2nd High Level Forum on GGIM
QNCC, Doha, Qatar, 6 February 2013

Standards in support of UN-GGIM and sustainable development

Olaf Østensen
Chair of ISO/TC 211
Norway

Background

New York, 13 – 15 August, 2012
Second session of the UN Committee of Experts on Global Geospatial Information Management

2/103
Inventory of issues to be addressed by the Committee

The Committee of Experts:

…

(d) Took note of the suggestion by technical committee 211 of the International Organization for Standardization (ISO/TC211) to put forward, jointly with the Open Geospatial Consortium and the International Hydrographic Organization, a proposal on the issues related to standard-setting in the international community;

…

Schedule

SECOND HIGH LEVEL FORUM ON GLOBAL GEOSPATIAL INFORMATION MANAGEMENT

Qatar National Convention Centre, Doha, Qatar, 4-6 February 2013

Draft report

THIRD SESSION OF THE COMMITTEE

Cambridge, UK
24 – 27 July, 2013

Final report

Main authors: Serena Coetzee, South Africa, Carl Reed, OGC, Jean Brodeur, Canada

International Organization for Standardization (ISO)

- ISO = equal
- World's largest developer of standards
  - Network of national standards institutes from 164 countries
  - Full, corresponding and subscriber members
- Established in 1946
- Recognized by the UN
- Principal activity is developing technical standards
- Technical Committees (TCs)
  - From *Screw threads* to *Railway applications*
  - ISO/TC 211, *Geographic information/geomatics*
    - Lawrence D. Eicher Leadership Award in 2010

www.iso.org

The goal of ISO/TC 211...

International Organization for Standardization

... is to develop a family of international standards that will

- support the understanding and usage of geographic information
- increase the availability, access, integration, and sharing of geographic information, enable inter-operability of geospatially enabled computer systems
- contribute to a unified approach to addressing global ecological and humanitarian problems
- ease the establishment of geospatial infrastructures on local, regional and global level
- contribute to sustainable development

Open Geospatial Consortium

- Industry consortium of 400+ members
- 2000+ implementations of standards and specifications, some certified to be compliant
- Focus
  - to define, document and test implementation standards for use with geospatial content and services
  - integration of geospatial content and services into applications for the benefit of mankind
- Close co-operation OGC - ISO/TC 211

www.opengeospatial.org

OGC® Making location count.

OGC – a vast field of standards activities

International Hydrographic Organization (IHO)

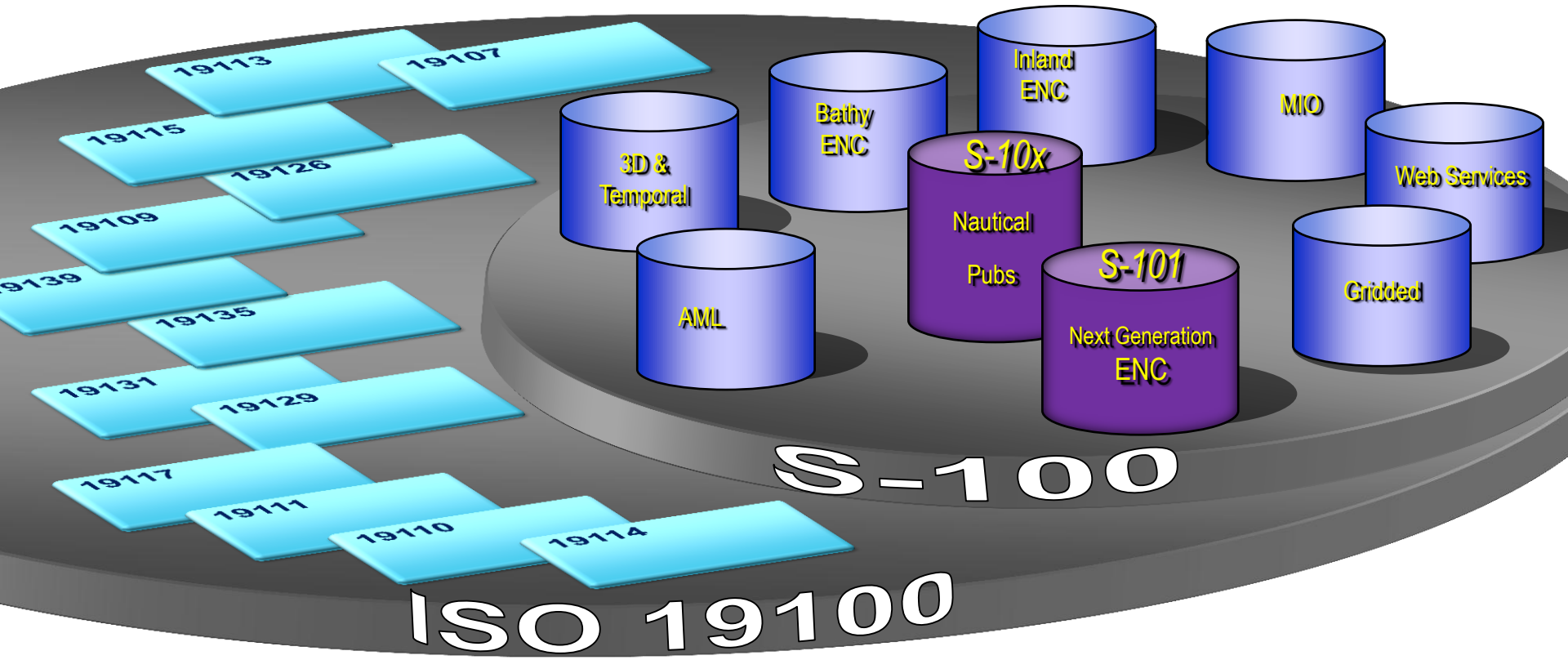
- Intergovernmental consultative and technical organization
- Established in 1921
- To support safety of navigation and the protection of the marine environment
- One of the IHO objectives
  - to bring about the greatest possible uniformity in nautical charts and documents (i.e. standardization)

www.iho.int

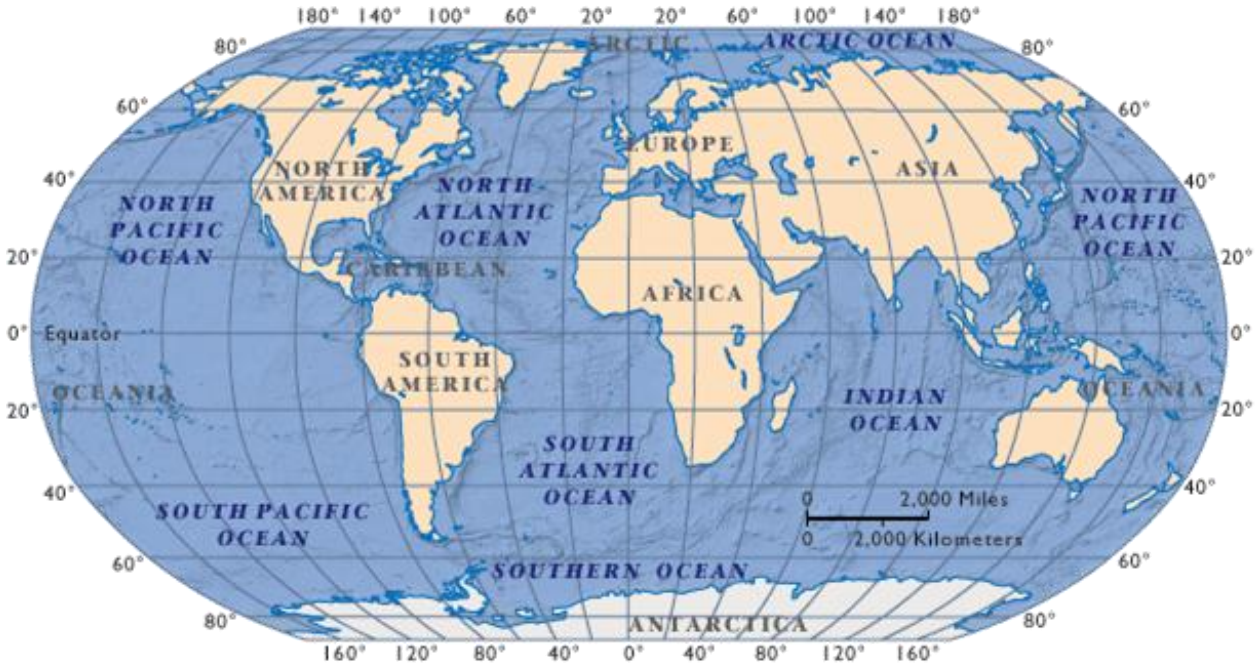
International Hydrographic Organization
Organisation Hydrographique Internationale

S-100 - built on ISO 19100-series

- **IHO S-10*x* standards will depend on several ISO19100 standards**



The Earth is mostly covered by water



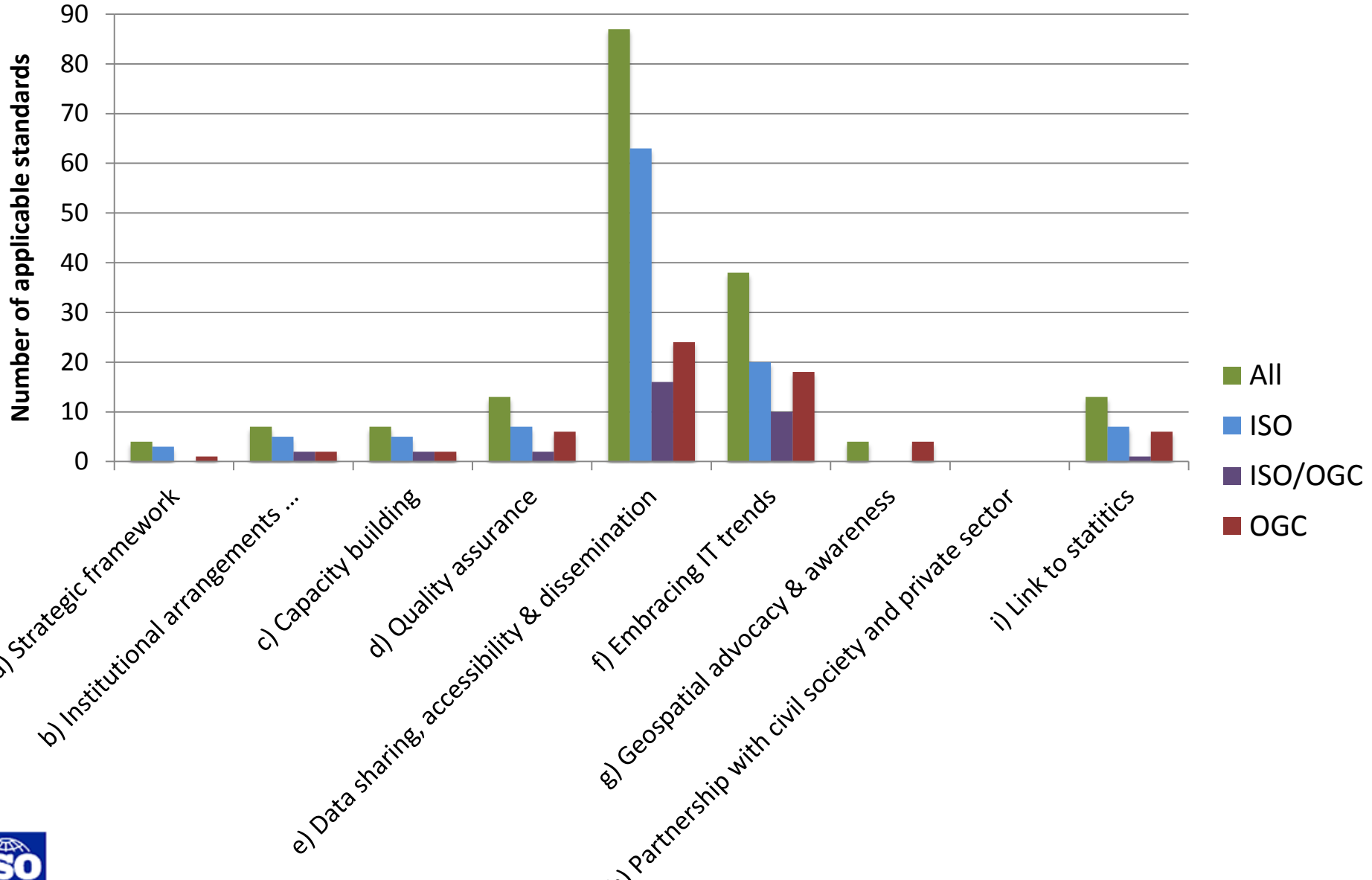
- The marine environment already play a huge role in human life and economy, and even more in the future

UN-GGIM inventory of issues

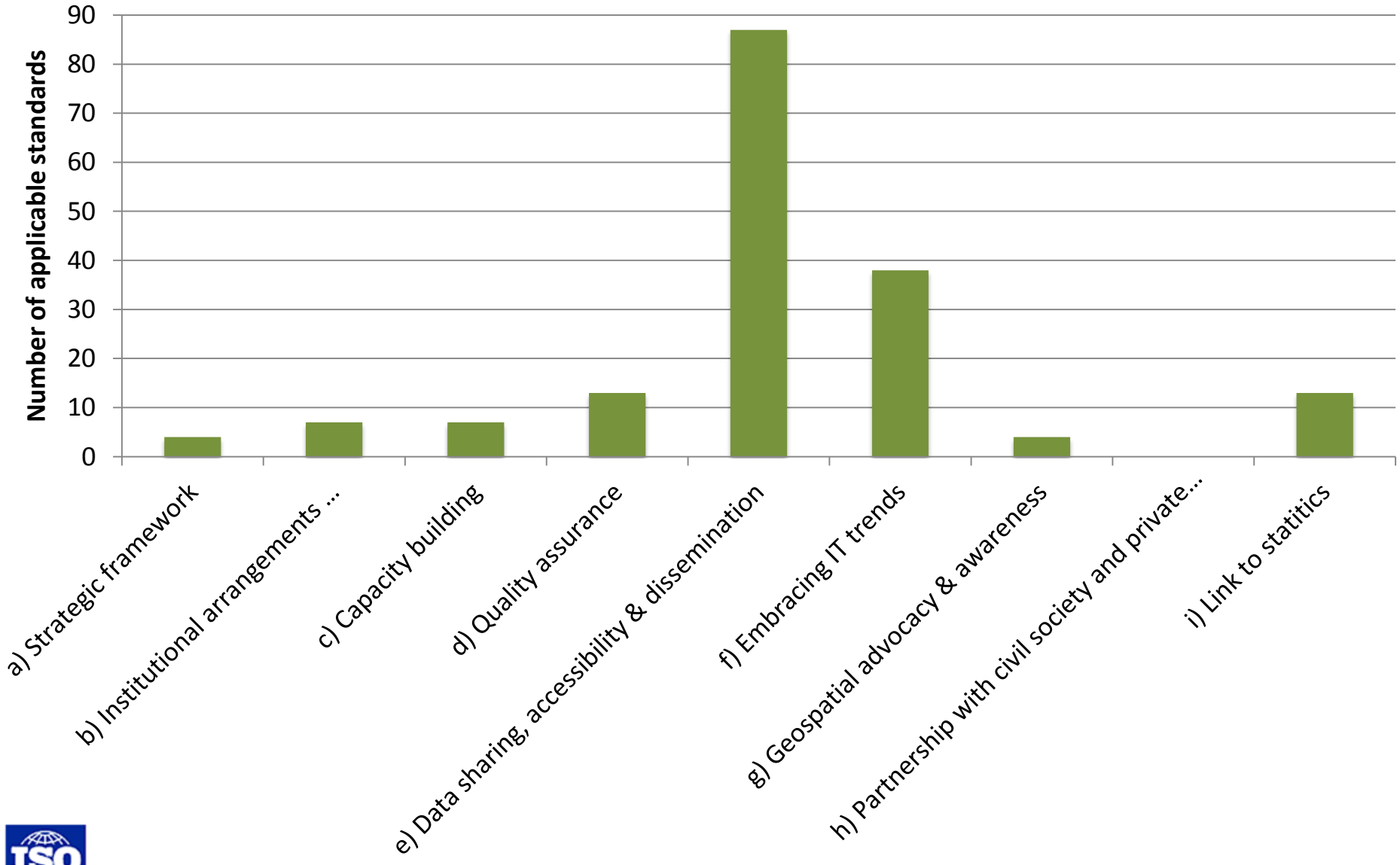
- The inventory of issues to be addressed by the Committee of Experts on Global Geospatial Information Management has been collated and consolidated within the following nine thematic groups (ECOSOC 2012b):

a) Developing a national, regional and global strategic framework for geospatial information;
b) Establishing institutional arrangements and legal and common frameworks;
c) Building capability and capacity, especially in developing countries;
d) Assuring the quality of geospatial information;
e) Promoting data sharing, accessibility and dissemination;
f) Embracing trends in information technology;
g) Promoting geospatial advocacy and awareness;
h) Working in partnership with civil society and the private sector;
i) Linking geospatial information to statistics.

Standards applicable to UN-GGIM issues



Standards applicable to UN-GGIM issues



Some identified future standardization areas

- Guidelines for frameworks conducive to standards
- Management system standards
- Translations of the terminology in the field of geographic information
- Standardized descriptions of knowledge, skills and competencies in geographic information science (GISc)
- Quality assurance for crowdsourced data
- Ontologies for national geographic information
- Standardized license agreements
- Standardization requirements to be identified by ISO 19161, *Geodetic references*
- ISO 19160-2, *Good practices for address assignment schemes*
- ISO standard for the representation of boundaries to which statistical data is linked

Contribution to UN-GGIM issues

a) Developing a national, regional and global strategic framework for geospatial information

- A common framework of standards and tools makes it possible to maximize the impact of the total available resources in an SDI
- The GSDI Cookbook (2012) identifies compatible, mature geospatial standards that allow maximum technical interoperability based on general evaluation criteria

Contribution to UN-GGIM issues

b) Establishing institutional arrangements and legal and common frameworks

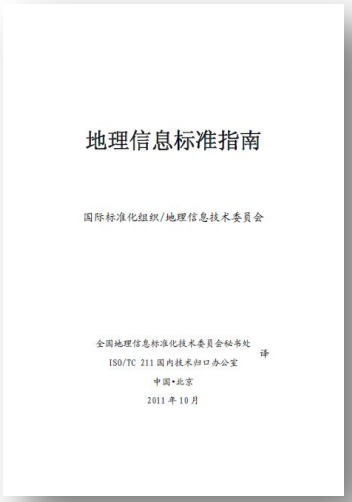
- Standardization organizations provide policies and procedures for developing consensus based standards
- Existing reference architectures provide patterns for defining a framework of technical governance, policy development, and specific implementation architectures
  - e.g. Canadian Geospatial Data Infrastructure, INSPIRE (**IN**frastructure for **SP**atial **I**nfo**R**mation in **E**urope)

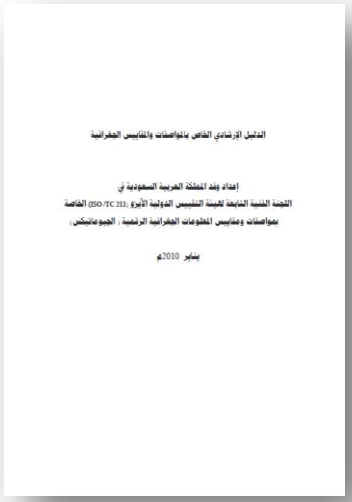
Contribution to UN-GGIM issues

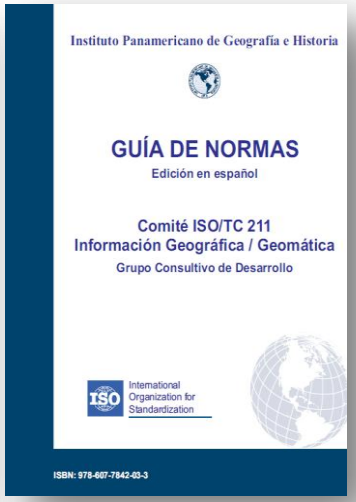
c) Building capability and capacity, especially in developing countries

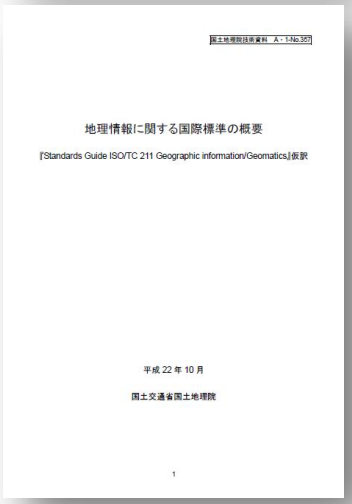
- Standardized terminology available in multiple languages
  - Arabic, Chinese, Danish, Dutch, English, Finnish, French, German, Japanese, Korean, Polish, Russian, Spanish and Swedish
- Standards outreach/marketing activities
- Standards guide in 6 languages
- Experience in standard development in inter-disciplinary and cross community collaboration
  - Semantic mediation

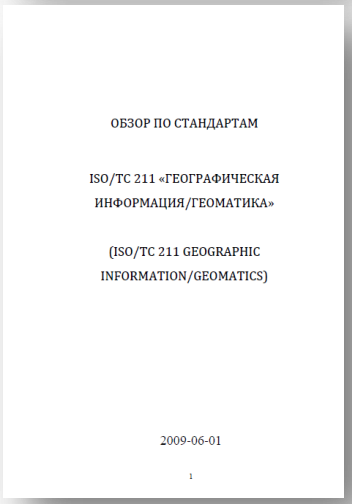
Standards guide

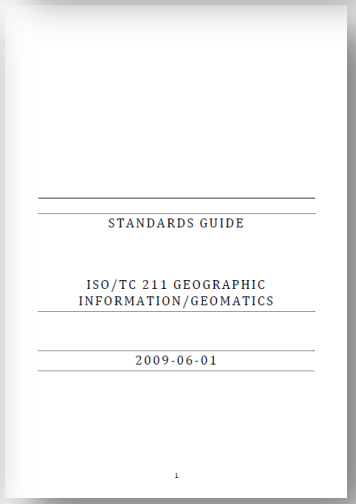












Arabic version

Chinese version

English version

Japanese version

Russian version

Spanish version

Contribution to UN-GGIM issues

d) Assuring the quality of geospatial information

- ISO/DIS 19157, *Geographic information - Data quality*
  - Principles for describing data quality
- ISO/TS 19158:2012, *Geographic information - Quality assurance of data supply*
  - Based on general quality management principles defined in ISO 9000
- OGC Data Quality Domain Working Group
  - Uncertainty and the encoding of multi-dimensional scientific data

Management standards – strengthening governance and the authoritative aspects

- ISO has a strong emphasis on management standards
  - quality management
  - environmental management
  - risk management
  - information security
  - social responsibility
  - etc.

Contribution to UN-GGIM issues

e) Promoting data sharing, accessibility and dissemination

- Many standards exist for standardizing…
  - the geospatial standardization infrastructure
  - data models for geographic information
  - management of geographic information
  - encoding of geographic information
  - tightly coupled access to geographic information
  - portrayal of geographic information
  - web services for geographic information
  - digital rights management for geographic information
  - geodetic products
  - interface for positioning instruments and devices
  - calibration and validation of sensors
  - specific domains of interest
  - Addressing, climate change, geology, land administration, transportation, urban and building information, water…

How standards matter, the INSPIRE example

INSPIRE DIRECTIVE

IMPLEMENTING RULES

TECHNICAL GUIDANCE

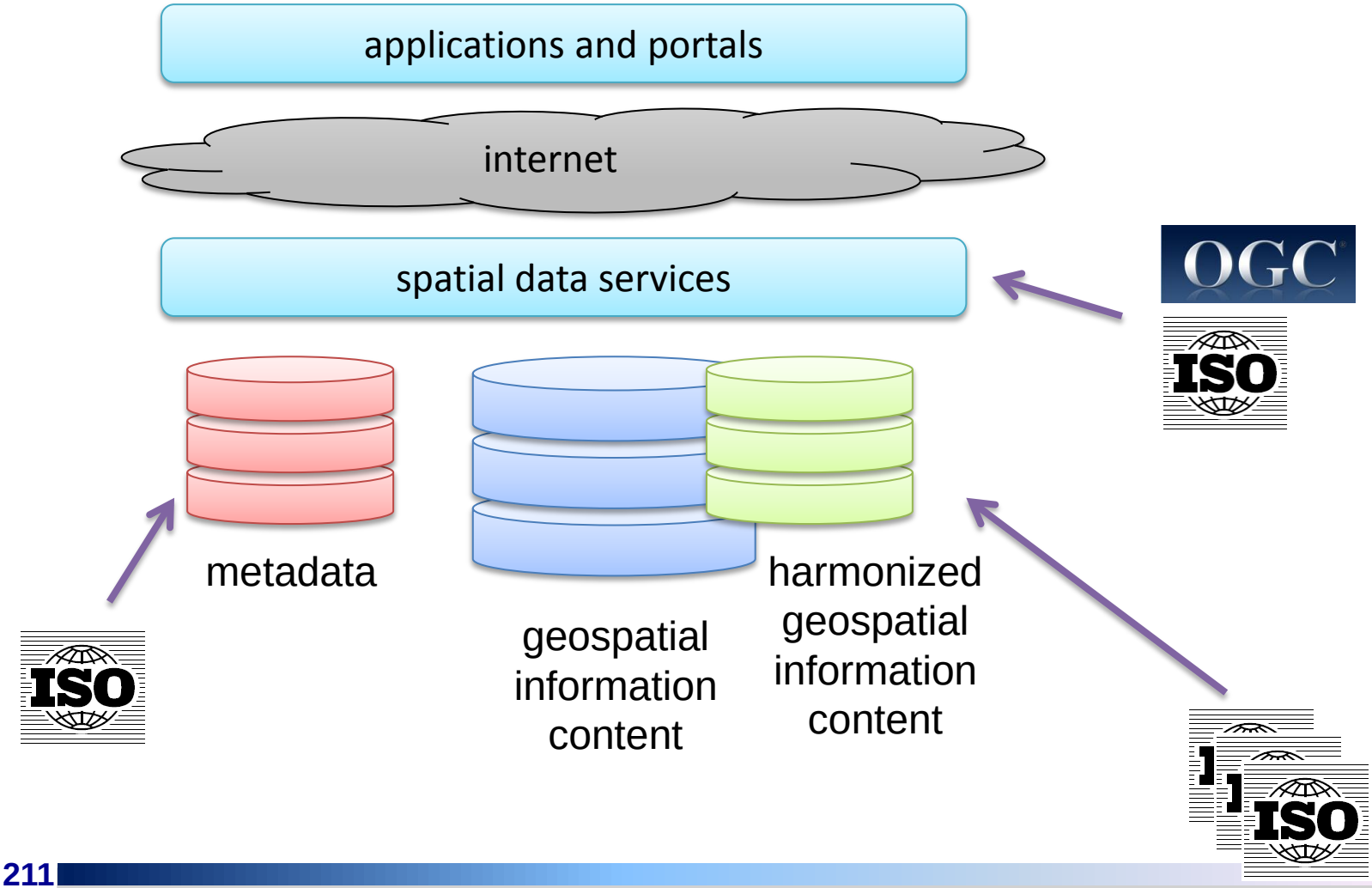
STANDARDS

Legal regulations, have to be implemented in national regulations

The thematic scope of INSPIRE emphasizing the variety of sectors involved

- coordinate reference systems
- geographical grid syst.
- geographical names
- administrative units
- addresses
- cadastral parcels
- transport networks
- hydrography
- protected sites
- elevation
- land cover
- orthoimagery
- geology
- statistical units
- buildings
- soils
- land use
- human health and safety
- utility and government services
- environmental monitoring facilities
- production and industrial facilities
- agriculture and aquaculture facilities
- population distribution - demography
- area management/restriction/regulation zone and reporting units
- natural risk zones
- atmospheric conditions
- meteorological geographical features
- oceanographic geographical features
- sea regions
- bio-geographical regions
- habitats and biotops
- species
- energy resources
- mineral resources

Simplified technical architecture - and where geospatial standards apply



Contribution to UN-GGIM issues

f) Embracing trends in information technology

- Ongoing developments on interoperability of emerging technologies in…
  - Augmented reality
  - Indoor modeling and navigation
  - Internet of things
  - Location-based services
  - Mobile internet
  - Position instruments and devices
  - Semantic web
  - Sensor web enablement
  - Ubiquitous public access

Standards are not only following the trends, but sometimes set the trends …

Contribution to UN-GGIM issues

g) Promoting geospatial advocacy and awareness

- Standards outreach/marketing activities
- Any standard can be seen as a best practice or guideline (without necessarily being enforced)

Contribution to UN-GGIM issues

h) Working in partnership with civil society and the private sector

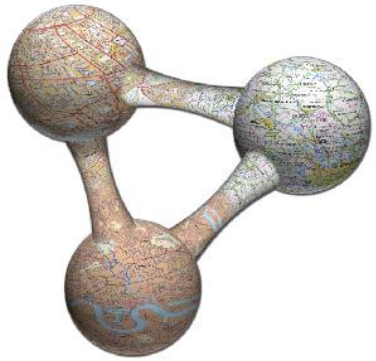
- ISO and OGC are voluntary consensus standards organization
- IHO also mandates standards e.g. through conventions
  - Ensures collaboration and partnership between government organizations, the private sector, universities, NGOs, and scientific research organizations
  - Strong consensus environment

The work in standards organizations is done in partnership between public sector, private sector and civil society in general

Contribution to UN-GGIM issues

i) Linking geospatial information to statistics

- Many geoportals implement or are based on ISO's geographic information metadata standards and use OGC standards for access
  - Provides a basis for linking or combining metadata conventions and systems for geospatial and statistical information
  - Linked data, semantics



Next version

- Complete the analysis
- Restructure the document
- Recommendations to the Committee of Experts on GGIM

Thank you for your attention!