

FIG STANDARDS NETWORK REPORT TO THE 2016 FIG GENERAL ASSEMBLY

David Martin 29 February 2016

Standards Network Terms of Reference:

The Standards Network was formed in 2002. It works within Commission 1 and consists of representatives from each of FIG's Commissions. The terms of reference of the Network set out in the FIG Guide on Standardisation are:

- Building and maintaining relations with the secretariats of standardisation bodies,
- Proposing priorities on FIG's standardisation activities, including advising the Council on priorities for spending,
- Setting up necessary Liaison relationships with standardisation bodies,
- Ensuring that lead contacts to Technical Committees etc are in place,
- Maintaining an information flow on standardisation to FIG members, including through the FIG website, and more directly to relevant Commission Officers,
- Maintaining this Guide, and related material on the FIG website,
- Working with other NGOs, within the framework of the MOUs signed by the Council,
- Advising FIG's officers and members on standardisation activities as necessary.

FIG 2016 Christchurch Working Week Standards Network Meeting

The last Network meeting was during the 2014 FIG Congress in Kuala Lumpur. ***The Standards Network is scheduled to meet in Christchurch on Thursday 5 May at 16:00-17:30.***

ISO/TC 211 Geographic Information/Geomatics

Nic Donnelly of Land Information New Zealand (LINZ) is the lead liaison from FIG to ISO/TC 211.

ISO/TC211 is involved with Standardization in the field of digital geographic information. It 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 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 TC211 Liaison Report – March 2016

Nic Donnelly

Background

The International Organization for Standardization (ISO) develops and publishes standards in a comprehensive range of subject areas. Responsibility for a particular subject area resides with a Technical Committee (TC), comprising representatives of national standards bodies, liaisons from other international organizations and subject matter experts. The technical committee responsible for Geographic Information/Geomatics is TC211. FIG is one of the organizations invited to appoint a special liaison to TC/211. Currently, this role is undertaken by Mr Nic Donnelly, of New Zealand. ISO/TC 211 also appoints a liaison to FIG, a role which is currently vacant.

Liaison Involvement

There were two meetings of the ISO technical committee in 2015; Southampton (June) and Sydney (December). Nic Donnelly attended Sydney meeting. The next meeting is in Norway in June 2016.

The main direct involvement that FIG currently has is with the Control Body for the ISO Geodetic Registry, of which Nic Donnelly is a member.

In general the role of the liaison is to identify work items of interest and alert interested parties, who may then get directly involved through their national standards body.

Key Work Items of Interest to FIG

Geodetic Registry

This project aims to establish a registry for geodetic codes and parameters. The first phase of software development is complete and is being tested. This testing has identified enhancements which are currently being made. Improvements are steadily being made and the Norwegian Mapping Authority will host the software on their servers. It is anticipated that an initial public release will occur later in 2016.

The process of entering data into the registry has highlighted potential limitations with the existing ISO19111 standard, particularly relating to kinematic reference frames, which has led to a new work item proposal to revise this standard.

FIG was invited to nominate someone for the Control Body of the registry. The Control Body has responsibility for the management and strategic direction of the registry, on behalf of ISO/TC211. Nic Donnelly is the principal representative, with Volker Schwieger of Germany as alternate. Larry Hothem, who is also active in FIG, is Vice-Chair of the Control Body, which is chaired by Mike Cramer of Canada.

Review of ISO/TS 19127:2005 Geodetic codes and parameters

“ISO TS 19127:2005 defines rules for the population and maintenance of registers of geodetic codes and parameters and identifies the data elements, in compliance with ISO 19135 and ISO 19111, required within these registers. Recommendations for the use of the registers, the legal aspects, the applicability to historic data, the completeness of the registers, and a mechanism for maintenance are specified by the registers themselves”

A decision was made in Shenzhen to review this technical specification and turn it into an international standard. This is usual practice, as technical specifications are not designed for very long-term use. If they are valuable, they should be converted to a full international standard. The

editing committee has produced a draft version of the standard, which will now be voted on by member bodies of ISO/TC211. There are strong linkages between this work and that of the Control Body, with a significant overlap of membership between the two. Nic Donnelly and Larry Hothem are on this review committee.

Potential review of ISO 19111:2007 Geographic Information – Spatial Referencing by Coordinates

This standard describes coordinate systems, coordinate reference systems and datums and the relationships between them. It also describes coordinates and the operations that may be carried out on them.

The standard is not particularly well-suited to some aspects of modern reference frames, such as time-dependent coordinates and transformations, geoid models and deformation models. A workshop was held at the Southampton meeting in June, which has led to a new work item being proposed to revise the standard. ISO is currently seeking comment on the proposal from national standards bodies, after which a decision will be made on whether to proceed with a full review. This decision is expected in May 2016.

ISO 19152:2012 Land Administration Domain Model (LADM)

This Standard grew out of the Commission 7 work on the Core Cadastral Domain Model and was accepted into the ISO/TC 211 work programme in 2008. ISO 19152:2012 was published in 2012. From the ISO website, ISO 19152:2012:

- defines a reference Land Administration Domain Model (LADM) covering basic information-related components of land administration (including those over water and land, and elements above and below the surface of the earth);
- provides an abstract, conceptual model with four packages related to parties (people and organizations); basic administrative units, rights, responsibilities, and restrictions (ownership rights); spatial units (parcels, and the legal space of buildings and utility networks); spatial sources (surveying), and spatial representations (geometry and topology);
- provides terminology for land administration, based on various national and international systems, that is as simple as possible in order to be useful in practice. The terminology allows a shared description of different formal or informal practices and procedures in various jurisdictions;
- provides a basis for national and regional profiles; and
- enables the combining of land administration information from different sources in a coherent manner.

The Land Administration Domain Model (LADM) Edition 1 was published in 2012 (ISO 19152). It facilitates the efficient set-up of land administration and can function as the core of any land administration system. LADM is flexible, widely applicable and functions as a central source of state-of-the-art international knowledge on this topic. LADM is one of the first spatial domain standards. With a view to the future, trends in the domain and the maintenance of the standard are now under discussion. These trends may be relevant for the development of a second edition of the LADM over the coming years.

Key areas of LADM 2.0 development include:

- The development of an Information infrastructure for the full use of modern information and communication technology.
- Integration of the fourth temporal dimension, valuation and legal refinement (categorisation).
- Careful work on semantics – correction and clarification of terminology and other concepts which are used by different land administration systems.
- Appreciation of the full Spatial Development Life Cycle.
- Integration and development of a Community Driven Cadastral mapping.
- Maintenance and development of the LADM taking into account elements from the Social Tenure Domain Model and Fit For Purpose approaches.

The LADM standard published in 2012 was ground breaking. However as we move into the future, it is hoped that access to land-related information will be enabled for everybody (via the internet), creating a 'spatially enabled society'. Many - Information Communication Technology - related developments will strengthen the relationship between land administration and other registrations, such as building, address, company and population registrations.

For more information contact Chrit Lemmen (chair of the FIG Commission 7 Working Group 7.1 on Fit-for-Purpose Land Administration and director of the FIG International Office of Cadastre and Land Records (OICRF))

See also:

Peter van Oosterom, Christiaan Lemmen, *Developing a Second Edition of the Land Administration Domain Model: Trends in Spatial Domain Standards*, GIM - Issue 12 - Volume 29, December 2015.

Christiaan Lemmen, Peter van Oosterom and Rohan Bennett (2015). *The land administration domain model*. Land Use Policy 49 (December 2015), 535-545
<http://www.sciencedirect.com/science/article/pii/S0264837715000174>

ISO/TC 172 SC6 Work on Survey Instrument Standards

Hans Heister was the representative to ISO/TC 172 SC6 for FIG for many years. He stepped down as our lead at the Kuala Lumpur Congress. In principle Prof Dr. Ingo Neumann from the University of Hannover, who is a member of FIG Commission 5 as well a member of the mirror committee NA 005-03-04 in DIN (the German standards organisation), was designated to report on the activities of ISO /TC 172 SC6 in the future. Unfortunately he has not submitted a report. We will discuss the status of the FIG representative to ISO /TC 172 SC6 at the Standards Network meeting in Christchurch.

Standards under the responsibility of the ISO /TC 172 SC6 are the following:

Standard and/or project

ISO 9849:2000

Standard and/or project

Optics and optical instruments -- Geodetic and surveying instruments -- Vocabulary

[ISO 12858-1:2014](#)

Optics and optical instruments -- Ancillary devices for geodetic instruments -- Part 1: Invar levelling staffs

[ISO 12858-2:1999](#)

Optics and optical instruments -- Ancillary devices for geodetic instruments -- Part 2: Tripods

[ISO 12858-2:1999/Amd 1:2013](#)

[ISO 12858-3:2005](#)

Optics and optical instruments -- Ancillary devices for geodetic instruments -- Part 3: Tribrachs

[ISO 16331-1:2012](#)

Optics and optical instruments -- Laboratory procedures for testing surveying and construction instruments -- Part 1: Performance of handheld laser distance meters

[ISO 17123-1:2014](#)

Optics and optical instruments -- Field procedures for testing geodetic and surveying instruments -- Part 1: Theory

[ISO 17123-2:2001](#)

Optics and optical instruments -- Field procedures for testing geodetic and surveying instruments -- Part 2: Levels

[ISO 17123-3:2001](#)

Optics and optical instruments -- Field procedures for testing geodetic and surveying instruments -- Part 3: Theodolites

[ISO 17123-4:2012](#)

Optics and optical instruments -- Field procedures for testing geodetic and surveying instruments -- Part 4: Electro-optical distance meters (EDM measurements to reflectors)

[ISO 17123-5:2012](#)

Optics and optical instruments -- Field procedures for testing geodetic and surveying instruments -- Part 5: Total stations

[ISO 17123-6:2012](#)

Optics and optical instruments -- Field procedures for testing geodetic and surveying instruments -- Part 6: Rotating lasers

[ISO 17123-7:2005](#)

Standard and/or project

Optics and optical instruments -- Field procedures for testing geodetic and surveying instruments
-- Part 7: Optical plumbing instruments

[ISO 17123-8:2015](#)

Optics and optical instruments -- Field procedures for testing geodetic and surveying instruments
-- Part 8: GNSS field measurement systems in real-time kinematic (RTK)

[ISO/CD 17123-9](#)

Optics and optical instruments -- Field procedures for testing geodetic and surveying instruments
-- Part 9: Terrestrial laser scanners

International Measurement Standard of Property (IPMS)

The International Property Measurement Standards Coalition (IPMSC) was formed during a meeting at the World Bank in Washington on 01-02 May 2013. The IPMSC is a group of 70 professional and not-for-profit organisations from around the world, working together to develop and implement international standards for measuring property. Member organisations of the IPMS Coalition have made a commitment to promote the implementation the new international standards when published. FIG is one of the member organisations of the IPMSC.

IPMS for Office Buildings has been drafted by the independent Standards Setting Committee and establishes a consistent methodology for measuring office buildings around the world. It is available to freely download below in several language versions. The final version of IPMS for Office Buildings was published in November 2014.

Standards Issues in other Commissions

[The Standards Network Template- list of commission topics](#)

Each Commission is invited to nominate a representative to the Standards Network. This representative should attend the Standards Network meeting to discuss topics relevant to their Commission's activities. A key point of discussion at the meeting will be how best to communicate and represent Commission's activities. In the past a *Standards Template* was maintained to help facilitate this.

[Standards issues initiatives in the FIG commissions](#)

[Standards issues related to FIG Commission 2](#)

People working in different countries have different competencies. One key issue is to establish a database on body of knowledge in land surveying. Distance and e-learning are important points of reflection and development.

Standards issues related to FIG Commission 4

The International Board (IHO, FIG and ICA) has published guidelines for establishing individual recognition for hydrographic surveyors, at both professional and technical levels, taking into account education and experience.

Standards issues related to FIG Commission 5

Commission 5 follows ISO/TC 172 SC6 Work on Survey Instrument Standards, and ISO/TC 211 Geographic information/Geomatics.

Standards issues related to FIG Commission 6

Commission 6 is interested in the ISO TC 172 and the ISO 17123 series of standards related to survey instruments. There is interest in helping to define standards in deformation measurement and monitoring and data analysis. Other points of interest include machine guidance, land xml for 3D models, integrating BIM model and machine guidance, exchange of data.

Standards issues related to FIG Commission 7

See remarks on *ISO 19152 on the Land Administration Domain Model (LADM)* above.

Standards issues related to FIG Commission 9

See remarks on the *International Measurement Standard of Property (IPMS)* above.

Summary

Standards are important in the surveying profession. Standards work in FIG ranges from input on the very specific ISO/TC 172 SC6 Survey Instrument Standards; to liaison with the much broader ISO/TC 211 Geographic Information/Geomatics which impacts on virtually every aspect of the surveying profession; to ISO 19152:2012 Land Administration Domain Model (LADM); and the implication of Commission 9 in the IPM coalition with the aim to develop and implement International Property Measurement Standards.

The Standards Network is responsible for building and maintaining relations with the different standardisation bodies, proposing priorities on FIG's standardisation activities and ensuring information flow on standardisation to FIG members. One of the principal ways these goals are accomplished is through a Standards Network meeting held during FIG working weeks and Congresses. Each Commission sends a representative to the meeting to discuss their Commission's interest and requirements in standards.

Recall the Christchurch FIG ***Standards Network meeting is scheduled for Thursday 5 May at 16:00-17:30***. All those interested in the work of the Standards Network are cordially invited to attend.