WFP SDI implementation

Review of an experience...

Agenda

We will talk about...

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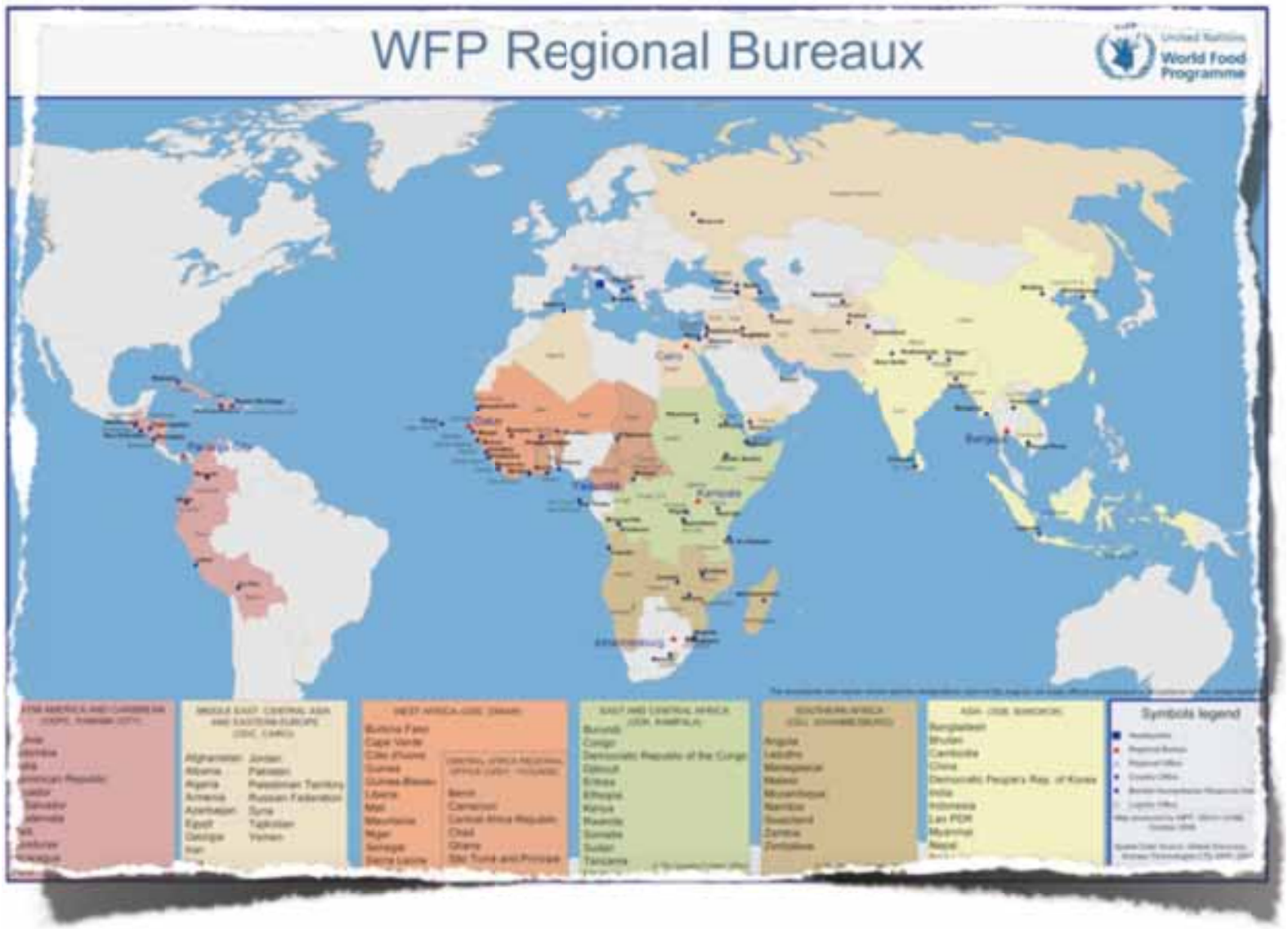
1. a short introduction to the WFP SDI experience;
2. a brief analysis to the four most relevant issues (technology, data, metadata, organization);
3. some conclusions.

We will talk about...

World Food Programme

World Food Programme

- More than 13,000 staff members, >90% on the “field”;
- “Victims of a conflict or natural disaster can lose everything they own in minutes. Some are struck by repeated crises, with each one pushing them deeper into hunger and poverty. Being prepared for such emergencies is a top priority for WFP.”



ITHACA and WFP

- Information Technology for Humanitarian Assistance, Cooperation and Action is a **no-profit organization** founded in 2006 by Politecnico di Torino;
- Competences: **GIS** and **Remote Sensing**, mainly to support emergency management;
- **MoU with WFP** signed in 2007, to support Emergency Preparedness and Response branch activities:
  - **Spatial Data Infrastructure** for **early-warning** and **early-impact**

SDI issues

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SDI definition

technology, policies, standards, human resources, and related activities necessary to acquire, process, distribute, use, maintain, and preserve spatial data

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Technology

Data

Metadata

Organization

Technological issues

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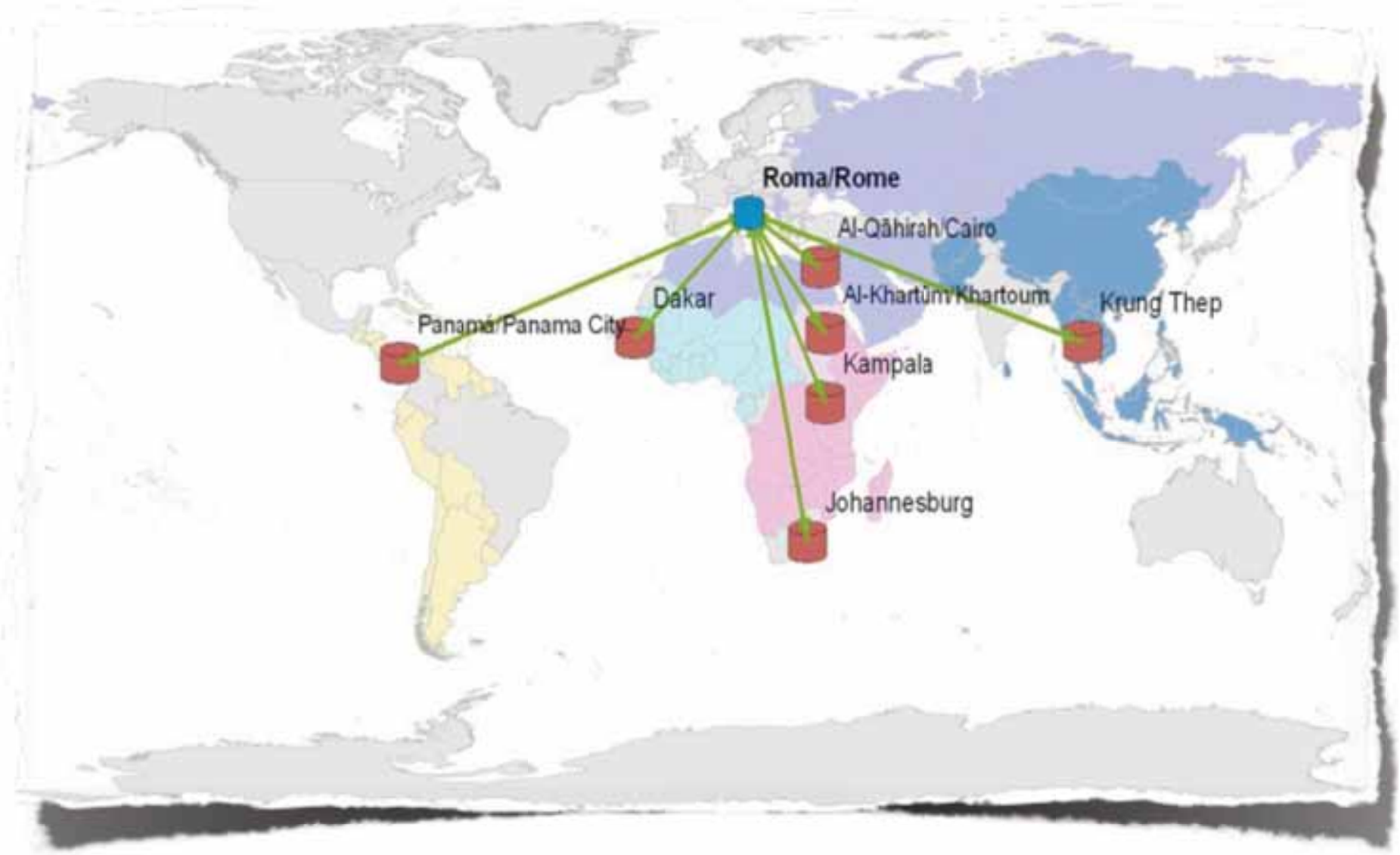

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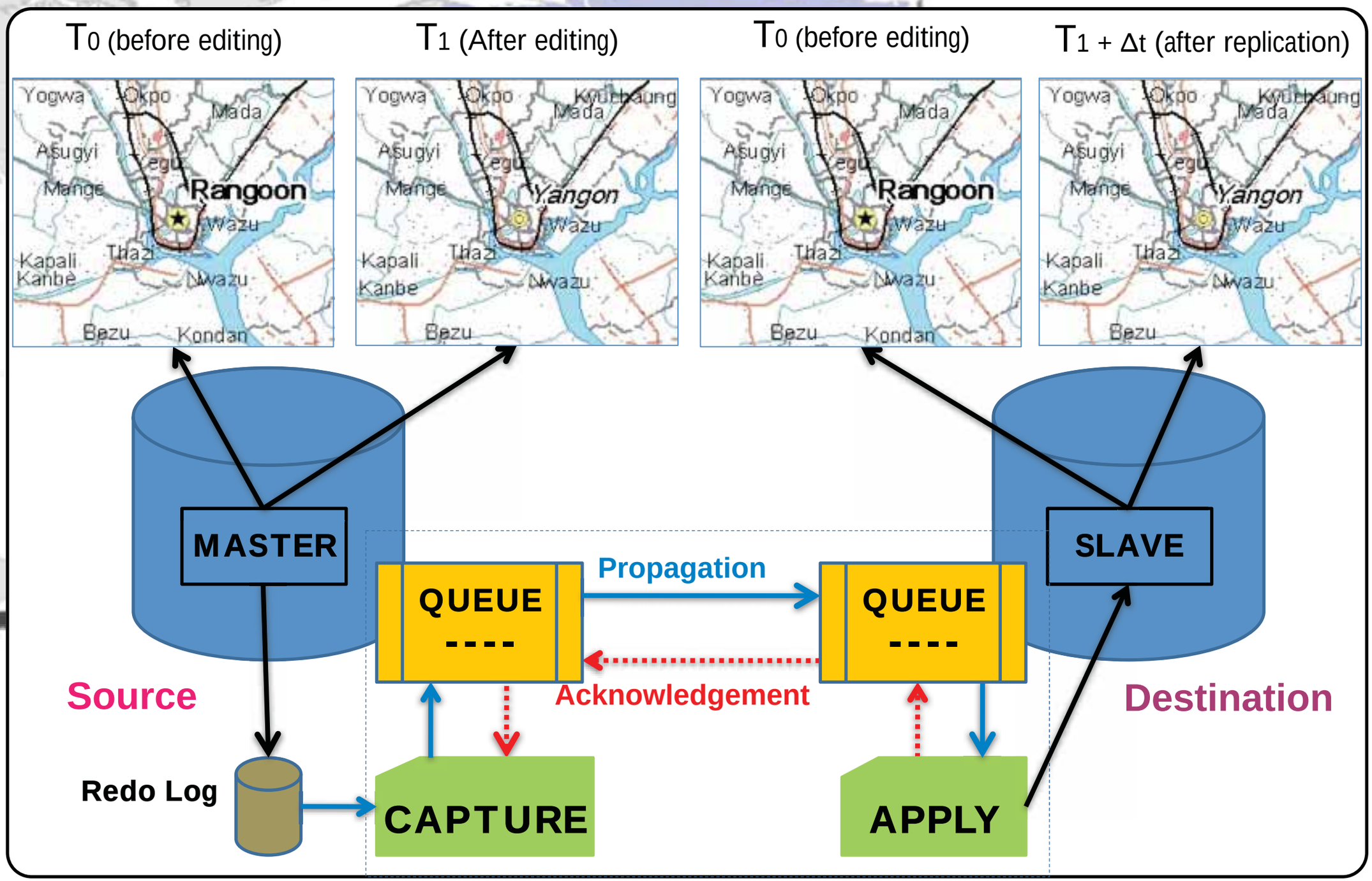
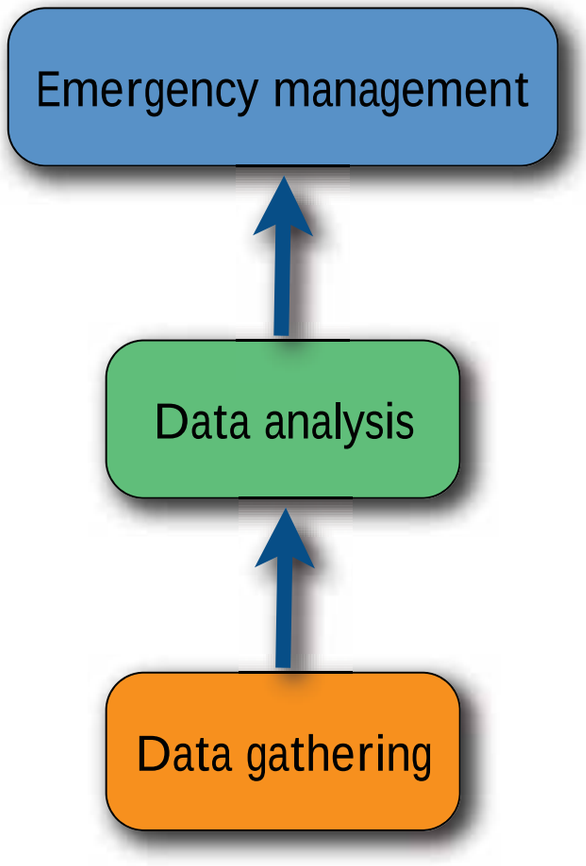


Data issues



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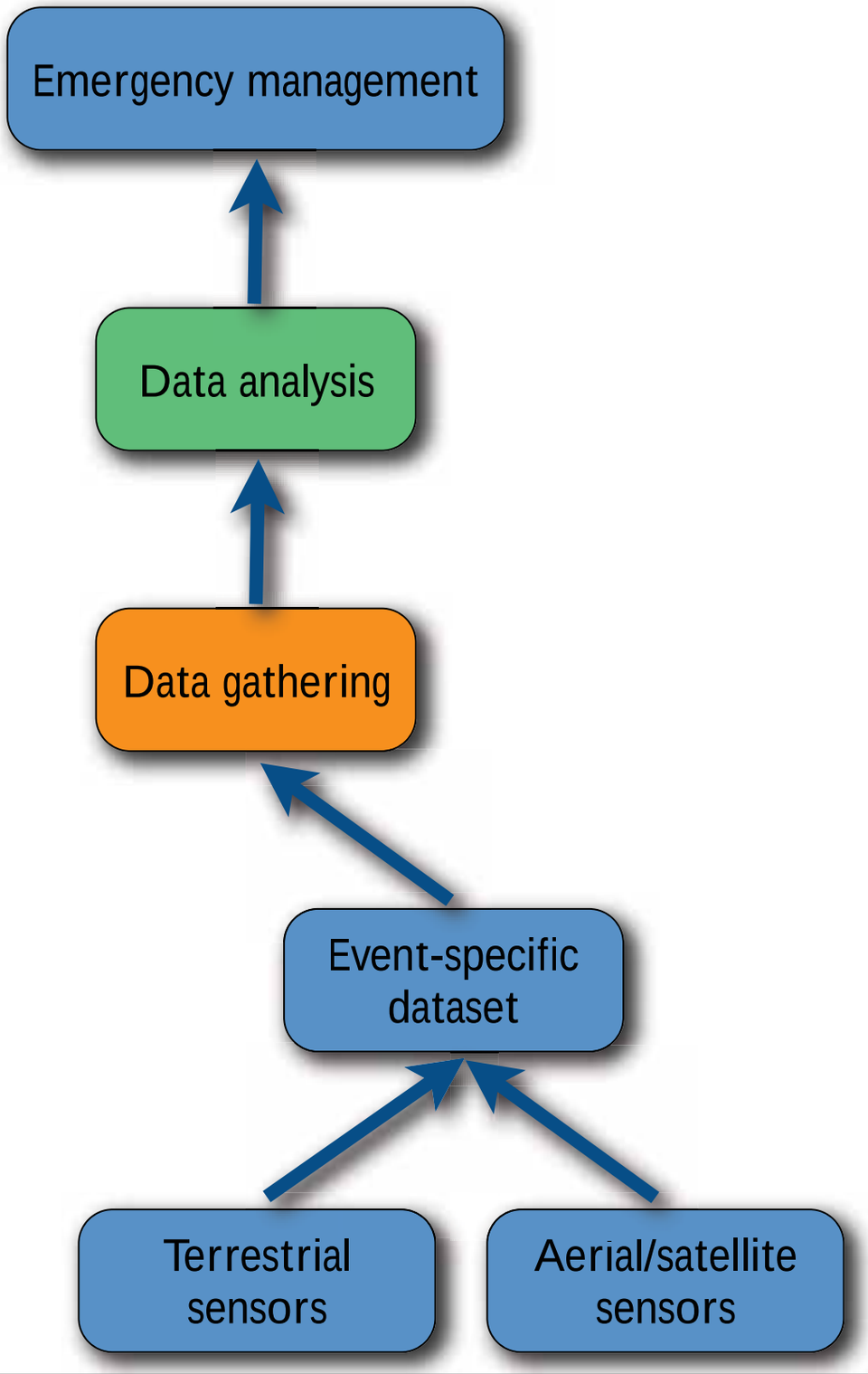
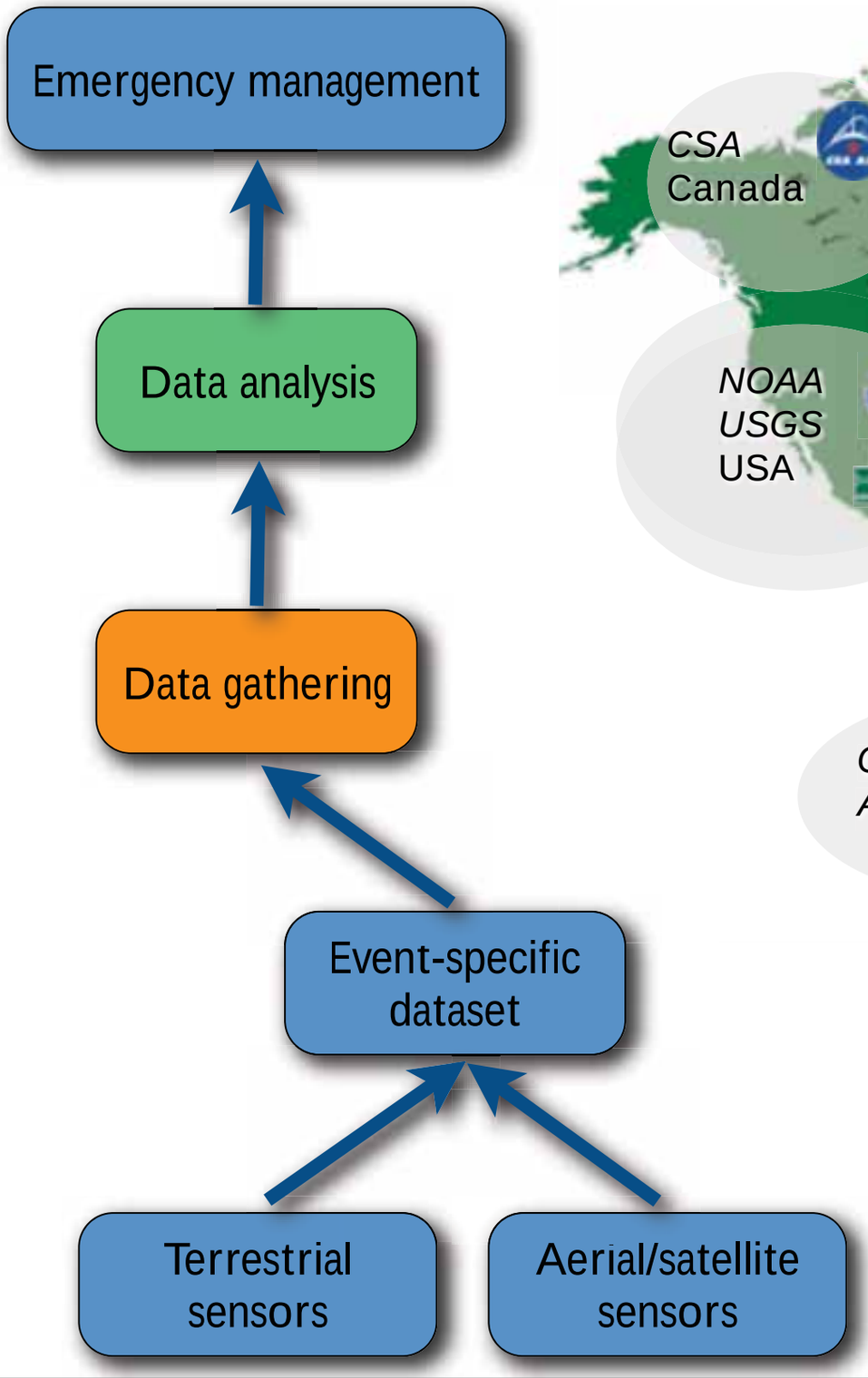

Emergency management
Data analysis
Data gathering
Event-specific dataset
Terrestrial sensors
Aerial/satellite sensors

Data issues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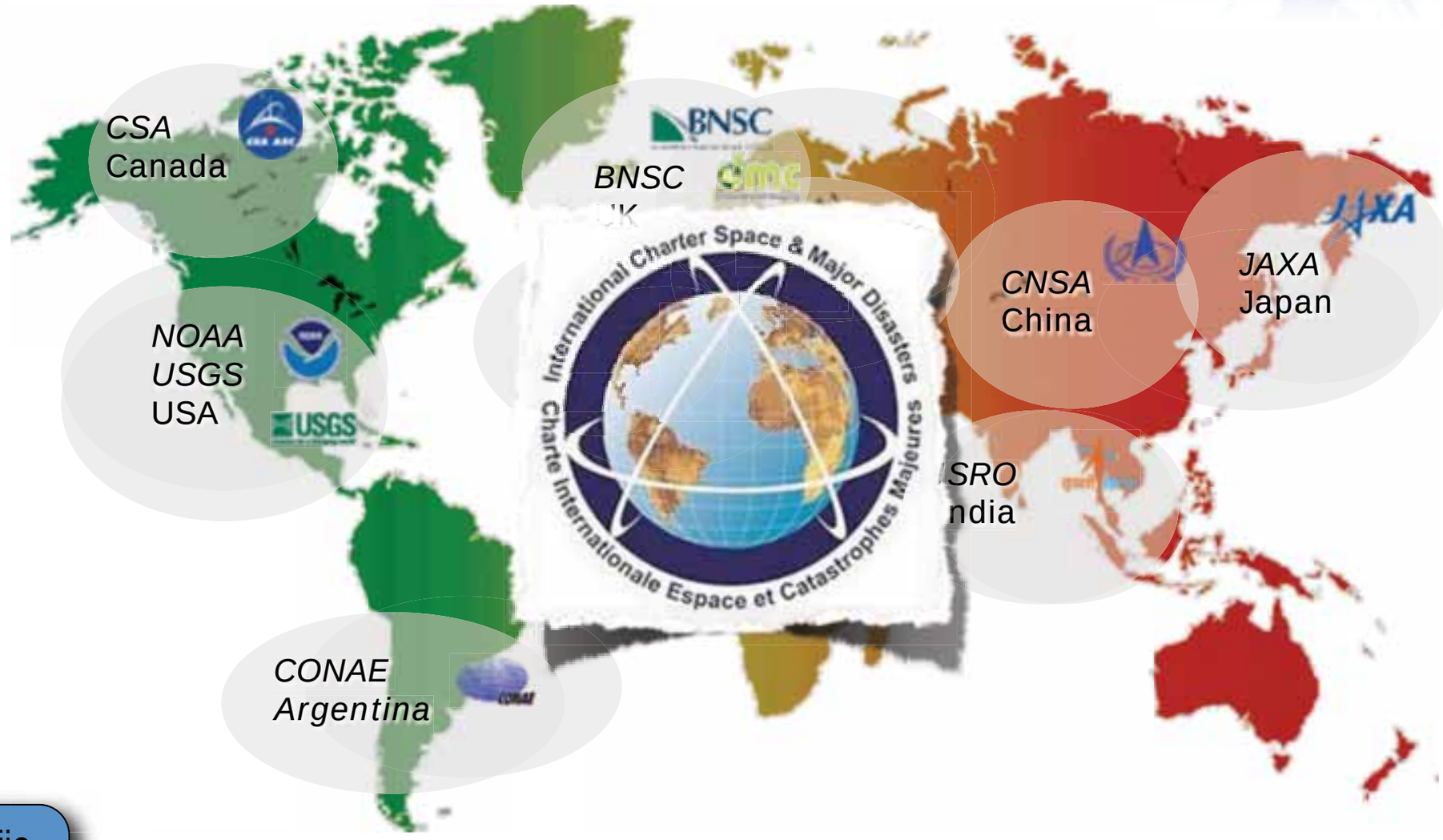
CSA
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BNSC
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NOAA
USGS
USA
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International Charter Space & Major Disasters
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CNSA
China
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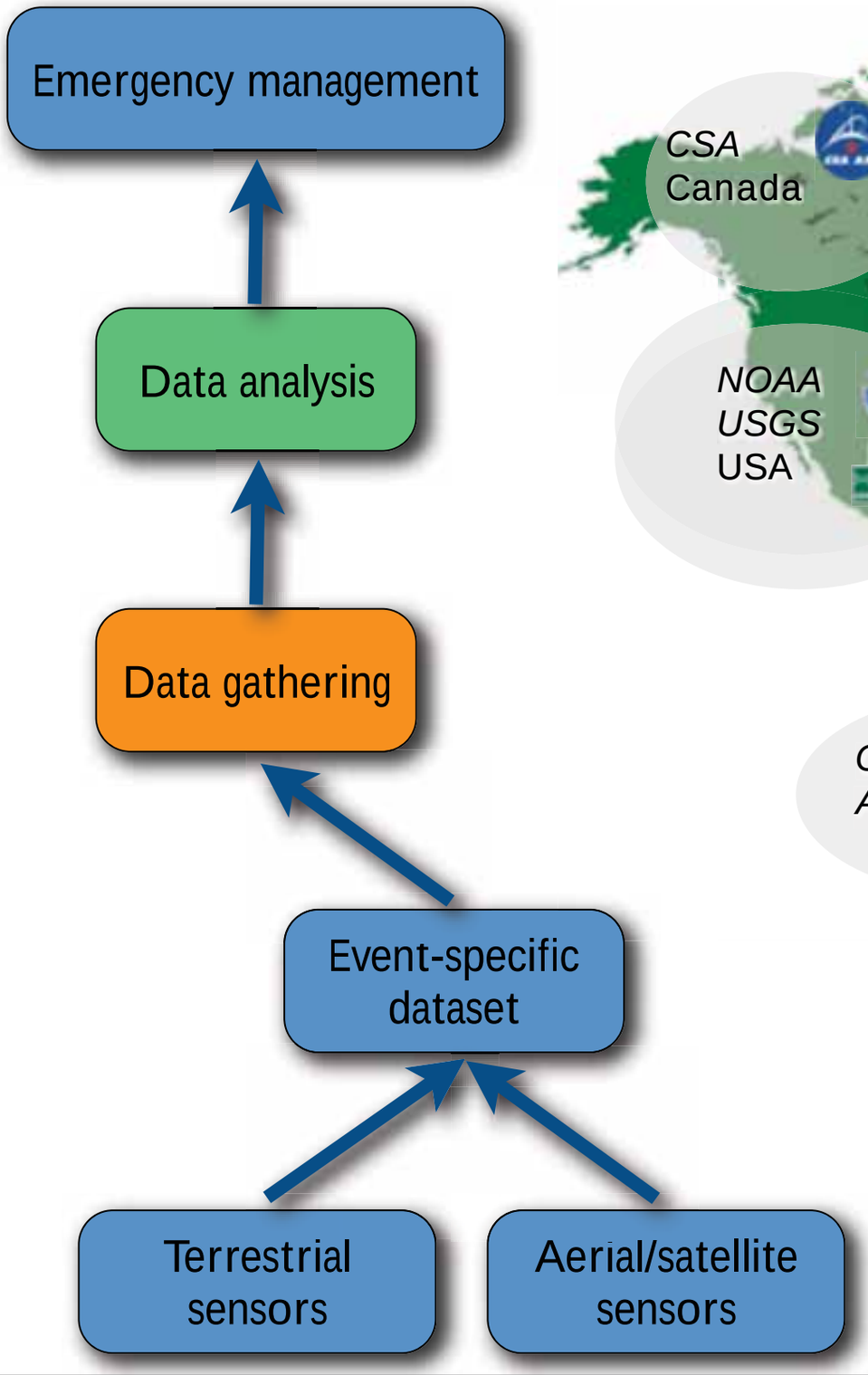
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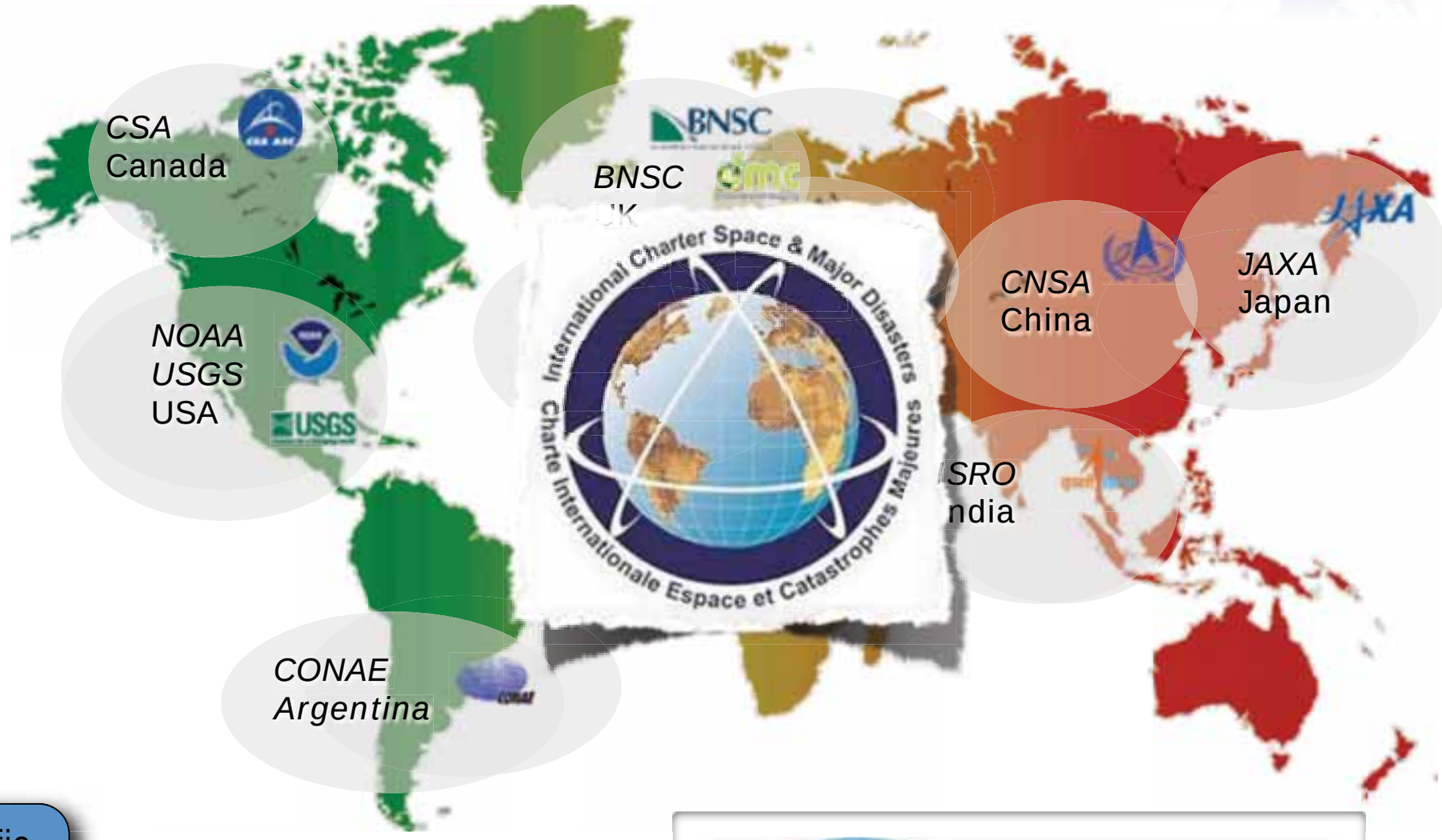
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GMES
Observing our planet for a safer world

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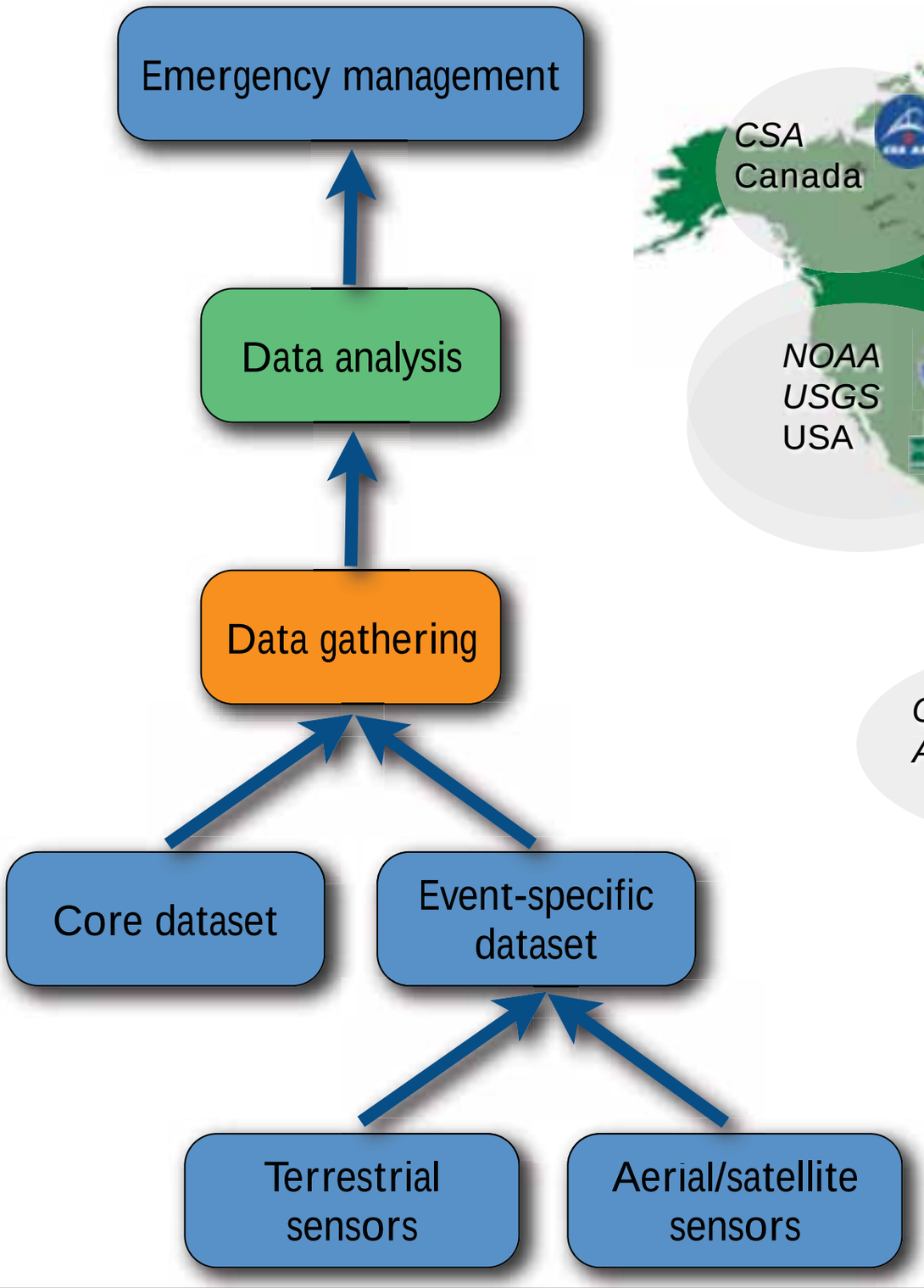

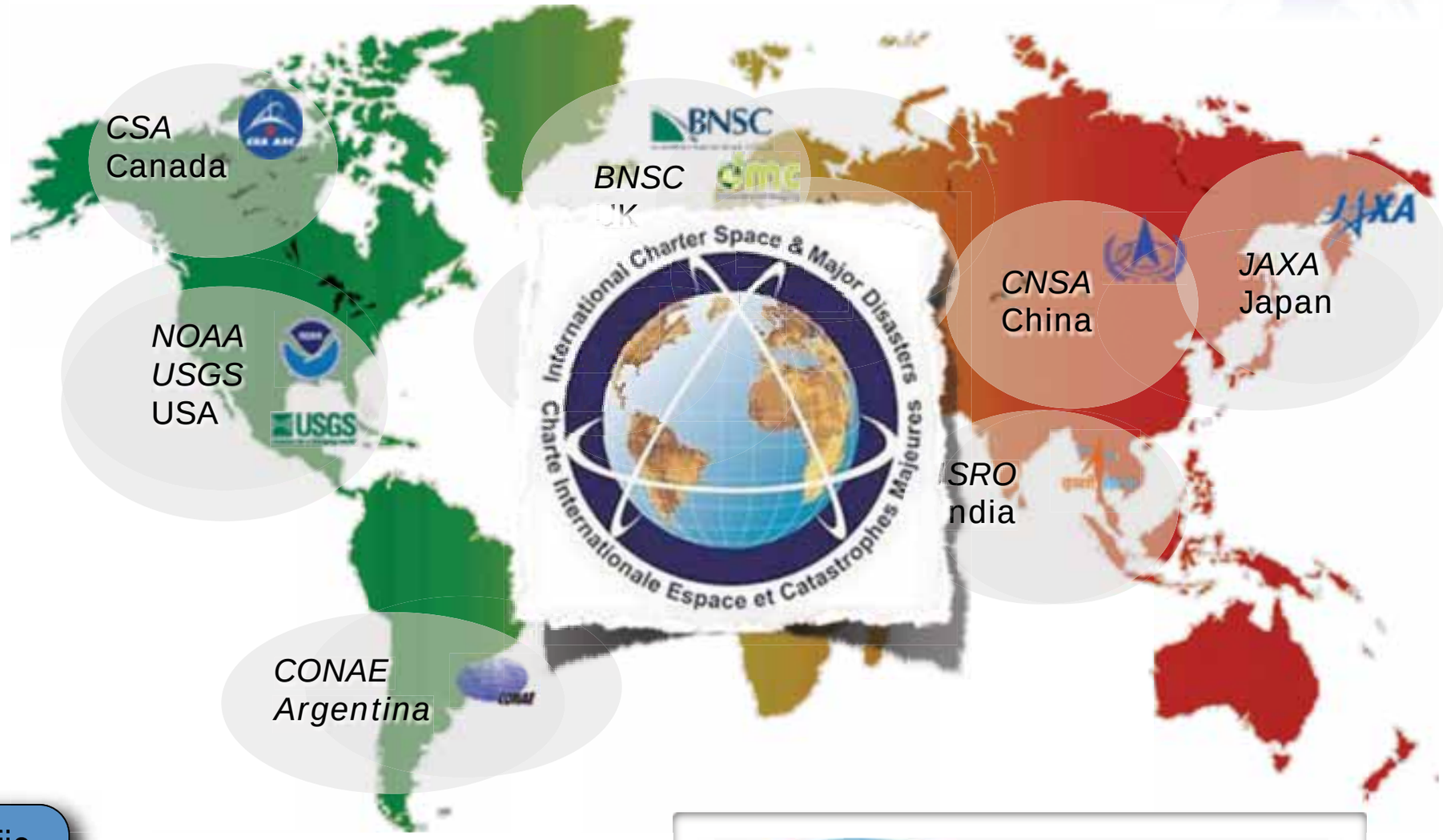

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Core datasets

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  - the **set of relationships** between the geographical components that will allow building the assessments, analyses and monitoring from combinations of datasets.

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- Commercial datasets:
  - ☑ update, accuracy, reliability, ...
  - ☐ free availability.

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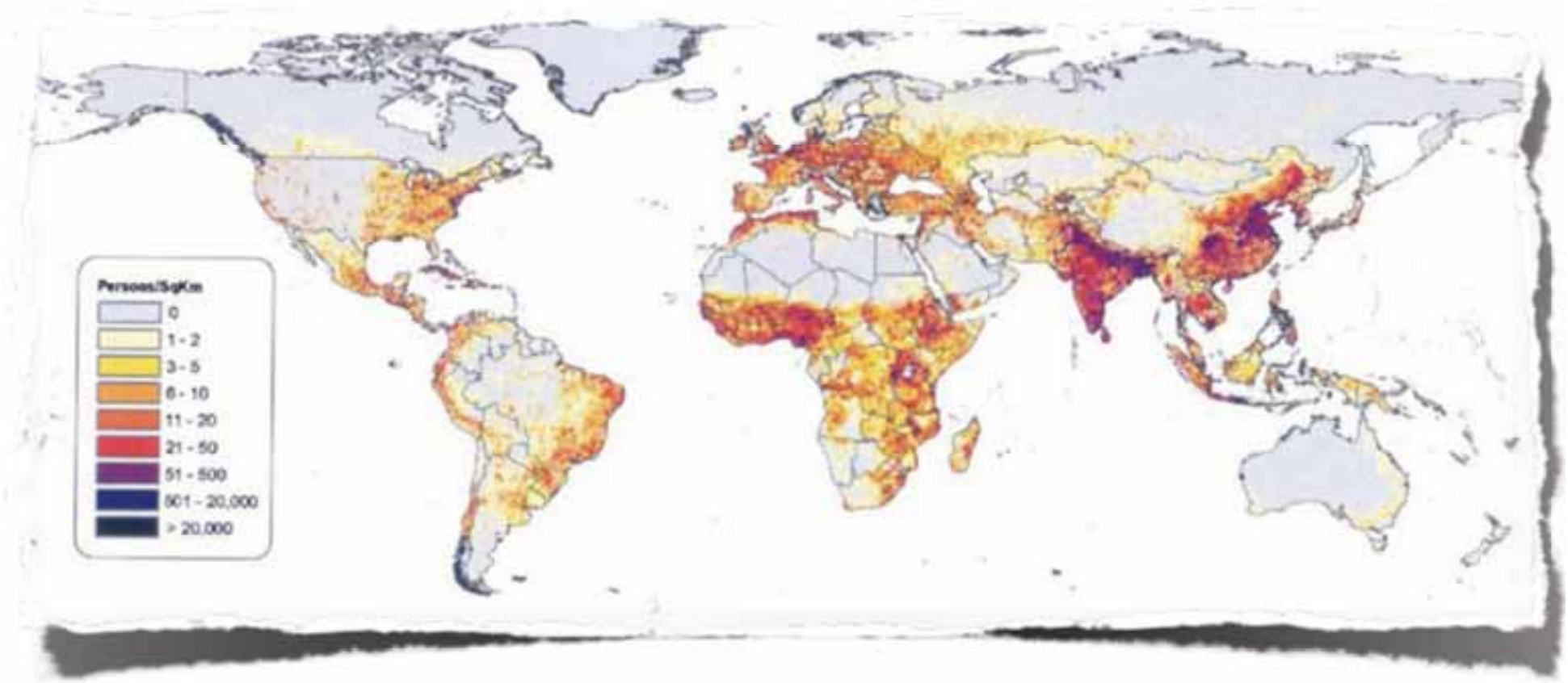

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- ***external quality*** corresponds to the level of concordance that exists between a product and user needs, or expectations, in a given context.

Internal quality

Internal quality

- Geographic extent
- Licensing and constraints
- Scale Denominator
- Update
- Fitness for use in cartographic representation (I) and (II)
- Integration
- Data integrity
- Positional accuracy
- Thematic accuracy
- Completeness

11 indicators

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1.Local
2.Sub national
3.National
4.Continental
5.Global

1.Coarse
2.Low
3.Intermediate
4.High
5.File

11 indicators

5 levels of quality

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comparison, measures and statistics

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Geographic extent	5
Licensing and constraints	5
Scale Denominator	2
Update	3
Fitness for use in cartographic representation(I) and (II)	4-5
Integration	5
Data integrity	5
Positional accuracy	3
Thematic accuracy	5
Completeness	5

11 indicators

5 levels of quality

comparison, measures and statistics

11 scores

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Dataset	Geogra-phic Extent	Licensing and Constr.	Scale Denom.	Update	Fit. For Use I	Fit. For Use II	Integration	Data Integrity	Positional Accuracy	Thematic Accuracy	Compl.
VMAP0	5	5	2	3	4	5	5	5	3	5	5
VMAP1	5	4	4	3	4	3	5	5	5	5	5
GADM	5	4	3	5	3	5	1	5	4	5	5
GAUL	5	4	2	4	5	4	1	4	3	5	5
WVS+	5	2	4	1	4	5	3	5	5	5	5
Global Map	4	4	3	3	4	4	5	5	5	5	5

Geographic extent	5
Licensing and constraints	5
Scale Denominator	2
Thematic accuracy	5
Completeness	5

11 indicators

5 levels of quality

comparison, measures and statistics

11 scores

External quality

External quality

- ***a weight*** included in the range 0-1 has to be assigned to each indicator for the single sub-topic: this value represents the **importance** of any single quality indicator for the **specific user and usage**;

Parameter	Weight (0 to 1)
Geographic Extent	1
Licensing and Constraint	1
Scale Denominator	0.5
Update	1
Fitness For Use I	1
Fitness For Use II	1
Integration	1
Data Integrity	1
Positional Accuracy	0.5
Thematic Accuracy	1
Completeness	1

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Parameter	Weight (0 to 1)
Geographic Extent	1
Licensing and Constraint	1
Scale Denominator	0.5
Update	1
Fitness For Use I	1
Fitness For Use II	1
Integration	1
Data Integrity	1
Positional Accuracy	0.5
Thematic Accuracy	1
Completeness	1

- a vector of the ***total scores*** for each considered dataset is calculated as the result of an ordinary matrix product between the quality matrix and the vector of weights.

Dataset	Final Score
VMAP0	44.5
VMAP1	43.5
Global Map	43.5
GADM	41.5
GAUL	39.5
WVS+	39.5

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  - their usage, especially by big organizations and for the establishment of key services, should be carefully evaluated:
    - abuse of dominant position;
    - change in policies/service conditions;
    - not fully clear licensing conditions.

Metadata issues

- Lack of availability in standard formats;
- Include in standard and applications (catalogues) specific keys related to data quality.

Organizational issues

European Commission

INSPIRE

Infrastructure for Spatial Information in the European Community

UNGIWG

United Nations Geographic Information Working Group

Organizational issues

- Coordination and cooperation is required at various levels;
- Coordination duty:
  - to legally recognized entities;
  - to authoritative, independent entities, responsible for procedures development, for controlling their application and for capacity building and training;
  - to structures providing tools, instruments, procedures (volunteered based communities).

Conclusions

- **Technology** is **not a major limitation** in implementing an efficient and effective SDI solution;
- core **data lacks** in availability, clear license policies, description (metadata);
- in absence of a clear legal framework, **authoritative structures** should take the lead of the organization process.

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SDI definition: technology, policies, standards, human resources, and related activities necessary to acquire, process, distribute, use, maintain, and preserve spatial data