United Nations World Geospatial Information Congress
联合国世界地理信息大会

Standards That Make Innovation Possible

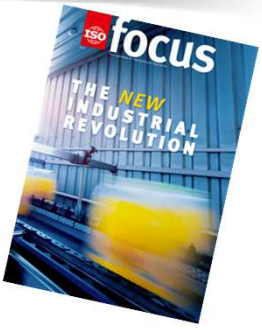
Digital Silk Road and International Partnerships

20 November 2018, Deqing, Zhejiang Province, China

ISO/TC 211

International Standardization

ISO is an independent, non-governmental international organization with a membership of 162 national standards bodies



ISO has published 22407 International Standards and related documents, covering almost every industry, from technology, to food safety, to agriculture and healthcare.

ISO/TC 211

TC 211 – the technical committee for geographic information - has published 80 standards

The session agenda

- Moderator: Mr. Olaf Magnus Østensen, Norwegian Mapping Authority, Norway

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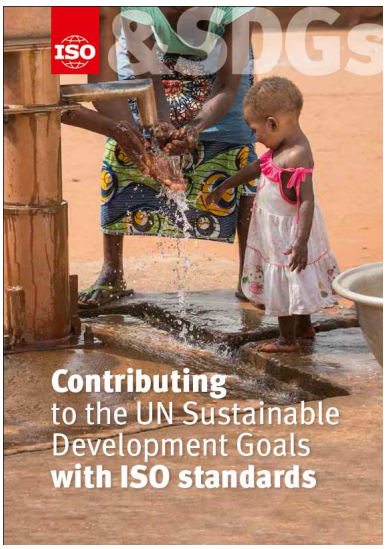
  ISO in general and Geodesy Standards
- Mr. Christopher Body, ISO/TC 211 Land administration
  Land Administration Standards and its revision program
- Prof., Dr. Serena Coetzee, University of Pretoria
  International Addressing Standards
- Mr. Trond Harald Hovland, ITS Norway
  ITS and GIS Standards to support autonomous driving

ISO is devoted to support the SDGs

ISO
When the world agrees



957 ISO standards support SDGs

957 ISO standards identified to be directly applicable to the various SDGs

ISO – Great things happen when the world agrees

Image: digitalresetla.com

By offering a solid base, a common language and a layer of confidence, ISO standards help our greatest minds to concentrate on pushing the limits and taking us to new places.

Inspiring Innovators

By offering a solid base, a common language and a layer of confidence, ISO standards help our greatest minds to concentrate on pushing the limits and taking us to new places.

Standards are stable platforms for innovation, standards save a lot of time and effort, which helps us to advance faster. But more importantly, standards make it easier for products to be compatible with existing technology, and to be introduced and accepted faster into new markets.

Examples of relevance for the SDGs

2 ZERO HUNGER

ISO 19144-1:2009, *Geographic information -- Classification systems -- Part 1: Classification system structure*
ISO 19144-2:2012, *Geographic information - Classification systems -- Part 2: Land Cover Meta Language (LCML)*

11 SUSTAINABLE CITIES AND COMMUNITIES

ISO 19152:2012, *Geographic information -- Land Administration Domain Model (LADM)*
ISO 19160-1:2015, *Addressing -- Part 1: Conceptual model*
ISO 19160-4:2017, *Addressing -- Part 4: International postal address components and template language*

13 CLIMATE ACTION

ISO 19144-1:2009, *Geographic information -- Classification systems -- Part 1: Classification system structure*
ISO 19144-2:2012, *Geographic information - Classification systems -- Part 2: Land Cover Meta Language (LCML)*

14 LIFE BELOW WATER

ISO 19152:2012, *Geographic information -- Land Administration Domain Model (LADM)*

15 LIFE ON LAND

ISO 19152:2012, *Geographic information -- Land Administration Domain Model (LADM)*
ISO 19160-1:2015, *Addressing -- Part 1: Conceptual model*
ISO 19160-4:2017, *Addressing -- Part 4: International postal address components and template language*

17 PARTNERSHIPS FOR THE GOALS

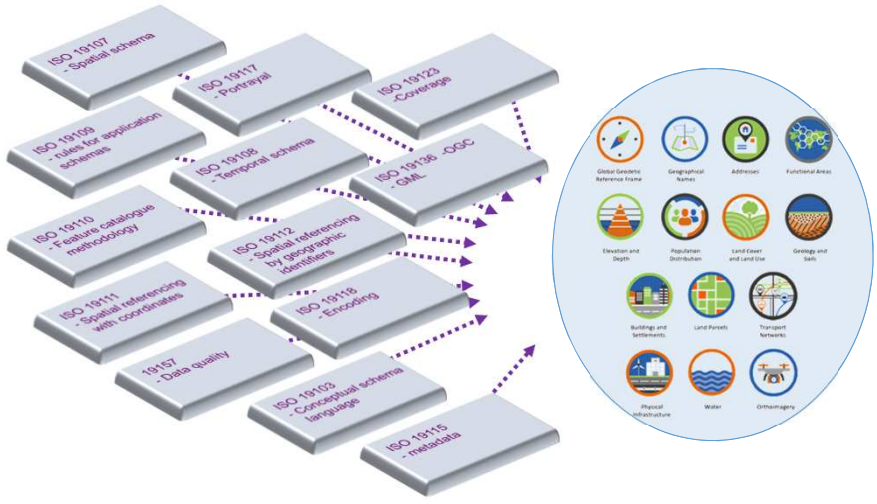
All other ISO/TC 211 standards

Fundamental datasets

*'an urgent need for a set of **global fundamental geospatial data themes** that could be harmonized in order to enable the measurement, monitoring and management of sustainable development in a consistent way over time and to facilitate evidence-based decision-making and policy-making'*

- UN-GGIM has identified fundamental datasets

ISO 19100-series – the basis for describing geospatial information



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Geodesy Standards

”A global geodetic reference frame for sustainable development”

Photo: Kyoung-Soo Eom

UN General Assembly resolution A/RES/69/266

UN-GGIM Sub-committee on Geodesy

Geodetic survey in Mozambique. Photo: Rui Fernandes

Flood in Jamaica. Photo: National Spatial Data Management

Shrinking Aral Sea

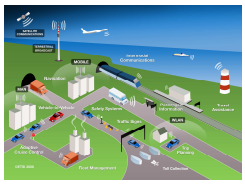
Tsunami disaster area in Japan. Photo: Geospatial Information Authority

Earthquake damages in Japan. Photo: Geospatial Information Authority

Greater need for precise positioning

Autonomous surface vessels

Autonomous cars


ITS in general

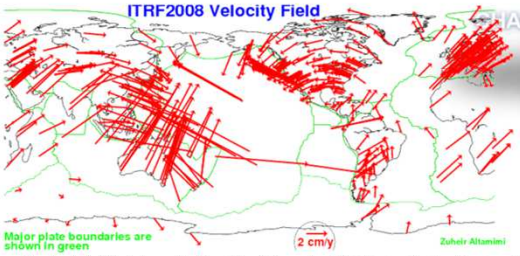
Precision agriculture

Drone delivery


Smart and resilient cities

The dynamic world

- Crustal plate movement
- Earthquakes
- Sea rise
- Spinning earth
- …



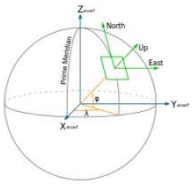
The Geodesy Standards

- ISO 19161 Geographic information -- Geodetic references -- Part 1: The international terrestrial reference system (ITRS)

  ESSENTIAL FOR THE CONSISTENT REALIZATION OF THE ITRF AND GGRF

- ISO 19111 Geographic information -- Spatial referencing by coordinates

  THE STATE-OF-THE-ART DESCRIPTION AND MODEL FOR POSITIONS



The Geodesy Standards

- ISO 19127 Geographic information -- Geodetic register

THE AUTHORIZED INTERNATIONAL REGISTER OF GEODETIC CODES AND PARAMETERS

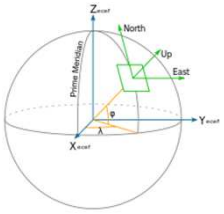
- CURRENTLY MORE THAN 2400 ITEMS

https://registry.isotc211.org ***(soon to be fully launched)***

The Geodesy Standards

- ISO 6709 Standard representation of geographic point location by coordinates
- ISO 19162 Geographic information -- Well-known text representation of coordinate reference systems

THE STATE-OF-THE-ART ENCODING OF COORDINATE REFERENCES



ISO 19161 Geographic information -- Geodetic references -- Part 1: The international terrestrial reference system (ITRS)

- **Recommendations**
- The UN-GGIM Sub-committee on Geodesy agrees that the ITRS, through its numerical realization, the ITRF, be adopted for geospatial and scientific positioning applications. This adoption may be achieved by closely aligning to

Recognizing the development of ISO19161-1 document on the ITRS, currently at the Draft International Standard (DIS) level, the Sub-Committee urges member states to record their national reference frame details, and its alignment to the ITRF, in the ISO Geodetic Register

systems, the GNSS Providers have aligned their GNSS-specific reference frames to the ITRF, such as WGS84 for GPS, PZ-90 for GLONASS, CGCS2000 for Beidou, the Galileo Terrestrial Reference frame (GTRF) for Galileo, and the Japanese Geodetic System (JGS) for QZSS. Regional entities of UN-GGIM and of the International Association of Geodesy (IAG) rely on and adopt the ITRF for their operational geodesy and geospatial applications, as well as for the alignment of their regional geodetic reference frames.