OpenHDS

Open-source Health and Demographic Surveillance System

for The OpenHDS Community
Community

- University of Calabar CRHDSS, Nigeria – pioneer implementer
- University of Southern Maine, US
- Ifakara Research Center, Tanzania
- Participants from different sites on the open mailing list from the INDEPTH workshop in Nov 2010
Background

- Strengthen Country Health Management Information Systems (HMIS)

- HMIS are clinic-focused and largely blind to community events; but HDSSs have potential to provide reliable denominator values and track HMIS indicators with greater accuracy

- How to build HDSS information systems that contribute to and inform public health policy

- Configurable by non-programmers
What we have done

- Open-source enterprise Java
- Multi-platform - web-based standalone, tablet, mobile
- Support various databases
- Multi-lingual (internationalized)
- Extensible with new forms and variables
- Secure with role-based access
- DDI-compatible
- Demographic rates computation
- Custom Reports and exports
- Web service – exposed API – potential external clients
- Auditing
• Cheaper on the long term; collective design and maintenance
• Allows easier collaboration
• Good tool for training learning and discussion
• Wisdom of the crowd
OpenHDS Linkage with Health System

- Integrated with District Health Information System (DHIS) platform used by state ministries of health
- DHIS, implements open XML standards - SDMX-HD developed by WHO-HMN and DXF
- OpenHDS implements XML standard to allow automated export from OpenHDS to country/state DHIS
- Indicator repository
Where

- Akpabuyo HDSS, Cross River, Nigeria
- Baseline and 1st update done
- Verbal autopsy forms computerized
- Tablet piloted in Ifakara
- Mobile devices currently being tested in Cross river
Forms

• Baseline
• Update
• Amendments; individual, location, social group, death, in-migration, out-migration, membership, relationship, residency
Update form

### Update

- **Visit Id**: VME111
- **Location Name**: House 1
- **Date**: 15-07-2010

#### List of Individuals in Selected Location

<table>
<thead>
<tr>
<th>Individual Id</th>
<th>Name</th>
<th>Birth Date</th>
<th>Gender</th>
<th>Last Event</th>
<th>Selected Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBA18</td>
<td>Ayo Bassey</td>
<td>19-12-1959</td>
<td>1</td>
<td>Death</td>
<td>Select</td>
</tr>
<tr>
<td>BJOH11</td>
<td>Bayo John</td>
<td>19-12-1979</td>
<td>1</td>
<td>Death</td>
<td>Select</td>
</tr>
<tr>
<td>MGRA12</td>
<td>Mary Grape</td>
<td>19-12-1979</td>
<td>2</td>
<td></td>
<td>Select</td>
</tr>
<tr>
<td>NBAS11</td>
<td>Nancy Bassey</td>
<td>19-12-1959</td>
<td>2</td>
<td></td>
<td>Select</td>
</tr>
<tr>
<td>OJOH11</td>
<td>Obong John</td>
<td>19-12-1979</td>
<td>1</td>
<td>In Migration</td>
<td>Select</td>
</tr>
<tr>
<td>SBAS17</td>
<td>Sani Bassey</td>
<td>19-12-1979</td>
<td>1</td>
<td></td>
<td>Select</td>
</tr>
</tbody>
</table>

### Shortcut Keys

- c - Clear Selected Individual
- p - Pregnancy Outcome
- d - Death
- i - In Migration
- e - Pregnancy Observation
- r - Relationship
- m - Membership
- o - Out Migration
- a - Attributes
- f - Finish

### Buttons

- Preg. Outcome
- Relationship
- Death
- Membership
- In Migration
- Out Migration
- Preg. Observ.
- Finish
### Standard Verbal Autopsy Questionnaire for Adolescent and Adult Deaths (12 years and over)

**Background Information on Deceased**

- Name of deceased:
- Deceased Individual Id:
- House Id:
- House Name:

### Standard Verbal Autopsy Questionnaire for Neonatal Deaths (0–27 days)

**Background Information on Deceased**

- Age of
- Sex of
- Name of child:
- Child Id:
- House Id:
- House Name:

**Ident**

- Field Worker Id:
- Date of interview: (dd-MM-yyyy) 24-10-2011
- Visit Id:
- Sex of child:

**Informant**
## Individual History – Person Timeline

<table>
<thead>
<tr>
<th>Social Group Id</th>
<th>Relationship to Group Head</th>
<th>View</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG1K</td>
<td>04</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Individual A</th>
<th>Individual B</th>
<th>Relationship Type</th>
<th>View</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBAS17</td>
<td>NBAS11</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

(No Social Group Items Found)

<table>
<thead>
<tr>
<th>Individual</th>
<th>Location</th>
<th>Start Date</th>
<th>View</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBAS11</td>
<td>MBI001</td>
<td>20-11-1990</td>
<td></td>
</tr>
</tbody>
</table>

(No In Migration Items Found)

(No Out Migration Items Found)

(No Pregnancy Outcome Items found)

(No Pregnancy Observation Items Found)

(No Death Items found)
Data Quality Routines

Validation Routine
Select the Entity to Validate:
- Individual
- Location
- Social Group
- Relationship
- Membership
- Preg Outcome
- Preg Observed
- In Migration
- Out Migration
- Residency
- Visit
- Death

New Role
Name:
Description:
- CREATE_ENTITY
- EDIT_ENTITY
- DELETE_ENTITY
- VIEW_ENTITY
- CREATE_USER
- DELETE_USER
- ACCESS_BASELINE
- ACCESS_UPDATE
- ACCESS_AMENDMENT_FORMS
- ACCESS_REPORTS
- ACCESSSUTILITY_ROUTINES

Create Note
Field Worker Id:
Description:
Create

Role-based access
Field worker
Notes
Reports

- Household registers
- Identification book
- Temporary Ids
- Reconciliation reports
- Demographic rates
Demographic Rates Calculation By Subsets of Individuals and Locations

Start Date for Analysis (dd-MM-yyyy): Select Event Rate To Calculate

End Date for Analysis (dd-MM-yyyy):

Select Individuals
- All Individuals
- Selected Individuals

Select Locations
- All Locations
- Selected Locations

Select Denominator Type:
- Person Days Observed
- Population at Mid-Point

Output Type
- HTML
- CSV
- PDF
- XLS

Create Report Definition
Identification and Merging of Temporary ids automated

Merge Individual

Merging involves defining a Primary Individual, who will receive all InMigration and Membership events from another (Temporary) Individual.

Individual Id (Primary):

Individual Id (Temporary):

Events to Merge:
- [ ] In Migrations
- [ ] Memberships

Merge Individuals
Mobile

- OpenXdata – J2ME based
- Open Data Kit – OpenHDS – Android-based
- GPS data for Geographical Information Mapping
- Audio
- Pictures – using phone cameras
- Video
Ongoing and Future

- HDSS are ’heavy’ and not many districts can have a DSS.
- Potentially, a scalable and sustainable model of a ’scaled’-down but integrated HDSS-HMIS that can be replicated country wide.
- Mobile-based HDSS can contribute to current policy debates on strengthening health systems.
Development Methodology

• Agile
  – Not just about exciting technology but technology driven by use cases
  – Users drive design
  – Iterative (2-weekly calls with CRHDSS)
• Scrum
• Open!
In a process of establishing a website and wiki
We welcome more help in the development efforts
More pilot testing sites
Funding for future development and pilot testing
Funding for future development and pilot testing

OpenHDS Community Wiki

OpenHDS
Welcome and thanks for visiting the OpenHDS wiki. OpenHDS is a health demographic system (HDS) web application. It is built on top of the Spring Framework, and uses Hibernate and Java Server Faces. The project is still in early development, but we welcome all feedback from the community. OpenHDS is an open source project, so anyone can contribute. This site is intended to be used by both developers and users of OpenHDS.

User Guide
Get up and running, and start using OpenHDS today. Click here for instructions.

Developer Documentation
OpenHDS is still in early development and we welcome contributions from developers. Get started by obtaining the OpenHDS source code, and setting up your development environment. Click here to get started.

Technical Overview
For a Technical Overview of the OpenHDS project, click here.

Project Management
OpenHDS currently uses Redmine for project management. Click here to view the Redmine site.
Welcome to Join and Contribute

- Website: [http://openhds.rcg.usm.maine.edu](http://openhds.rcg.usm.maine.edu)
- Mailing list: [http://groups.google.com/group/openhds-users](http://groups.google.com/group/openhds-users)
- Wiki: [http://openhds.rcg.usm.maine.edu/wiki/](http://openhds.rcg.usm.maine.edu/wiki/)
- Source code repository: [http://svn.rcg.usm.maine.edu/redmine/projects/openhds](http://svn.rcg.usm.maine.edu/redmine/projects/openhds)

Call to participation; contribute best practices from different sites
Demo online:
http://openhds.rcg.usm.maine.edu/openhds/
username/password; admin/test
Acknowledgement

- IDRC/CIDA, Canada
- INDEPTH Network
- Akpabuyo HDSS, Cross River
- University of Southern Maine
- Mailing list participants