	**REGIONAL CENTRE**	**LOCATION**
1	Arua	Arua District Headquarters
2	Gulu	Gulu District Headquarters
3	Hoima	Office of the Auditor General in Hoima
4	Jinja	Jinja District Headquarters
5	Kampala	Treasury Building, Ministry of Finance
6	Masaka	Masaka District Headquarters
7	Mbale	Mbale District Headquarters
8	Mbarara	Mbarara District Headquarters
9	Moroto	Office of the Auditor General in Moroto
10	Soroti	Soroti District Headquarters

Table 5.4-1 TSC regional centres

5.4.5 Other Support Resources

Peer Support

Peer discussions form the first level of system support for all government entities. This involves making active use of colleagues for knowledge sharing and quick troubleshooting when required.

Superusers

These are officers/users who are equipped with additional training/skills on systems operations (or have extensive experience using systems) and provide a central referral point in the entity. These *superusers* offer supplementary support to other users as and when needed.

Mobile Application

An Android OS mobile Application was developed to augment the support services offered by the TSC. This application encourages users to make active use of the Treasury Service Centre given the convenient and widespread nature of mobile devices.

Service Desk Tool

Access to the Treasury Service Centre is available on every IFMS user's computer terminal through a *Service Centre Tool Web Application*. This allows users to quickly report (log) any challenges they are having with the system(s). These logs are centrally managed at the TSC and routed to the support team for resolution. Feedback to the user is provided through the same tool.

Audio Video Guides

Audio Video operation guides are provided on all Computers both at Regional Centres and the votes. A set of computer disc with these guides is also given to all entities for use whenever required. This is an easier form of skills enhancement skills on IFMS especially for new users as well as a reference or refresher course for seasoned users.

Hard Copy Manuals

Printed IFMS operation guides are availed to all users. These guides were developed to complement the comprehensive training provided. Guides are available for all IFMS modules and other peripheral support processes. In addition, detailed guide documents are created for any enhancements (*processes and features*) that are developed and activated on IFMS.

FAQs Document

The Treasury Service Centre has created, and shared with users, a document that compiles the most *Frequently Asked Questions*, spanning across various aspects of systems use, including, but not limited to, *transaction processing*, *basic trouble shooting* and how to *address basic challenges encountered*. These FAQs provide an immediate point of reference to users when the need arises,

E-Library

All relevant documents, manuals, guides, and other information (including important circulars) are available to users in an *Electronic Library* that is accessible at any time over the internet. This online central repository is regularly updated with new content.

6 LESSONS LEARNT

6.1 PEOPLE

6.1.1 Managing the fear of change is critical to adoption of systems

As with all changes that shake up the existing status quo, resistance to change is always a major hindrance to implementation and swift adoption of systems. This resistance is manifested in many forms, from unwillingness to learn the operations of a new system to more extreme forms of misreporting and/or withdrawal of support for new systems. This severely impacts on service delivery as well as creating an unsightly image of systems in the public's eye. To minimize this, multiple *change management sessions* are held, prior to IFMS go-live in any government entity, giving all stakeholders the much-needed information that assuages their fears and insecurities in as afar as how the system will affect them.

6.1.2 Adequate staff is vital for the optimal operation of IFMS

IFMS implementation is sometimes challenged by low staffing levels in some government entities. This is especially glaring in Local Governments (more so in newly created LGs). The successful operation of IFMS requires sufficient officers to carry-out the business processes within the various modules that mirror the financial activities of government entities. In addition, staff should be adequate to carry out these activities while adhering to the Separation of Duties Principle, a key concept of internal controls. SOD implements an appropriate level of checks and balances on the activities of individuals, thereby preventing or reducing incidences of fraud and errors. This objective is achieved by disseminating the tasks and associated privileges for a specific business process among multiple users (e.g. IFMS requirement of two or more approvers for an invoice processed for payment).

Where an entity does not have sufficient staff to achieve this*, IFMS is re-configured* taking into consideration these staffing gaps while maintaining an acceptable level of SOD. These entities are also closely monitored for any operational anomalies on a regular basis. The Accountant General's Office also regularly holds *engagements with the Ministry of Public Service* to address staffing gaps.

6.1.3 There is a Learning Curve for all users new to systems

Users that are new on the system need time to learn. This especially applies to users in sites where systems have just been implemented. If the system implemented is a replacement to an existing system, there is often a sense of loss of the familiar, especially if some previously existing functions are replaced with new processes and procedures. This creates some initial discomfort that eventually subsides as users acclimatize to the new system. To reduce this curve, *comprehensive training* is undertaken before IFMS implementation to ensure all users are properly skilled. *Refresher training* is readily available to provide users with new skills as well as introduce any new features and processes deployed to IFMS. *On-job training* is also provided for a minimum of 2 weeks after IFMS go-live.

6.1.4 Frequent loss of staff can be detrimental to IFMS operations

Loss of staff at sites resulting from either standard staff transfers, dismissal, or resignation, affects the efficiency of service delivery at affected sites. Any replacements must be trained and setup on the system for them to be able to carry out their duties. This creates delays in provision of services and creating unease in these sites. Significant effort has been put in availing *training programmes to all government officers* to minimise any delays in service delivery attributed to staff movement. This ensures as many officers as possible are able to use the IFMS irrespective of office allocation.

6.1.5 Timely transaction processing should be emphasised

Deliberate delays in processing of Transactions can be a challenge in systems operations. *Key Performance Indicators are regularly monitored* (including transaction time) and findings shared with

the respective government entities, providing guidance on how best to avoid these delays as well as reminders where transactions delays are identified. Efforts have also been made to provide as much *information to the public* (using commonly available media) on government operations and key timelines. The *service centre* is also readily available to the public for provision of information and addressing any inquiries.

6.1.6 Using IFMS as a scapegoat should be avoided

Scapegoating is often a sign of inefficiency in government entities. Where officers have failed to effect their duties in a diligent and timely manner, it is very often easy to use systems in place as a scapegoat. Reasons such as unavailability of the system, planned or unplanned system downtime are commonplace excuses for failure to accomplish transactions and other tasks on IFMS. This is also counteracted through the active monitoring of *Key Performance Indicators* and giving the public easy access to the *service centre* for information and inquiries.

6.1.7 Resident IT Personnel play a key role in support to IFMS

Where entities do not have a resident IT officer, it constrains the process of troubleshooting simple IT issues, such as dislodged network cables, computers and servers that need rebooting, installation of software etc. This makes provision of IT support inefficient and creates delays in service delivery. Active recruitment of IT staff is ongoing. In addition, all IFMS *training programmes include sessions specifically targeted at IT staff* to enable them support government systems. Where entities lack IT staff, another officer is nominated and given basic IT training to fill the gap until an IT Officer is recruited.

6.2 EQUIPMENT

6.2.1 IFMS equipment must be regularly and properly maintained

With time and frequent use, computer equipment at entities will depreciate owing to natural wear and tear as well as negligence. If poorly maintained, the useful life of equipment drastically reduces from the expected 3-4 years. The Accountant General's Office has largely *centralised the maintenance of IFMS equipment*, easing the process of tracking maintenance schedules and managing the repair and replacement of equipment under a uniform umbrella contract, which is both cost-saving and efficient.

6.3 SYSTEMS

6.3.1 The high birth rate of government votes affects implementation timelines

The number of Local Governments and Agencies has rapidly grown since the inception of IFMS. This has continually shifted completion targets. IFMS implementation commenced in in 2004. Since then 4 Ministries, 15 Agencies, 5 Referral Hospitals, 27 Municipal councils and 65 Districts have been created with districts (*illustrated in Graph 6.3-1*) having the largest spike in numbers. Whereas Donor Funded Projects also have a high birth rate, the implementation methodology in these projects is different and on a much smaller scale for each project.

Government has taken a *gradual approach* to rolling out of IFMS in MALGs so as to maintain a desired level of quality of service (given the extensive process of getting a site up and running as well as the dedicated support necessary to ensure successful implementation) while taking into account the available resources (both monetary and human).
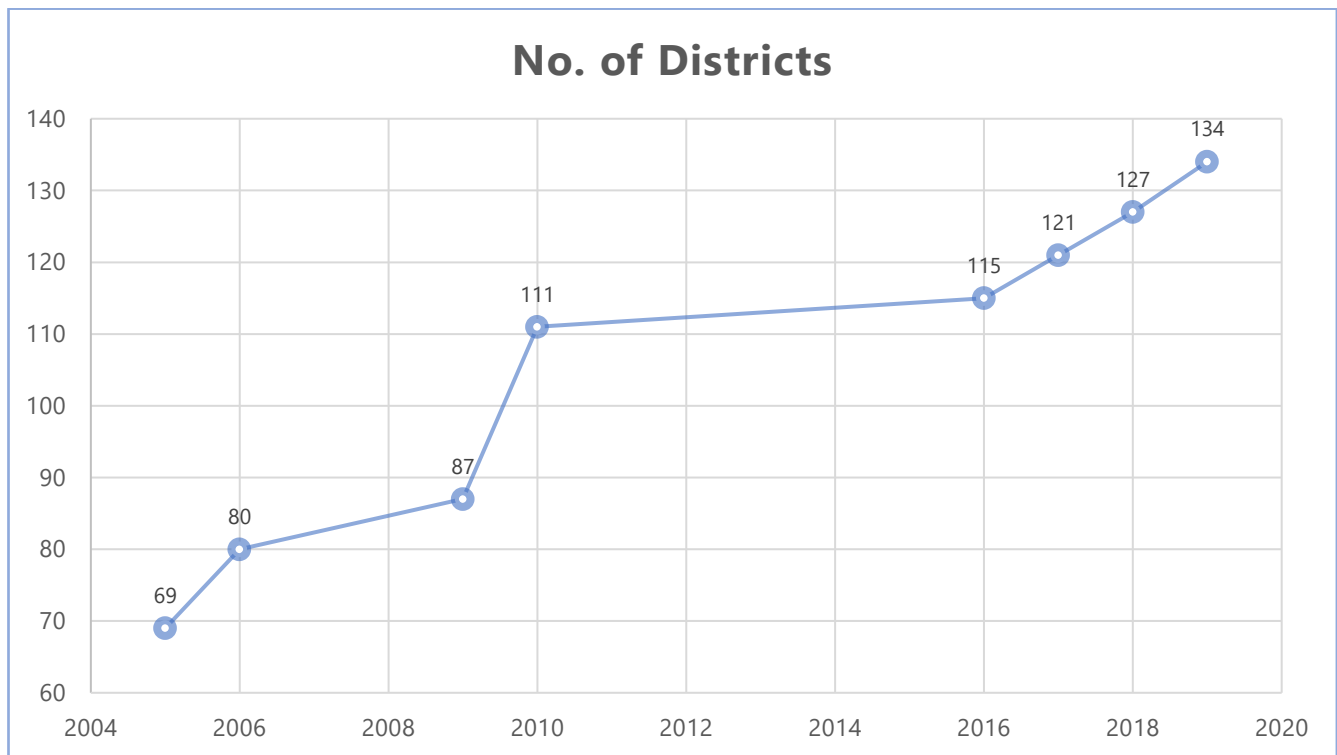
No. of Districts

Graph 6.3-1 Growth of districts

6.3.2 A single system is preferable to multiple systems for efficient financial management

Managing fragmented systems has proven to be challenging to government, as was the experience of having multiple Tiers of IFMS (Oracle Tier 1 and Microsoft Navision Tier 2). It is both costly (in terms of procuring, developing and support for multiple systems), rapidly losing the benefits attributed to *economies of scale,* and inefficient (reproducing features and functions for multiple systems in an attempt to establish consistency in operation). A single system also promotes uniformity in financial management policy implementation and financial reporting. It also greatly facilitates the ease of managing reforms providing a more efficient and effective platform for advancing systems in government

6.3.3 Lower tier systems do not necessarily translate into cost savings.

On the contrary, if the fixed or unavoidable costs of implementing and maintaining systems are excluded, all other variable costs significantly increase with lower tier systems, regardless of the lower cost of acquisition. Primarily because they do have the scalability and vast number of features (especially integration and central administration) a more robust system would have, allowing for growth when required.

Costs savings of higher tier system that often go unnoticed include:

Licencing - a single higher tier system benefits from one licencing arrangement and cost savings accrued from enterprise packages often unavailable to lower tier systems.

Development and upgrades - the costs of developing new features, system enhancements and upgrades is drastically lower for a system that can be easily scaled to mirror the growing business requirements of government as this is done centrally and once for all government entities.

Maintenance - costs of system maintenance such as implementing security measures, system fine-tuning, and equipment care are much lower when centrally carried out and availed to all entities centrally.

Vendor Support – Higher Tier systems come with more robust vendor support arrangements giving the government a reasonable guarantee that operations are safeguarded against unmitigated disaster, saving the government costs of higher third-party assurance.

6.3.4 Non-financial functions can be better addressed by other systems

IFMS at its very core is a financial management system. Several government entities have a vast number of operations that are not purely financial in nature but have financial implications downstream. There are various systems on the market which offer better performance for non-financial operations and should therefore be acquired rather than attempt to use IFMS to serve multiple functions. As government steadily transitions to electronic operations for added efficiency, it has become evident that for some government operations, other systems provide more extensive features tailored to their unique requirements. Examples of these systems include, but are not limited to, *AIMS* for managing academic affairs of public universities, *HCM* for administration of government human resources, *EGP* for procurement of goods and services. Refer to *Diagram 4.5-1* for other systems. Government has put significant effort in building system interfaces that promote data sharing allowing for these systems to feed into IFMS for the financial elements of the entities within which they operate. NITA is also building *a robust integration platform* that will seamlessly integrate all present and future government systems (*see 7.6.1*)

6.3.5 Government operations are growing faster than existing data centre infrastructure

Growth of government financial operations is disproportionate to the rate at which the data centre infrastructure is scaling upwards. As votes increase in number and government business requirements rise in volume and complexity, the data centre is not growing fast enough to accommodate this steady expansion. Given the considerable volume of government financial data, this has sometimes led to hiccups in transaction and report generation time, inconveniencing IFMS users. Government intends to *expand the data centre servers*, increasing the processing power allowing for greater headroom to cater for existing and future needs. In addition, a *data archival policy* needs to be explored to reduce the load of real-time data processing.

6.4   INFRASTRUCTURE

6.4.1   IFMS implementation is affected by votes without or poor premises (buildings)

Successful implementation of systems in general (including IFMS) hinges on the government entities in which these systems are housed, having adequate structures that can accommodate installation of computer equipment. Several entities do not have approved premises in which to operate (e.g. Kalungu District), others are housed in improvised structures (e.g. Kyotera which uses a converted maternity ward) while some have required extensive renovation work before being deemed fit for installation of systems if the building is dilapidated, insecure or was initially meant for temporary, rather long-term use. Local Governments in remote areas of the country are the most likely to face this challenge. This is taken into account during the IFMS implementation planning stages and *communication is made to all entities on the implementation schedule*, giving them time to ensure the structures where IFMS equipment will be housed meet the required guidelines. Where the budget allows, *IFMS critical infrastructure (server rooms and officers) are also renovated* by the Accountant General's Office as part of site preparation.

6.4.2   A source of power is essential to the implementation of IFMS

Unavailability of Sustainable Power Sources is a severe hindrance to deployment of systems in government votes. The *National Power Grid* (through *UETCL*) is the widely available power source across the country. It is challenging to implement IFMS in an entity that has no access to the power grid. *A generator is provided* to each vote during IFMS rollout. This generator is meant to act as a backup during intermittent power blackouts. In addition, *other power solutions, such as solar energy*, are being explored for adoption, based on factors such as cost, efficiency, and longevity.

6.4.3   Dirty and unstable power can result in unexpectedly high maintenance costs

Whereas the benefit of having power cannot be emphasized enough, the quality of power is just as important. Poor quality or fluctuating power supply often causes power surges, spikes and voltage

fluctuations severely damaging systems equipment at various entities. (In April 2020, server switches and routers in Gulu District and Busitema University were destroyed beyond repair by power spikes). This increases the costs of repair and replacement of equipment. Several measures have been adopted to protect equipment from power fluctuations, including *use of high-end UPSs* and *installation of Lightning Conductors* in all government entities as part of the implementation process. However, these measures are not enough to withstand consistently poor power.

6.4.4 Reliable telecommunication networks play a big role in IFMS operations

Stable, reliable Telecommunications Networks are critical to the successful implementation of IFMS. Several Districts e.g. (Abim, Amuru, Buhweju etc.) have experienced instabilities in network quality of service making IFMS inaccessible or severely slow in operation. This is often attributed to their geographical location or substandard equipment unable to deliver a consistently stable network in these districts. Multiple network service options have been explored to address this challenge. Where use of telecom masts is not possible, *satellites have been deployed* as an alternative. NITAU is also *fast tracking the installation of the government backbone* which utilises fibre, a more stable form of connectivity to all government entities.

6.5 OTHERS

6.5.1 Measures should be available to counteract Natural Disasters (Acts of God)

These are major adverse events resulting from natural processes of the Earth; including floods stemming from storms and torrential rains, earthquakes and other geologic processes. Natural disasters can lead to damaged equipment, the severity of which depends on the resilience of the equipment and infrastructure. In 2019-2020 A locust invasion in north eastern Uganda could very easily have damaged telecoms external equipment and exposed generators disrupting operation of IFMS. Damage to physical equipment is often remedied through *repairs and replacement under warranty or maintenance contracts*. Centralised data management and *regular backup of data* ensures no or minimal loss of data in the event of a disaster.

6.5.2 Safeguards against Theft and Vandalism must be put in place

Some government entities lack adequate security to safeguard IFMS equipment leaving it vulnerable to theft and vandalism. Part of IFMS implementation entails the assessment of physical security and its enhancement in areas directly related to IFMS. All entities are furnished with comprehensive *guidelines on physical security* including locks, protective bars, alarms, and uniformed guards. While these countermeasures are by no means the only precautions that need to be considered when trying to secure computer and other equipment, they are a perfectly logical place to begin. Physical security remains a vital part of any security plan and is fundamental to protection from intruders. Without it, user access security, network security and software security are considerably more vulnerable.

7 LOOKING FORWARD (THE FUTURE OF IFMS)
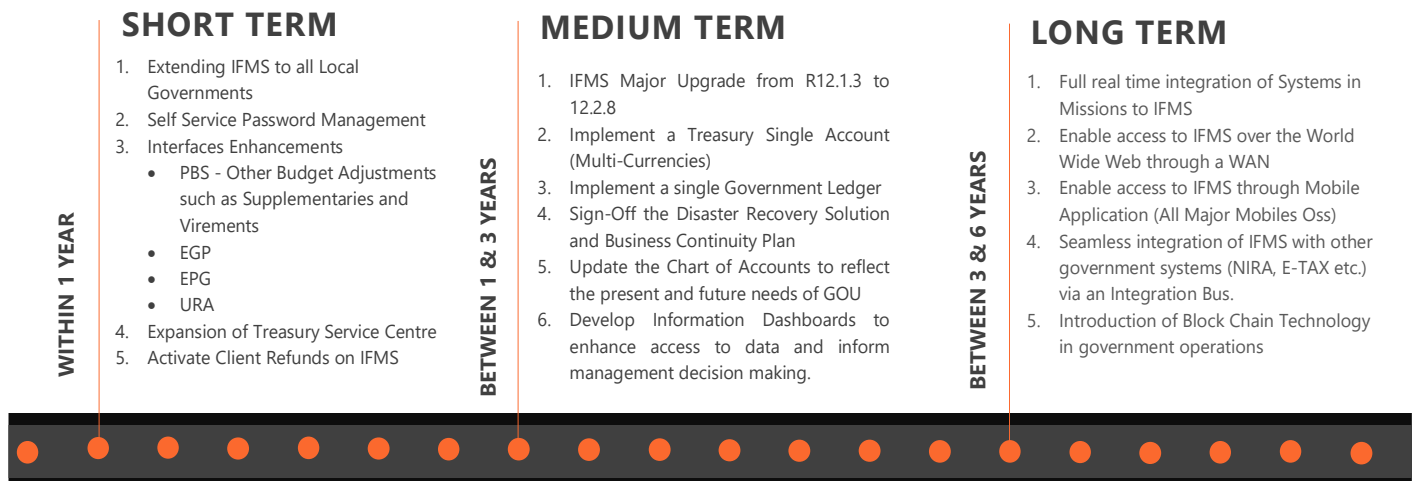
7.1 THE FUTURE AT A GLANCE

SHORT TERM

WITHIN 1 YEAR

1. Extending IFMS to all Local Governments
2. Self Service Password Management
3. Interfaces Enhancements
   - PBS - Other Budget Adjustments such as Supplementaries and Virements
   - EGP
   - EPG
   - URA
4. Expansion of Treasury Service Centre
5. Activate Client Refunds on IFMS

MEDIUM TERM

BETWEEN 1 & 3 YEARS

1. IFMS Major Upgrade from R12.1.3 to 12.2.8
2. Implement a Treasury Single Account (Multi-Currencies)
3. Implement a single Government Ledger
4. Sign-Off the Disaster Recovery Solution and Business Continuity Plan
5. Update the Chart of Accounts to reflect the present and future needs of GOU
6. Develop Information Dashboards to enhance access to data and inform management decision making.

LONG TERM

BETWEEN 3 & 6 YEARS

1. Full real time integration of Systems in Missions to IFMS
2. Enable access to IFMS over the World Wide Web through a WAN
3. Enable access to IFMS through Mobile Application (All Major Mobiles Oss)
4. Seamless integration of IFMS with other government systems (NIRA, E-TAX etc.) via an Integration Bus.
5. Introduction of Block Chain Technology in government operations

Diagram 7.1-1 A glance into the future of IFMS

7.2 EXTENDING THE IFMS

7.2.1 Local Governments

To-date 156 out of 175 Local Governments use IFMS for financial management. A plan is in place to implement IFMS in the remaining 19 Local Governments in their respective physical locations by 2020 (See 4.2). Thereafter, any newly created Local Governments will be immediately incorporated on IFMS at the start of operations.

7.2.2 Missions

Government operates 35 missions (Embassies and Consulates) across the globe. All government missions use *Microsoft Navision Dynamics* for Financial Management. This system operates as a standalone for each mission, independent of a central server. Over the course of the next 5 years, integration of all government foreign service financial operations with IFMS will form a key deliverable for Government of Uganda.

7.2.3 Donor Funded Projects

To-Date 73 Donor Funded Projects use IFMS as their primary financial management tool. These projects operate under a separate ledger that was originally created for purposes of catering to the unique operations of DFPs including, but not limited to, *Multi-Currency Operations*, *Multi-Year Budgets* and *Rollover Funding*.

However, over the past 6 years, many GoU functions have been restructured and enhanced to include features previously available to DFPs only (such as Multi-Currency Operations). In addition, the increasing need for streamlined reporting has prompted the drive towards a single operating ledger that encompasses all *Ministries*, *Agencies* and *Projects*. This will be achieved during the planned IFMS upgrade in 2022. It is also envisaged that the re-structuring of ledgers will provide a pathway for incorporating all DFPs on IFMS expeditiously.

7.3 EXPANDING IFMS FUNCTIONALITY

7.3.1 Self-Service Password Management

With effect from January 2021, all IFMS users should be able to reset their password at their own convenience without the intervention of the Treasury Service Centre which will significantly reduce the load

of this mundane task from the TSC as well as empower users in all aspects of password management. All other security policies, such as auto-prompting for password review every 60 days will remain in place.

7.3.2 Information Dashboards

With the planned IFMS upgrade to 12.2.8, information dashboards will be a key output during the upgrade. These information dashboards provide visual displays of the most important information needed to achieve one or more government objectives, consolidated, and arranged on a single screen for monitoring at a glance. These BI dashboards will be primarily developed to assist in strategic decision making and providing quick access to data on daily operations of government. They will contain data summarized to a high level to enable targeted users to quickly understand the larger trends affecting government with the ability to "*drill down*" to greater levels of detail as required and can be customized to a user's particular requirements.

7.3.3 Processing Refunds On IFMS

Additional enhancements to IFMS will include processing and accounting for refunds on IFMS. Clients to government will be entitled to a refund of monies paid to any government entity for goods and services not delivered or overpayments made by a client to government. Refunds will be initiated from Accounts Receivables and effected in Accounts Payables.

7.4 A SINGLE TREASURY ACCOUNT FOR GOVERNMENT

A TSA is a unified structure of government bank accounts enabling consolidation and optimum utilization of government cash resources. A TSA is a bank account or a set of linked bank accounts through which the government transacts all its receipts and payments and gets a consolidated view of its cash position at the end of each day. This banking arrangement for government transactions is based on the principle of opportunity cost of cash irrespective of its end use. While it is necessary to distinguish individual cash transactions for control and reporting purposes, these objectives are achieved through the accounting system and not by holding and/or depositing cash in individual bank accounts.

In 2013, Government of Uganda commenced the implementation of a Treasury Single Account for the following Reasons:

- Prevent incidences of idle cash balances in bank accounts which often fail to earn market-related remuneration.
- Prevent government from incurring unnecessary borrowing costs on raising funds to cover a perceived cash shortage.
- A TSA system also helps consolidate government cash balances, giving the Treasury oversight of all government cash flows, thereby improving budget control and monitoring by providing complete and timely information. This facilitates better fiscal, debt management, and monetary policy coordination as well as better reconciliation of fiscal and banking data, which in turn improves the quality of fiscal information.
- The establishment of a TSA significantly reduces the government debt servicing costs.

A TSA was initially implemented for only Central Government entities (Ministries, Agencies, Universities and Referral Hospitals). The TSA banking arrangement was later extended to Local Governments in 2015. Donor Funded Projects, for the moment, do not operate under the TSA umbrella.

The existing TSA banking arrangement involves the use of a holding bank account (Sub-TSA) for each government which is used for routing transactions to and from the TSA to the entity's suppliers and employees.

The future of a TSA is expected to eliminate Sub-TSAs allowing for transacting directing from one TSA by all government entities. Government will operate multiple TSA, each denominated by a specific currency to accommodate transacting in multiple currencies without the risks inherent in foreign currency transactions.
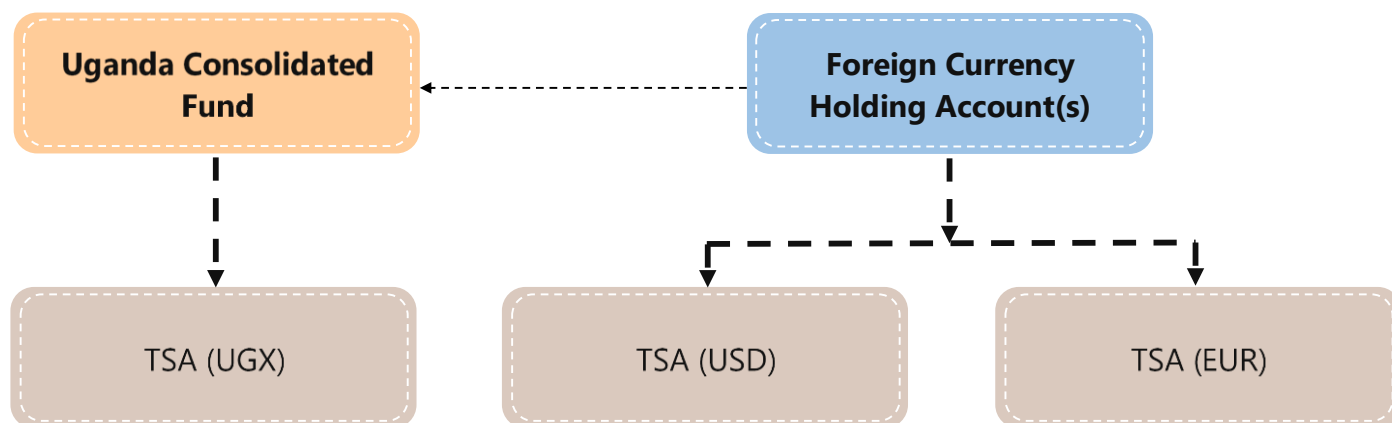

Diagram 7.4-1 Proposed TSA structure

7.5 REMOTE ACCESS TO THE IFMS

7.5.1 IFMS On the Internet (WAN)

Access to IFMS over the *World Wide Web* forms part of the long-term plan in the enhancement of IFMS operations. Currently IFMS can only be accessed in a closed network with servers installed in every government entity's premises to facilitate connectivity to the system. This was deliberately setup as such for security purposes providing a more controlled environment for monitoring access to the system.

However, with the significant strides that have been made in systems security, the tools that government has acquired to monitor IFMS (*Governance, Risk and Compliance*, *Audit Vault* and *Checkpoint*) as well as planned security enhancements, it is expected that in the near future access to IFMS will be availed over the internet. This will allow for user convenience as well as the ability to work accomplish one's tasks from anywhere on the globe.

7.5.2 IFMS On Mobile Platforms

Part of extending access to IFMS involves development of a Mobile Application to enable system users log onto IFMS using mobile devices and attend to their duties online as well as receive real-time notifications of transactions pending a user's action. This will be a fast, convenient, and readily available tool that provides a complementary route to the LAN and broader WAN for using IFMS. Applications will be developed for the 2 main mobile application systems (*Google Android* and *Apple IOS*). This development will be initiated within the next 5 years.

7.6 WIDER SYSTEMS AUGMENTATION

7.6.1 Seamless Integration with other Government Systems

Government of Uganda (GoU), through NITA-U, intends to develop an integration platform to facilitate secure and efficient data sharing across government entities in real time, eliminating the need for physical documents while ensuring data is readily available when required. *Diagram 7.6-1* shows graphical representation of the platform.
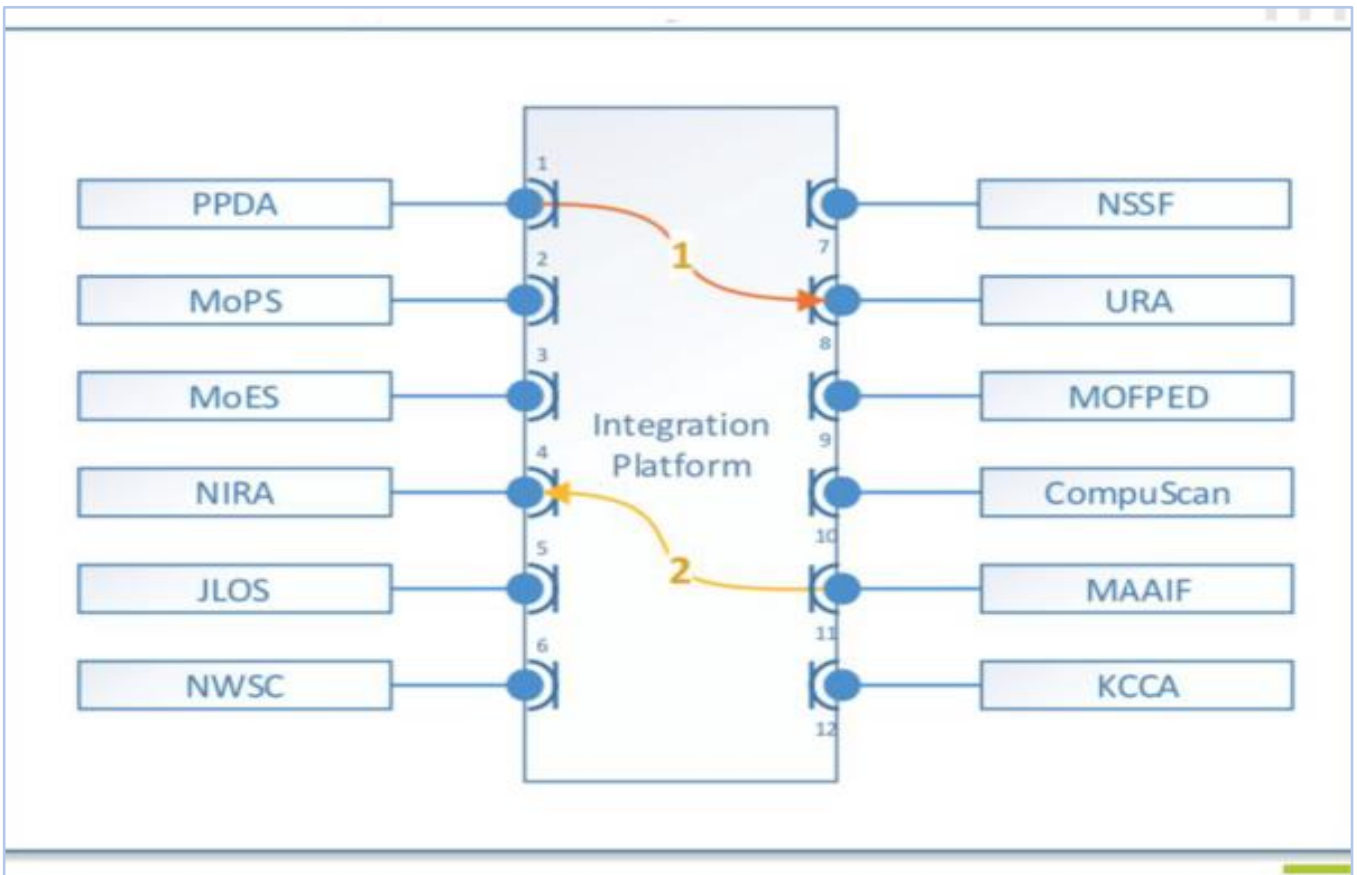
Diagram 7.6-1 Integration Platform Overview

Diagram highlights how the platform will enable access to information and services by citizens as well as analytics tools.
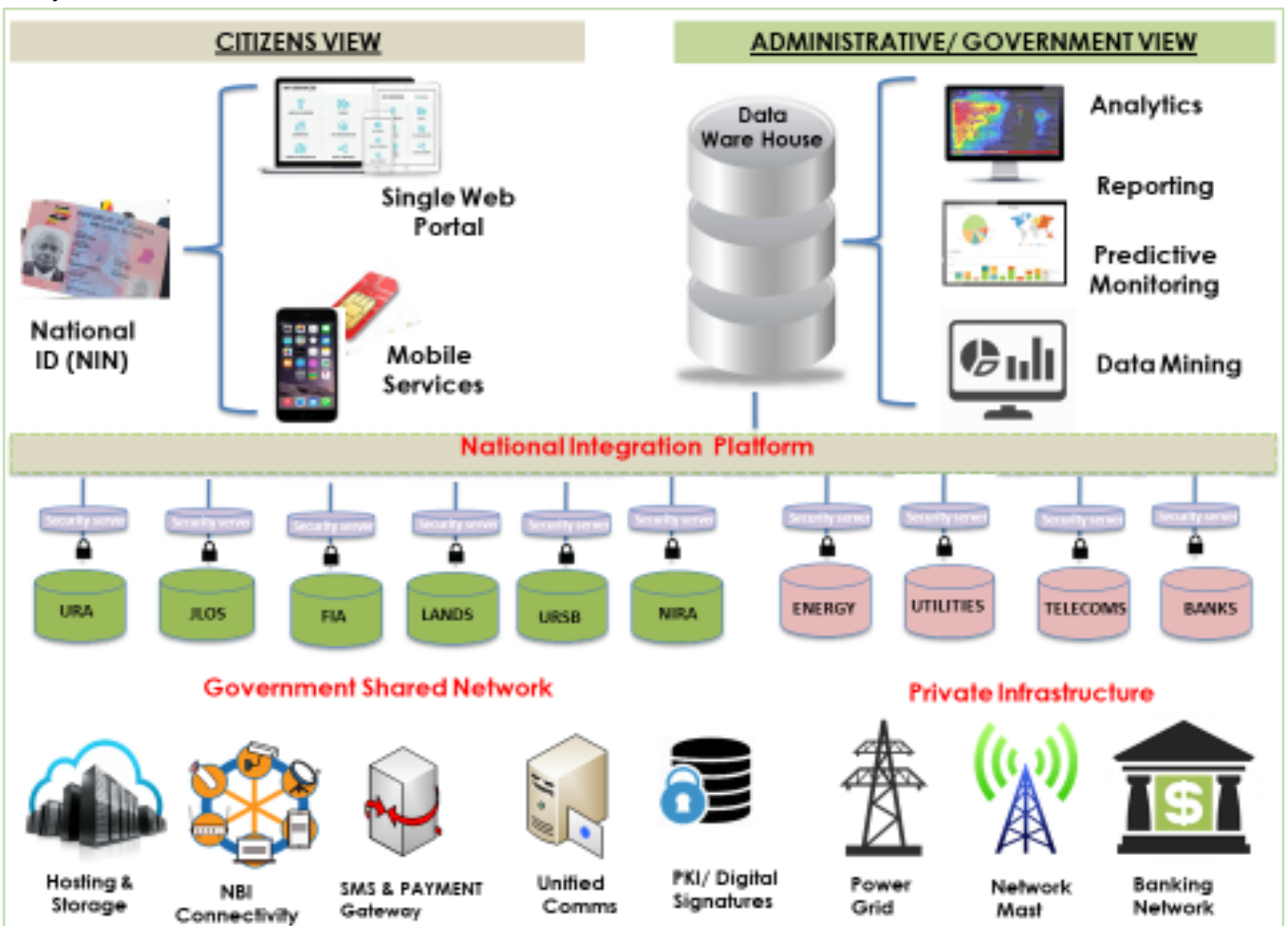

Diagram 7.6-2 Integration Platform and Public Services

7.6.2   Use of Blockchain Technology

A blockchain is a list of records (blocks) chain linked using cryptography (applying information technology for securing data by using third parties/adversaries to prevent unauthorised access to this information, thereby ensuring data maintains its integrity, authenticity and remains confidential). Each block of data is timestamped and integrated to previous blocks using a cryptographic hash. By design, a blockchain is resistant to modification of the data. It is "*an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way*" adhering to a defined protocol for communication and validation of new blocks. Once recorded, the data in any given block cannot be altered retroactively without alteration of all subsequent blocks, which requires consensus of the network majority.

Uganda (through National Drug Authority) is already using blockchain to verify the distribution of counterfeit drugs in the country. The government in collaboration with UK blockchain start-up *MediConnect* tracks the journey of a drug across the supply chain, preventing counterfeits from reaching users. Utilizing blockchain technology in the Financial management and Accountability sectors of government would provide benefits including:

Building Trust in Government Financial Records

A key feature of blockchain-based solutions is transparency through decentralization, allowing participating parties to see and verify data. A blockchain solution could allow for independent verification of governmental claims. For example, publishing of government financial statements enabling multiple parties to securely access and substantiate these financial records, potentially decreasing public distrust.

Protecting Sensitive Government Financial Data

As the default record keeper for society, government is a potential target for hackers. Rather than accept such attacks as the cost of doing business in the information era, they could be mitigated or avoided through the responsible deployment of blockchain data structures. Such data structures harden network security by reducing *single-point-of-failure* risk and can make attempting a breach prohibitively challenging.

Reducing Costs & Improving Efficiency

Government must fulfil its mission while responsibly managing scarce public resources. In the right context, blockchain solutions could reduce redundancy, streamline processes, decrease audit burden, increase security, and ensure data integrity. As an example of efficiency that could be achieved using blockchain solutions, consider the reconciliation of intragovernmental funds transfers. The process of reconciling these funds is time consuming, expensive, and creates budget uncertainty. A payment and accounting system that used blockchain could provide a permanent audit trail and facilitate faster reconciliation.

7.7   A BROADER, LONGER OUTLOOK OF PFM SYSTEMS

Government systems are constantly evolving. With the perpetually shifting business requirements of government, financial management systems must also be tweaked to meet these requirements. Systems' evolution reflects the future of government.

In the future, systems implementation will focus on specific needs of government entities to meet their unique operations requirements. Studies indicate that in the next 10 years, personalization will be preferred over customization in financial management systems. This will help government stay up to date with the industry trends as system users tend to look for personalization of solutions instead of modifications.

As fresh, new generations of employees continue to enter the workforce, the popularization and therefore consumerization of systems will likely rise to meet the demand for systems that aren't run on obsolete technologies. Future trends in ERP systems play a special role in today's growing trends and requirements. Before we know it, AI-powered government will do a lot more than simply track every aspect of government financial and non-financial information and processes. It will go one step further and actually

provide recommendations for improving and optimizing at every level, becoming the real brains behind the operation.

7.7.1 The move to cloud

Cloud computing is not just a buzzword. The year 2018 saw a considerable exodus of several software platforms to the cloud. Oracle Public Sector Financials (On which IFMS is based) had already initiated cloud services for a few years by then. To-date, IFMS is lagging with the integration of cloud computing. In the next few years, expectations are ripe that government will switch to the cloud. The benefits of cloud computing include:

i.   Access to data and applications anytime from anywhere with the help of a browser and an internet connection, even away from office.

ii. Provides the ability to easily and quickly communicate and share work with colleagues, team members and the public in real time.

iii. To a great extent, reduces the need for physical infrastructure, hardware, and other associated costs. The burden of servers and data maintenance shifts to the service provider. With cloud solutions, there is no need to maintain in-house infrastructure.

iv. Automatic software updates and upgrades is easily achieved with cloud computing. All updates are made in the background with little to no interruption in workflow. With the rising trend of cloud solutions, there will inevitably be more regular updates.

v.   One key advantage with the cloud is the secure availability of data. Data is easily recovered, and operations can resume with minimal cost to data and time (even in case of a disaster such as earthquake or your local computer's failure).

vi. Cloud is generally very scalable with flexible pricing as well as resources options. Government can add or remove resources and users according to it's requirements.

vii. Cloud computing provides access to real-time and up-to-date financial data which, in turn, can help government make better business decisions.

7.7.2 Advanced Mobile Features

While the cloud may eventually be the new home of financial management systems, the front door will be mobile devices. Although demand for cloud-based solutions has garnered industry attention, mobility will likely be the primary technological reality ruling government in the near future. Mobile apps provide access to government processes/data via mobile devices anywhere and anytime and are undeniably the best way to respond to real-time changes in government transaction process, procedures, and reports. Having immediate mobile access makes it possible for users to resolve problems on the spot. Government managers, even while off-site, can ensure continuity of government operations.

Mobile technology can also increase security measures through the implementation of multi-factor authentication. Two-factor authentication is a verification method in which a computer user is granted access only after successfully presenting two or more pieces of evidence such as something they know, something they have or something they are. As an example, an IFMS user would only be granted access after inputting the IFMS password AND a code sent to the user's mobile phone on login.

This more widespread use of mobile will be because people are already using their devices extensively and are likely to always carry it with them. Mobility will translate to greater speed and efficiency with no need to first *get back to the office* before they can respond to a request. The imminent release of 5G technology

supports this need for greater speed with the expectation being that 5G could be up to 200 times faster than 4G LTE. In addition, the growth in remote working teams, part-time and contract staff will require that IFMS and other government systems be available, accessible, and operational on-the-go.

Wearable technology is everywhere these days (smart watches such as iOS and android watches). These kinds of devices are popular among the public already. The instant notification, tracking and data aggregating uses of devices like smart watches could be beneficial for government entities looking to access real time notifications (such as an urgent transaction that needs the attention or action of an officer), collect and analyse information even when not in office (e.g. a push notification of a critical message a manager is awaiting on). This means wearable tech will continue to drive demand for cloud computing. These devices receive, generate and store data, which goes through the cloud. The steady growth in popularity of this tech indicates that government will need to invest in cloud computing solutions to accommodate these features.

7.7.3 The Use of Artificial Intelligence

When it comes to future enhancements of PFM systems, AI's the word. *Artificial Intelligence* services are likely to impact every facet of government operations in the near future. The concept of machine learning will soon revolutionize financial management systems. It will help government achieve high levels of automation.

The concept of *Robotic Process Automation (RPA)* is catching up. Whereas previous systems focused on specific processes, RPA is applicable across all departments. This can help the government reallocate wasteful human resources to more productive avenues. An extension of AI is in the form of *Chatbots* and *Digital Assistants*. AI technology chatbots can be deeply integrated in government systems to reduce the cost of operations. For example, as government operations grow in scale, exponentially increasing the volume of service centre calls, chatbots and digital assistants can be used to serve as a as a first point of contact for Service Centres, routing calls to service centre officers after basic interactions with the user and initial analysis, for a more efficient service centre.
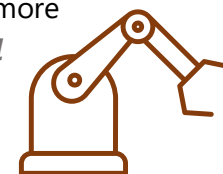
When facing challenges in the course of using IFMS (and other systems in general), users typically address their specific queries to the service desk and then wait for a response. In general, such requests take 1–2 days of processing or even more (depending on the task's complexity level), and so bring some bottlenecks into the workflow. A lot of queries addressed to the IT service desk are similar, and they slow down the process of solving more complex and important queries. According to real data, nearly 35% of all service centre queries are simple and routine inquiries. For live support workers, such requests take up valuable time. This is where digital assistants come into play. Hundreds of ordinary and routine problems can be easily solved in a short period. Notably, running a digital assistant does not require large cash outlays. Ultimately, it offers an opportunity for Service Centre workers to devote appropriate time on handling more complex queries and innovation rather than conducting routine work.

AI-based, voice-activated personal assistant can be invaluable to effectively managing service centres especially during peak hours. The footprint of AI-driven technologies such as machine learning and predictive analytics will only continue to expand in the future.
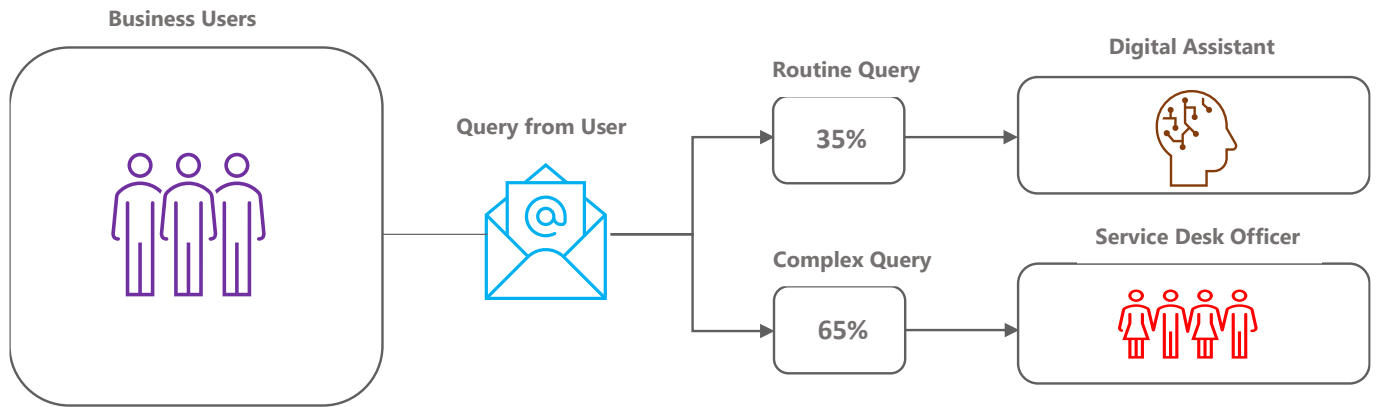
Automation enables users to focus on adapting and responding to more pressing matters. In this new era, individuals will be able to carry out tasks on the go through emerging voice, and gesture-based technologies, resulting in a more seamless user experience.

7.7.4 Support for Internet of Things

The Internet of Things (IoT) is a concept that provides interconnectivity, via the Internet, of computing devices embedded in everyday objects, enabling them to send and receive data without requiring human interaction. Systems can facilitate a new level of interconnectedness between core government processes and IoT devices. IoT-enabled systems operations can easily link and sync devices used in systems with the *Service Centre*.

IFMS relies on various equipment to operate. This equipment needs to be constantly monitored to ensure that it is operating optimally. To help connect all devices used by systems, government could turn to the Internet of Things (IoT). The sharing of data between IoT-connected devices and systems will help gather and analyse data, as well as simplify processes. Data monitoring devices (such as sensors) included in everything from generators, air conditioners and biometric devices can transmit information via their IoT connection back to *Service Centres* or *Data Centres* in real time. IoT, via devices attached to assets, can also help monitoring of government fixed assets, feeding output data into the fixed assets module (relating to asset use and perceived depreciation). Equipment performance can then be easily accessed, allowing government to identify issues such as required maintenance. Government can then have additional transparency as IoT and its connected devices follow a product's life cycle. Another key benefit of bringing IoT-connected device information into financial management systems will be the centralization of data storage and report generation. This transparency, when plugged into systems, aids in making better financial decisions relating to replacement of equipment and other government assets in general.

The additional information from IoT-connected devices will increase overall business intelligence. Government will be able to make increasingly informed decisions from the data at their fingertips via advanced analytics, increased interfaces and forecasts, along with automated workflows. Management can also improve efficiency and productivity by using this information to select the most beneficial updates to various business processes

7.7.5 Big Data Analytics

Big data is a term widely used to describe the exponential growth of data. It also explains the rise of the computing technologies and algorithms that harness big data for valuable insights. In the public sector, big data typically refers to the use of non-traditional data sources and data innovations to make government solutions more responsive and effective. PFM Systems have been operational for more than 12 years now and as such have accumulated a wealth of data that has been traditionally underutilized. This data generation is set to grow exponentially. By employing analytical tools, government can begin to use this data to make accurate predictions that form the basis of a more intelligent approach to strategy.

The potential for big data to transform government is vast. Big data analytics can be used by government to improve existing services and to draw on new datasets to drive entirely new public services. These days, users are accustomed to services growing more personalized and always on-demand. People interact with government services every day in various sectors including the financial sector. There should be an eagerness to use big data to make service delivery smart, responsive and personalized.
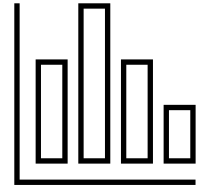
One area of tremendous opportunity is in the use big data algorithms to detect fraud, non-compliance, and bottlenecks in government operations by studying datasets in order to identify patterns and flaws in expected operational patterns. Governments are huge producers of data, a lot of which is unstructured and text intensive. Text analytics and machine learning algorithms can be indispensable in analysis administrative data for insights. They can automate systematic, multilevel checks on payments, procurement and tax records to flag entries requiring further examination, or to identify performance bottlenecks that need attention. For example, big data techniques can transform processes to detect fraud, collusion and money laundering through the analysis of procurement and financial information. Algorithms can be used to trawl procurement records, invoices, bank information, and other data to identify fraud, collusion and shell companies.

Big data is a pressing issue, particularly at a time when many are concerned about the role of information in political change. The role of data in policymaking is big in this information age. Big data is a viable source of high-frequency and granular data that can provide profound insights into government operations to better inform policy decisions. However, to realize value from big data, government must strengthen technical and legal frameworks to access and use data responsibly. Data needs to be seen as an asset rather than a by-product of administrative activity, in order to be valued, curated and shared where appropriate.

7.7.6 Context Aware Business Intelligence

With government increasingly operating in a complex world, using technology that understands the situation you're in, what information you would like to see, and how you would like to see it, will begin to have a real impact on performance. Computers and mobile apps will increasingly integrate *context aware functionality* to anticipate user needs and improve the efficiency of day to day tasks. For example, an accounting officer may automatically receive data on the entity's available funding, a summary of pending approvals every morning, while only data on budget absorption or total transactions for the day is provided every evening. Context aware BI dashboards or Information given to you on mobile e.g. A summary of revenue collected auto generated when government systems shut down at the end of the day and sent to a senior officer manager by email or as a notification.
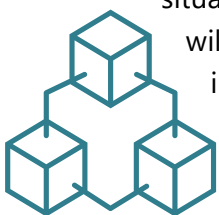
Already a hallmark of a good PFM system, the use of Business Intelligence (BI) will go beyond simply compiling reports. Government will increasingly demand that system data not just be available but interpretable in such a way as to produce strategic leverage. AI or machine learning empowered systems will be able to provide advanced analytics, greater workflow automation and increasingly intelligent interfaces and forecasts.

7.7.7 Triggering Innovation

Over the next few years, technologies discussed above such as cloud computing, the IoT, mobile and big data analytics stand to reinvent how government will operate. Therefore, government will need to keep an eye on technological advances, even those that may seem to be irrelevant at the time.

Recent developments have shown that solutions which first appeared to be designed for private sector are increasingly becoming applicable within the confines of public sector. By taking an innovative approach to the adoption of technology, government stands to save time and increase productivity; results that will be reflected in the increased service levels.

7.7.8 Integration of Multiple Complementary Systems

The strength of an ERP system has always rested in the system is being greater than the sum of its parts. The proliferation of systems has meant that expectations of beneficiaries of government services have shifted from faith in a single solution (such as IFMS) to a combination of *fit-for-purpose* solutions (such as AIMS, EGP etc). Changing lanes between single solutions and clustered options seems to be a natural rhythm in implementation of government systems, leaning one way or the other based on the changing needs of government entities. Accordingly, systems will have to ensure that they can adequately address the challenges faced by government. The biggest challenge government systems will face in the onslaught of independent applications is integration. Figuring out how to expertly integrate a constant stream of data from multiple sources and still present it in coherent system output will be of paramount importance.
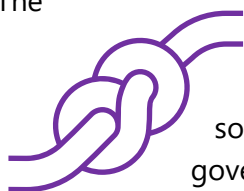
7.7.9 Promotion of Local Solutions

The rapid growth of computing has given rise to significant strides in the local IT sector. Over the past few years, the country has educated and fostered IT skills through education programmes (certificates, diplomas, and degrees) and interactive computing garages that continuously enhance the IT skills of Ugandans. In addition, the rapid growth of local start-ups has showcased the intense capacity for innovation. Government is already taking advantage of this fresh talent for software development, using several home-grown software solutions (e.g. AIMS). It is envisaged that in the near future, government will entrust much broader, complex software development to local IT experts, thereby nurturing local talent, creating much needed employment opportunities while ensuring sustainability by significantly reducing cost outlays required to automate government processes.

7.7.10 Value addition to the citizens of Uganda

While conventionally, financial management systems prioritize internal business value, the focus going forward will lean more toward providing value to clients. This, in turn, will create value for government as well. Government clients will now have a direct hand in shaping the face of PFM Systems, including elements of UI (User Interface) of PFM systems. Traditionally, systems and processes were designed more around solving a problem or streamlining an action as its primary function with its user interface being a secondary element. The ubiquity of the internet (and indeed social media) and its use has shaped what is expected in terms of user experience. This level of expectation will mean that employees, particularly

from a younger generation, will prefer to work with systems that embrace innovation. Systems of the future would need to support multi-team and user collaboration, dashboard customisation and comments/posting to specific system-based requests or processes.

While each of the innovations mentioned above all serve as signposts showing how the future of PFM systems is likely to unfold, there remains one challenge: *People*. Historically the uptake in adopting new technology is slow and when it comes to radical digital transformation, most people are not yet ready. Innovation in systems cannot happen in isolation, it needs to be accompanied by comprehensive change management efforts. Addressing the concerns and fears of both government employees and the public will prove to be as important as adopting or integrating new technology.

APPENDIX 1 (GOVERNMENT ENTITIES USING IFMS FOR FINANCIAL MANAGEMENT) *

Vote No.	Vote Name	Vote No.	Vote Name
MINISTRIES AND AGENCIES (79)			
001	Office Of The President	120	National Citizenship And Immigration Control
002	State House	121	Diary Development Authority
003	Office Of The Prime Minister	122	Kampala City Council Authority
004	Ministry Of Defence	123	Rural Electrification Authority
005	Ministry Of Public Service	124	Equal Opportunities Commission
006	Ministry Of Foreign Affairs	125	National Animal Genetics And Resources Centre and Data Bank
007	Ministry Of Justice And Constitutional Affairs	126	National Information Technology of Uganda
008	Ministry Of Finance, Planning And Economic Development	128	Uganda National Examination Board
009	Ministry Of Internal Affairs	129	Financial Intelligence Authority (FIA)
010	Ministry Of Agriculture Animal Industry And Fisheries	130	Treasury Operations
011	Ministry Of Local Government	131	Office Of The Auditor General
012	Ministry Of Lands Housing And Urban Development	132	Education Services Commission
013	Ministry Of Education And Sports	133	Directorate of Public Prosecution
014	Ministry Of Health	134	Health Services Commission
015	Ministry Of Trade And Industry	142	National Agriculture Research Organisation
016	Ministry Of Works And Transport	143	Uganda Bureau Of Statistics
017	Ministry of Energy And Mineral Development	144	Uganda Police
018	Ministry Of Gender And Social Development	145	Uganda Prisons Services
019	Ministry Of Water And Environment	146	Public Service Commision
020	Ministry Of Information Communication And Technology	147	Local Government Finance Commission
021	Ministry Of East African Affairs	148	Judicial Services Commission
022	Ministry of Tourism and Wildlife	150	National Environment Management Authority
023	Ministry of Science, Technology and Innovation	151	Uganda Blood Bank Transfusion
101	Judiciary (Office Of Judicature)	152	National Agricultural Advisory Services
102	Electoral Commission	153	Public Procurement And Disposal Of Assets Authority
103	Inspectorate Of General Government	154	Uganda National Bureau Of Standards
104	Parliamentary Commission	155	Cotton Development Organisations
105	Law Reform Commission	156	Uganda Land Commission
106	Uganda Human Rights Commission	157	National Forestry Authority
107	Uganda Aids Commission	159	External Security Organisation
108	National Planning Authority	160	Uganda Coffee Development Authority
110	Uganda Industrial Research Institute	302	Uganda National Meteorological Authority (UNMA)
112	Directorate of Ethics And Intergrity	303	National Curriculum Development Centre (NCDC)
113	Uganda National Roads Authority	304	Uganda Virus Research Institute (UVRI)
114	Uganda Cancer Institute	305	Directorate of Govt Analytical Laboratory (DGAL)
115	Uganda Heart Institute	306	Uganda Export Promotion Board (UEPB)
116	National Medical Stores	309	National Identification and Registration Authority
117	Uganda Tourism Board	310	Uganda Investment Authority
118	Road Fund	312	Petroleum Authority of Uganda
119	Uganda Registration Services Bureau		

Vote No.	Vote Name	Vote No.	Vote Name
REFERRAL HOSPITALS (20)			
162	Butabika Hospital	169	Masaka Regional Referral Hospital
173	Mbarara Hospital	170	Mbale Regional Referral Hospital
161	Mulago Hospital	175	Moroto Regional Referral Hospital
163	Arua Regional Referral Hospital	174	Mubende Regional Referral Hospital
164	Fort Portal Regional Referral Hospital	176	Naguru Referral Hospital
165	Gulu Regional Referral Hospital	171	Soroti Referral Hospital
166	Hoima Regional Referral Hospital	179	Entebbe Referral Hospital
167	Jinja Regional Referral Hospital	177	Kiruddu Referral Hospital
168	Kabale Regional Referral Hospital	178	Kawempe Referral Hospital
172	Lira Regional Referral Hospital	180	Mulago Specialized Women and Neonatal Hospital

Vote No.	Vote Name	Vote No.	Vote Name
PUBLIC UNIVERSITIES AND TERTIARY INSTITUTIONS (12)			
139	Kyambogo University (KYU)	136	Makerere University (MAK)
137	Mbarara University of Science and Technology (MUST)	127	MUNI University (MU)
138	Makerere University Business School MUBS)	149	Gulu University (GU)
111	Busitema University (BU)	307	Kabale University
140	Uganda Management Institute (UMI)	308	Soroti University
109	Law Development Centre	301	Lira University

Excludes Uganda Revenue Authority (141) and Uganda National Oil Company (311)

DISTRICTS (115)			
Vote No.	Vote Name	Vote No.	Vote Name
501	Adjumani District	560	Isingiro District
502	Apac District	561	Kaliro District
503	Arua District	562	Kiruhura District
504	Bugiri District	563	Koboko District
505	Bundibugyo District	564	Amolatar District
506	Bushenyi District	565	Amuria District
507	Busia District	566	Manafwa District
508	Gulu District	567	Bukwo District
509	Hoima District	568	Mityana District
510	Iganga District	569	Nakaseke District
511	Jinja District	570	Amuru District
512	Kabale District	571	Budaka District
513	Kabarole District	572	Oyam District
514	Kaberamaido District	573	Abim District
515	Kalangala District	574	Namutumba District
517	Kamuli District	575	Dokolo District
518	Kamwenge District	576	Buliisa District
519	Kanungu District	577	Maracha District
520	Kapchorwa District	578	Bukedea District
521	Kasese District	579	Bududa District
522	Katakwi District	580	Lyantonde District
523	Kayunga District	581	Amudat District
524	Kibale District	582	Buikwe District
525	Kiboga District	583	Buyende District
526	Kisoro District	584	Kyegegwa District
527	Kitgum District	585	Lamwo District
528	Kotido District	586	Otuke District
529	Kumi District	587	Zombo District
530	Kyenjonjo District	588	Alebtong District
531	Lira District	589	Bulambuli District
532	Luwero District	590	Buvuma District
533	Masaka District	591	Gomba District
534	Masindi District	592	Kiryandongo District
535	Mayuge District	593	Luuka District
536	Mbale District	594	Namayingo District
537	Mbarara District	595	Ntoroko District
538	Moroto District	596	Serere District
539	Moyo District	597	Kyankwanzi District
540	Mpigi District	599	Lwengo District
541	Mubende District	601	Mitooma District
542	Mukono District	602	Rubirizi District
543	Nakapiripirit District	603	Ngora District
544	Nakasongola District	604	Napak District
545	Nebbi District	605	Kibuku District
546	Ntungamo District	606	Nwoya District
547	Pader District	607	Kole District
548	Pallisa District	608	Butambala District
549	Rakai District	609	Sheema District
550	Rukungiri District	610	Buhweju District
551	Sembabule District	611	Agago District
552	Sironko District	612	Kween District
553	Soroti District	613	Kagadi District
554	Tororo District	616	Rubanda District
555	Wakiso District	618	Pakwach District
556	Yumbe District	620	Rukiga District
557	Butaleja District	622	Bunyangabu District
558	Ibanda District	627	Kapelebyong District
559	Kaabong District		

MUNICIPAL COUNCILS (41)

Vote No.	Vote Name	Vote No.	Vote Name
751	Arua Municipal Council	778	Rukungiri Municipal Council
752	Entebbe Municipal Council	779	Nansana Municipal Council
753	Fort Portal Municipal	780	Makindye-Ssabagabo Municipal Council
754	Gulu Municipal Council	781	Kira Municipal Council
755	Jinja Municipal Council	782	Kisoro Municipal Council
757	Kabale Municipal Council	783	Mityana Municipal Council
758	Lira Municipal Council	784	Kitgum Municipal Council
759	Masaka Municipal Council	785	Koboko Municipal Council
760	Mbale Municipal Council	786	Mubende Municipal Council
761	Mbarara Municipal Council	787	Kumi Municipal Council
762	Moroto Municipal Council	788	Lugazi Municipal Council
763	Soroti Municipal Council	789	Kamuli Municipal Council
764	Tororo Municipal Council	790	Kapchorwa Municipal Council
770	Kasese Municipal Council	791	Ibanda Municipal Council
771	Hoima Municipal Council	792	Njeru Municipal Council
772	Mukono Municipal Council	793	Apac Municipal Council
773	Iganga Municipal Council	794	Nebbi Municipal Council
774	Masindi Municipal Council	795	Bugiri Municipal Council
775	Ntungamo Municipal Council	796	Sheema Municipal Council
776	Busia Municipal Council	797	Kotido Municipal Council
777	Bushenyi-Ishaka Municipal Council		

DONOR FUNDED PROJECTS (73)

Project Code	Project Name	Project Code	Project Name
0220	Global Fund	1312	Upgrading Mbale-Bubulo-Lwakhakha Road
0354	Support To IGG	1313	North Eastern Road-Corridor Asset Management Project
0952	Upgrading of Masaka-Bukakata Road	1316	Enhancing National Food Security through increased Rice production in Eastern Uganda
0957	Construction of 2nd Nile Bridge	1317	Drylands Intergrated Development Project
1031	Gulu – Atiak - Nimule Road	1319	Kampala Flyover
1038	Design Ntungamo-Mirama Hill Road	1322	Upgrading Muyembe-Nakapiripirit (92km) Road
1040	Kapchorwa Suam	1338	Uganda Skills Development Project
1041	Kigumba Bulima Kabwoya	1338	Skills Development Project
1104	Construct selected bridges	1344	Renovation And Equiping Of Kayunga And Yumbe General Hospitals
1139	Agricultural Technologies & Agribusiness Advisory Services	1354	Grid Rural Electrification Project IDB I
1141	Global Alliance For Vaccine Initiative	1360	Markets and Agricultural Trade Improvements Programme
1158	Northern Corridor Mbarara –Katuna	1363	Regional Pastoral Livelihood Improvement Project
1178	UPDF Peace Keeping Mission in Somalia	1379	Promotion of Green Jobs and Fair Labour Marketing Uganda
1180	Kampala-Entebbe Express Highway	1380	Northern Uganda Social Action Fund
1184	Refinery Development Programme	1381	Programme For Restoration of Lives in Northern Uganda
1185	Italian Support To HSSP And PRDP	1400	Regional Communication Infrastructure Program
1195	Vegetables Oil Development Project Phase 2	1404	Kibuye Busega Mpigi
1212	Electricity Sector Development Project	1410	Skills for Oil and Gas Africa
1231	Water Management and Development Project	1413	East Africa Public Health Laboratory Network Phase II
1243	Rehabilitation & Construction Of General Hospitals	1417	Farm Income Enhancement and Forest Conservation Project
1255	Uganda Support to Municipal Infrastructure Development Project	1424	Multi-Lateral Lakes Edward & Albert Integrated Fisheries and Water Resources Management
1262	Rural Electrication project	1425	Multisectoral Food Safety & Nutrition Project
1263	Agriculture Cluster Development Project	1426	Grid Expansion and Reinforcement Project - Lira,Gulu, Nebbi to Arua Transmission Line
1273	Support to Higher Education, Science and Technology	1428	Energy for Rural Transformation
1277	Kampala Northern Bypass Phase 2	1436	Gavi Vaccines And Health Sector Devt Plan Support
1281	Tirinyi-Pallisa-Kumi/Kamonkoli Road	1440	Uganda Reproductive Maternal & Child Health
1288	Programme For Financial Inclusion in Rural Areas of Uganda	1441	Uganda Sanitation Fund Phase II
1289	Competitiveness and Enterprise Development Project	1486	Development Initiative for Northern Uganda
1289	Competitiveness and Enterprise Development Project	1499	Development Response to Displacement Impacts Project
1290	The Third Financial Management & Accountability Programme	1500	Institution Capacity Building In Health Sector Phase II
1291	Regional Integration Implementation Programme Support for Uganda	1508	National Oil Palm Project
1295	Second Kampala Institutional and Infrastructure Development Project	1514	Uganda Support to Municipal Infrastructure Development
1296	Uganda Teacher and School Effectiveness Project	1516	Construction of the 33KV Distribution Lines in Kayunga, Kamuli and Kalungi Service Stations
1310	Albertine Region Sustainable Development Project	1517	Bridging the demand gap through the accelerated rural electrification Programme
1310	Uganda Albertine Region Sustainable Development Project	1518	Uganda Rural Electrification Access Project
1310	Albertine Region Sustainable Development Project	1521	Resource Enhancement and Accountability Programme
1311	Upgrading Rukungiri-Kihihi-Ishasha/Kanungu Road		

APPENDIX 2 (GOVERNMENT ENTITIES USING A HYBRID FORM OF IFMS)

Vote No.	Vote Number	Vote No.	Vote Number
DISTRICTS USING HYBRID IFMS (19)			
624	Bugweri District	632	Kitagwenda District
600	Bukomansimbi District	626	Kwania District
619	Butebo District	621	Kyotera District
614	Kakumiro District	633	Madi-Okollo District
635	Kalaki District	623	Nabilatuk District
598	Kalungu District	617	Namisindwa District
634	Karenga District	629	Obongi District
625	Kasanda District	615	Omoro District
630	Kazo District	631	Rwampara District
628	Kikuube District		