

FIG STANDARDS NETWORK REPORT TO THE GENERAL ASSEMBLY

David Martin 5 April 2017

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.

Key Activities

The Standards Network covers several key activities. At different periods, the commissions are more or less active or impacted by Standards. Some activities such as ISO 19152 on the Land Administration Domain Model (LADM) or the International Measurement Standard of Property (IPMS) are clearly linked to a specific commission –Commission 7 for the LADM and Commission 9 for IPMS. While other Standards issues relate to, or implicate, or could potentially implicate several commissions. The ISO/TC 211 concerning Geographic Information/Geomatics is an example.

Below is a summary of current Standards activities in FIG.

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. ISO/TC 211 also appoints a liaison to FIG, a role which is currently held by Mr Larry Hothem, of the United States.

Nick Donnelly reports:

ISO/TC211 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.

Key items currently under consideration are: a Geodetic Registry, a Review of ISO/TS 19127:2005 Geodetic codes and parameters, and a potential review of ISO 19111:2007 Geographic Information – Spatial Referencing by Coordinates

Liaison Involvement

There were two meetings of the ISO technical committee in 2016; Tromsø (June) and Redlands (December). The next meeting is in Stockholm, 29 May – 2 June 2017.

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.

TC211 Changes

From the start of 2017, the TC211 Secretariat is based in Sweden, through the Swedish Standards Institute. The Chair is Christina Wasström from Lantmäteriet, the Secretary is Therése Andrén from the Swedish Standards Institute and the Assistant Secretary is Christine Allanson from the Swedish Standards Institute.

The Secretariat has previously been held by Norway since the establishment of TC211 in 1994. Olaf Østensen from the Norwegian Mapping and Cadastre Authority has chaired the Committee since that time, with Bjørnhild Saetøry from Standards Norway as Secretary. Their service to TC211 was acknowledged during the Redlands meeting.

Key Work Items of Interest to FIG

Geodetic Registry

This project aims to establish a registry for geodetic codes and parameters. Software has been developed in compliance with ISO19127: Geodetic Register and the Norwegian Mapping Authority will host the software on their servers.

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 Craymer of Canada.

The work of the Control Body is currently focused on adding the major global, regional and national reference frames to the register, which is not yet publically available.

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.

A review of this standard is underway in conjunction with the Open Geospatial Consortium (OGC). Amongst other things, this review aims to update 19111 to better handle modern datum such as

kinematic datums and those using the geoid as a reference surface. A committee draft is due in May 2017.

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

This is a new standard that will formalize the ITRS, the global system upon which all modern positioning and mapping systems (such as GNSS) are based.

A working draft is due in mid-2017.

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. The Land Administration Domain Model (LADM) ISO 19152:2012 Edition 1 was published in 2012. 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.

Chrit Lemmen reports:

Several events in relation to LADM have been organised:

- UN GGIM Expert Group on Land Administration, Delft, The Netherlands, 14 – 15 March 2017, by invitation, I will represent FIG, LADM is on the Agenda
- FIG/GLTN/ISO Preparatory meeting on LADM Edition II, Delft, The Netherlands, 16 March 2017
- OGC meeting on operational standards for LA, Delft, The Netherlands, 17 March

Followed by:

- World Bank Land and Poverty 2017, Washington, US, 20 March: Pre Conference session on Standards

This latter meeting in Washington is a high level meeting – with a very important role for FIG as knowledge organisation (on functionality related to operational standards).

ISO TC 211 has agreed with the development of Edition II of LADM. Some key proposals for the extension this edition include:

- Further modelling of LADMs with more detailed classification of the legal part of the LADM is proposed for inclusion in LADM Edition II including interests in land, 'right', 'restriction' and 'responsibility' (RRR) classes as well as informal rights descriptions introduced in the Social Tenure Domain Model (STDM).
- An extension module proposing to extend the scope of LADM with a fiscal perspective to provide a data model that could be used to construct information systems for immovable property valuation and taxation, and offer a data exchange option. The proposal provides a common basis for governments to direct the development of local and national databases, and for the private sector to develop information technology products.
- LADM in support to Marine Cadastre: the role of IHO and a new standard S121 – Maritime Limits and Boundaries – will be discussed.

- More explicit relations with BIM (IFC), GeoBIM, CityGML, IndoorGML, InfraGML, LandXML, etc. implying a relation to the lifecycle of buildings and related rights.

This very active group also is working on comprehensive support for *Linking New Data Acquisition Methods and Maintenance* to LADMs and coordination with OGC/ISO activities.

ISO/TC 172 SC6 Survey Instrument Standards

ISO/TC 172 SC6 provides a comprehensive coverage of standards related to surveying instruments and their accessories including: handheld laser distance meters, levels, theodolites, EDM measurements to reflectors, total stations, GNSS field measurement systems in real-time kinematic (RTK), terrestrial laser scanners etc...

Standards and/or project under the direct responsibility of ISO/TC 172/SC 6 Secretariat (17)

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 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 17123-5:2012 Part 5: Total stations **[Under development]**
- 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/CD 17123-9 Part 9: Terrestrial laser scanners **[Under development]**

ISO 9849 Series Geodetic and surveying instruments

- ISO 9849:2000 Vocabulary **[Under development]**

Currently FIG is looking for a representative to ISO/TC 172 SC6.

International Property Measurement Standards Coalition IPMS

Jean-Yves Pirlot Secretary General of the IPMS coalition reports:

The International Property Measurement Standards Coalition (IPMSC) is a group of more than 80 professional and not-for-profit organisations from around the world, working together to develop and implement international standards for measuring property.

At present, the way property assets – such as homes, offices or shopping centres – are measured varies dramatically. For example, in some parts of the world it is established practice to include

common space (lift shafts; communal hallways etc.) in floor area measurements; in others off-site parking might be included or even swimming pools.

With so many different methods of measurement in use, it makes it difficult for property users, investors, occupiers and developers to accurately compare space. Research by global property firm JLL shows that, depending on the method used, a property's floor area can deviate by as much as 24%.

An International Property Measurement Standard (IPMS) will ensure that property assets are measured in a consistent way, creating a more transparent marketplace, greater public trust, stronger investor confidence, and increased market stability.

The IPMS Coalition was formed during a meeting at the World Bank in Washington on 01-02 May 2013. Since then two standards were published (IPMS for offices and residential). A few other are to come (industrial, retail and mixed use). The eventual aim is to develop one single standard applicable to all building types, with slight variations or specifics.

The standards are written by an independent Standard Setting Committee, whilst the coalition is led by a Board of Trustees.

Jean-Yves Pirlot, Director General of CLGE is also Secretary General of the IPMS Coalition. His Alternate Trustee for CLGE is Nicolas Smith, CLGE Vice President. He is chairing the euREAL working group in charge of translating IPMS is EU guidance for surveyors. Maurice Barbieri and Rudolf Staiger are respectively Trustee and Alternate Trustee for FIG. Frederic Mortier is a CLGE Expert within the Standard Setting Committee.

Based on the same idea, other coalitions were started (IES: International Ethics Coalition, ICMS: International Construction Measurement Coalition, ILMS: International Land Measurement Coalition).

[International Land Measurement coalition ILMS](#)

The International Land Measurement coalition (ILMS) - take part in a major initiative to improve land reporting efficiency and economic development At the heart of all international standards is the desire to create sustainable, professional markets in an increasingly connected global economy.

ILMS will be a strong international principles based standard, in the public interest, focused on key land information elements, as required to de-risk and aid the process of transaction and strengthen land tenure security, land rights, investment, government revenue raising and economic development.

A basic scope

- Transaction oriented
- High level 'due diligence' process focused on transaction process rather than across the board implementation
- Land Information Framework
- Work on a very high level initial ILMS 1 global standard as a platform for further development

- Creating a basic land information link between developed land systems and developing land systems.
- Key global elements needed (creating an interoperable environment)
- Inclusivity of process and SSC
- Market driven/ inclusion of stakeholders

Key strategic elements

- Approach is key - must be inclusive, transparent and independent
- Money needn't be a blocker. Volunteer experts can be part of something momentous. Virtual meetings will help.
- Implementation needs to be front of mind - not an academic exercise
- The scope is potentially huge. The standards setting committee will need to narrow this down through a 'work plan'.
- ILMS must be high-level and applicable everywhere with national standards slotting in, potentially providing more granular detail.
- Current gap in underlying data between markets (e.g. mapping). This needs to be considered but shouldn't prevent early stages of ILMS.
- The term 'measurement' needs to be explained to ensure it is not seen purely as mechanical - not just about boundaries, could also be more theoretical.
- Through a common approach, ILMS will seek to provide greater confidence in the data/information attributed to a parcel of land.

The coalition was launched at the FAO in Rome, in May 2016. Maurice Barbieri is representing CLGE and FIG (with Rudolf Steiger as alternate). He is vice-chair of the Coalition. The Standard Setting Committee was set up this year and the first meeting will be held in Washington during the World Bank meeting.

International Construction Measurement Standards

The International Construction Measurement Standards Coalition (ICMSC) is a growing group of more than 40 professional and not-for-profit organisations from around the world. It was launched in 2015 to develop and implement consistent international standards for benchmarking, measuring and reporting construction project cost.

In her Commission 10 Report to the GA, See Lian Ong states there has been significant progress in the development of ICMS over the past year. A first draft of the standard was completed and circulated in August 2016. The final draft of ICMS was completed in October 2016. It is scheduled to be fine-tuned for final public consultation in March and published in July 2017.

Specific Standards Issues in the Commissions

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, integrating BIM model and machine guidance, exchange of data etc....

Standards issues related to FIG Commission 7

Commission 7 is very active – specifically in *ISO 19152 on the Land Administration Domain Model (LADM)*.

Standards issues related to FIG Commission 9

Commission 9 is the FIG link to the *International Measurement Standard of Property (IPMS)* initiative.

Standards issues related to FIG Commission 10

Commission 10 is actively involved with the International Construction Measurement Standards Coalition (ICMSC) aiming to develop and implement consistent international standards for benchmarking, measuring and reporting construction project cost.

FIG 2017 Helsinki Working Week Standards Network Meeting

The next Network meeting will be held on Thursday 1 June 11:00 to 12:30 during the 2017 FIG Helsinki Working Week.

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 IPMSC 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. In principle each Commission appoints a representative to the Standards Network to discuss their Commission's interest and requirements in standards.