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Geospatial preparedness: Joint effort to provide geospatial support to disasters

Esri User Conference - Innovations in GI Science

July 9, 2019 | San Diego Convention Center, San Diego, California

GIS for Disaster Management

Mitigation

Preparedness

Prevention and Early Warning

Response and Recovery

Geographic dimension to the decision-making process
Cartographic tool (situational awareness & communication)
Data Analysis (optimization methods, problem solving...) & modelling
3D-mapping, Web-based GIS

Geospatial Preparedness

Databases with reliable up-to-date information
Tools to use and share that information
People to use those tools

Institutions & Coordination

GIS for Emergency Response

Developed countries

Complex analysis & tools

Complex institutional organization

Data available (SDI & databases)

Least developed countries

Lack of technical knowledge

Institutions do not consider GIS

Lack of data

Geospatial preparedness inequity

Lack of Geospatial Preparedness

International Support

Coordinated Assessment Support Section of the United Nations Office for the Coordination of Humanitarian Affairs (OCHA CASS)

UNDAC Teams - UN Disaster Assessment and Coordination

MapAction

Coordinated Data Scramble

Objective: Magnitude of the disaster vs Local capabilities

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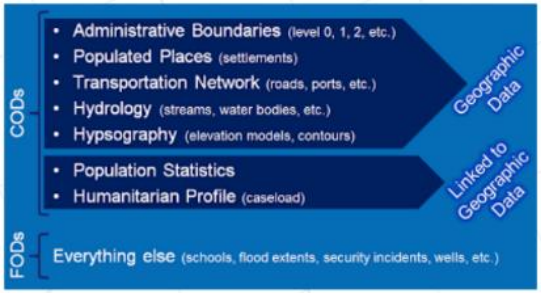
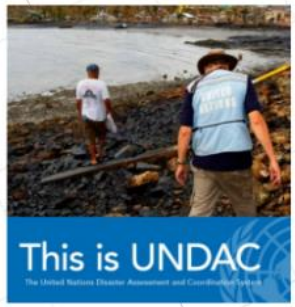
UN Humanitarian Aid Coordination





HDX Humanitarian Data Exchange

OCHA United Nations Office for the Coordination of Humanitarian Affairs

Coordinated Data Scramble

MapAction

Tools

International Support

Common Operational Datasets (CODs) & Fundamental Operational Datasets (FODs)

Humanitarian Data Exchange (HDX)

Coordinated Data Scramble: Skype room, Trello board, Google docs, Telegram....

Volunteered Geographic Information (VGI)

OpenStreetMap

Objective: Magnitude of the disaster vs Local capabilities

How does it work?

Literature review
Interviews
Skype rooms, Trello boards, etc.

Methodology

Coordinated Data Scramble

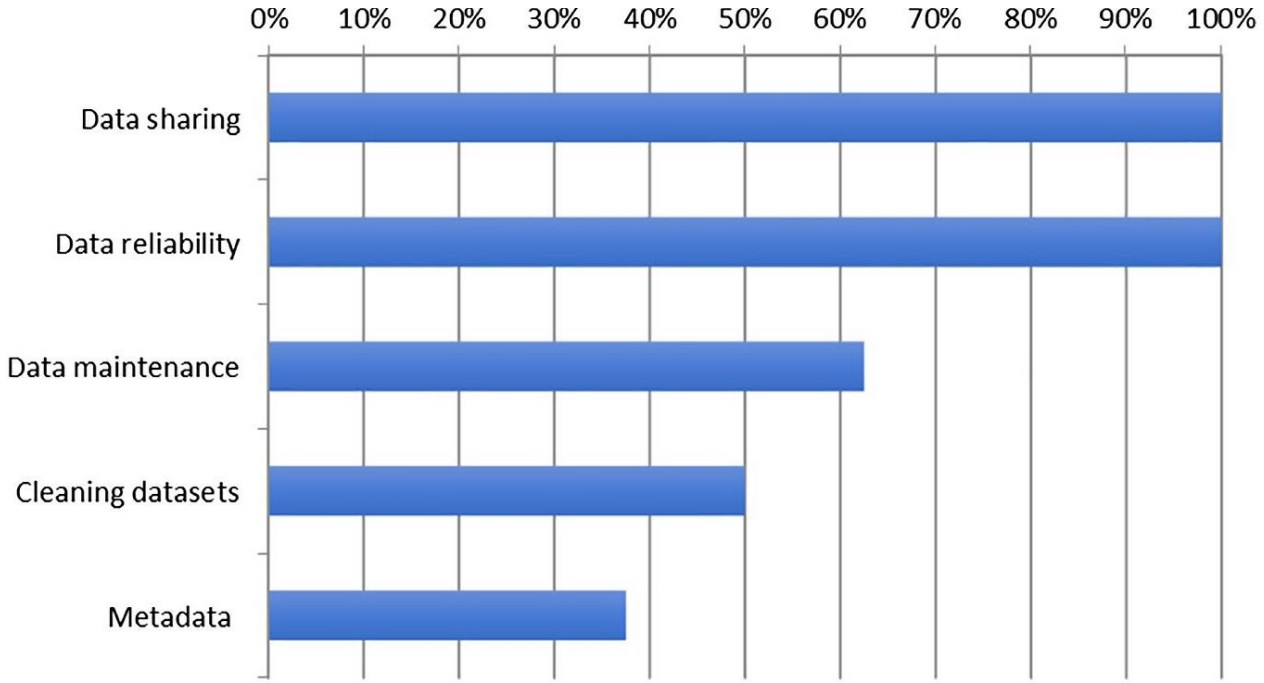
OCHA – Information management group to share data and information

Skype room: Haiti 2016 Hurricane (45 from 22 organizations) West African 2014–2015 Ebola (232 from 92 organizations)

Objective: Operational picture from primary and secondary sources

Avoid duplication of information and facilitate data sharing among all stakeholders.

IMOs opinions



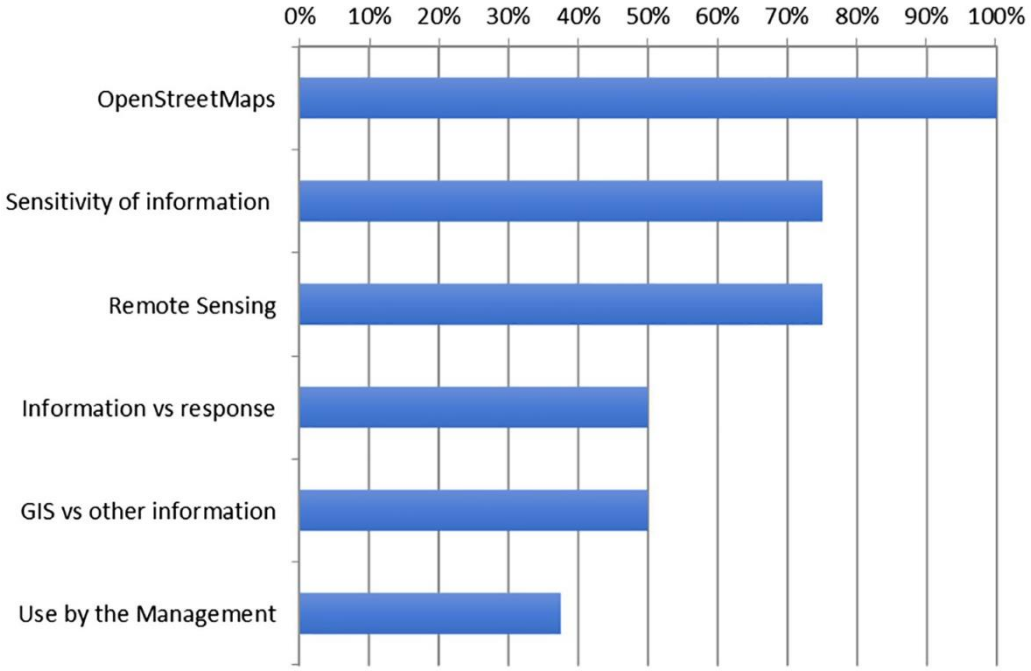
Data Management strategy

IMOs opinions – Findings

Data sharing
Data reliability
Data maintenance & Cleaning datasets

Data Management strategy

IMOs opinions



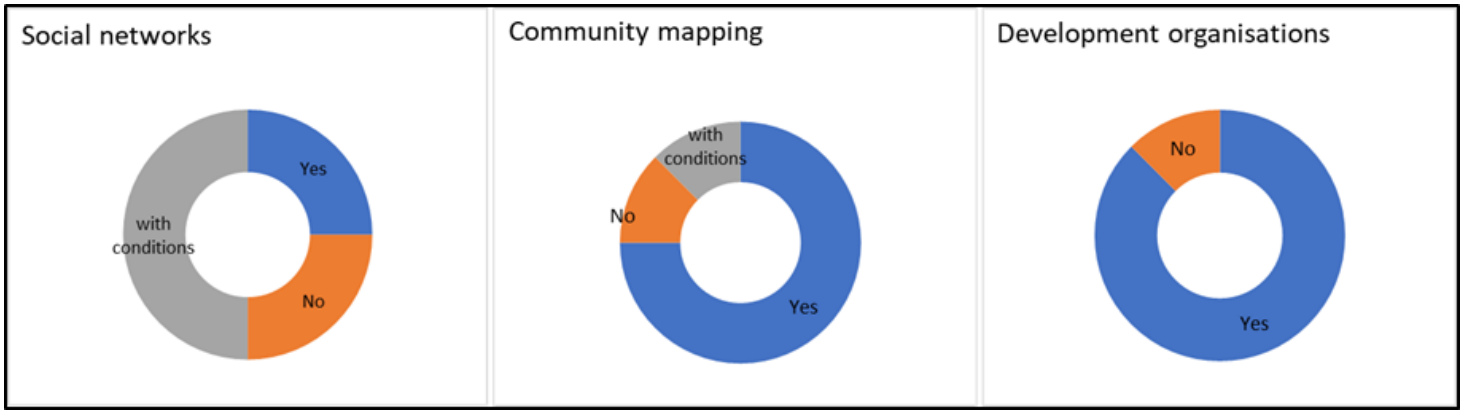
Use of GIS

IMOs opinions – Findings

OpenStreetMap
Sensitivity of information
Remote Sensing

Use of GIS

IMOs opinions



Sources of geospatial information

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Conclusions

Geodata production and sharing is becoming more dynamic, transparent, and decentralized

Information is urgently needed - Data is available but it might not be reliable

S*ingle Point of Truth* datasets are harvested, validated, cleaned, and maintained (platform where applications can be plugged)

improving OpenStreetMap improves geospatial preparedness

Conclusions

Development organizations could improve geospatial preparedness
Public Participatory GIS (PPGIS) Community mapping - VGI Grassroots solution from a bottom-up approach to reduce geospatial preparedness inequity
Cost-effective Synergies with UN, NGOs, V&TCs Community empowerment

improving OpenStreetMap improves geospatial preparedness

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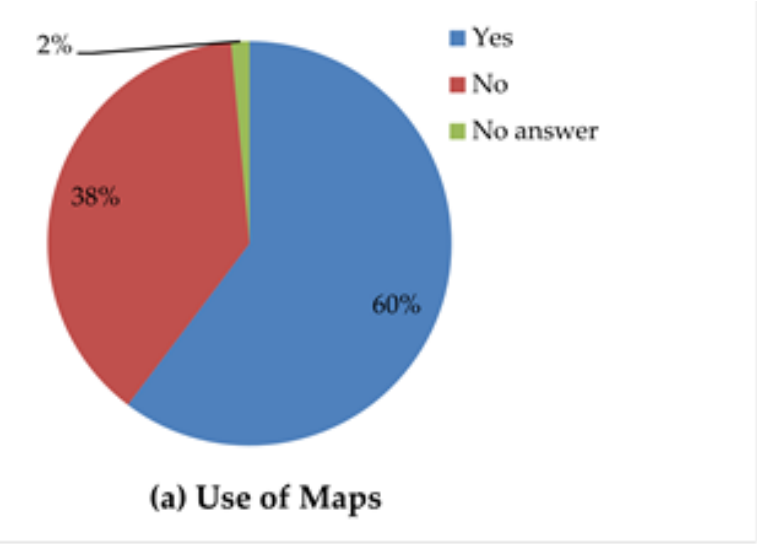
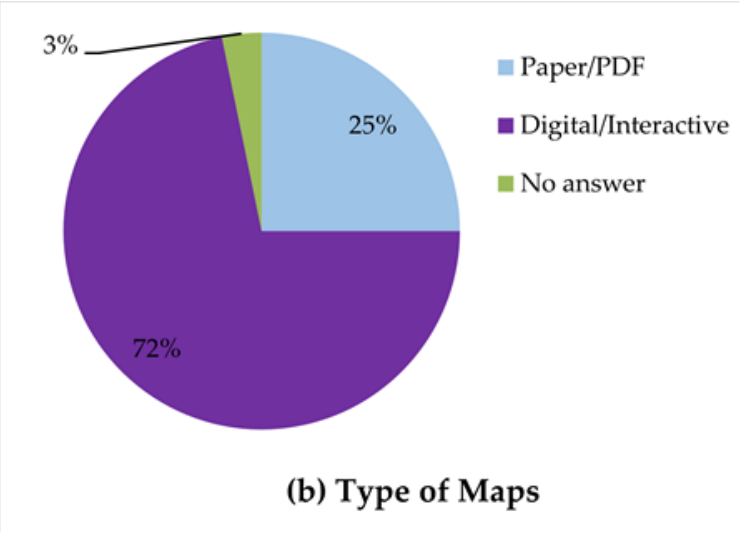
Further Research

NGOs to improve OpenStreetMap?

NGOs – Use of Geospatial information



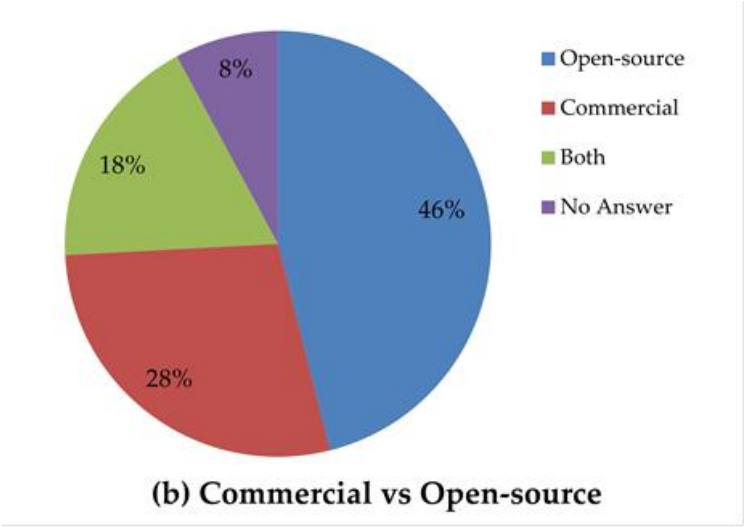
(a) Use of Maps



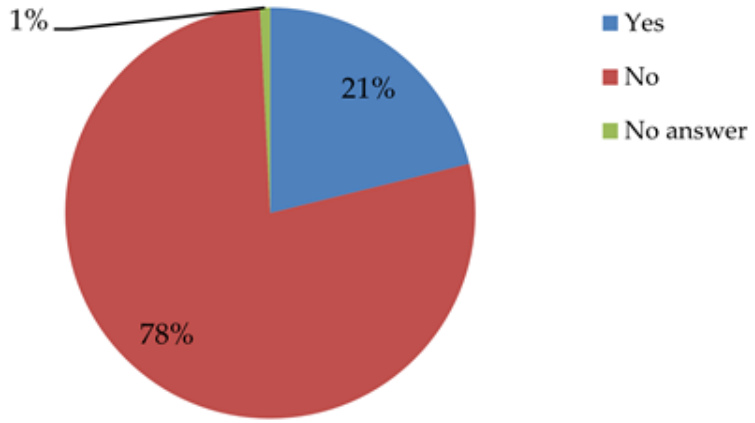
(b) Type of Maps

Further Research

NGOs – Use of GIS & OpenStreetMap



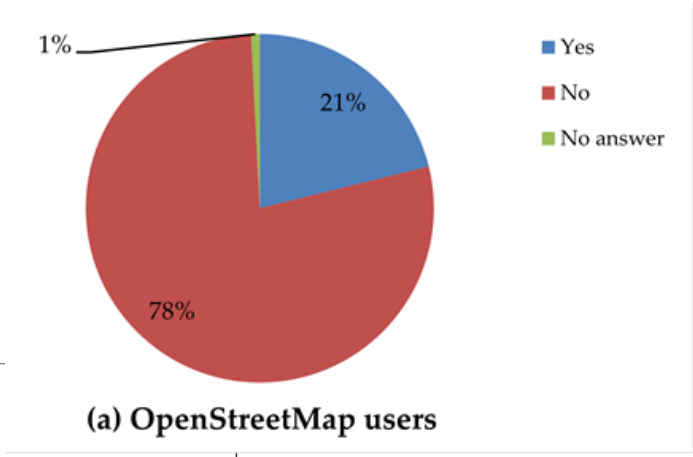
(b) Commercial vs Open-source



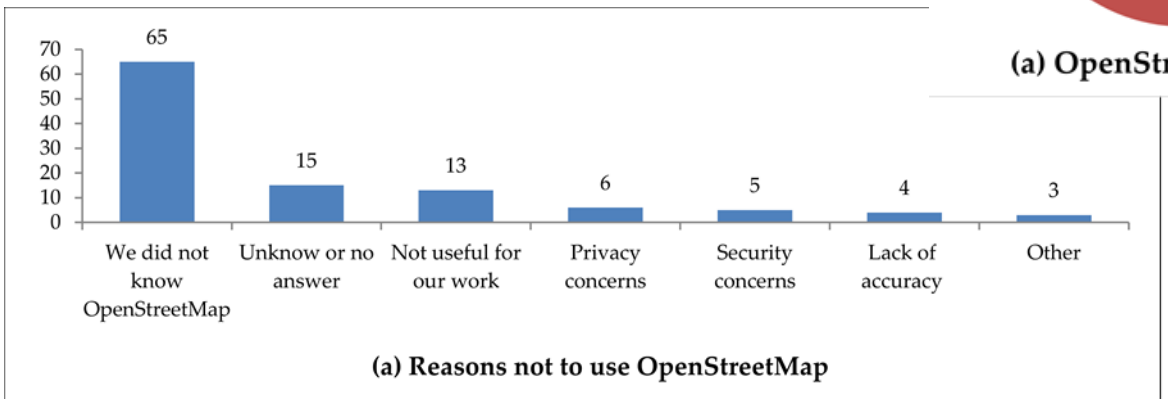
(a) OpenStreetMap users

Further Research

NGOs – Use of GIS & OpenStreetMap



(a) OpenStreetMap users



(a) Reasons not to use OpenStreetMap

Further Research