Geospatial Information Services to Support Emergency Response:

Current situation (fact finding analysis) and way forward (strategic framework)

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Positioning geospatial information to address global challenges
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What would you expect at the time of crisis ?

All the **geospatial information** necessary to support decision making is not only **available** but also of **quality** and **accessible** from **authoritative sources**. In addition to that, all the stakeholders involved are using the same information to ensure a **common operational picture** of the situation during the response as well as the recovery and reconstruction phases.

What is happening in the reality?

Starting assumption:

The **mechanisms and resources are generally not in place before a crisis happens**. As a result, the **many actors** simultaneously engaged in the response are:

- Generating an important volume of **concurrent** and frequently **overlapping** geospatial information initiatives;
- **Adding to the burden** of the local institutions which already have to deal with limited resources and this because of their **competing priorities**, combined with a **lack of coordination and collaboration**

What is happening in the reality?

To confirm this assumption, and serve as the base for developing the strategic framework, two surveys have been conducted among:

1. **People involved in recent major events** (with a special focus on typhoon Haiyan/ Yolanda; Ebola outbreak and Iraq);

2. **Governmental agencies**

Survey among people involved in recent events

Method:

- Questionnaire accessible online;
- Covered different aspects linked to geospatial information and sharing of geospatial information based products;
- Shared widely through different channels over two weeks;
- Used a snowball approach to get more respondents;
- Estimated to have reached around 1000 to 1500 people.

UN GGIM - Improving Geospatial Information Policy, Processes and Services to support Emergency Response

Event(s) Covered

Please fill the information for the event(s)/crisis you have been involved in:

2. Typhoon Yolanda/Haiyan (Philippines)
Function occupied
Organization
Country station during the event
City station during the event
Start date (month) of working in response (MM/YYYY)
End date (month) of working in response (MM/YYYY)
Was involved in this event (Yes/No)

3. Ebola outbreak (west Africa)
Function occupied
Organization
Country station during the event
City station during the event

Survey among people involved in recent events

Results:

- **218 respondents:**

  - 95 of them involved in more than 1 event (47% in Yolanda, 45% in Ebola outbreak, 14% in Iraq);

  - 84% worked at least once for the United Nations, 39% for another NGO, 12% for the Government;

  - 50% worked at least once as information management officer, 49% as GIS officer/analyst, 31.2% of them have occupied a function of coordinator/manager
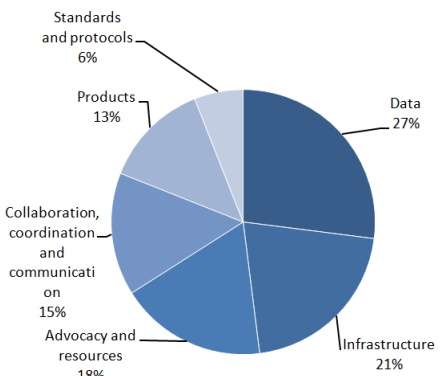
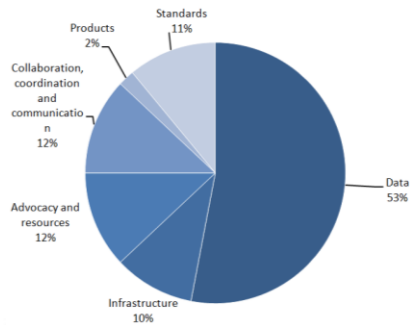# Survey among people involved in recent events

Results:

Main challenges in accessing geospatial information:

65% Lack of data collection standards

51% Data placed on many different platforms

47% Data access not timely

Main challenges in using geospatial information:

63% Conflicting or contradicting datasets

55% Metadata is not available

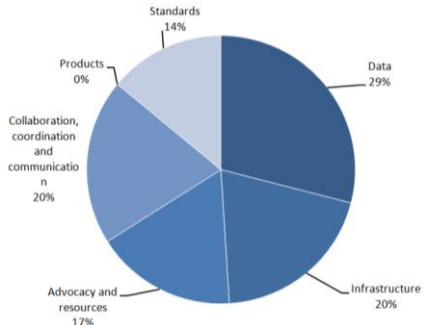**51%** Data of poor quality

Main challenges in using products:

45% Duplicated products make information overwhelming

38% Duplicated products with conflicting information

Main challenges in sharing products:

57% Numerous platforms to share these products

30% Sharing of products not allowed

Major bottlenecks

Standards 11%
Products 2%
Collaboration, coordination and communication 12%
Advocacy and resources 12%
Infrastructure 10%
Data 53%

Success factors

Standards and protocols 6%
Products 13%
Data 27%
Infrastructure 21%
Collaboration, coordination and communication 15%
Advocacy and resources 18%

Proposed actions

Standards 14%
Products 0%
Data 29%
Collaboration, coordination and communication 20%
Advocacy and resources 17%
Infrastructure 20%

"I think this is a great initiative and I hope there are concrete action points that can be taken by those leading data initiatives in the UN, NGOs and Government. I hope the UN learns to share data more openly and at least among our organizations"

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Survey with Governmental Agencies

Method:

- Questionnaire accessible online;
- Covered different aspects: data custodianship; geospatial information services, technical support, emergency management, etc.;
- Shared with the National Mapping Agencies (NMA) of 68 countries (cover all the continents).

UN GGIM - Questionnaire for Government Agencies

Details of your Institution's Specific Geospatial Data Sets

3. Please complete the different columns for the geospatial data on which your agency have custodianship (Please leave unused rows blank).

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Survey with Governmental Agencies

Results:

- **25 respondents**:
    - 20 National Mapping Agencies (NMAs);
    - 3 Disaster Management Organizations;
    - 2 Other types of Agencies/Organizations dealing with geospatial information and/or geospatial information services.

- **Geographic coverage**:
    - Africa (6)
    - Americas (8)
    - Asia and the Pacific (5)
    - Europe (6)

Survey with Governmental Agencies

Results:

23 of the 25 Governmental Agencies indicated **having custodianship** on at least one geospatial information layer

24 of these Governmental Agencies **have a GIS unit/team/data center** with a number of staff ranging from 1 to more than 12

A law, rules or regulations requesting for the Agency to provide geospatial information and/or service in support to the response to an emergency **exist in 10** of the 25 countries **but only 3** covers the international community.

44% of the Governmental Agencies **received some technical support** over the past 5 years but all of them indicated **needing more support** to be in position to deliver adequate geospatial information and geospatial information services

40% of the agencies think that the international community involved in the response **did not leverage enough** their existing geospatial information and/or technical capacities.

Conclusions of the fact finding analysis

Confirmed:

- the **existence of challenges and gaps** when it comes to:
  - the **availability**, **quality** (completeness, timeliness, accuracy, authoritativeness, documentation) and **accessibility** of geospatial information;
  - **Collaboration**, **coordination** and **communication**;
- the **existence** of geospatial **information** and technical **capacity** in countries but also the **need** to **strengthen** and better **leverage** them;
- **limited** number of countries having **laws, rules or regulations** in place to facilitate the provision of data and services to the international community in case of disaster.

Conclusions of the fact finding analysis

- **Six (6) core strategies identified as key to address the mentioned challenges and gaps on the basis of the results of the analysis:**
    - Awareness raising, capacity building and training;
    - Common standards, protocols and processes;
    - Collaboration, coordination and communication;
    - Policies;
    - Common infrastructures and services;
    - Resources mobilizations.

➡ **Necessary evidence regarding the challenges and gaps observed during emergency response**

➡ **Base for the establishment of the strategic framework aiming at addressing them**

Proposed strategic framework

Why →

Purpose
To prevent and reduce the human and economic impact of disasters

Target →

Vision
The necessary geospatial information and geospatial information services are available, of quality and accessible in a coordinated way to decision making and operations during disasters

What →

Mission
Ensure the timely and effective delivery of quality geospatial information and geospatial information services across the whole emergency cycle

Who →

Stakeholders and partners
Governments and Government Organizations, UN-GGIM, UN agencies as well other NGOs and International partners/Donors - Private sector - Volunteers,...

Core Strategies

How →

| Awareness raising, capacity building and training | Common Standards, protocols and processes | Collaboration, coordination and communication | Policies | Common infrastructures and services |

Resource mobilization

Proposed strategic framework (Flowcharts)
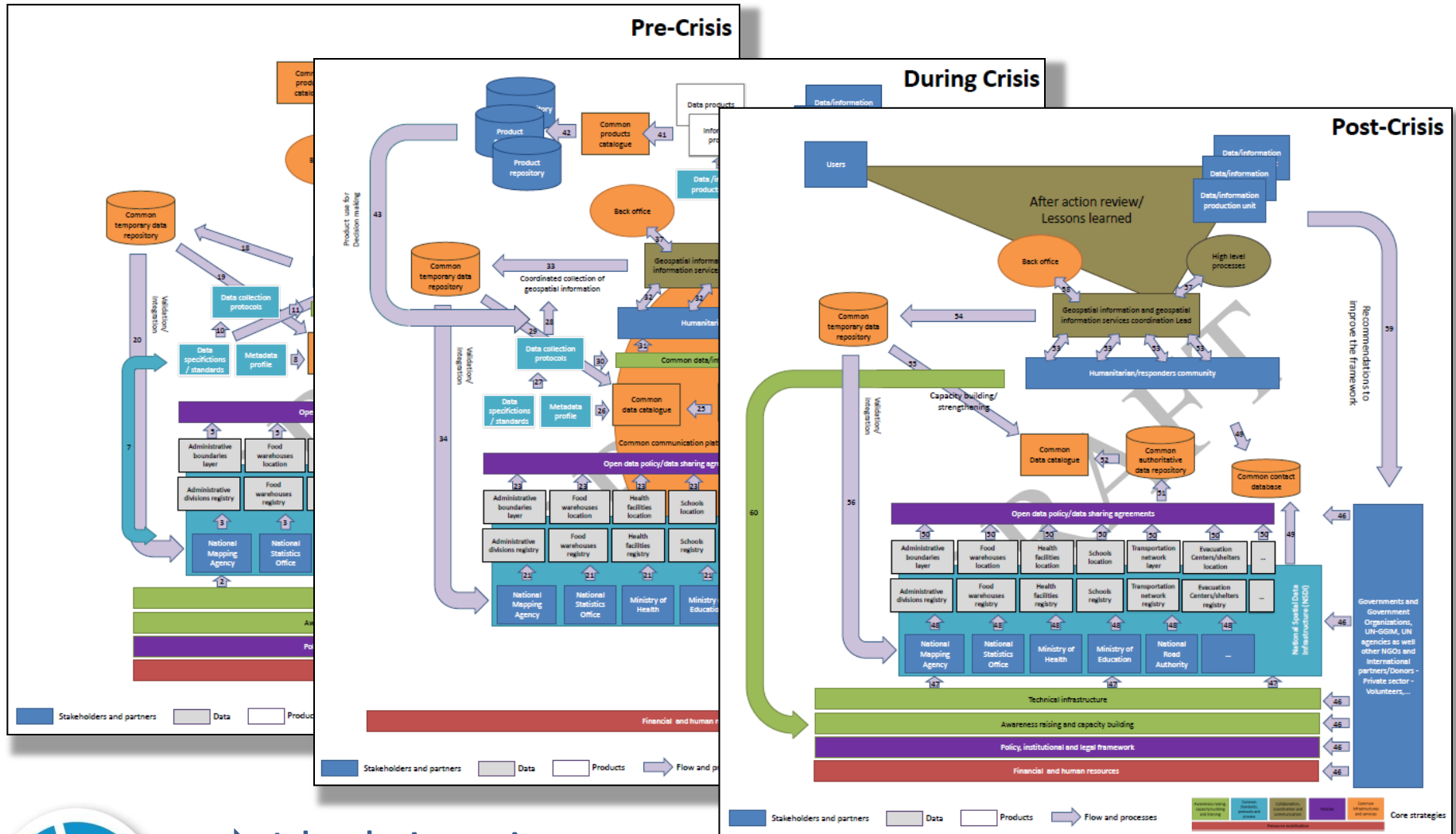

➡ Ideal situation

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Proposed strategic framework (Flowcharts)

- **Comparison with the reality observed during crisis confirmed that:**
  - there is **room for improvement** when it comes to **collaboration** and **coordination**;
  - some **platforms** and **technologies** needed to support the framework do **exist and are already being used**

	Pre-crisis (preparedness)	During crisis (response)	Post-crisis (recovery, reconstruction)
Awareness raising, capacity building and training	Raising awareness on the importance of data preparedness, National Spatial Data Infrastructure (NSDI) and open data policies; Strengthening of countries' technical infrastructure and capacities; Development, improvement and conduct of common data/information management training among the humanitarian/responders community based on the agreed upon standards, protocols and processes;	On site training of the data/information management officers that would not have been covered during the preparedness phase; If needed, strengthening of national institutions' capacity to ensure the timely delivery of geospatial information and geospatial information services.	Strengthening of the country's technical capacities and infrastructures based on the gaps identified during the response phase.
Common standards, protocols and processes	Agreement on and implementation of data specification/standards, metadata profile, data collection protocols and overall data/information management processes/practices in alignment with the NSDI if existing; Development/ improvement of data/information products templates that answers high level process needs. Organization and documentation of all the baseline data in the common temporary or authoritative (validated by the government) data repositories and data catalogue. Validation and integration of the temporary data into the authoritative datasets. Population/update of the common contact database	Implementation of the agreed upon data specification/standards, metadata profile, data collection protocols, products templates and overall data/information management processes/practices. Coordinated collection of geospatial information and its organization in the common temporary data repository. Whenever possible, validation and integration of this data into the authoritative datasets. Capture of new responders into the common contact database.	Identification, documentation and adjustments of potential gaps in the agreed upon standards, protocols and processes/practices as part of the lessons learned. Integration of all the data collected during the crisis into the common temporary data repository and data catalogue as well as support to Governmental Agencies for the integration and validation of this data into the authoritative datasets.
Collaboration, coordination and communication	Agreement among all stakeholders and partners regarding their respective role and mandate when it comes to geospatial information and geospatial information services during crisis.	Designation and operationalization of the geospatial information and geospatial information services coordination lead to ensure collaboration and coordination among all stakeholders/partners.	Comprehensive lessons learned among all stakeholders and partners involved in the response and provision of recommendations to improve the overall framework and the flowcharts. Decommissioning of the geospatial information and geospatial information services coordination lead

Conclusions

- The fact finding analysis allowed identifying not only the **challenges** and **bottlenecks** encountered by stakeholders and partners during recent crisis but also the **major success factor** and **opportunities** to address them;

- These finding got crystallized into the **proposed strategic framework** which, if implemented, would allow for the necessary geospatial information and services to be **available**, of **quality** and **accessible** in a **coordinated way** to decision making and operations during disasters.

UN-GGIM contribution

The **UN-GGIM**, **through its mandate**, is well placed to contribute to several of the core strategies mentioned in the framework, starting with:

- **Raising the awareness of Member States** on the importance of data preparedness, National Spatial Data Infrastructure (NSDI) and open data policies;
- **Developing and promoting common standards protocols and processes** aiming at improving data quality and data interoperability at the global level;
- **Developing and implementing policies** aiming at improving the availability, quality and accessibility of geospatial information and services.

UN-GGIM contribution

Implementing the other core strategies are **beyond** the aim and objectives of the **UN-GGIM**

➡ should be addressed by the programmes, specialized agencies and offices and department of the UN Secretariat in charge of DRR and emergency management (UN ISDR, OCHA, DFS, DPKO, UNHCR, WFP, WHO, FAO, etc...).

The **UN-GGIM** could nevertheless serve as:

- a **Technical Advisory Group (TAG)** for the implementation of the overall framework;
- an **interface** between the above mentioned institutions and key Governmental Agencies involved in the provision of geospatial information and services.

Recommendations

For the UN-GGIM Committee to:

- Consider including geospatial information and services in disasters as a **formal UN-GGIM agenda item;**

- Establish a **Working Group on geospatial information and services in disasters** within UN-GGIM with the main objective to develop a policy framework to be presented to ECOSOC for consideration;

- **Advocate** for the humanitarian and response community to review the framework as a way to improve geospatial information and services to support disaster response.

Thank you for your attention!