

# FIG STANDARDS NETWORK REPORT TO THE GENERAL ASSEMBLY

David Martin 9 April 2018

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## 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 the Standards 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.

**Nic Donnelly reports:**

## ISO TC211 Liaison Report – March 2018

### 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 held by Mr Larry Hothem, of the United States.

#### **Liaison Involvement**

There were two meetings of the ISO technical committee in 2017; Stockholm, Sweden (June) and Wellington, New Zealand (December). The next meeting is in Copenhagen, Denmark 27 May – 1 June 2018.

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 Secretariat**

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.

#### **Key Work Items of Interest to FIG**

##### *Revision of ISO19152: Land Administration Domain Model (LADM)*

The drafting of the first edition of the LADM, published in 2012, was driven by FIG Commission 7, particularly Peter van Oosterom and Christiaan Lemmen. The LADM has gained considerable prominence since 2012 and work is underway to scope a revision. At the Stockholm TC211 meeting, FIG was invited to lead this revision, recognizing the significant expertise within FIG Commission 7, as well as the strong historical connection to the LADM.

The seventh Land Administration Domain Model Workshop in Zagreb, Croatia (11-13 April 2018) will focus on the scope and functionality of the revised standard. Potential extensions to the existing LADM include additional rights, restrictions and responsibilities; valuation; marine cadastre; relationship to Building Information Modelling (BIM); 3D/4D cadastre.

This will ultimately lead to the submission of a New Work Item Proposal through ISO TC211.

##### *Geodetic Registry*

This project aims to establish a registry of geodetic coordinate systems and transformations. Software has been developed in compliance with ISO19127: Geodetic Register. FIG is represented on the Control Body for the registry, which has responsibility for its management and strategic direction. Nic Donnelly is the principal representative, with Volker Schwieger of Germany as alternate. Larry Hothem is Vice-Chair of the Control Body, which is chaired by International Association of Geodesy representative Mike Craymer, of Canada.

The registry development is complete, so current work is focused on getting the software deployed with long-term technical support.

### *Review of ISO 19111:2007 Geographic Information – Spatial Referencing by Coordinates*

This standard describes coordinate systems, coordinate reference systems and datums and the relationships among 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 datums such as kinematic datums and those using the geoid as a reference surface.

### **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:**

The 2018 workshop on the 7<sup>th</sup> Administration Domain (LADM) was held in Zagreb, Croatia, 11-13 April 2018. The focus of LADM2018 workshop was on sharpening the scope and extending functionality of LADM II. Extensions are about a fiscal/valuation module, Marine Cadastre, more explicit relations with Building Information Modelling, further modelling of LADM's survey and spatial representation and 3D/4D Cadastre. More attention was paid to the operational standards in Land Administration: CityGML, IndoorGML, LandInfra, InfraGML, LandXML, and GeoBIM. Also the aspects beyond Information models were discussed: Organization, Best practices, Legal/financial aspects, OpenCadastre approach, Crowd sourcing, Workflow modelling, Blockchain and ledger technologies.

The proceedings of the Workshop are published in co-operation with FIG.

During the Workshop in Zagreb there was also a discussion on a draft of a 'New Working Item Proposal' (NWIP) for LADM II. This NWIP will be discussed in the FIG Standard's Network meeting. This may result in an advice to the Council to submit the NWIP to ISO TC211 on Geographic information (Note: FIG is a liaison member of this Technical Committee).

The idea is to organise the development of LADM II in close cooperation with the Open Geospatial Consortium. A draft version of an OGC White Paper on Land Administration is available. This Draft White Paper was subject of discussion during a special session of the World Bank Land and Poverty Conference, held in March 2018 in Washington DC, US. This White Paper was also discussed in the Zagreb LADM Workshop – and needs attention of the FIG Standards Network.

The White Paper and the NWIP are available with the proceedings of the Zagreb Workshop:

[https://wiki.tudelft.nl/pub/Research/ISO19152/LADM2018Workshop/21-22\\_LADM\\_2018.pdf](https://wiki.tudelft.nl/pub/Research/ISO19152/LADM2018Workshop/21-22_LADM_2018.pdf)

See also:

<https://wiki.tudelft.nl/bin/view/Research/ISO19152/LADM2018Workshop>

<http://www.opengeospatial.org/projects/groups/landadmin>

<https://www.conftool.com/landandpoverty2018/sessions.php>

## 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/AWI 16331-2 Part 2: Terrestrial laser scanner *[Under development]*

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/CD 17123-9 Part 9: Terrestrial laser scanners *[Under development]*

ISO 9849 *Series Geodetic and surveying instruments*

- ISO 9849:2017 Vocabulary *[Under development]*

**Ingo Neumann is the FIG representative to ISO/TC 172 SC6. He reports:**

### Summary of the most important (current) work of the ISO/TC 172/SC 6 “Geodetic and surveying instruments”

#### Terrestrial laser scanning

The new standard ISO/DIS 17123-9 is close to publication (probably by the end of the year) - Optics and optical instruments -- Field procedures for testing geodetic and surveying instruments -- Part 9: Terrestrial laser scanners.

New working group for ISO/NP 16331-2 Optics and optical instruments -- Laboratory procedures for testing surveying and construction instruments -- Part 2: Terrestrial laser scanner

This new working group has been established to work on a laboratory standard for terrestrial laser scanning. This version is in an early stage. However, it will be of interest in the future. A final version will take at least 2 to 3 years to complete.

### **Distance and angle measurements:**

The new ISO 16331-1 is published: - Optics and optical instruments -- Laboratory procedures for testing surveying and construction instruments -- Part 1: Performance of handheld laser distance meters

The ISO/DIS 17123-5 under revision until the end of the year: - Optics and optical instruments -- Field procedures for testing geodetic and surveying instruments -- Part 5: Total stations

We will keep the general procedure but update some formulas (to correct for some small errors) and some layout issues. This version will be moved to final draft and probably be published by the end of the year.

### **Other important work**

The new Standard ISO 9849 is published – Optics and optical instruments -- Geodetic and surveying instruments – Vocabulary

This standard is maybe important for FIG because it summarizes the vocabulary used in the field of geodetic and surveying sensors. This standard shall be extended concerning the terms in the area of multi-sensor-systems in the future.

## **International Property Measurement Standards Coalition IPMS**

### **Jean-Yves Pirlot Member of the BoT for CLGE, (ex-Committee member of IPMS-C) reports:**

The IPMS Coalition aims at the creation of an International Property Measurement Standard.

It was created on May 1, 2013, in Washington. It has now existed for five years. The coalition has 89 members and continues to grow. Many partner organizations support IPMS from the outside.

Even if the final goal of the CLGE and FIG delegates to the IPMS Coalition is to develop one universal measurement code of all building types, the coalition started with developing a series of codes.

For the time being, we have the IPMS for Office buildings (2014), for Residential buildings (2016) and for Industrial buildings (2018). One IPMS standard has been added every two years.

Work is ongoing for Retail Buildings and we expect a finalized and approved version by 2019. Initial work has also started on the Mixed Use standard.

The Standard Setting Committee is working hard to keep all these standards harmonized and the aim is to follow CLGE's and FIG's wish to adopt one overall standard for all building types.

At the end of 2017, the IPMS Coalition has organized elections. The full Executive Committee was renewed, many of the old members stayed on the committee welcoming a few new comers. With the expanding coalition, it now makes sense to increase Executive Committee.

A new bureau was also elected. The incoming Chair is Lisa Prats (BOMA International), the former Chair, Ken Creighton (RICS) was appointed as Vice Chair, while Jean-Yves Pirlot (CLGE), outgoing Secretary General was replaced by Maurice Barbieri, current CLGE president and FIG delegate for the IPMS Coalition.

The Standard Setting Committee (SSC) was also partially renewed with new mandates for some outgoing members and two new experts appointed.

It appears that it would be nice to introduce a height reference, since this is needed for diverse applications such as Fire Fighting and Energy Certification. The SSC has announced that they are already considering this aspect. Once again, this is coherent and in the direction of both CLGE and FIG.

## International Land Measurement coalition ILMS

### **Maurice Maurice Barbieri reports:**

The initial consultation of the proposed ILMS Land transfer standard was held during the early months on 2018 and closed at the end of Feb. The draft was downloaded over 200 times and several substantial comments were made. The ILMS draft seems robust and most comments focussed on minor issues of language use, gender rights and most interestingly the 'GML/XML coding' of the ILMS final output. ILMS is fundamentally orientated on the key 7 land data elements needed for successful and effective land transfer, acquisition, valuation and compensation/taxation, the ILMS coalition have successfully keep the standard as high level as possible to enable flexibility and global application.

This post consultation draft was successfully presented at the World Bank Land conference. ILMS has also been highlighted by Thomson Reuters (Place) as a significant development within the land acquisition and tenure security sectors <http://www.thisisplace.org/i/?id=aadd9347-801f-48e7-8e27-e025db28a755> – this is quite a coup and the article has been picked up by multiple publications worldwide. ILMS is now moving towards its next stages of consultation (ILMS exposure draft - summer 2018) with expected publication in late 2018.

<https://consultations.intstandards.org/consult.ti/ilms/consultationHome>

The exposure draft of ILMS will be presented at FIG Istanbul during the main technical programme and at the Regional Bodies meeting. The ILMS coalition would like to thank FIG, and many member associations, for their support during this important collaborative initiative.

### **James Kavanagh, Maurice Barbieri, Pedro Ortiz add:**

ILMS - International principle-based standard for recording and reporting information and material relevant to land and property transfers:

- Both a standard and a framework for reporting
- Aim to reduce risks in the land transfer process by creating consistency of application and facilitating and supporting land governance, robust conveyancing, secure lending and land registration
- Goal: to support global consistency by setting standards for classifying, defining, measuring, analysing, presenting and reporting land information

- Can be applied at a project, regional, state, national or international level
- 7 key elements required during a 'due diligence' process
- Creates land data feedback 'loop' where elements such as valuation can be improved as land data becomes available.

Property Address/Identifier:							
	Component	Basis	Date (dd/mm/yy)	Conveyancer Verification (Formal/Informal)	Documentary Support	ILMS status	Risk Status
1	Land Tenure						
2	Parcel Identification (Boundaries)						
3	Site/Land Area						
4	Land Use						
5	Services						
6	Building						
7	Land Valuation (Transfer Price)						

## 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.

**Dr See Lian Ong, commission 10 Chair reports:**

### Background

Against a backdrop of tightening public purse strings and growing investment demand, construction industry leaders have joined together to set out a radical new approach to calculate, report or compare costs for the world's building and civil engineering projects.

A pioneer group of about 20 professional bodies (including FIG) established the International Construction Measurement Standards (ICMS) Coalition, at the IMF in Washington D.C. in June 2015, calling for professionals across the globe to support the collaboration and help embed common standards at the heart of construction investment.

The ICMS Coalition is a rapidly growing partnership of leading organisations from around the world, committed to producing and supporting consistent shared standards for construction costs. To date more than 40 professional bodies have signed up to be partners of the Coalition.

### Modus Operandi of ICMS

The organisation structure of ICMS comprises the Trustee Board of the ICMS Coalition that is represented by representatives of all members of the Coalition.

The ICMS then appoints the Standard Setting Committee (SSC), which is independent and comprises of experts from across the world. The initial SSC comprises 27 professional experts. The SSC members elect their officers (Chairman, Vice-Chairman and Secretary) and Dr. See Lian Ong was appointed as the Chairman of SSC in late 2015.

ICMS adopts the operation model that no overheads will be incurred by the Coalition and no member is required to pay subscription to be a member of the Coalition. Most meetings are conducted through tele-conferencing and for face-to-face meetings; the Coalition member will have to pay their representative the cost of travel or accommodation for such meetings. The member hosting the meeting will provide the facilities for the meeting.

### **Progress of ICMS**

The Standard Setting Committee (SSC), which I chair, held regular meetings via tele-conferencing between November 2015 and November 2016 with its first physical meeting held on 5-6 March 2016 in Brussels hosted by the European Commission.

Much had been achieved at this meeting with the framework for the ICMS established and the drafting group was ready to go away to prepare the first draft of the ICMS. The first draft of ICMS was completed and circulated to the members and friends of the ICMS Coalition for comment in August 2016. With the comments received, the SSC proceeded to fine-tune the draft.

The final draft of ICMS was completed at the end of October 2016. Trustees of ICMS and the members of the SSC met in London on 10 November 2016 and the final draft of the ICMS was launched for the first public consultation at a ceremony held on 11 November 2016 at RICS Headquarters at Parliament Square, London.

The draft ICMS was well received and several constructive comments were received when dateline for receiving comments for the final draft closed on 15 January 2017.

Consequently, the SSC further fine-tuned the final draft with the comments received and publish for the Second public consultation draft in Mid-March 2017. The second public consultation closed on 1 May 2017 and the SSC then fine-tuned the final draft for publication.

The ICMS was published and launched at the annual congress Pacific Association of Quantity Surveyors (PAQS) held in Vancouver, Canada from 24 to 26 July 2017.

With the publication of ICMS, we hope that there will be wide adoption of ICMS so that there will be consistency in measurement and reporting of construction cost across the entire world.

### **The Way Forward**

The Trustee of ICMS Coalition has reconstituted the SSC and has mandated the SSC to consider the review of the ICMS that has been published and to incorporate new features such as Life Cycle Costing in the next edition of ICMS.

The SSC has just had its first meeting via tele-conferencing on 16 March 2018 and have set out plans over the next 12 months to publish the 2<sup>nd</sup> Edition of ICMS.

The 2<sup>nd</sup> Edition of ICMS will likely incorporate additional project categories for civil engineering works, life cycle costing and also to reformat the standard so that it will enable data capture digitally.

More information on ICMS can be obtained from the website: [www.icms-coalition.org](http://www.icms-coalition.org)

## Specific Standards Issues in the Commissions

### Standards issues related to FIG Commission 4

The International Board (IHO, FIG and ICA) publishes 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 2018 Istanbul Working Week Standards Network Meeting

The next Network meeting will be held on Tuesday, 8 May 14:00–15:30 during the 2018 FIG Istanbul Congress.

## 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.