Developing the Enterprise Architecture and HIE for E-Health Services for the Health Sector, Uganda

MINISTRY OF HEALTH & MAKERERE UNIVERSITY
In collaboration with DEVELOPMENT PARTNERS
What eHealth Seeks to Achieve

- Interoperable Electronic Health Record (iEHR) for All Patients
- Patient Health Information Available to Clinicians in All Health Facilities
- Efficient System to Transfer Patients Between Health Facilities
- Access to Health Services through electronic means
- Improved Health Research, knowledge & practice sharing and information management
- Improved capacity and capability of health professionals
eHealth Policy & Strategic Framework

- **Mission**: To transform the health of the people of Uganda by promoting effective utilization of e-Health

- **Rationale**: Aligned to SDGs, Aligned to the NDP II, Aligned to National Health Policy, Aligned to HSSIP II, Aligned to National ICT Policy

- **Vision**: Effective use of e-Health for better health outcomes of the Ugandan population

- **Scope**: Public & Private Sector, Development Partners, Clients, Full Range of Healthcare Services

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e-Health is a cost-effective and secure use of information and communication technology (ICT) in support of health and health-related fields, including healthcare services; health surveillance; health literature; and health education, knowledge, and research.
eHealth Policy & Strategy Pillars

Benefits
Improved Quality, Safety and Outcomes,
Improved efficiency, productivity and effectiveness
Enhanced service and satisfaction for citizens, patients and providers

Uganda National eHealth Pillars

- Leadership and Governance
- eHealth Enterprise Architecture
- eHealth Services
- Infrastructure
- eHealth Information Assurance
- Human Resources & Capacity Building
- Mainstreaming Special Interest Groups
- Research, Innovation and Development
- eHealth Investment
- Stakeholder Engagement
- Change, Adoption, BPR and Transitioning
- Legal and Regulatory Function
Immediate Strategy Implementation Areas (Phase I)

- Setup, strengthen and operationalize eHealth Governance Structures
- eHealth Regulatory function development
- Stakeholder Engagement Plan Development
- eHealth Enterprise Architecture (EA) and Health Information Exchange (HIE) Development
- Electronic Health Record (EHR) development
- Health Provider, Facility and Client Registry Development
- Strengthen existing eHealth Initiatives DHIS, HMIS, HRHIS, e-Recruitment, etc.
- Workforce, Skills and Training
Enterprise Architecture Framework

EA direction
- EA vision
- EA strategy
- EA principle

EA information
- As-is Architecture
- Transition plan
- To-be Architecture

Reference model
- PRM
- BRM
- DRM
- SRM
- TRM

EA management system
- Organization
- People
- Process
- EA management system

EA information
- Figurative current and future state of business and ICT resources (biz process, system, data, infra) with standardized specification

EA direction
- Guide EA activities and deliverables

EA Management system
- Managerial foundation and Supporting tool
Problem Situation in Uganda Health Sector

- Duplication of efforts across health sector amidst scanty and un-optimally utilized resources
- Lack of standardization & low adoption of open standards
- Lack of a transparent process for review and accreditation process for e-health innovations prior to pilot or scale-up
  - Lack of interoperable e-health initiatives
  - Lack of appropriate control of e-health initiatives
- Scanty or very low use of data on health service delivery
- Relaxed mode of enforcing national & international laws/regulations on health information management
Benefits of EA in enabling e-health services

1. Eliminate duplication of functionality within systems, using a unified framework for developing and documenting e-health solutions that address mission-specific requirements and adhere to MOH standards and reporting needs

2. Provide a holistic vision of the relationship between MOH business operations and ICT investments for enabling integrated e-health services and evidence based decision making in health sector

3. Provide a common frame of reference for e-health services that MOH can use to contract service providers or steer the development of e-health services in a cohesive manner

4. Increased cost savings for MOH and its partners, and redirecting resources to sustainability of integrated e-health initiatives.
Expected Solutions

Synergy of business processes that deliver integrated e-health services

Harmonized data for enabling integrated e-health services

Existing and required applications for integrated e-health services; and the Uganda’s HIE Framework

Existing and required ICTs for supporting delivery of integrated e-health services

Security mechanisms for reliable e-health services

Open source HIE approaches (e.g. Open HIE)
Development Steps for Uganda eHealth EA & HIE

- Specify key dimensions of the baseline context and target context for integrated e-health services in Uganda
- Conduct a benchmarking exercise to explore best practices or success stories on implementation of nation wide e-health EAs and HIEs, Standards and compliance frameworks in those countries
- Develop business requirements for integrated e-health services in Uganda
- Develop Architecture Principles [B,D,A,S,T] for integrated e-health services in Uganda
- Design Business Architecture Vision/intermediate detail for integrated e-health services in Uganda
- Develop data requirements for integrated e-health services
- Develop data architecture for integrated e-health services
- Develop applications requirements and corresponding applications architecture for integrated e-health services
- Develop technology requirements and corresponding technology architecture vision for integrated e-health services
- Develop security requirements and corresponding security architecture vision for integrated e-health services
- Develop Interoperability standards for integrated e-health services in Uganda
- Develop a Health Information Exchange (HIE) Framework for Uganda (based on output from activities 5 to 11 and with reference to the existing open HIE framework)
- Validate the e-health EA and HIE framework for Uganda by engaging an external technical team that has widely implemented e-health services
- Validate the e-health EA and HIE framework for Uganda by engaging all stakeholders in final consultative meetings
- Consolidate project deliverables and seek stakeholders final approvals
Expected Outputs for Uganda eHealth EA & HIE

• **Enterprise Architecture for E-Health Services in Uganda**: This will involve a collaborative and rigorous exercise between Makerere University team and MOH with its partners, that will deliberate and yield the following:
  - The full portfolio of existing and planned health services and e-health services in Uganda;
  - A holistic comprehension of business processes executed by MOH and its partners in delivering the e-health services portfolio [output will be a Business Architecture for e-health services in Uganda];
  - A holistic comprehension of data requirements that must be addressed to meet the planning and decision making needs of MOH and its partners [output will be a Data Architecture for e-health services in Uganda];
  - A comprehensive delineation of applications that MOH and its partners must build and implement to realize their respective visions and missions [output will be an Applications’ Architecture for e-health services in Uganda];
  - A holistic conceptualization of the technology requirements that must be established so as to realize reliable and robust e-health services in the country [output will be Technology Architecture for e-health services in Uganda];
  - An underlying suite of security requirements that must be implemented so as to realize information assurance (data confidentiality and privacy) [output will be a Security Architecture for e-health services in Uganda];
  - An underlying suite of architecture principles and standards to enable proper governance of deliverables (a) to (f) above.

• **Health Information Exchange (HIE) Framework**: This will involve a detailed comprehensive exercise of drilling the deliverables above to a level of detail that is adequate enough to clearly articulate information exchanges instances in the complete suite of e-health services in the country
National eHealth Standards, Registries, & Interoperability
THANK YOU FOR LISTENING,
CONTRIBUTIONS ARE WELCOME