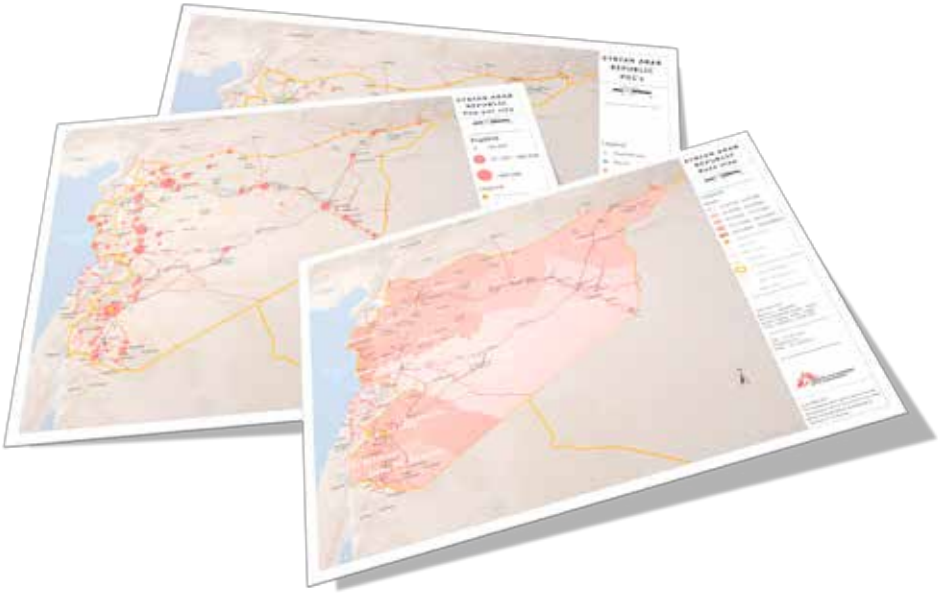


Development of the Geographic Information System in MSF-CH

1st Edition
Feb 2014
Operational Center
Geneva

Logistics Department
Strategy

MEDECINS SANS FRONTIERES
ÄRZTE OHNE GRENZEN

Development of the Geographic Information System in MSF-CH

MSF Section	MSF-OCG		
Title	Development of the Geographic Information System in MSF-CH		
Owner & commissioner	Technical Support to the Operations Logistics Department Médecins Sans Frontières Operational Center Geneva		
Author	Sylvie de Laborderie, Audrey Lessard-Fontaine, GIS experts CartONG, Mathieu Soupart, GIS Focal point MSF-CH, head of Technical Support to the Operations		
Purpose	This document defines a 2 years plan to implement a GIS structure for MSF-CH first and then make it available to all MSF's offices and OC's. The document outlines tools and software, roles and responsibilities, and training plan for HQ & field users and advanced users over the 2 years horizon.		
Version	1st Edition/Feb 2014	**Language**	English
Reviewers	Claire Dorion Sebastien Soulier Andreas Papp Etienne Gignoux Ludovic Rossel Jean-Luc Castell	**Date**	February 2014

EXECUTIVE SUMMARY

In 2013, MSF Switzerland began to appraise mapping and the use of GIS within the Movement. A comprehensive study of what already existed in the Movement led to the conclusion that access to / interpolate base maps and reference data for their countries of operation is the main need.

This first study has defined four main strategic objectives which should be achieved in order to build a useful Geographic Information System.

- Promoting the use of maps and other GIS products in the organisation.
- Consolidating existing GIS capacity in MSF.
- Ensuring good capacity to share information within MSF-CH and potentially across the organisation.
- Ensuring participation and capacity building within the organisation.

The GIS Strategy developed for MSF-CH is setting the foundation of a system responding to the needs for base maps and reference data. Those will be accessible through a Map Centre, which will be developed as a portal for GIS data, maps and tools and remain the cornerstone of the GIS strategy.

This Map Centre is composed of a library of maps (Geonetwork) and a centralized database allowing users or dedicated applications to access reference maps and data. CartONG is responsible to setup all GIS dimensions and make it a living and participatory tool.

- GIS Data Management defines rules and processes of users rights to respect confidentiality and own policies of MSF-CH.
- Data collection, cleaning and storage in a centralized database.
- Technology selected, appropriate software and hardware chosen in response to MSF-CH needs: capable of complex analysis yet simple to use for daily tasks.
- Human Resources with different roles and responsibilities.

The MSF CH also aims at structuring this movement so it can serve as a replicable system for other MSF's Operational Centres. MSF CH defines 4 mains GIS roles in order to organize and order this new service:

- GIS referent: project leader & budget holder who channels the requests to GIS specialist or GIS partners (in an OC the functions of GIS Referent and Focal Point are often combined).
- GIS specialist: maintains and develops tools, databases and maps.

Also provides GIS services.

- GIS partner: provides GIS services depending on the partner's own specialities.
- GIS user: sector specialists with different levels of GIS knowledge.

Transport and Health infrastructure - Kinshasa - Democratic Republic of Congo

Legend

- Airport
- Station
- Bus stop
- Hospital
- Pharmacy
- Township
- Water
- Forest / Park
- Wetland
- Internat. boundary
- Main road
- Secondary road
- Tertiary road
- Other road
- Railway

N

0 1.25 2.5 5 Km

Data Sources

Borders, Administrative levels : GRP,
Roads, Railways, Rivers, Natural : OSM
Hydrology : NaturalEarth

Document Name: COD_Kinshasa
Date: 21/01/2014
Realised by CartONG for MSF-CH
Print dimensions: ISO A0 size

1. INTRODUCTION

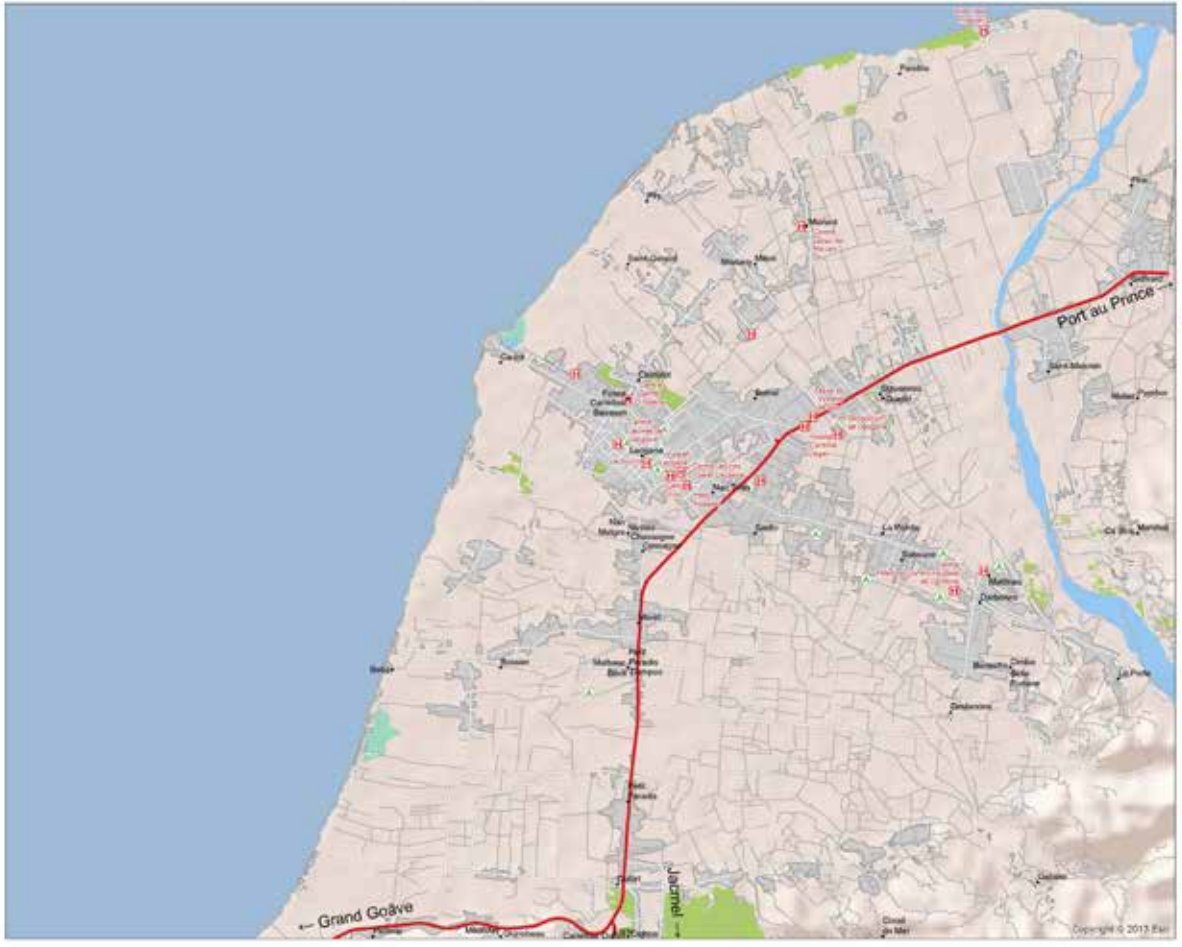
Geographic information systems (commonly referred to as GIS) provide tools to create, store, share and analyse spatial information. They are now commonly used in most major international NGOs as a central information management and logistic support tool. For an organisation such as MSF, GIS could not only become a tool to support emergency deployment and to conduct epidemiological analysis, but also to brief – report – communicate– monitor their movements and to assist planning (related to activities, security, logistics, preparedness & response, program planning, etc.)..

The Study: "State of art and opportunities using Geographic Information Systems in MSF" (2013) (referred to as GIS in MSF study) highlights the interest and importance of GIS for MSF. Even without a GIS development strategy within the organisation, many projects where GIS plays an important role are already taking place in the organization. While the report praises individual initiatives and encourages the exploration of different possibilities and partnerships, it also strongly recommends elaborating a MSF-CH and potentially MSF wide strategic plan for GIS development. The study concludes that MSF needs to have a more structured approach, to clarify its objectives, to allocate dedicated resources, to conduct training and to debate on ethical issues. It also recommends having a GIS focal person per OC who would help to structure initiatives and demands.

In 2013, MSF-CH has sought external expertise, signing a framework contract with CartONG in order to gradually develop MSF-CH's GIS system, starting with the setup of its Map Centre. Together they developed the present strategic plan regarding the use of GIS and cartographic products in MSF-CH. This document is based on recommendations given in Chapter VI of the GIS in MSF study.

This document defines a 2 years plan to implement a GIS structure for MSF-CH first and then make it available to all MSF's offices and OCs. The document outlines tools and software, roles and responsibilities, and training plan for HQ & field users and advanced users over the 2 years horizon.

Leogane (Ouest Department) - Haiti



Legend

- Settlement
- Hospital
- IDP camp
- Main road
- Secondary road
- Other road / track
- Water
- Wetland
- Wood
- Residential

N

0 1 2 Km

Data Sources

Borders, Administrative levels : GADM
Places, Roads, Natural : OSM

Document Name: HTI_Leogane
Date: 18/02/2014
Realised by CartONG for MSF-CH
Print dimensions: ISO A3 size

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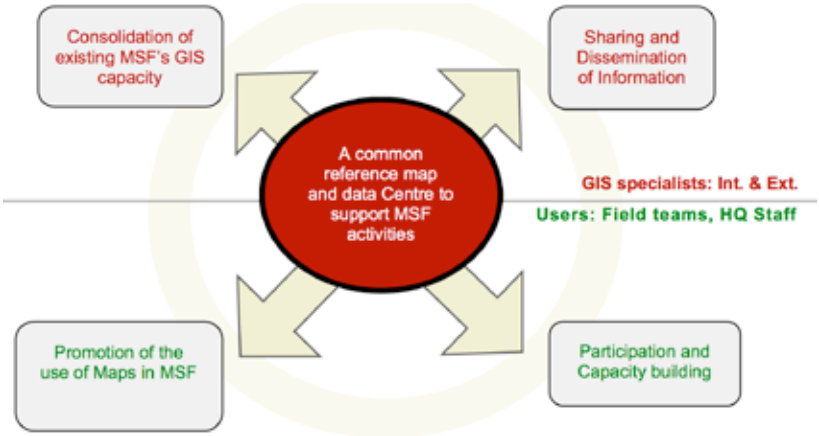
ARZTE OHNE GRENZEN

2. ORIENTATION & STRATEGIC OBJECTIVES

The GIS in MSF study defines four main strategic objectives that need to be followed in order to develop GIS successfully in the organisation. This section reviews the different objectives and states how they need to be considered in the development of a GIS strategy. The four organisation-wide objectives are **to consolidate existing GIS capacity, to ensure good capacity to share information** (within MSF-CH and potentially across the organisation), to promote **the use of maps** and other **GIS products** and also **to ensure participation and capacity building**.



2.1 CONSOLIDATION OF EXISTING GIS CAPACITY

According to the MSF GIS usage study different units have developed tools, products and/or partnerships with external actors. These initiatives should be reflected within the GIS strategy and promoted within the organization whenever relevant to ensure they benefit everyone.

To reach that objective, a clear engagement from each unit is needed. Roles and responsibilities of each GIS unit, partners and external actors should be defined as well. A clear map of services available is required so the focal person in each Operational Centre knows where the resources are and how to mobilise them. Moreover, projects, maps and data used or produced by one of the GIS partners (internal or external) should be shared with all MSF

sections and incorporated in the Map Centre.

2.2 SHARING AND DISSEMINATION OF INFORMATION

MSF is composed of 5 independent operational centres each overviewing a number of antennas. Two or three of them have developed GIS capacity. They work independently and on different thematics. In the field, the different sections of MSF may work in the same region, but in an independent manner.

The development of individual capacity is within the MSF strategy to allow development and testing of new solutions. But **to become efficient and ensure baseline data is made available to all sections, a coordinated approach and/or a common platform to share and disseminate information is required.**

Having access to common baseline data represents a great advantage: it facilitates collaboration and provides a standardized set of data and visualisation platform. Improved data sharing will enhance as well the efficiency of emergency response and operations support.

2.3 PROMOTION OF THE USE OF MAPS IN MSF

Field and HQ staff should be aware of the services and maps available to them so they can request them as needed. To ensure this is the case, one of the main objectives for 2014 (initiated in 2013) is to create a Map Centre which will host a library of different maps from different sources related to MSF-CH's countries of operation and available to all MSF staffs.

2.4 PARTICIPATION AND CAPACITY BUILDING

GIS allows interpretation of field gathered data. It could also help transforming MSF operations from passive reception of patients toward active case finding as the use of GIS and mapping helps define MSF targets (GIS in MSF study). Whereas most of the reference data are available on the web, MSF's data can only come from MSF's field teams. And this collection of in-house data will be the added value for MSF' GIS. That is why **guidelines and trainings should be provided in order to create a structured approach**

and make MSF staff the driving force of the tools. The GIS in MSF study has concluded that there is no point in trying to train all the teams on high end GIS client software. However, capacity building in simple mapping tools, data collection and use of the future GIS tool will improve MSF competence to understand the different stakes of a project.
In order to achieve those objectives, different groups depending on their roles and responsibilities inside MSF will be defined to receive appropriate trainings.

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3. CONCEPTUAL GIS STRATEGY FOR MSF

Before defining a scenario for MSF, it is important to define its needs. As indicated in the GIS in MSF study, one of the main need for MSF staff is to access simple base maps and reference data. Yet, MSF does not currently have the resources to manage georeferenced data. In order to give easy access to them, **MSF needs to store the data** related to their countries of operation and to make them available to all users. This implies **having GIS Specialists** to maintain the data sets, expand them, etc.

As MSF and their partners develop GIS products such as georeferenced data and maps, **they will need to promote and communicate about available maps and GIS products**. As MSF is largely decentralized, having most of its staff in field operations, one of the challenges will be to reach not only the people working at HQ level, but also all involved field staff. Having an online Map Centre could be a way to respond to this need, it would make the maps and potentially the data available to all staff through a web interface.

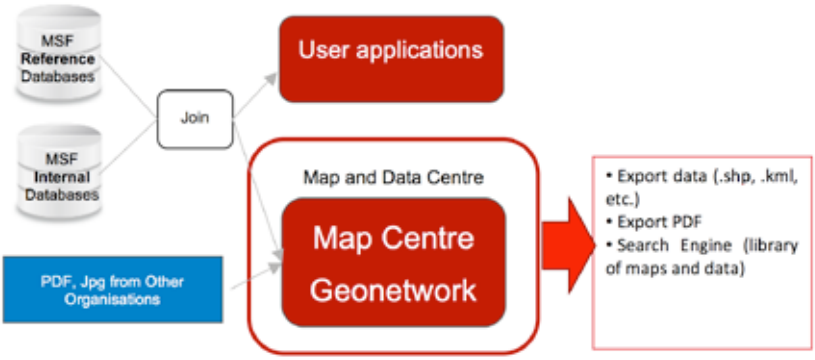
MSF also **needs to train** some of their staff to use GIS products and to be able to define their GIS related needs. Again, because of the decentralized structure of MSF, distant learning tutorials will be required.

Finally, MSF is a movement type of organisation (5 OCs + all field operations), but will need to share common core up-to-date geographic data (having the same data both at HQ and field level). A centralized geographic database accessible through a web server will answer this need. Specific applications such as QlikView will connect to the database.

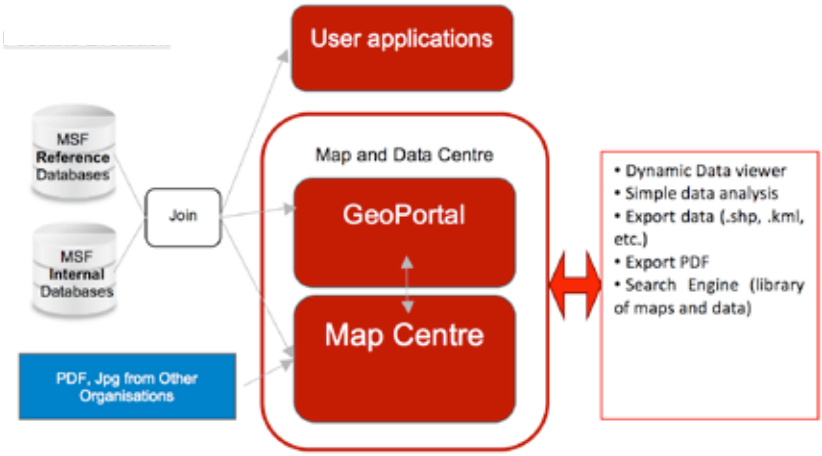
The initial GIS strategic objectives will thus be creating a Map Centre to access static (pdf, jpg) maps, setting up a centralized database and preparing/conducting trainings to learn how to use those new tools. This should create in MSF a GIS culture or at least a map culture. International and local staff will adopt these tools in their daily work. Once the tools initially set in place are well used by MSF staffs and if the need arises, it would be possible to develop an online tool, like a geoPortal, to visualize dynamically MSF data.

3.1 DATA FLOW CHART

Actual GIS Strategy



Possible Evolution



3.2 GIS DATA MANAGEMENT

The first need that will be covered by developing a GIS will be to build a geographic database of reference data. To be able to map MSF actions and/or a country situation, accurate and up-to-date data related to their countries of interest is required. Geographic data or vector data should be called reference data and be managed by a GIS Specialist. MSF may also have databases currently linked to locations (countries, cities,

neighbourhoods, etc.) but not georeferenced with X and Y coordinates such as medical data and epidemiologic data. Links between the datasets will be made (called joins) so those datasets can be visualized on maps with GIS tools.

Data Confidentiality
MSF works with confidential data which cannot be shared in any case. MSF staff needs to be confident with the database system security. However, not all MSF data is confidential. The data owner will be the person responsible to define the level of confidentiality.

A database system allows storing data with different level of permission. This is linked with the management of users, roles and permissions. Depending on the solution the management is more or less easy but in every case the management requires an administrator.

Users, roles and permissions
As explained before a user management system is important in order to manage the confidentiality of the data but also to facilitate the navigation for the users. Roles and permissions could follow the MSF organisation rules. MSF uses a LDAP, which could be an option to link the LDAP[1] to the geographic database server in order to attribute roles and permissions by department or unit.

Technology Selected
Database - PostgreSQL/GIS: Open Source: One of today's most powerful database system. It is free and open source with a very active community of users. A very complete and up-to-date documentation is available, good UI and built-in help. It allows more flexibility with the management of data, users, and rights than other well-known DB systems. It runs on both Windows and Linux environment.

Data Server - ArcGIS server: Most integrated, user friendly solution on the market. Integrated with ArcGIS for desktop, solution selected for expert GIS desktop mapping.

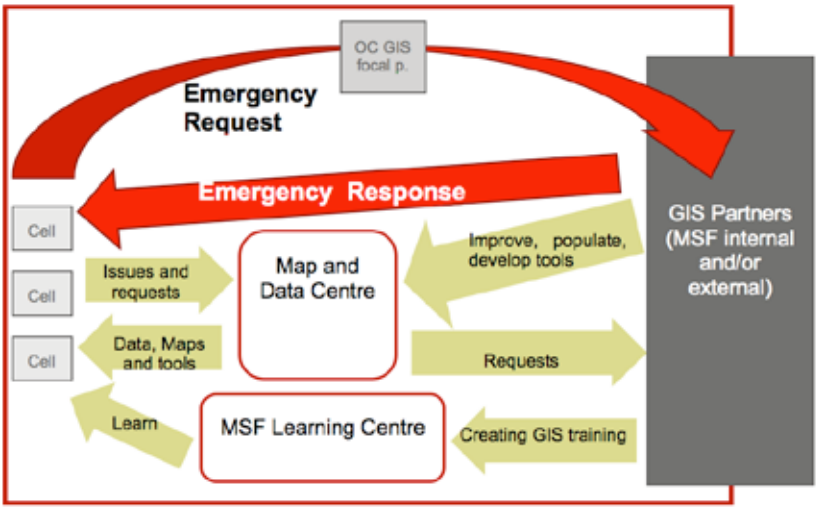
3.3 MAP AND DATA CENTRE

Head cornerstone of GIS in MSF, a map sharing platform is the main objective for the Map Centre. A first temporary FTP as a Map Centre (2013) has been put temporary in place to quickly give MSF staffs access to cartographic resources. The FTP Map Centre is meant to be replaced, in 2014, by a more user-friendly and permanent solution for maps sharing

[1]Lightweight Directory Access Protocol

called a Geonetwork (See annexe 1: MSF-CH Map Centre: Mock-up). This section presents the Map and Data Centre as a concept first, then presents in more details the technology selected.

Participative process



The **Map Centre** will first and foremost allow users to access a library of published maps (pdf, jpg, etc.) originating from a variety of sources.

- MSF internal productions by specialised units such as: Manson Unit. Vienna Unit and to some extent Epicentre.
- MSF staff-made maps.
- Other Organisations, NGOs, UN Agencies, Universities.

In other words, if a map is relevant to MSF's work, it should be integrated into the Map Centre.

As in a book library, the Map centre should be searchable per thematic categories, keywords, date of production, date of insertion in the geoportal, etc. The maps and data will also be searchable by geographic region thanks to the technology selected. It will be searchable because it will contain metadata (information about the data/map).

Categories of metadata:

- General description of Metadata
- Identification and main features
- Quality and update of data
- Constraints on data
- Spatial reference and system of projection
- Content of the data (attributes)
- Modality of access and sharing (confidentiality...)
- Modality of representation

The Map Centre is also a participative project since:

Users are allowed to request maps and tools through their GIS focal point.

Users and field GIS Officers submit their own mapping production & data through the Submission platform of the Map Centre.

In the annex of this document some examples illustrate Geoportals developed by other NGOs. FAO's developed using the Geonetwork platform whereas ICRC's is using the ESRI solution (ArcGIS). Both solutions are free and open source.

Technology selected, The Geonetwork

"Geonetwork is a catalogue application to manage spatially referenced resources."

"The software provides an easy to use web interface to search geospatial data across multiple catalogues, combine distributed map services in the embedded map viewer, and publish geospatial data using the online metadata editing tools. Administrators have the option to manage user and group accounts, configure the server through web based and desktop utilities and schedule metadata harvesting from other catalogues." (Geonetwork-opensource.org)

Geonetwork will be hosted on a server on CartONG's infrastructure for the beginning of the year (until defined otherwise).

3.4 HUMAN RESOURCES AND DEVELOPMENT

Although MSF currently has some internal GIS capacity in some of their units, they need dedicated resources in order to develop and maintain the GIS structure. Different support will be required for setting up the GIS system in MSF and managing it once it has been set up.

Development of the tool
Based on what has been done in other organisations, a GIS expertise is required as well as IT expertise to set up a GIS system for both the data management structure and the maps and data Centre.

A GIS Specialist will be able to set up the dedicated platform, create databases, populate them and produce maps as well. His expertise is necessary to understand and translate the users' needs in order to respond to it as best as possible.

> In 2013, MSF-CH has sought external expertise, signing a framework contract with CartONG in order to gradually develop MSF-CH's GIS system, starting with the setting up of its Map Centre [see also: roles & responsibilities – Annexe III]

For this development, the GIS Specialist will need to work in collaboration with IT support,. Initially (until further defined)and the tools will be hosted at CartONG. Hence CartONG's IT will support the project.

Some consultant may also be requested during the development of GIS tools. If very specifics requirements are requested for a tool, the GIS Specialist may seek support from developers to put the tool in place.

Maintenance of the tool
GIS, Map and Data Centre require constant adaptation and development. If the tools are not kept up to date, they will quickly stop being used. Once the tools are in place, the two main responsibilities of the GIS Specialist (or Officer in the field) are database management and maps production.

A GIS Specialist is the most appropriate person to maintain the database and different tools (Geonetwork, metadata). He will be able to teach the users how to use them as well. The GIS Specialist will have the responsibility (on behalf of MSF-CH) to lead and coordinate different internal GIS units and external actors.

That is why a setup of one GIS Specialist and IT support are recommended

to develop and maintain the Map and Data Centre. This GIS "team" should be also coordinated by a GIS Referent who defines objectives and has a vision for the development of the project.

Different scenarios are possible on how the GIS structure could be maintained in MSF (MSF-CH in particular, potentially MSF at large) once the system is set in place where internal and/or external actors could be responsible for the maintenance. One scenario has been chosen, and three alternative scenarii are presented in annex of this document.

3.5 ROLES AND RESPONSIBILITIES

The main roles for a "GIS Unit" – composed of GIS Specialist - (external partner in the case of MSF-CH) is to produce, collect and share basic data and provide basic maps on demand. It would also be a central position for all focal persons and external/internal GIS Partners as well.

Roles and responsibilities for the implementation of GIS and daily geodata management in MSF-CH and potentially MSF intersection still need to be defined. The structure should take into account internal and external GIS Partners. This section presents the chosen geodata management scenario for MSF-CH (potentially MSF). Other scenarii are presented in the Annex.

MSF-CH has opted for scenario 1 model end of 2013. Given the complexity of materializing a clear and quick intersection collaborative model for GIS development, the present approach solely concerns MSF-CH. It is independent from a potential MSF wide strategic plan, while all components of this present strategy will make possible a transition from MSF-CH to the intersection, if any.

3.6 CARTONG AS GIS UNIT (SCENARIO 1)

(see alternative scenarii in Annex III)

This model presents the option of having one body, CartONG, acting as the main GIS focal body for MSF-CH (potentially MSF intersection). The GIS Unit's main roles are to maintain the geodatabases & main systems (Geonetwork, etc), to perform mapping, deliver trainings, and - when necessary - to channel/manage the requests to a second line of specialized bodies (internal or external).

Human Resources
1 OCG **GIS Referent** acting as **focal point** (till otherwise defined): MSF-CH employee (part time)

1 GIS Unit: CartONG, acting as the main GIS focal body for MSF-CH

1 IT specialist: responsible for the server. Shared between MSF and CartONG: depending where the server is located, thus maintained (CartONG vs MSF-CH HQ).

Focal & Trained Persons
At MSF-CH level: Key involved staff introduced to GIS (especially the E-Cell), having followed the tutorials: the typology of mapping & GIS products, and how to use them; how to translate a need in a GIS request form. These actors accordingly trained play the role of GIS Facilitator among their immediate entourage (ie. RLO is the GIS facilitator for his Cell).

The GIS Facilitator requests to MSF-CH GIS focal point, for any demands, but as time goes, should be able to request by himself the GIS Unit for maps and or data that are not already in the map centre.

MSF intersection (potentially)
One GIS Referent (and/or Focal point) in each OC who is working part-time on GIS + 1 GIS Facilitator (GIS knowledgeable person) per operational cell in the OC. Initially, the new person in charge of GIS will be supported by MSF-CH GIS Referent. As they learn basic GIS knowledge; they will be able to explain what GIS analysis they need in the field and ask the GIS Unit to do it.

Roles & Responsibilities
GIS Referent (per OC):
- GIS project leader & budget holder.
- (acting as) Focal point: person who deals with all daily GIS matters and channels communication between the OC and the GIS Unit, potentially to any other GIS Partner. The functions of GIS Referent and Focal Point are often combined (depending on workload and resource allocation).
- Follows the development of the GIS in MSF-CH: map and data centre.
- Channels the requests to a second line of specialized GIS bodies (internal or external).

GIS Specialist (employee of CartONG in most cases) – **at HQ / centralised level**
- Builds the Geodatabase and the MSF-CH Geonetwork or portal.
- Provides GIS services in rush mode and non-rush mode (See annex).
- Teach OC's focal points, and deliver training on ad hoc manner to concerned field staff.

- Channels the requests to a second line of specialized bodies (internal or external).
- Populate the database and Map centre.

GIS Officer (MSF or CartONG employee) – **a GIS Specialist deployed in the field** (mainly in situation of large epidemics, i.e. cholera) when a local & on time follow up of the special evolution of an epidemic and special monitoring of the response are needed. (In annexe an example of GIS Job description)

MSF Internal GIS Partners:

- Responding to demands from GIS Focal point or the GIS Unit if the demands concern their competences.
- Continue to develop partnership with external actors [called: External GIS Partners] like universities or research centres.
- Communicate about their actual projects.
- Populate the Map centre (non exhaustive description).
- For instance,

  Manson Unit:
  - Support spatial analyst for routine medical programmes and epidemiological investigations
  - Base mapping initiatives with external partners (OSM, Map Action)
  - Develop tools
  - Collaboration with universities

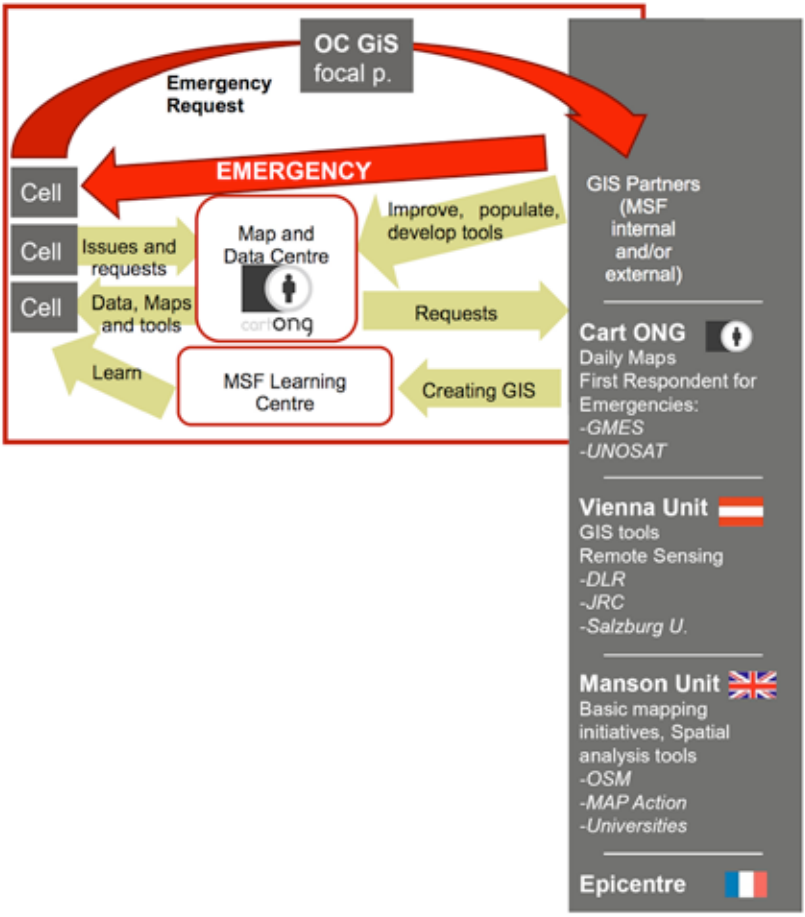
  Epicentre:
  - Epidemiology, description and understanding morbidity

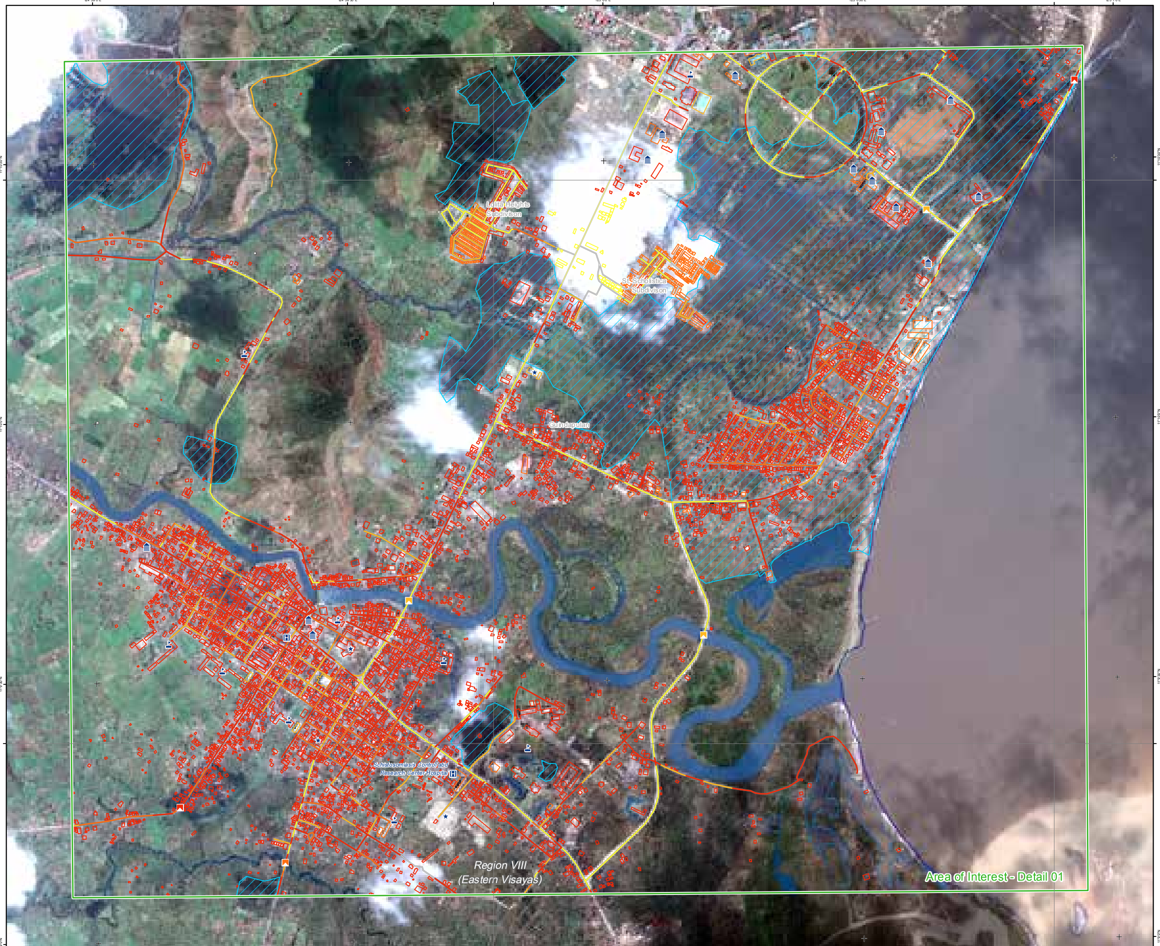
  Vienna
  - Develop GIS capacities and services with German aerospace and the University of Salzburg
  - Develop tools: population, shelter, food security, water, etc.
  - Satellite imagery and derived modelled
  - Important partnerships

In the chosen model, internal specialised units (called: Internal GIS Partners) provide specific expertise and development capacities on specific questions through a reinforced network of External GIS Partners (universities, space agencies, etc) in order to develop further their specialised portfolio.

Having a single body responding / channelling MSF GIS request would allow good accountability, good overview of all GIS processes. It would also simplify work for the GIS knowledgeable staff who would not need to follow up and choose between the different services that could be offered to them. Their demands would be channelled by GIS focal points or specialists who

are more aware of who is doing what with regards to GIS.



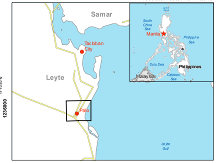


GLIDE number: TC-2013-000139-PHL

Activation ID: EMSR-058
Product N.: 04Palo, v2

Palo - PHILIPPINES
Typhoon HAIYAN - 08/11/2013
Grading Map - Detail 01

Production date: 18/11/2013



Cartographic Information

1:6000

Full color ISO A1, low resolution (100 dpi)

0 125 250 500 Meters

N

Grid: WGS 1984 UTM Zone 51N map coordinate system
Tick marks: WGS 84 geographical coordinate system

Legend

Crisis Information
- Flooded Area (10/11/2013 03:00 UTC)

Settlements Grading
- Destroyed
- Highly Affected
- Moderately Affected
- Possibly Affected

Transportation Grading
- Bridge, Destroyed
- Bridge, Highly Affected
- Bridge, Moderately Affected
- Road, Destroyed
- Road, Highly Affected
- Road, Moderately Affected
- Road, Possibly Affected

General Information
- Area of Interest

Settlements
- Populated Place

Hydrology
- Coastline
- River
- Dam
- Lake
- River

Point of Interest
- Educational
- Institutional
- Medical
- Religious

Transportation
- Bridge
- Primary Road
- Secondary Road
- Local Road

Land use - Land Cover
Features available in vector data

Consequences within the detail AOI on 10/11/2013

			Destroyed	Highly affected	Moderately affected	Possibly affected	Total affected	Total in AOI
Affected area		ha	47	4.8	0.75	0.68	53	1082
Estimated population		Inhabitants in related areas	1008	103	4	12	1159	23182
Settlements	Commercial	No	18	0	1	0	19	19
	Industrial	No	4	0	0	0	4	4
	Institutional	No	51	17	1	0	69	69
	Religious	No	35	1	2	0	38	38
	Medical	No	5	1	0	0	6	6
	Educational	No	67	3	2	0	72	72
	Sports Ground	No	0	0	1	0	1	1
	Residential	No	4377	516	0	48	4941	4941
Transportation	Primary roads	km	0.4	0.1	0.05	2.5	3	3.7
	Secondary	km	2.8	1	0.7	5.5	10	9.8
	Local roads	km	11	10	6.5	4	31	33
	Bridges	No	2	1	3	0	6	6
Other items	Flooded areas	ha						236

Map Information

In the early morning of Friday 8 November local time typhoon Haiyan, called Yolanda in the Philippines, made landfall over Guiuan in Eastern Samar as category 5 typhoon and continue its route over the Philippines in west north west direction.
Haiyan is an exceptionally strong typhoon with winds up to 315 km/h (GDACS). Surge of sea level is expected to be two meter, higher on some locations depending on the coast line, and having the potential for wide spread destruction in areas along the coast.
Heavy/intense rainfall, possible within the 400 km diameter of the typhoon, is expected to cause floods and flash floods in several areas.

Data Sources

Inset maps based on: Administrative boundaries (JRC 2013, GISCO 2010, © EuroGeographics), Hydrology, Transportation (Natural Earth, 2012), Settlements (Geonames, 2013).
WorldView-2 © Digitalglobe (acquired on 10/11/2013 at 03:00 UTC, GSD 0.5, 5% cloud coverage).
Pleiades © Astrium (acquired on 07/04/2013 at 02:10 UTC, GSD 0.7 m, approx 1.7% cloud coverage).
Base vector layers based on OpenStreetMap © OpenStreetMap contributors, Wikimapia.org, GeoNames (approx. 1:10000, extracted on 14/11/2013), Globcover © ESA 2010 and UCLouvain refined by GAF AG. Source information is included in vector data.
Elevation data: SRTM (90m posting).
Population data: Landscan 2010 © UT BATTELLE, LLC.
All Data sources are complete and with no gaps.

Dissemination/Publication

No restrictions on the publication of the mapping apply.
Delivery formats are GeoTIFF, GeoPDF, GeoJPEG and vectors (shapefile and KML formats).

Framework

The products elaborated in the framework of current mapping in rush mode activation are realized to the best of our ability, within a very short time frame during a crisis, optimising the available data and information. All geographic information has limitations due to scale, resolution, date and interpretation of the original data sources. The products are compliant with GIO-EMS RUSH Product Portfolio specifications.

Map Production

The present map shows the damage grading at building footprint level in the area of Palo City, Philippines. The basic topographic features such as transportation, hydrology and settlements are derived from public datasets, refined by means of visual interpretation of pre-event Pleiades © CNES 2013 imagery (acquired on 07/04/2013 02:10 UTC, GSD 0.7 m, 0% cloud coverage).
Thematic layers, assessing the delineation of the event and its grading have been derived from postevent WorldView-2 © Digitalglobe (acquired on 10/11/2013 at 03:00 UTC, GSD 0.5, 5% cloud coverage).
All satellite images have been radiometrically enhanced and orthocorrected with RPC approach (using SRTM elevation data).
The estimated geometric accuracy of this product is 12 m CE90 or better, from native positional accuracy of the background satellite image.
The estimated thematic accuracy of this product is 85% or better, as it is based on visual interpretation of high resolution optical imagery. Grading classes are based on EMS-98 damage grades, specifically:
Destroyed (EMS-98 grade 5), Highly affected (EMS-98 grade 3, 4), Moderately affected (EMS-98 grade 2), Possibly affected (EMS-98 grade 1).
Map produced on 18/11/2013 by GAF AG under contract 257219 with the European Commission. All products are © of the European Commission.
Name of the release inspector (quality control): e-GEOS (ODO).
E-mail: rush@ems-gmes.eu

Storm/Hurricane
- Civil Protection
- Response
- Grading Map - Detail
- Planning
- WorldView-2 © Digitalglobe
- 08-11-2013

4. TECHNICAL CHOICES OVERVIEW

In regard of the review on how other NGOs are managing their geodata and considering MSF organizational specificity, the authors recommend the following technical solutions:

Database: PostgreSQL/GIS (centralised)

- Flexible
- Free software
- User-friendly, with good documentation and community to help users

Server: ArcGIS Server (centralised)

- Full integration with ArcGIS for deskstop
- Easier creation of geoportal to view live data
- Worth investing in, has been chosen by ICRC and UNHCR among others

Desktop mapping: ArcGIS for desktop, Advanced.

- A powerful and integrated solution (with ArcGIS server)
- Already used by many MSF staff
- Is a leader in GIS solution and offers adapted costs for NGOs
- Good value added for complex analysis and layout
- Limited number of licenses (for GIS specialists and GIS officers).

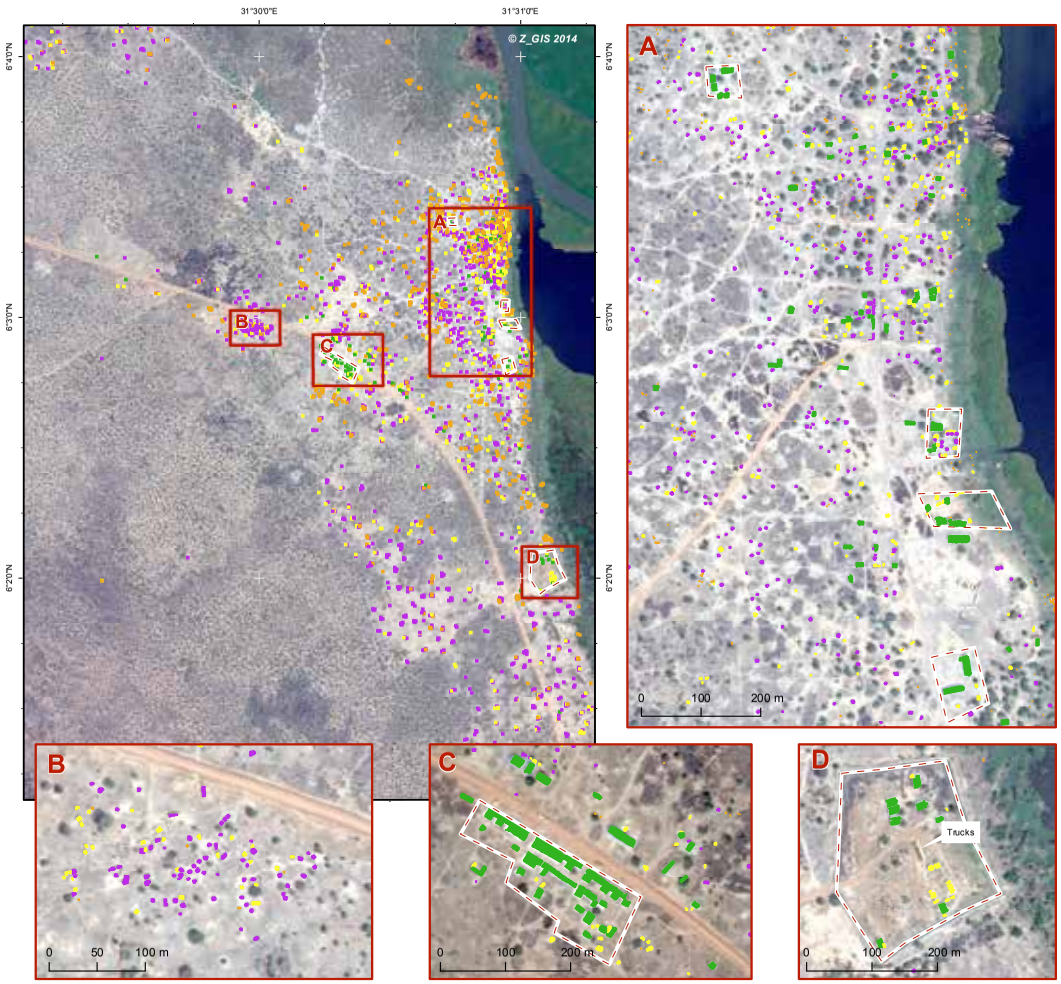
Map Centre: Geonetwork (centralised)

- Stable and linkable to ArcGIS server and PostGIS
- Free and no value add to go for a paid solution

At field level, and widely spread: QGIS

- An open source GIS
- User friendly, ideal for daily common tasks
- Free, yet contain some advanced tools
- Easy to deploy on the ground for interested staff

Approach:
QGIS for daily and common tasks: mainly at field level and for non-specialist persons.
ESRI for complex analysis and layout: for GIS specialists and GIS Officers only



Production date: 22/01/2014

IDP Camp Awerial, South Sudan
Dwelling Extraction
10 January 2014

Location

Description

This map shows single dwellings of the IDP camp Awerial as of 10 January 2014. The camp is located in El Buheyrat state on the west bank of the Nile, near the city of Bor, South Sudan. Besides traditional housing structures (tukuls, see detail B), bright shelters (see detail A), large structures, likely supply structures, (see details C and D) and very small, bright objects (indicating probable temporary makeshift structures), are visible on the satellite image.
Dwellings have been semi-automatically extracted from very high resolution WorldView-2 satellite data. In total 2,727 dwellings were identified: 1,120 tukuls and other dark dwellings, 599 bright dwellings (e.g. covered by plastic sheeting), 125 large structures (area >50m², attached structures were not separated) and 883 small structures (area <5m²). Due to limited spatial resolution, the latter class is only vague with no guarantee for completeness and correctness. It is impossible to detect temporary structures under trees made out of shrubs or other makeshift materials, although it is known that they are used by the vast majority of IDPs not having any other shelter.
Probable supply areas are based on visual image interpretation with no guarantee for completeness and correctness.
The pan-sharpened WorldView-2 image in the background is displayed in true colour composite.

Legend

Semi-automated extracted dwellings and other structures

- Tukul or other dark dwelling
- Bright dwelling
- Large structure (area >50m²)
- Small bright structure (area <5m²) (probable makeshift structure)
- Probable supply areas

Total extracted dwelling/structures 2,727


Tukuls


Bright dwellings


Large structures

Cartographic Information

0 150 300 450 600
Meters

Scale Main Map 1:24,000 for A3 prints

Local projection: UTM Zone 36N, Datum: WGS 84
Geographic projection: Lat/Lon (DMS), Datum: WGS 84

N

Data sources

Satellite data
WorldView-2
Acquisition date: 10/01/2014
Copyright: Digital Globe
Source: European Space Imaging
Spatial resolution: 0.5 m

Disclaimer

This map has been generated by optimizing the material available. Boundary or naming information implies no endorsement from the producer. Geographic information has limitations due to the scale, resolution, date and interpretation of the original source materials. The producer accepts no legal responsibility or liability whatsoever with regard to the use of this product.

UNIVERSITÄT SALZBURG ZGIS

5. TRAINING PLAN

As summarized in the GIS for MSF study, there is no need to teach advanced GIS to every MSF staff. Nonetheless, having some basic knowledge could help them define their GIS related needs and objectives, as well as to make the best use of delivered products.

> Two different profiles of users will be targeted by the trainings: potential GIS users and GIS focal points / facilitators.

The training will be available in e-learning to be accessible to all MSF staff. Since 2011 MSF has been developing e-learning platforms such as Dokeos or E-Campus. They also developed a log key containing various learning material that works both offline and online. In 2014, the trainings will be made available on the log key. In-class training will also take place a few times a year.

Potential Users of GIS and Mapping Services
They need to have basic knowledge on GIS: read a map, use the Map and Data Centre, use the Geonetwork, define area of interest on Google Earth and be aware about what GIS can support their activities.

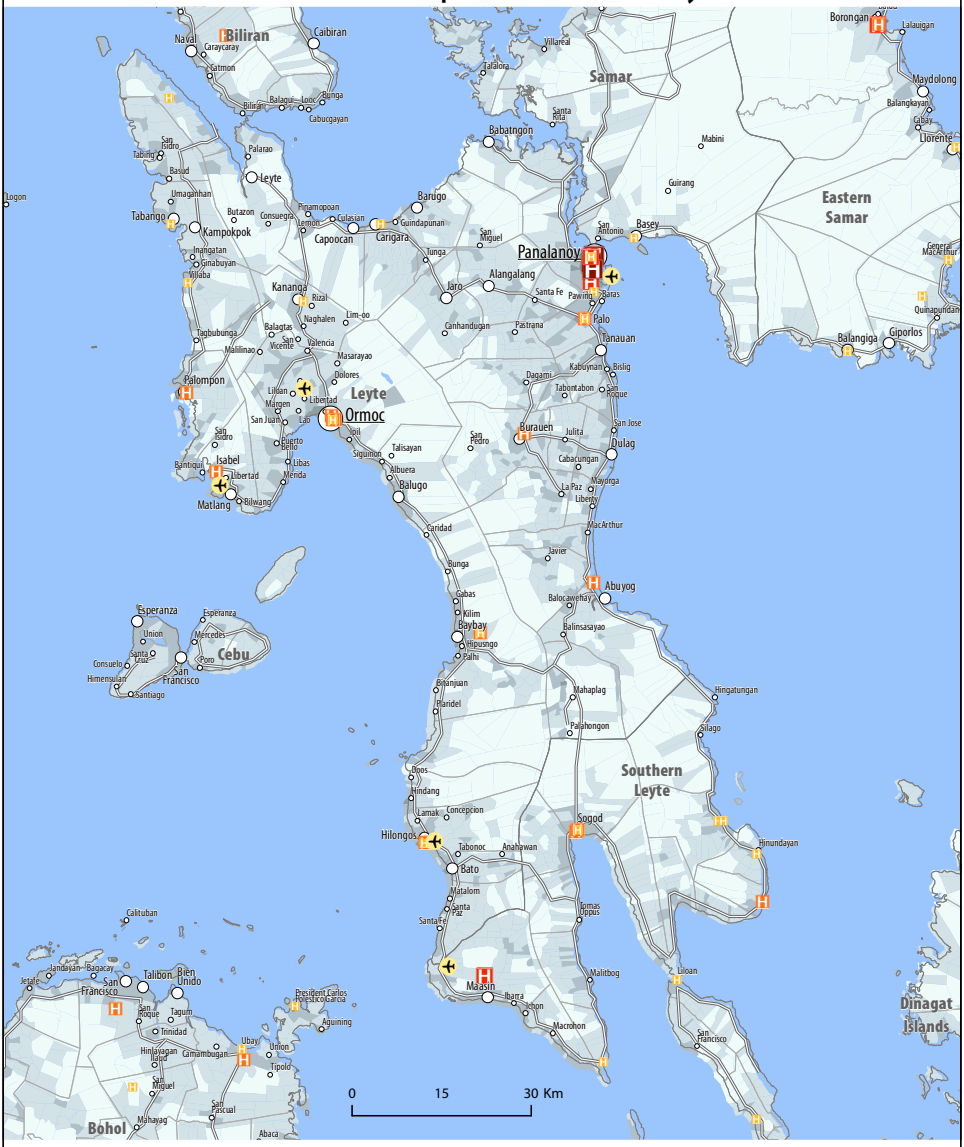
The training modules will be:
- Introduction to GIS and Mapping for Humanitarian Operations online-support.
- Initiation Google Earth: How to create kml (could be online).
- Introduction to use the Geonetwork: presentation of tools, display data, export kml, create and print maps...

OC GIS Focal Points and GIS Facilitators
One person per OC should play the role of GIS Focal Point who will be in charge to translate the needs and write a demand to the GIS Unit or Int/Ext Partners. They must know the possibilities and functions of GIS and they must be able to explain objectives of projects. It could be very helpful for them to have basic knowledge on a GIS software. It could be ArcGIS but also QGIS which is free and very powerful for basic needs.

- Same trainings as for basic potential users.
- Training focal persons: GIS resources in MSF, portfolio and activation process,

- Define their needs and fill the request form.
- Introduction to ArcGIS/QGIS desktop.

Healt Infrastructure (pre disaster) in Leyte Island



Health Infrastructure :

- Level 1 / Primary
- Level 2 / Secondary
- Level 3 / Tertiary
- Level 4 / Speciality

Population density per Barangay (hab/km2)

- 0 - 100
- 101 - 500
- 501 - 5000
- + 5001

Population :

- - 5000
- 5001 - 25000
- 25001 - 50000
- + 50001

- Aerodromes
- Province Bounderies
- District Bounderies

As of 13-11-2013

Sources : OSM, OCHA, GDAM, PH. Department of Health, Log Cluster

6. OVERVIEW OF THE PROJECT'S TIMELINE

Pre-Phase: MSF-CH — 2013

- **Priori Study and Solutions proposed**
  - Comparative study between existing solutions in other NGOs
  - Recommendations for MSF
- **First Map Centre on an FTP**
  - Map Centre on CartONG's FTP
  - Portfolio

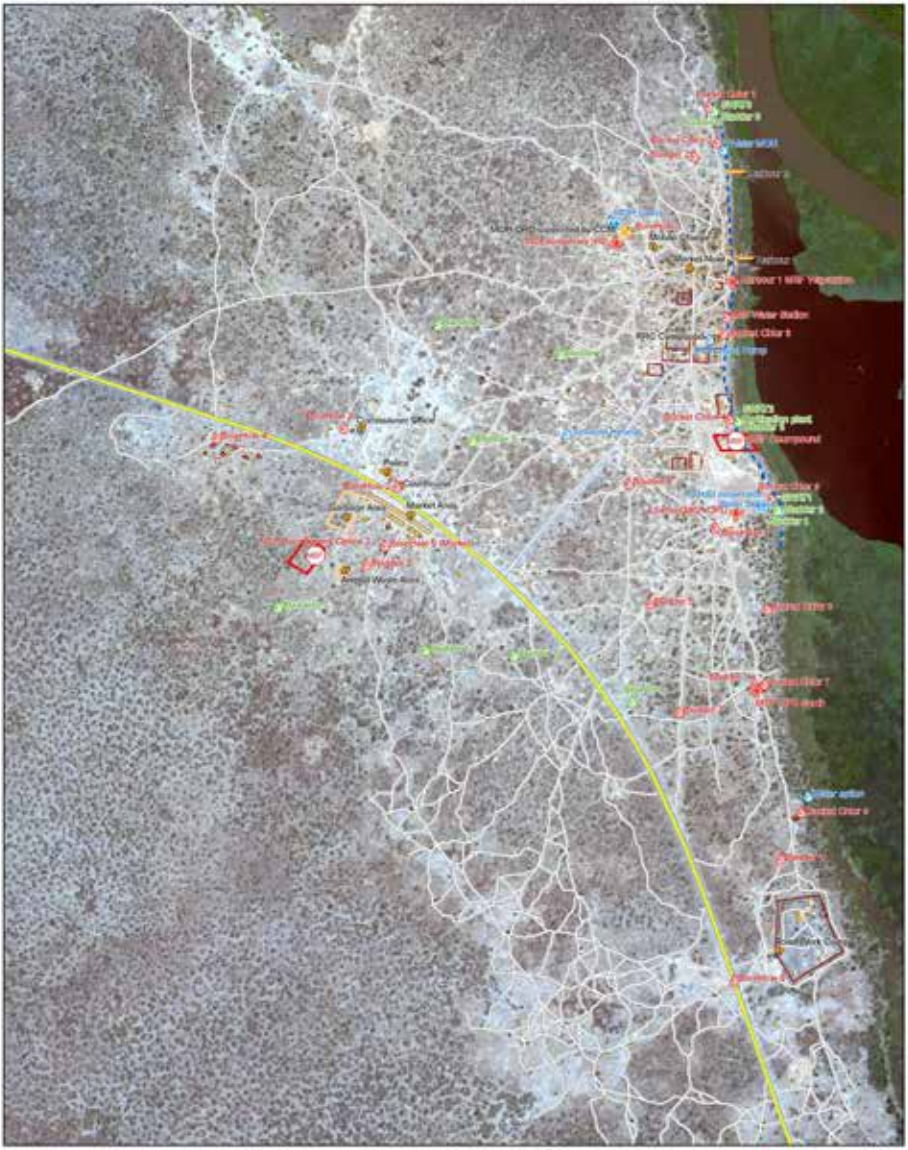
Phase 1: MSF-CH — 2014

- **Test**
  - Develop Mapping Standards
  - Develop a Geo-Database
  - Develop an online Library for Maps (followed by a Map Centre FTP)
  - Develop a Geonetwork for MSF-CH
- **Implementation**
  - Migrate the Library for Maps from FTP to Geonetwork
  - Implement the Geonetwork for MSF-CH
  - Involve partners and other units
  - Training focal points in each OC
  - Training field users (specialised fields)

Phase 2: MSF — 2015

- **Communication**
  - Create a GIS working group
  - Validate mapping standards
- **Implementation** (to be confirmed)
  - Populate the database
  - Migrate the viewer for all MSF
  - Develop advanced geoportal
  - Training on the geoportal
  - Training field users (specialised fields)

Infrastructure : Minkammanl (Lakes State) - South Sudan - 29 Jan 2014



Legend

- MSF Compound
- Health infrastructure
- MSF Health Infrastructure
- Water Supply
- MSF Water Supply
- Oxfam Water Supply
- Latrine
- General Infrastructure
- Harbour
- Limit of flood
- Main road
- Other road / track
- Wall
- Building
- MSF Compound
- Garbage area
- International Boundary
- Administrative Line
- Undefined Boundary

0 500 1,000 Meters

N

Source :
Roads : OSM
Imagery :
Copyright : DigitalGlobe
Source : European Space Imaging
Date : 29 January 2014
Resolution : 0.5m

Document Name :
SSD_Awerial_img-01-29_MSFdata-01-20-2014_A3
Date : 19/02/2014
Realised by CartONG for MSF-CH
Print dimensions : ISO A3 size

This map is for information purposes only and has no political significance. The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by MSF.

7. GLOSSARY OF HR ROLES

GIS Unit (external contractual partner in the case of MSF-CH) is to produce, collect and share basic data and provide basic maps on demand. It is also a central position for all focal persons and GIS Partners units as well. GIS Unit is composed of GIS Specialists.

GIS Referent: OC's GIS project leader & budget holder (not necessarily a GIS Specialist)

GIS Focal Point: person who deals with all daily GIS matters and channels communication between the OC and the GIS Unit, potentially to any other GIS Partner.

Note: in an OC the functions of GIS Referent and Focal Point are often combined (depending on workload and resource allocation).

GIS Facilitator: various actors appropriately trained, playing the role of facilitator or relay among their immediate entourage (i.e. RLO is a GIS facilitator in his Cell).

GIS Specialist: professional in GIS, mostly working within a GIS unit.

GIS Officer (MSF or CartONG employee) – a GIS Specialist deployed in the field (mainly in situation of large epidemics, i.e. cholera) when a local & on time follow up of the spatial evolution of the response and the epidemic are required.

GIS Specific Project Holder: persons, external to the GIS setup, who is elaborating a specific project that involves GIS (i.e. epidemio). That project will be supported by the GIS Unit upon request by the GIS Focal point.

ANNEX I
MSF-CH Map Centre: Mock-up

At the end of 2013 the MSF-CH Map Centre was hosted by the CartONG's Server and accessible through FTP interface: AjaXplorer.

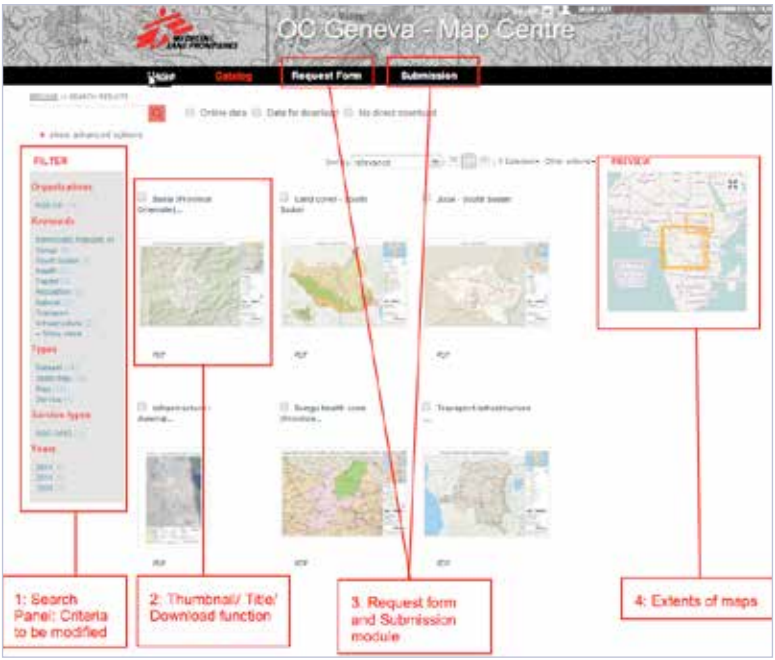
Map Centre in 2014 will be hosted on a GeoNetwork an open-source catalog application. "It manages spatially referenced resources. It provides powerful metadata editing and search functions".[2]

Map Centre Home:

Home page will contain the latest added documents. And a secondary section presenting countries in Emergencies will appear in this home page.

[2] http://geonetwork-opensource.org/

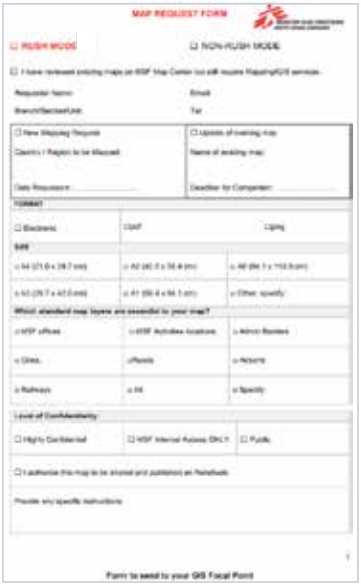
Main page of the ongoing Map Centre:



1: The maps will be classified by different categories using list of tags. Those categories will fit MSF terminology.

2: Each thumbnail will open information page about the map. Confidential Maps will be stored and will contain a disclaimer to inform that it must be used internally. Those maps are made by MSF or MSF's partner for MSF. They should contain MSF's logo as well.

3: To be efficient it is essential to keep a clear and ordered Map Centre which is why it is exclusively administrated by CartONG. MSF staff will be able to request a Map to the GIS Unit through the request Form.
However a secure process will allow everyone to add resources on the Map Centre through the submission button.



4: Extent of each maps is for information only. It will be possible in the future to add a map viewer module. This module will allow to display data and create some very basic maps.

ANNEX II
Non Rush vs Rush Modes

Non Rush mode and Specific GIS projects
This mode consists of the **on-demand of geospatial information**. This information supports humanitarian operations regarding the preparedness phase or recovery phases. Information and maps to be deliverable in weeks or months.

The process is standardised following a set of steps in order to get the most suitable information by tasking the most relevant GIS unit.

GIS Unit or GIS partners might be available to response to the needs. The crucial step is to precisely define the objectives.

Regarding the MSF's organization the GIS focal point from each OC is in charge to translate needs and objectives between field and GIS provider. He should communicate to the Map and Data Centre about the project as well.

Rush Mode and Emergency Mapping
This mode consists of the **on-demand and fast provision (hours-days) of geospatial information**. This information supports emergency management activities immediately following an emergency event. The provider is the GIS Unit.

The process is standardised following a set of steps in order to rapidly produce quality information.

Those kind of products below could be available when a rush mode is launched.

Reference maps available in the GIS community, provide a quick updated knowledge on the territory and assets using data prior to the disaster. The content consists of topographic features, transports facilities and other available information that can assist the users in their specific crisis management tasks. Maps are directly compiled and mounted in the Map Centre.

First thematic maps available on the web, produced and published by other organizations. They provide an assessment of the event extent. The content consists of first data analysis, event impact area, displaced population, damages...

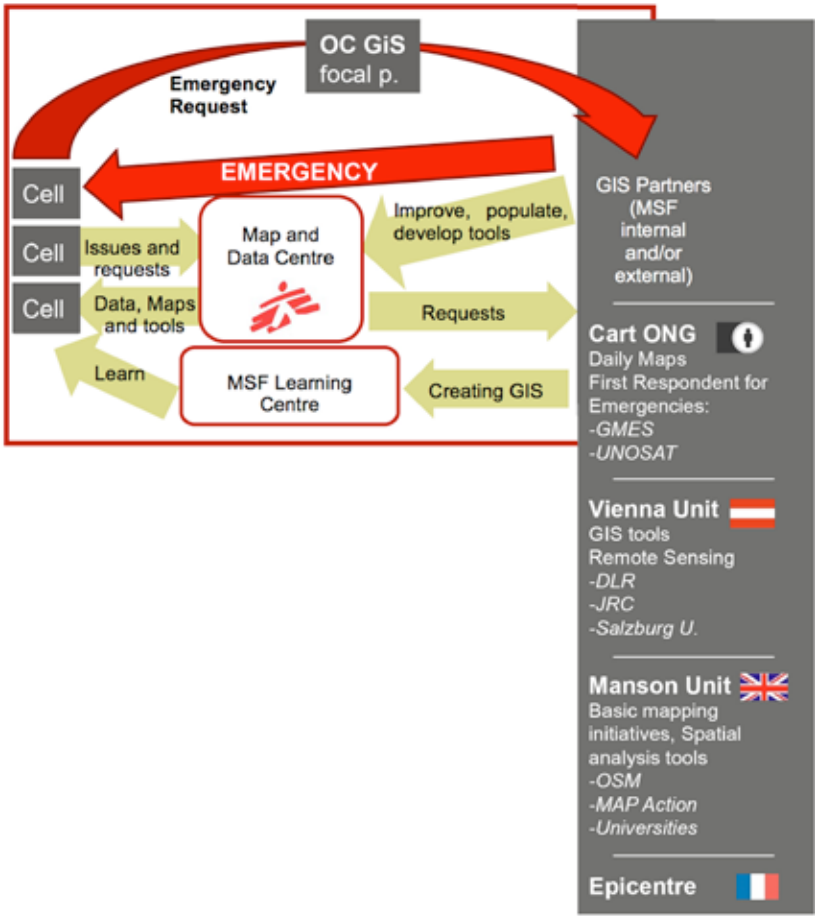
GMES products available if tasked, maps and geospatial information based on satellite imagery: cf. GMES' Portfolio.

MSF Specific maps produced by the GIS Unit if tasked, maps and geospatial information to response to the specific MSF's needs. It could be a zoom on area of MSF's operations, collect specific humanitarian data...

Annex III
Roles and responsibilities: the alternative scenarii

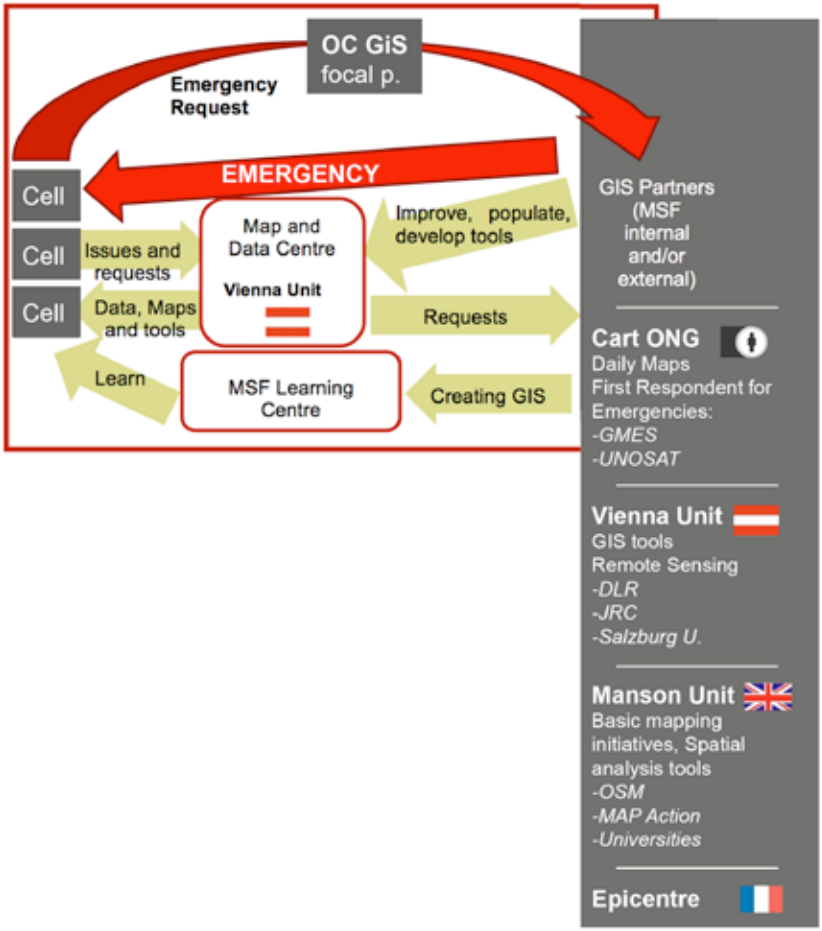
Scenario 2: Internal resources – MSF runs its own GIS "support unit"
MSF-CH could choose to employ full-time GIS experts with the same role and responsibilities as CartONG in the 1st scenario.

CartONG would remain responsible for implementing the GIS system and to insure the MSF's GIS officers are well trained on MSF systems.



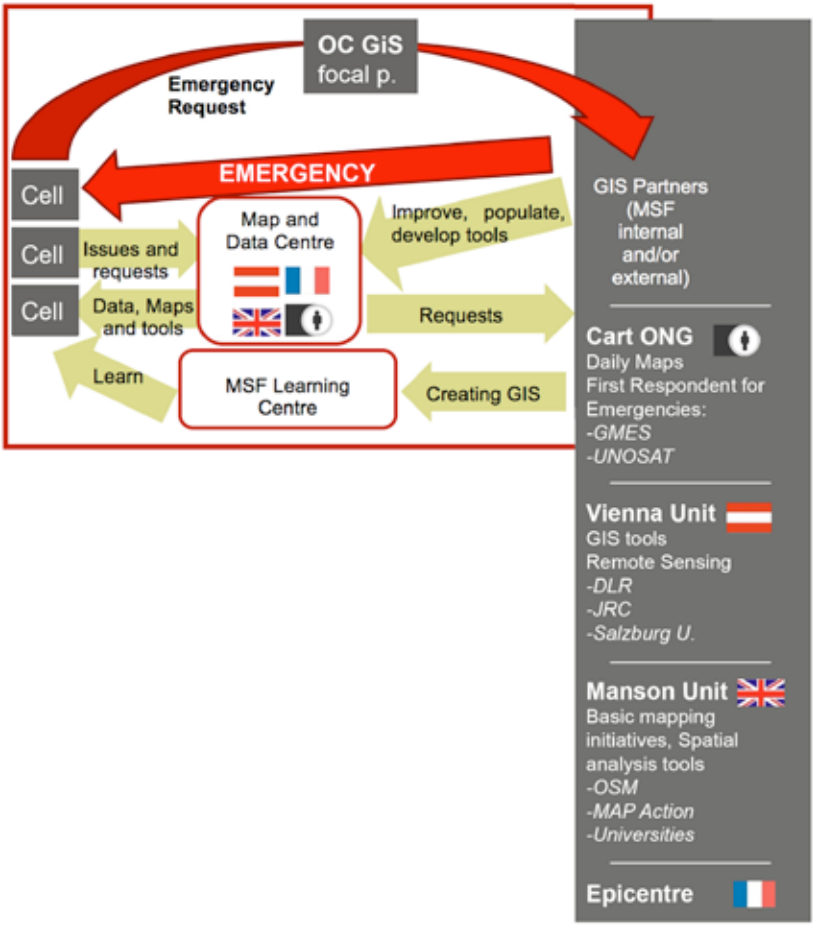
Scenario 3: MSF Internal partner taking the lead acting as GIS "support unit"

The Vienna Unit could also become MSF's GIS manager. They are building GIS capacities and services and their tools are used by more than one OC's and their partnerships with Universities and Research Centres give them to access to large resources. One of the limitation of having the Vienna unit becoming the GIS support unit for MSF is that it would take them to significantly scale up to at least reach CartOng present (growing) capacity.



Scenario 4: Consortium

This last scenario aims to describe a map and data centre managed by all GIS partners. Manson Unit, Vienna Unit, Epicentre and CartONG, the main GIS partners, would manage the Map centre with coordination. The responsibilities will be shared by all partners. They would be coordinated by a GIS Coordinator appointed by the International Office.



Comparative Table

GIS manager	Implementer	Organisation	Implication	Response Time	Quality	Fit to needs
Sc.1: CartONG	Implementing Partner (CartONG)	Already involved Good knowledge Technical team	Needs complementary capacity for the dev of specialised tools and access to satellite imagery	Rapid +	Good +	Yes
Sc.2: Internal	MSF Employee with support from external experts (i.e. CartONG)	Need to be setup from scratch. HR implication.	Need to be defined as referent depending on where he stands	Rapid -	Fair	Yes
SC.3: Vienna Unit	Partner MSF sect° with some capacity. for the dev of specialised tools and access to satellite imagery	Knows MSF needs, part of inter MSF coordination mechanisms	Would take to significantly scale up to at least reach CartOng capacity	Rapid	Good	Yes
Sc.4: Consortium under IO	MSF units (Vienna and Manson) + implementing partner (CartONG)	Need coordination & mandate from I.Office. Complex to run	everyone as equal share, obvious advantage of centralising data & capacity	Slower	Good +	yes

Note: subject to evolution and improvement

Annex IV
GIS Management in other NGOs

ICRC: A STRATEGY BASED ON ESRI SOLUTION

ICRC is a centralized organisation: one HQ and a variety of delegations and offices per country. The GIS unit started to be structured around 2006. It was initially put in place to respond to Water and Habitat Unit needs. Since then, GIS capacity in ICRC has been continuously increasing and is now considered as a reference tool for all units. As the GIS capacity increased in ICRC, more and more data became georeferenced. This allowed the GIS unit to reconcile the different database and allow live data visualisation and basic analysis through a web platform called geoportal.

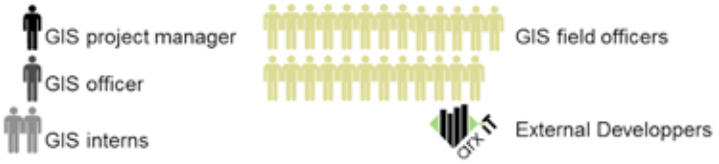
GIS Data Management

- **Local data storage**: allows field to have continuous access to the organization data relevant to the delegation. The data is regularly synchronized back with HQ to ensure all data is also centrally available.
- **Centralized data storage**: in a web enabled database. This allows ICRC to serve their organization data on a web platform (geoportal). The centralize database stores reference data, and creates links toward existing databasesthus enabling its use for GIS purposes while leaving the data ownership to the specialists of each data sets.
- **Roles and Permissions**: Reference data is available to all ICRC staff members and easily shared with other organizations or partners. ICRC specific data, however, is potentially highly confidential. ArxIT has developed a big Users management tool. The level and permissions are defined by the layer owner.

Static Maps

- **Software**: ArcGIS desktop: they've opted for a pool of 150 licenses included with ArcGIS server solution.
- **Storage and printer**: after having stored on a FTP, ICRC has developed a metadata geoportal with the free and open source tool developed by ESRI. Printer A2 and external partnership with Xerox for A1 and A0.
- GIS Officer: Maps are made on the field by GIS Officers and in the HQ by one or two intern positions.

Human resources and Development



Pros and cons

	Platform	Pros	Cons
Data Storage	SQL Server ArcGIS Server Local files structure	Integrated software	DB not accessible to manage users rights and permissions
Live Data/Viewer	Geoportal Flex	Customized for the ICRC, reference tool, useful tools, fancy, KML	Users rights management not easy, big management To big, to slow in delegations
Static Maps	FTP > Geoportal ESRI Geoportal ArcGIS desktop	Search engine Store data and other documents viewer	Difficulties to develop Implementing partners?
HR/development	25 officers, 4 in HQ, ArxIT as consultant	Proximity/rapidity/up-to-date of Data	Duplication, cost for consultancy

WFP: MULTIPLE CHOICES OPEN SOURCE SOLUTION

Historically WFP contains 3 GIS teams: one for the Logistic Cluster, one for Emergencies Unit and one for Vulnerability Analysis and Mapping. Logistic Cluster and Emergencies Unit have merged few years ago. The different teams try to work with the same tools and data but for political reasons it is proving difficult. The organisation described below concerns the Emergencies GIS team.

Data Storage

- **Private solution**: ArcSDE/Oracle hosted on their internal server, managed by their IT team.
- **Open Source**: Postgres database hosted in a private company.
- Synchronisation between those both databases in order to work and use the same data with their different solutions.
- **Geoserver**: linked to GeoNode a sharing tool which manages users' rights and roles. Public data hosted on GeoNode are shared with public as well. Private data are shared with partners through an FTP.

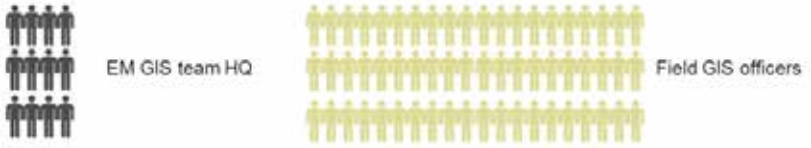
Static Maps

- **Software**: QGIS for daily and common tasks, ESRI for complex

analysis and layout.

- **Storage and printer**: shared with GeoNode. Printers from A4 to taller than A0.

Human Resources and Development



Pros and cons

	Platform	Pros	Cons
Data Storage	ArcSDE/Oracle, PostgreSQL		2 is too much and not useful because ESRI could be connected to PostgreSQL.
Live Data/Viewer	GeoServer, GeoNode	Speed (field access), manages rights	Not pretty, could appear as a complex tool
Static Maps	ESRI / QGIS	Both tools have strengths if used complementary	QGIS capacities are not enough
HR/development	11 staff HQ 60 GIS officers	Strengths of the number	

Those two solutions could be a good way to think about field's needs. When we open the web application it does not load every data but only the ones we choose.

This is different with the actual **ICRC geoportal** (ESRI solution). Depending on user rights it is possible to see data by thematic for all countries. It takes longer to load on the field where the connectivity is not very good.

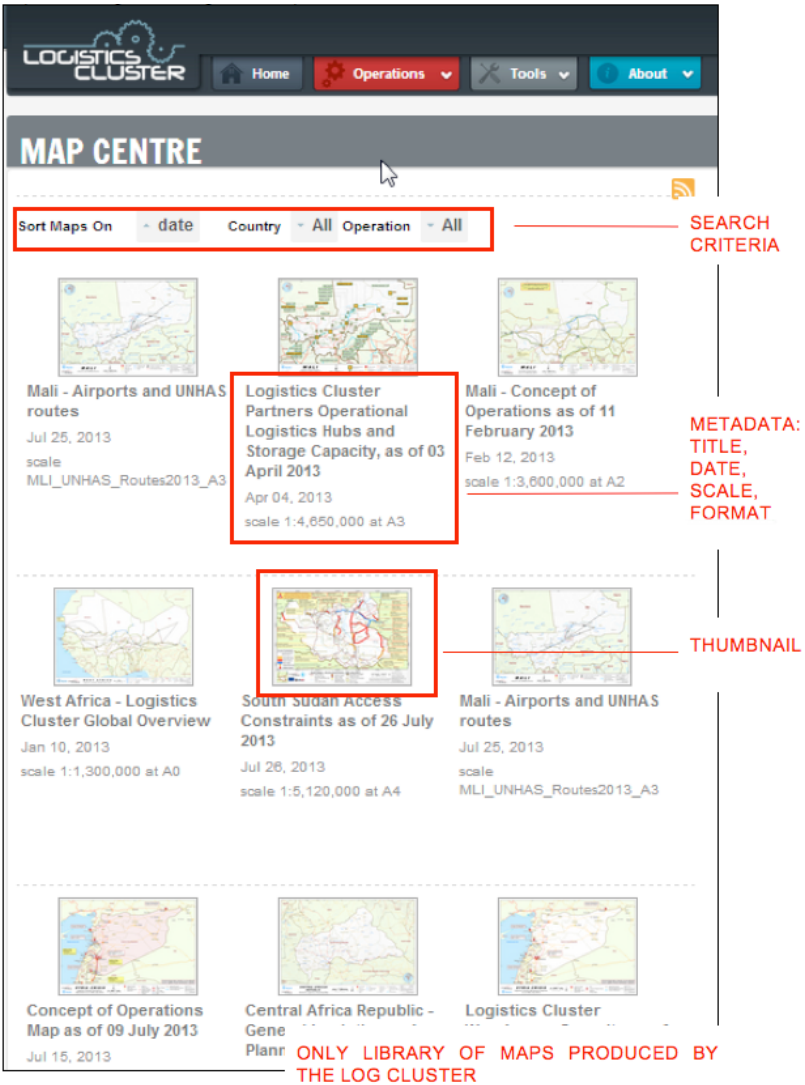
Comparative Table

PROS	Open Source	Proprietary software
Data storage	Flexibility, Management of rights, roles	Integrated Solution
Development	Easily customizable	No important needs
HR		Less development and available support
Implementing partner	"Free" software	
User		Fancy

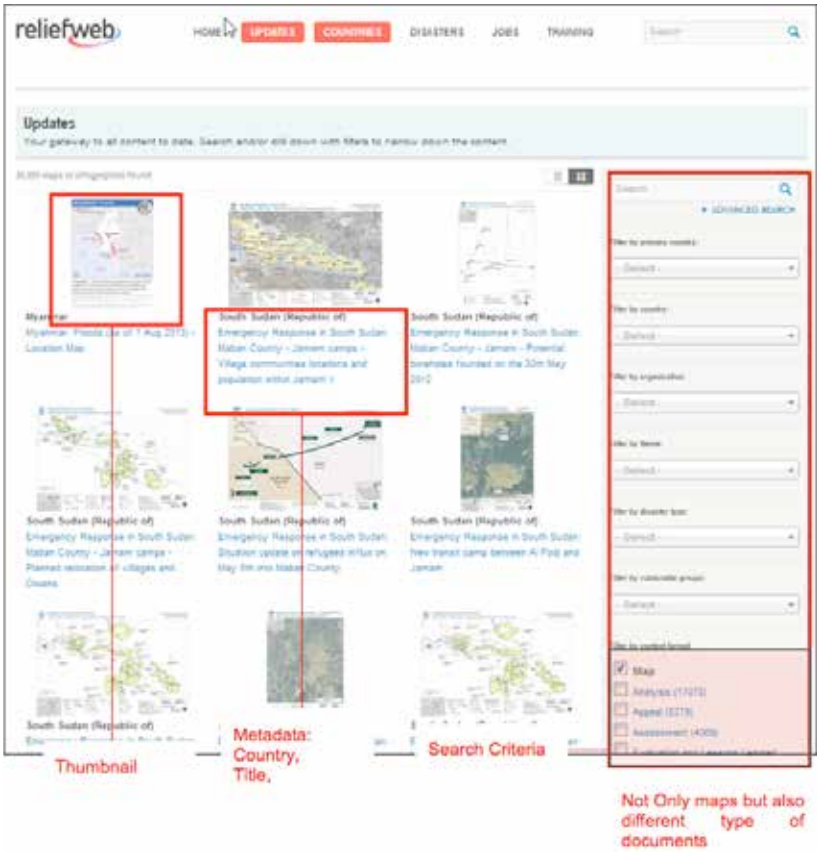
CONS	Open Source	Proprietary software
Data storage	Need competence	Difficulties to access the db
Development	Need time	Need expert
HR	Need development time	Need expert consultant
Implementing partner		Expensive solution
User	Not fancy	

ANNEX V
Samples of Map and Data Centres

LogCluster:
http://www.logcluster.org/tools/mapcentre

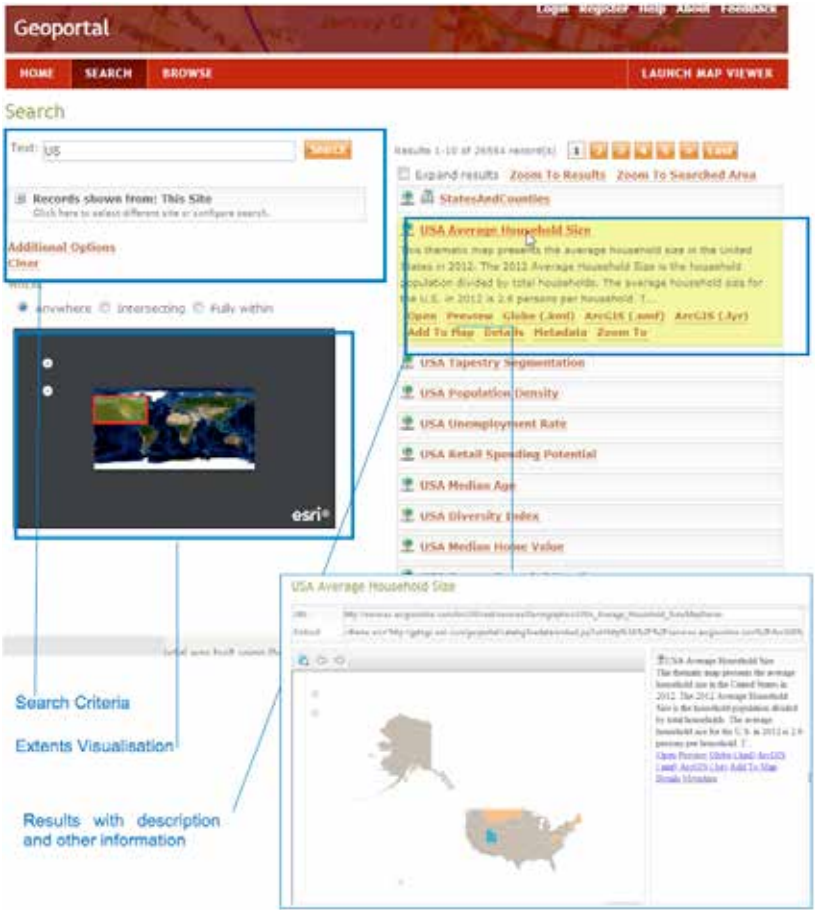


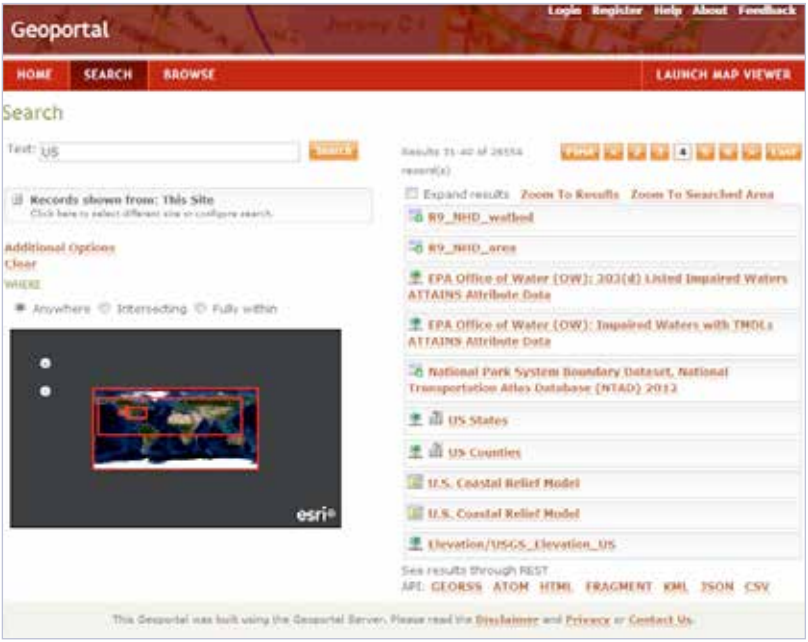
Reliefweb:
http://reliefweb.int/maps



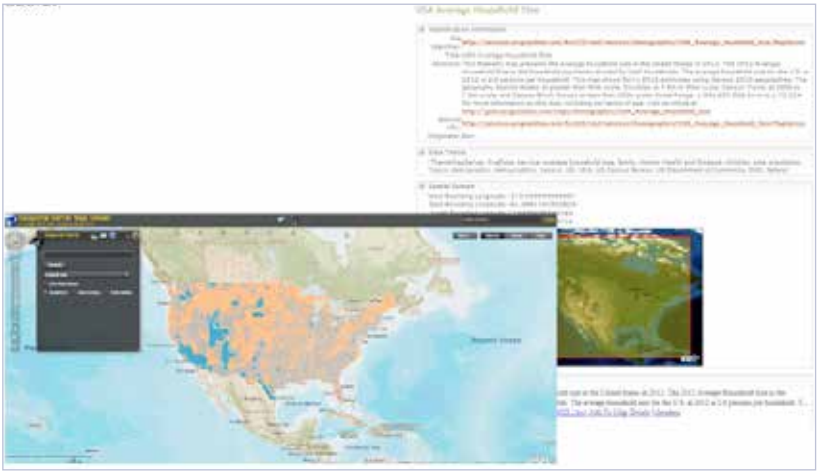
FAO:
http://www.fao.org/Geonetwork/srv/en/main.home

ICRC:
http://gptogc.esri.com/geoportal/catalog/main/home.pageDemo version from ESRI

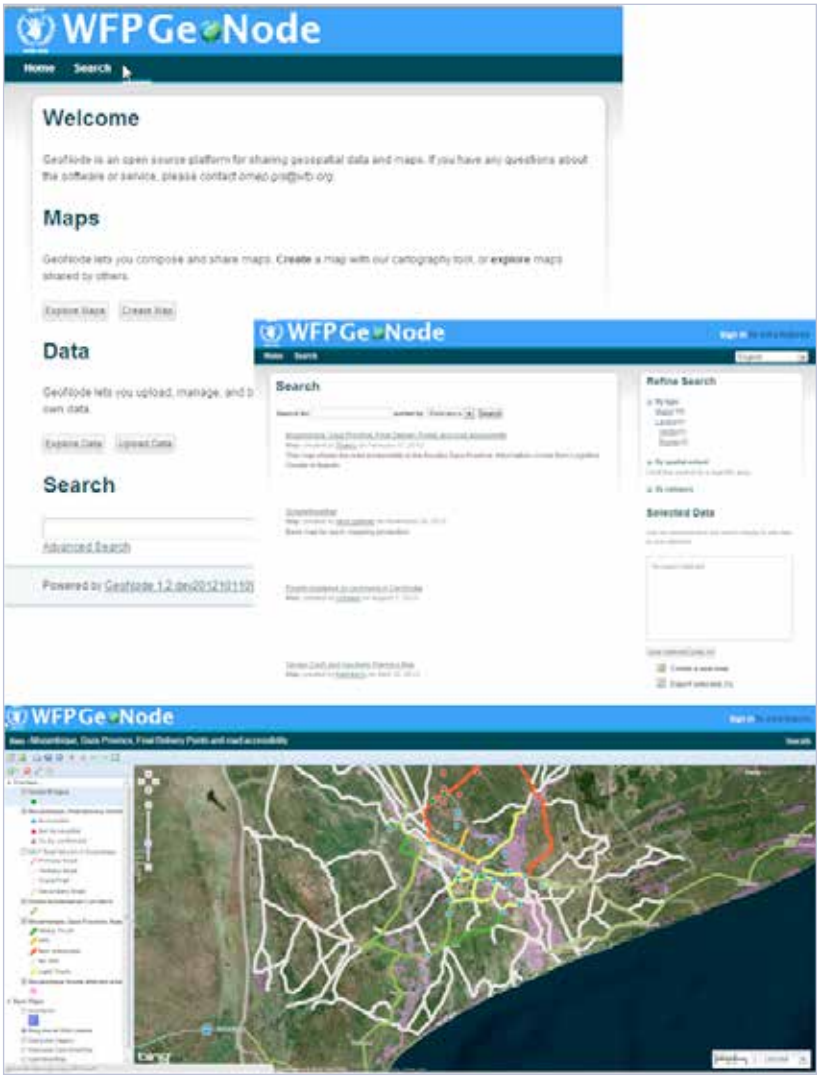




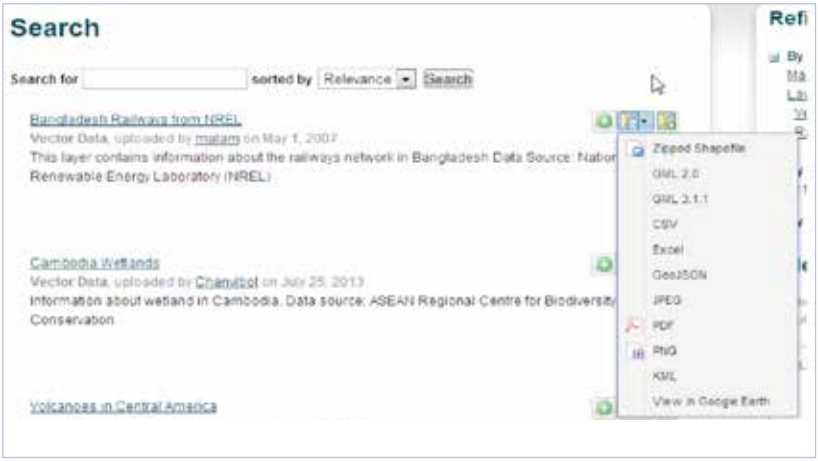
FOR ESRI USERS, more difficult for non-GIS users.



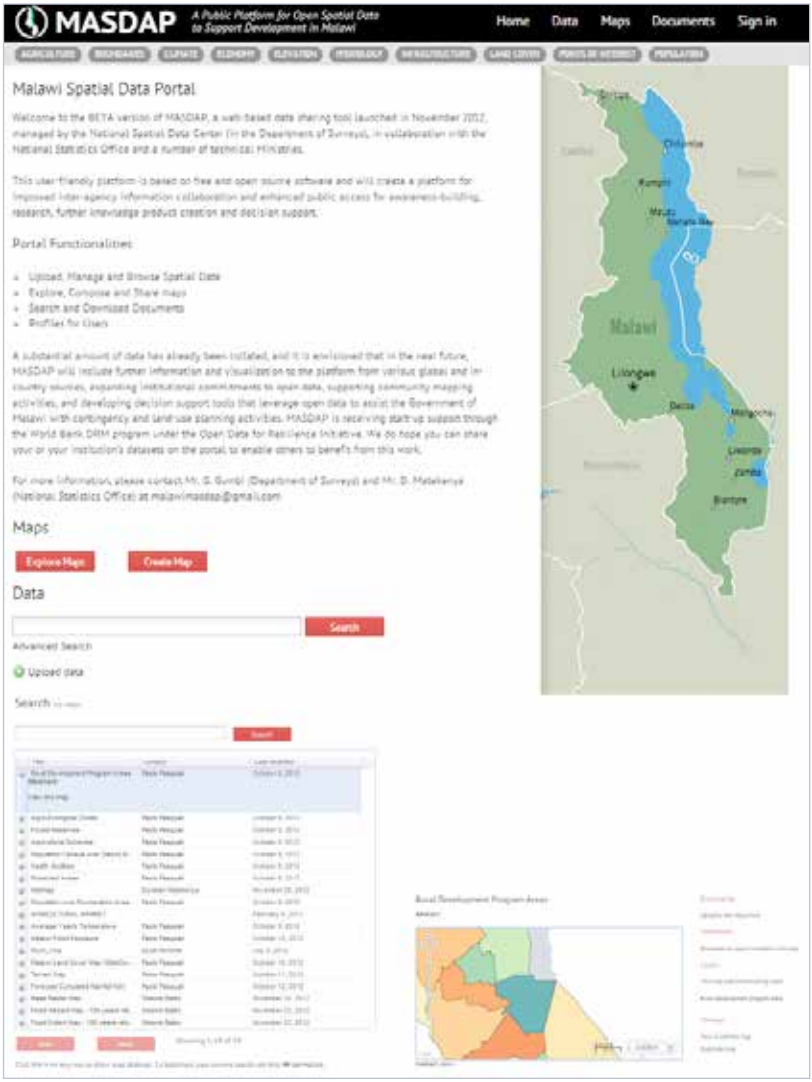
WFP:
GeoNode http://geonode.wfp.org/




Selected Data
Create a new map
Export selected to


Search
Search for
sorted by
Relevance
Search
Bangladesh Railways from NREL
Vector Data, uploaded by mstarn on May 1, 2007
This layer contains information about the railways network in Bangladesh Data Source: Natior
Renewable Energy Laboratory (NREL)
Cambodia Wetlands
Vector Data, uploaded by Chanvibol on July 25, 2013
Information about wetland in Cambodia. Data source: ASEAN Regional Centre for Biodiversity
Conservation
Volcanoes in Central America
Zipped Shapefile
GML 2.0
GML 2.1.1
CSV
Excel
GeoJSON
JPEG
PDF
PNG
KML
View in Google Earth

MASDAP:
http://23.22.63.123/




MASDAP
Home
Data
Maps
Documents
Sign in
Rural development program areas
MASDAP Login
Username:
Password:
Login

ANNEX VI
Terms of reference: GIS Officer (field posted)

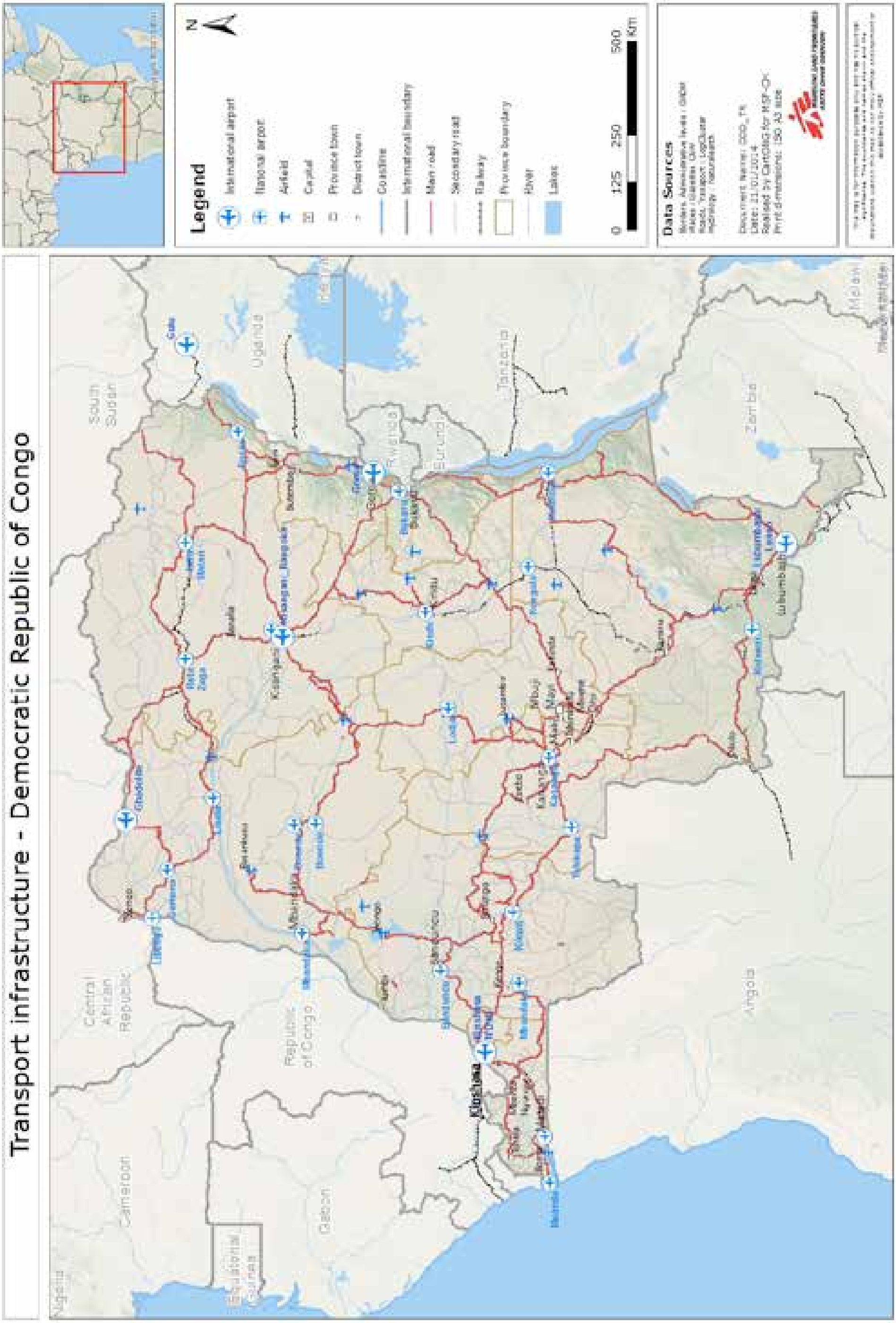
The GIS Officer shall manage technical activities, under the direction of the GIS Specialist overall management of the GIS Referent. This support will include but not be limited to:

- Direct liaison with staff to identify GIS needs and develop appropriate GIS products.
- Manage response and prioritization of requests for map products and services.
- Manage the development, quality control and reproduction of products in appropriate formats for clients.
- Use and Advocate data and mapping standards.
- Identify, gather and incorporate external datasets into the MSF repository.
- Maintain and expand the data repository and related metadata;
- Work with data to create themes and layers for use in GIS;
- Conduct analysis and relate separate datasets to create analytical products.
- Manage training and skills development support to staff with simple mapping, Google Earth, use of GPS.

Qualifications

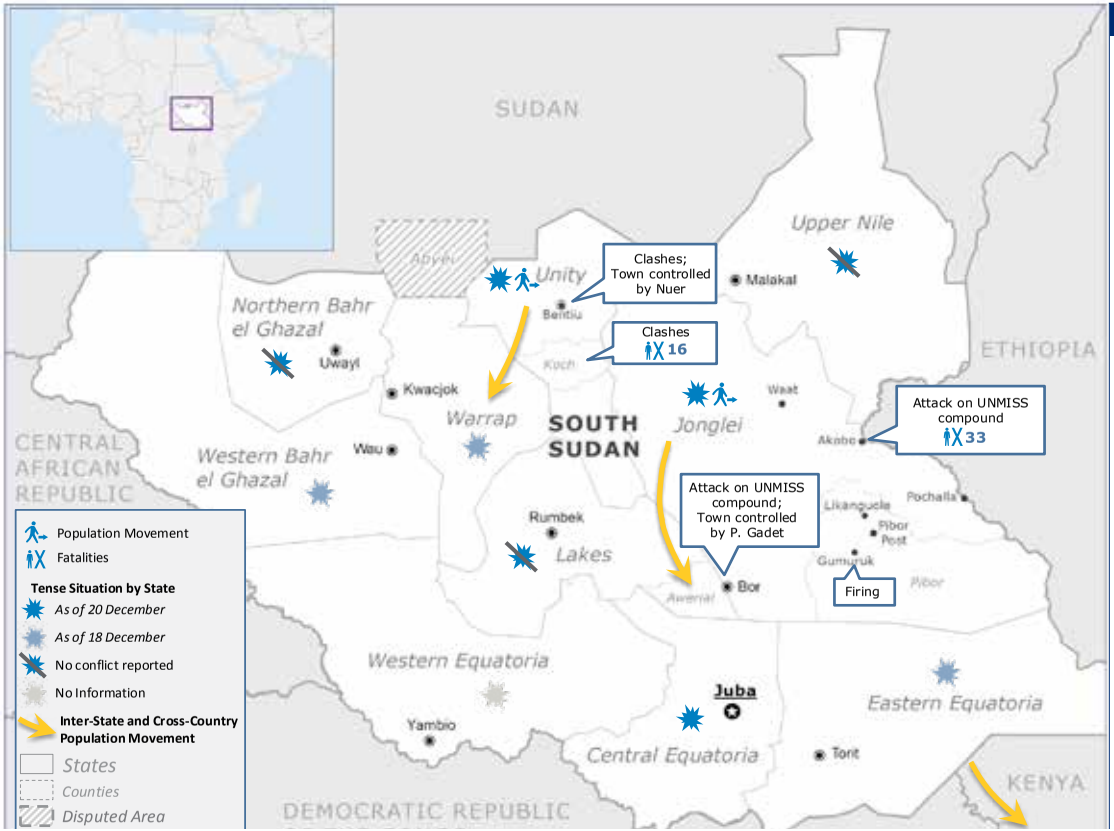
- Experience managing data collection, entry and maintenance.
- Experience in managing or developing databases.
- Strong practical experience in using Geographic Information Systems (GIS).
- University Degree required.
- Excellent interpersonal and presentation skills.

ANNEX VII
Illustrations


Transport infrastructure - Democratic Republic of Congo
Legend
International airport
National airport
Airfield
Capital
Province town
District town
Coastline
International boundary
Main road
Secondary road
Railway
Province boundary
River
Lakes
0
125
250
500
Km
N
Data Sources
South Sudan
Uganda
Rwanda
Burundi
Tanzania
Zambia
Angola
Central African Republic
Republic of Congo
Gabon
Cameroon
Equatorial Guinea
Kinshasa
Lubumbashi

20 December 2013: South Sudan – Crisis

European Commission



SITUATION

South Sudan Situation Update as of 20 December

Juba

- The situation remains tense, but stable. Government security forces are in control. Preliminary reports from inter-agency rapid needs assessments indicate several immediate humanitarian needs.

Jonglei State

- Three peacekeepers and 30 civilians of the Dinka ethnic group were killed in an attack at the UNMISS compound in Akobo. The Bor UNMISS compound, sheltering 14 000 people, was also attacked.
- Firing was reported in Gumuruk. No updated information on previously reported fighting in Pibor Post, Likanguole, Waat and Pochalla.
- 4 650 people from Jonglei, including local officials, have arrived at Awerial County, Lakes State.

Unity State

- Heavy clashes were reported in Bentiu, as well as fights between Dinka and Nuer ethnic groups in Tharjas oil field in Koch County.

Kenya

- Over 36 000 people from South Sudan (Dinka, Nuer and Murle ethnic groups) sought refuge in Kenya.

Ethiopia

- Clashes in Akobo may cause refugee influx in the country.

Sources: ECHO, UN OCHA

Some of the information provided may not be confirmed, as only limited movement is possible for security

GLIDE number: TC-20163-000139-PHL
Activation ID: EMSR-058
Product N.: 02TaclobanCity, v1

Tacloban City - PHILIPPINES
Typhoon HAIYAN - 08/11/2013
Grading Map - Detail 02

Production date: 11.11.2013

Cartographic Information

1:2000 — Full color ISO A1, low resolution (100 dpi)

0 37,5 75 150 Meters

Map Coordinate System: WGS 1984 UTM Zone 51N
Graticule: WGS 84 geographical coordinates

N

Legend

Crisis Information
- Road Block

Settlements Grading
- Destroyed
- Highly Affected
- Moderately Affected
- Possibly Affected

General Information
- Area of Interest

Hydrology
- Coastline
- River
- Canal
- Land Subject to Inundation

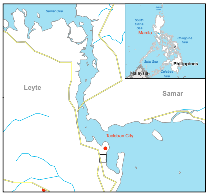
Point of Interest
- Educational
- Medical
- Religious

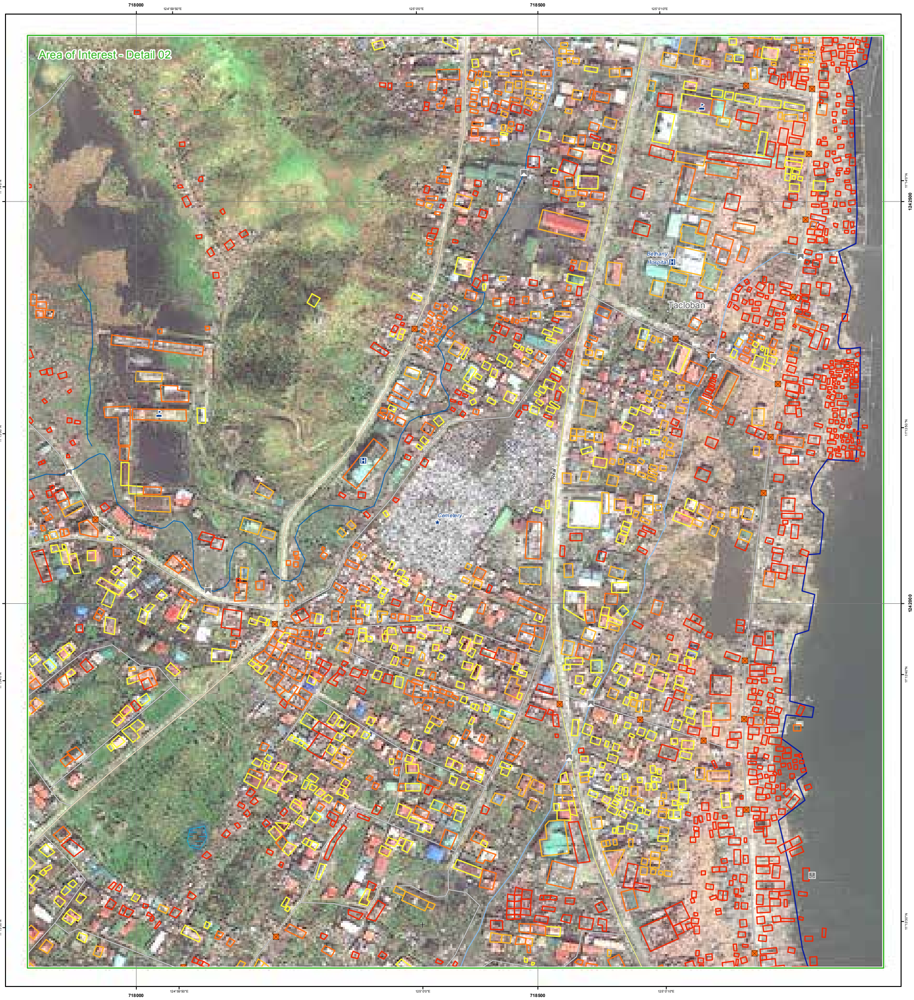
Transportation
- Harbour
- Bridge
- Primary Road
- Secondary Road
- Local Road

Land use - Land Cover
Features available in vector data

Consequences within the detail AOI 02 on 11/11/2013

			Destroyed	Highly affected	Moderately affected	Possibly affected	Total affected	Total in AOI
Estimated population	Inhabitants in related areas							11098
Settlements	Industrial	No.	0	1	1	0	2	12
	Institutional	No.	0	0	1	0	1	4
	Religious	No.	2	2	2	0	6	13
	Residential	No.	613	254	194	351	1412	3354
	Medical	No.	5	8	6	0	19	54
	Educational	No.	9	11	8	14	42	88
Transportation	Road Blocks	No.						22





Map Information
In the early morning of Friday 8 November local time typhoon Haiyan, called Yolanda in the Philippines, made landfall over Guiuan in Eastern Samar as category 5 typhoon and continued its route over the Philippines in west north west direction.
Haiyan is an exceptionally strong typhoon with winds up to 315 km/h (GDACS). Surge of sea level is expected to be two meter, higher on some locations depending on the coast line, and having the potential for wide spread destruction in areas along the coast.
Heavy rainfall, possible within the 400 km diameter of the typhoon, cause floods and flash floods in several areas.

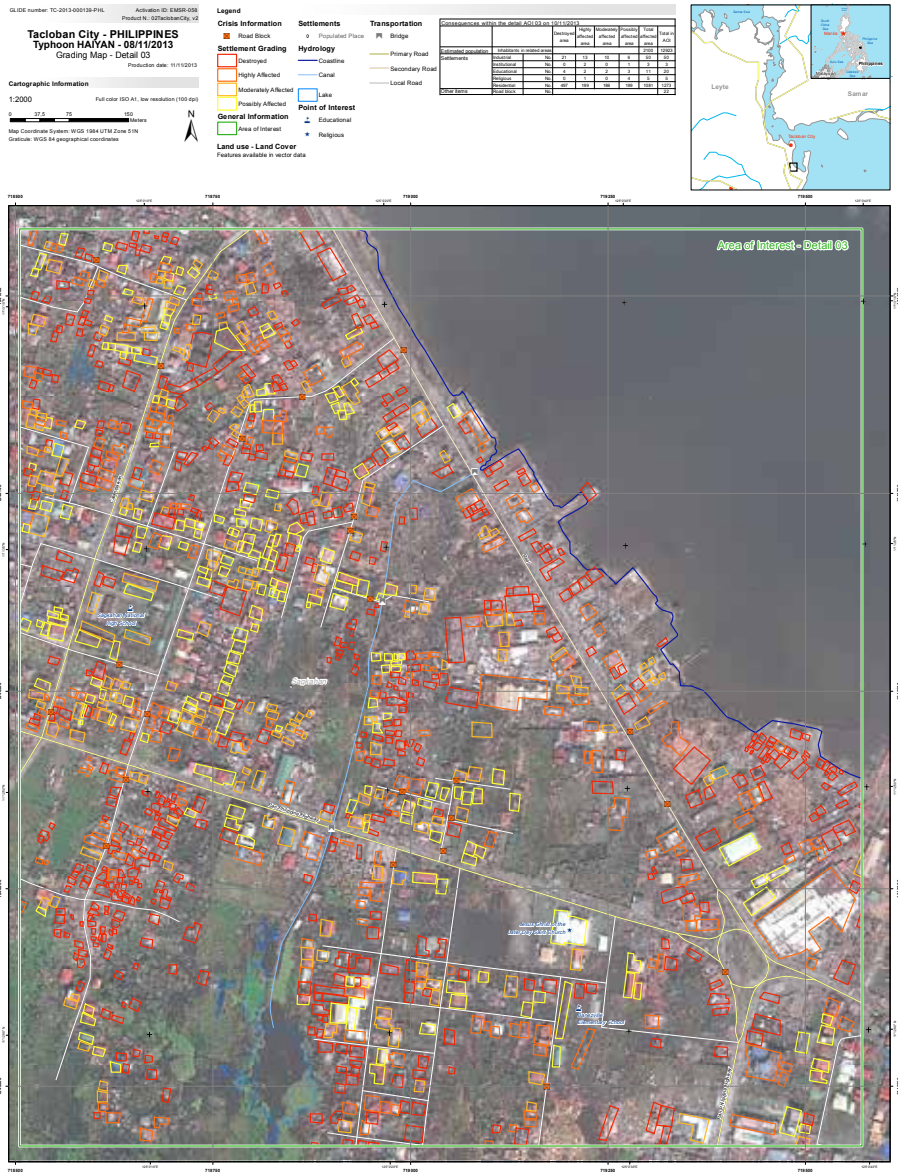
Data Sources
Hydrology, Transportation (Natural Earth, 2012), Settlements (Geonames, 2013).
Geoeye-1 © Digitalglobe 2013, Distribution Astrium Services/SPOT Image S.A., all rights reserved (acquired on 10/11/2013 2:15 UTC, GSD 0.5 m, 0% cloud coverage).
Pleiades © CNES 2013, Distribution Astrium Services/SPOT Image S.A., all rights reserved (acquired on 07/04/2013 02:10 UTC, GSD 0.7 m, 0% cloud coverage).
Base vector layers based on OpenStreetMap © OpenStreetMap contributors, Wikimapia.org, GeoNames (extracted on 10/11/2013) refined by GAF AG. Source information is included in vector data.
Elevation data: SRTM (90 m posting).
Population data: Landscan 2010 © UT BATTELLE, LLC.
All Data sources are complete and with no gaps.

Dissemination/Publication
No restrictions on the publication of the mapping apply.
Delivery formats are GeoTIFF, GeoPDF, GeoJPEG and vectors (shapefile and KML formats).

Framework
The products elaborated in the framework of current mapping in rush mode activation are realized to the best of our ability, within a very short time frame during a crisis, optimising the available data and information. All geographic information has limitations due to scale, resolution, date and interpretation of the original data sources. The products are compliant with GIO-EMS RUSH Product Portfolio specifications.

Map Production
The present map shows the damage grading at building footprint level in the area of Tacloban City, Philippines.The basic topographic features such as transportation, hydrology and settlements are derived from public datasets, refined by means of visual interpretation of pre-event Pleiades © CNES 2013 imagery (acquired on 07/04/2013 02:10 UTC, GSD 0.7 m, 0% cloud coverage).
Thematic layers, assessing the delineation of the event and its grading have been derived from postevent GeoEye-1 © Digitalglobe (acquired on 10/11/2013 at 02:15 UTC, GSD 0.5 m, 0% cloud coverage, 27° off-nadir angle).
All satellite images have been radiometrically enhanced and orthocorrected with RPC approach (using SRTM elevation data).
The estimated geometric accuracy of this product is 12 m CE90 or better, from native positional accuracy of the background satellite image.
The estimated thematic accuracy of this product is 60% or better, as it is based on visual interpretation of high resolution optical imagery. Grading classes are based on EMS-98 damage grades, specifically: Destroyed (EMS-98 grade 5), Highly affected (EMS-98 grade 3, 4), Moderately affected (EMS-98 grade 2), Possibly affected (EMS-98 grade 1).
Map produced on 11.11.2013 by GAF AG under contract 257219 with the European Commission. All products are © of the European Commission.
Name of the release inspector (quality control): GAF AG (ODO).
E-mail: rush@ems-gmes.eu

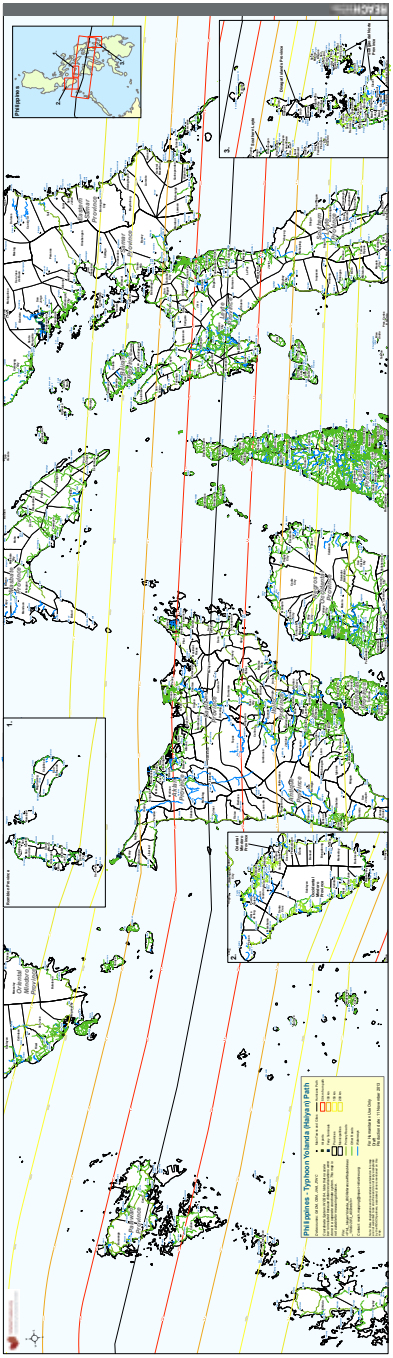
Storm/Hurricane
Humanitarian Aid
Response
Grading Map - Detail
Planning
Geoeye © Digitalglobe
08-11-2013

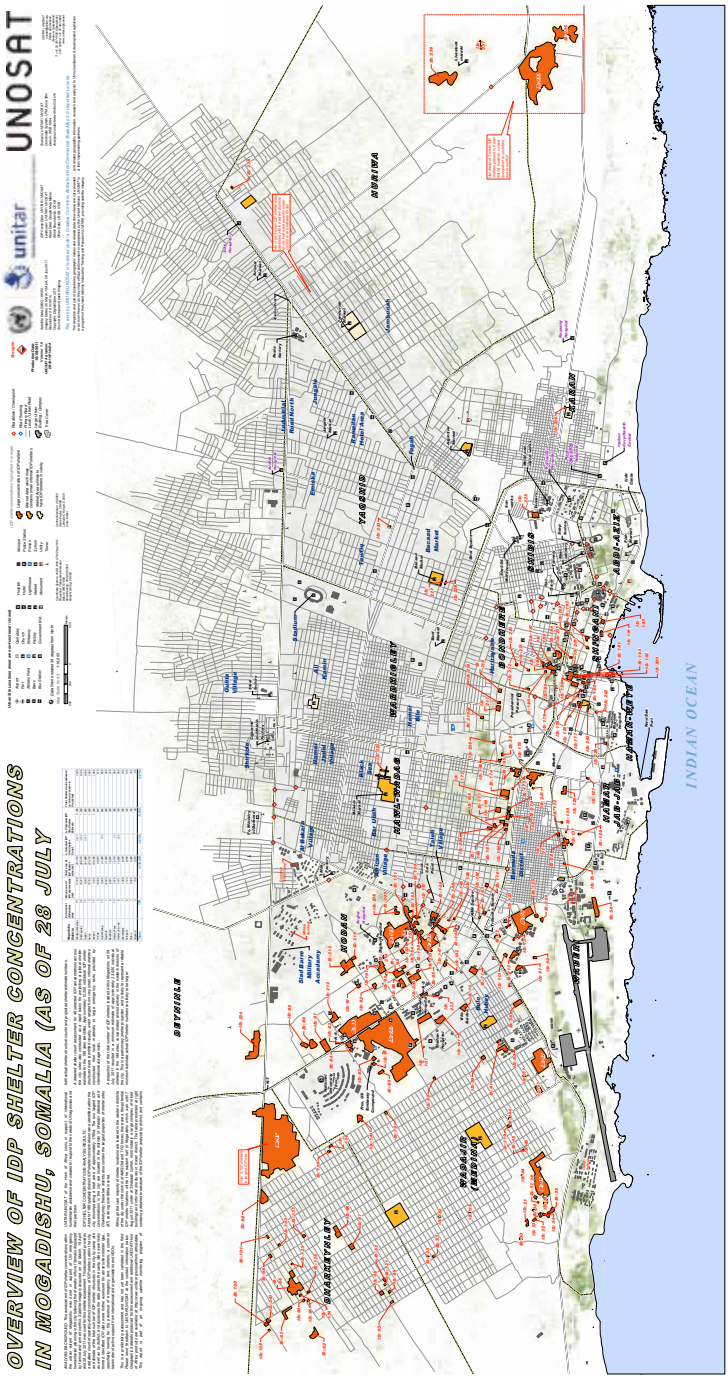

GLIDE number: TC-2013-000139-PHL
Activation ID: EMSR-058
Product N.: 02TacobanCity_v2
Tacloban City - PHILIPPINES
Typhoon HAIYAN - 08/11/2013
Grading Map - Detail 03
Production date: 11/11/2013
Cartographic Information
1:2000
Full color ISO A1, low resolution (100 dpi)
0 37,5 75 150 Meters
Map Coordinate System: WGS 1984 UTM Zone 51N
Gratcule: WGS 84 geographical coordinates
N
Legend
Crisis Information
Road Block
Settlement Grading
Destroyed
Highly Affected
Moderately Affected
Possibly Affected
General Information
Area of Interest
Settlements
Populated Place
Hydrology
Coastline
Canal
Lake
Point of Interest
Educational
Religious
Transportation
Bridge
Primary Road
Secondary Road
Local Road
Land use - Land Cover
Features available in vector data
Consequences within the detail AOI 03 on 13/11/2013
Estimated population
Settlements
Other items
Area of Interest - Detail 03
Leyte
Samar
Philippines
Tacloban City
Map Information
Data Sources
Framework
Dissemination/Publication
Map Production
Humanitarian Aid
Response
Grading Map - Detail
Planning
GeoEye-1 (c) DigitalGlobe
03-11-2013
Copernicus

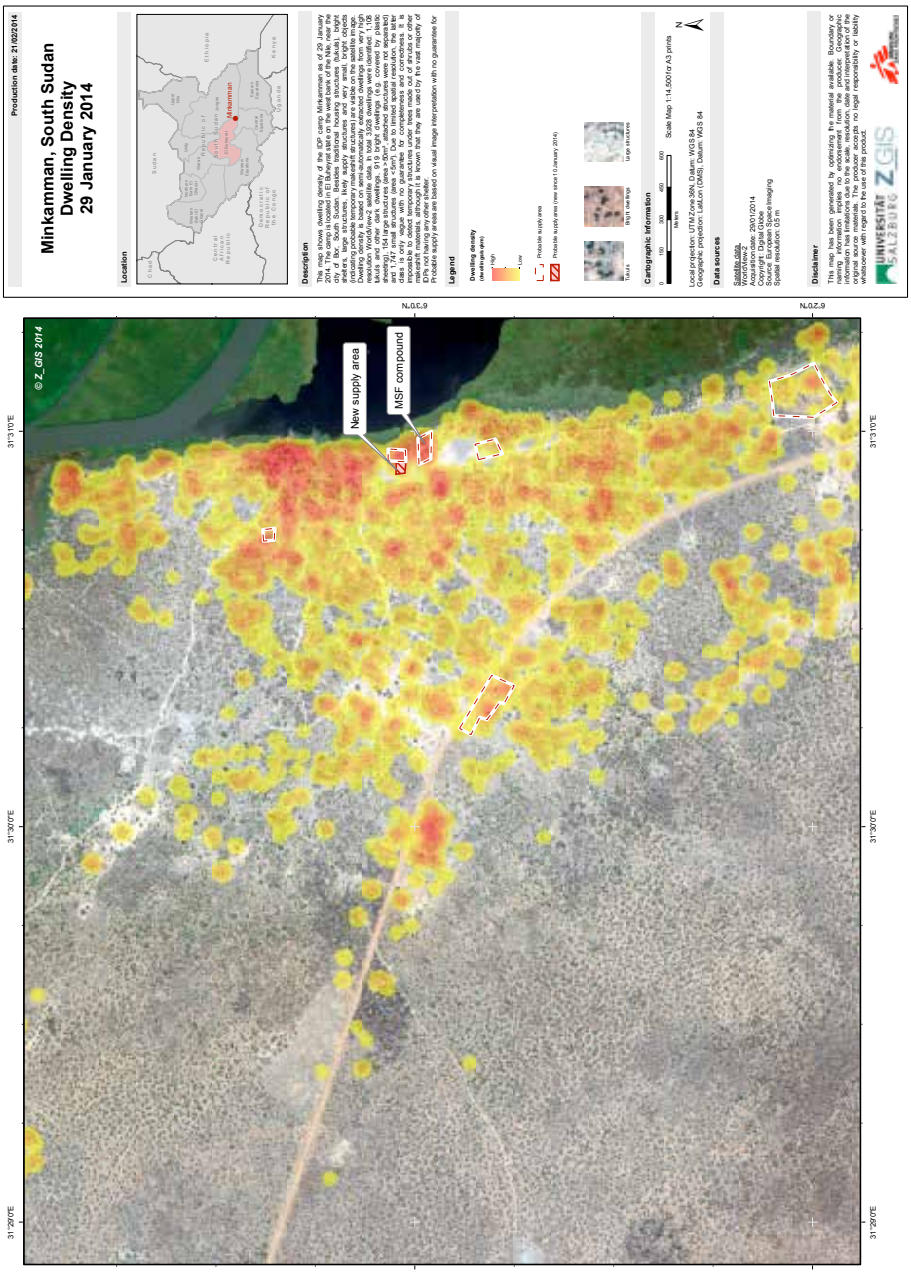

Tacloban City - PHILIPPINES
Typhoon HAIYAN - 08/11/2013
Grading Map - Detail 04
Production date: 11.11.2013
Cartographic Information
1:2000
Full color ISO A1, low resolution (100 dpi)
Meters
Map Coordinate System: WGS 1984 UTM Zone 51N
Graticule: WGS 84 geographical coordinates
N
Crisis Information
Road Block
Settlements Grading
Destroyed
Highly Affected
Moderately Affected
Possibly Affected
General Information
Area of Interest
Hydrology
Coastline
Land Subject to Inundation
Point of Interest
Educational
Religious
Transportation
Primary Road
Secondary Road
Local Road
Land use - Land Cover
Features available in vector data
Consequences within the detail AOI 04 on 11/11/2013
Destroyed | Highly affected | Moderately affected | Possibly affected | Total affected | Total in AOI
Estimated population | Inhabitants in related areas | 18247 | 18247
Settlements | Industrial | No. | 5 | 0 | 0 | 0 | 0 | 5
Educational | No. | 7 | 6 | 15 | 0 | 28 | 28
Religious | No. | 0 | 1 | 0 | 1 | 0 | 2
Residential | No. | 701 | 356 | 104 | 80 | 1241 | 1241
Recreational | No. | 0 | 2 | 0 | 0 | 2 | 2
Transportation | Road Blocks | No. | 18
Leyte
Samar
Philippines
Tacloban City
721000
Area of Interest - Detail 04
Map Information
Data Sources
Dissemination/Publication
Framework
Map Production

Leogane (Ouest Department) - Haiti
Legend
Settlement
Hospital
IDP camp
Main road
Secondary road
Other road / track
Water
Wetland
Wood
Residential
0
1
2
Km
N
Data Sources
Jacmel
Grand Goâve


Transport infrastructure - Mozambique
Democratic Republic of the Congo
Tanzania
Zambia
Malawi
Zimbabwe
Botswana
South Africa
Swaziland
Madagascar
Pemba
Tete
Chimoio
Beira
Inhambane
Maputo
Legend
Capital
Province town
Coastline
International Boundary
Water
Airport
Railway
Main road
Secondary road
Other road
N
Source :
Borders, Administrative levels : GADM
Roads : LogCluster
Railways : Diva-gis
Places, Airports : Geonames, OSM
Hydrography : NaturalEarth
Document Name : MOZ_TR
Date : 25/02/2014
Realised by CartONG for MSF-CH
Print dimensions : ISO A3 size


Philippines - Typhoon Yolanda (Haiyan) Path


OVERVIEW OF IDP SHELTER CONCENTRATIONS
IN MOGADISHU, SOMALIA (AS OF 28 JULY
unitar
UNOSAT
INDIAN OCEAN


Minkamman, South Sudan
Dwelling Density
29 January 2014
Production date: 21/02/2014
Location
Description
Legend
Dwelling density
Cartographic information
Data sources
Disclaimer
© Z_GIS 2014
New supply area
MSF compound
31°29'0"E
31°30'0"E
31°31'0"E
6°33'0"N
6°32'0"N

This document defines a 2 years plan to implement a GIS structure for MSF-CH first and then make it available to all MSF's offices and OCs. The document outlines tools and software, roles and responsibilities, and training plan for HQ & field users and advanced users over the 2 years horizon.

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