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THE NATIONAL GEOSPATIAL CONFERENCE



Collaboration, Innovation and Resilience: Championing a Digital Generation

Brisbane, Australia 6–10 April

FIG Standards Network

David Martin, ESRF, Standards Network Chair

European Synchrotron Radiation Facility

6-10 April 2025
FIG Standards Network
ESRF
The European Synchrotron Radiation Facility



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Standards Network responsibilities and activities

Promote Standards

- Liaison with standards bodies and NGOs
- Ensuring lead contacts to Technical Committees
- Proposing priorities on FIG's standardisation activities
- Advising and providing information on standards to FIG members

blow

What is a standard?

Generally, a standard is created to **fulfil a need**. For example:

- assure safety of products,
- ensure that products and materials are fit for their purpose,
- promote and ensure the interoperability of products and services,
- facilitate trade by removing trade barriers,
- promote a common understanding of a product or service.

A standard will succeed when it satisfies the needs, requirements and expectations of its **stakeholders**.





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Main FIG standards

- In principle, the Standards Network has members from all of the FIG Commissions
→ some commissions are more active than others.
Key items presently linked to the Standards Network are:
 - ISO/TC 172 SC6 Survey Instrument Standards,
 - ISO/TC 211 Geographic Information/Geomatics,
 - ISO TC 307 Blockchain and distributed ledger technologies.
- Non-ISO type Standards initiated by and/or which FIG is deeply involved:
 - International Property Measurement Standards Coalition,
 - International Land Measurement Standards Coalition,
 - International Construction Measurement Standards.
- OGC, IHO ...



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ISO/TC 211 Geographic information/Geomatics

SUSTAINABLE DEVELOPMENT GOALS

This committee contributes with 132 standards to the following Sustainable Development Goals:



100

Published ISO standards*

32

ISO standards under development*

38

Participating members

37

Observing members



Secretariat - Swedish Standards Institute
Participating members
Observing members

Scope

Standardization in the field of digital geographic information, which 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, including methods, tools, and services for data management.

ISO/TC 172/SC 6 Geodetic and surveying instruments

SUSTAINABLE DEVELOPMENT GOALS

This committee contributes with 19 standards to the following Sustainable Development Goals:

4 9 11

14

Published ISO standards*

5

ISO standards under development*

12

Participating members

12

Observing members



Secretariat - Swiss Association for Standardization
 Participating members
 Observing members

Scope

Standardization of terminology, requirements and test methods for geodetic and surveying instruments, their components and accessories.

Standards Network meeting Monday 14:00

- Presentation and discussion of the status of activities in the Standards Network covering:
 - ISO/TC 211 Geographic Information/Geomatics,
 - ISO/TC 211/Advisory Group 12, Control body for the ISO geodetic registry (ISOGR) → **Nic Donnelly (15 minutes)**
 - ISO/TC211 19152 LADM Edition II → **Peter van Oosterom (15 minutes)**
→ FIG publication No. 84 *The Land Administration Domain Model An Overview*
 - Hydrographic surveying standards → **Geoff Lawes (15 minutes)**
 - International Property Measurement Standards IPMS } → **James Kavanagh (15 minutes)**
 - International Construction Measurement Standards }
 - ISO/TC 172 SC6 Survey Instrument Standards } → **David Martin (15 minutes)**
 - Follow-up on standards for Survey by Drones }
 - AOB

ISO TC172 SC6 Survey Instrument Standards

- ISO 12858 *Series Ancillary devices for geodetic instruments*
 - ISO 12858-1:2014 Part 1: Invar levelling staffs
 - ISO 12858-2:1999/Amd 1:2013 Part 2: Tripods
 - ISO 12858-3:2005 Part 3: Tribrachs
- ISO 16331 *Series Laboratory procedures for testing surveying and construction instruments*
 - ISO 16331-1:2017 Part 1: Performance of handheld laser distance meters
 - ISO/AWI 16331-2 Part 2: Terrestrial laser scanner
- ISO 17123 *Field procedures for testing geodetic and surveying instruments*
 - ISO 17123-1:2014 Part 1: Theory
 - ISO 17123-2:2001 Part 2: Levels
 - ISO 17123-3:2001 Part 3: Theodolites
 - ISO 17123-4:2012 Part 4: Electro-optical distance meters (EDM measurements to reflectors)
 - ISO 17123-5:2018 Part 5: Total stations
 - ISO 17123-6:2012 Part 6: Rotating lasers
 - ISO 17123-7:2005 Part 7: Optical plumbing instruments
 - ISO 17123-8:2015 Part 8: GNSS field measurement systems in real-time kinematic (RTK)
 - ISO 17123-9:2018 Part 9: Terrestrial laser scanners
 - ISO 17123-8:2015 Part 11: Part 11: GNSS instruments
- ISO 9849 *Series Geodetic and surveying instruments*
- ISO 9849:2017 Vocabulary

Surveying with Drone systems

- At the Orlando working week, FIG explored creating a standard for drone surveying, focusing on three key areas:
 - technical details (site planning, data acquisition, processing, and map production),
 - operational best practices (sensor choice, georeferencing, and data processing), and
 - outreach/communication.
- We thought a standard could take the form of:
 - a FIG publication,
 - a consortium-produced standard, or
 - an ISO standard.
- There were two sessions:
 - The first session introduced the topic,
 - the second featured a panel of experts.



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ISO/WD 17123-10 Optics and optical instruments

Field procedures for testing geodetic and surveying instruments Part 10: UAV photogrammetry systems

Later we discovered ISO is working on a standard that comes close to addressing our key requirements/concerns

ISO 17123-10 outlines test procedures for assessing the validity of workflows using UAV photo measurement systems (drones) for surveying tasks like land surveying, earthworks monitoring, structural measurements, and volume calculations. The tests primarily verify if a specific UAV system (including the camera and software) meets accuracy requirements for the intended survey task, based on pre-planned conditions. These procedures are designed to quickly evaluate whether the system can achieve the required accuracy, but they are not for calibrating UAV systems. Both the full and simplified procedures require a minimal set of ground markers with known coordinates as control and check points.

The standard is set to be published within the next two years and looks promising. FIG supports TC172 SC6 standards for surveying instruments and believes this approach should be followed for this standard as well...



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Global Challenges
Standards Network
Consensus
Purpose
People
Governance
Society
Society
Society
Partnership
Communication
Action
People clarity
Planet ISO
SOCIETY
STANDARD
GLOBALLY
CHALLENGES
QUALITY
COURAGE

