The TC 59 secretariat is happy to present the eleventh newsletter of ISO/TC 59, giving a brief indication of current or recent affairs in our committee. The newsletter is distributed twice a year. Feel free to use this as a forum to inform others of your work or draw attention to areas you would like to highlight with relevance to ISO/TC 59. Please send your contributions to the TC 59 secretary at ksb@standard.no.

ISO/TC 59 at the Heart of Facility and Infrastructure Industry Transformation

A standard for Total Cost of Ownership (TCO) is being developed by APPA (APPA: Leadership in Educational Facilities) which is a recognized American National Standard Institute, ANSI, standards developing organization. Why is this important to ISO/TC 59? Because the APPA TCO standard is based on ISO/TC 59/SC 14's ISO 15686 Service Life and links to ISO 55000 Asset Management, an effort of ISO/TC 251, and ISO 41000 Facility Management, the work of ISO/TC 267.

While the APPA 1000 TCO standard is the United States implementation of ISO 15686, the standard also outlines for the facilities and infrastructure industries how the many disparate pieces fit together.

Not only does the APPA 1000 TCO standard connect the above ISO standards together, it also links TCO to BIM, a potential significant resource of TCO information. How, you ask? This connection occurs because of ISO 15686-4 Service Life Planning using IFC based Building Information Modelling and ISO 16739:2013 Industry Foundation Classes (IFC) for data sharing in the construction and facility management industries from ISO/TC 184/SC 4. Since ISO 15686 also mentions COBie, and COBie is linked to CSI OmniClass, then the connections really do a tremendous job of bringing all the key elements together for the facilities and infrastructure industries.

Having comprehensive financial metrics in place through TCO/Service Life will help support far better decision-making in the facilities and infrastructure industries as well as provide a stronger argument to populate the “I” in BIM.

Couple this with the product libraries efforts such as BIMObject, which was recently incorporated into Autodesk Seek, and now you have the tools to begin populating the information models needed for both BIM and TCO.

All this provides the foundation to bring profound change to the facilities and infrastructure industries, but that will not happen without a significant amount of education and training as culture change of this magnitude will not be easy to accomplish. However, since the reward is so great, change will certainly come and ISO/TC 59 will be at the heart of the transformation.

Text by Dana K. “Deke” Smith, FAIA, Co-Chair APPA TCO 1000 Committee

ISO/TC 59/SC 13/WG 11 develops the standard ISO 16757 to describe products of building services systems. It is based on the German standard VDI 3805 which has been used by manufacturers, software companies and designers in Germany for more than 10 years. ISO 16757 supports the digital exchange of product data that manufacturers have traditionally provided by paper-based product catalogues. ISO 16757 allows the design and simulation of complex building services systems. It is based on the German standard VDI 3805 which has been used by manufacturers, software companies and designers in Germany for more than 10 years. ISO 16757 supports the digital exchange of product data that manufacturers have traditionally provided by paper-based product catalogues. ISO 16757 allows the design and simulation of complex building services systems in CAD software systems – on the basis of data provided by product manufacturers. Important features are dynamic properties to describe the behavior of a product in dependency of conditions of the surrounding system and the handling of the big number of variants of building services products by means of a parametric representation of products and their respective geometries.

ISO 16757-1 defines the overall architecture and model. Part 2 defines the geometric elements based on STEP (ISO 10303-42) and IFC (ISO 16739), both are on the IS level. There are three further “infrastructure” Parts under development, a script language to define functions and algorithmic information (Part 3), an overview about the relationships to other BIM standards (Part 4), and an exchange format (Part 5). In addition, a number of “Content” Parts will be developed, to basically define the specific properties of a product group.

ISO/TC 59/SC 13WG 11 is interested in a close cooperation with other organizations in order to develop ISO 16757 in a concerted action with other activities around BIM and buildingSMART. ISO 16757 will also be published as a CEN standard under the Vienna Agreement, so that currently, connections to European industry associations are being established. An important goal is to provide the properties in an online dictionary – a canonic candidate would be bSDD (buildingSMART Data Dictionary). Read full article about ISO 16757 on the ISO/TC 59 website.

Text by Dr. Wolfgang Wilkes, FernUniversität in Hagen and Convener of ISO/TC 59/SC 13/WG 11
Growth in Environmental Product Declarations (EPD) for construction products

**ISO/TC 59/SC 17/WG 3** has recently completed the revision of ISO 21930:2007 *Sustainability in building construction – Environmental declaration of building products*, which will be published later this year. The standard now provides the core product category rules for EPD for construction products, and the revision has aligned very closely with EN 15804:2012, the corresponding European Standard.

Jane Anderson, Principal Consultant at thinkstep and a UK Expert in WG 3, has been tracking EPD numbers since 2011, and reports that there are now over 4000 verified construction product EPD available to either ISO 21930 or EN 15804.

Using construction products with verified EPD to ISO 21930 or EN 15804 can achieve credits in LEED and BREEAM (the leading global sustainable building certification schemes), and assist in calculating and reducing building impacts from materials over the life cycle, which can also obtain credits in LEED, BREEAM and DGNB. Both Life Cycle Assessment (LCA) for buildings and infrastructure and EPD are being referenced in Green Public Procurement in Norway, the Netherlands and Ireland for example, and France and Belgium have both regulated to ensure that environmental claims about construction products are supported by verified EPD within national EPD programmes. It is no surprise therefore that the numbers of EPD available globally has seen strong growth.

For example, the UL Environmental EPD programme in the US was only launched in 2011, but now lists over 600 construction product EPD, and EPD Norge, the Norwegian EPD Programme, has seen a growth from 50 construction product EPD in 2011 to over 300 today. In France there are 500 verified EPD in the inies database, and there are over 1500 EPD listed in the German IBU EPD Programme. Construction product EPD programmes are also operating in Australasia, Latin America, Turkey and in the majority of European member states.

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**News from SC 17 Sustainability in buildings and civil engineering works**

Following SC 17’s adoption of a preliminary work item titled ISO/PWI 22057 *Enabling use of Environment Product Declarations (EPD) at construction works level using building information modelling (BIM)* under WG 3, a workshop took place in Paris in March 2017 to share what is done in each country. It was a success with many presentations that will help in the drafting of the standard.

ISO/FDIS 21930 *Sustainability in building construction – Environmental declaration of building products* was positive and the standard will be published soon.

The next plenary meeting of SC 17 and its WGs will take place in Israel in September 2017.

Text by Karine Dari, Secretary of ISO/TC 59/SC 17

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**News from SC 2 Terminology and harmonization of languages**

**SC 2/WG 4** (Convenor Brian Edgill) has been working on two projects. The first is a revision of ISO 6707-1:2014 *Buildings and civil engineering works – Vocabulary – Part 1: General terms*. It is necessary to revise and update this continuously to keep it line with terminology work in other TC 59 committees. This latest update incorporates ISO 2444 *Joints in building – Vocabulary* – a standard which recently became the responsibility of SC 2. A DIS has been approved and the text of a FDIS submitted to ISO Central Secretariat. This standard will make the communication of all types of information and data between contractors and clients and their design teams easier, as well as the drafting and interpretation of contracts. The change in scope will also make the document more useful to organizations of all sizes and be a complement to the terminology that is evolving for Building Information Modelling (BIM).

A second project involves a revision and enlargement of ISO 6707-2 *Contracts terms* to include Communication terms. The enlargement will make the standard more useful internationally and in particular will reflect the recent standards of SC 13. A DIS has been approved and the text of a FDIS submitted to ISO Central Secretariat. This standard will make the communication of all types of information and data between contractors and clients and their design teams easier, as well as the drafting and interpretation of contracts. The change in scope will also make the document more useful to organizations of all sizes and be a complement to the terminology that is evolving for Building Information Modelling (BIM).

Text by Mike Roberts, Secretary of ISO/TC 59/SC 2
Our subcommittees
In our newsletters, we will give you short presentations of all the ISO/TC 59 subcommittees. This time, we look to SC 13.

SC 13 Organization of information about construction works
Chair: Kjell Ivar Bakkmoen (Norway)
Secretary: Lisbet Landfald (Standards Norway)

SC 13’s prime focus is to organize information about construction works. The figure below shows how the traditional processes repeatedly experience dramatic information loss, especially in the steps between the main processes and life-cycle stages, and that digital processes often are supported with manual processes to build and rebuild the information.

Several studies have shown that:

a) 25-30% of the construction cost is caused by splitting up of processes and lack of communication,
b) within the same domain there is often significant communication errors and loss of information,
c) the same information is re-entered on average 7 times in different systems before the building is handed over to owner organization,
d) the same information is also re-created several times by different software.

Building construction information models (BIM) are shared digital representations of physical and functional characteristics of any built object (including buildings, bridges, roads, etc.) which forms a reliable basis for decisions. With a BIM based construction process, the loss of information between processes and/or stages can be eliminated. This requires the development and implementation of BIM standards for the building and construction industry.

BIM will be useful for the whole lifecycle of buildings and their assets, both in economic, social and environmental terms. SC 13 acts as “The gateway to ISO BIM-standards”.

Systems for organization of information are crucial for the AEC industry. SC 13 is an incubator and facilitator for development of standard-based solutions for exchange of information about construction works. The time necessary from an idea to development of a standard can be reduced through collaboration with SC 13, and the relevance of the standards developed can be increased. buildingSMART International is an example of an industry organization where we have a mutual collaboration.

Standards from SC 13 can be used for semantic interoperability. Examples of these types of standards are the ISO 12006-3 as foundation for development of the IFD library (buildingSMART Data Dictionary), and the Information Delivery Manual (IDM) series, ISO 29481, for specification of the relevant information to be exchanged.

Standards from SC 13 can be used as framework for other standardization projects. Use of the IDM series, ISO 29481, for specification of required information can be considered as example of this use.

Recognition status launched by buildingSMART
A new Fellowship status was launched at buildingSMART International’s Barcelona summit in April, recognising the voluntary contributions of 18 buildingSMART members and officers – past and mainly present – from around the world.

This first tranche of awards celebrated the founding of buildingSMART (then called IAI), and many of those honoured were instrumental in its creation and in setting up their own chapters. Others had provided technical assistance in developing the IFC standard. “Our new Fellows come from very varied backgrounds and have willingly contributed their time and experience to make buildingSMART the thriving and influential organisation it is today,” said Patrick MacLeamy, bSI chair. At the request of the new Fellows, Patrick MacLeamy was also awarded a Fellowship in recognition of his long service – and infectious commitment – to bSI.

Each of the Fellows present was presented with a buildingSMART certificate and gold pin. The pin is in the shape of the buildingSMART links logo, allowing the new Fellows to be identified immediately at public events.

Text by Betzy Dinesen, Editor for buildingSMART International

Patrick MacLeamy, Chair of buildingSMART International.
ISO/TC 59 at WSBE17 in Hong Kong

At the beginning of June, the World Sustainable Built Environment Conference took place in Hong Kong. With approximately 1,800 participants, it was one of the largest events worldwide on this topic. With the kind support of the International Initiative for a Sustainable Built Environment (iiSBE), which provided space and personnel for ISO/TC 59 at its stand, the participants were provided with up-to-date information on current international standardization activities in the construction sector.

Current standardization projects from ISO/TC 59/SC17 were also presented in individual papers during the conference. This attracted great interest among numerous researchers. Often, they were not aware of how they could contribute to international standardization processes. It is becoming increasingly important to mobilize international expertise and to motivate representatives from countries to participate in an active way. Events such as these are the perfect opportunity to get in touch with experts and familiarize them with the standards and processes involved in their development.

Text and photo by Prof. Dr.-Ing. habil. Thomas Lützkendorf, Karlsruhe Institute of Technology and German expert to SC 17.

Upcoming meetings under ISO/TC 59

ISO/TC 59 has a plenary meeting every two years, and an Advisory Group meeting every year. In 2017, there is no plenary meeting on the TC level, but the ISO/TC 59 Advisory Group will meet in Pretoria, South Africa, on 22 October. Three subcommittees with working groups will meet in conjunction with the AG meeting. These are the dates for the meetings in Pretoria:

SC 2 Terminology and harmonization of languages: 23-25 October
SC 15 Framework for the description of housing performance: 24 October
SC 18 Construction procurement: 25-26 October

SC 8 Sealants will meet in London, UK, on 11-13 October,
SC 13 Organization of information about construction works will meet in London, UK, on 30 October to 3 November in conjunction with the autumn meeting of buildingSMART International,
SC 17 Sustainability in buildings and civil engineering works will meet in Tel Aviv-Yafo, Israel, on 10-14 September.

(SC 16 Accessibility and usability of the built environment met in Madrid in March 2017.)

The next ISO/TC 59 plenary week will take place in Beijing, China, in the week starting on 22 October 2018.

Published since December 2016

ISO 15686-7:2017 Buildings and constructed assets – Service life planning – Part 7: Performance evaluation for feedback of service life data from practice (SC 14)
ISO 16745-1:2017 Sustainability in buildings and civil engineering works – Carbon metric of an existing building during use stage – Part 1: Calculation, reporting and communication (SC 17)
ISO 10563:2017 Buildings and civil engineering works – Sealants – Determination of change in mass and volume (SC 8)