Information and Communications Technology in support of NHI

4th Biennial Conference

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Introduction

• The Health system in South Africa is undergoing transformative changes

• Appropriate information systems form the basis of successful NHI implementations

• How is the CSIR, from an ICT perspective, supporting the transformation of the health system in South Africa?

• Two national strategic initiatives:
  • Development of a Normative Standards Framework for eHealth in South Africa
  • NHI population enrolment and linkage to facilities
World Health Organisation defines eHealth as “the use of ICTs for health to, for example, treat patients, pursue research, educate students, track diseases, and monitor public health.”

- Electronic Health Records
- Vital Registrations
- Consumer Health Informatics
- Mobile health (mHealth)
- Telemedicine
“Historically, health information systems in South Africa have been characterised by fragmentation and lack of coordination, prevalence of manual systems and lack of automation, and where automation existed, there was a lack of interoperability between different systems.”

Dr. Aaron Motsoaledi, Minister of Health, eHealth Strategy South Africa, 2012-2016
Normative Standards Framework (NSF) for eHealth in South Africa

Commissioned by the National Department of Health

CSIR Meraka, Medical Research Council, Nelson Mandela Metropolitan University
eHealth: Interoperability

- Prevalence of heterogenous systems – lack of interoperability

- One of the mechanisms to achieving interoperability of eHealth systems is standards

- Challenges:
  - Systems involve large and disparate data sets including multimedia diagnostic images, patient records, test results, research samples, financial codes, etc.
  - eHealth standards do not address one unified area of technology but multiple areas
  - The eHealth standards arena involves competing or overlapping standards initiatives taking place in different institutions

- Project Objective: to establish a National Normative Standards Framework for eHealth; thereby ensuring interoperability of health information systems
Normative Standards Framework - Process

- International and National eHealth standards
- National Indicator Data Set (NIDS) Requirements
- Typical Health Scenarios and Functions

eHealth National Standards Framework V1.0
Example of typical health scenario

Consultation –
pregnant woman who is diabetic
Patient registration related standards

1. **Patient arrives**
2. **Search for patient**
3. **Found?**
   - **YES**
     - **Retrieve patient folder**
   - **NO**
     - **Register patient**
     - **Create Patient Folder**
     - **Create Patient Card**
     - **Record Attendance**
4. **NIDS data element (PHC headcount >=5 years)**
Consultation standards

NIDS data element (PHC case seen by Prof Nurse; Antenatal care 1st visit; Antenatal care 1st visit >= 20 weeks; Antenatal care 1st visit < 20 weeks)

Nurse consultation/Record type of Service

Record Medical History

Record observations

Order tests

NIDS data element (Antenatal care client HIV 1st test)

Standards (ISO/TR 20514:2005; ISO 13606 (parts 1-4); HL7 CDA)

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Schedule appointment standards

- Make appointments
  - Standards (ISO 13606-4:2009; HL7 messaging standard)

- Standard (ICD code)
- Diabetic clinic follow-up

- Antenatal follow-up

- Patient leaves
  - Standard (ICD code)
Categories of eHealth Standards

- Identifier Standards
- Electronic Health Record Standards
- Health Smart Card Standard
- Messaging Standards
- Structure and Content Standards
- Terminology and Classification Standards
- Security and Access Control Standards
# Recommended Standards

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<tr>
<th>Standard</th>
<th>Description</th>
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<tr>
<td>ISO/TS 22220:2011</td>
<td>Identification of subjects of health care</td>
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<tr>
<td>ISO 13606 (1-4)</td>
<td>Electronic health record communication (Part 1-4)</td>
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<td>ISO 18308:2011</td>
<td>Requirements for an Electronic Health Record Architecture</td>
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<td>ISO 21549 (1-8)</td>
<td>Patient Healthcard Data – (Part 1-8)</td>
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<td>ISO 170090 (1-3)</td>
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<td>ISO/TS 27527:2010</td>
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<td>HL7</td>
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<td>DICOM</td>
<td>Digital Imaging and communication in medicine</td>
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<td>HL7 CDA</td>
<td>Clinical document architecture</td>
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<td>HL7/ASTM standard</td>
<td>Continuity of Care Document (CCD)</td>
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<tr>
<td>ICD Codes</td>
<td>International classification of diseases codes</td>
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<tr>
<td>SNOMED CT</td>
<td>Systematized nomenclature of medicine – clinical terms</td>
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<tr>
<td>LOINC</td>
<td>Logical observation identifiers names and codes</td>
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<tr>
<td>NAPPI</td>
<td>National pharmaceutical product index</td>
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<tr>
<td>ICHI</td>
<td>International Classification of Health Intervention</td>
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<tr>
<td>CPT</td>
<td>Current Procedure Terminology</td>
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<tr>
<td>MIOS 5.0</td>
<td>SITA – Minimum Interoperability Standards for SA Govt. systems</td>
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Next Steps

- Approval of Normative Standards Framework V1.0 – NDoH
- Development of an assessment tool
- Audit of existing health information systems against NSF using assessment tool
- Recommendations for roadmap towards interoperability
NHI Population Enrolment and Linkage to Facilities

Commissioned by the National Department of Health

Meraka, DPSS, BE, MDS
Project Objective

SA NHI Population Register

Linkage of population to health facilities
NHI population enrolment and facility linkage - Process

- NHI PR Demo
  - NHI PR requirements;
  - Gaps in existing data sources;
  - Strategy for filling in gaps;
  - Pilot implementation;
  - Lessons learned;
  - Acquisition Strategy

- NHI population register design
  - Enterprise engineering approach
  - Use TOGAF model
  - Bus. requirements
  - Technology requirements

- Initialisation of the NHI population register
  - DHA
  - DoH
  - Other sources, e.g. IEC, census, etc.
  - Assessment of facility linkages
Conclusion

• NDoH is leading the transformation of the South African health system and is at the forefront of unlocking the power of ICTs to support the ‘new’ health system in South Africa – CSIR supporting this transformation with key strategic projects

• South African eHealth vision – “a fully automated and integrated health information system”
Thank you