ISO/TC 211 "Geographic information/Geomatics"
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ISO_TC211_Strategic_Business_Plan_2023

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Description

Corrected a typo on page 4

International Organization for Standardization
Organisation internationale de normalisation
Международная организация по стандартизации

STRATEGIC BUSINESS PLAN – ISO/TC 211 GEOGRAPHIC INFORMATION/ GEOMATICS

Executive summary

Geospatial or location technology has been going mainstream for some years now. Maps, geographic information, and related content are becoming more pervasive and embedded in everyday life. Continued major investments from large players like Google, Microsoft, Apple and Amazon are making consumer-based mapping, location-based service applications and image-based maps truly ubiquitous. As the consumerization of technology increases, the focus will be more on providing value and return on investment to the users. Major international organisations such as the United Nations increasingly recognise the value of standards based geographic information to equip nations to improve sustainability, resilience, and wellbeing.

The scope of ISO/TC 211 is very wide targeting several key segments:

- modelling and documentation of geographic information,
- making geographic information easier to find, access, and integrate through web services
- embedding of geographic information in everyday life – ubiquitous geographic information,
- some specific subject domains where geographic information is an important component and where multiple disciplines are involved.

The standards developed by ISO/TC 211 actively contribute to authoritative, evidence-based decisions in any field involving geographic or location content. Standards provide a platform for innovation.

The plan for the coming two years includes delivering:

- a sustainable maintenance of the ISO geodetic registry (with the United Nations and the International Association of Geodesy),
- a coherent multi-part standard for different aspects of land and marine administration (with Open Geospatial Consortium, the International Federation of Surveyors, International Hydrographic Organization, and others),
- a revised classification meta language to facilitate merging land cover and land use data from different national systems (with UN Food and Agriculture Organization),
- ontologies to support our standards that are published more in line with web good practice,
- in total between 10 and 15 geographic information technology standards which will have been revised.

Furthermore, the plan is to initiate:

- work on calibration and validation of remote sensing data and derived products, which e.g. will help government design data quality policy and regulation to achieve high quality data and products (WG 6),
- revision of further web service standards based upon contemporary API design principles, in close cooperation with OGC,
- further work in support of specific domains such as digital twins, in collaboration with relevant ISO and ISO/IEC committees.

More information on the work programme and the projects is found in section 7.

Introduction

1.1 ISO technical committees and business planning

The extension of formal business planning to ISO Technical Committees (ISO/TCs) is an important measure which forms part of a major review of business. The aim is to align the ISO work programme with expressed business environment needs and trends and to allow ISO/TCs to prioritize among different projects, to identify the benefits expected from the availability of International Standards, and to help ensure adequate resources for projects throughout their development.

1.2 International standardization and the role of ISO

The foremost aim of international standardization is to facilitate the exchange of goods and services through the elimination of technical barriers to trade.

Three bodies are responsible for the planning, development and adoption of International Standards: ISO (International Organization for Standardization) is responsible for all sectors excluding Electrotechnical, which is the responsibility of IEC (International Electrotechnical Committee), and most of the Telecommunications Technologies, which are largely the responsibility of ITU (International Telecommunication Union).

ISO is a legal association, the members of which are the National Standards Bodies (NSBs) of some 164 countries (organizations representing social and economic interests at the international level), supported by a Central Secretariat based in Geneva, Switzerland.

The principal deliverable of ISO is the International Standard.

1.3 Scope of ISO/TC 211 Geographic information

Standardization in the field of digital geographic information.

This work aims to establish a structured set of standards for information concerning objects or phenomena that are directly or indirectly associated with a location relative to the Earth.

These standards may specify, for geographic information, methods, tools and services for data management (including definition and description), acquiring, processing, analyzing, accessing, presenting and transferring such data in digital/electronic form between different users, systems and locations.

The work shall link to appropriate standards for information technology and data where possible, and provide a framework for the development of sector-specific applications using geographic data.

1.4 Vision of ISO/TC 211 Geographic information

ISO/TC 211 wants to support a sustainably prosperous future by providing, in cooperation with others, a set of standards that enable better management of geographic information.

Business Environment of the ISO/TC

1.5 Description of the Business Environment

The following political, economic, environmental, technical, regulatory, and social dynamics describe the business environment related to the scope of this ISO/TC. They may significantly influence how the relevant standards development processes are conducted and the content of the resulting standards:

Introduction

Geographic information (GI) is used by governments, industries, and individuals, and is captured and maintained by various organizations in both the public and the private sectors. For example, GI is used to:

- plan for and recover from disasters,
- support land administration and surveying,
- support the delivery of goods, and
- show the best route to a restaurant.

For citizens, it's not about having access to the raw data, knowing the spatial analysis process used, or which specialized tools were used to produce the answer. It is about the knowledge that the data conveys and how it can help them – "will my house be flooded during the approaching rainstorm, and if so, where should I go to keep safe?"

Spatial Data Infrastructure (SDIs) have contributed to the wider availability of GI on the internet. The United Nations recognizes this approach as supporting the implementation of the Sustainable Development Goals (SDGs). The UN's Committee of Experts on Global Geospatial Information Management (UN-GGIM) has developed the Integrated Geospatial Information Framework (IGIF) which, like a mature SDI, recognizes that standards are a key component of a complex picture covering governance, policy, finance, data, innovation, partnerships, education, and engagement.

In this document, the terms geographic, geospatial, and spatial are used interchangeably.

As the web-based distribution of GI continues to evolve, sensors and citizens are continuously connected and providing data. Data is increasingly detailed, up to date and instantly accessible. This allows more useful information and knowledge to be provided by the automatic processing of standardized data.

Increasingly, GI is embedded within other domain systems, such as intelligent transport, construction, city management and national demographic systems. Recently, several of these domains are adopting the manufacturing industry concept of a ‘digital twin’ to consider city-scale digital copies of infrastructure, transport, and city-service/population models, enriched with live or near live sensor and community-sourced data. Using standards allows these to be integrated. Where appropriate, these can include ‘actuators’ allowing the digital control room to adjust the environment, through for example traffic signals or flood control gates.

In many countries and communities, the focus is now on integrating this GI with other data in a coordinated data management approach. Some public sector initiatives refer to this as e-government, digital government, or the digital transformation of public administration. While other initiatives talk of a geospatial knowledge infrastructure, geospatial information ecosystem, or a spatially enabled IT infrastructure – the term in the UN IGIF.

Whichever initiative is described, they closely follow the principles of FAIR – making data *Findable, Accessible, Interoperable, and Reusable* (Reference 3).

Purpose of Geographic Standards

Geographic information standards underpin data sharing and interoperability, providing a foundation for other domains which need to a digital representation of the world. As far as possible, GI standards build on standards from IT and other domains that are not specifically geographic in nature. Domain-specific standards then build on geographic standards and together they provide the pillars for interoperability as illustrated by examples in Figure 1. Many of the domain standards are developed by others.

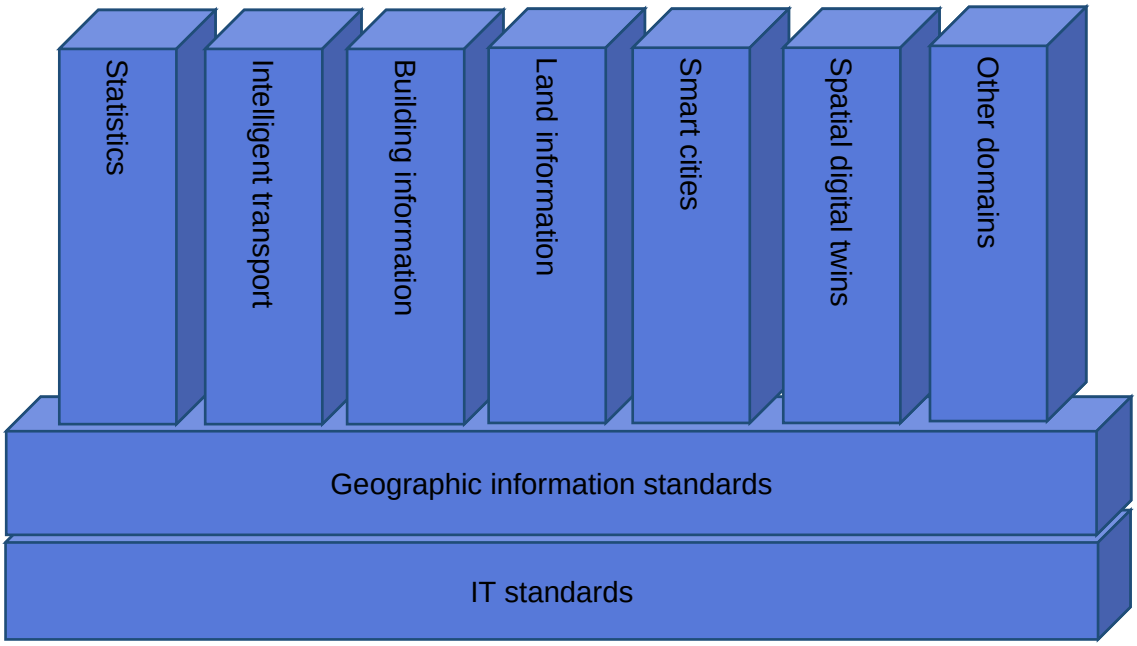

Figure 1 – The layers of standards

Standards enable interoperability through consistent definitions and structure for:

- data and metadata (semantics);
- encoding (syntax), and
- access and processing (services – known on the web as APIs[1]).

Together, these aspects make GI more findable, accessible, interoperable, and reusable.

For example,

- the Internet Engineering Task Force (IETF) standardizes the internet and some of the information transfers over it;
- the World Wide Web Consortium (W3C) standards cover most of the web environment;
- ISO/TC 211 and OGC provide standards specific to GI, such as the representation of location (geospatial schema), geodesy and coordinate reference systems, and profiles of generic IT standards;
- the World Meteorological Organization (WMO), International Hydrographic Organization (IHO) and Defence Geospatial Information Working Group (DGIWG) provide standards for their domains using this common geographic standards base.

Stakeholders

Many communities have a direct or indirect interest in producing and using GI standards, including:

[1] Application Programming Interfaces, specifically as a web architecture pattern

- regulators;
- government bodies at all levels,
- national mapping agencies, and increasingly national cadastral, transport, and statistical bodies,
- UN organizations such as Universal Postal Union (UPU) and UN Food and Agriculture Organization (FAO);
- academic communities;
- commercial data producers, both large and small;
- industry organizations such as the International Association of Oil and Gas Producers (IOGP);
- software manufacturers, both those whose software manages and creates GI, and those whose software consumes it;
- individual data users;
- professional interest organizations such as the International Society of Photogrammetry and Remote Sensing (ISPRS).

While these communities have different perspectives and priorities, they all benefit if GI is easy to produce, find, access, and use. In many cases, the desire is that GI should be as simple to use as non-geographic information (data).

Environment

There are a wide range of domains making use of GI, or which could benefit from using GI, for example:

- improving the sustainability of communities (smart cities, urban digital twins);
- enabling intelligent transport networks and autonomous vehicles;
- administering land and land use;
- enhancing digitalization in the construction industry;
- making and measuring progress towards the UN SDGs;
- measuring climate change;
- evaluating likely impacts of planned changes;
- statistics measuring aspects of society;
- planning for and responding to disasters.

Managing complex processes that occur in specific places, such as traffic, air quality, climate conditions, public safety, energy and water distribution are increasingly being supported by real-time monitoring from sensor web technologies, and geospatial representations using digital twins. The future direction will apply algorithms, AI and deep learning systems to support the operational management of smart cities and other dynamic spatial-data-rich environments. GI standardization enables a spatial base on which integrated knowledge systems can be developed.

In all cases, data sharing is carried out almost exclusively via the web. Data with geospatial elements are being created and published by individuals or organizations with little or no background in GI. It is therefore important that this ISO/TC continue to build its work on existing standards for IT, ethics, privacy, usability, and other domains.

Through UN-GGIM, the UN promotes the use of GI to address key global challenges and plays an increasing role in setting the agenda for the development of GI globally. With the OGC and IHO, ISO/TC 211 contributes standards which work within the programme of UN-GGIM.

The UN-GGIM document “A Guide to the Role of Standards in Geospatial Information Management” (often abbreviated as “the Standards Guide”), prepared cooperatively by ISO/TC 211, the OGC and the IHO, introduces a maturity model for developing the IGIF, and suggests appropriate standards at different levels, or tiers of maturity (Reference 1).

The first tier is about sharing maps over the web using Web Mapping Services – WMS/ISO 19128 (migrating to OGC API Tiles and Maps); the second tier describes the discovery (ISO 19115), access (ISO 19142 and 19168) and use of GI from multiple sources (perhaps using ISO 19136). In this way, the web can be used to host a global GI database in which data from different sources are connected, providing additional value to the existing data.

Spatial data is increasingly important in the transformation toward digital government or e-Government, as illustrated in Figure 2. Most public administration data have (or could have) a location component.

A potential pitfall in e-Government is to start immediately with database implementation and not follow a standardized approach for modelling, applying a conceptual modelling language, as defined in the package of standards developed in ISO/TC 211.

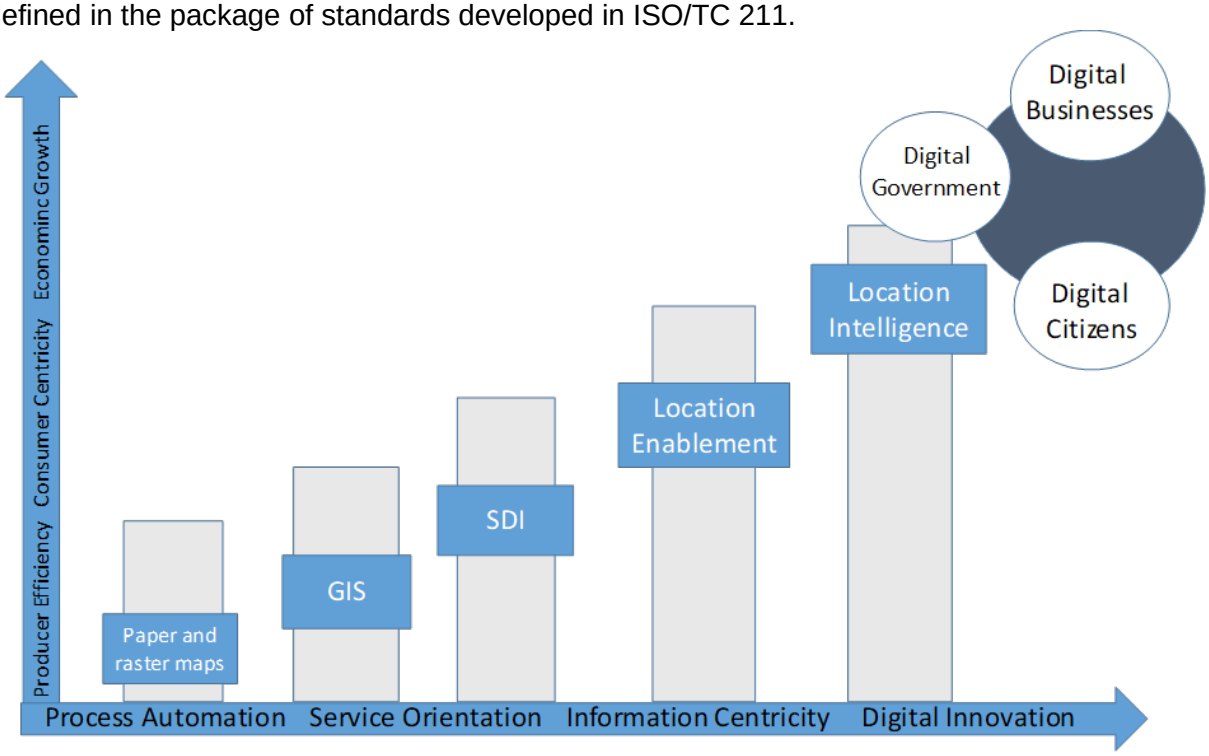

Figure 2 - Location Data underpins transformation towards digital government (from Reference 2)

Listening to these various external trends identifies several increasing technical pressures. To respond to these, ISO/TC 211 should:

- strive for standards that are easier to implement, for example simpler data models, modular standards with a simple core and optional extensions;
- consider new and emerging metadata standards which have simpler data models;
- consider ways to work with liaisons and other partners to assist implementers and those who commission standardized implementations;
- make clearer use of current IT standards and approaches, such as OpenAPI, data in JSON format, and semantic context using e.g., JSON-LD.

ISO is also evolving, and ISO/TC 211 is pleased to be involved in the ISO SMART and ISO Online Standard Development Tool projects to modernize the way that standards are developed and published.

1.6 Quantitative Indicators of the Business Environment

The following list of quantitative indicators describes the business environment in order to provide adequate information to support actions of the ISO/TC:

Implementation of standards and compliance with standards

Many of our standards are hidden in industry common practice, for example, any device or product that makes use of location coordinates derived from a GNSS device is likely to follow ISO 6709:2022 *Standard representation of geographic point location by coordinates*. Many, if not most, geospatial products are based on ISO 19107, *Geographic information -- Spatial schema*, a conceptual schema describing the spatial characteristics of geographic features and operations on them.

At each of our plenary meetings we have presentations by organizations who are using our standards.

ISO 19135 *Procedures for item registration* has been implemented by the ISO 19127 Geodetic Register which is recognized as foundational to the United Nations Global Geodetic Reference Framework. ISO 19135 has also been implemented by the IHO and the European Commission, and partially implemented by the Defence Geospatial Information Working Group, the WMO, and the ISO/IEC 9973 Items Register.

EuroGeographics surveys of national mapping and cadastral agencies in Europe found that the majority of the 28 organizations use one or more ISO/TC 211 standards to help manage the quality of their data. The European Commission's INSPIRE adopted a range of ISO/TC 211 and OGC standards. For example, ISO 19115/19139 compliant metadata records power the INSPIRE GeoPortal, at http://inspire-geoportal.ec.europa.eu/. Which catalogues over 63,000 datasets viewable through ISO 19128 *Web Map Servers* and a similar number available through ISO 19142 *Web Feature Services*. USA's data.gov currently contains over 16,000 Web Map Servers and over 3,600 Web Feature Servers (defined in ISO 19142). We are working with OGC to provide contemporary web standard equivalents, such as ISO 19168 Geospatial API for features as the "Open API version" of ISO 19142 Web Feature Service. INSPIRE is interested to adopt these.

The United Nations and World Bank have encouraged the use of ISO 19152 *Geographic information - Land Administration Domain Model*, in many developing countries. We are working with the IHO to harmonize their standard for maritime limits and boundaries with the ISO 19152 approach.

Compliance statistics are available for standards that have been developed and/or published in collaboration with OGC and the Universal Postal Union (UPU). Currently 157 products comply with OGC WMS / ISO 19128 and 359 products implement the standard but have not been certified (Reference 4). ISO 19160-4:2017, Addressing -- Part 4: International postal address components and template language, was jointly developed with the UPU. Currently, 58 countries have UPU S42 templates complying with this standard (Reference 5).

Several initiatives in the European Union may well increase uptake of standards for GI. This includes initiatives on open data, high value datasets and the Single Digital Gateway.

Benefits expected from the work of the ISO/TC

Easier access to GI supports improved delivery of public services, faster recovery from disasters, lower cost and environmental impact of transport and delivery of goods, and at a more personal level, knowing where to buy specific goods and acquire specific services.

The benefits and value of geospatial standards are described in the UN Standards Guide (Reference 1). We have documented user stories describing the use of GI standards to help progress with the UN SDGs. The United Nations COVID-19 Data Hub is an example of what can be achieved using a commercial implementation of several OGC – ISO/TC 211 standards.

General benefits are common to all areas of standardization, particularly in areas of information systems and technology:

- reduced development costs of systems and applications through following established procedures, e.g. ISO 19135-1 specifies procedures to be followed in establishing, maintaining, and publishing registers of unique, unambiguous, and permanent identifiers and meanings that are assigned to items of GI. Once a register is implemented, it can be used for many kinds of identifiers;
- improved reliability of systems through reuse of mature components, e.g. Web Map Service (ISO 19128) and a Web Feature Service (ISO 19142) or Geospatial API for Features (ISO 19168);
- reduced lock-in to individual proprietary suppliers;
- ability to interoperate between systems through use of common schemas and interfaces;
- increased understanding of data, through common terminology and standardized data definitions;
- ability to discover data resources through standardized metadata.

Some benefits are specific to GI:

- ability to integrate location data through use of standardized geospatial referencing systems;
- enabling a fuller understanding of the true nature of the changing shape of the earth.

Some benefits derive from ISO/TC 211’s provision of supplementary resources:

- improved data quality, through use of standardized quality measures;
- easier development of software systems and applications.

ISO/TC 211 provides the opportunity to formalize standards developed by industry bodies such as OGC and to harmonize the geospatial aspects of other standards such as those of the International Hydrographic Office and Universal Postal Union.

The specific application communities addressed by the TC, where benefits are achieved include:

- location based services;
- observation and measurement;
- imagery sensor technology;
- land administration and information systems;
- monitoring land cover and land use;
- addressing;
- transportation systems and self-driving vehicles.

Representation and participation in the ISO/TC

1.7 Membership

Countries/ISO member bodies that are P and O members of the ISO/TC 211.

https://www.iso.org/committee/54904.html?view=participation

1.8 Analysis of participation

Figure 3 shows the participation in ISO/TC 211.

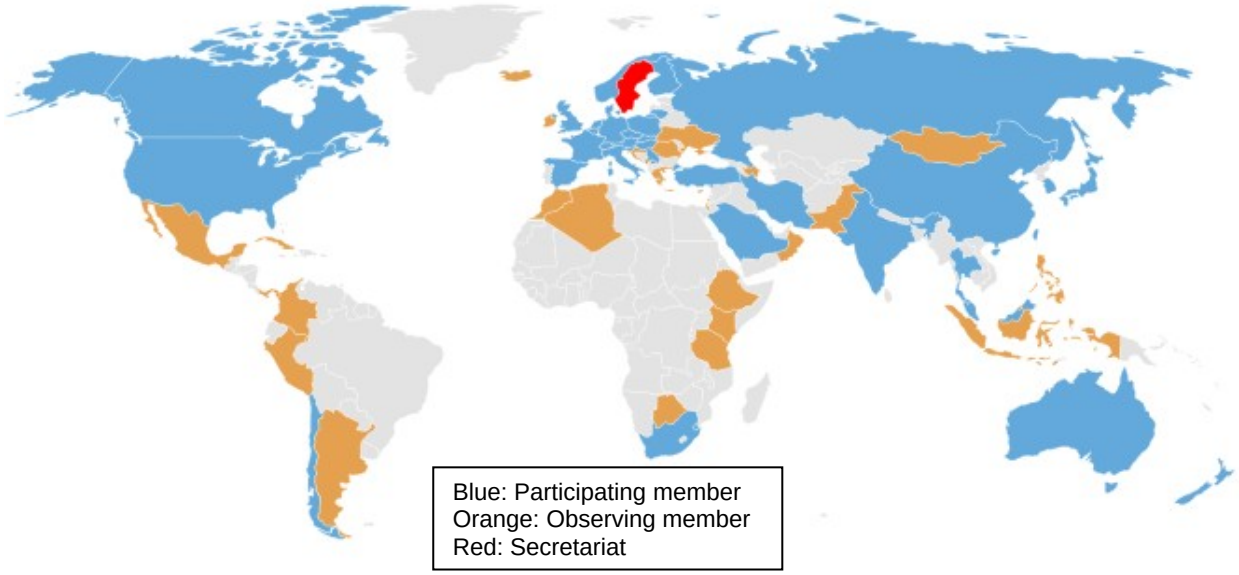

Figure 3 - The ISO/TC 211 world map (source: ISO web October 2022)

The technical committee would like to increase participation from Africa and Latin-America.

The imbalance in participation is mostly caused by lack of financial resources, but also, to some extent, human resources.

The imbalance is partially reduced by having regional organizations, like the Sahara and Sahel Observatoriy, the Pan American Institute of Geography and History, the UN Economic Commission for Africa (UNECA), the Regional Committee of the UN Global Geospatial Information Management Americas (UN-GGIM Americas), and the Regional Committee of the United Nations Global Geospatial Information Management for Asia and the Pacific (UN-GGIM-AP), participating as Category A liaisons.

The external liaisons to ISO/TC 211 include professional associations, international and regional institutions, industry and academic consortia.

As an effort to improve participation in the committee, ISO/TC 211 is specifically focusing on collaborating with the UN in a broad sense and continuing the good cooperation with other standards developing bodies.

Objectives of the ISO/TC and strategies for their achievement

1.9 Defined objectives of the ISO/TC

ISO/TC 211 develops and maintains a consistent set of International Standards supporting the activities described above. Standards developed by the committee have numbers between 19100 and 19199, with a few exceptions.

Where possible, the work is based on appropriate IT standards for information technology, and this means they require frequent update.

1.10 Strategies to achieve the ISO/TC's objectives

This section describes three strategic areas:

- collaboration;
- harmonization and maintenance of standards;
- outreach.

Collaboration

We seek to collaborate with IT standardization groups such as ISO/IEC JTC1 and W3C.

We collaborate with other geospatial standards development organizations, especially the OGC.

Increasingly we collaborate with domain organizations within and outside ISO, in areas such as:

- Smart cities (ISO/IEC JTC1/WG 11);
- urban Digital Twins (ISO/IEC JTC1/SC 41)
- Intelligent Transport Systems (Joint ISO/TC 211 - ISO/TC 204 WG: GIS-ITS);
- the construction industry (Joint ISO/TC 59/SC 13 - ISO/TC 211 WG: GIS-BIM interoperability;
- land and marine administration (International Federation of Surveyors, IHO);
- postal services (UPU)
- statistics.

We collaborate with those who develop domain standards to help them to build on our standards.

There are 38 external liaisons and approximately 25 internal ISO liaison committees to and/or from ISO/TC 211. In 2020 we prioritized and rationalized our liaisons, and we are working to strengthen corporation with key committees and organizations. Each liaison has a key contact group within ISO/TC 211; the Chairs Advisory Group oversees liaison relationships across the groups.

OGC is a voluntary consensus standards organization. Its focus is to define, document and test implementation standards for use with geospatial content and services. Many of these implementation standards are based on the conceptual (or abstract) models defined by ISO/TC 211 or in cooperation between OGC and ISO/TC 211. The collaboration between ISO/TC 211 and OGC has proven to be one of the most important liaisons, and it is formalized by the Cooperative agreement, with the overall purpose of aligning the working processes of the two organizations. A Terms of Reference for AG4 *Joint Advisory Group* (JAG) between ISO/TC 211 and OGC refines the relationship. In addition to collaboration on specific documents, we work with OGC to improve both organizations' management of UML content, and to develop and implement a modular approach to standardization.

AG13 *Land Cover and Land Use Advisory Group* advises in these particular areas; led by the UN FAO and working closely with WG6 and WG7.

The International Association of Geodesy appoints the chair of AG12 *Control Body for the ISO Geodetic Registry*, which will work more closely with the UN-GGIM Sub Committee on Geodesy.

Listening to the external groups, especially OGC, UN-GGIM and European initiatives, has contributed to the “environment” section in 2.1 above.

In the next two years we will:

- Continue working with OGC on API standards that build on OpenAPI and return JSON.
- Continue working with OGC and ISO SMART towards standards that are more “developer friendly”.
- Work with OGC to consider the complex relationships between our established metadata standards, other ISO metadata standards, and those of W3C and less formal groups that are gaining popularity especially in web based development.
- Continue working with FAO on standards for land cover and land use including publishing ISO 19144-2 *Land cover metalanguage* and ISO 19144-3 *Land use metalanguage*. This work directly supports the FAO work on the UN SDG 2 to “End hunger, achieve food security and improved nutrition and promote sustainable agriculture”;
- Continue working with the International Federation of Surveyors (FIG) and others revising and extending ISO 19152 *Land Administration Domain Model* (LADM) to include parts for taxation and validation, enhanced 3D and 4D support, land management and registration, and marine geo-regulation.
- Continue working with OGC and IHO in support of UN-GGIM, for example updating the Standards Guide (Reference 1).
- Work with a new UN Geodetic Centre of Excellence towards a sustainable ISO Geodetic Registry;
- Work with OGC and the World Geospatial Industry Council to document standards that support the development of urban digital twins.

Harmonization and Maintenance

ISO/TC 211 encourages Preliminary Work Item projects to formulate standardization requirements and to ensure involvement of relevant stakeholders in new areas of work before accepting NWIPs. In better understood situations, AG3 *Programme Maintenance Group* (PMG) facilitates discussion on a draft NWIP before formal submission; this also helps other members to understand the kind of expertise that the project team will need.

The maintenance groups in ISO/TC 211 coordinate harmonization among ISO/TC 211 standards, as well as with the GI community at large.

- The Programme Maintenance Group (PMG) monitors ISO/TC 211 standards, specifications and reports to ensure harmonization and consistency. It also monitors changing requirements and technological developments for alignment with the ISO/TC 211 programme of work.
- The Resources groups collaborate to ensure the maintenance and harmonization of terms, models, schemas, and ontologies for standards development projects within the TC. In 2022, this work was formalized with the appointment of a Registration Authority for these Harmonized Resources.
    - AG5 *Harmonized Model Maintenance Group* (HMMG) maintains the harmonized model to ensure that the UML models of ISO/TC 211 projects and standards and specifications are harmonized and conformant to requirements for UML modelling.

  - AG6 *Group on Ontology Maintenance* (GOM) ensures the development, maintenance and accessibility on the web of ontologies related ISO/TC 211 standards and specifications.
  - AG7 *Terminology Maintenance Group* (TMG) maintains and harmonizes all of the terminology within ISO/TC211, and publishes, with the help of National Body members, a multi-lingual glossary of terms – Geolexica;
  - AG10 *XML Maintenance Group* (XMG) ensures the development, maintenance and accessibility of XML implementation schemas from ISO/TC 211 standards and specifications;
- AG12 Control body for the ISO Geodetic Registry. The Control body for the ISO Geodetic Registry was established by ISO/TC 211 and consists of a group of geodetic experts that decide on the acceptability of proposals for changes to the content of the register.
- AG14 Registration management group has been set up to oversee consistency between the ISO Geodetic Registry and other registries that will be set up as further ‘registration authority standards’ are published

Outreach

The objective of outreach is to increase the uptake of standards and attract participation. The committee work and outreach activities should have impact on the quantitative indicators described in section 2.2 concerning adoption, referencing, and implementation of standards, although it could be a great challenge to measure these effects. This is coordinated by AG1 *Outreach*.

The plan for the coming few years is to ensure that:

- communication is appropriately targeted to a variety of audiences;
- liaison representatives have access to consistent and up to date information;
- experts and potential experts in the working groups are better equipped to participate;
- establish effective methods to strengthen the promotion and application of standards

Activities will again include:

- Biannual standards in action workshops;
- Maintaining a social media presence;
- Strengthening our relationship with regional and subject groups of UN-GGIM.
-

Factors affecting completion and implementation of the ISO/TC work programme

It has proven difficult to engage sufficient experts to be active in standards development projects. Through our liaison partners, we will take a sector based approach to promoting the value of this work to the individual expert, the expert's organization, and the wider community. Public sector organizations, large and small private sector businesses, and the academic community all have different value expectations.

The lack of resources also impacts the capability to meet societal and business needs in the sense that important standards projects cannot be initiated.

With such a comprehensive list of published standards, ISO/TC 211 faces a great challenge in the maintenance programme. Standards that should be revised for technical and business reasons, cannot move forward due to a lack of the resources to lead and participate in the work.

The strategic business plan addresses this factor in several ways: the global imbalance in participation is discussed in section 4, and the strategy section in 2.1 describes efforts in collaboration and building strategic alliances, as well as outreach.

Structure, current projects and publications of the ISO/TC

The defined scope of ISO/TC 211 is “standardization in the field of digital geographic information and geomatics. These standards may specify, for geographic information, methods, tools and services for data management (including definition and description), acquiring, processing, analyzing, accessing, presenting and transferring such data in digital/electronic form between different users, systems and locations. The work links to appropriate standards for information technology and data where possible and provides a framework for the development of sector-specific applications using geographic data.”

ISO/TC 211 has a longstanding cooperation with CEN/TC 287. The work is now concentrated within ISO/TC 211; standards are developed within the Vienna Agreement by default.

Information on ISO online

The link below is to the TC’s page on ISO’s website:

https://www.iso.org/committee/54904.html

Click on the tabs and links on this page to find the following information:

- About (Secretariat, Committee Manager, Chair, Date of creation, Scope, etc.)
- Contact details
- Structure (Subcommittees and working groups)
- Liaisons
- Meetings
- Tools
- Work programme (published standards and standards under development)

Reference information

Glossary of terms and abbreviations used in ISO/TC Business Plans

General information on the principles of ISO’s technical work

References in this document

(1) OGC, ISO/TC 211 and IHO, 2022. A Guide to the Role of Standards in Geospatial Information Management (often abbreviated to the Standards Guide), revised version adopted at the eleventh session of the UN Committee of Experts on GGIM, New York, NY, August 2021, 32p. http://ggim.un.org/UN-GGIM-publications/ available as a web document at http://standards.unggim.ogc.org/.

(2) European Location Interoperability Solutions for E-Government (ELISE), an action within Interoperability solutions for public administrations, businesses and citizens (ISA^2).

(3) https://www.go-fair.org/, from article in 2016 *Scientific Data*

(4) Source: http://www.opengeospatial.org/resource/products/stats

(5) Source: http://www.upu.int/en/activities/addressing/s42-standard/compliant-countries.html

Organizations referenced in this document

Defence Geospatial Information Working Group	DGIWG	https://dgiwg.org/
European Commission	EC	https://ec.europa.eu/
European Union	EU	https://european-union.europa.eu/
International Association of Geodesy	IAG	http://www.iag-aig.org/
International Association of Oil and Gas Producers	IOGP	https://www.iogp.org/
International Federation of Surveyors	FIG	http://www.fig.net/
International Hydrographic Organization	IHO	https://iho.int
International Society of Photogrammetry and Remote Sensing	ISPRS	https://www.isprs.org/
Internet Engineering Task Force	IETF	https://www.ietf.org/
Open Geospatial Consortium	OGC	http://www.ogc.org/
United Nations	UN	http://un.org/
Group of Experts on Geographic Information Management	UN-GGIM	https://ggim.un.org/
Food and Agriculture Organization	FAO	http://www.fao.org/
Universal Postal Union	UPU	www.upu.int
UN Economic Commission for Africa	UNECA	https://www.uneca.org/
World Bank		https://www.worldbank.org/
World Meteorological Organization	WMO	https://public.wmo.int/
World Geospatial Industry Council		https://wgicouncil.org/
World Wide Web Consortium	W3C	www.w3.org

Acronyms used in this document

API	Application Programming Interface
BIM	Building Information Model (Modeling)
ELISE	European Location Interoperability Solutions for E-Government
FAIR	Findable, Accessible, Interoperable, Reusable
GGRF	Global Geodetic Reference Frame
GIS	Geographic Information System
GIS-BIM	the interaction between GIS and Building Information Modelling
GIS-ITS	the interaction between GIS and Intelligent Transport Systems
GNSS	Global Navigation Satellite System

GOM	Group for Ontology Maintenance (ISO/TC 211)
HMMG	Harmonized Model Maintenance Group (ISO/TC 211)
IETF	Internet Engineering Task Force
IGIF	Integrated Geospatial Information Framework
IHO	International Hydrographic Organization
INSPIRE	Infrastructure for Spatial Information in Europe (EU)
ISA^2	Interoperability solutions for public administrations, businesses & citizens (EU)
ISO SMART	ISO/IEC joint programme investigation machine readable standards
IT	Information Technology
JSON	Java Script Object Notation, ECMA-404
JSON-LD	JSON for Linking Data
LADM	Land Administration Domain Model
OpenAPI	a community specification for web APIs, see https://www.openapis.org/
PMG	Programme Maintenance Group (ISO/TC 211)
SDG	Sustainable Development Goals
SDI	Spatial Data Infrastructure
TMG	Terminology Maintenance Group (ISO/TC 211)
UML	Unified Modeling Language
WMS	Web Map Service (OGC)
XMG	XML Maintenance Group (ISO/TC 211)
XML	Extensible Markup Language