HISP – Health Information Systems Program
DHIS – District Health information Software
1994 – 2007 – Ongoing ...
Open Source: application sw – technologies

Background South Africa:

- Started 1994/95 as a RDP project –funded by NORAD (the longest lasting? At least the widest spread!)
- 4 pilot districts in Cape Town : Information systems to support post-apartheid decentralised health structures (RDP goals)
- Base: Universities of Western cape & Cape Town & Western Cape Dept. of Health

Status today

- National standard in South Africa
- Being spread in Sub-Saharan Africa & Asia

South Africa 1994 /95

– Problems & challenges:

Apartheid Legacy:

- Inequity in Health status & Health services provision
- Fragmentation:
 - Until 1994: 14 Departments of health at central level
 - 'National' Department;
 - 'White', 'Coloured', 'Indian' administrations
 - 10 'Black homelands' & self-governed states

-+4 'independent' provinces & 400 local authorities

 Neighbouring clinics / health centres / hospital reporting to different authorities - no co-ordination

South Africa 1994 /95

– Problems & challenges (2):

- **Inequity** between blacks & whites, rural & urban, urban & "peri-urban", former "homelands", etc.
- "Equity" main target
 - But how to know whether targets are achieved?
- Need standard data from across the country on
 - Health status & Health services provision
- **Problem:** No coordinated data system no standards
- HISP key actor in developing the new unified Health Information System in South Africa

Developing District-based Health Information System in South Africa

Research and development

- HISP approach: Local use of information; Maximise enduser control; Local empowerment & bottom-up design and system development
- Focus on

standardisation of primary health care data &
 development of database software to support a 'flexible' hierarchy of primary health care data

- 1998/99: implemented District database software and 'processes' in two provinces - Eastern & Western Cape
- 1999/2000: Becomes National Standard being rolled out to all provinces and districts



Apartheid legacy: a fragmented and top down health structure as reflected and 'reproduced' every day by the information systems Information infrastructure - Installed base Information management at district level

- From fragmentation to integration; A process of standardisation



A) Pre-apartheid vertical and fragmented structure in Atlantis (simplified)

no local use & analysis of data
172 data collecting forms in 3 gov. structures
+ multiple health programs (immunisation, TB, etc.)
-Data overlaps and gaps and inconsistencies
-Data handling takes up to 40% of nurses' time!

B) "Ideal" integrated district model

-South African HISP approach was to create a common "minimum" data set, "one sheet of paper" covering key Issues, addressing key *indicators* - This seemingly logical approach has Worked in NONE of the other HISP countries! (why?) A Hierarchy of (data) standards as implemented in South Africa: • Balancing national need for **standards** *and* **innovation** & local need for **flexibility**

- Structure Supported by the HISP software:
 - •flexibility, integration between & within levels
 - •Allowing for "glocal" (global/local) prototyping because all levels have freedom to define their own standards as long as they adhere to the standards of the level above (core data set)



DHIS – a flexible "generic" health information software

DHIS could quickly adapt to

- Changes in data and indicator sets
- Differences between provinces
 - 1998-Western & Eastern Cape: different data sets same DHIS
- And changes in the district structure

Changes were the only constant in these days ...

Since DHIS could be adapted to the very different circumstances within South Africa – and changes over time:

• DHIS could be adapted also to other countries

And DHIS spread to other countries from about 1999/2000:Mozambique, India, Mongolia, Malawi, Tanzania, Cuba, Ethiopia, Nigeria, Vietnam, Zanzibar, Zambia, Nigeria, Namibia,

• And Now: DHIS 2 in India – big country & scale



HISP & BEANISH: "South – South – North" Network



DHIS

– the software /information system research frontier

DHIS as a generic software to be adapted to users needs through

- Prototyping
- User participation

Thereby part of the "participatory design" approach:

- Design and develop Information systems in cooperation with users

 and to serve their needs
- IT people needs to learn about the user domain (health) and users need to learn IT and both parties need to learn how IT can satisfy the needs of the users through cooperation
- Part of global research agenda
- Born out of Union activists in Scandinavia & Norway– and thereby the Informatics /information systems research component:
 - Phd program
 - Masters programs

DHIS-research agenda (2) – combining Health & Information systems research

The most original & crucial part of DHIS – HISP: Combination of

- Public Health research &
- Information systems / software research

What can the two fields learn from DHIS/HISP & vice versa?

- How to combine "order" (standards) with change /flexibility at local & global levels
 - To change with the needs of the health services
- Integration of data & indicator sets across health programs
- How to develop effective "data warehouses" for all essential data and indicators in a country or in a district

Other countries – as Zanzibar, Ethiopia and India – have used DHIS more directly as a **data warehouse**

Application OSS: the problem of being both specific and general

"Society"/organisations End-users Not (so) standardised

- Applications: supporting specific needs, customization & interaction with end-users crucial
 From specific to more general usage (e.g. HISP)
- Tools for building applications: general for wider areas or particular purposes (e.g. Java platform)
- Databases (e.g. MySQL)
- General tools for very specific purposes; e.g. web portals, logging libraries, XML parsers ...
- Operating systems (Linux)

Hardware, networks *Standardised*

Global SW development; Outsourcing, off-shoring, shared

"Society"/organisations End-users Not (so) standardised

Difficult to specify & out-source

- End-user application SW; in principle difficult - DHIS?
 - Core & generic modules shared;
- Tools for building applications: general for wider areas or particular purposes (e.g. Java platform)
- Databases (e.g. MySQL)
- General tools for very specific purposes; e.g. web portals, logging libraries, XML parsers ...
- Operating systems (Linux) &/or Call centres! IKEA! (same specification)

"Easy" to specify & out-source

Hardware, networks Standardised



DHIS — Remaining at the cutting edge! ?

- web and Open Source

- MS Office was available everywhere in the health services when DHIS started that's why Access/MS Office became the platform
- Today: Internet is spreading in Africa and Asia AND
- Many countries have policies on Open Source
- DHIS 2 addresses this by being
- Web-enabled (and stand-alone)
- Fully Open Source: based on Java tools/frameworks
- Database and Operating system independent (Oracle/Mysql/Access, Windows/Linux)

Challenges:

- Not much knowledge and experience with the programming tools in Africa/Asia so far most done by Oslo
- But Vietnam, India and Ethiopia picking up

HISP – Development & migration strategy and platforms (2)

Extensive prototyping leading to "onion" like structure (DHIS 1.4)

- Major "clean-up" of data structure, indicator engine etc. in new version (now) – core module still same platform

Gradual web-enabling & fully OSS platform (Migration from MS-OSS)

- New modules web-enabled (web portal & (pivot) report generator)
- & fully OSS (Data Dictionary)

Global re-implementation/development on OSS platform

- Parallel multi-country project to re-develop using Java frameworks
- Global collaboration requires strict modular design & well defined interfaces & Shared representations & tools
- Technical framework for collaboration (Wiki & bandwidth!)
- OSS development platform more complex than commercial! (combine pieces)

Outsourcing – web and Open Source

Challenges for global distributed development

- Context of use & user needs differ; how to get useful & stable specifications and shared understanding?
- Knowledge about SW tools & frameworks across countries
- Collaborate on development –between countries

`Example India:

- More customization & implementation than "core" development
- Need team of developers engaged both
 - With users
 - Global network

Free & Open Source SW development in international network – many challenges!

- "Outsourcing": share *one* specification which is produced by a dominant partner
- Shared *application* SW development more complex
 - Different contexts of use
 - Different languages, realities and representations
- Need to share and agree to what is common /global AND
- Find ways to accommodate the differences and the specifics

