This is an open event. The session is recorded

Side event to UN-GGIM 11th session -Guide to the role of standards in global geospatial information management – *The Standards Guide* 

Tuesday August 17th 2021 at 08:00am – 09:30am EDT (12:00-13:00 UTC) Virtual session





International Hydrographic Organization



International Organization for Standardization

TC 211

Positioning geospatial information to address global challenges

United Nations Initiative on Global Geospatial Information Management

### Agenda 17 August 2021

Moderator and opening

Mr. Mark Reichardt, OGC

#### Introductory speech

Mr. Anders Sandin, UN-GGIM High Level Group on IGIF

#### Introduction to the joint work of the SDOs

Dr. Nadine Alameh, OGC Ms. Agneta Engberg, ISO/TC 211 Dr. Mathias Jonas, IHO *An overview of Standards Guide Edition 3* Mr. Mark Reichardt, OGC *Facilitated Discussion: How do I use the Guide* Prof. Serena Coetzee, Dr. Jill Saligoe-Simmel, Ms. Irina Bastrakova, Ms. Pearlyn Pang, Mr. Tobias Spears, Mr. Jan Hjelmager, Mr. Shane Crossman *Summary and Closing* 



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### **Objective and expected outcomes**

- Raise awareness of the role of global standards for interoperability
- Identify the need for standards development and implementation to support addressing the SDGs
- Participate in standards development and sharing user stories of implementations.

#### Organizers

The Standards Development Organizations (SDO): Open Geospatial Consortium (OGC), ISO/TC 211 Geographic Information/Geomatics; and the International Hydrographic Organization (IHO).



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### Cooperation

ISO/TC 211, OGC and IHO members have been formally – and practically cooperating since 1994.

We also benefit from a range of people working actively across our organizations.

Supporting the advancement of Sustainable Development Goals (SDGs) and the work of the UN-GGIM are important aspects of our missions





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### **Introductory Message**

#### **Anders Sandin**

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Co-Chair, UN-GGIM High Level Group on the Integrated Geospatial Information Framework (IGIF)

CIO and Director at Lantmäteriet, the Swedish Mapping, Cadastral and Land Registration Authority



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### Joint work of the SDOs





Nadine Alameh, CEO Open Geospatial Consortium (OGC)

Agneta Engberg, Chair ISO Technical Committee 211 (ISO/TC 211) on Geomatics / Geographic Information



Mathias Jonas, Secretary General, International Hydrographic Organization (IHO)



E-C.20-2021-14-Add 1 Implementation and adoption of standards 3Aug2021.pdf (un.org)

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# What is OGC?

A Hub for thought leadership, innovation, and standards for all things related to location



#### **Our Vision**

Building the future of location with community, and technology for the good of society



#### **Our Mission**

Make location information Findable, Accessible, Interoperable, and Reusable (FAIR)

#### **Our Approach:**

A proven collaborative and agile process combining consensusbased standards, innovation projects, and partnership building

## **Open Geospatial Consortium (OGC)**

### Collaboration across SDOs in Support of UN-GGIM / SDGs

- Joint development of UN-GGIM IGIF Chapter 6 on Standards
- Results of OGC / IHO Maritime Limits and Boundaries S-121 Pilot are starting to be implemented nationally
- Land Administration Data Model (with ISO/TC 211)
- Health Data Model
  - In development in response to COVID19 to better prepare for future events.
- <u>Disaster Resilience 2021 Pilot</u>
   Automation of discovery, access and integration of sources to create Analysis Ready Data, Decision Ready Indicators for decision makers / respónders.
- OGC Open API standards
  - Development well underway, will simplify integration and interoperability for applications on the web
  - **Builds on OGC Web Services**





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### **ISO/TC 211 Geospatial Information / Geomatics**

Collaboration across SDOs in support of UN-GGIM/ SDGs

- ISO entry point to geospatial standards. Freely available resources to assist implementation;
- Progress in standards in direct support of the SDGs: Geodetic Referencing, Land Administration, Land Cover Land Use, and Addressing;
- General purpose standards. Aligning with new developments and new uses;
- Participation through user requirements. Advancing lacksquareimplementation User Story Collection;
- Increasing engagement with UN-GGIM regional committees, e.g. to facilitate participation in ISO work at country level.

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### International Hydrographic Organization

- <u>Long history in global standardization</u> of geoinformation in the analogue era: Harmonization of cartographic features on navigational charts for ships
- Develops and maintains <u>global standards for data products for the</u> <u>maritime domain</u> not limited ships navigation
- Take the <u>best out of SDO collaboration</u>: data modelling and encoding based on ISO 19100 series; transmission, presentation, and interface on OGC Norms.
- <u>Two roles</u>: the <u>workbench</u> for standardized geoinformation tools based on open standards and the creation of use cases in a <u>global test</u> <u>field.</u>
- <u>Provide feedback</u> from relevant user groups for further development of all SDO elements .



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### **Standards Guide Ed3 - Overview**

- Edition 3 approach
  - Alignment with the IGIF
  - Build on, extend and update the content of Ed 2
  - Inclusion of reinforcing use cases / implementations
  - Links to standards, proven practices, other resources
  - Enable creation of document version.
  - Implement as on-line resource (January 2022)
  - Active maintenance by OGC, ISO/TC 211, IHO SDO team
  - Goal: Answer the question,
     "Where do I start?"



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### **Standards Guide Ed3 - Overview**

### **Guide Sections**

- Summary
- Introduction
- Direction Setting
- Understanding National Needs
- Planning for Change
- Taking Action
- Ongoing Management
  - Achieving Outcomes

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### **Guide Annexes**

- Standards Inventory by Tier
- <u>Metadata Survey</u>
- <u>Vocabulary and Codelist</u>
   <u>Registries</u>
- <u>Standards Adoption Roadmap</u>
   <u>Template</u>
- <u>Standards Bodies, Registries</u>
- Emerging, Future Standards
- <u>Communities of Practice</u>
- <u>References, Resources, and Tools</u>

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## **Standards Guide Ed3 - Overview**

### **Status / Next Steps:**

- Coordination draft completed by the SDO team in June 2021
- Member Nation and Observer feedback appreciated by 31
   October 2021 to support initial Guide Ed3 deployment
- Emphasis September 2021 January 2022
  - Address comments received
  - Capture and include additional use cases on deployment of standards at various tier levels
  - Develop and deploy web-based Guide
  - Implement formal maintenance process with predictable "refresh" cadence



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### **Standards Guide - Introduction**

Roles	Link to IGIF/SP6 Element	Required level of understanding standards	Activities	Relation to this Standards Guide
Decision makers	Governance and Policy	Can recognize the benefits of standards, in reaching long-term goals	- Set government policy framework - Allocate funding	Secondary target audience
Developers of interoperable solutions	Technology and Data Interoperability	Can implement standards, Can develop & revise standards	<ul> <li>Ensure design meets national needs and challenges</li> <li>Participate in standards development</li> </ul>	Main target audience
Standards users	Compliance Testing and Certification	Can interpret & use standards	- Participate by expressing needs - Implement internal policy to align with endorsed standards	Target audience
Practitioners in the public and private sector, and civil society	Community of Practice (CoP)	Can discover & use standards as good practice	<ul> <li>Identify needs for standards contributing to the Sustainable Development Goals (SDGs)</li> <li>Participate in standards development, adoption, and implementation</li> </ul>	Target audience



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### **Standards Guide - Direction setting**

#### **Purpose:**

- Understand the benefits of standards and the importance of setting strategic goals to achieve increasing levels of geospatial maturity.
- Identify the types of standards required for increasing levels of capability and scale of collaboration.
- Understand the role of standards development organizations (SDOs) and how to participate in standards development
- Understand the different types of standards and how they contribute to interoperability, and examples of benefits.

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### **Standards Guide - Direction setting**



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### **Standards Guide - Understanding Needs**

#### **Purpose:**

- Understand which standards are available to assess and address an organization's needs based on geospatial maturity level or tier.
- Understand how standards are evolving along with changing needs and technologies.



#### **Three perspectives:**

- User
- Data
- Organizational/Institutional

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Step	тоо
1. Determine the standards baseline and needs	<ul> <li>Framework for managing geospatial data lifecycle (Figure 2.1)</li> <li>Standards Baseline Survey (IGIF SP6, Appendix 6.2)</li> <li>Example of a metadata survey (Appendix 2) to determine adoption of a metadata standard and issues with and priorities of its implementation</li> </ul>
2. Choose the tier that matches the needs	<ul> <li>The Tier Maturity Matrix (Figures 1.5 and 1.6)</li> <li>Needs Assessment and Gap Analysis Template (IGIF SP6, Appendix 6.3)</li> </ul>
3. Match standards to needs.	<ul> <li><u>Standards Inventory (Appendix 1)</u> provides recommended geospatial standards for each Tier.</li> <li><u>Vocabulary registry (Appendix 3)</u> provides a list of registers publishing generic and domain specific code lists and ontologies</li> </ul>
<ol> <li>Develop a roadmap to address the identified needs</li> </ol>	<ul> <li>Needs Assessment and Gap Analysis Template (IGIF SP6, Appendix 6.3)</li> <li><u>Template for a Roadmap (Appendix 4)</u></li> </ul>
<ol> <li>Identify the additional standards required (i.e., gaps and next actions)</li> </ol>	<ul> <li>Needs Assessment and Gap Analysis Template (IGIF SP6, Appendix 6.3)</li> </ul>

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### **Standards Guide - Understanding Needs**

#### Functionality provided by Tier:

- 1. Share Maps Over the Web
- 2. Geospatial Information Partnerships
- 3. Spatially Enabling the Nation
- 4. Towards Spatially Enabled Infrastructure

#### Management of data lifecycle:

- Acquisition, preservation and archiving
- Discovery and access

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### **Standards Guide - Planning for change**

- How other nations or organizations have implemented and used standards to meet their needs.
- The types of business needs that may be supported through the implementation of standards, advocating for the adoption of standards to facilitate interoperability and other efficiencies.
- The importance of considering and implementing standards as part of the systems development lifecycle, and the importance of contributing to and providing feedback to the development of standards through direct participation and provision of feedback.
- How to play a role in the identification of opportunities for standardization in the context of their domain, and act as advocates to engage related communities of practice to facilitate alignment and interoperability at various levels.



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### **Standards Guide - Planning for change**

- Governance across the national framework, including central government, devolved (regional) administrations, local government, and technical implementing organizations
- An endorsed national policy and legal framework
- Leadership for each part of the national framework, including the standards pathway
- An active communications plan

- Bridges to the international and national standards bodies
- Mechanisms to influence adoption, such as spend controls and local government information standards
- Partnerships with industry to develop tools
- Partnerships with universities and professional bodies to deliver skills training
- An underpinning and sustainable financial plan, including clear management of benefit realization.

#### Governance

Action

#### Sustainability



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### **Standards Guide - Planning for change**

### **Institutional Arrangements**

- •Governing bodies
- •Bridges linkages to standards development bodies
- Mechanisms to influence adoption
- **Action Plan** 
  - What
  - When
  - Who
  - Costs and funding
- Relations to other initiatives and activities
- Capacity building

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### **Standards Guide - Taking action**

#### **Purpose:**

•Understand the level of **maturity of the nation and/or organization** and thereby the level of complexity and the potential work that needs to be done during the implementation phase.

•Match the standards required to fulfill their needs to a given maturity level,

•Understand details about what standards are needed and applicable in different cases, how to access the standards, and how to take the **essential steps to implement** those standards.

•Understand the standards and provide feedback into the ongoing development of the implemented standards.



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### **Standards Guide - Taking action**

Foundational standards:

•General information technology standards

• E.g. Internet standards

•General geospatial standards

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•Data definitions, representation, data quality, architecture

•Help to collect, produce and maintain geospatial data



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### **Standards Guide - Taking Action**

<b>v</b>	
Technology in Tier1	Relevant Standard
Visualization and Portrayal	OGC Web Map Service
	OGC Web Map Tile Service
	OGC Styled Layer Descriptor
	OGC Symbology Encoding
	OGC Web Services Context Document
	IHO S-100 Part 9 – Universal Hydrographic Data Model Part 9 - Portrayal
Catalogue and Discovery	ISO 19115-1:2014, Geographic information — Metadata — Part 1: Fundamentals
	ISO 19115-2:2019, Geographic information — Metadata — Part 2: Extensions for acquisition and processing
	ISO 19115-3:2016, Geographic information - Metadata - Part 3: XML schema implementation for fundamental concepts
	OGC Catalogue Service
	Data Catalog (DCAT) Vocabulary Version 2

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### **Standards Guide - Ongoing management**

#### **Purpose:**

- Establishing a standards review / maintenance process
- Understand how to remain current with advancements in standards through periodic review with standards bodies and Communities Of Practice.
- Leveraging standards bodies at the national and international levels to discuss, identify, and submit requirements for standards and to address interoperability issues.
- Understand the value of sharing experiences and standards success stories with others.

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#### Geo standards

Open geo standards ensure that geo information can be used meaningfully for various tasks and in different software packages. Geonovum develops and manages the Dutch basic set of geo-standards. This set of standards ensures a properly functioning infrastructure. In addition, Geonovum manages a number of legally anchored sector standards. Below you will find detailed explanations of the geo-standards and their implementation.

https://www.geonovum.nl/geo-standaarden/alle-standaarden

Figure 3.1 Geonovum statement on Dutch Geospatial Standards



d	FGDC Standards Work Group Charter
	Purpose The Federal Geographic Data Committee (FGDC) Standards Working Group (SWG) promotes the development and implementation of standards in support of the National Spatial Data Infrastructure (NSD1).
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### **Standards Guide - Achieving outcomes**

#### **Purpose:**

- Understand the importance of how standards will improve sharing and use of geospatial information and optimize geospatial information management.
- Understand use cases to apply rapid mobilization of new sources of data and technologies and avoid lock-in to specific technology providers.
- Understand requirements for improved uptake of geospatial information across government and with the private sector and citizens; and creating efficiencies in geospatial data production and lifecycle management, saving effort, time, and cost in reusing and repurposing data.
- Understand the benefit realization and compliance of standards with the development of indicators to assess, monitor and evaluate as part of an internal/external auditing exercise.



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### **Standards Guide - Achieving outcomes**

Three main aspects of positive outcomes are compliance, success indicators, and role models of success

#### Compliance

A system of compliance is encouraged to ensure that organizations are implementing the nationally (or internationally) endorsed standards that promote data sharing and use, and to verify that technology products and services

#### **Success Indicators**

Success indicators set targets and define how the benefits will be measured, and what evidence will be used as the basis. It is valuable to know when the objective of implementing standards has achieved overarching goal(s), such as enhanced interoperability and data integration.

The benefits of implementing a common standards framework are achieved over time and reinforce the need for a national standards strategy for verifying that implementations had the desired impact in reaching overarching goals and objectives.

## Role Models of Success - Standards Training, Tools and Related Resources

A range of training, references and tools are made freely available by the SDOs and other organizations committed to advancing efficient and effective geospatial information management (Appendix 8)



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# Use cases, case studies, examples of implementations, other resources

#### Infrastructure for Spatial Information in the European Community (INSPIRE)

established on 14 March 2007, INSPIRE aims to create a European Union Spatial Data Infrastructure for the purposes of EU environmental policies or policies and activities which may have an impact on the environment.



A number of common Implementing Rules and Technical Guidelines are adopted for the follow ing:

- <u>Metadata</u>
- <u>Data Specifications</u>
- <u>Netw ork Services</u>
- Data and Service Sharing
- <u>Spatial Data Services</u>
- Monitoring and Reporting

As technology has evolved since INSPIRE's creation, <u>good practices</u> are being shared and discussed that help 1)support community needs, 2)link with other initiatives, and / or 3) improve INSPIRE's usability / usefulness.

OGC standards e-learning

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- Metadata
- Foundation Data
- Compliance testing/certification



eaDataNet



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### **Summary and Closing**

We welcome your comments, questions, ideas, case studies! Contact the OGC, ISO/TC 211, IHO Standards Guide Team at: <u>UNStdsGuideComments@lists.ogc.org</u>

- Comments requested by 31 October
- SDO Team updates / revision November December
   2021
- Revised Guide as an on-line resource January 2022

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### Thank you



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