FIG STANDARDS NETWORK REPORT TO THE 2014 FIG GENERAL ASSEMBLY

David Martin 2 June 2014

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 2014 Kuala Lumpur Congress Standards Network Meeting

The last Network meeting was during the 2012 Working Week in Rome. A report was written to the Abuja working week in 2013.***The Standards Network is scheduled to meet in Kuala Lumpur on Wednesday, 18 June 11:30–13:00.***

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.

Nic Donnelly's ISO TC211 Liaison Report

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, currently Mr Larry Hothem of the United States.

Key Work Items of Interest to FIG

Geodetic Registry Network

This project aims to establish a registry for geodetic codes and parameters. Initial development of the software has been completed and demonstrations are being held in late May/early June 2014. The registry will be hosted by the Norwegian Mapping Authority.

The Geodetic Registry Network comprises three parts:

1) The ISO register of geodetic registers. This is a catalogue of registers, either directly established by ISO, or established by other entities, but approved by ISO.
2) The ISO register of geodetic codes and parameters. This includes coordinate system and transformation parameters conforming to *ISO 19111: Spatial referencing by coordinates*
3) External registers of geodetic codes and parameters approved by the Control Body of the ISO Geodetic Registry Network

The Registry Network and associated standards provide a framework for the implementation of robust, well-managed, publically accessible geodetic registries. As such, organizations with responsibility for geodetic parameters will be encouraged to make them compliant with the ISO registry requirements. FIG, through the Standards Network and Commission 5, has a role to play in promoting the Registry, particularly as it reaches maturity. FIG may be invited to nominate a representative to serve on the Control Body. Membership of the Control Body would give FIG the opportunity to influence the development of the Registry.

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"

This standard underwent systematic review in late 2013. There was an even split in the voting between those members voting to confirm the standard and those voting to revise it. In light of this, a final decision has been deferred until the plenary meeting in Berlin in early June 2014.

Summary of existing standards under review

Standard	Name	Scope
ISO/TS 19104:2008	Geographic information -- Terminology	Provides the guidelines for collection and maintenance of terminology in the field of geographic information. It establishes criteria for selection of concepts to be included in other standards concerning geographic information, which are developed by ISO/TC

		211, specifies the structure of the terminological record, and describes the principles for definition writing.
ISO 19119:2005	Geographic information -- Services	Identifies and defines the architecture patterns for service interfaces used for geographic information, defines its relationship to the Open Systems Environment model, presents a geographic services taxonomy and a list of example geographic services placed in the services taxonomy. It also prescribes how to create a platform-neutral service specification, how to derive conformant platform-specific service specifications, and provides guidelines for the selection and specification of geographic services from both platform-neutral and platform-specific perspectives.
ISO/TS 19139:2007	Geographic information -- Metadata -- XML schema implementation	Defines Geographic MetaData XML (gmd) encoding, an XML Schema implementation derived from ISO 19115.

Summary of new standards under development

Project	Name	Scope
ISO/DTS 19115-3	Geographic information -- Metadata -- Part 3: XML schema implementation of metadata fundamentals	This Technical Specification defines five artefacts to support the use of ISO 19115-1 compliant metadata and migration from ISO19115 to ISO19115-1.
ISO/AWI 19155-2	Geographic Information -- Place Identifier (PI) architecture -- Part 2: Place Identifier (PI) linking	Similar to the Place Identifier (PI) architecture (ISO 19155:2012) this International Standard is not an implementation specification. One main design concept of the Place Identifier is that the format of a user's original data content remains unchanged, when encoded into a Place Identifier. This enables communities and PI data providers to more easily provide their already existing data as Place Identifiers.
ISO/AWI 19159-2	Geographic information -- Calibration and validation of remote sensing imagery	This Technical Specification defines the data recording and the calibration of airborne lidar (light detection and ranging) sensors. This Technical Specification also addresses the associated metadata related to data recording and calibration that has not been defined in other ISO geographic information standards.

	sensors -- Part 2: Lidar	This International Specification is part 2 of a series of specifications. Part 1 addresses the optical sensors. The following parts will cover SAR/InSAR and microwave radiometers (RADAR), as well as SONAR (sound).
ISO/CD 19160-1	Addressing -- Part 1: Conceptual model	This part of ISO 19160 defines a conceptual model for address information (address model), together with the terms and definitions that describe the concepts in the model. Lifecycle, metadata and address aliases are included in the conceptual model. The model is presented in the Unified Modeling Language (UML). The model provides a common representation of address information, independent of actual addressing implementations. It is not intended to replace conceptual models proposed in other specifications, but provides a means to cross-map between different conceptual models for address information and enables the conversion of address information between specifications. The model provides a basis for developing address specifications by individual countries or communities.
ISO/AWI 19160-4	Addressing -- Part 4: International postal address components and template languages	This part of ISO 19160 defines key terms, a dictionary of postal address components and constraints on the use of the components. Further this part of ISO 19160 defines languages suitable for human comprehension and computer processing to formally express address rendering rules that stipulate how a postal address is to be written, including the order in which postal address components are to appear, required and optional components, and the presentation or rendition of the components, subject to constraints on the space available for that task. A formal expression of address rendering rules provided in one of the specified languages is defined in this part of ISO 19160 as postal address template.
ISO/WD TR 19163	Geographic information -- Content components and encoding rules for imagery and gridded data	This Technical Specification classifies imagery and regularly-spaced gridded thematic data into types based on attribute property, sensor type, and spatial property, and defines an encoding-neutral content model for the required components for each type of data. It also specifies logical data structures and the rules for encoding the content components in the structures.
ISO/AWI 19164	Geographic information -- Registry service	This International Standard specifies the Geographic information – Registry Service, an extensible web-based service for the management of geographic and geographically related artefacts, including, but not limited to dataset, feature and service descriptors, map symbols and styles, application schemas, feature concept

		dictionary entries, feature catalogue entries, data/service subscriptions, access control policies, web map and other context documents, geographic entities/identities, geographic names, building or property addresses, codelists, sensor and process descriptions. This International Standard can support the vast majority of registers proposed by ISO/TC 211, INSPIRE and a variety of national, regional and local government bodies. In addition, this International Standard is anticipated to have a significant role in sensor networks and sensor webs, the Internet of Things, ubiquitous public access, and linked data.

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.

There was an LADM Workshop in Kuala Lumpur in September 2013. Over 40 participants attended the workshop and a total of 25 peer reviewed papers were presented, covering a range of themes, including: the industry perspective on LADM; the linkage between LADM and information infrastructures; refined LADM modelling, 3D representations and formalizing LADM semantics; specific LADM country profiles; and implementation aspects. Proceedings are available at http://www.fig.net/news/news_2013/ladm2013_proceedings.htm

Version 1.0 of the Social Tenure Domain Model (STDM) tool source will released at FIG Congress 2014 in Kuala Lumpur Malaysia, June 2014. The land tool is a product of several years of conceptualization, design, development, field testing and implementation by various partners of the Network. It is one of the flagship land tools that GLTN is developing to promote the continuum of land rights approach and to offer an alternative and affordable land information tool to strengthen tenure security, improve livelihoods and empower poor communities. STDM, a specialization of the Land Administration Domain Model (ISO 19152:2012), will highlight new improved features and enhancements in its first release, including the ability by users (not programmers or developers!) to

customize the tool for their purpose. It will be officially launched at the 25th Congress of the International Federation of Surveyors (FIG) on the 20th June 2014 in Kuala Lumpur, Malaysia. (http://www.fig.net/news/news_2014/stdm_launch.htm)

ISO/TC 172 SC6 Work on Survey Instrument Standards

Hans Heister has been the representative to ISO/TC 172 SC6 for FIG for many years. He will step down as our lead at the Kuala Lumpur Congress. Many thanks are given to Hans for his conscientious work over the years in standards and as FIG liaison to ISO/TC 172 SC6. Hans has proposed 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), to report on the activities of ISO /TC 172 SC6 in the future.

Hans Heister's Report on the ISO/TC 172/SC 6 Meeting held in Graz, Austria - September 19 – 20 2013

The meeting was held on invitation of Austria (new member since May 2013) and the Institute of Engineering Geodesy and Measurement Systems (EGMS) of the Graz University of Technology, represented by Univ. Prof. Dr. Werner Lienhart, in Graz, Austria.

As usual, the conference was well prepared by the chairman Mr. Wolfgang Hardegen, Leica Geosystems Ltd, Heerbrugg and the new secretary Mrs. Barbara Mullis, SNV, Winterthur.

The main topics of this meeting can be summarised as follows:

- Report of the secretariat
- ISO 12858 – Part 1: Invar levelling staffs
- ISO/NP 9849: Vocabulary
- ISO 17123 – Part 5: Total stations
- ISO 16331 – Part 1: Performance of handheld distance meters
- ISO 17123 – Part 9: Terrestrial laser scanners
- ISO 17123 – Part 10: Non prism measurement (reflectorless distance

New published Standard: ISO 17123-Part 5:2012 Total stations

Comments to the single topics:

The new secretary Mrs. Barbara Mullis was introduced to the participants of ISO TC 172 SC6.

After a minor revision of **ISO 12858 – Part 1**: Invar levelling staffs concerning the classification of scale (class A) it was decided to proceed to the FDIS ballot.

The delegates discussed again the revision of **ISO 9849:2000** (Vocabulary). Taking into account the ballot results and the comments received ISO/TC 172/SC6 decided to stop the project on the revision and set it back to preliminary stage in order to correct and complete the compilation. The new draft will be submitted for approval as NWI in May 2014.

The delegates discussed the comment resolution on **ISO 12858-Part 1** / CD (levelling staffs) and asked the secretary to launch the CD ballot after inclusion of the agreed changes.

The delegates welcomed the publication of **ISO 17123 – Part 5**: Total stations

ISO/TC 172/SC6 acknowledged the presentation about the state of the art of testing terrestrial laser scanners by the German delegate of DIN (German standard organisation) Mr. Neumann. He was nominated as project leader for **ISO/PWI 17123-Part 9**: Terrestrial laser scanners.

ISO/TC 172/SC6 acknowledged the presentation of Mr. Mayer (Leica Geosystems) regarding **ISO/PWI 17123-Part 10:** Non-prism measurement (reflectorless distance measurement by total stations). A draft should be prepared for the next meeting.

ISO/TC 172/SC6 recognized problems in the application of **ISO 16331 – Part 1**: Performance of handheld distance meters due to editorial and technical mistakes. The project leader was asked to provide a draft based on the discussion of the delegates for a new CD ballot.

The next meeting of ISO/TC 172/SC 6 will be held on September 18-19 2014 in Tokyo by invitation of Japanese delegation.

After the meeting a voluntary trip was organized by Prof. Lienhart to the famous wine region South Steiermark.

As attachment an actual compilation of all active work items and published standards of ISO/TC 172/SC6 is given.

Neubiberg, May 27 2014

Hans Heister

Abbreviations:

NWI: New work item proposal (stage 1)
WD: Working draft (stage 2)
CD: Committee draft (stage 3
DIS: Draft international standard (stage 4)
FDIS: Final draft international standard (stage 5)
ISO International standard (publication) (stage 6)

Active work items

Reference	Document title	Crnt Stage	Action/Next Step
ISO/DIS 9849	Optics and optical instruments -- Geodetic and surveying instruments -- Vocabulary	40.60	Comment resolution and decision about further proceedings
ISO/DIS 12858-1	Optics and optical instruments -- Ancillary devices for geodetic instruments -- Part 1: Invar levelling staffs	40.60	Comment resolution and decision about further proceedings
ISO 12858-2:1999/Amd 1	Optics and optical instruments -- Ancillary devices for geodetic instruments -- Part 2: Tripods -- Amendment 1	60.00	Publication
ISO/DIS 17123-1	Optics and optical instruments -- Field procedures for testing geodetic and surveying instruments -- Part 1: Theory	40.99	Formal Vote
ISO/CD 17123-8	Optics and optical instruments -- Field procedures for testing geodetic and surveying instruments -- Part 8: GNSS field measurement systems in real-time kinematic (RTK)	30.00	Comment resolution and decision about further proceedings

For more details see N 344 Status of Work

Preliminary Work Items

Reference	Document title	Crnt Stage	Action/Next Step
ISO/PWI 17123-9	Optics and optical instruments -- Field procedures for testing geodetic and surveying instruments -- Part 9: Terrestrial laser scanners	00.00	Discussion and decision
ISO/PWI 17123-10	Optics and optical instruments -- Field procedures for testing geodetic and surveying instruments -- Part 10: Non-prisma measurement (reflector less distance measurements by total stations)	00.00	Discussion and decision

For more details see N 344 Status of Work

Published Standards of ISO/TC 172/SC 6

Reference	Title	Comment
ISO 9849:2000	Optics and optical instruments -- Geodetic and surveying instruments -- Vocabulary	Under revision
ISO 12858-1:1999	Optics and optical instruments -- Ancillary devices for geodetic instruments -- Part 1: Invar levelling staffs	Under revision
ISO 12858-2:1999	Optics and optical instruments -- Ancillary devices for geodetic instruments -- Part 2: Tripods	Amd under publication
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	Proposal for revision
ISO 17123-1:2010	Optics and optical instruments -- Field procedures for testing geodetic and surveying instruments -- Part 1: Theory	Minor revision in progress
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	New
ISO 17123-6:2012	Optics and optical instruments -- Field procedures for testing geodetic and surveying instruments -- Part 6: Rotating lasers	
ISO 17123-7:2005	Optics and optical instruments -- Field procedures for testing geodetic and surveying instruments -- Part 7: Optical plumbing instruments	
ISO 17123-8:2007	Optics and optical instruments -- Field procedures for testing geodetic and surveying instruments -- Part 8: GNSS field measurement systems in real-time kinematic (RTK)	Under revision

International Measurement Standard of Property (IPMS)

An international initiative to establish International Property Measurement Standards is underway. Frances Plimmer, FIG Commission 9 Chair, is the FIG liaison for this initiative. A round table meeting is scheduled in Kuala Lumpur to discuss progress on this project.

International Property Measurement (IPMS) Declaration Document

As representative bodies of the international property profession, having agreed with the goal of addressing property measurement fragmentation to increase public trust while supporting financial reporting and sound economic information, we commit in principle to the development and implementation of International Property Measurement Standards and confirm our intention to fulfil the following Objectives:

Objective 1 - Ethics

Ethics guide everything we do and foster public trust. To complement property measurement standards, we follow ethical principles that guide our international profession.

Objective 2 – Standards

Standards are the foundation of our profession. We support the creation, maintenance and use of high quality, international and principle-based property measurement standards through a transparent and inclusive standard setting process.

Objective 3 - Measurement

Measurement underpins the assumptions on which property professionals undertake their activities. We will cooperate in creating an inclusive and sustained measurement standard setting process.

Objective 4 – Implementation

Once International Property Measurement Standards (IPMS) are created we are committed to promote the implementation of these standards to encourage world markets to accept and adopt IPMS as the primary method of property measurement.

The IPMS Coalition

The IPMS Coalition currently comprises the following 20 members who have signed the Declaration:

- Australian Property Institute (API)
- The Appraisal Foundation (TAF)
- Appraisal Institute (AI)
- Asia-Pacific Real Estate Association (APREA)
- Asociacion Professional de Sociedades de Valoracion (ATASA)
- American Society of Farm Managers and Rural Appraisers (ASFMRA)
- ASTM International
- Building Owners and Managers Association (BOMA)
- China Institute of Real Estate Appraisers and Agents (CIREA)
- CoreNet Global
- Council of European Geodetic Surveyors (CLGE)
- Commonwealth Association of Surveyors and Land Economists (CASLE)
- International Consortium of Real Estate Associations (ICREA)
- International Federation of Surveyors (FIG)
- International Monetary Fund (IMF)

- International Real Estate Federation (FIABCI)
- Property Council of Australia (PCA)
- Royal Institution of Chartered Surveyors (RICS)
- Open Standards Consortium for Real Estate (OSCRE)
- South African Property Owners Association (SAPOA)
- 25 members

IPMS Round Table Meeting Thursday, 19 June 11:30–13:00

The development of the International Measurement Standard of Property (IPMS) is continuing with the launch of the IPMS for Offices scheduled for the FIG Congress in Kuala Lumpur. Additional Standards on Retail, Dwellings and Other building types will follow.

The IPMS Coalition is now turning its attention to the measurement of Land, and also Construction Measurement and Ethics. For the purposes of Kuala Lumpur, FIG is planning a round-table debate on the subject of the Coalition's proposals for an International Standard for Land Measurement. Loads of issues involved here, but a major one is the limited appreciation of the Coalition secretariat as to the current international land measurement standards and the role of ISOs. This is largely due to the practice of measuring buildings around the world, which does not have an ISO and, as the need for the IPMS demonstrated, has had no international standard at all. ISOs are, therefore, not on their radar … but they are very much mainstream for FIG surveyors.

The round table meeting is, therefore, an opportunity for those knowledgeable in the practice of land measurement and the nature and role of ISOs to "educate" the IPMS secretariat. It is also relevant that those of us who are able to do this can identify themselves, not merely with FIG but with their National Associations. As I have discovered, the IMPS secretariat can be persuaded, but only by a strong and united international and professional association voice. Indeed, the focus of the IPMS on buildings (rather than land and buildings which was their original aim) was the result of just such a round table debate and consensus.

Standards Issues in other Commissions

The Standards Network Template- list of commission topics

The pertinence of the *Standards Template* will be discussed in the Kuala Lumpur Standards Meeting and a decision will be made to maintain it or replace it with something better adapted to communicating the Commissions standards activities keeping people informed of them.

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

There was also some discussion concerning FIG Publication No. 9. At the FIG working week held in Marrakesh it was decided to that FIG publication No. 9 Recommended Procedures for Routine Checks of Electro-Optical Distance Meters - (http://www.fig.net/pub/figpub/pub09/FIG-Publication_Nr9_english.pdf) should be revised with additions for recommendations for hand held distance-meters and reflector-less instruments. Unfortunately due to a very heavy workload this has not advanced. 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 BIMP 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

The broad spectrum of work in FIG shows that 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 the remarkable work of Commission 7 members to initiate, develop and publish 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.

During the Standards meeting held in Marrakesh it was remarked that the representatives of the different Member Associations, Affiliates, Corporate members and Academic members are directly concerned with the importance and impact of standards on the profession. They should be informed of the activities of the FIG Standards Network. They should also provide input on how standards impact on them and indeed what they would like to see accomplished in the Standards Network.

Recall the Kuala Lumpur FIG ***Standards Network meeting is scheduled for Wednesday 18 June 2014 11:30 to 13:00***. All those interested in the work of the Standards Network are cordially invited to attend.