European Standardization Organizations

We start at 14:00 CET

Welcome to this webinar

Building Information Modelling (BIM) supports the digitalization of standards for the construction sector. First elements on Building Information Modelling.

Your webinar moderator

Els SOMERS

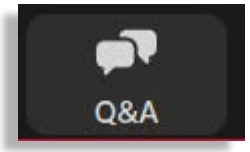
Project Manager Engagement

Governance & Partnerships

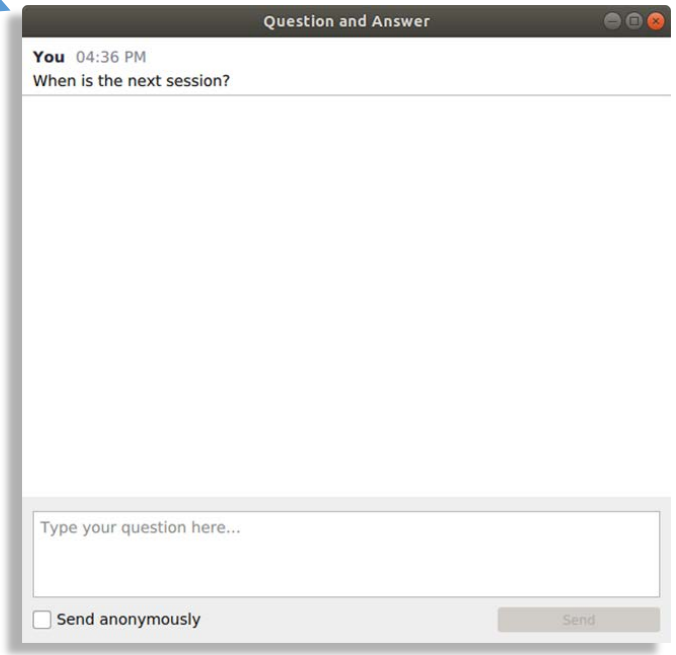
esomers@cencenelec.eu

Get the most out of the webinar today

- You are many! So, you are muted



- Use the Q&A panel to submit your questions
- Chat messages will not be looked at
- Upvote on the questions raised by others 2
- Keep your question short & concise
- Address your question to the speaker



- Talk about us on Twitter #training4standards @Standards4EU

Agenda

- Introduction
- General information on BIM and scope of CEN/TC 442
- How can processes & methodologies developed by CEN/TC 442 be used?
  - How to achieve digital collaboration in construction
  - How does BIM support information exchanges in construction processes (EN ISO 19650) ?
  - How can we describe products and their properties digitally in our own standards (EN ISO 23386)?
  - How can we describe our products and their properties? Using a dictionary, a specific annex in a standard… (ISO 12006-3) ?
  - How can we integrate product data into BIM? Engineering calculations with digital building models according to standards (EN ISO 16757) ?
- Liaisons and their importance
- Conclusion

Introduction

Constant KOHLER

Account Manager Electrotechnology

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Manuela TANCOGNE-DEJEAN

Convenor CEN/TC 442/WG7

Mandated by the French National Strategy for Digital Transformation of Construction Sector

ADN Construction

European Standardization System

- Supporting the Digital Transformation of industries through state-of-the art European Standards

- Achieving the Digital Transformation of European Standards

What are the perspectives for BIM standardization in Europe?

Standards are a coordinated effort

- Several **CEN** and **CENELEC** technical bodies are working on Data Modelling
- In synchronization with international standardization in **ISO** and **IEC**
  - Raise understanding on the role and objectives of BIM standards
  - Foster the digital collaboration in the build environment

Improve collaboration ties: CEN/TC 442 needs you!

Standards are a coordinated effort

- Several **CEN** and **CENELEC** technical bodies are working on Data Modelling
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  - Raise understanding on the role and objectives of BIM standards
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Improve collaboration ties: CEN/TC 442 needs you!

CEN & CENELEC Strategy 2030

Press release here.

CEN/TC 442 ”BIM”: Horizontal purpose

- The **purpose of CEN / TC 442** is to facilitate and support the digital transition in standardisation work in the construction sector of which BIM is a part

- The **objectives of CEN / TC 442** are:
  - To provide a structured set of standards, specifications and reports that specify methodologies
  - To define, describe, exchange, monitor and manage securely asset data, semantics and processes

These standards cover the entire life cycle of buildings

CEN/TC 442 ”BIM”: Horizontal purpose

As well as the **construction sector,** which brings together a wide variety of actors and interests (products, services, stakeholders, etc.),

CEN/TC 442:

- **Ensures that the information** from each standardization committee is taken into account in all their specifications, because **the business expertise lies in each TC**

- **Promotes a trusted BIM ecosystem** based on collaboration and the implementation of sustainable solutions

CEN/TC 442 ”BIM”: Horizontal purpose

The **construction sector** is a horizontal sector

So, **working together** implies, as a minimum :

- **A need for trust** in order to clear up fears and doubts of appropriation of technical aspects by computer scientists

- **A need for efficiency** to avoid the duplication of data and the risk of the emergence of divergent and contradictory solutions

CEN/TC 442 ”BIM”: Horizontal purpose

Thus, in order to meet these objectives, CEN/TC 442 decided:

- **To create a “Forum"** for exchange between CEN/TC 442 and other TCs
- **To establish a framework** for a collaborative approach
- **To support the development of deliverables** necessary to facilitate the digitization of information and processes in the construction and building sectors

These tasks are assigned to

CEN / TC442 / WG7 "Horizontal role"

CEN/TC 442 ”BIM”: Horizontal purpose

CEN/TC442/WG7 « Horizontal role » is a win-win WG with 3 main activities:

- **A coordination activity**
- **An advisory activity**
- **An outreaching activity**

CEN/TC 442 ”BIM”: Horizontal purpose

In this context of collaboration between other TCs :

CEN/TC 442 and CCMC decided to communicate together on BIM

CEN/TC 442 ”BIM”: Horizontal purpose

The objectives of this webinar are twofold:

- **Explain what CEN/TC 442 does**, in a simple way, to provide answers and explanations on BIM, on how to use BIM, on BIM methodologies and processes

- **Invite TCs interested in BIM to liaise with CEN/TC 442** to develop processes and methodologies according to the needs of construction stakeholders and the needs of products TCs, in order to support the implementation of BIM

CEN/TC 442 ”BIM”: Horizontal purpose

Building information modelling is a process of

USEFUL digital exchanges and models

TO BUILD AND OPERATE REAL ASSETS

LET US WORK TOGETHER!

General information on BIM & scope of CEN/TC 442

Øivind ROOTH

Chairperson CEN/TC 442

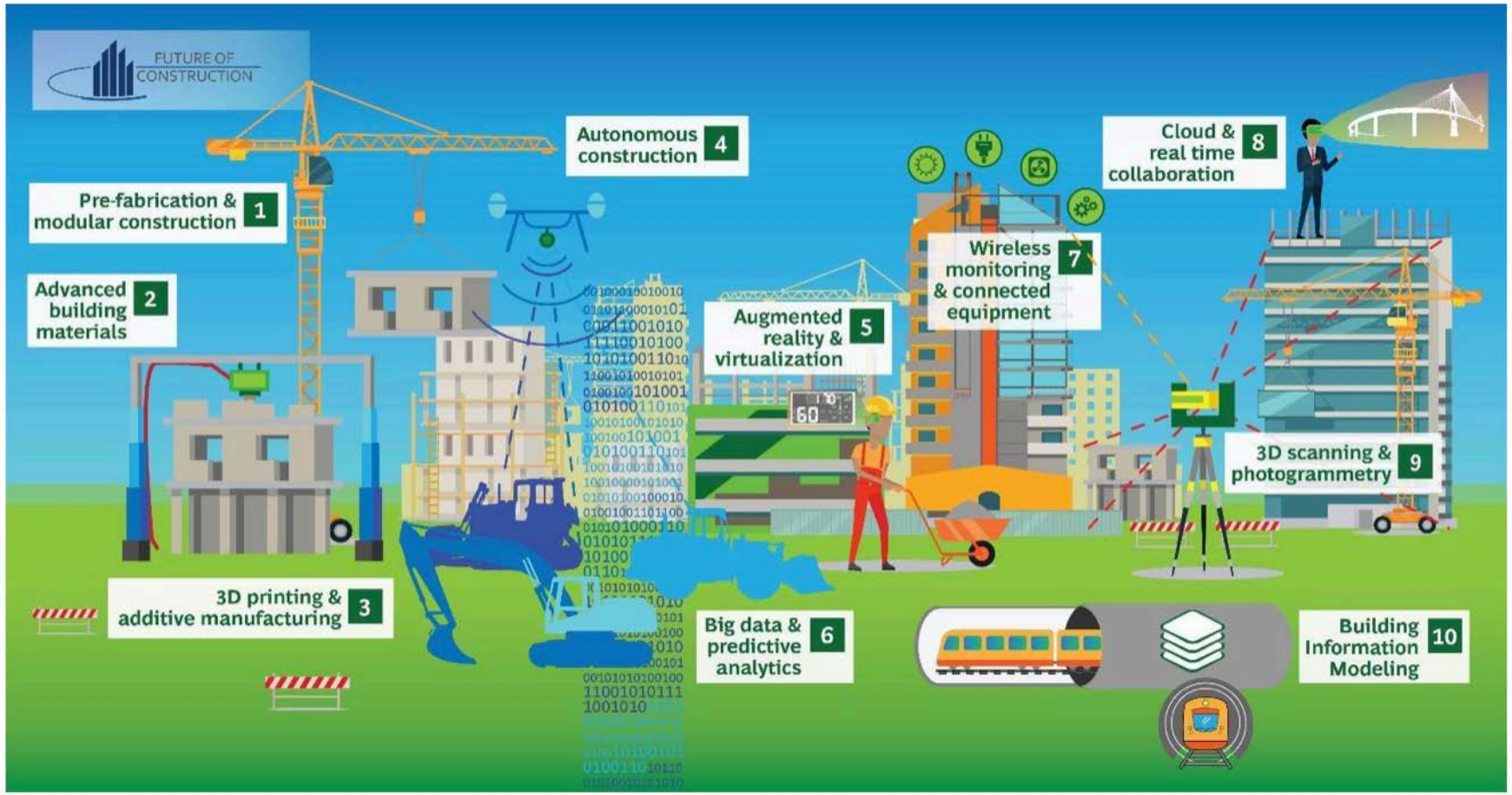
Specialist Director

Norwegian Building Authority

General information on BIM & scope of CEN/TC 442

Image: World Economic Forum, Boston Consulting Group

Top 10 disruptive technologies



Top 10 disruptive technologies in construction Image: World Economic Forum, Boston Consulting Group

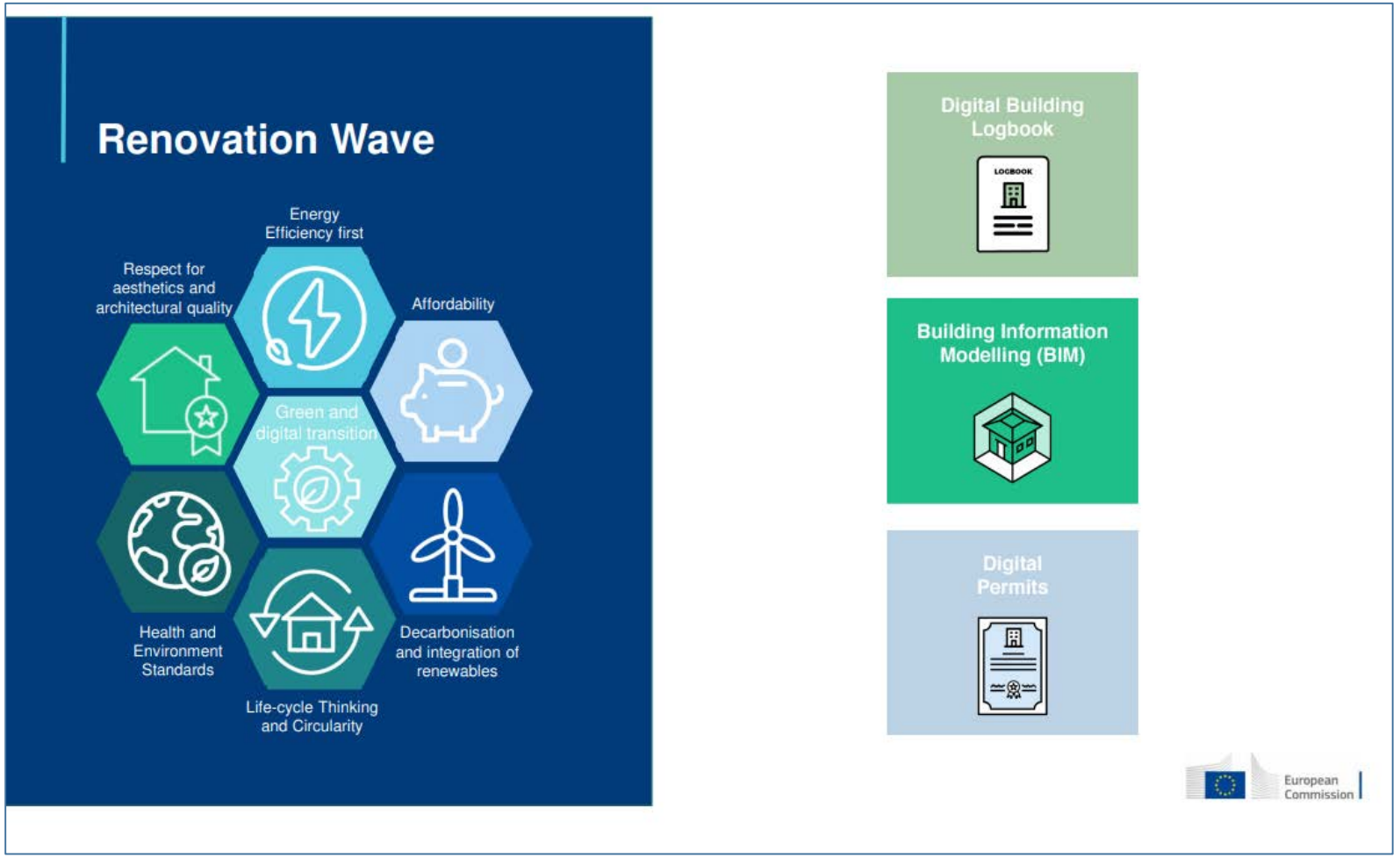
What is BIM?

The core of the fourth Industrial Revolution is data. Computers can process mass of data in microseconds. **Building Information Modelling (BIM) is about transforming data to information enabling digitalization of the Construction Industry value chain in an assets lifecycle.**

BIM can change the construction industry and facilitate digitalization.

Building Information Model – BIM or BIM-model – is a digital representation of a built asset

Digitalization of construction support the implementation of the «New Green Deal» strategy



BIM standardization in Europe

- There is a high level political goal to digitalize the construction sector in Europe to gain **productivity** and a **carbon neutral society**
- Establish a common marked for Construction in Europe through digitalization
- Standards are needed to support digitalization. CEN/TC442 strategies to develop standards are:
  - Collaborate within standardization bodies in Europe (e.g. CEN, CENELEC)
  - Adopt relevant international standards and collaborate with international standardization bodies (e.g. ISO, IEC, buildingSMART)
  - Standardize how to use international BIM standards in Europe and develop European BIM standards when needed to support European strategies, regulations and marked needs.

CEN/TC 442 – Building Information Modelling

Scope

Standardization in the field of structured semantic life-cycle information for the built environment.

The committee will develop a structured set of standards, specifications and reports which specify methodologies to define, describe, exchange, monitor, record and securely handle asset data, semantics and processes with links to geospatial and other external data.

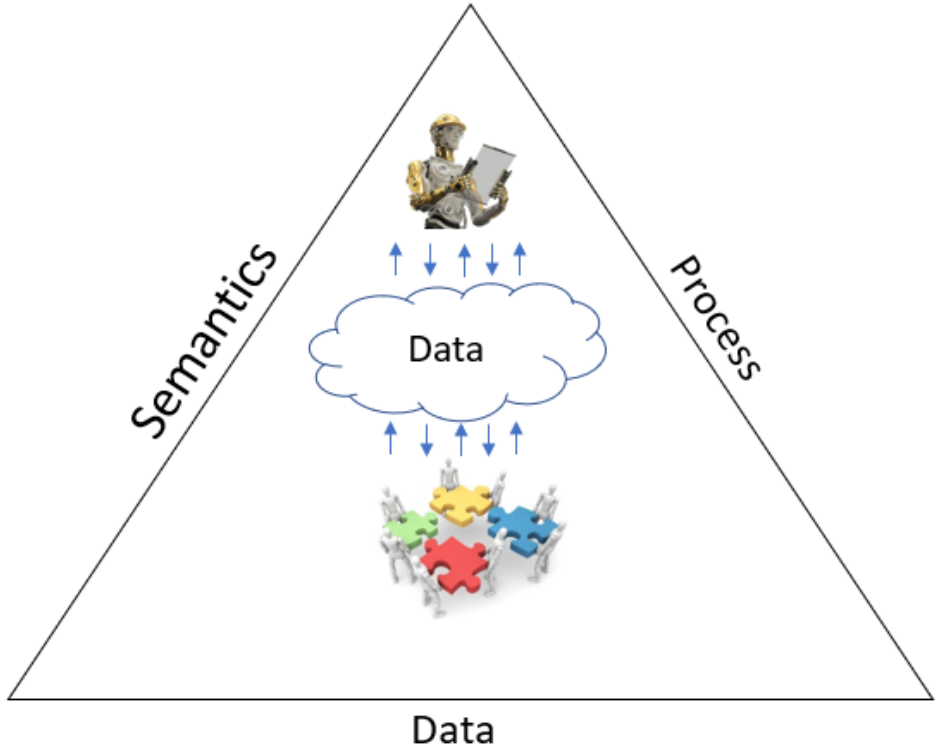
Interaction with CEN and CENELEC TC's

CEN/TC 442 will **specify methodologies** to digitally define, describe, exchange, monitor, record and securely handle asset data, semantics and processes with links to geospatial and other external data which other TCs will then adopt.

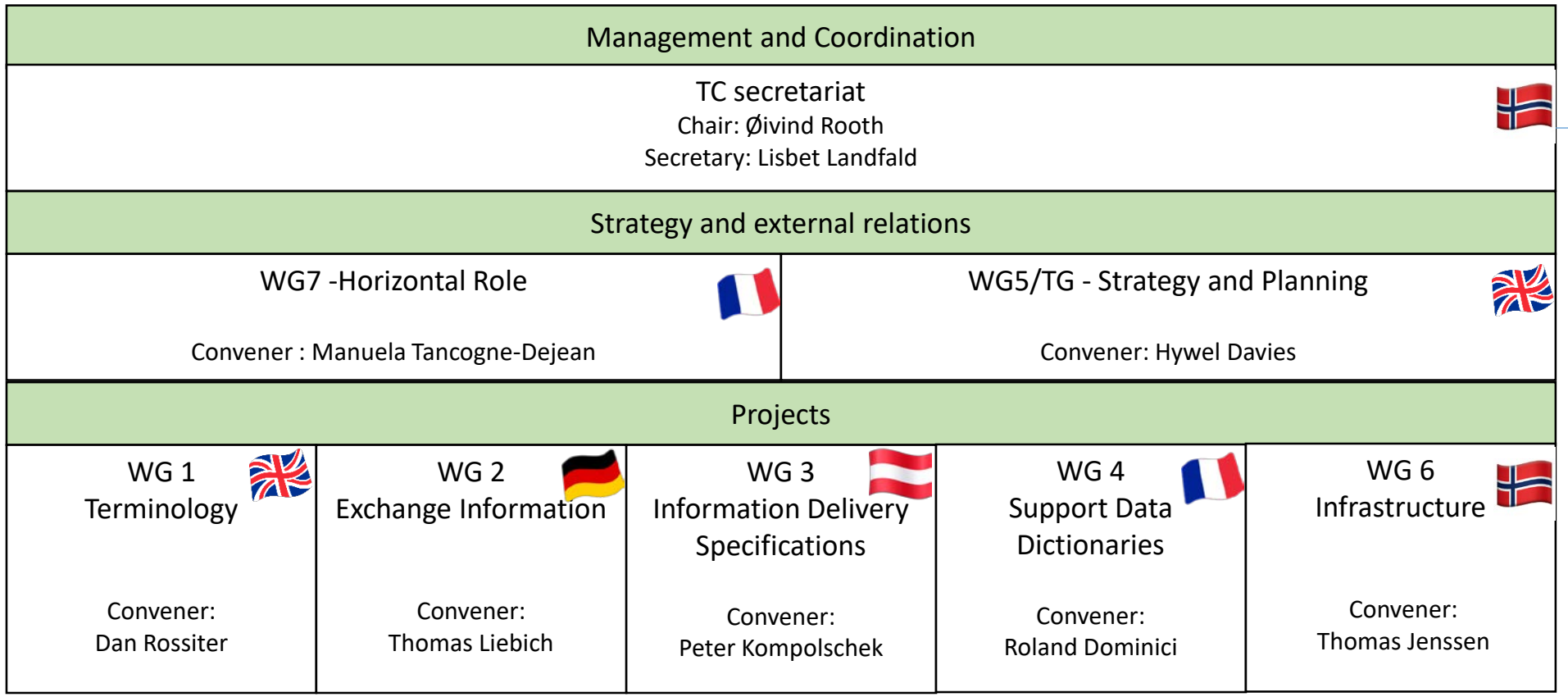
However, the other TCs will define their own properties, processes and elements.

Interoperability is conditioned by three sets of standards

- Model standards to specify data structure for entities, geometry and related properties as well as classification for exchanging data models. The data model ensures exchange of object-based information;
- Data Dictionary standards to specify data structure for defining data-semantic concepts (entity, property, classification…) and relations between them;
- Process standards to specify how to describe the required information supporting a given process.



Structure of CEN/TC 442



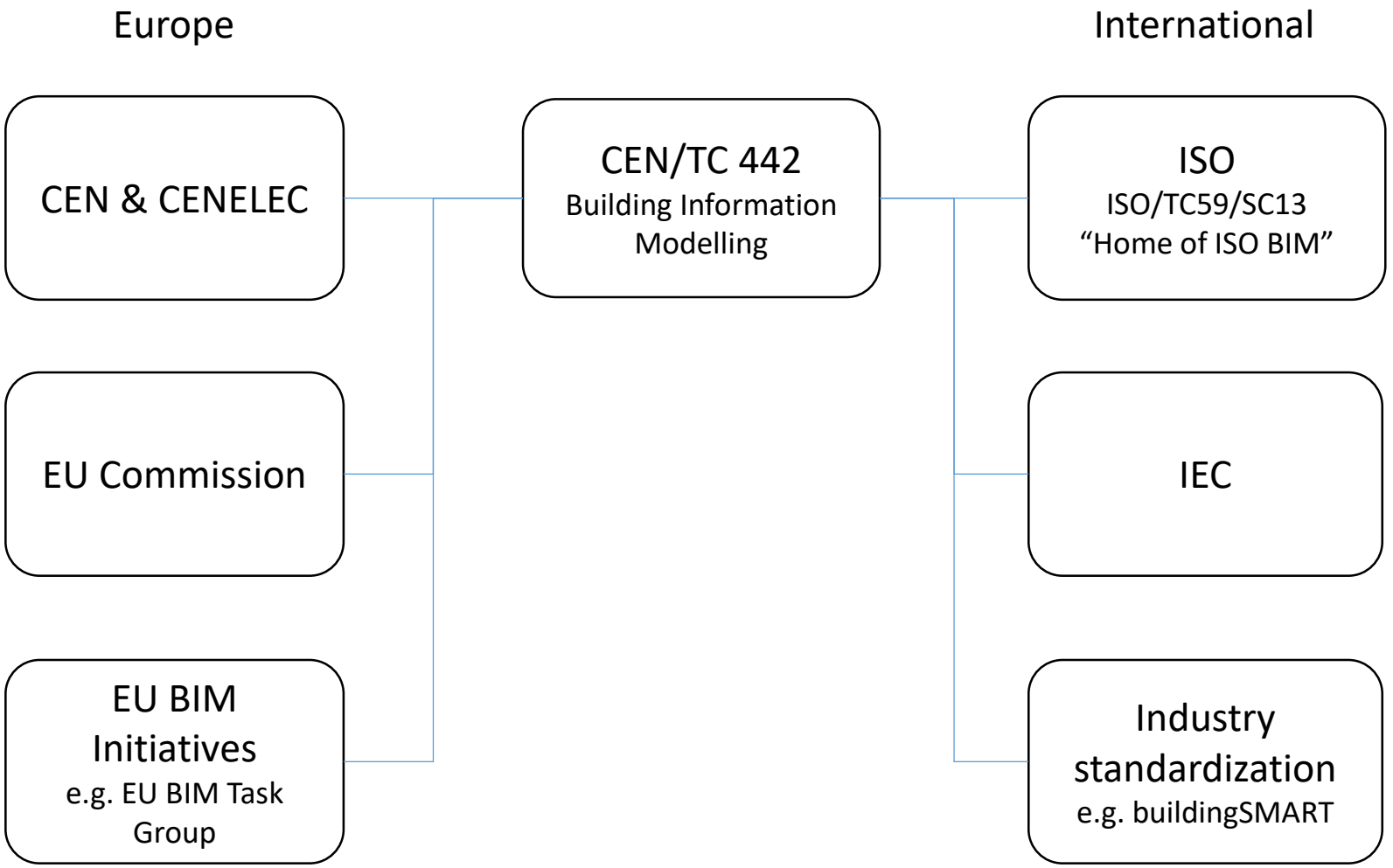
Chairpersons Advisory Group

The Vienna Agreement

The Vienna Agreement regulates the relationship between ISO and CEN

More information.

Relations in international BIM standardization



BIM standardization can not be done within CEN/TC 442 alone.
It is a complex structure of committees within ISO, CEN, CENELEC, IEC and other industry and Government standardization bodies that needs to collaborate.

The Vienna Agreement and the liaison system are important tools to achieve good collaboration.

CEN/TC 442 has adopted central ISO standards in the field of BIM

EN ISO 12006-2	Framework for classification
EN ISO 12006-3	Framework for object-oriented information
EN ISO 16739-1	Industry Foundation Classes (IFC) for data sharing in the construction and facility management industries - Part 1: Data schema
EN ISO 29481-1	Information Delivery manual – Methodology and format
EN ISO 29481-2	Information Delivery manual – Interaction framework
EN ISO 16757-1	Data structures for electronic product catalogues for building services - Part 1: Concepts, architecture and model
EN ISO 16757-2	Data structures for electronic product catalogues for building services - Part 2: Geometry

Developed through the Vienna Agreement

ISO lead:

EN ISO 19650-1	Information Management using Building Information Modelling Part 1- Concept and Principles
EN ISO 19650-2	Information Management using Building Information Modelling Part 2:2018 – Delivery phase of an asset
EN ISO 19650-3	Information Management using Building Information Modelling Part 3: Operation phase of an asset
EN ISO 19650-5	Information Management using Building Information Modelling Part 5 – Security Minded approach to information management
EN ISO 21597-1	Information container for data drop - Exchange specification - Part 1: Container
EN ISO 21597-2	Information container for data drop - Exchange specification - Part 2: Dynamic semantics

CEN lead:

EN ISO 23386	Methodology to describe, author and maintain properties in interconnected dictionaries
EN ISO 23387	Data templates for construction objects used in the life cycle of any built asset-Part1 Concepts and Principles

CEN/TC 442 developed products

EN 17412-1	Building Information Modelling - Level of Information Need - Concepts and principles
CEN/TR 17439	Guidance on how to implement EN ISO 19650-1 and -2 in Europe

CEN/TC 442 Work Programme #1

WI 00442035	Data templates for construction objects used in the life cycle of built assets — Data templates based on European standards and technical specifications
prEN 17549-1	Information structure based on EN ISO 16739 1:2018 to exchange data templates and data sheets for construction objects - Part 1: Data templates and configured construction objects
prEN 17632	Semantic Modelling and Linking (SML)
CEN/TR (WI 00442023)	Guideline on how to understand and utilize EN ISO 29481 Building information models - Information delivery manual - Part 1: Methodology and format and Part 2: Interaction framework
FprCEN/TR 17654	Guideline for the implementation of BIM Execution Plans (BEP) and Exchange Information Requirements (EIR) on European level based on EN ISO 19650-1 and -2
WI 00442027	BIM in infrastructure - standardization need and recommendations

Link to the Work Programme online

CEN/TC 442 Work Programme #2

prCEN TR (WI00442031)	Framework and Implementation of Common Data Environment Solutions, in accordance with EN ISO 19650
WI00442032	Common Data Environments (CDE) for BIM projects –Open data exchange between platforms of different vendors via an open CDE API
WI00442030	Building Information Modelling – Level of information need – Part 2: Guidance for application
WI00442029	Building Information Modelling – Level of information need – Part 3: Data Schema
prEN 17549-2 (WI00442033)	Exchange structure for product data templates and product data sheets based on ISO 16739-1 - Part 2: Requirements and configurable products

Link to the Work Programme online

CEN/TC 442 Work Programme #3
Vienna Agreement projects

EN ISO 19650-4	Information Management using Building Information Modelling Part 4 – Information exchange
EN ISO 12006-3 revision	Framework for object-oriented information
EN ISO 29481-3	Information Delivery manual – Data schema and classification

Link to the Work Programme online

How can processes & methodologies developed by CEN/TC 442 be used?

Anne KEMP

Convenor ISO TC59/SC13/WG13 (ISO 19650 series)

Co-Chair CEN/TC442/WG5/TG Strategy and Planning

Technical Director BIM, Geospatial and Digital Engineering, SNC Lavalin – Atkins Limited

It’s all about information….

B I M

Better INFORMATION Modelling
Management

With the lowest common denominator being digital data…..

Liberated Data

Key principles of the 19650 series

Perspective	Purpose	Example deliverables
Asset owner's perspective	To establish and maintain the purpose of the asset or project. To make the strategic business decisions.	Business plan Strategic asset portfolio review Life cycle cost analysis
Asset user's perspective	To identify the true requirements of the user and make sure the asset solution has the right qualities and capacities.	Project brief AIM PIM Product documentation
Project delivery or asset management perspective	To plan and organize the work, mobilize the right resources, coordinate and control development.	Plans, for example BIM Execution Plans Organizational charts Function definitions
Society's perspective	To make sure the community's interest is taken care of during the asset life cycle (planning, delivery and operation).	Political decisions Area plans Building permits, concessions
NOTE The example deliverables are relevant to the point of view of each perspective and do not indicate ownership of the deliverables or who does the work to produce the deliverables.		

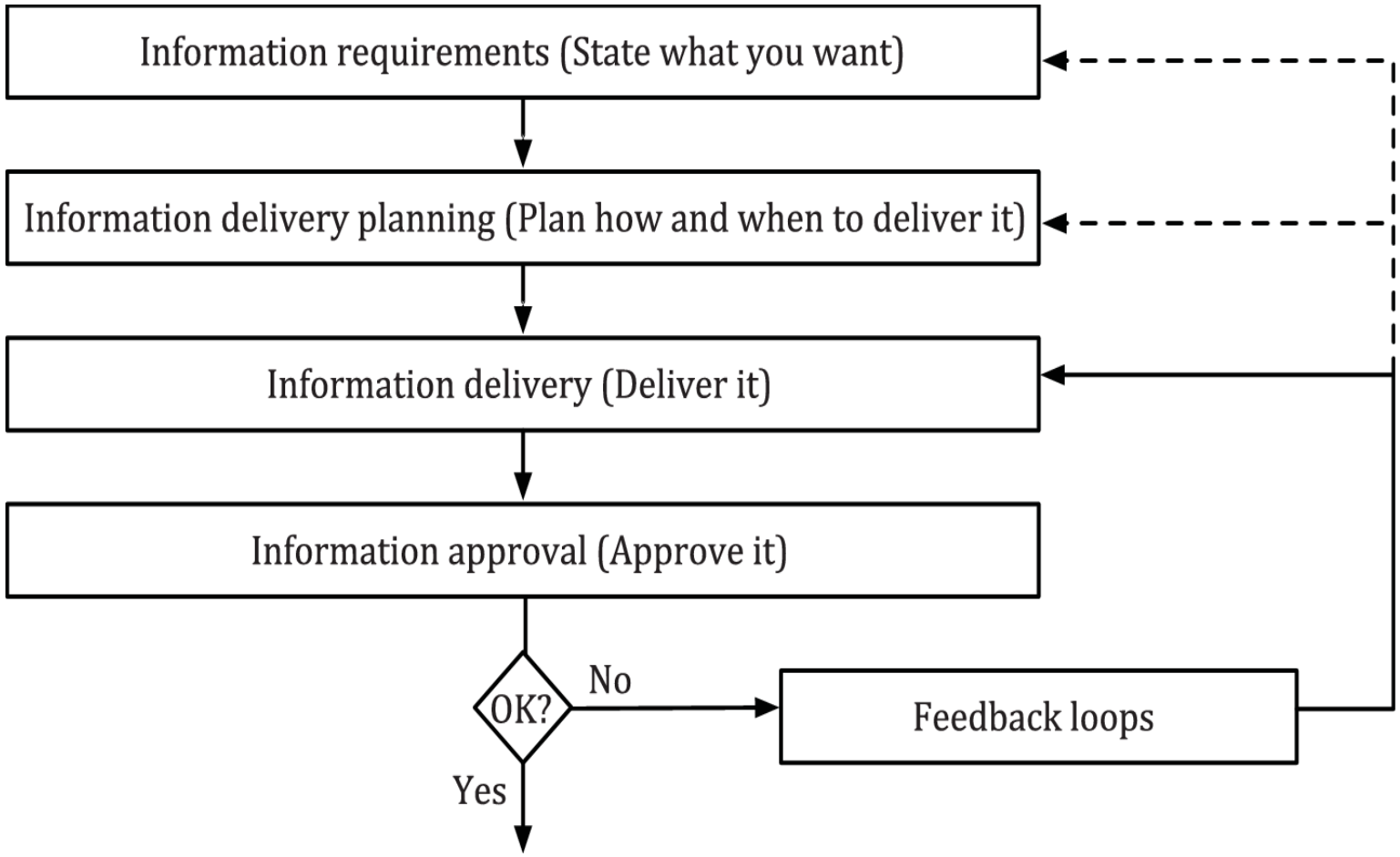
Key principles of the 19650 series

The 19650 series is applicable to assets of all sizes and all levels of complexity. This includes portfolios of buildings, campuses, infrastructure networks, individual buildings and pieces of infrastructure. The requirements in this document should be applied in a way that is proportionate and appropriate to the scale and complexity of the asset.

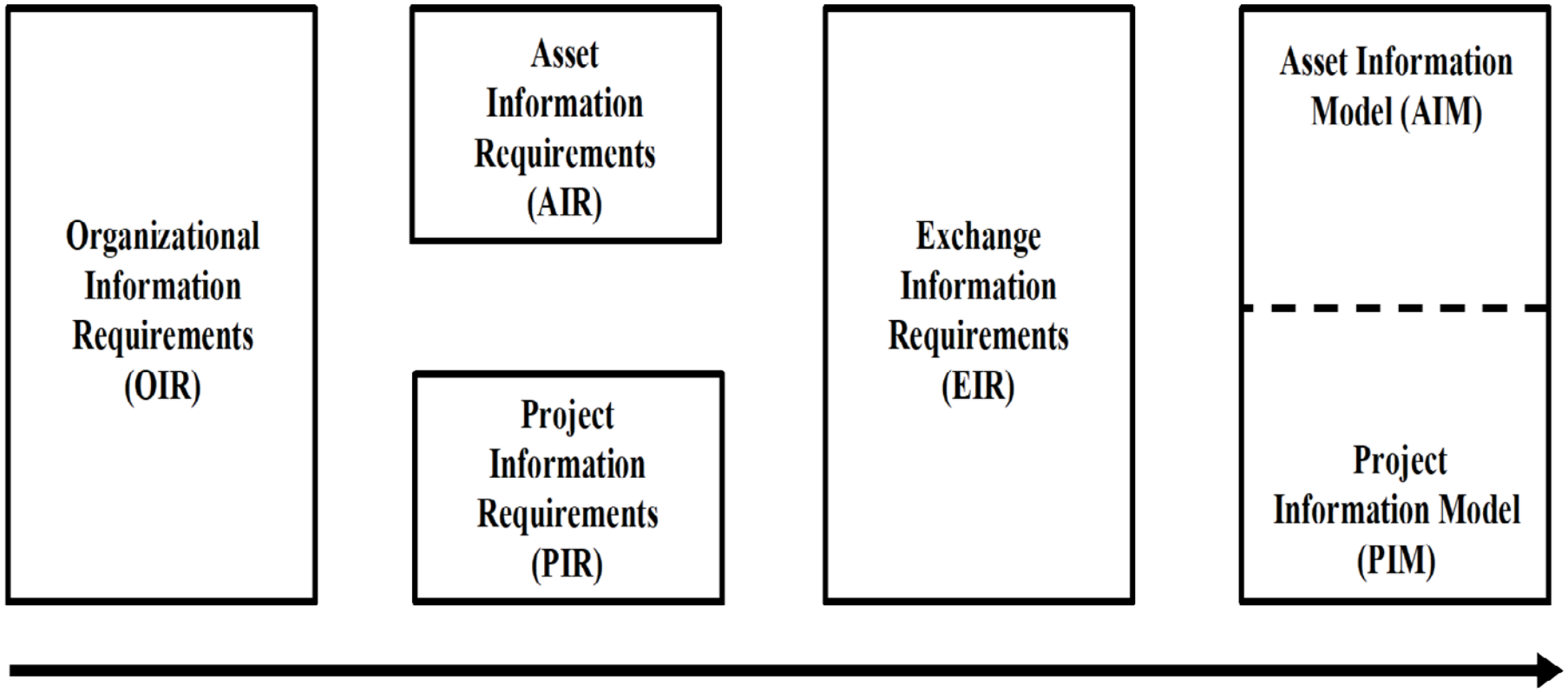
Key principles of the 19650 series

A modular appointment-based approach spanning across asset owner activities

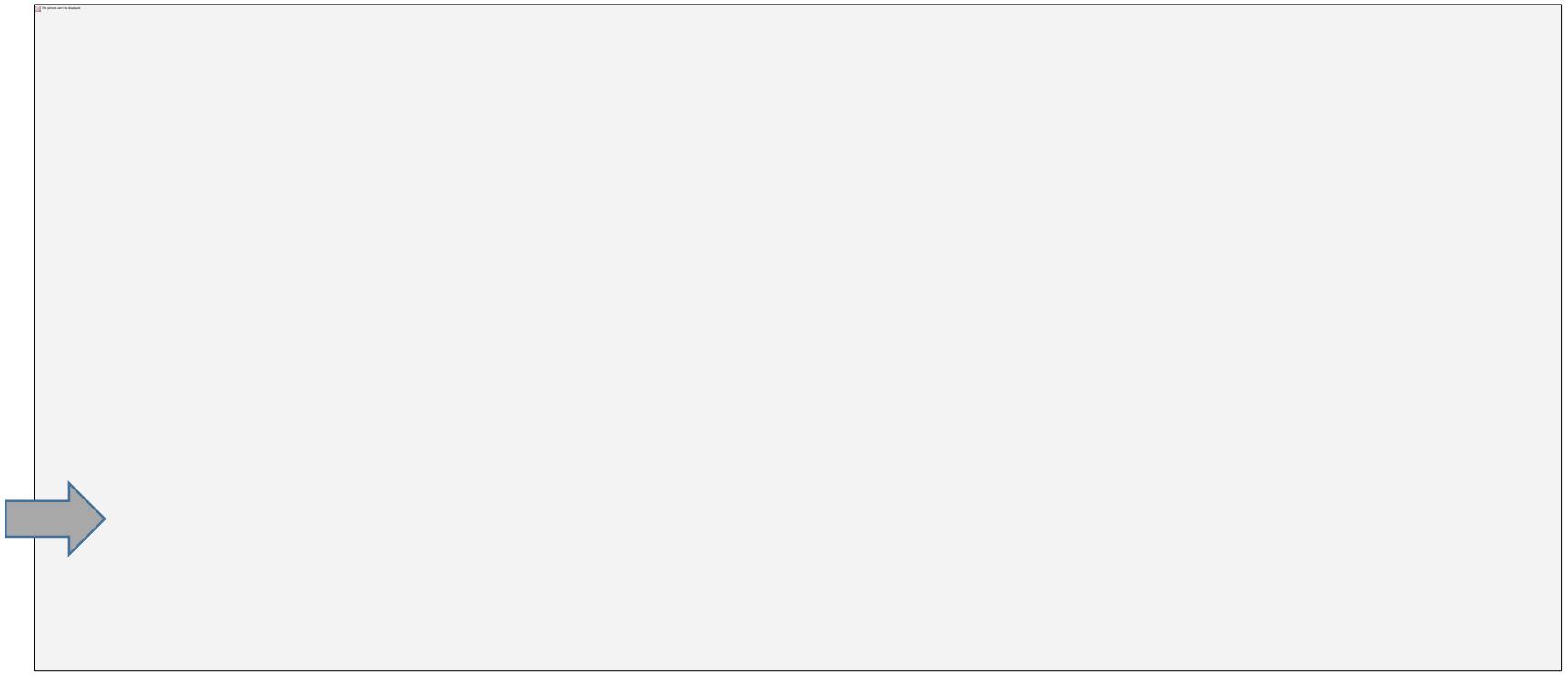
Key principles of the 19650 series



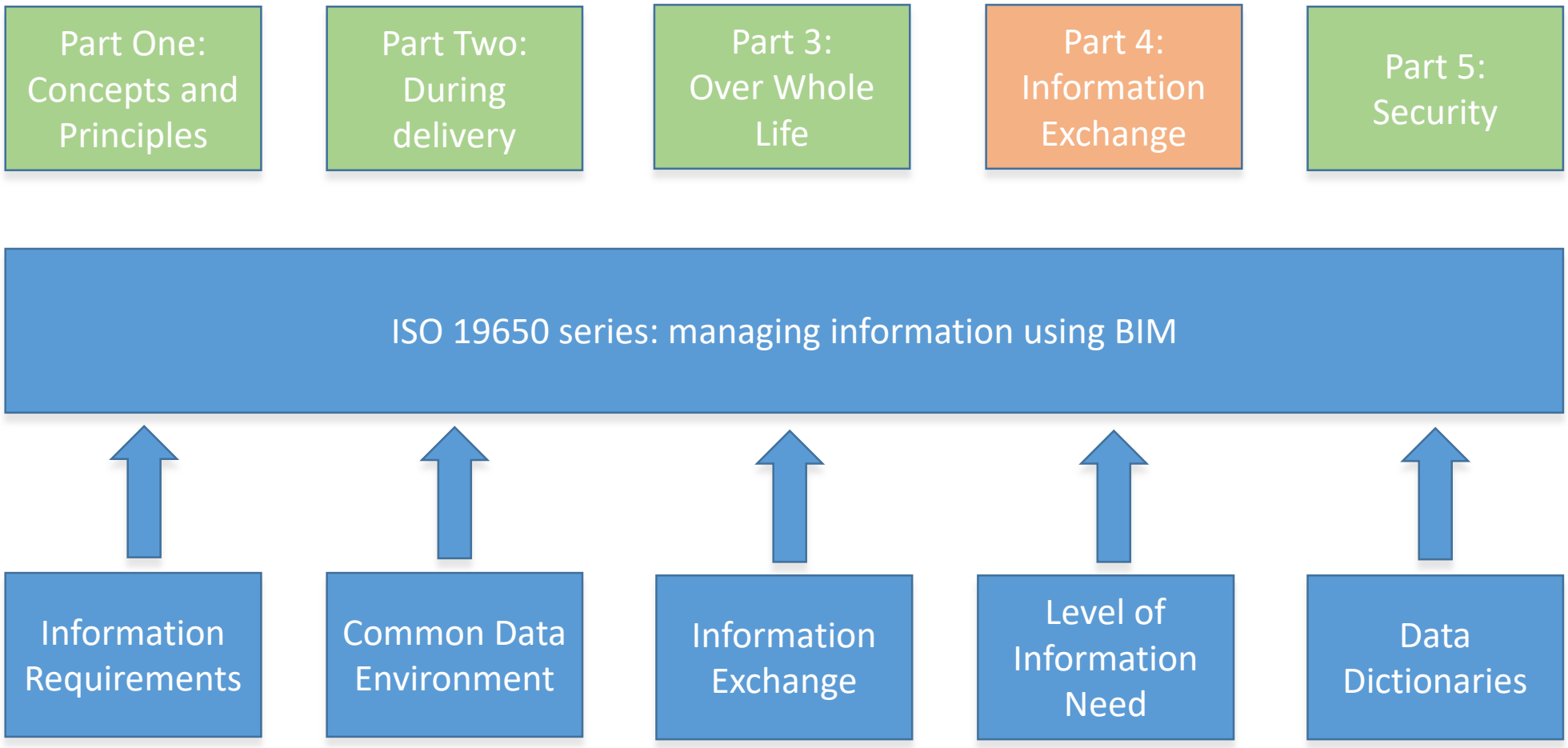
Key principles of the 19650 series



Information exchange

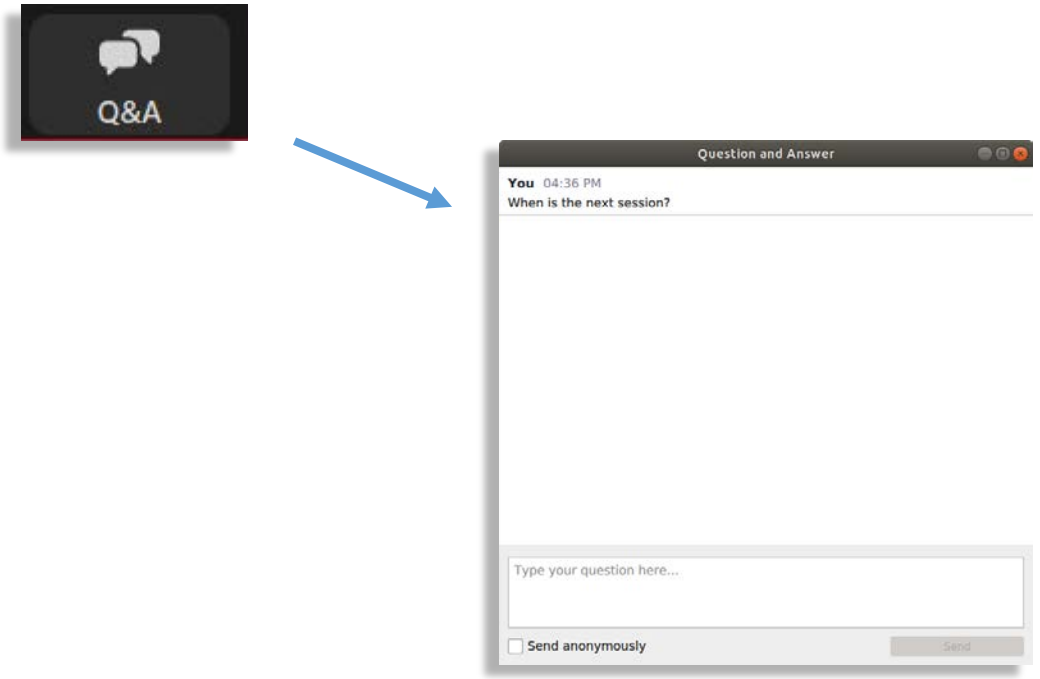


Key principles of the 19650 series

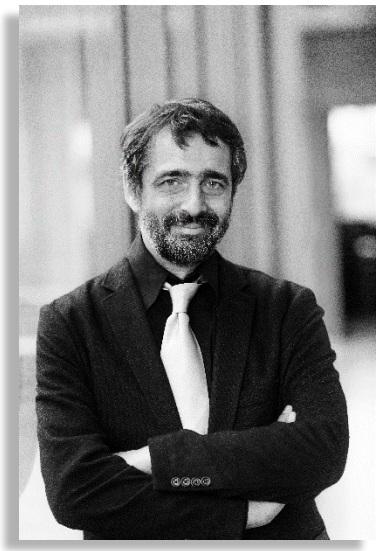


Thank you for your attention!

Address your questions for Anne Kemp. We'll inform her.



How to achieve digital collaboration in construction?



Thomas LIEBICH

Convenor CEN/TC 442/WG2 (exchange information)

Chair of DIN Committee for BIM (Germany)

Managing director of AEC3 Germany

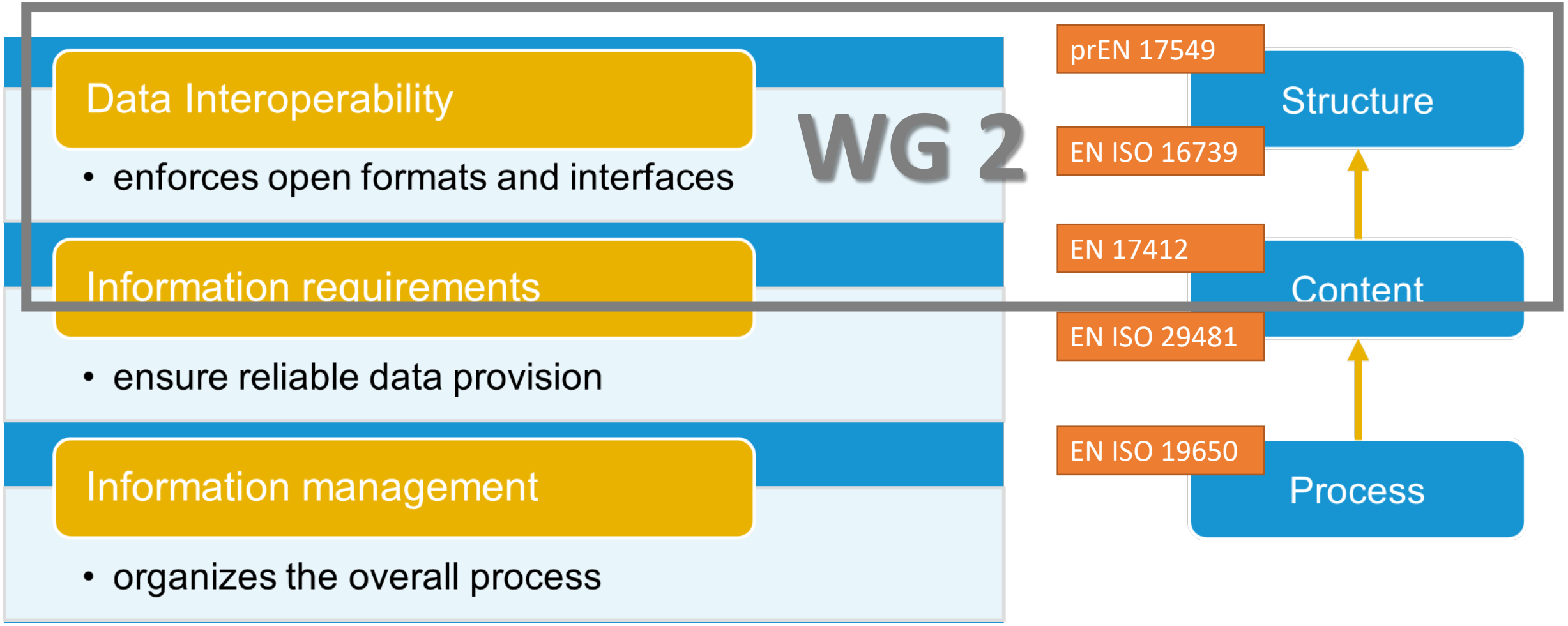
Daniel SAÏD

Technical Information System Department Manager

Bouygues Construction

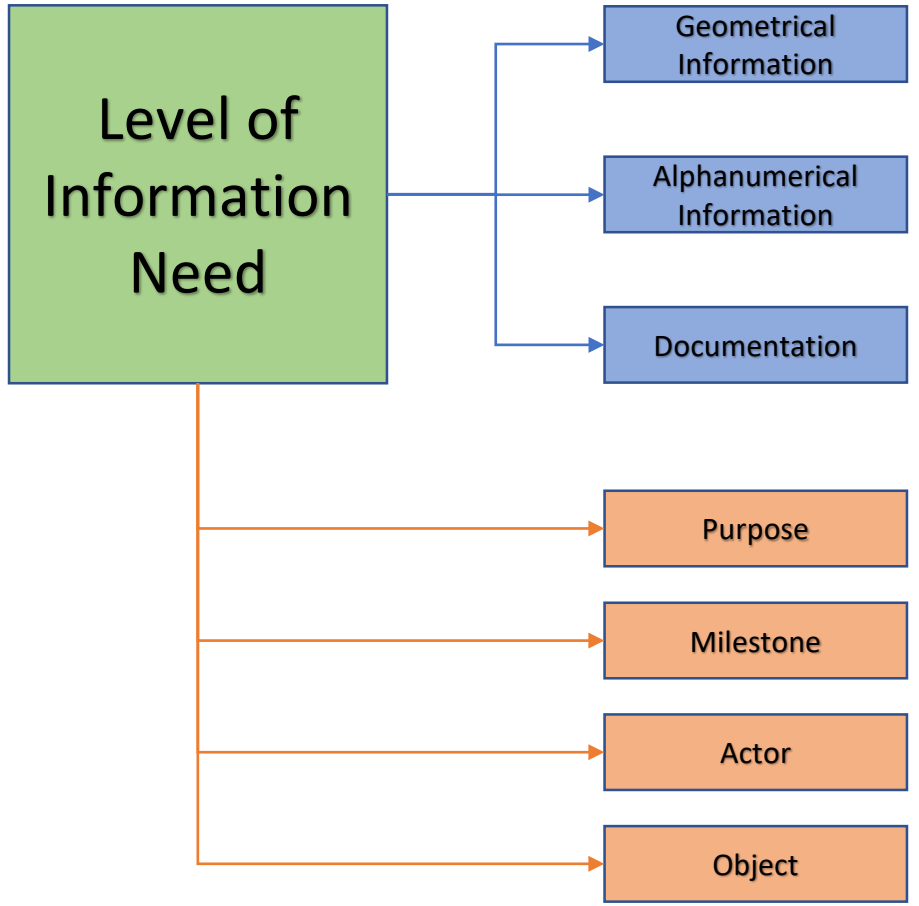
Challenge

- Digitalization (BIM) depends on broad and reliable data access



Information Need – EN 17439

- Determine the information required
  - based on
    Information management – EN ISO 19650
    Information deliveries – EN ISO 29481
  - Is exchanged using
    Information container – EN ISO 21597
    with Data Schema – EN ISO 16739
    via Common Data Environment - WI
  - including
    Manufacturers' data sheets – prEN 17549

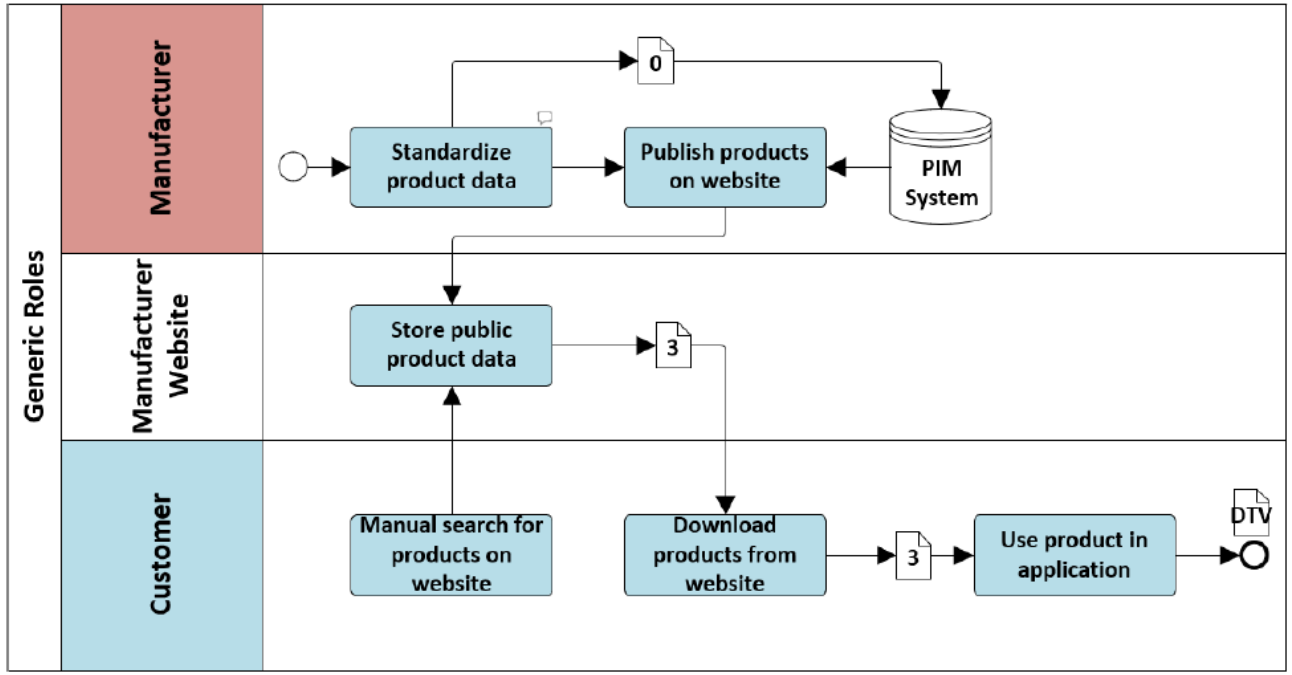


Data Templates and Sheets

- under development

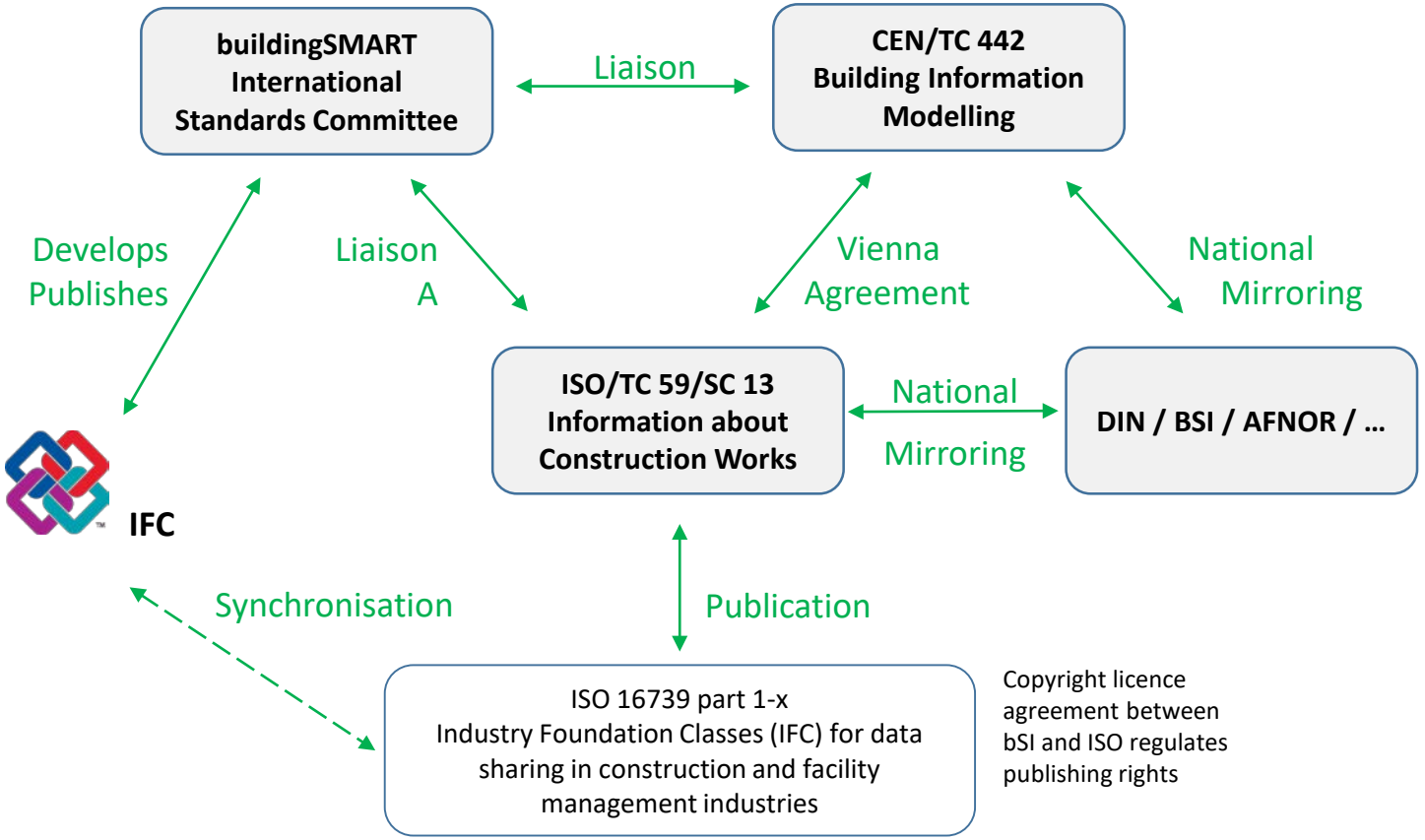
  Part 1: Data templates and configured construction objects

  Part 2: Requirements and configurable products



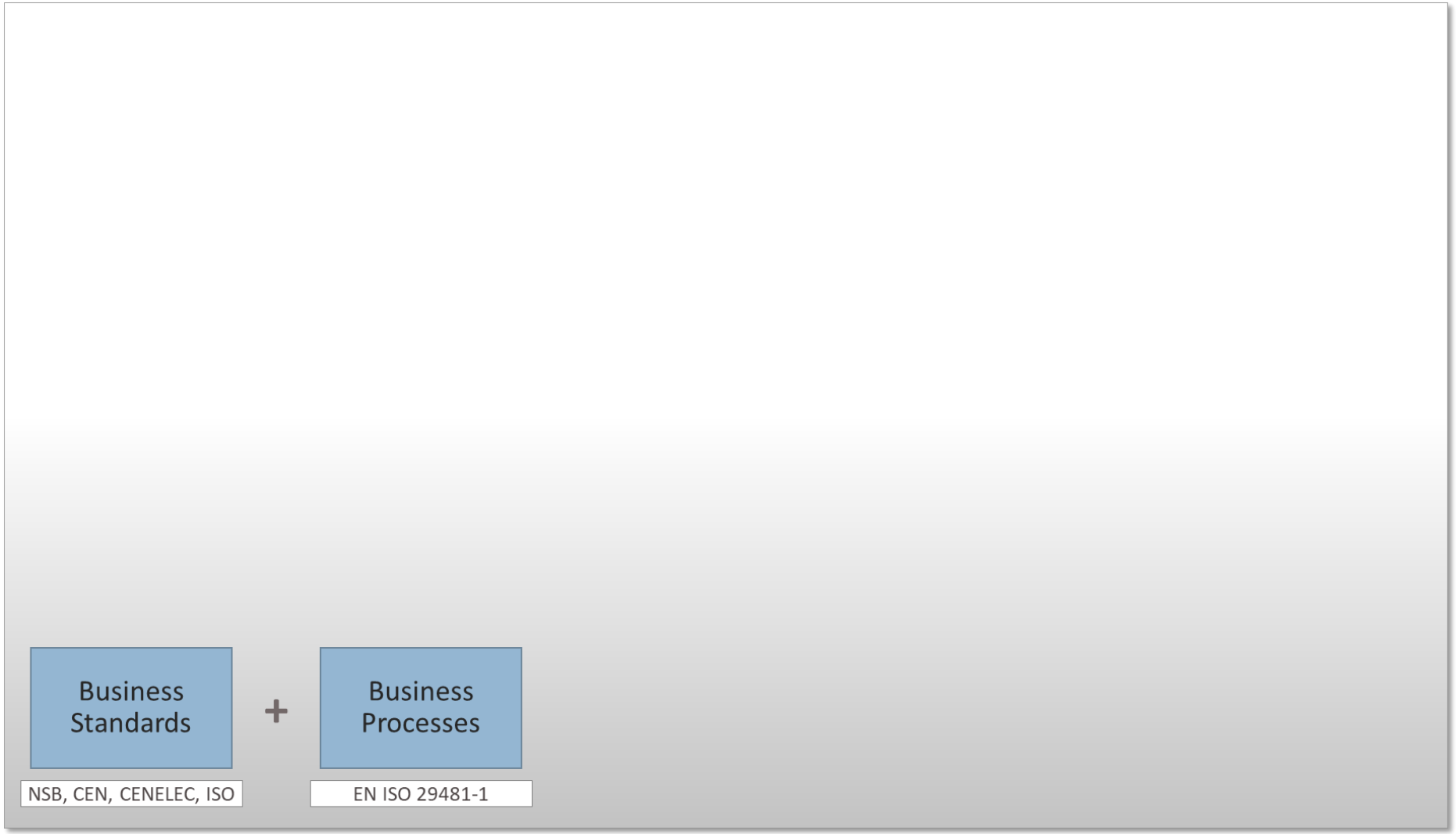
Collaborate with others

- ISO – Vienna Agreement
- buildingSMART – Liaison Agreement and cross participation

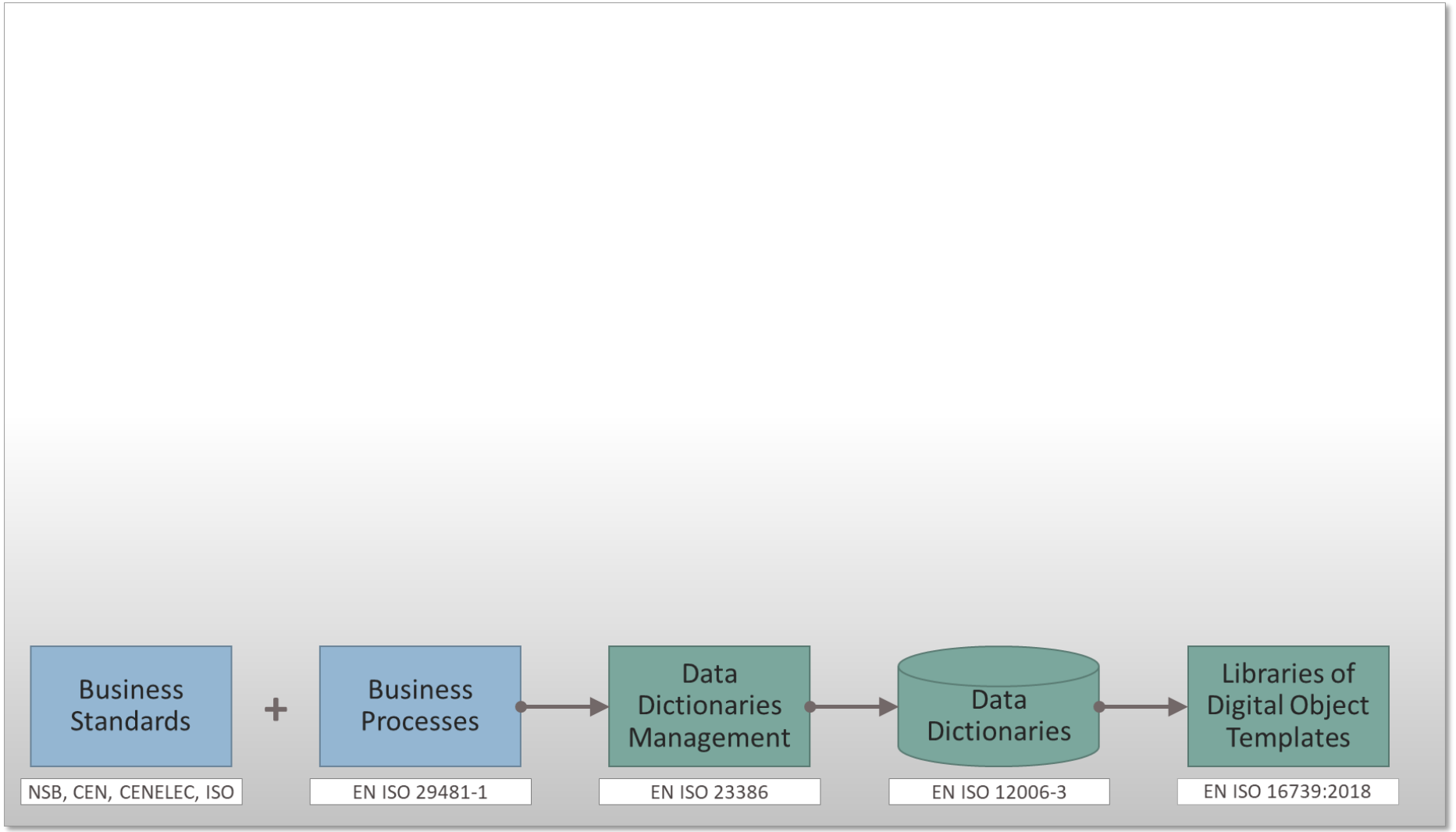


Overview of CEN standards related to BIM

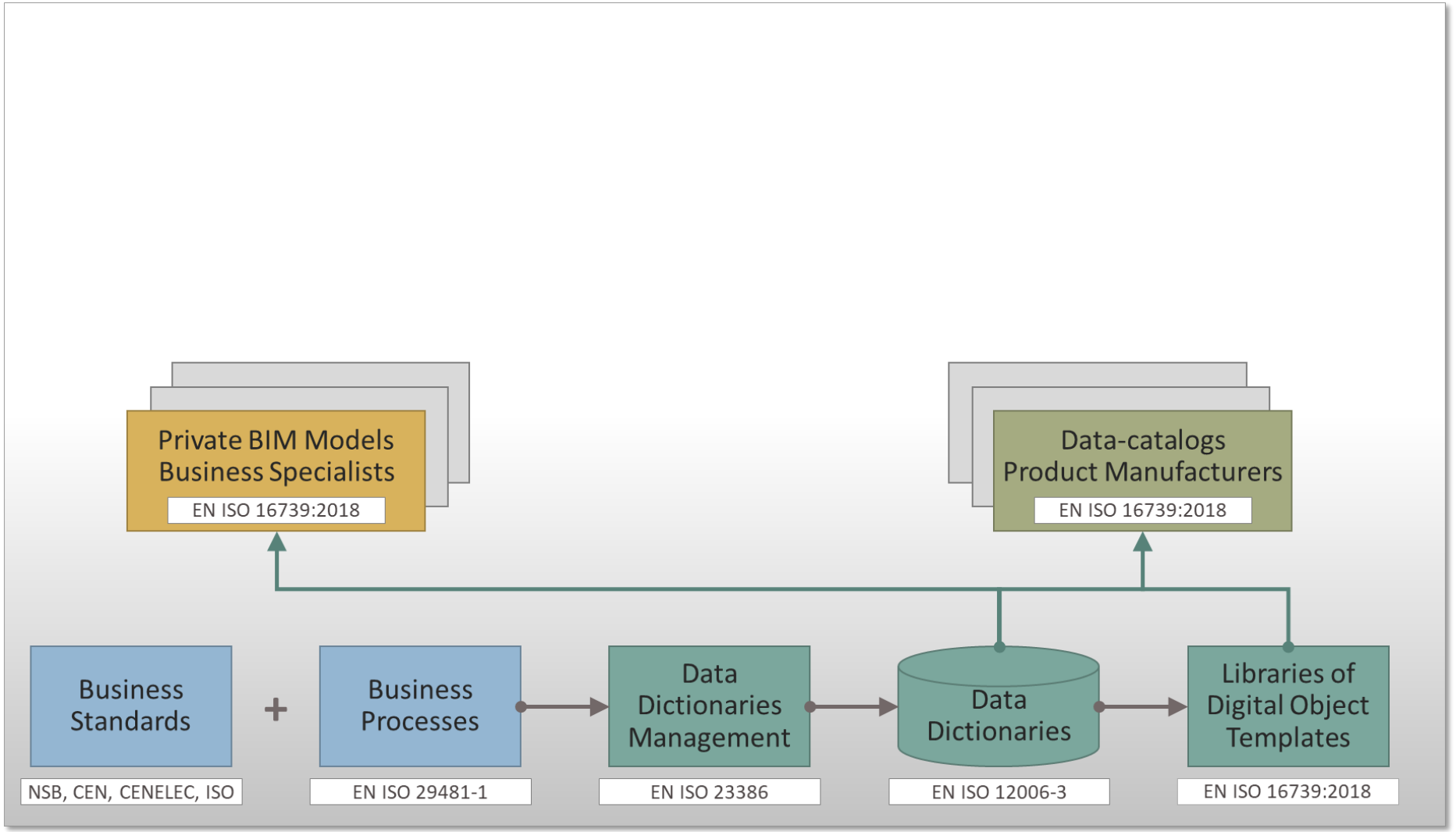
Construction is our business



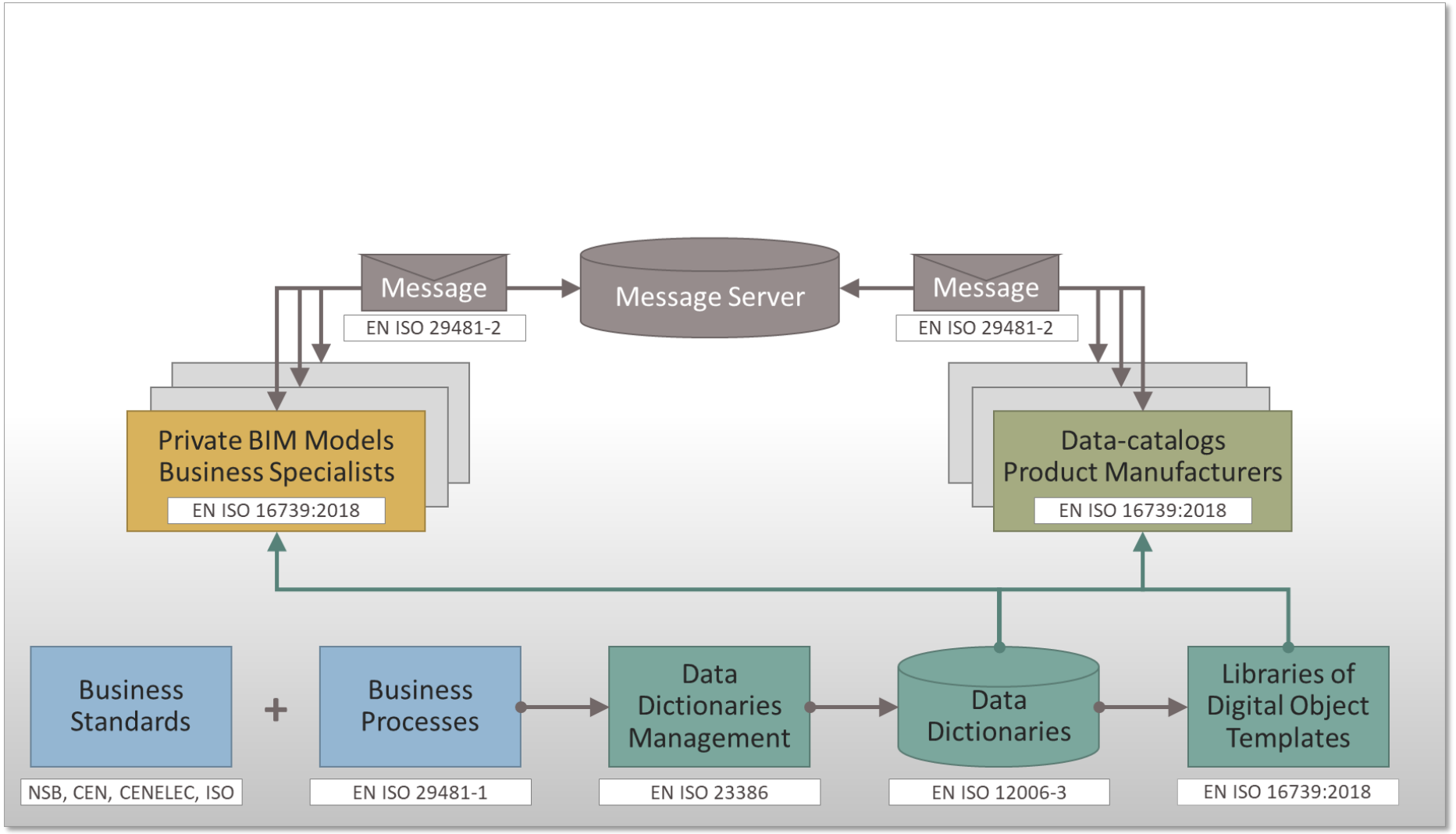
Let our computers understand us



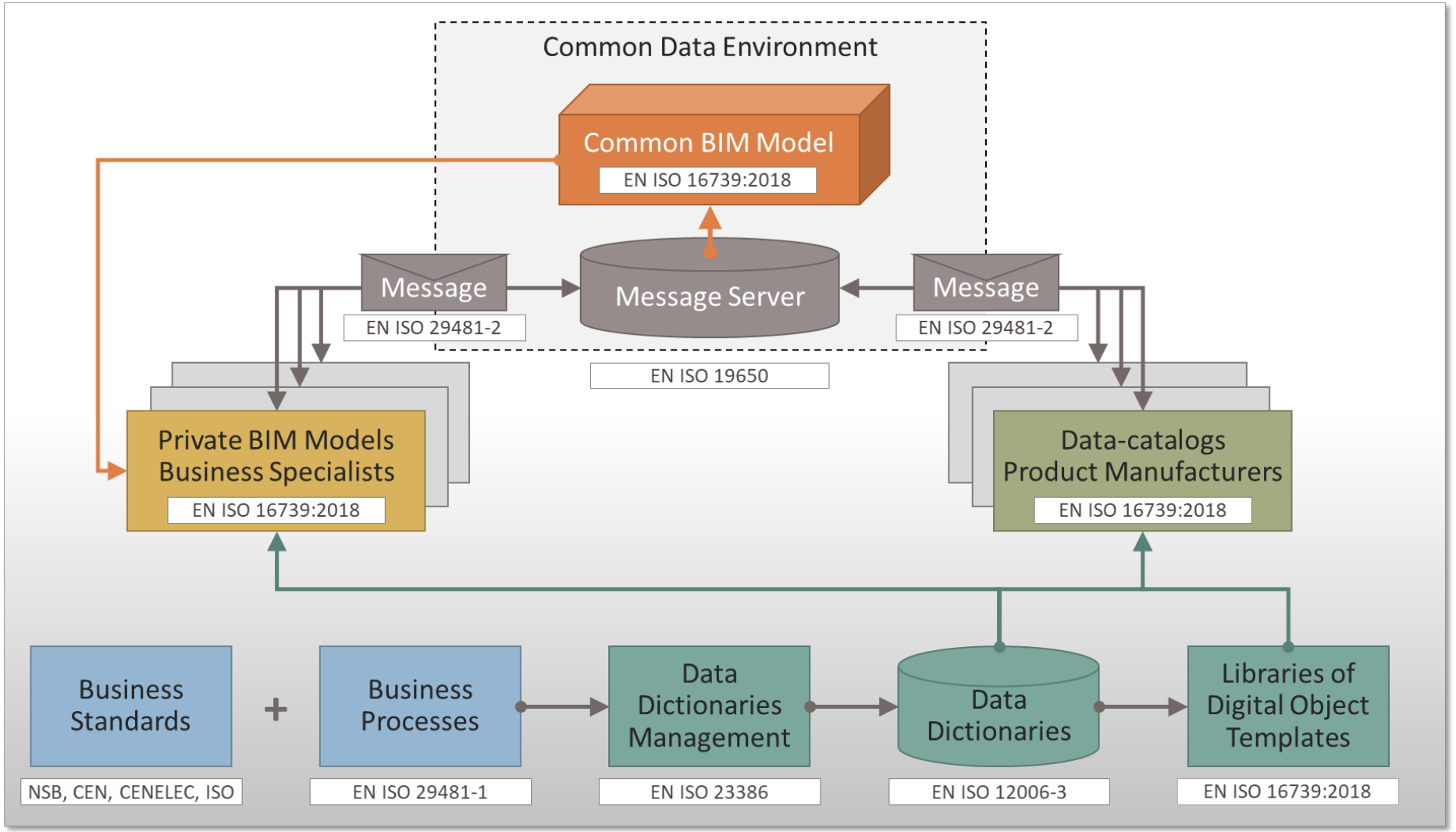
What if our computers could help us?



Did you say emails?

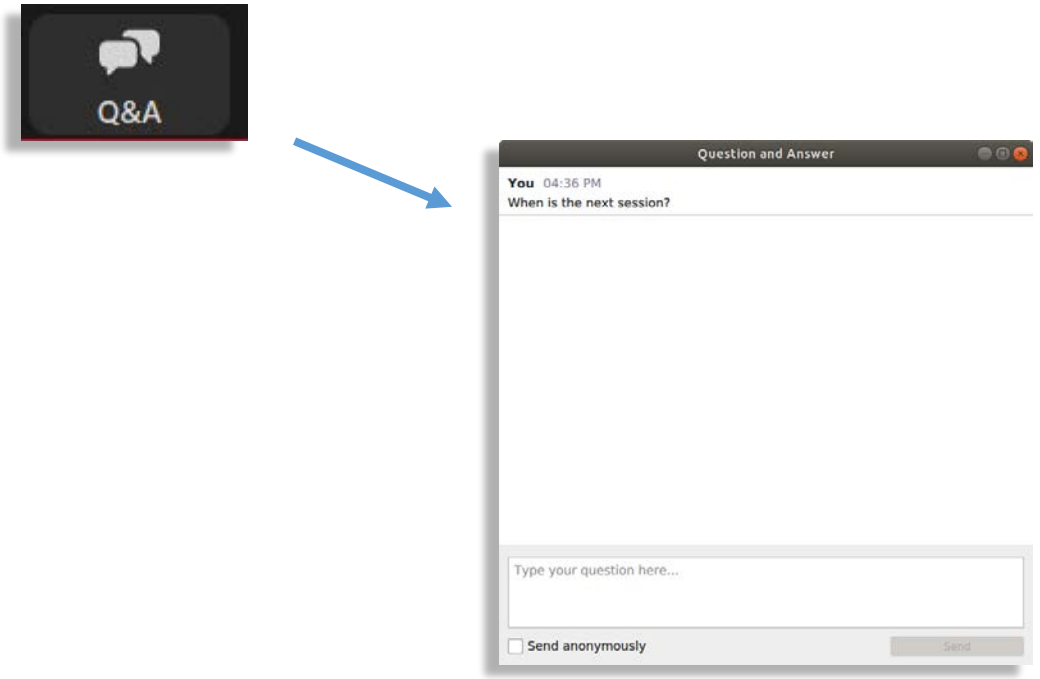


Computer Aided Construction !!!



Thank you for your attention!

Address your questions for Thomas Liebich & Daniel Saïd.



How does BIM support information exchanges in construction processes (EN ISO 19650)? – the "big picture"

Peter KOMPOLSCHEK

Convenor WG3 CEN/TC 442 BIM

Delegate to ISO SC 59

Convenor of Austrian BIM Standards

Manfred HUBER

Member WG 3 CEN/TC 442 BIM

CO-TG Leader CEN/TR 17439 Guidance to EN ISO 19650-1/-2

Convenor of Swiss BIM Standards

Head of Institute for Virtual Design and Construction FHNW

1. WG 3 CEN/TC 442 BIM

The Scope of Working Group 3 is:

„Information Delivery Specification“

WG 3 has more than 100 representatives / experts from 21 European countries.

2. Subjects/Products WG 3

WG 3 projects are:

CEN/TR 17439:2020 Guidance on how to implement EN ISO 19650-1 and -2 in Europe

WI 442023 Guidance for understanding and using EN ISO 29481-1:2017 Building information models - Information delivery manual - Part 1: Methodology and format

WI 442024 CEN/TR Guideline for the implementation of BEP and EIR based on EN ISO 19650

Preliminary WI Framework and Implementation of CDE Workflow and Solution in accordance with EN ISO 19650

CEN/TR 17439:2020

Guidance on how to implement EN ISO 19650-1 and -2 in Europe

Scope:

EN ISO 19650 series form the basis for digital collaboration over the life cycle of all types of built assets.

The aim of this document is to highlight the individual aspects of EN ISO 19650 -1 & -2 and to explain those two standards by means of examples.

WI 442023

Guidance for understanding and using EN ISO 29481-1:2017 Building information models - Information delivery manual - Part 1: Methodology and format

Scope:

EN ISO 29481-1 defines a framework and methods for linking process maps and exchange requirements with digital building models over the life cycle of a built asset.

This document provides guidance on how to develop an Information Delivery Manual (IDM) in compliance with EN ISO 29481.
It explains the core components and development process of the IDM methodology in non-technical terms.
The objective is to help users and software vendors to understand and utilize the IDM standard in defining information requirements and deliverables

WI 442024

CEN/TR Guideline for the implementation of BEP and EIR based on EN ISO 19650

Scope:

WI 442024 operationalises the tendering and appointment process of information deliveries as specified in **EN / ISO 19650-2**.

The main goal of this document is to provide templates and guidance for all activities conditioning specification of requirements and deliveries in the production of Exchange Information Requirements and BIM Execution Plan as described **in EN / ISO 19650-2**.

Preliminary Work Item (PWI)

Framework and Implementation of CDE Workflow and Solution in accordance with EN ISO 19650

Scope:

This New Work Item will extend the basic information given in the EN ISO 19650.
It will detail and structure the concept of a Common Data Environment (CDE) as a workflow for the collaborative process of managing information and information containers.
It will describe:

- how to link a CDE according to EN ISO 19650 to an already existing Asset Management Systems of the Asset Owner
- how to maintain and manage “living documents” like Information Models (AIM, PIM)
- how to maintain, exchange and manage Information Requirements like (OIR, AIR, EIR) as well as BIM Execution Plans (BEP)
- how to use and implement Information Delivery Plans for the above entities (MIDP and TID P in ISO 19650)
- how to manage and collaborate between various Information Containers like models, requirements, container states
- how to support Process Workflow by a CDE based on the IDM concept

3. EN ISO 19650

- Information management using building information modelling.
- The EN ISO 19650 series provides recommendations for a framework to manage information including exchanging, recording, versioning and organizing for all actors.
- It’s a basis for a common understanding between all stakeholders regarding the information exchange during the whole life cycle of any built asset.

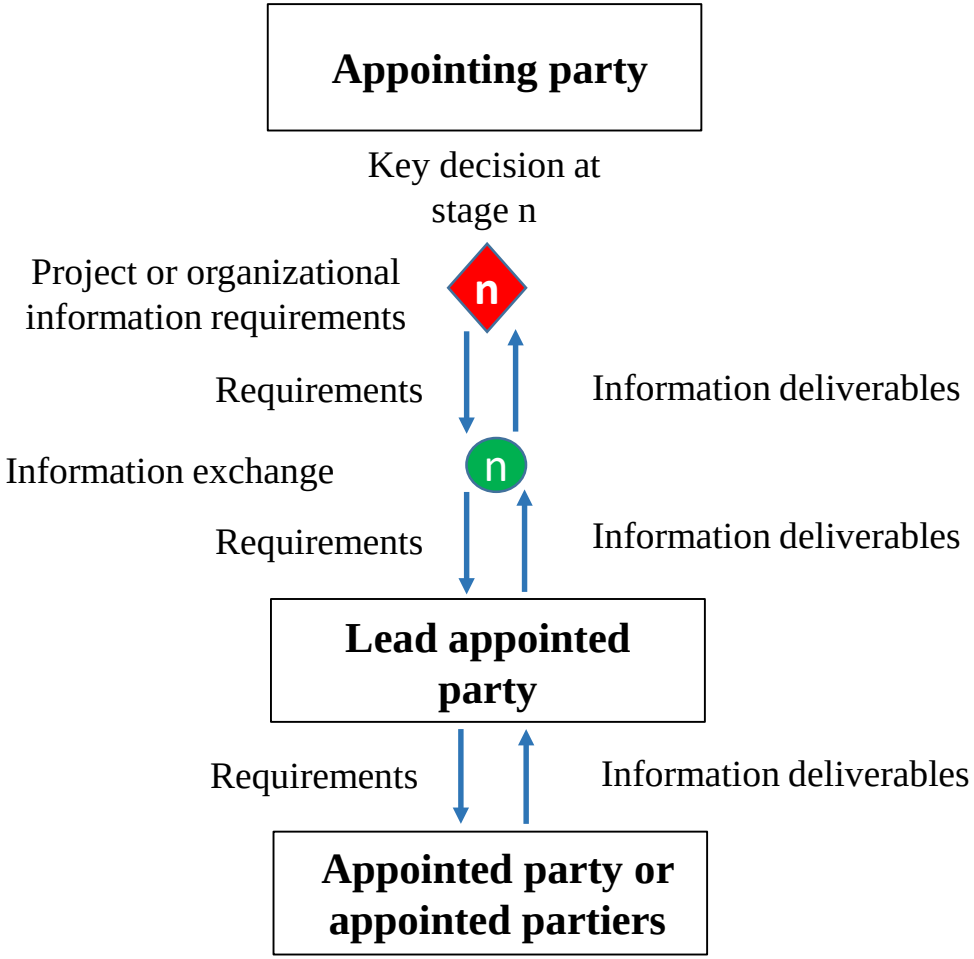
4.1 Main functions

appointing party

- receiver of information concerning works, goods or services from a lead appointed party
- has a need for specific information for specific purpose at a defined point in time (key decision) → information requirements

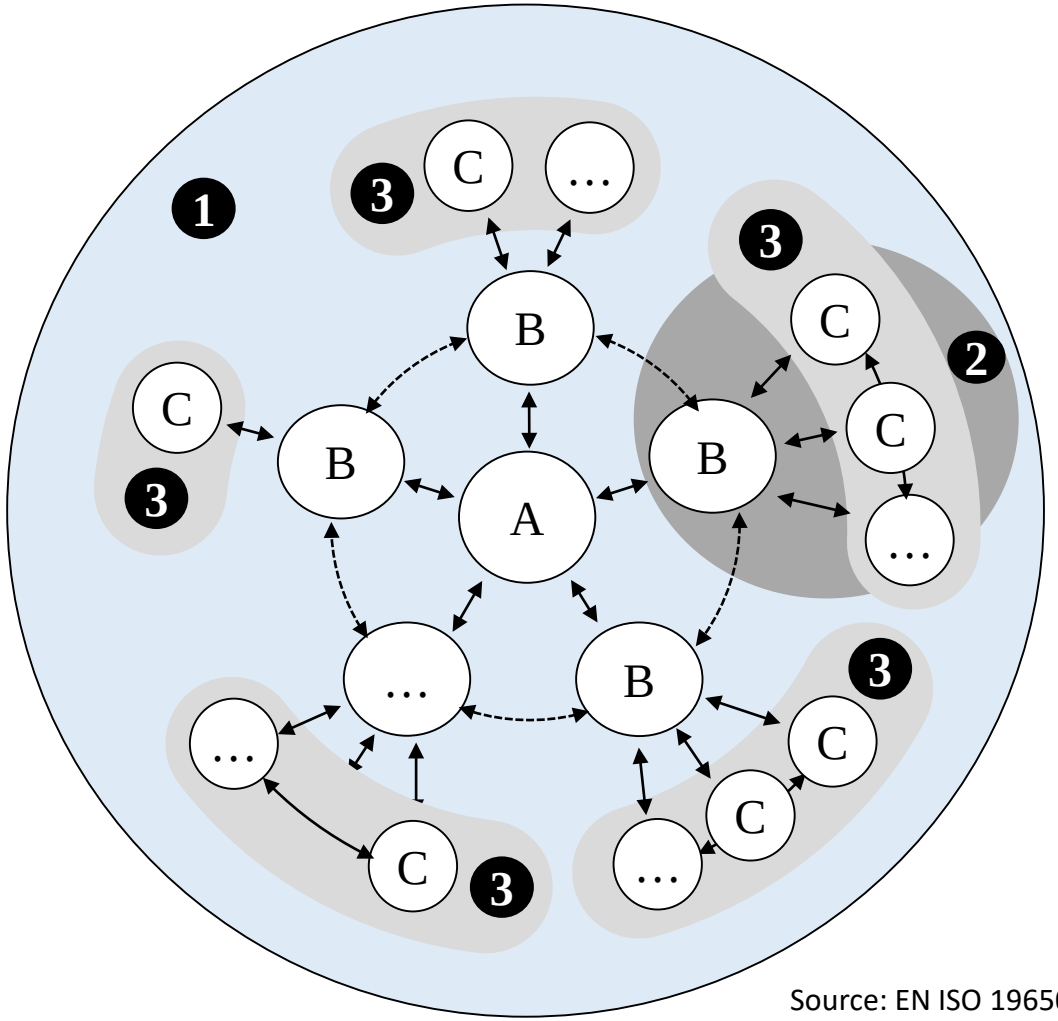
appointed party

- provider of information concerning works, goods or services
- delivers specific information at a specific point in time (key decision)



Source: EN ISO 19650-1:2018: 15

4.1 Main functions



A appointing party
B lead appointed party
C appointed party
… variable amount
1 project team
2 illustration of a delivery team
3 task team(s)
⟷ information requirements and
⟷ information exchange
information coordination

Source: EN ISO 19650-2:2018: ix

4.2 Adopt to scale/complexity

For all kind of projects, but it should be used in a way that is proportionate and appropriate to the scale and complexity of the asset or project.

This document is applicable to built assets and construction projects of all sizes and all levels of complexity. This includes large estates, infrastructure networks, individual buildings and pieces of infrastructure and the projects or sets of projects that deliver them. However, the concepts and principles included in this document should be applied in a way that is proportionate and appropriate to the scale and complexity of the asset or project. This is particularly the case where small and medium-

Source: EN ISO 19650-1:2018: vi

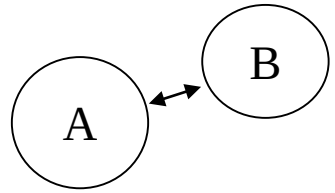
4.3 Example of implementation

Example: EN ISO 19650 seems too much effort

- Small residential building
- The architect has a classic project management role
- The client is not aware of EN ISO 19650
- EN ISO 19650 seems too much effort
- For SMEs, this kind of project is quite common in several countries across Europe (e.g. France, Germany, Austria, Switzerland, ...)

4.3 Example of implementation

- **The client is** not aware of EN ISO 19650 and is not able to specify the information requirements.
- The client as the **appointing party** appoints the **architect** as the **prospective lead appointed party** to **take over the information management function** in its place.
- In this case, the appointing party shall establish a scope of services. That includes, **supporting the client in specifying its exchange information requirements**.



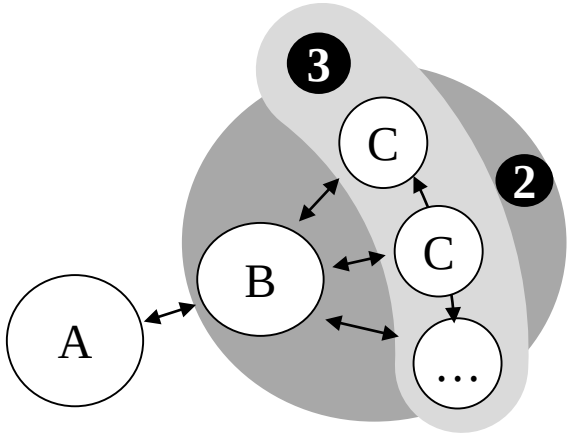
Source: adapted from EN ISO 19650-2:2018: ix

4.3 Example of implementation

- **The architect** – as **lead appointed party** - defines a framework for the exchange of information according to the **client's Exchange Information Requirements** (EIR).

- The architect uses this framework for the **exchange of information** within the design team (including structural and MEP engineers and the contractors).

- **Engineers** and **contractors** are **appointed parties** and together with the architect they are one **delivery team.**



Source: adapted from EN ISO 19650-2:2018: ix

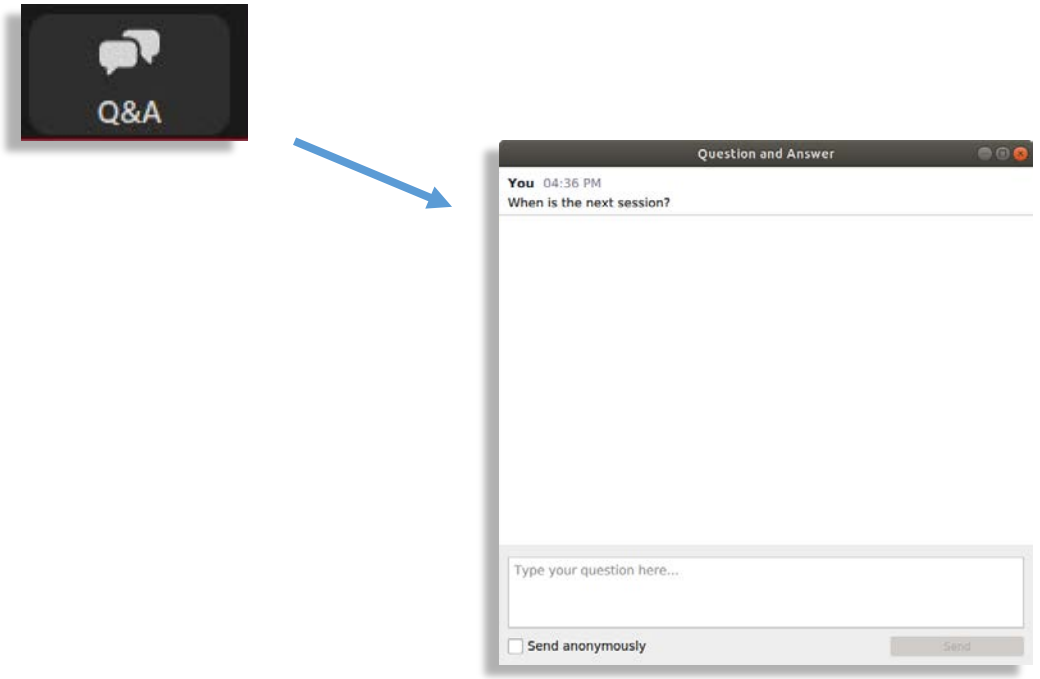
4.2 Conclusion/summary

- WG 3’s focus is information delivery
- First documents are already published
- There is more to come in the near future
- Our goal is the support a common understanding for collaborative working and information management over the lifecycle of an asset.

Thank you for your attention!

Address your questions for Peter Kompolschek & Manfred Huber.

We will inform them.



How to make BIM speak professional language as defined in construction standards? How can we describe products and their properties digitally in our own standards (EN ISO 23386)?

Roland DOMINICI

Convenor CEN/TC 442 WG04 and French mirror committee

French standardization committee member: AFNOR-PPBIM

buildingSMART France member

CEO & Sales manager Cobuilder France

Frédéric GRAND

Member WG 2 & 4 CEN/TC 442 BIM

Technical director buildingSMART France

WG04 – Support data dictionnairies

Our mission

Establish method standards for **data** management to enable stakeholders to exchange seamlessly and operate in a **common language** in the act of construction and throughout the asset life cycle.

WG04 programme - February 2016

Item identified as one of construction stakeholder's priority

- Need to address : **Enhance quality of data dictionaries content**

- How to achieve it:

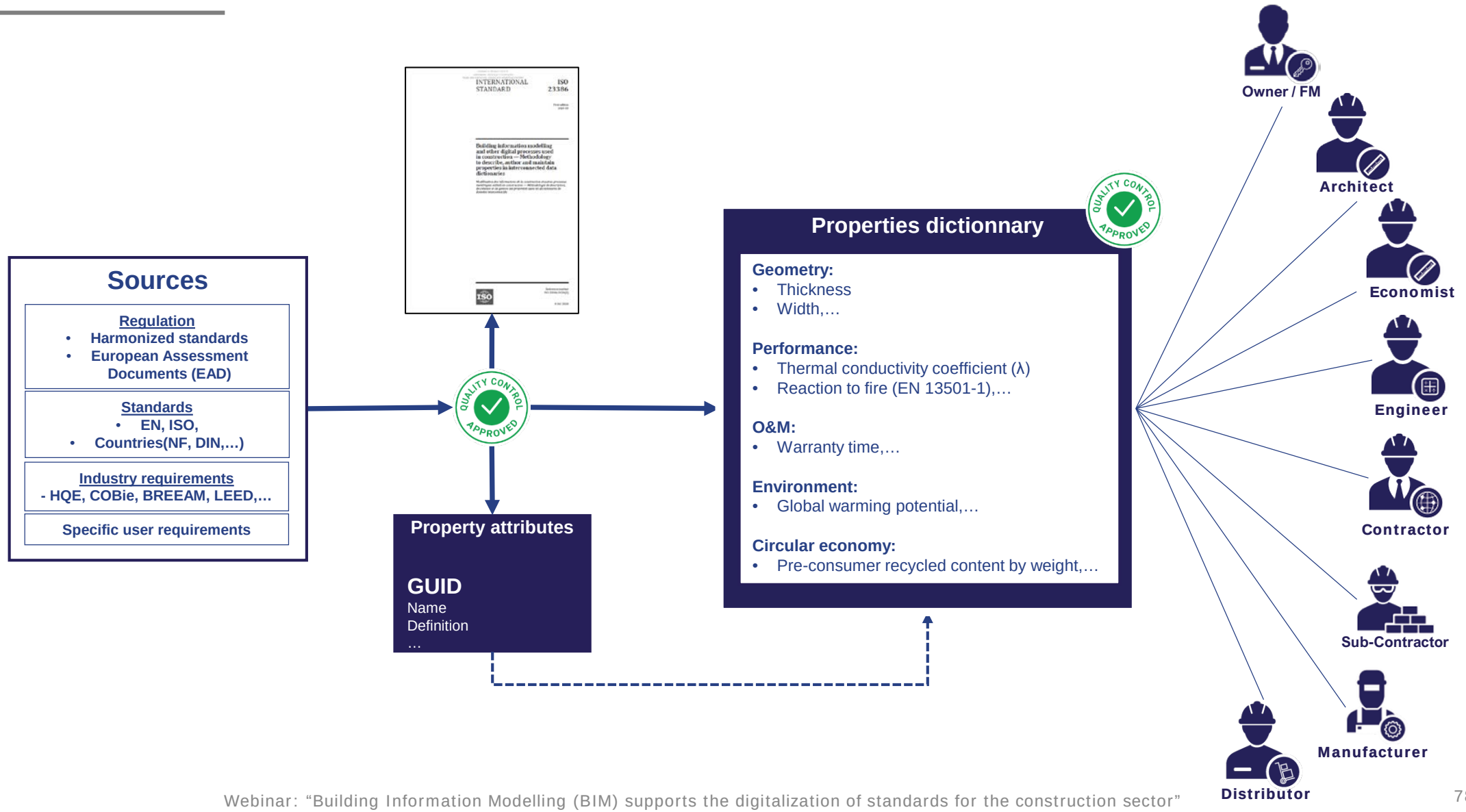
  By developing a standard or a set of standards consistent with ISO 12006 series:

  - Providing a methodology to define a common and unique definition of a property (e.g., name, definition, UOM)
    - Introduce consistency between existing dictionaries through an interconnection network (e.g., bSDD, Barbi, CB-NL, Cobie, GS1, E-class,...)
    - Enhance fluidity and efficiency exchange between BIM softwares

  - Providing a Process Management for the property's maintenance

The first “BIM” method standards published in 2020

EN ISO 23386 - Building information modelling and other digital processes used in construction — Methodology to describe, author and maintain properties in interconnected dictionaries*(published in March 2020)*



EN ISO 23387 – Building Information Modelling (BIM) — Data templates for construction objects used in the life cycle of any built asset — Concepts and principles *(published in July 2020)*

Sources

Regulation
- **Harmonized standards**
- **European Assessment Documents (EAD)**

Standards
- **EN, ISO,**
- **Countries(NF, DIN,...)**

Industry requirements
- HQE, COBie, BREEAM, LEED,...

Specific user requirements

EN520, DOP, EPD, SDS...

Properties dictionnary

Geometry:
- Thickness
- Width,...

Performance:
- Thermal conductivity coefficient (λ)
- Reaction to fire (EN 13501-1),...

O&M:
- Warranty time,...

Environment:
- Global warming potential,...

Circular economy:
- Pre-consumer recycled content by weight,...

Construction object data template

Geometry:
- Thickness
- Width,...

Features:
- Board edge type,
- Is Product CE certified?,...

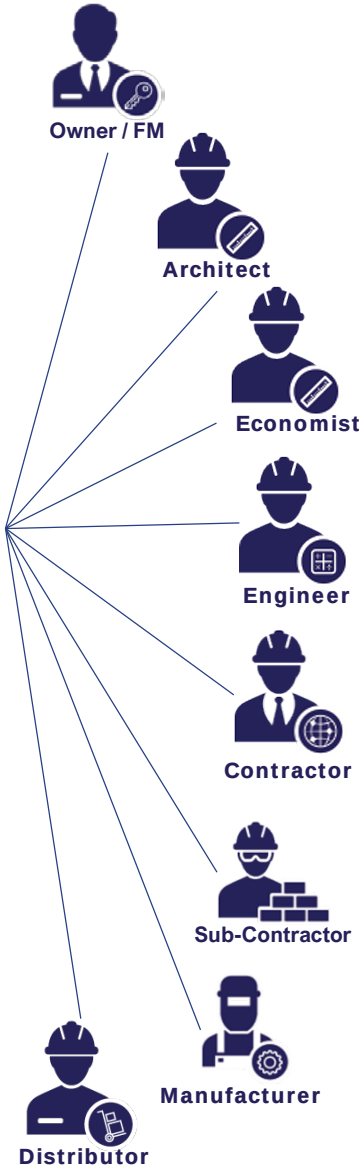
Performance:
- Thermal conductivity coefficient (λ)
- Reaction to fire (EN 13501-1),...

O&M:
- Warranty time,...

Environment:
- Chemical composition
- Exhaustion of abiotic resources (fossils)
- Global warming potential,...

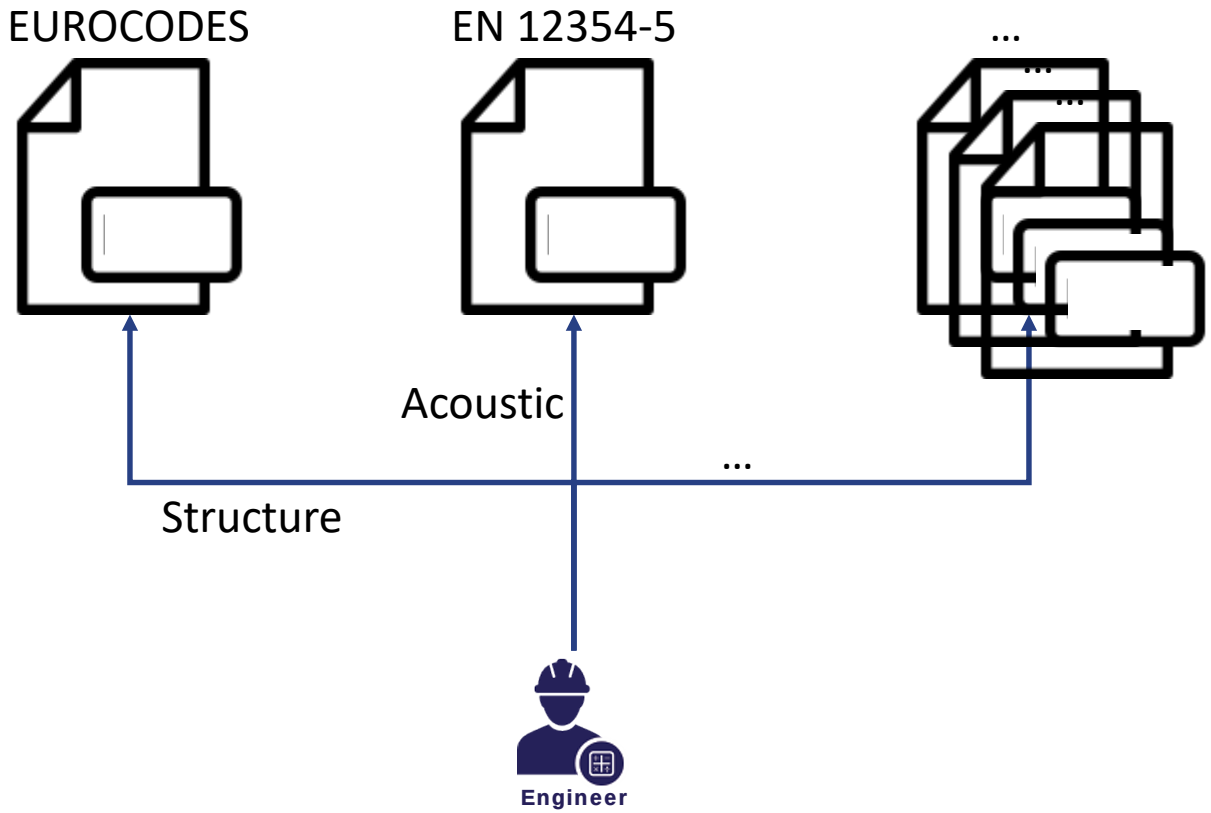
Circularity:
- Presence of substances of Very High Concern from REACH Candidate list >0.1% by weight,...

...



EN ISO 23386

An issue to solve



How to access data from BIM ?

- Several sources of Information
- Each source has its own structuration
- Properties are defined in different ways

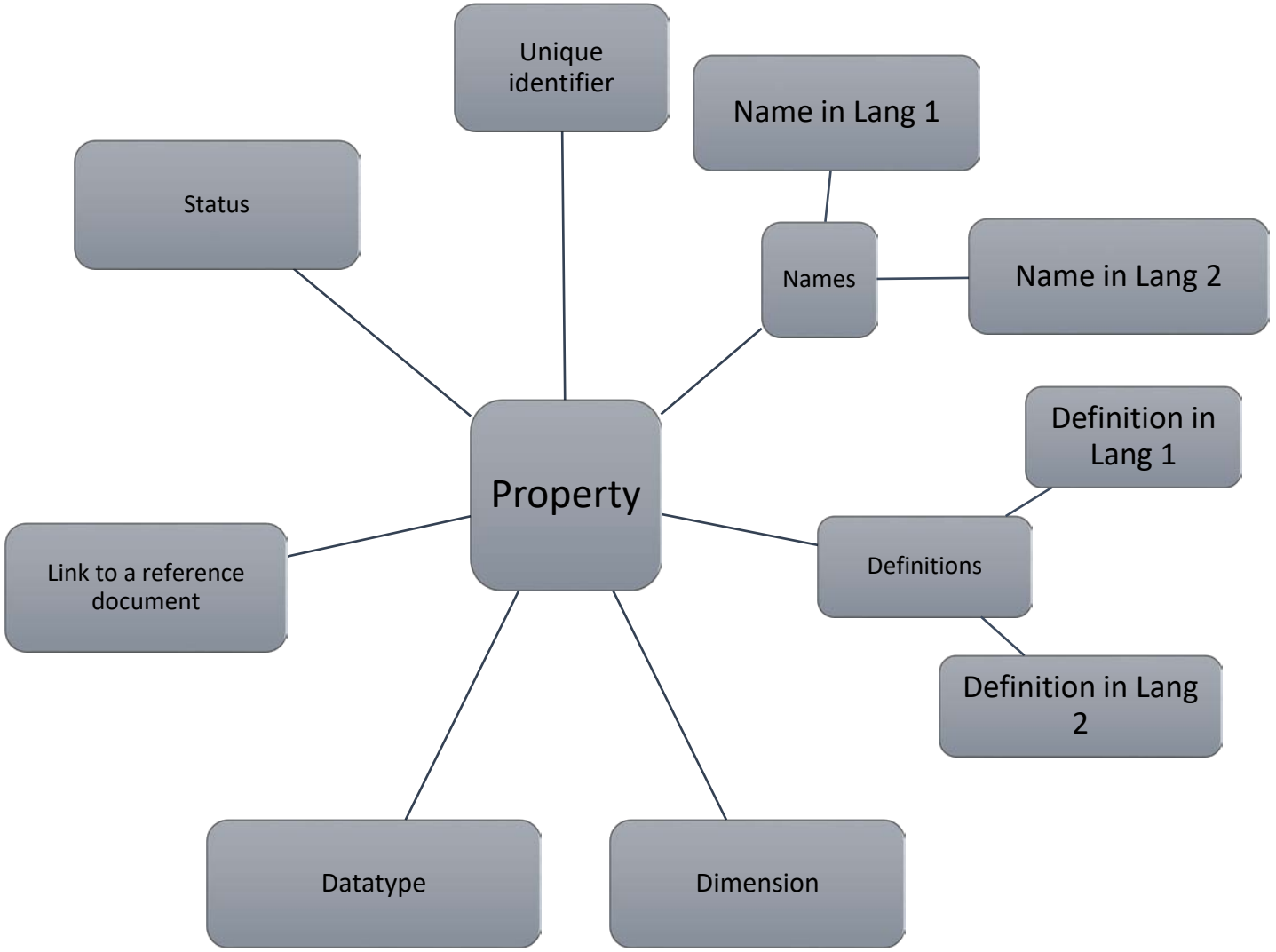
Statement

- **Trusted definitions** are needed (link to standards)
- A **definition** can **not** just be a **name + a text description**
- A **standardized way of defining concepts** is needed
- A dictionary can be handled with 2 kinds of concepts: **properties and groups of properties**
- A dictionary to rule them all will probably never exists: a solution to **interconnnect dictionaries** is needed.

1 standard - 3 parts

- How to define properties and groups of properties with a set of attributes.
- Workflows to author and maintain a dictionary
- How to interconnect dictionaries

Definition of properties / groups of properties ?



Definition is not « text name + text description »

Log / traceability

Version number

Revision number

Dates:
- **Creation**
- **Activation**

Requests
- **Users involved**
- **Experts involved**

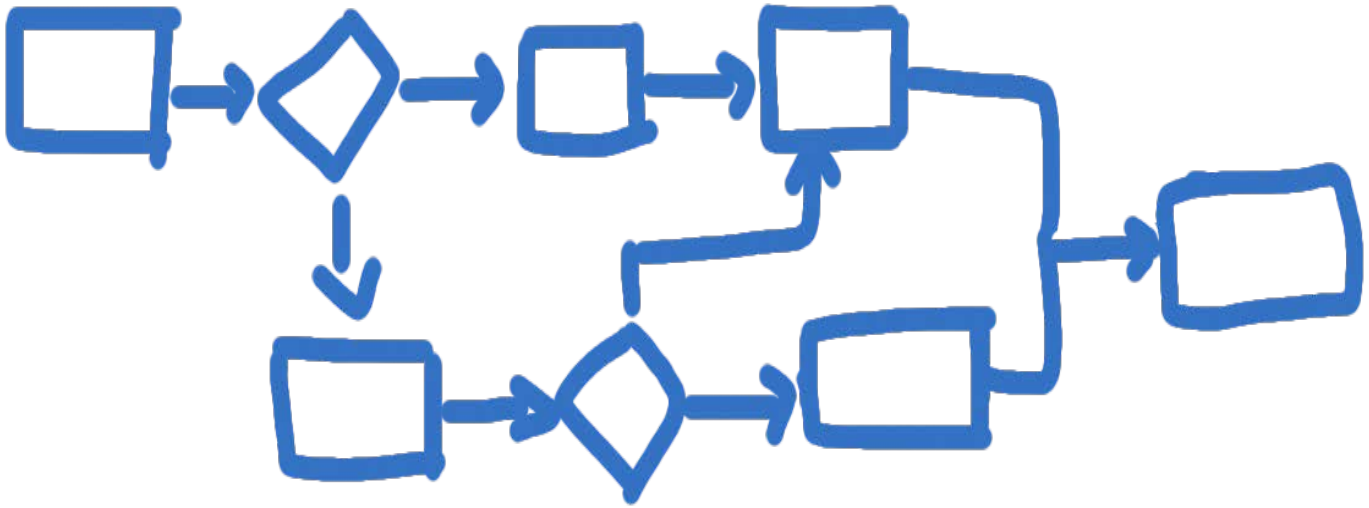
No deletions but deprecation

Quality insurance !

Reference documents

Users

User



Steering committee

Experts

Expert

Expert

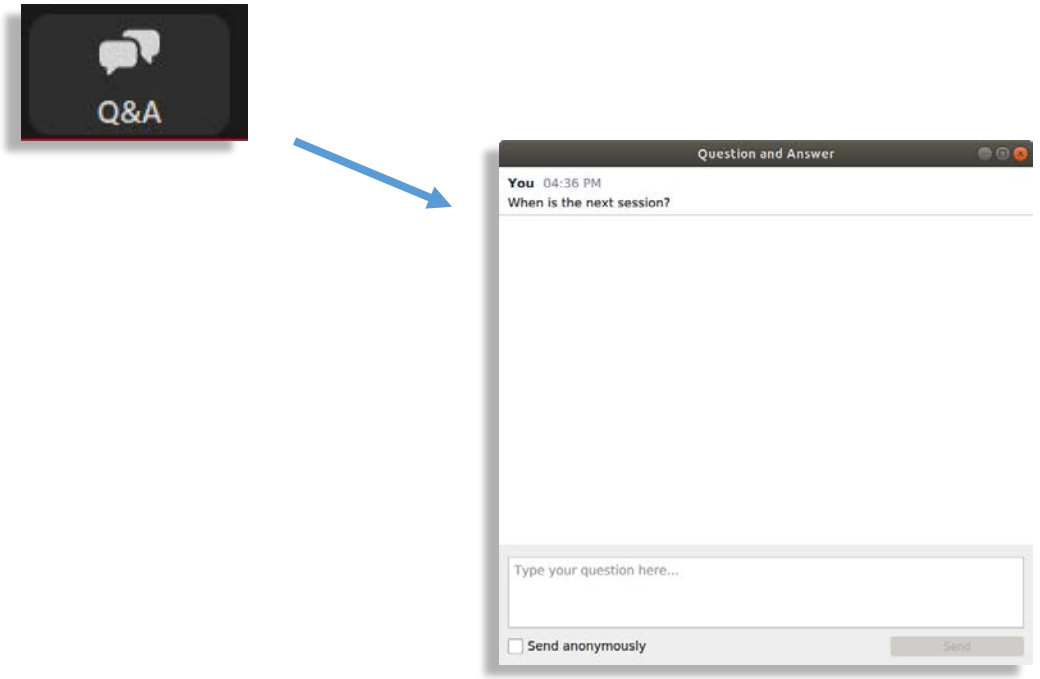
Expert

A network of interconnected dictionaries

Dictionaries following EN ISO 23386 must be connected through EN ISO 12006-3 API

Thank you for your attention!

Address your questions for Roland Dominici & Frédéric Grand.



How can we describe our products and their properties? Using a dictionary, a specific annex in a standard… (ISO 12006-3)?

Peter MUIGG

Member of WG 2, 3 & 4 of CEN/TC 442 BIM

Delegate to ISO/TC 59/SC 13/WG 6

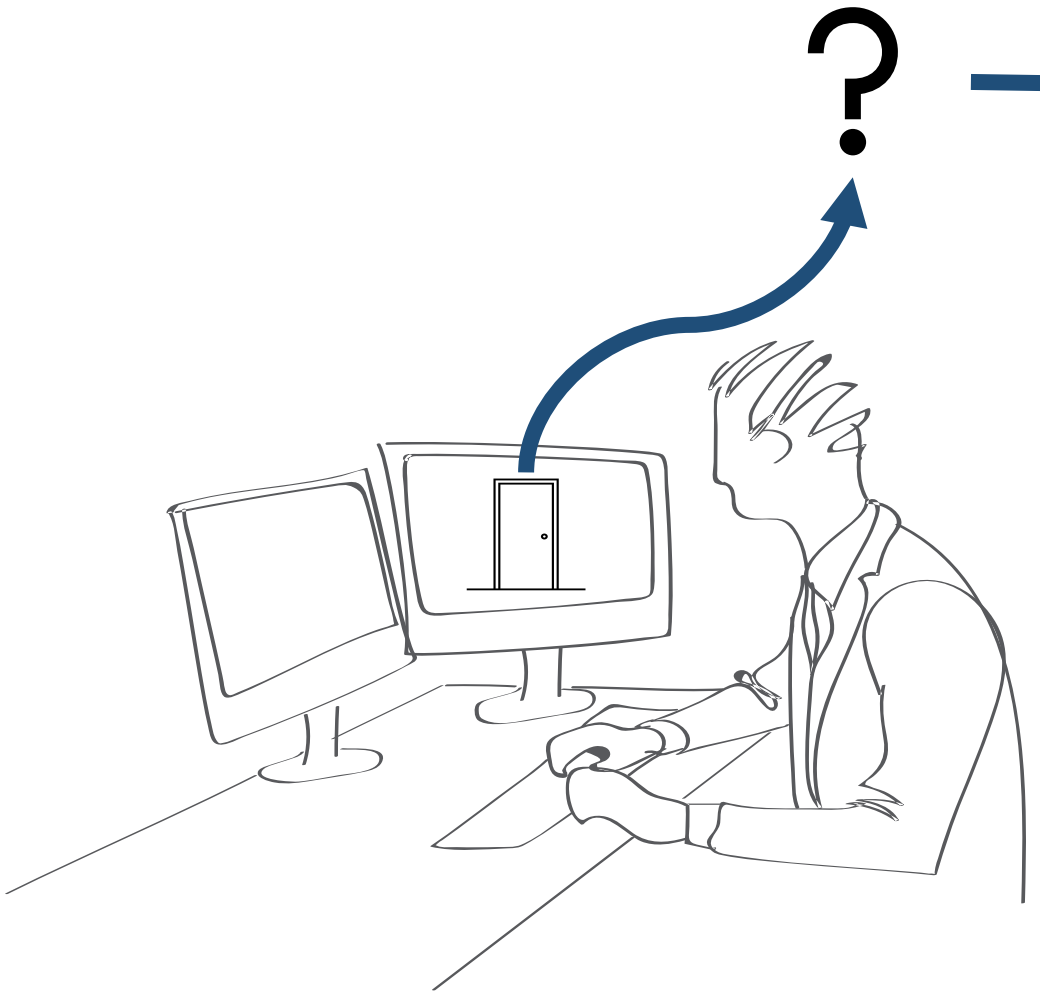
Managing Partner at BIM-and Ges.m.b.H.

Tim LEMOINE

Member WG 2 & 4 CEN/TC 442 BIM

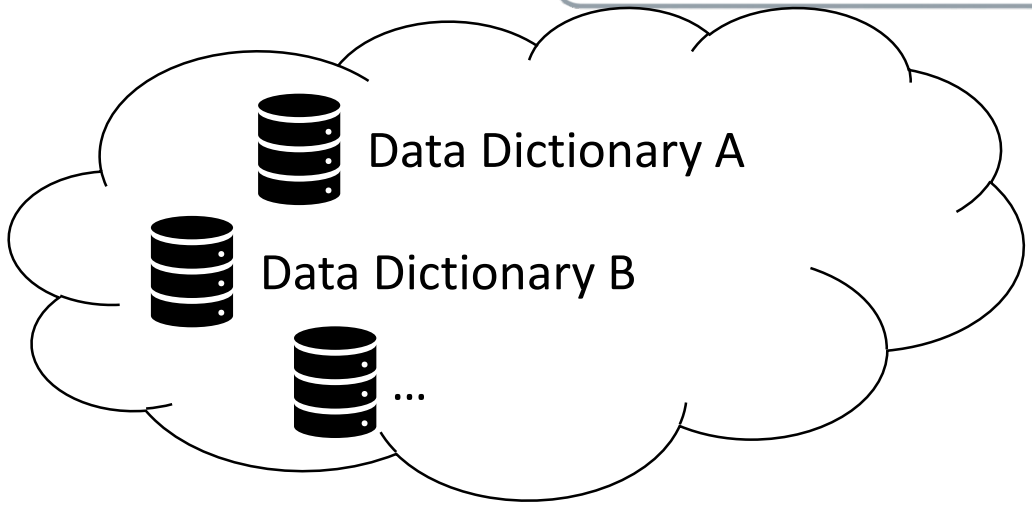
Advisor at Belgian Building Research Institute (BBRI)

Purpose



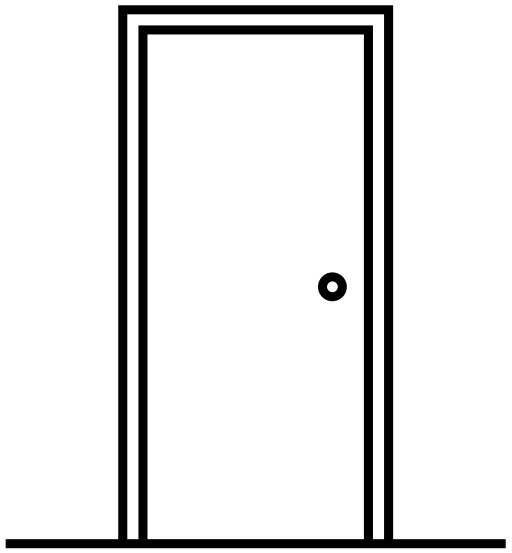
- Agreement on common terms
- Well-defined (e.g. according to EN ISO 23386)
- Structured (e.g. according to EN ISO 23387)
- Accessible

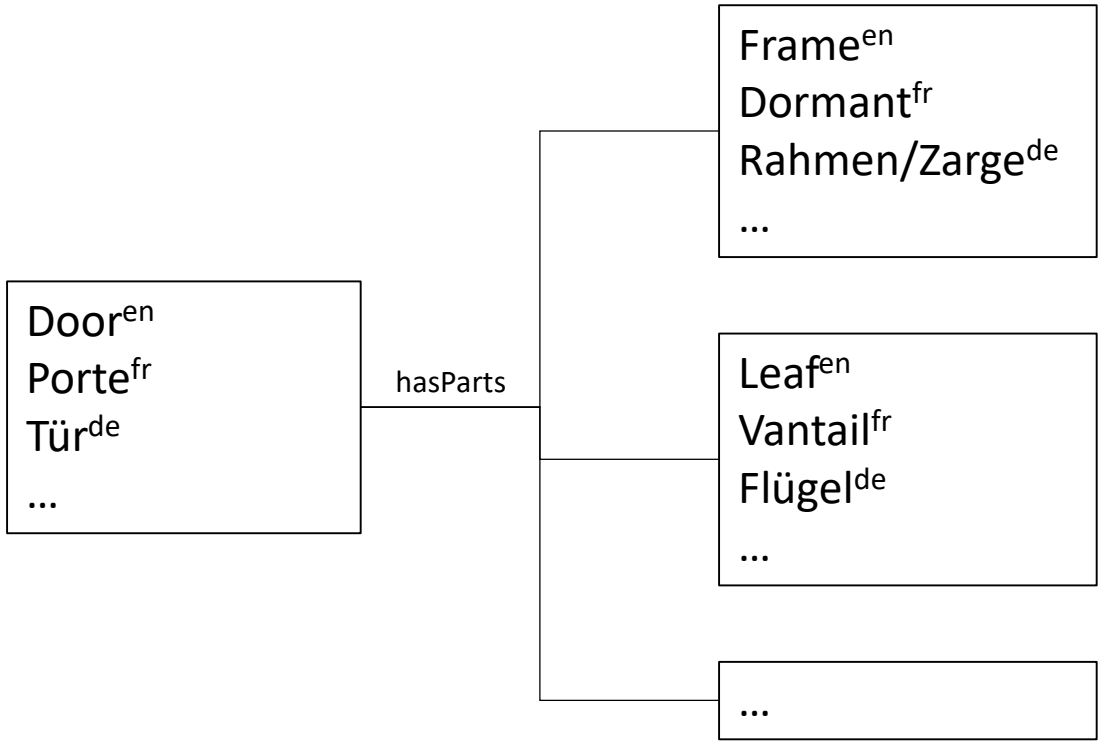
Purpose



according to EN ISO 12006-3 (rev)

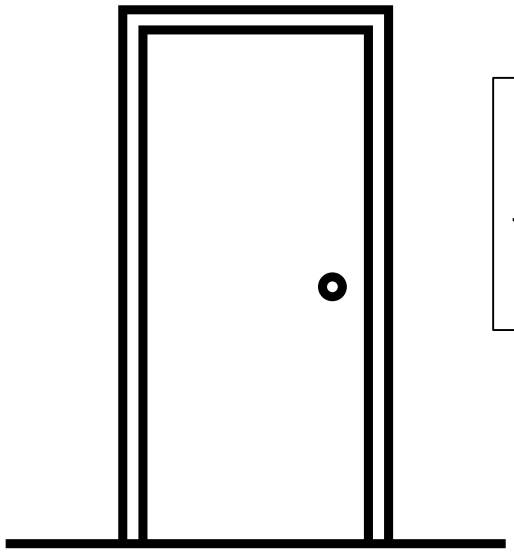
Purpose





EN 12519
Windows and pedestrian doors - Terminology

Purpose



Door[en]
Porte[fr]
Tür[de]
…

hasProperties

Name = Width
Quantity = Length
Unit = Meter

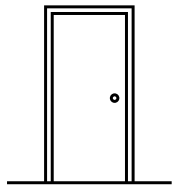
Name = Height
…

Name = Fire Resistance
Document = EN 13501-2
Values = EI_1 15, EI_1 20, EI_1 30
EI_1 45, ….

Name = Fire Resistance
Document = NBN 713-020
Values = Rf 30, Rf 60, …

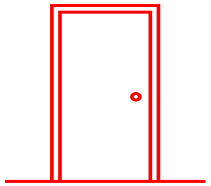
…

Purpose



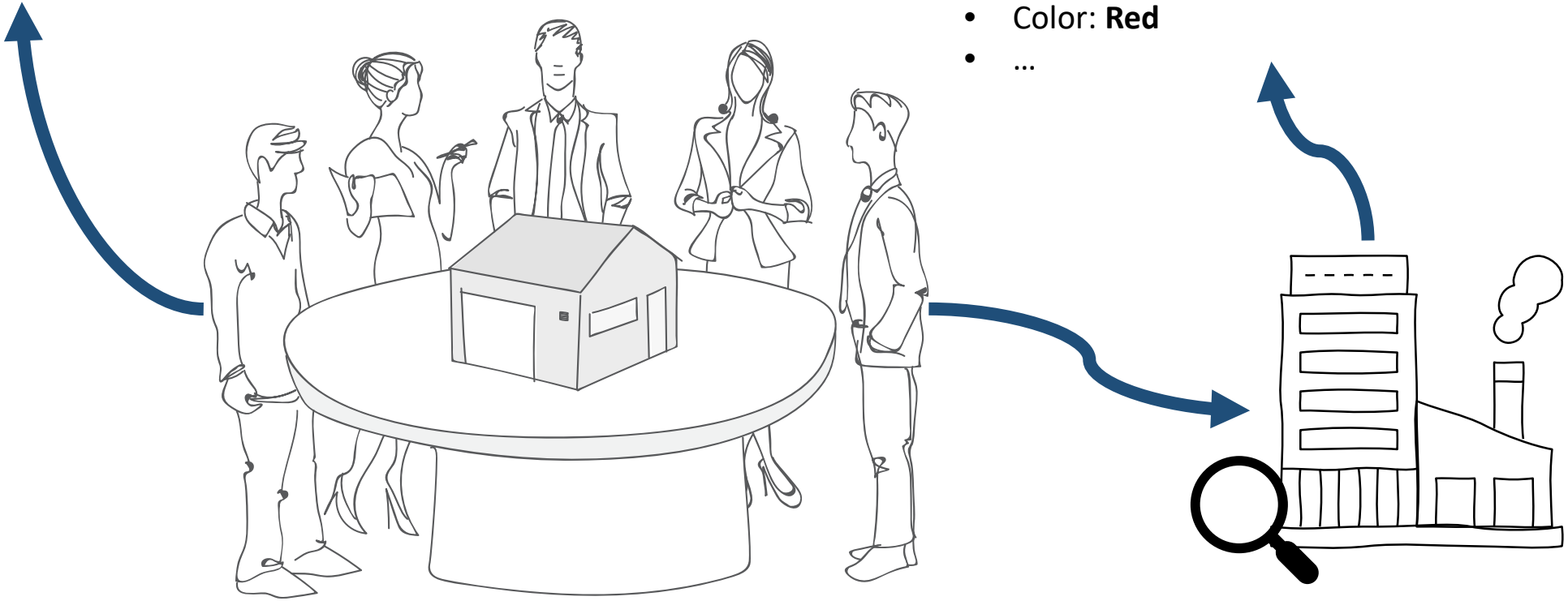
Requirements

- Material: **Wood**
- Fire Resistance according to EN 13501-2: **≥ EI_1 30**
- Color: **Red**
- …



Deliverables

- Material: **Wood**
- Fire Resistance according to EN 13501-2: **EI_1 60**
- Color: **Red**
- …



What are the Issues ?

- Define / Manage Information Requirements (IR)
  - How to define Information Requirements
  - How to ensure Quality in a Properties – Server ?
  - How to manage change ?

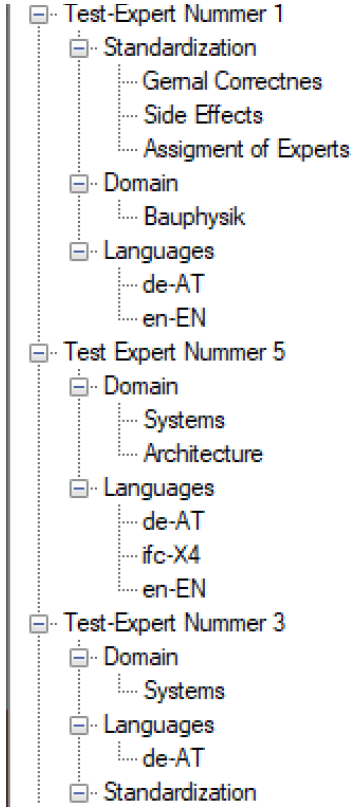
- Download IR for a BIM project as an end-user ?
  - Current Situation
  - Outlook: Define a standard format for the download of IR

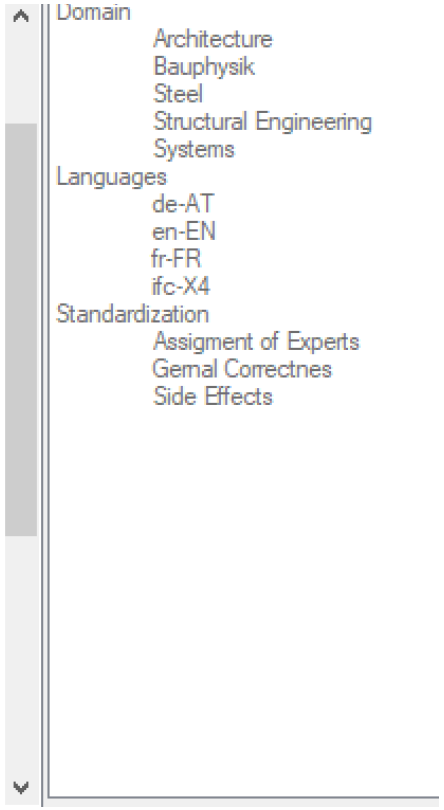
Standards to define IR‘s

- EN – ISO 23386
  - Defines the List of „Attributes“ required to define a „Property“
  - Define a „Quality Management Process“ to be used for the development of Information Requirements
- EN – ISO 23387
  - Defines the structure for „Data Templates“
- ISO 12006-3:202X(e)
  - Defines the Structure for Information Requirements
    - Subject, Property, Value, Unit, Interval, Dimension …
  - Provides Concepts for Quality Management for Content Creation and Management
    - Change Request, Expert, Area of Competence
  - Provides Concepts for Validation of BIM Data (Filters, Value-Lists)

Managing Quality in a Data Dictionary

- Provide a „Classification“ for Experts
  - Area of Expertise (Standardization, Domains, Languages)
- Provide a „Classification“ for Content
  - Specify „Domains“ for the Concepts
- When both Content and Experts can be „classified“ an automatic Assignment of Experts can be made





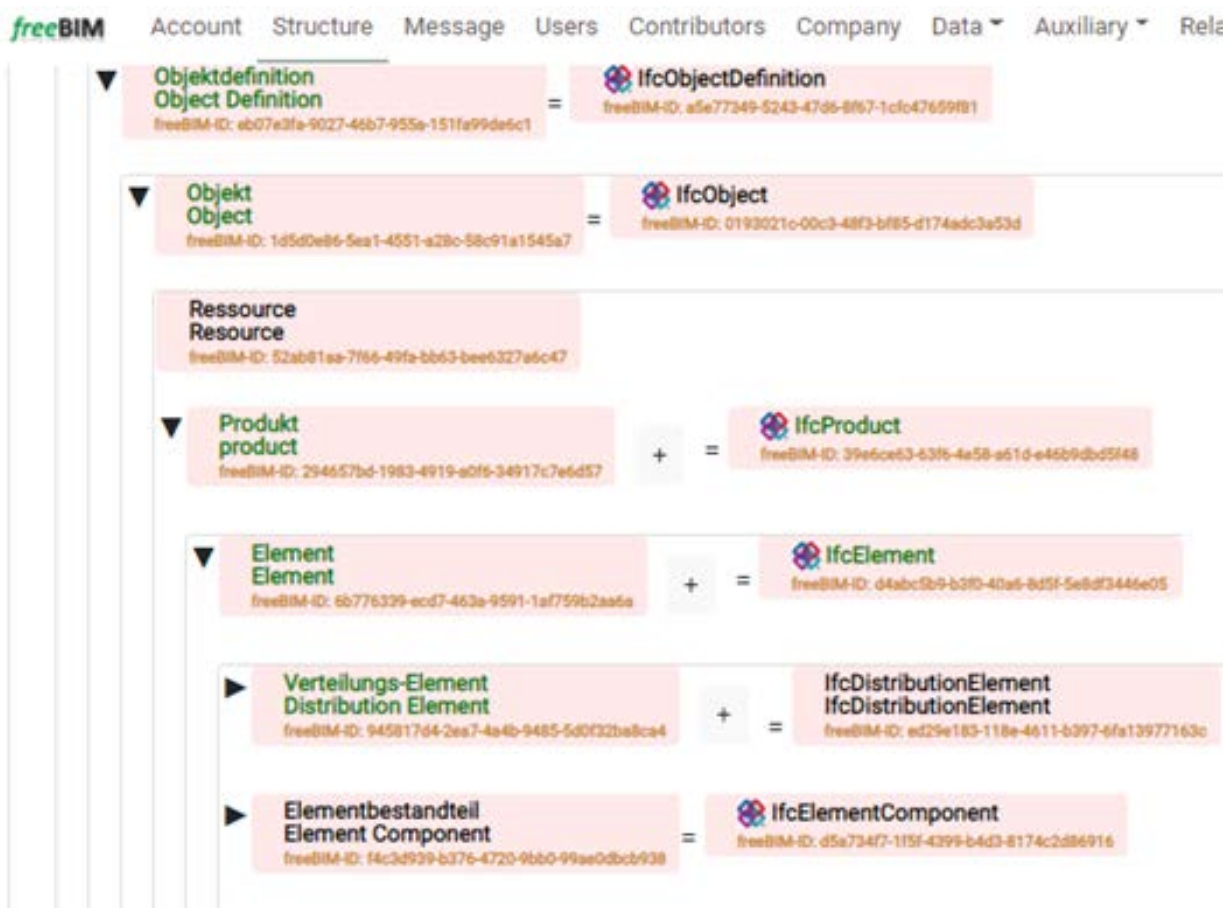
Define the „Rules“ for the QM Process

- Number of Experts for every Area of Competence
- Rules for the Decisions
  - Simple Majority
  - 2/3 Majority
  - ...

▶	Standardization	General Correctness of Reuqests	2	Einfache Me...
	Languages	Language	2	2/3 Mehrheit
	Domain	Domain	2	2/3 Mehrheit

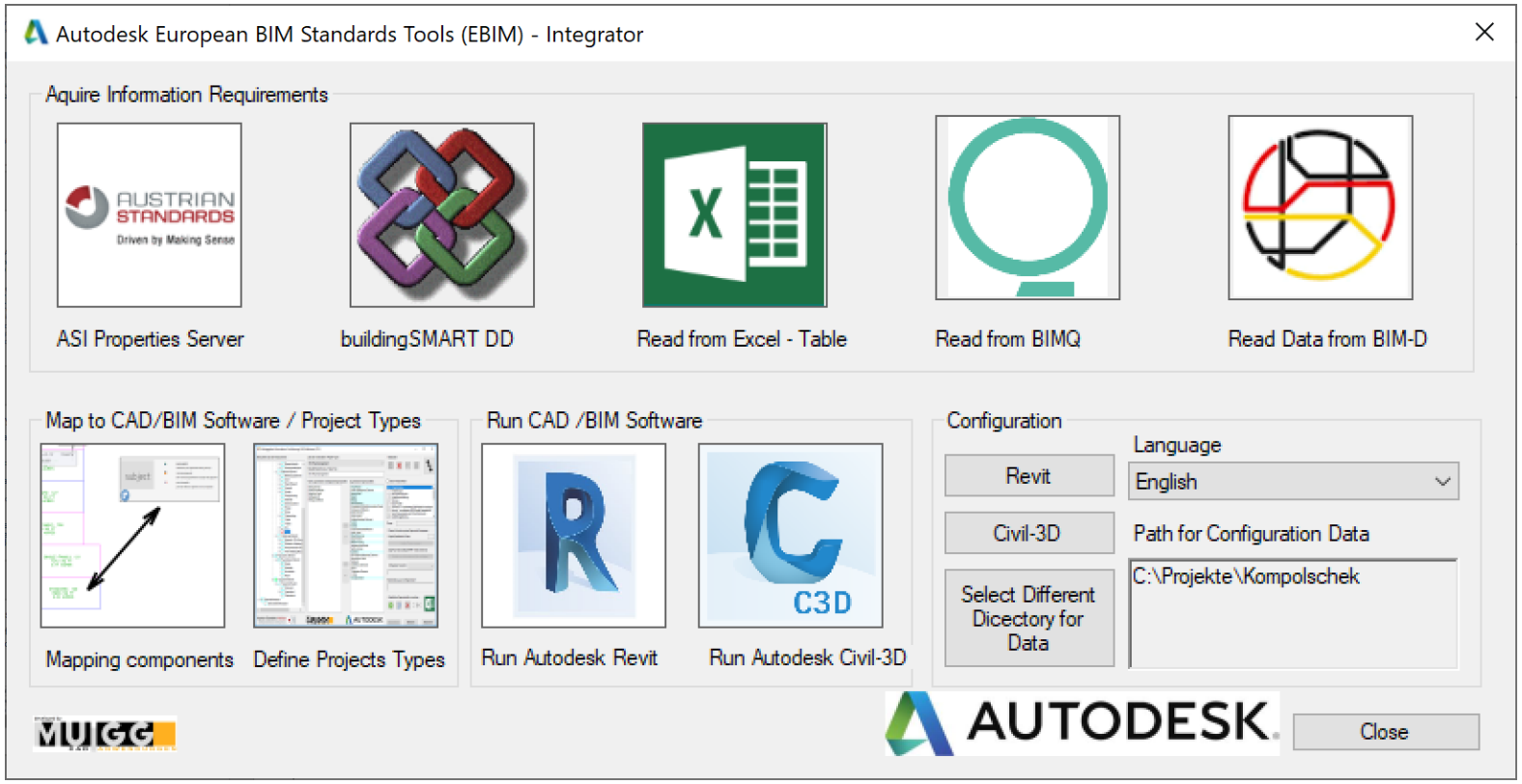
Manage Change in a Data Dictionary

- Companies must be able to rely on Information Requirements (IR) to be „stable“ over the lifetime of a project
  - Every change, however minor, constitutes a change
- Solution: Introduce a “Versioning Schema” and keep track of all the version for every component by keeping the complete “history”
- Evolution is still possible



Current Situation

- There are Standards in place – as mentioned - but there is still no standardized structure or format in place to download an IR
- Users need to access different sources
- Example:
  - Autodesk's EBIM-Tool
    - 5 different sources
    - Use of Excel-Sheets

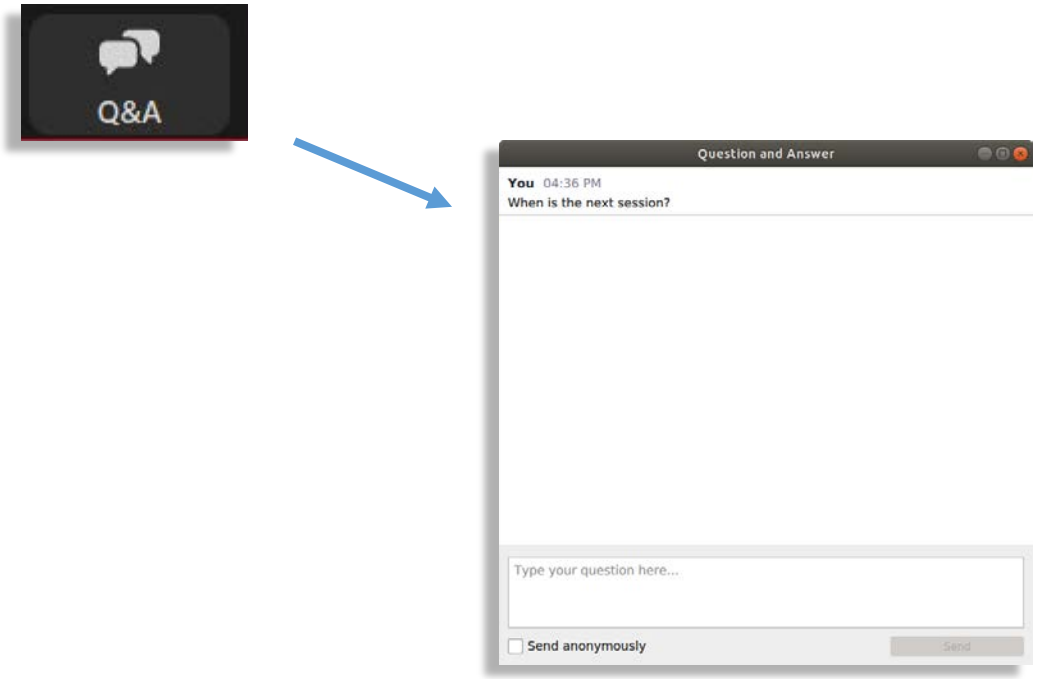


Outlook

- There is an initiative from buildingSMART to develop an „IDS“ standard using a simple XML schema
  - Two initial formats are currently under evaluation
- There are Initiatives on a national level under way
  - Germany: BIM-D Portal
  - Austria: ASI Properties Server
  - buildingSMART: New bSDD
  - ....
- Maybe there should be another initiative in CEN to develop a European IDS standard

Thank you for your attention!

Address your questions for Peter Muigg & Tim Lemoine.



How can we integrate product data into BIM? Engineering calculations with digital building models according to standards (EN ISO 16757)

Wolfgang WILKES

Managing Director

Semaino Technologies GmbH

Convener ISO TC 59/SC 13/WG 11

Ralf KIRYK

Head of Department and Project Leader BIM

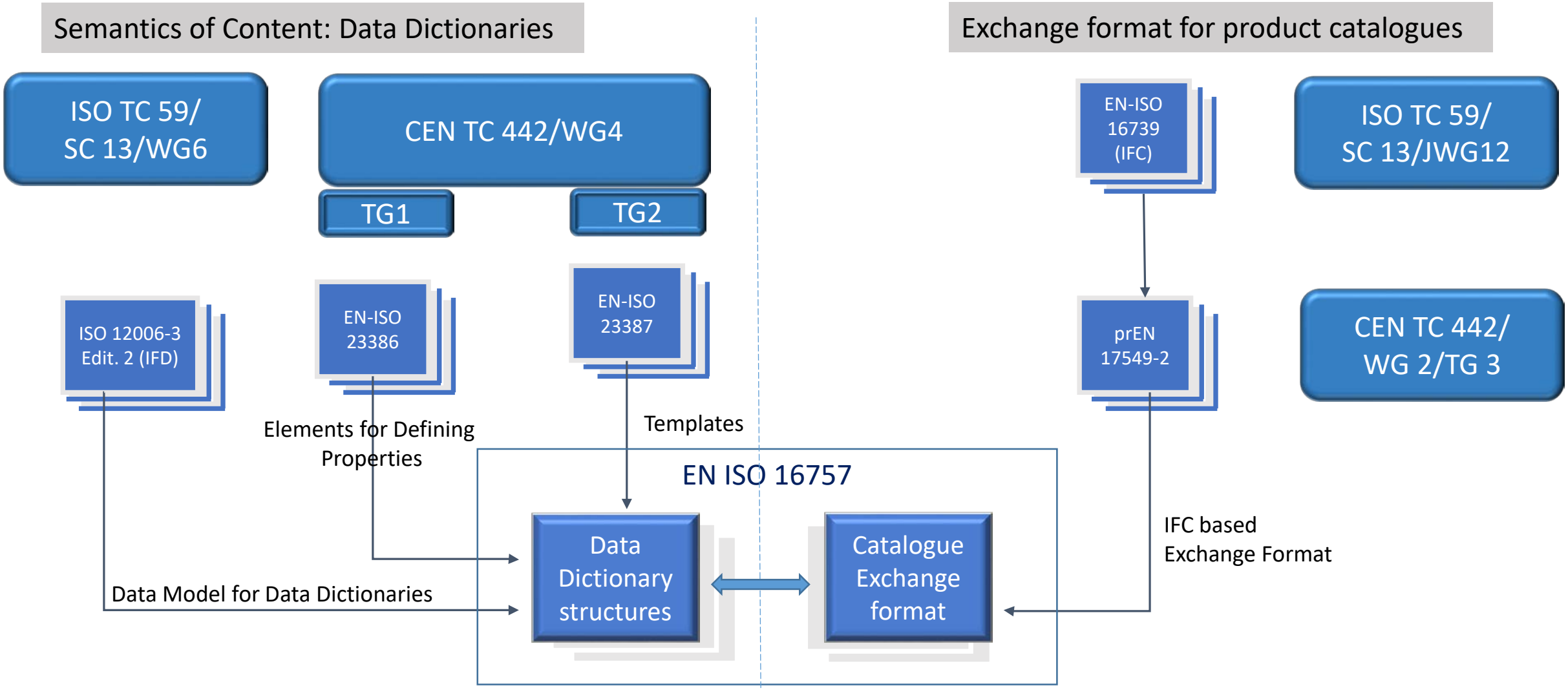
Federation of German Heating Industry

ralf.kiryk@bdh-koeln.de

CONTENT

- Methodology: EN ISO 16757 embedded in BIM standards
- Content: Property definitions and technical standards

Methodology: EN ISO 16757 and BIM standards



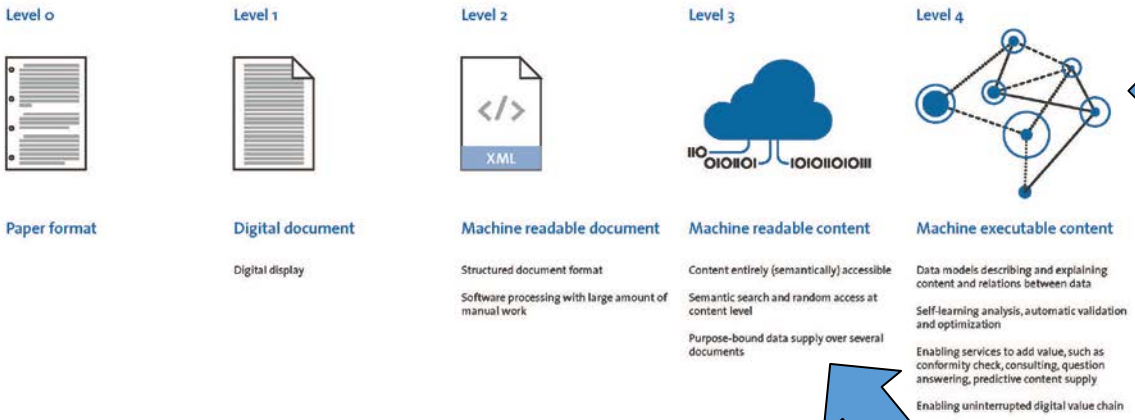
What is EN ISO 16757?

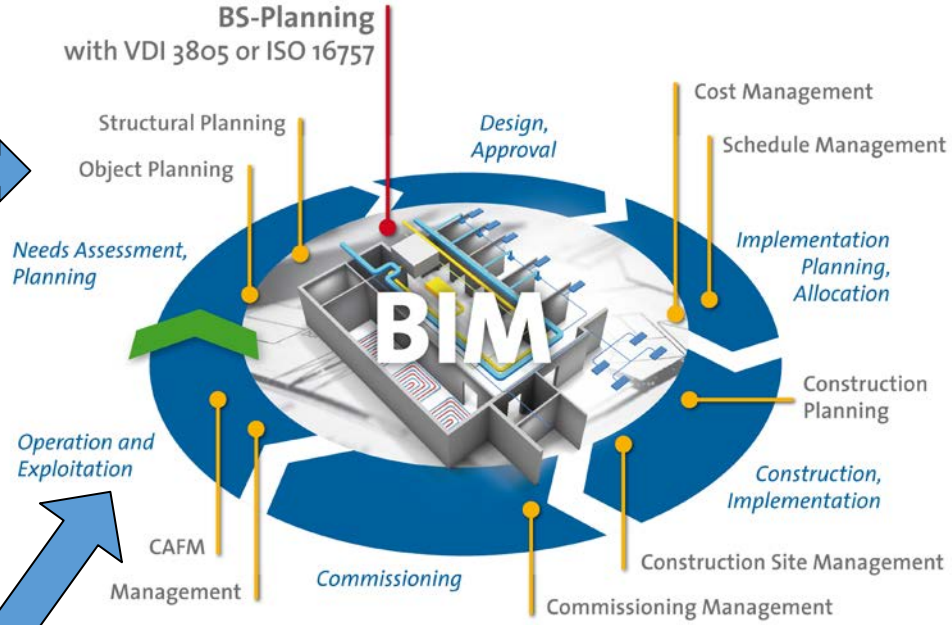
- EN ISO 16757
  - Allows Technical Committees to formalize their product definitions by
    - property definition templates based on BIM standards and Mappings to Data Dictionary models
  - Allows Manufacturers to produce product catalogues
    - Dynamic properties and respective computing functions
    - Parametric geometry, including HVAC related primitives
    - Indirect definition of variants by rules and tables
    - Using IFC
- Parts of EN ISO 16757
  - Part 1: Concepts, architecture and model
  - Part 2: Geometry
  - Part 3: Script language for functions and dynamic properties (NWIP upcoming)
  - Part 4: Definition of properties in dictionaries (NWIP upcoming)
  - Part 5: Exchange format (NWIP upcoming)

Content: Comparison of definitions from different standards

	EN 442 “Radiators and Convectors“	EN ISO 16757 “Data structures for electronic product catalogues for building services” Basis data from VDI 3805	EN 15316-2 “Energy performance of buildings - Method for calculation of system energy requirements and system efficiencies - Part 2: Space emission systems”	DIN V 18599-5 “Energy efficiency of buildings - Calculation of the net, final and primary energy demand for heating, cooling, ventilation, domestic hot water and lighting - Part 5: Final energy demand of heating systems”
Radiator	heating appliance, produced with different materials (e.g. steel, aluminium, cast-iron) and with different designs (e.g. plate type, column type, tube type, finned tube type), which emits heat by free convection and radiation	Radiator, which gives off its heat to the room air mainly by radiation	No definition	No definition
Standard heat output for heating case	**standard rated thermal output:** thermal output of a heating appliance defined at 50 K excess temperature	Heat output at 50 K excess temperature acc. to DIN EN 442-2 for an inlet temperature of 75K and an outlet temperature of 65K at an environmental temperature of 20K	No definition	No definition

Connection of SMART Standards, EPB Standards, Product Standards, BIM and Data Dictionary like bSDD





SMART Standards using unique properties Standards i.e. ISO 52000-series

BIM-Standards using unique properties

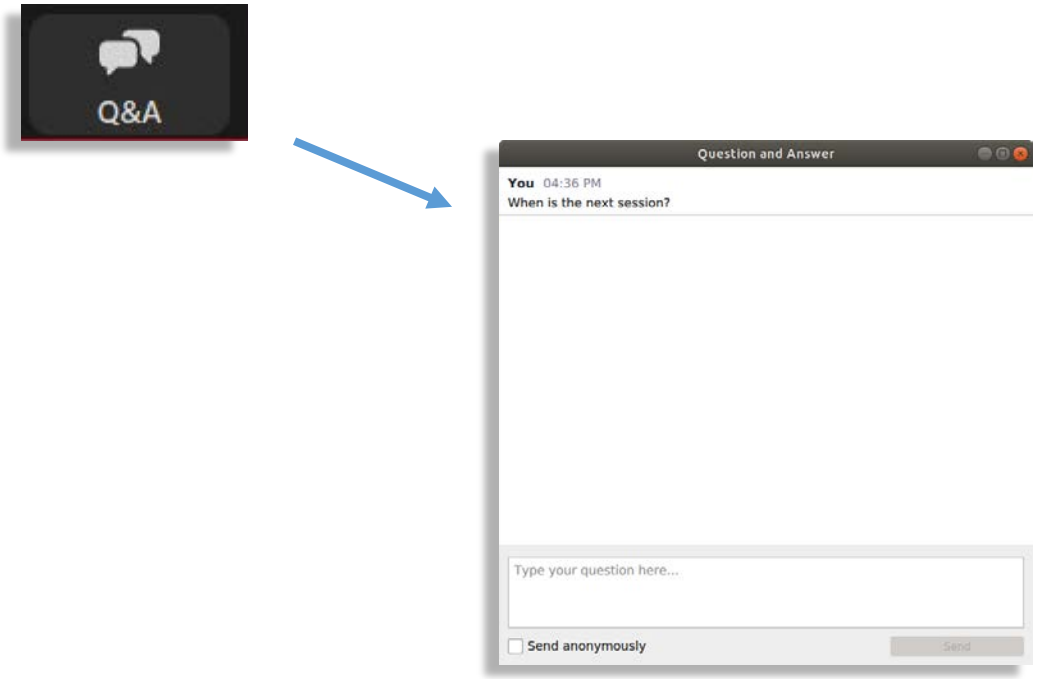
Common Database, i.e. bSDD, filled with properties according to EN ISO 23386 and EN ISO 23387

Recommendations for the connection of SMART Standards, EPB Standards, Product Standards, BIM and Data Dictionary like bSDD

- Define „Input“ and „Output“ parameters
- Use obligatory a Data Dictionary for necessary properties and their definition
- Optimum would be to use within CEN/ISO and on national obligatory one common Data Dictionary
- Define new properties according to EN ISO 23386
- Templates for the Technical Committees
- Qualification of the Technical Committees

Thank you for your attention!

Address your questions for Wolfgang Wilkes & Ralf Kiryk.



Liaisons and their importance

Robert HEINZE

Liaison officer
CEN/TC 169 (Lighting) – CEN/TC 442

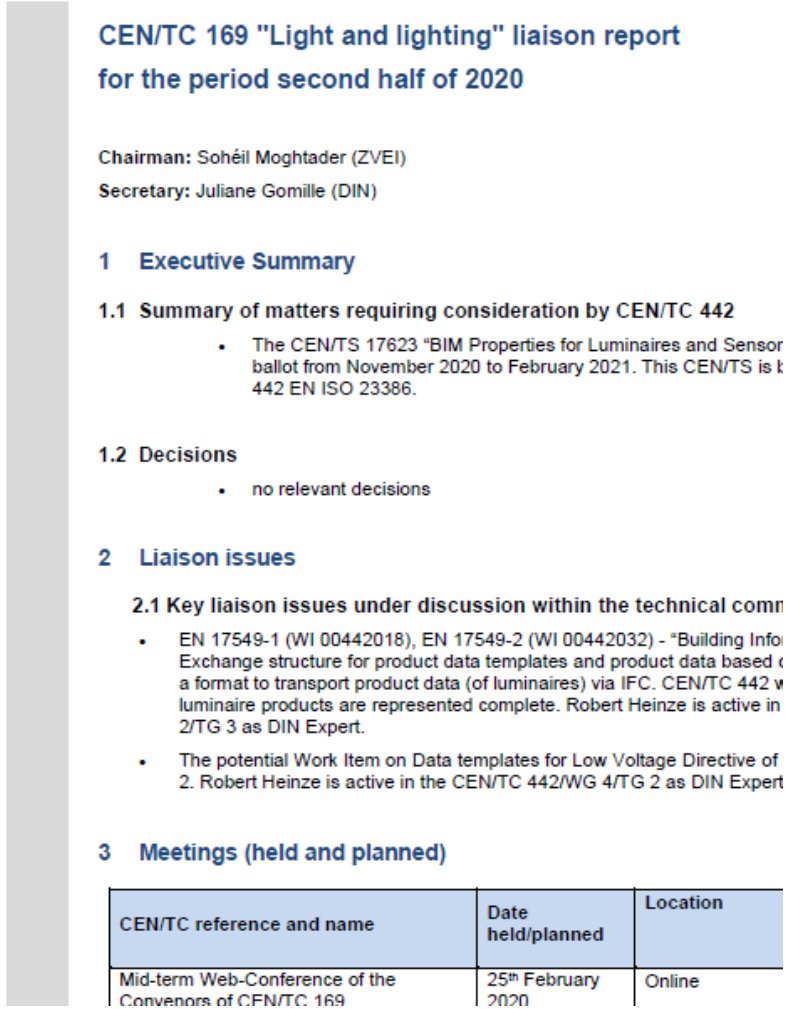
r.heinze@relux.com

Connect CEN/CLC/TCs

- At CEN and CENELEC are hundreds active TCs, mostly isolated from each other
- A connection between TCs is essential to
  - Avoid duplication of work / double standards
  - Exchange professional information and knowledge
  - Grand professional input to standardisation projects
  - Build standards on other standards
- Liaisons are a proven and experienced way of collaboration inside CEN / CLC and to other organisations

Liaisons

- TCs could request a formal liaison to other TCs the request needs to accepted with a TC decision
- After acceptance the TC sends one (or more) experts as liaison officer to the another TC as observer without voting rights
- Liaisons works one-directional; the TC has also to send one expert too (could be the same)
- A Liaison officer reports in the plenary from his origin TC
- He identifies conflicts and opportunities and acts as the communication bridge between the TCs



CEN/TC 169 "Light and lighting" liaison report for the period second half of 2020

Chairman: Sohéil Moghtader (ZVEI)

Secretary: Juliane Gomille (DIN)

1 Executive Summary

1.1 Summary of matters requiring consideration by CEN/TC 442

- The CEN/TS 17623 "BIM Properties for Luminaires and Sensor ballot from November 2020 to February 2021. This CEN/TS is b 442 EN ISO 23386.

1.2 Decisions

- no relevant decisions

2 Liaison issues

2.1 Key liaison issues under discussion within the technical comm

- EN 17549-1 (WI 00442018), EN 17549-2 (WI 00442032) - "Building Info Exchange structure for product data templates and product data based a format to transport product data (of luminaires) via IFC. CEN/TC 442 w luminaire products are represented complete. Robert Heinze is active in 2/TG 3 as DIN Expert.
- The potential Work Item on Data templates for Low Voltage Directive of 2. Robert Heinze is active in the CEN/TC 442/WG 4/TG 2 as DIN Expert

3 Meetings (held and planned)

CEN/TC reference and name	Date held/planned	Location
Mid-term Web-Conference of the Convenors of CEN/TC 169	25th February 2020	Online

CEN/TC 442 Liaisons

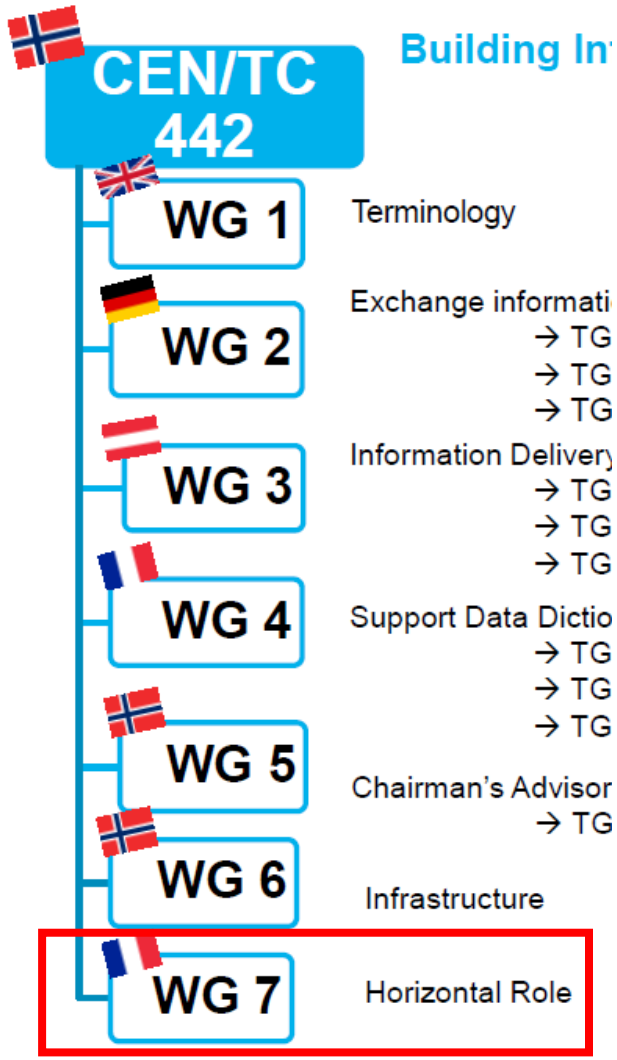
- CEN/TC 442 has these 16 liaisons today inside CEN:
  - CEN/TC 51 Cement and building limes
  - CEN/TC 69 Industrial valves
  - CEN/TC 126 Acoustic properties of building elements and of buildings
  - CEN/TC 127 Fire safety in buildings
  - CEN/TC 134 Resilient, textile and laminat floor coverings
  - CEN/TC 169 Light and lighting
  - CEN/TC 247 Building Automation, Controls and Building Management
  - CEN/TC 250 Structural Eurocodes
  - CEN/TC 251 Health informatics
  - CEN/TC 254 Flexible sheets for waterproofing
  - CEN/TC 287 Geographic information
  - CEN/TC 310 Advanced automation technologies and their applications
  - CEN/TC 348 Facility management
  - CEN/TC 350 Sustainability in Construction Works
  - CEN/TC 371 Energy Performance of Buildings project group
  - CEN/TC 440 Electronic Public Procurement

CEN/TC 442 Liaisons

- CEN/TC 442 has these liaisons today outside CEN:
  - EC, European Commission
  - buildingSMART Int.
  - ACE, Architects Council of Europe
  - CEIR, Comité Européen de l'Industrie de la Robinetterie
  - CERAME-UNIE, European Ceramic Industry Association
  - CPE, Construction Product Europe
  - EFCA, European Federation of Engineering Consultancy Association
  - EHI, European Heating Industry
  - ERMCO, European Ready Mixed Concrete Organization
  - EURALARM
  - EURIMA, European Insulation Manufacturers Assosiation
  - EUROGYPSUM
  - EUROVENT, Europe's Industry Association for Indoor Climate, Process Cooling, …
  - FIEC, European Construction Industry Federation
  - SBS Small Business Standards
  - ISO/TC 46 Information and documentation
  - ISO/TC 59/SC 13 Organization of information about construction works
  - ISO/TC 211 Geographic information/Geomatics

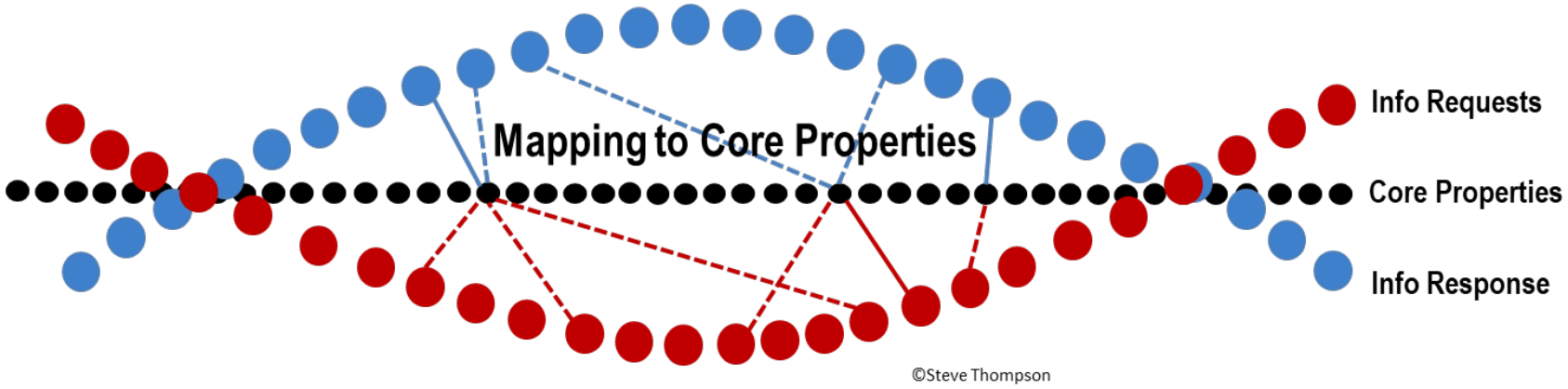
CEN/TC 442/WG 7

- BIM has a fundamental role for the complete building.
- TC 442 creates information-technically basics for the digital construction and digital building representation. But without any specialised building disciple knowledge.
- So there is a high amount of existing and possible liaisons
  (there are around 120 relevant TCs at CEN).
- CEN/TC established a speciated working group -WG7- especial for all liaisons and the horizontal role of BIM
- WG7 process the TC 442 work and projects for other TCs
- WG7 is a hub for all TC requests and needs



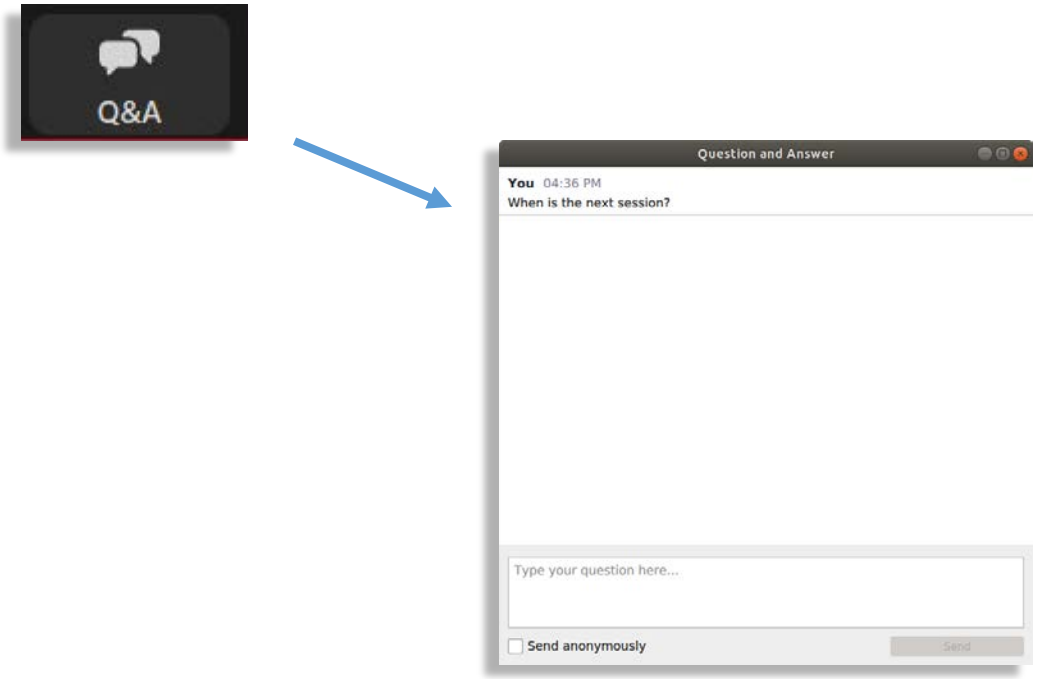
CEN/TC 169 Example

- CEN/TC 442 created the EN 23386 with a fundamental definition of building object (e.g. door) properties (e.g. height). This standard defines the attributes of the properties (e.g. ID of height).
- CEN/TC 169 created in liaison with CLC/TC 205 the CEN/TS 17623 with a list of all lighting fixture and sensing devices properties according the structure of EN 23386.
  Thanks to EN 23386 any discipline can read and understand the lighting properties.



Thank you for your attention!

Address your questions for Robert Heinze.



Conclusions

Øivind ROOTH

Chairperson CEN/TC 442

Take-Aways

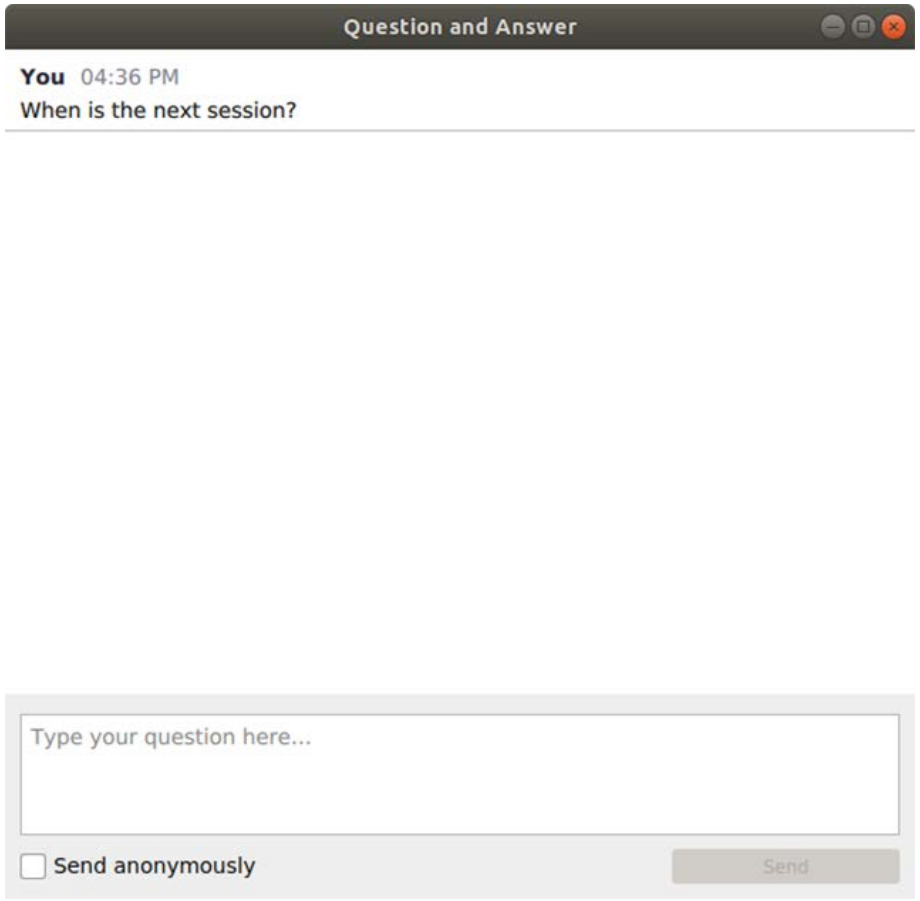
- Building Information Modelling (BIM) is about transforming data to information enabling digitalization of the Construction Industry value chain in the lifecycle of assets.
- Data must be structured and managed to become useful information that can be shared and support decisions in the whole lifecycle of an asset.
- In many ways TC442 is only a facilitator
  - TC 442 standardize methods on how data can be shared, and information managed digitally
  - TCs must define their own properties, processes and elements using TC442 methods.
  - TC 442 will support CEN/CENELEC TC's with tools, but TC 442 can not do this alone.
- Be a liaison to TC442 and join the work in WG7 and other WG's. We need to digitize together to be successful.

CEN & CENELEC Strategy 2030

Press release here.

Question time

- Use the Q&A panel to submit your questions



European Standardization Organizations

Thank you for your participation!

Next webinar

2021-03-10 - 10-10 webinar: Inclusive European Standardization: the case of Gender