Health Information Systems: Scaling up solutions to transform healthcare delivery in Africa

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Plot for the presentation

- **1st HELINA** Conference, Nigeria, 1993: Organizer
- **HELINA’2003**: Need for appropriate software for healthcare
- **HELINA’2007**: Situation in e-health in Africa then
- **HELINA’2011**: Situation in e-health in Africa now?

- Way forward for scaling up solutions?
- Way forward for transforming healthcare?
Software systems in HELINA’93

- AISY: An Integrated AIDS Information System
- The Development of a Computerized Information System in the Harare City Health Department
- Developing a Medical Information System for Two Local Governments: Ijebu-Igbo (Nigeria) and Manzini Town Council (Swaziland)
- An Integrated Hospital Information System for the National Cancer Institute in Cairo, Egypt: An Experience to Be Shared
- Hospital Information System in a Nigerian Teaching Hospital
- Utilization of Computers in Onchocerciasis Control Programme in West Africa
- Using Information in Clinical Management: A South African Case Study
- Expert Systems as a Useful Tool for Tropical Diseases Diagnosis: Case of Malaria
Preconditions for sustainable information systems development for African healthcare institutions

The MINPHIS experience and a software industry survey in Nigeria

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Ex-Chair, Finnish Social and Health Informatics Association FinnSHIA

H. Abimbola Soriyan, Obafemi Awolowo University, Nigeria
Anja Mursu, University of Kuopio, Finland
Generic model of the healthcare delivery system: What is your country’s specific system?
Information activities for healthcare delivery

Legend:

- Formal organization
- Activity
- Need/service relationship
Information systems for healthcare delivery

- Information system for clinical healthcare delivery = CIS
- Information system for inter-organizational networking in healthcare = "IOHIS"
- Information system for citizen-to-healthcare linkages = "eHealth"
- Information system for regional integration of healthcare and social services = "RHSIS"

Legend:
- Formal organization
- Activity
- Need/service relationship

Korpela et al., HELINA'2003: Preconditions for sustainable ...
Generic healthcare management system

Legend:

- □ Formal organization
- ○ Activity
- → Need/service relationship
Information systems for healthcare management

Information system for national healthcare management = NHMIS

Information system for district health management = DHMIS

Information system for healthcare facility management = "HFMIS"

Legend:
- Formal organization
- Activity
- Need/service relationship
- Need/service relationship

Korpela et al., HELINA'2003: Preconditions for sustainable ...
Need for appropriate software for healthcare – priorities in Africa?

Legend:
- Formal organization
- Activity
- Need/service relationship

- NHMIS software
- HFMIS software
- CIS software for hospitals and PHC
- Inter-organizational software
- DHMIS software
- "eHealth" software
Recommendations

1. **Local software development capacity** is the key to appropriate healthcare software in Africa – find your software professionals, trust them, educate them, fund them!

2. Foreign aid and government support are needed for *seed funding* to local developers, until they can fund themselves.

3. International organizations should organize and fund a clearing house of **useful open source bits and pieces** (applications, components, platforms, interfaces, information models) that African software developers can build upon and add to.

4. Open platforms (e.g. Linux), open standards (e.g. HL7) and open source applications (e.g. WorldVistA) are needed, but they are only materials for local adjustment and development.

5. Healthcare professionals and software professionals must apply **collaborative design methodologies**, and be educated in such methodologies.
Towards re-usable efforts in healthcare software for Africa

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Where is IT used currently in Africa?

Schematic picture of a health care system
Managing a healthcare system: HISP / DHIS
Managing a health facility:

HISP @ Zanzibar
Outpatient encounters:
OpenMRS
Inpatient care:
MINPHIS, Care2X

Legend:
- Society, social formation
- Formal organization
- Activity
- Need/service relationship
- Individual

Information use
Data transfer between systems
Data storage

Patient admin core, gen. record

National health administration

State / province health administration

District health administration

Teaching hospital

General hospital

Health centres

Social services

Private clinics etc.

NGOs, traditional healers, etc.

Control, coordination, resources

Information

Care provision

Clinics, specialties

Health records

Support services

Management

Control, coordination, resources

Data storage

Services

Health needs

Care provision

Health records

Control, coordination, resources

Data transfer between systems

Data storage

MINPHIS, Care2X

Citizens

Community

Inpatient care:

Resource control, coordination, resources

Clinics, specialties

Health centres

General hospital

Teaching hospital

National health administration

State / province

District health administration

Legend:
- Society, social formation
- Formal organization
- Activity
- Need/service relationship
- Individual

Information use

Data transfer between systems

Data storage

Patient admin core, gen. record

10 Jan 2007

Korpela, HELINA’2007. Tow
Empowering communities:

cf. Byrne
Possible elements for national e-health architecture

- Use situations
- Information storages
- Data transfer
- For action!
Problem: Lack of re-use of efforts

- Ideally: Combine OpenMRS, MINPHIS, DHIS, RAFT, ...
- But in practise cannot add "alien" modules
- Different data models
- Different technological architectures and platforms
- Not always fully "internationalized" for localization
- Local modification leads to incompatibility for ever

- So same functionality is re-developed all the time
- Overlap of efforts while development capacity is scarce!
HELINA’2011:
Situation in e-health in Africa now?

- Managing the (national) healthcare delivery system:
  - DHIS going strong

- Managing a healthcare facility (hospital):
  - Not yet there – something about process optimization?

- Inpatient care (hospital information systems):
  - Cinz@n is it !!!

- Outpatient encounters (electronic records):
  - OpenMRS going strong

- New: Integrating specialized clinical systems/modules:
  - RIS

- New: Vertical / disease-wise systems:
  - Psychiatry, neurology, ophthalmology, diabetes,

- Empowering communities (community health IS):
  - Not yet there – Kenya and home-based care getting close to it
Way forward for scaling up solutions?

• Health informatics / e-health for Africa has grown amazingly from 1993!

• In success stories, the recommendations of 2003 seem to be valid:
  • Local development capacity
  • Seed funding
  • International collaboration
  • Collaborative design

• But the importance of champions should be noted! There is no ”Anglophone RAFT”!

• In 2011 maybe less fragmentation than in 2007, but the conclusion in 2011 is still the same as 2007 (next slide)
Conclusion: Call for action
Who will do it in and for Africa?

- Group of research & development projects together – OpenMRS, HISP / DHIS, iPath, MINPHIS, …
- As a “HELINA Framework” project
- Action research on collaborative software development – solving the problems of distributed development of internationalized, configurable, locally extendable software
- Cooperate with similar initiatives worldwide
- Needs-driven! Study actual activities and work flows
- Start in HELINA’2007, continue as WITFOR’2007 project
- Raise funding from EU FP7 ICT or INCO, or from …
Way forward for transforming healthcare?

- Do we really know what is the impact of e-health / health informatics / telemedicine on people’s health?
- Is there evidence-based health informatics for Africa?
- Or do we rely on anecdotal evidence?

- **Evaluation of the health services** from community viewpoint, before and after an intervention, should be a standard part of e-health implementation projects
- Methods for e-health impact assessment needed!