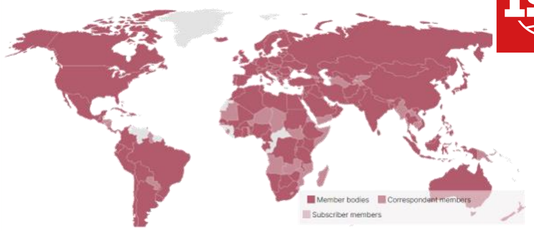
ISO's Technical Committee 211, Working Group 6 - Standardizing Imagery and Gridded Data

ISO's Technical Committee 211's Working Group 6 (WG6) standardizes geographic information, focusing on imagery, gridded data, coverage data, and associated metadata. With an emphasis on remote sensing and earth observation, WG6 includes aspects of remote sensing and earth observation related to remote sensing sensors, including geopositioning of the sensors, calibration and validation of the sensors and validation of the remote sensing data production stream from information capture to data encoding. These combined efforts are foundational in creating structured, multidimensional data for use in data cubes and other gridded data endpoints. Upstream structured grid data is foundational, providing consistency for downstream AI analytics. WG6's standards foster interoperability for use in diverse systems, enabling machines to process and interpret data over spatial, temporal, and spectral dimensions. Such work is critical in advancing open standards for interoperable, multi-dimensional analysis-ready data for future geospatial and Earth observation data analysis.

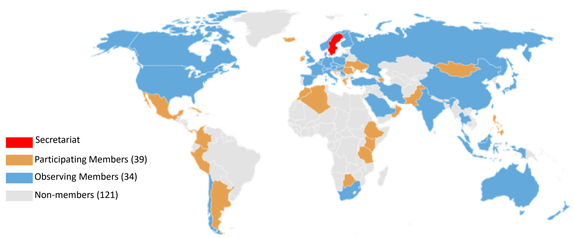
About

International Organization for Standardization



- The International Organization for Standardization (ISO) is an international standard development organization comprising representatives from member countries' national standards organizations.
- Formed on 23 February 1947. Headquartered in Geneva (Switzerland) and works in 170 countries as of 2024.
- Published over 25,200+ international standards covering almost all aspects of technology and manufacturing.
- 832 technical committees and sub-committees are responsible for standards development[1].

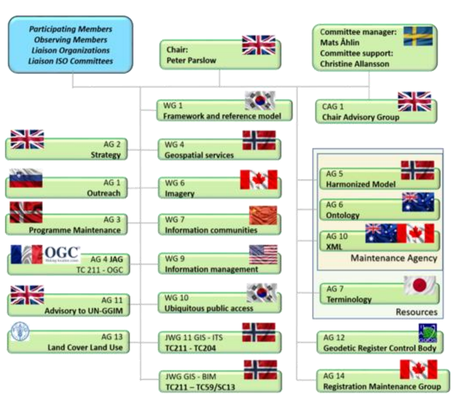
ISO/TC 211 - Geographic information/Geomatics



- ISO Technical Committee, TC 211, was formed in 1994 to establish standards for creating object-based data related to geographic location or phenomena that are directly or indirectly associated with a location relative to the Earth.
- **Scope** — These standards specify geographic information, methods, tools and services for data management (including definition and description), acquiring, processing, analyzing, accessing, presenting and transferring data in digital/electronic form between different users, systems and locations[2].

ISO/TC 211 organizational structure

ISO/TC 211 standards are written in working groups (WG) and joint working groups (JWG), each with a specific focus. The committee work is then supported by various advisory groups (AG)[3]. The ISO TC/211 structure is shown below:



About Working Groups

WG 1 Framework and reference model: Schema rules, language

WG 4 Geospatial services: geospatial services, registers, conformance and testing, encoding, portrayal (OGC tight relationship, e.g., web services)

WG 6 Imagery: Imagery, Gridded and Coverage data and related metadata (e.g., 191195-2, extension for acquisition and processing)

WG 7 Information communities: modelling of geographic features, including the documentation of geographic features in feature catalogues, dictionaries, and registers (e.g., 19115-1, fundamentals.)

WG 9 Information management: storage, retrieval, distribution and structure of data in support of any and all geospatial applications (19131: data product specifications, 19127: Geodetic register.)

WG 10 Ubiquitous public access: providing users seamless access from anywhere and at any time to geographic information and services, smart device architecture (e.g., ISO 19171, Handling urban objects in smart cities)

JWG 11 GIS - ITS: Joint Working Group between ISO/TC 211 and ISO/TC 204 (Intelligent transport systems).

For more details, please visit the ISO/TC 211 site[4]

WG 6: Imagery

Approximately 250+ members worldwide from various National Standards Bodies, such as the following:

Chile: INN - Instituto Nacional de Normalización

WG6 addresses standardization in Geographic Information concerning Imagery, Gridded and Coverage data and related metadata. The working group standardized aspects of remote sensing and earth observation related to remote sensing sensors, including geopositioning of the sensors, calibration and validation of the sensors and validation of the remote sensing data production stream from information capture to data encoding. Standardization includes the structure of grids, the definition of coverage geometry and functions, and the encoding of imagery, griddling, and coverage data and metadata in various encoding formats[4].

Liaison relationships[5]

Next ISO/TC 211 Meeting

ISO/TC 211 58th Hybrid Plenary meeting, Chiswick, London, UK [11]

June 24th – June 28th

Join us this June for TC 211's next Plenary week, where we will discuss the progress of current standards and review proposed standards.

References

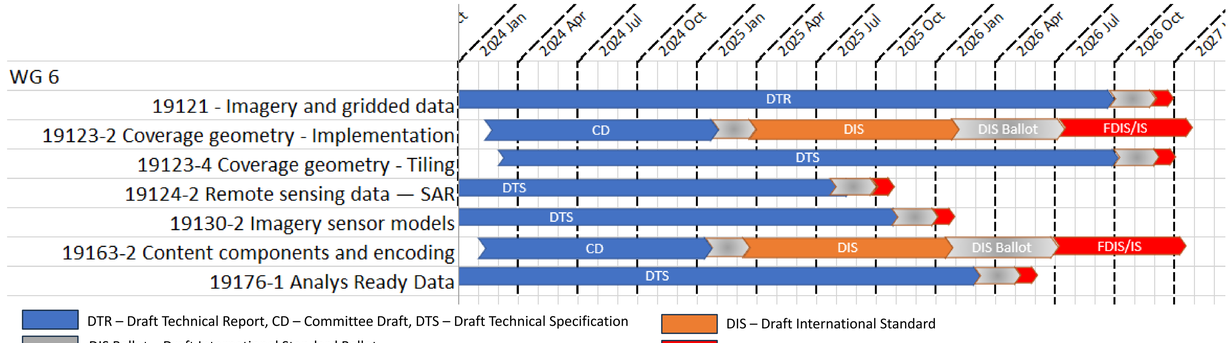
1. www.iso.org
2. https://committee.iso.org/home/tc211
3. https://committee.iso.org/sites/tc211/home/about/structure.html
4. https://committee.iso.org/sites/tc211/home/about/working-groups.html
5. https://committee.iso.org/sites/tc211/home/about/external-liaisons-1.html
6. https://committee.iso.org/sites/tc211/home/projects/projects---graphic-overview.html
7. https://committee.iso.org/sites/tc211/home/projects/projects-per-working-group.html
8. https://commons.wikimedia.org/wiki/File:FP_Satellite_icon.svg
9. https://iconduck.com/icons/256497/data-raster
10. https://www.pngegg.com/en/png-tfyst
11. https://committee.iso.org/sites/tc211/home/plenary-meeting/58th-plenary-meeting-chiswick.html

Imagery Standards

Working Group 6 of ISO TC/211 is responsible for the development of Imagery related standards and reports. The working group has been developing and maintaining over 20+ standards / technical specifications and technical reports with the generous contributions and participation of experts from 30+ Countries and Liaisons. The standards undergo routine systematic reviews to ensure the relevance of the documents. One such document which is currently being revised is ISO/TR 19121, which is a Technical Report reviewing the manner in which raster and gridded data is currently being handled in the Geomatics community.

WG 6 – Standards Under Development

There are currently 3 new standards / technical specifications being developed, and 4 documents being revised under WG 6 all with assigned project leaders and nominated project teams. A list of all standards under development can be seen below along with the scheduled timelines. More projects may be introduced in the upcoming ISO TC/211 Plenary week in June 2024 (see below for more details)[6].



WG 6 – Standards[7]

Working Group 6 of ISO/TC 211 has been instrumental in developing several key standards related to imagery and gridded data. The published standards by this working group encompass a variety of specifications aimed at improving the interoperability and effectiveness of geographic information systems (GIS) and related applications. WG 6 deals with a variety of standards (upstream and downstream) ranging from the calibration and validation of remote sensing imagery sensors (19159) to standards pertaining to analysis ready data (19176) for the users. A few of the standard series under WG6 are described below:

[8]

Calibration and validation of remote sensing imagery sensors and data:
19159 Series
- Part 1: Optical sensors
- Part 2: Lidar
- Part 3: SAR/InSAR
- Part 4: Space-borne passive microwave radiometers

[9]

New Series being developed:
19124 (Calibration and validation of remote sensing data and *derived products)*
- Part 1: Fundamentals
- Part 2: SAR
- More parts to be developed, i.e. Ultraviolet, visible, and near-Infrared instruments and also non-imaging sensors (microwave radiometers, microwave altimeters, magnetic sensors, gravimeters, Fourier spectrometers, laser rangefinders, and laser altimeters)

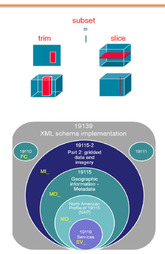
[10]

New Series being developed with OGC and other partners: 19176 Series (Analysis Ready Data)
- Part 1 -- ARD framework and fundamentals
- More parts to be developed, EO ARD for Land, EO ARD for Ocean, EO ARD for Atmosphere, Earth System Model ARD, Geospatial ARD service, etc.

Upstream (the science) — **Sharing Earth Observation Data** — **Downstream (the user)**

Coverages:
- 19123-1, 19123-3 (Fundamentals, Processing)
  - OGC Abstract Topic 6: Schema for coverage geometry and functions, Web Coverage Processing Service (WCPS) Standard

Metadata:
19115-2 (Acquisition and Processing), the extension of ISO 19115-2 for images (satellite imagery)



Coverages:
- 19123-2: Coverage implementation schema
  - OGC Coverage Implementation Schema (CIS) – Referenceable Grid Coverage Extension v1.1
- 19123-4: Tiling Schema (under development)
  - OGC WCS and or OGC API - COVERAGES

Metadata:
19115-3: XML schema implementation for fundamental concepts
MI_ Metadata for Imagery (added in ISO 19115-2 and replace the root MD)

Contact us

Standards are developed by the people who need them – that could mean you.

Working Group 6 includes experts from both national standards bodies and industry.

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