



National Information Technology Authority Uganda

Uganda - Integration of National Databases project

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NITA-U. (2015). Feasibility Study for Integration of National Databases Final Report. August 2015 [online]. Available: <https://www.nita.go.ug/sites/default/files/publications/NITA-U%20Feasibility%20study%20for%20integration%20of%20National%20databases.pdf> [accessed: 06 Nov 2017].

Table of Contents

Introduction.....	5
Summary of current state results.....	6
Summary of recommendations.....	8
Challenges to the Integration of National Databases in Uganda.....	10

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Introduction

The Government of the Republic of Uganda acting through National Information Technology Authority Uganda (NITA-U) identified the need to integrate national databases and systems to provide standard e-Government Services Integration Framework for the development of Government to Government (G2G), Government to Business (G2B) and Government to Citizen (G2C) services. There are approximately 130 Ministries, Departments and Agencies (MDA) each operating under a specific mandate to provide services to citizens and Government using different stand-alone systems. This justifies the need to integrate national systems and databases. NITA had a feasibility study carried out to consider the integration of the national databases.



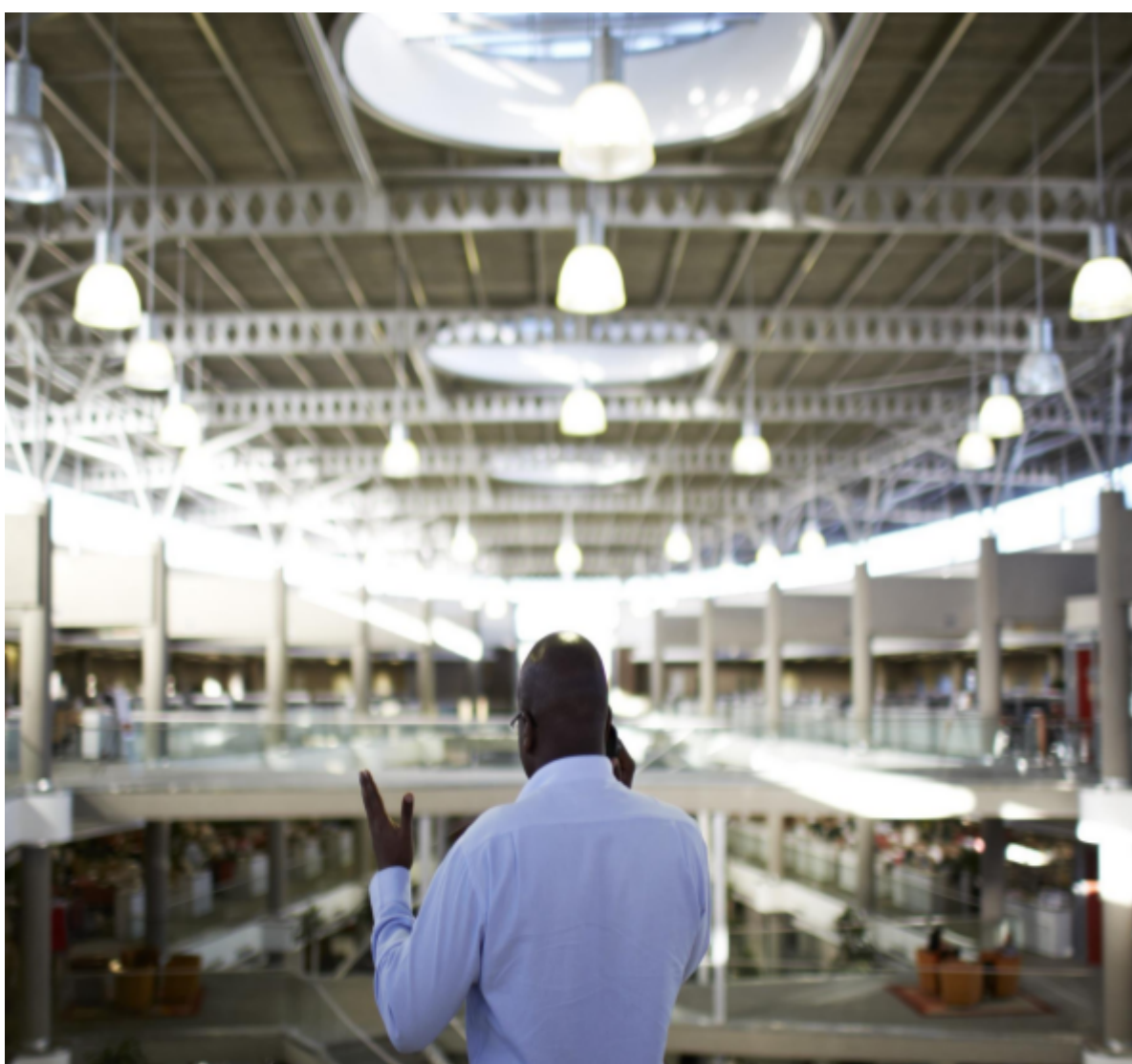
Summary of current state results

Based on the information reviewed and the interviews conducted with the identified MDA representatives, we have formed a view on the current state of the MDA IT environments and the legal environment. The key findings identified included the following:

- ***Legal Environment***
 - Limited awareness of the current cyber laws and ICT regulations.
 - Poor IT governance within the MDAs in regards to policies and procedures governing the environment and usage of IT.
 - Non-compliance to ICT regulations for example the National Information Security Framework.
 - Generic governance model; the regulations do not provide a clear structure for the governance for the integration.
- ***National Systems and interfaces***
 - Some of the National systems/databases that were selected as part of the project terms of reference had either been replaced or phased out.
 - Some MDAs are aware of the other MDAs they would need to be integrated with, but not aware or sure of the specific National systems within that MDA that they would need to connect to.
- ***Infrastructure and Security***
 - Many of the MDAs interviewed did not have knowledge of the National information security policy and were not in compliance with it.
 - 6% of the MDAs did not have any antivirus protection installed on their networks.
 - 13% of the MDAS did not have any firewall protection.
 - 91% of the MDAs do not have load balancers or any clustering for their National Systems.
 - The current National Web portal is not interactive and does not provide any e-services.

- **e-services**

- 63% of the MDAs do not provide web based e-services and 78% do not provide mobile based e-services.
- There is very limited integration between the current national systems, though 94% of the MDAs expressed the desire to share information and integrate in future.
- Some MDAs were identified by other MDAs to be service providers and yet they do not have any systems currently in place to support these services.



Summary of recommendations

- ***Legal Environment***

- Appointment of an independent governance structure for the integration with representation from the e-service providers as well as an administrative team.
- Implementation of Information Technology (IT) policies and procedures to govern aspects of the IT environment. These include; change management, monitoring, incident management, backup management, data classification, business continuity and access policies.
- Proposed legislation/guidelines;
 - identity management in electronic transactions
 - Regulations that govern the management of e-services i.e. implementation, upgrade and removal of systems or e-services from the bus in the current legislation
 - Information management
 - Service Level Agreements between e-service providers and consumers.
- Passing of the Data Protection and Privacy bill before the implementation of the integration infrastructure.
- Drafting and passing of the cybersecurity laws.

- ***Infrastructure and Security***

- Enforcement of the National Information Security Policy by NITA-U.
- Implementation of an information security framework for integration that any MDA wishing to integrate must adhere to. This will set standards like the antivirus protection, access control and firewalls standards.
- Implementation of a Government Service Bus (GSB), a software architecture model used for designing and implementing communication between mutually interacting software applications in the Service Oriented Architecture (SOA).
 - The GSB should have load balancers to enhance the availability and scalability of server applications.
 - The GSB should have the ability to log all activities and store the logs.

- *e-services*
 - Implementations of the quick win e-services within the next 12 months i.e. e-verification, e-passport and e-land.
 - Implementation of the top priority e-services within the next 3 years.
 - Implementation of the Government enterprise service bus to enable data sharing and consolidation.



Challenges to the Integration of National Databases in Uganda

- ***Unstable power supply***
 - Uganda suffers from irregular power supply in comparison to the countries reviewed in the case studies. Some areas of the country suffer frequent power outages while others have not yet been connected. This can be attributed to the fact these areas are not connected to the national grid. As a result, the use of technology is hindered.
 - In addition, some MDAs do not have back up to the main power supply yet they are proposed e-service providers. This is bound to affect the 99.9% availability of services. This was not a challenge in the other countries; these countries utilise alternative sources of power including wind, nuclear and solar energy. This challenge can be countered in the short run by using Uninterrupted Power Supply (UPS), Power Generators and investing in alternative power sources for example solar energy. In the long run, to ensure high availability of their services, MDAs will need to implement disaster recovery sites.
- ***Illiteracy is high in Uganda***
 - Computer illiteracy levels in Uganda are very high in comparison to Estonia, Moldova and South Korea. This will translate into a small portion of the population, concentrated in urban areas, accessing and utilising the e-services. To combat computer illiteracy, NITA-U is in the process of setting business information centres in rural areas. The same centres can be used to sensitise the citizens on e-services, how to access and use them.
- ***Language barrier in Uganda***
 - While English is the official language in Uganda, not very many are able to read or write it. This would prove a challenge to citizens when using e-services. In the countries where integration was implemented, content was localised to cater for all citizens for example Korean is the main language in South Korea, Romanian and Russian in Moldova and Uralic language in Estonia. For the case of Uganda, localising content in the e-services into the major local languages will go a long way in ensuring the inclusion of all citizens in the integration.
- ***Legal harmonisation of MDA roles***
 - There is need for legal harmonisation among the different MDAs on the roles to be played in the integration to prevent interference in the delivery of their mandates. In the countries where the integration was implemented Service level agreements were signed by the different agencies on the use of the integration solution. Service Level Agreement's that clearly define the roles of the different MDAs will be signed to ensure there is clear communication on each one's mandates and expected service quality.

- ***Lack of infrastructure and systems by the MDAs***
 - A good number of the MDAs that have been proposed as service providers lack the infrastructure and/ systems to deliver e-services. The case studies review revealed that the countries that implemented integration solutions invested in the development of systems for each of the service providers. In Uganda some of the MDAs with no systems are currently engaged in the procurement to acquire systems. NITA will also help in the development and as well as provide a central data store for frequently requested data.
- ***Non-compliance with IT Governance***
 - Currently, some of the MDAs proposed to be e-service providers do not have IT governance frameworks. In the case studies, governance frameworks were developed, implemented and utilized prior to the implementation of the integration. In Uganda NITA-U, has developed a detailed national information security framework for both public and private institutions that use protected computer resources. It covers minimum IT governance standards which can be adopted by MDAs that don't have. NITA-U must ensure to perform compliance checks to confirm that all MDAs adhere to these standards.
- ***Internet affordability***
 - Access to the internet is not yet affordable to most citizens. In addition to the challenge above, there is low penetration of the internet which will make the use of e-services especially in the rural areas low. This means that these citizens will not be able to reap the benefits of the integration. In the other countries where the integration was implemented there was high connectivity throughout the country unlike Uganda. This challenge is being addressed through the implementation of the National Backbone Infrastructure to connect the different parts of the country. District business information centres are also being implemented and can be used to provide free internet access to the citizens in those areas for easy access to e-services.
- ***MDA Acceptance***
 - The MDA's acceptance of the solution due to lack of funds to develop systems and possibilities of retrenchment will prove to be a challenge to the integration. In the other countries business process re-engineering was carried out to makes sure the different roles of the agencies were clearly laid out to avoid redundancies. Business process reviews will need to be carried out before the implementation of the e-services and stakeholder workshops will also provide an avenue to involve them in the implementation process.

