Open Source Software development and Java frameworks in global networks

INF5750

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Course focus:

1. Project work

- Participate in a global open source project - HISP
- Use open source java frameworks and tools
- Use collaborative tools

2. Open Source study

- Community building
- Organization of open source projects
- Open source licensing

- Weber: The Success of Open Source

- Various guest lecturers on e.g. Norwegian open source projects

Project work

- Integrated part of a larger open source project, **HISP**
- All project development will contribute to a real-life application, **DHIS**
- INF5750 Student = HISP developer
  - No separation between students and other developers

Open source Java development:

- **The Spring Framework**, a lightweight container and a J2EE framework
- **Eclipse**, Integrated Development Environment (IDE)
- **Maven**, project management, build and deployment tool
- **Subversion,** version control system
- Other java frameworks (for persistence and web) that might be relevant:
  - Hibernate, IBatis, Tapestry, Webwork ++

Collaborative tools for open source development

- **Confluence**, a wiki or collaborative webpage
  - http://www.hisp.info/confluence
  - All information about the project
  - Can easily be edited by all HISP members
  - Dynamic content

Collaborative tools for open source development

JIRA, an issue tracker system

- http://www.hisp.info/jira
- Tracks and manages bugs
- Project management
- Tasks and achievements

Collaborative tools for open source development

E-mail, mailing list system

- Each project group/module has an individual mailing list for internal coordination
  - *Addresses TBA*
- 1 list for all teams in Oslo, for internal messages and information concerning developers in Oslo
  - *jdhis-oslo AT lists.sourceforge.net*
- 1 global list for all general messages and discussions concerning DHIS-2 development
  - *jdhis-developers AT lists.sourceforge.net*

Practical information

Course evaluation:

- Passed/not passed
- Based on mandatory assignments

http://www.uio.no/studier/emner/matnat/ifi/INF5750/v05/assignments.xml

  - 2 Individual and 4 group assignments
  - Individual project report
- Warning and motivation:
  - –A potential oral exam ☺

Health Information Systems Program (HISP)

- A global research initiative targeted at improving HISs in developing countries, coordinated by the University of Oslo

- Collaboration between Academic Institutions and Health Departments in:
  - South Africa, Mozambique, Ethiopia, Malawi, Tanzania, India and Vietnam.

- Norwegian and EU funding

HISP Background

- Established in South Africa in 1994
- Actors:
  - IS Researchers from Norway and South Africa
  - University of Western Cape, Oslo, Provincial Health Department of Western Cape
- Objective:
  - Develop a district-based HIS
- Anti-apartheid movement combined with Scandinavian systems design influence

Political setting, South Africa 1994

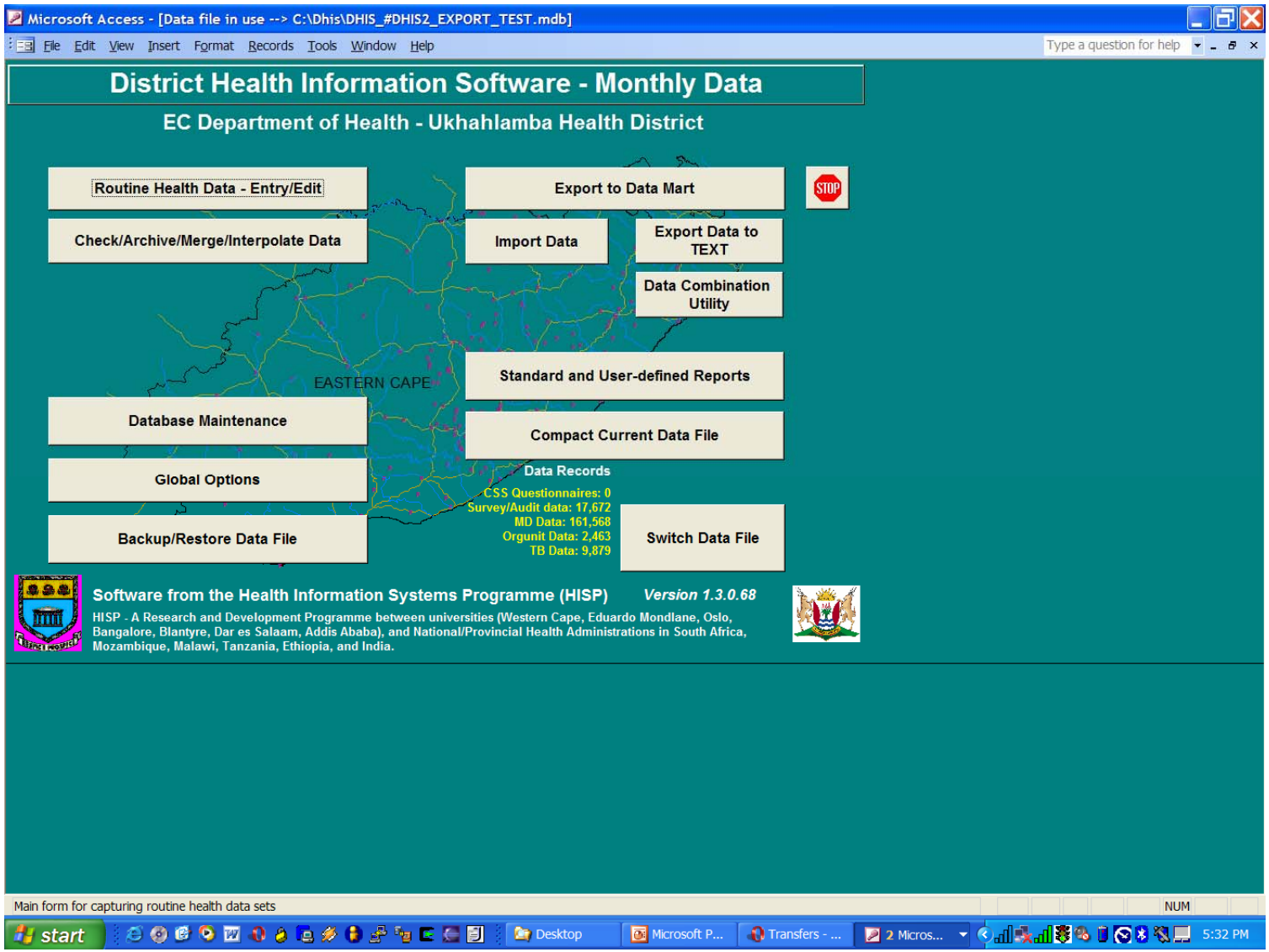
- Fall of apartheid
- Reconstruction and development project
- Health reform
  - Equity in health
  - Decentralization, WHO Alma Ata declaration
  - Local use of information
  - Empowerment of the local level
  - Action-led HIS

HISP systems development strategies

- Participatory design
- Local focus
- Informal evolutionary prototyping
- Improvisation
- Action research

HISP software - the DHIS

- DHIS, District Health Information Software
  - Free and Open Source Software
  - Implemented in MS Access (v. 1.3 and 1.4)
  - A flexible prototyping tool for developing locally adapted systems
  - Continuously improved since 1997 following a participatory prototyping approach
    - Functionality matches the domain needs
    - Poorly structured and documented


Microsoft Access - [Data file in use --> C:\Dhis\DHIS_#DHIS2_EXPORT_TEST.mdb]
File Edit View Insert Format Records Tools Window Help
Type a question for help
District Health Information Software - Monthly Data
EC Department of Health - Ukhahlamba Health District
Routine Health Data - Entry/Edit
Check/Archive/Merge/Interpolate Data
Export to Data Mart
Import Data
Export Data to TEXT
Data Combination Utility
STOP
EASTERN CAPE
Standard and User-defined Reports
Database Maintenance
Compact Current Data File
Global Options
Data Records
CSS Questionnaires: 0
Survey/Audit data: 17,672
MD Data: 161,568
Orgunit Data: 2,463
TB Data: 9,879
Backup/Restore Data File
Switch Data File
Software from the Health Information Systems Programme (HISP)
Version 1.3.0.68
HISP - A Research and Development Programme between universities (Western Cape, Eduardo Mondlane, Oslo, Bangalore, Blantyre, Dar es Salaam, Addis Ababa), and National/Provincial Health Administrations in South Africa, Mozambique, Malawi, Tanzania, Ethiopia, and India.
Main form for capturing routine health data sets
NUM
start
Desktop
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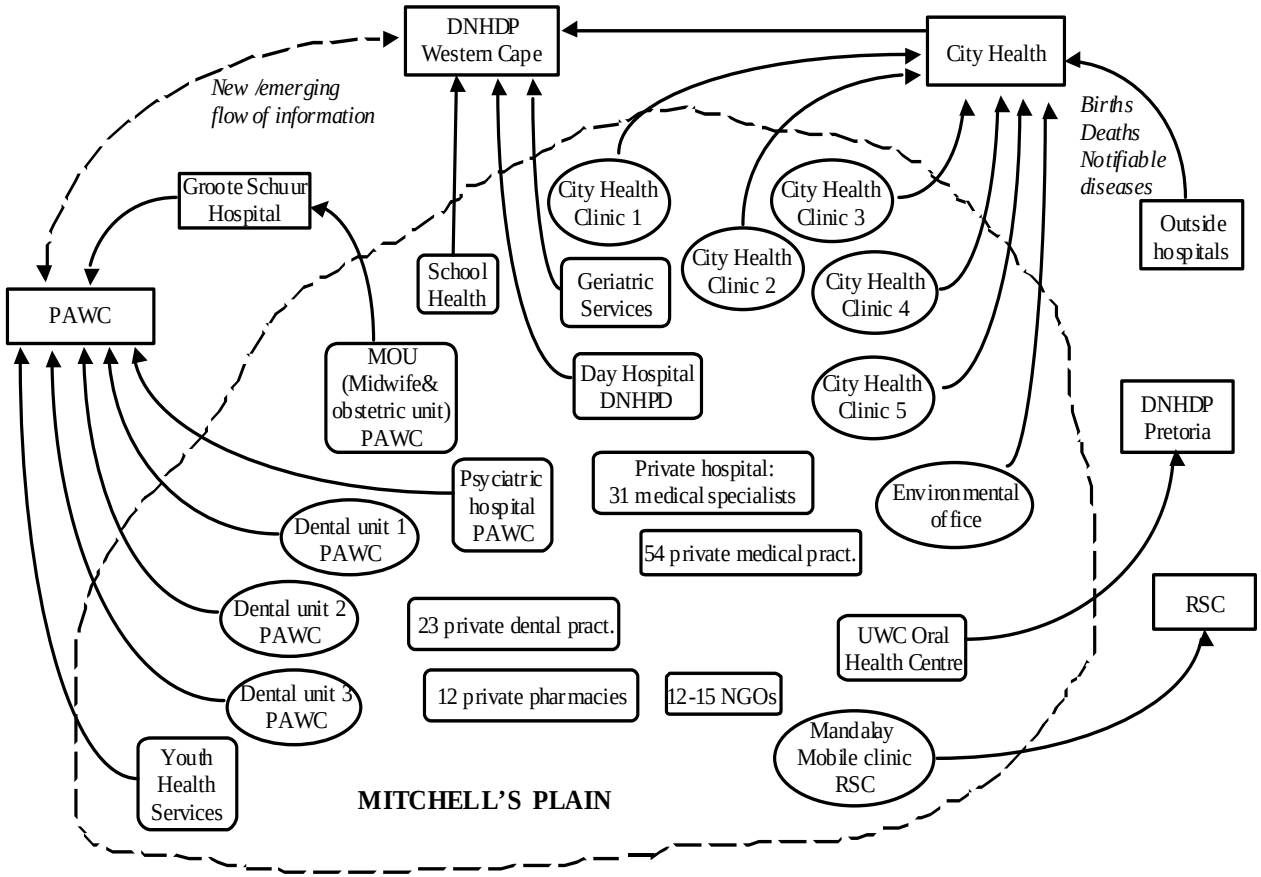
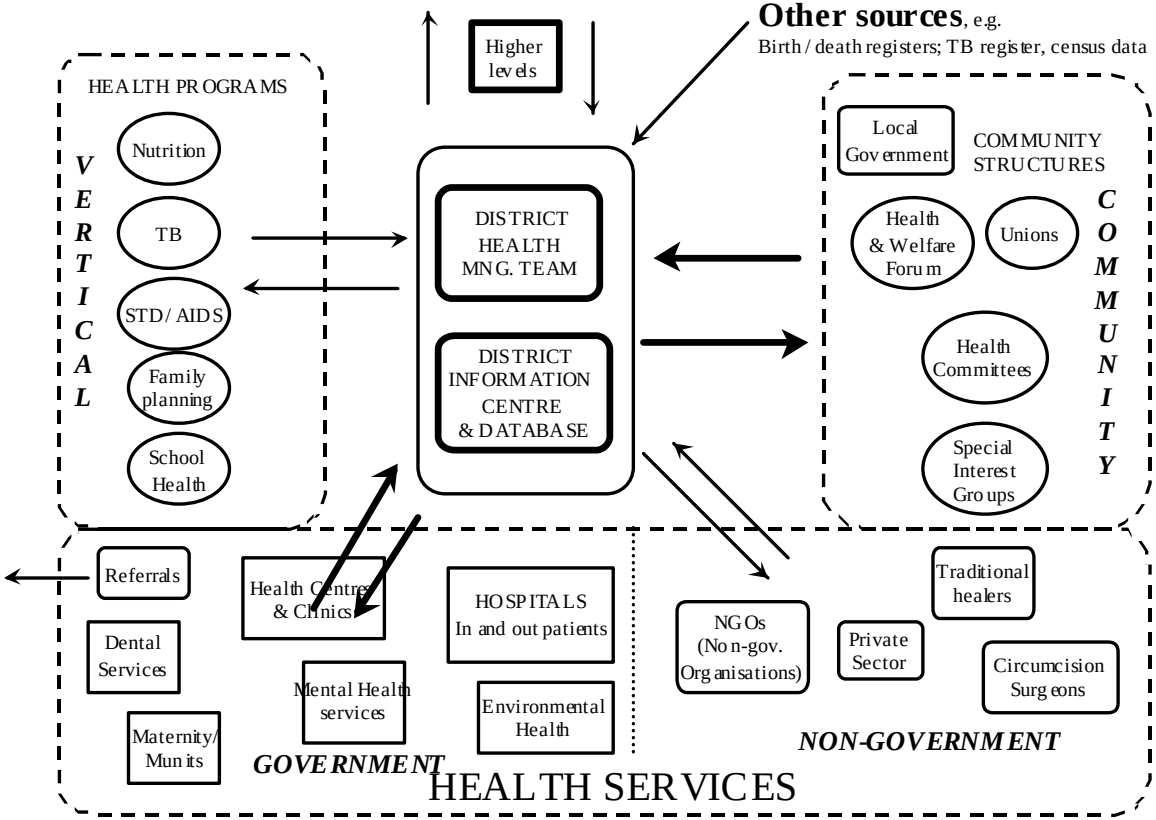
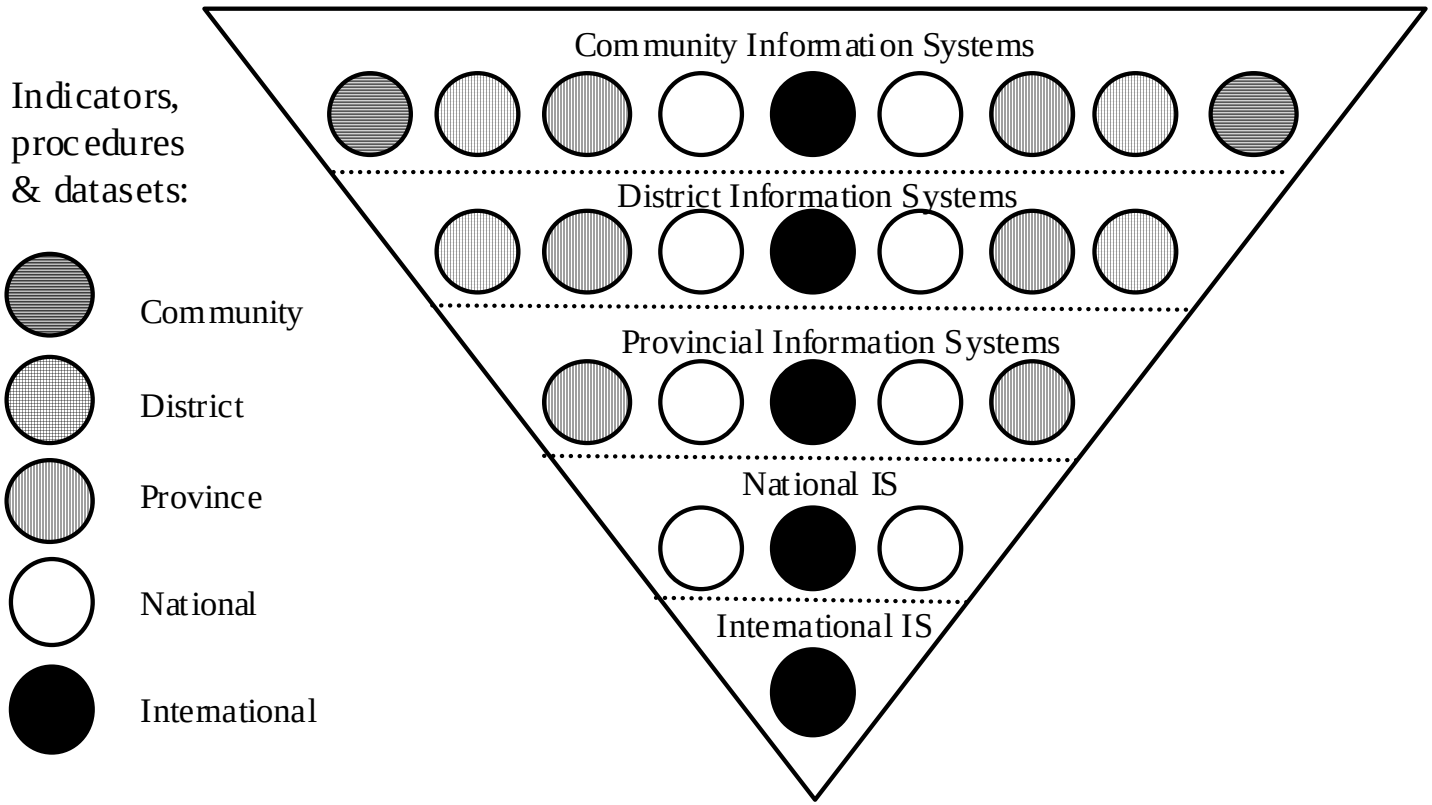
Institutional spaghetti



The proposed District Information System Model



Balancing the need between standardization and local flexibility



- A success story in South Africa
  - 1999: national standard for HIS in RSA

- Expanding global network
  - 2004: Global network of developing countries (Mozambique, India, Ethiopia, Malawi, Tanzania, Nigeria, Mongolia, China, Cuba, Vietnam)

- A new HISP-country means a transfer of the software, methods and strategies, -supported by HISP researchers/developers
  - E.g. The recent startup in Vietnam, in two pilot provinces

- Network challenges
  - Coordination
  - Software support
  - Local maintenance

- Latest HISP software developments
  - A global systems development approach towards a fully Open Source and Java-based version, the DHIS-2.

DHIS-2

- Java-based
  - Platform-independency, no MS licenses
- Network-enabled
  - Improving ICT infrastructures in developing countries
  - Still huge differences; among countries, and also among provinces within each country
  - Offer a localized combination of desktop and web-based modules

DHIS-2

-A hybrid application:

- The need to rapidly design data collection tools for a variety of purposes.
- Efficiently capture or import/collate this variety of data in an "integrated" manner, then to monitor the processing and flow of this data.
- The need to analyze relatively large and complicated data sets quickly and efficiently.
- Combines properties of transaction databases, data warehouses and communication tools.

DHIS-2

-The application shall be an assembly of loosely-coupled modules (components)

- Independent and multi-purpose modules, not only for the health domain

- Each module is a potential open source project

-http://www.hisp.info/confluence/display/DHIS2/DHIS+2.0+modules