ISO Geodetic Registry and related ISO/TC 211 geodetic standards

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Outline

• Overview: ISO Technical Committee (TC) 211 – Geographic Information and Geomatics

• ISO Geodetic registry

• TC 211 Geodetic standards
  – 19111, 19127 and 19161

• Other TC 211 geodetic related or support standards
  – 6709, 19116, 1191130, 19135, 19159 and 19162
ISO/TC 211
Geographic information/geomatics

➢ ISO Technical Committee (TC) 211, Geographic information/Geomatics, is one among over 200 ISO technical committees working on development and maintenance of a variety of standards.

➢ TC 211 is developing a suite of standards for geographic and geospatial information that forms a basis upon which geomatics – the modeling of the Earth – can be performed.

➢ The ISO process for standardizing is an open, consensus based public method for establishing standards.
ISO/TC 211 provides …

… a **structure for representing geographic information** in a consistent, standardized manner.

It includes the **geodetic framework** for identifying where information was collected for use in modeling, representing, encoding and disseminating spatial information.
The ISO Geodetic Registry (Part 1 of 2)

➢ A database (register)
   - Defines global and regional geodetic reference frames
   - Provides transformations between geodetic reference frames
   - Must conform to ISO standards
   - Online information system

➢ Benefits
   - Meets the vision of an accurate, sustainable and accessible Global Geodetic Reference Frame (GGRF) to support science and society
   - Sharing of international, national and regional reference frame definitions and transformations
The ISO Geodetic Registry (Part 2 of 2)

➢ Control Body (CB)
   ▪ CB approves the content of the Registry
   ▪ Validates information using authoritative sources
   ▪ Membership - geodetic experts nominated by:
     ▪ TC 211 member countries (currently 15): Australia, Canada, China, Denmark, France, Germany, Japan, New Zealand, Norway, Republic of Korea, South Africa, Spain, Sweden, United Kingdom and USA
       ▪ Nominations pending: Russia and India
     ▪ Liaison organizations: FIG, IAG, IOGP and PAIGH (South America)
     ▪ Chair, Mike Craymer, Canada; Larry Hothem, Vice-Chair
       ▪ Appointed by the IAG

➢ Public release is pending
   ▪ Populated with initial set of most global and regional reference frames and transformations
ISO/TC 211 Geodetic standards

- **19111** – Referencing by coordinates
- **19127** – Geodetic register
- **19161** – Geodetic references – Part 1: The International Terrestrial Reference System (ITRS)
19111 (2018) – Referencing by coordinates

- Data model of how coordinates, dynamic and static reference frames, geoid-based vertical datums, and transformations are represented.
  - modern dynamic 3D reference frames
  - modern geoid-based vertical datums
  - reference frames defined as transformations from other reference frames (e.g., from ITRF)
  - uses modern terminology (e.g., such as used in the IERS Conventions)

- Since initial standard published in the 1990s, adopted by many countries and organizations –
  - Used by GIS/geomatics industry, mapping agencies and academic institutions

- ISO Geodetic Registry must conform to this standard

- Project team lead: Roger Lott, UK and member Control Body, ISO Geodetic Registry
19127 (2018) – Geodetic Register

➢ **Defines** the management and operation of the ISO Geodetic Registry and identifies the required data elements that conforms with 19111.

➢ **Publication** is pending

➢ **Project team lead:** Patrick Vorster, South Africa and member Control Body, ISO Geodetic Registry
19161-1 – Geodetic references – Part 1: The International Terrestrial Reference System (ITRS)

Standard provides basic information and requirements related to the:

➢ ITRS, specifically its definition, realizations and access.

It:

➢ endorses definitions & terminology adopted by International Union of Geodesy and Geophysics (IUGG), the International association of Geodesy (IAG) and the International Astronomical Union (IAU)

➢ describes various realizations (such as ITRF, WGS-84, NAD, etc.)

➢ provides the required methods of realizing the ITRS.

➢ describes various ways of getting positions expressed in a realization of the ITRS

➢ Project team lead: Claude Boucher; Thierry Gattacceca, Technical editor & member Control Body, Geodetic registry
Other TC 211 geodetic related and associated standards

➢ **6709:2008** - Standard representation of geographic point locations by coordinates (revision underway - led by Japan)

➢ **19116:2004** - Positioning services (revision underway - led by Japan)
  ➢ **Associated standards (references 19111 and 19161):**
    ➢ **19130** - Imagery sensor models for geopositioning – optical, SAR, InSAR, LiDAR and SONAR
    ➢ **19135-2** - Procedures for item registration
    ➢ **19159** - Calibration and validation of remote sensing imagery sensors – optical, LiDAR, SAR/InSAR and SONAR
    ➢ **19162** - Well-known text representation of coordinate reference systems
Information about ISO/TC 211 standards is available at:

https://www.iso.org/committee/54904.html
https://committee.iso.org/home/tc211

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Thank You