



2008 FREE AND OPEN SOURCE
SOFTWARE FOR GEOSPATIAL CONFERENCE



Open source Web-GIS of the UN High Commissioner for Refugees (UNHCR): a model for the UN

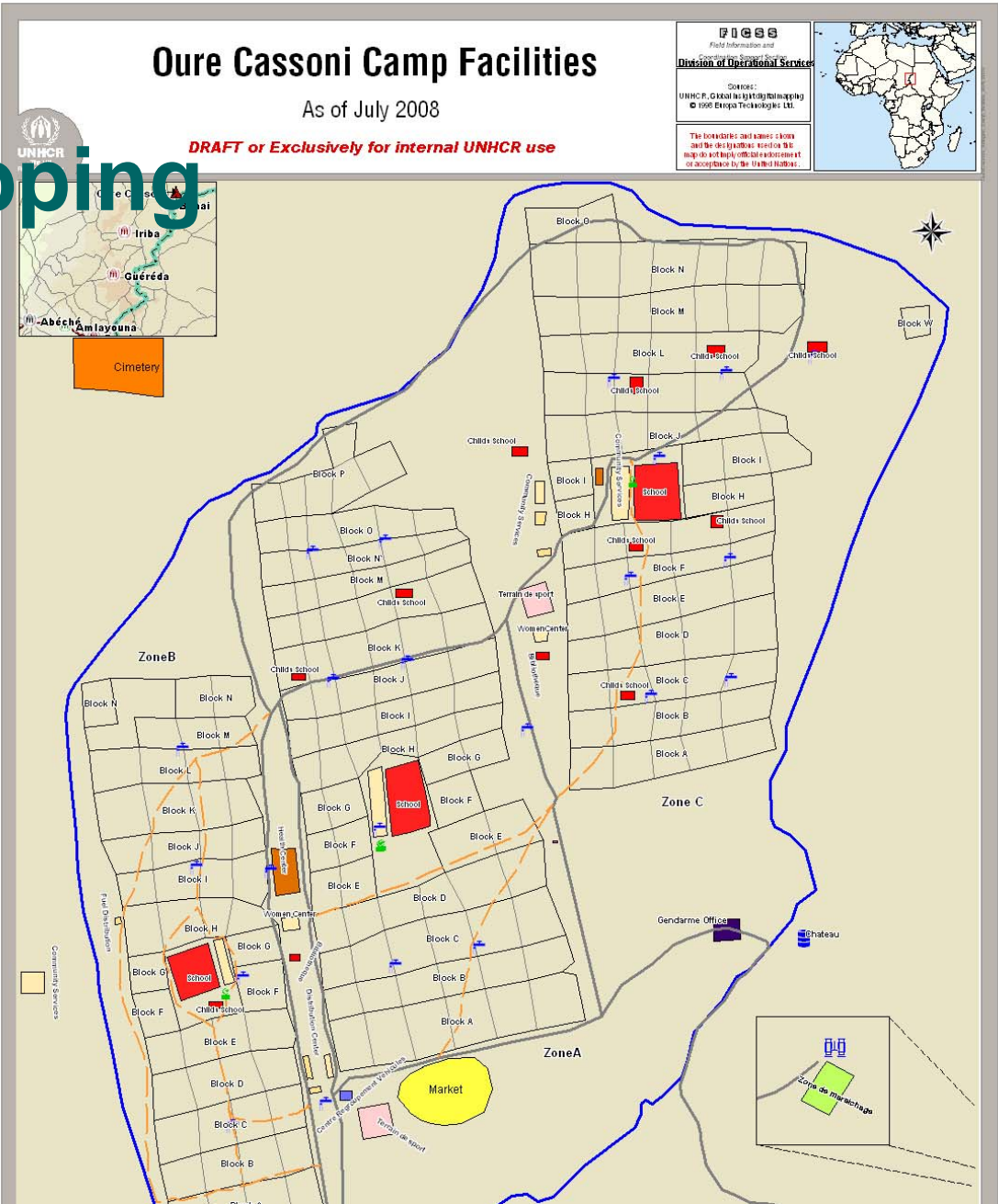


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Datasets and databases

- GeoData
 - Office location
 - Refugee camp/site/settlement location
 - Site/Camp mapping
 - Project location
- Geo-visualisation of:
 - Annual statistics and biodata profiling
 - Standards and indicators
 - Health Information
 - Logistic and stock management
 - Telecommunication and security

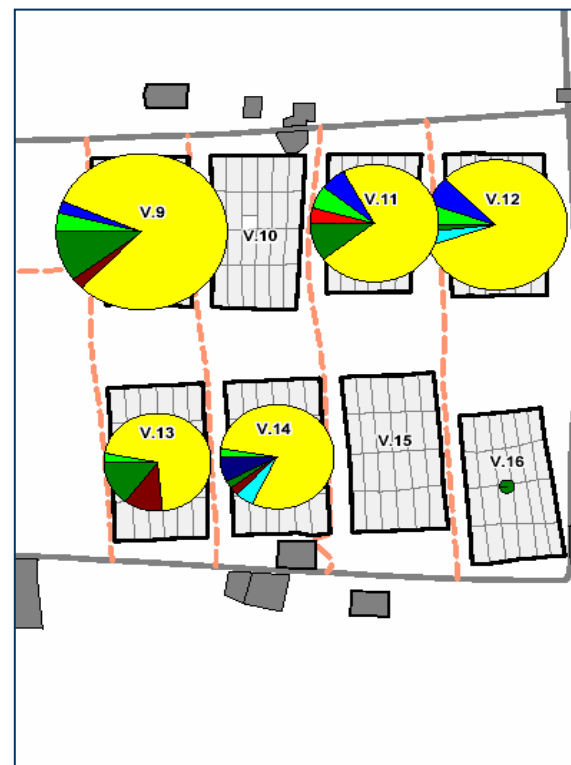
Camp mapping



Refugees individual registration



The proGRES database



Number of "vulnerable" by type

Indicators mapping

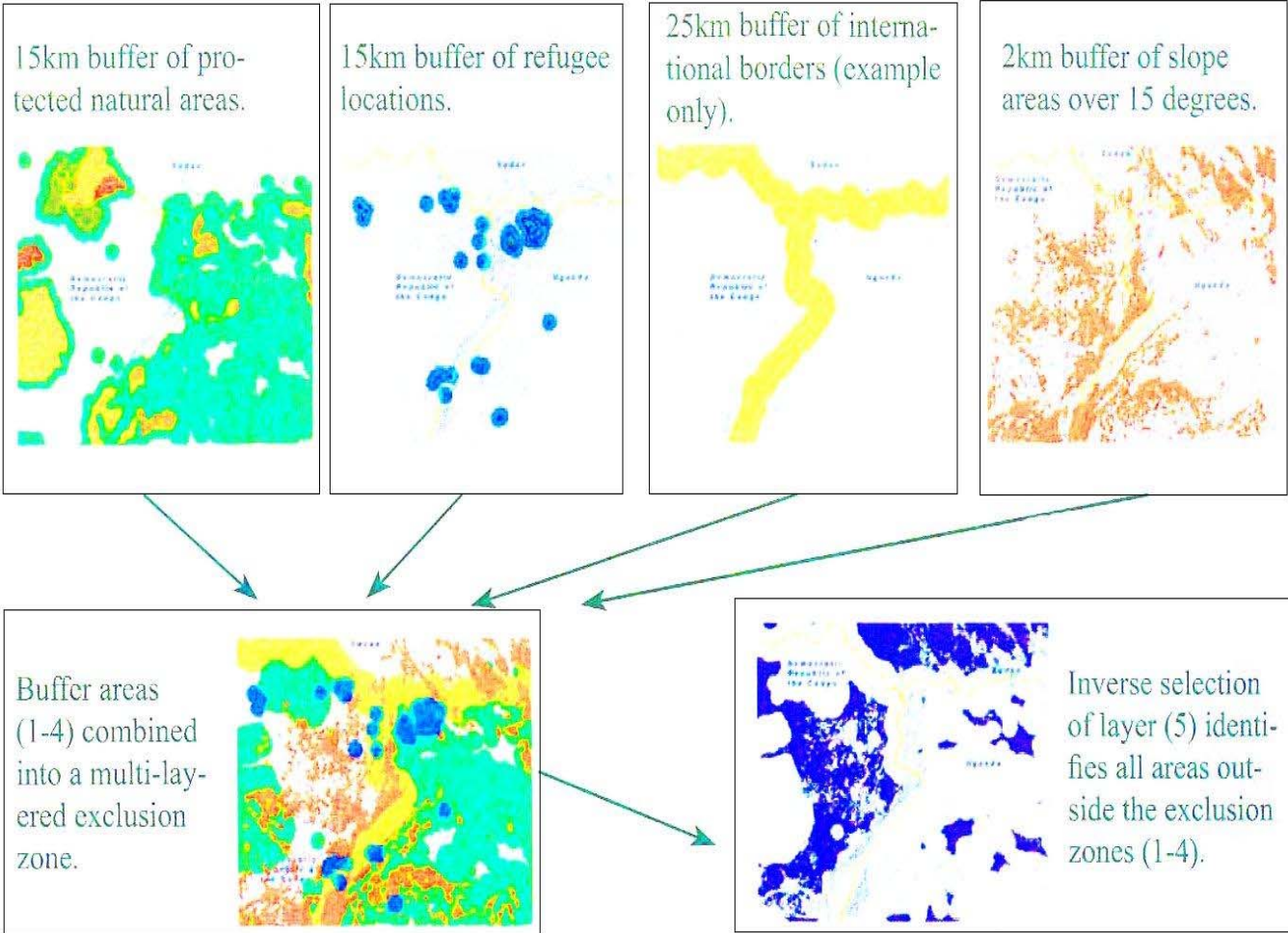


Areas and populations >200m from a water point



Square meters per person

Siting refugee camps



Standardising data sources

- Standard HQ data (refugee and office location)
- Country based data (camp mapping, project inventory)
- International borders
- UNSDI-T for transportation
- SALB/WHO for administrative boundaries
- WFP for warehouse/Office location
- OCHA for “Who What Where” project directory
- UNEP for Protected area
- Etc.

Data flow

1. Global data set distribution:
top -> down
2. Improvement of global dataset: **bottom -> top**
3. Locally produced dataset:
Field to field



User types and roles

- UNHCR Staff (protection, programme, community service, field, monitoring and evaluation)
- Operational and Implementing Partners
- Donors
- Researchers
- Media
- Public

Current GIS work practices

A few GIS Officers are working on desktop GIS with the following limits:

- GIS is still generally perceived only as “map-making” tool
- GIS Specialists are in only a few locations in Country or Regional Representations to support the operations

New technologies, new objectives

- Building and enforcing standard data models
- Improving data flow between headquarter, branch offices, field offices and partners
- Facilitating access to data for both online and offline users
- Involving more partners in geo-data collection
- Increasing knowledge-based decision-making
- Democratising use of geospatial information

Limited connectivity

- A major part of UNHCR potential users are using 54 kbps connection
- A significant part of them do not have permanent Internet access
- Many partners do also not have permanent Internet access

Getting the information back !

- Most of our partner's information is not recycled/re-used
- The challenge: **“offering tools that allow any partner to publish his data in ways that enable true use and re-use by the global community”**
- Conventional Web GIS systems can not fully address this problem (limited connectivity)
- Better than a closed and integrated network, a flexible **“mesh”** working offline and automatically synchronized can facilitate working with field offices and partners

The mesh concept

Online Global Geo Database (Web GIS)



Online users

Offline local mesh



1

Extraction of a
prepackaged
dataset per
user type for
any specific
area

2

Users perform
offline edit/use
on their locally
stored dataset

3

New edits are
synchronized
with the
global GeoDB
when a
connection is
available



Offline users

Mesh-GIS for offline work

- Prepackaged dataset generated through a Spatial Data Integrator
- Browser-based offline interface: MapFish for visualisation and edition
- Automatic synchronisation when users are back online: “Google Gears” technology
- “GIS on a stick” concept: better flexibility and user ownership

Open source and proprietary GIS

- Open Source
 - GeoNetwork
 - GeoSserver
 - MapFish
 - PostgreSQL/PostGIS
 - ExtJS
 - Talend Spatial Data Integrator
 - Gears (Google)



- Pitney Bose MapInfo Desk



Geospatial data management ⁽¹⁾

- Datasets formats
 - SFS (Simple Features Specifications)
 - GML (Geography Markup Language)
- Interoperability is offered as client and/or server with
 - WMS (Web Map Service)
 - WFS (Web Feature Service)
 - WCS (Web Coverage Service)

Geospatial data management (2)

- Metadata management uses:
 - ISO19115/ISO19139
 - ISO19119
- Catalogue is using following services
 - CSW (Catalogue Service for Web)
 - OAI (Open Archive Initiative Protocol for Metadata Harvesting)
 - Z39.50

W3C

- W3C standards (Web 2.0) for web user interface and data dissemination
 - RSS/GeoRSS
 - XHTML/AJAX
 - JSON/GeoJSON

Commitment to UNSDI

- UNHCR/OCHA are Co-CHAIRs of UNSDI
- Contributions to open source community
- Use of standards core datasets and Open Source resources (eg. GeoNetwork)
- Provision of standardised original data (refugees and IDPs)
- Preparation of a SDI methodology, through the project WIKI
- Development of an offline/asynchronous edition tool

The way forward

- “*Offline asynchronous environment*” is the regular situation for the vast majority of the world
- The technology developed in this project can be readily re-used by other agencies / NGOs / Institutions