



European Standardization Organizations

Webinar 'How can CEN/TC 442 support digitalization of data in design and product standards'

*We start at
10:00 CET*

Webinar moderator



Els SOMERS

Project Manager

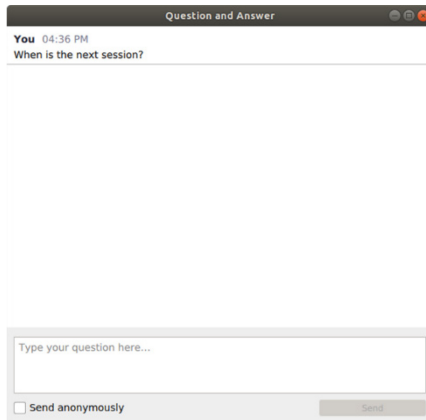
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1. General information on BIM & scope of CEN/TC 442
(Øivind ROTH – Standards Norway - CEN/TC 442 Chair)
2. CEN/TC 442 standards map
(Stepanka TOMANOVA - UNMZ)
3. Construction Products Regulation
(Espen SCHULZE - Standards Norway)
4. CEN/TC 442 standards Use Cases
 - a) CEN/TC 33 “Doors, windows, shutters, building hardware and curtain walling”
(Kai OBERSTE-UFER) (DIN)
 - b) CEN/TC 169 Light and lighting
(Robert HEINZE) (DIN)
 - c) Digital transformation - Standards digitalization
(Etienne CAILLEAU) (AFNOR)

- ▶ BIM – Building Information Modelling
- ▶ CAG – Chairpersons Advisory Group
- ▶ ESPR - Ecodesign for Sustainable Products
- ▶ CPR - Construction Products Regulation
- ▶ DPP - Digital Product Passport
- ▶ WI – work item
- ▶ DoPC - Declaration of Performance and Conformity
- ▶ EPD – Environment Product Declaration
- ▶ TS – Technical Specification
- ▶ TC – Technical Committee

Your speakers today



Øivind Rooth

Chairperson CEN/TC 442
Specialist Director
Norwegian Building Authority



Stepanka TOMANOVA

Chairwoman of the Czech mirror committee of CEN/TC442 and ISO/TC59/SC13 with working background of software for MEP engineers, cooperating expert for Czech data dictionary



Espen SCHULZE

Group Vice President
Research at Cobuilder
- CEN/TC442/WG4 &
WG7 Project leader
and CEN/TC442/WG12
convenor



Robert HEINZE

CTO at RELUX (a lighting design software company).
Electrical engineer and lighting designer. Liaison officer between lighting TCs and BIM TCs on CEN and ISO level (CEN/TC 169 - CEN/TC 442 and ISO/TC 274 - ISO/TC 59/SC 13)



Etienne CAILLEAU

Head of SMART Standards
AFNOR Group



Kai OBERSTE-UFER

Senior Manager
EntriWorX Specification
Software



Øivind Rooth

Chairperson CEN/TC 442

Specialist Director Norwegian Building Authority













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.



Structure of CEN/TC 442

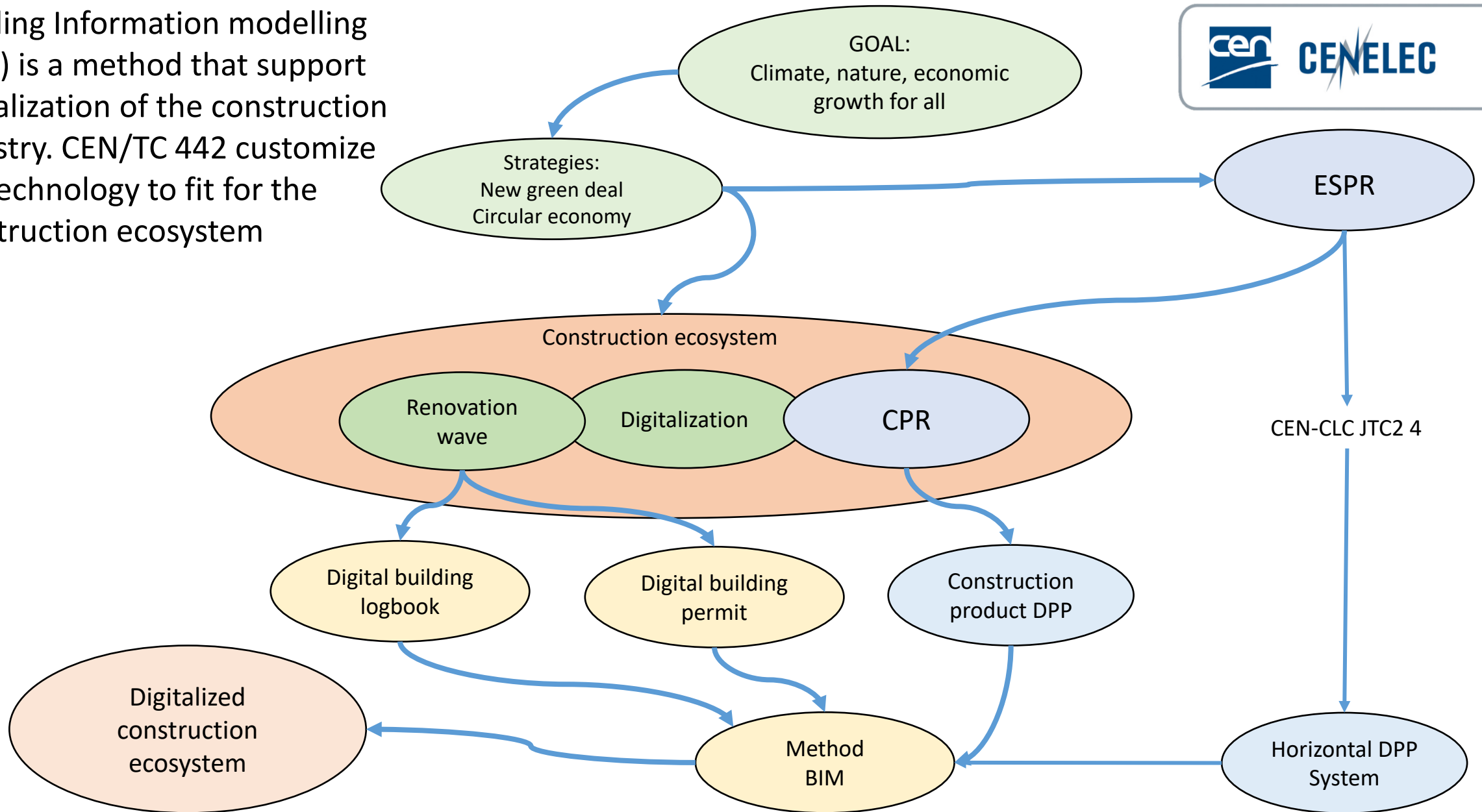
Management and Coordination							
WG 1  Terminology Convener: Dan Rossiter (UK) Secretary: Danny Peacock (BSI)		TC secretariat  Chair: Øivind Rooth (Norway) Secretary: Lisbet Landfald (SN)			Chairpersons Advisory Group (CAG)		
Strategy and external relations							
WG7 - Horizontal Role  Convener : Roland Dominici (France) Secretary: Ursula Viltart-Baquero (AFNOR)				WG10 - Strategy and Planning  Convener: Hywel Davies (UK) Secretary: Danny Peacock (BSI)			
Projects							
WG 2  Exchange Information Convener: Thomas Liebich (Germany) Secretary: Izabela Liero (DIN)	WG 3  Information Delivery Specifications Convener: Peter Kompolschek (Austria) Secretary: Stefan Wagmeister (ASI)	WG 4  Support Data Dictionaries Convener: Roland Dominici (France) Secretary: Ursula Viltart-Baquero (AFNOR)	WG 6  Infrastructure Convener: Dominique Chevillard (France) Secretary: Stefan Bæk Jensen (SN)	WG 8  Competence Convener: Angelo Ciribini (Italy) Secretary: (UNI)	WG 9  Digital twin Convener: Eduard Loscos (Spain) Secretary: AitorAragón Basabe (UNE)	WG 11  BIM objects Convener: Steen Sunesen(Norway) Secretary: Stefan Bæk Jensen (SN)	WG 12  DoPC Convener: Espen Schulze (Norway) Secretary: AitorAragón Basabe (UNE)



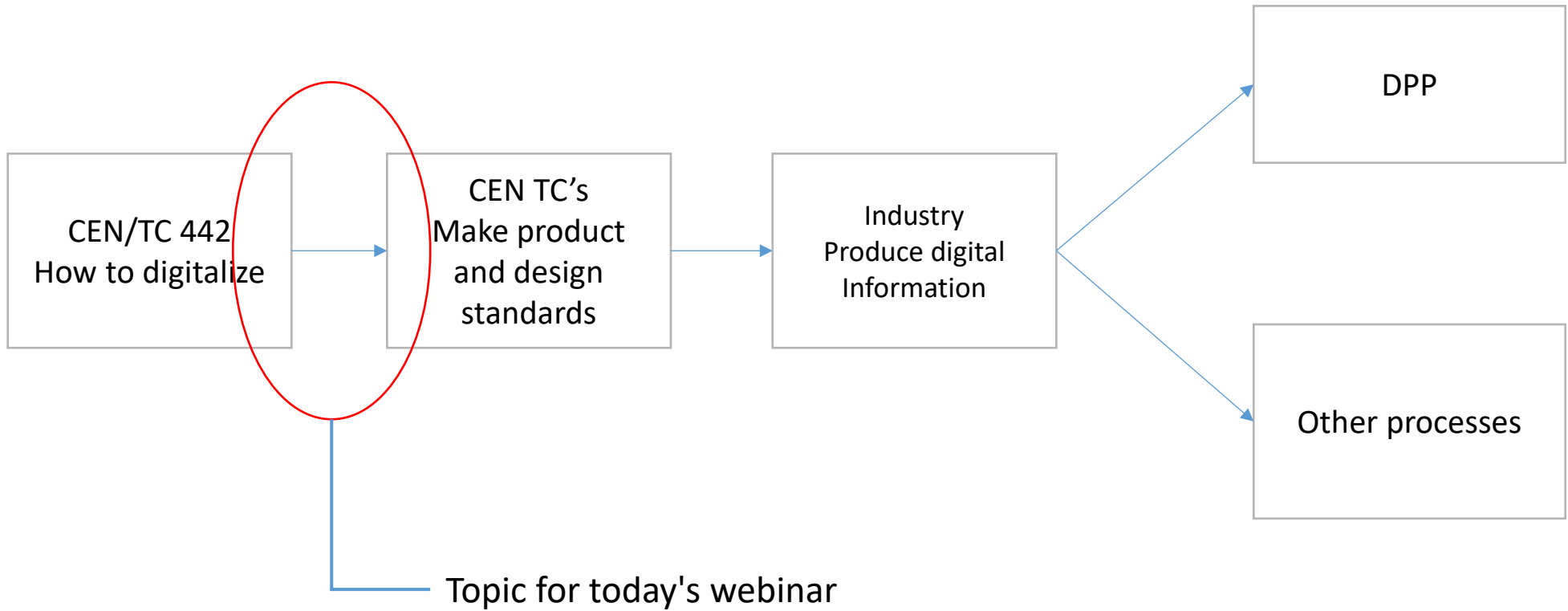
Digitalization of the construction ecosystem

EU policy, standardization and the role of CEN/TC 442

Building Information modelling (BIM) is a method that support digitalization of the construction industry. CEN/TC 442 customize ICT technology to fit for the construction ecosystem



CEN/TC 442 and role in digitalization





Stepanka TOMANOVA

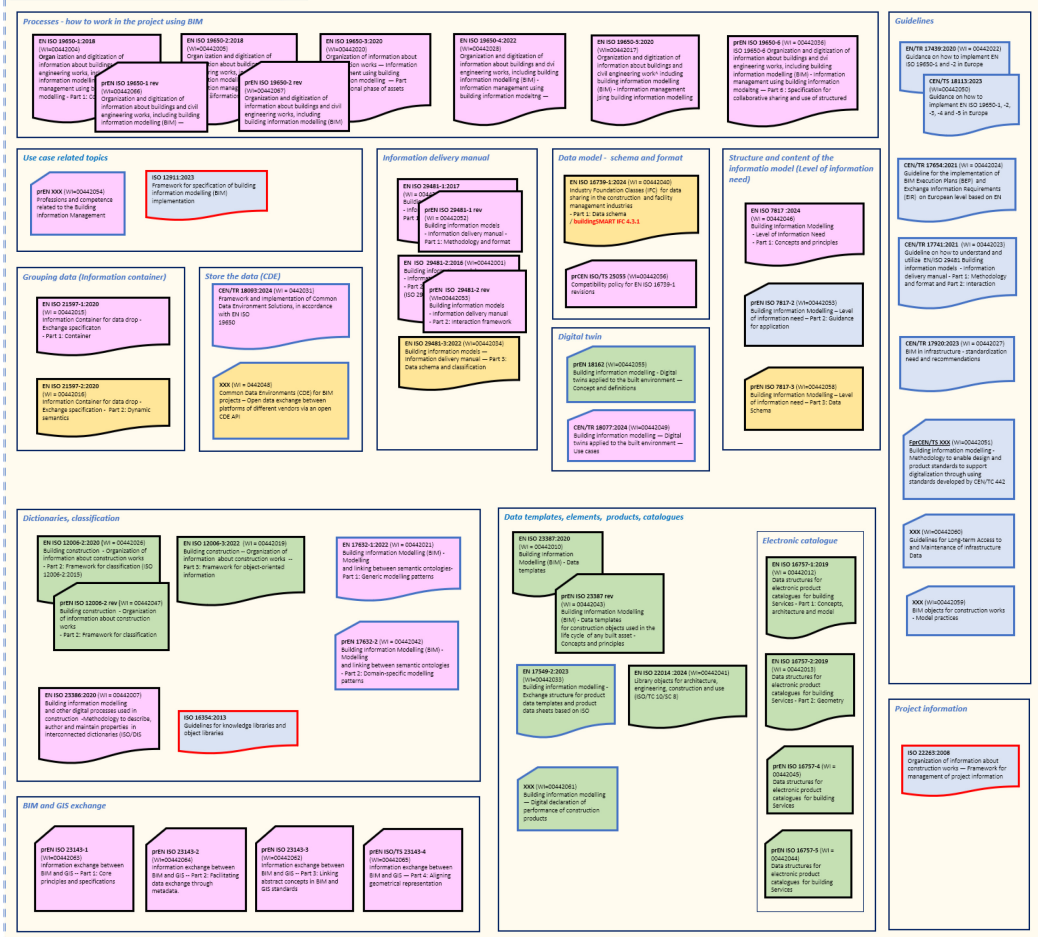
Chairwoman of the Czech mirror committee of CEN/TC442 and ISO/TC59/SC13 with working background of software for MEP engineers, cooperating expert for Czech data dictionary

- ▶ Transformation to „digital world“ has two main topics:
 - ▶ create and use digital data,
 - ▶ integration of digital technologies into processes;
- ▶ purpose of the standards map:
 - ▶ to explain the purpose of TC 442 documents,
 - ▶ to enable orientation in the processed topics,
 - ▶ create an open approach to connect domain topics with the building information modelling and management, digitalization in general;
- ▶ CEN/TC 442 standards map:
 - ▶ groups of standards – target topics,
 - ▶ list of standards – description, target users,
 - ▶ legend for groups of standards.

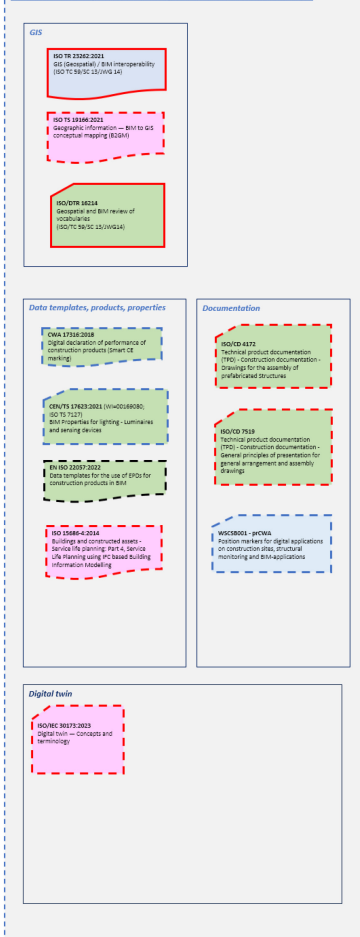
CEN/TC 442 standards map



Standards developed for BIM in CEN/TC442 and ISO/TC59/SC13

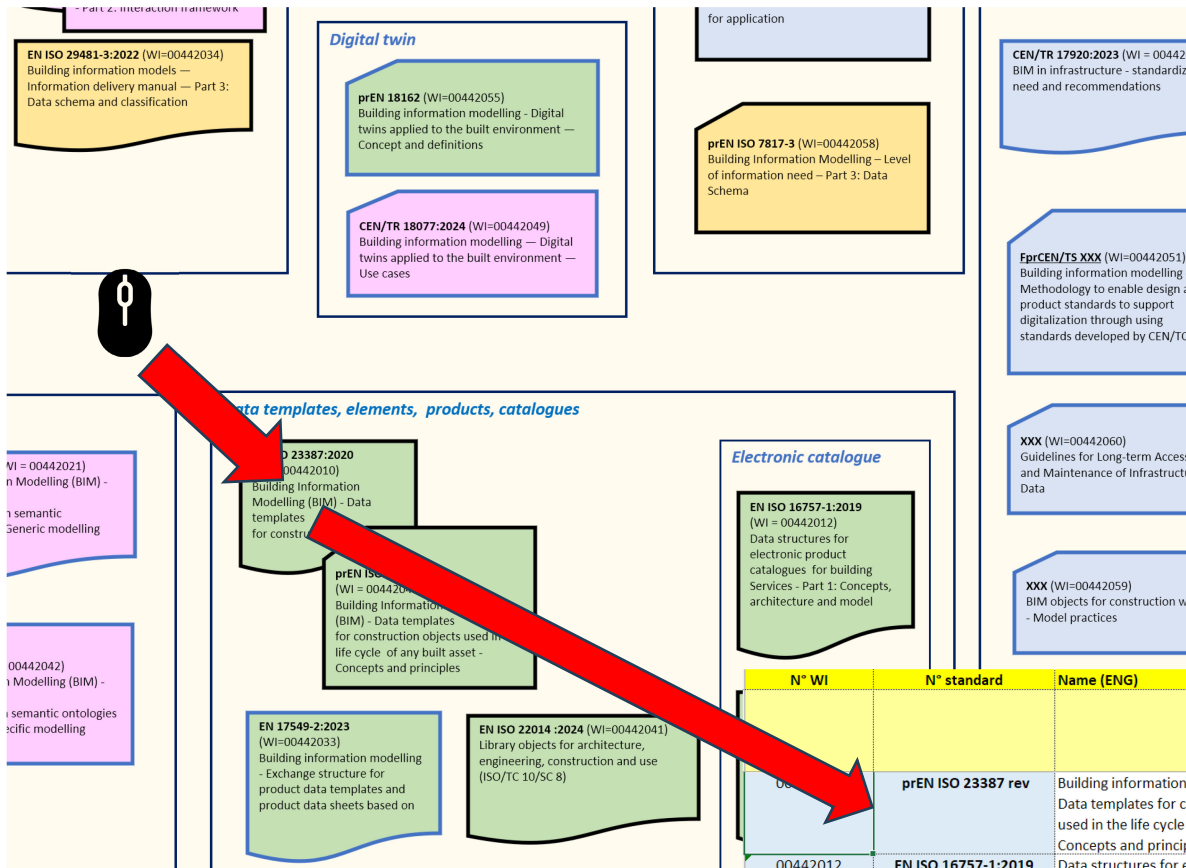


Standards developed outside CEN/TC442 connected to BIM topic



- ▶ Processes - how to work in the project using BIM
- ▶ Use case related topics
- ▶ Grouping data (Information container)
- ▶ Store the data (CDE)
- ▶ Information delivery manual
- ▶ Data model - schema and format
- ▶ Structure and content of the information model (Level of information need)
- ▶ **Data templates, elements, products, catalogues**
- ▶ **Dictionaries, classification**
- ▶ BIM and GIS exchange
- ▶ Project information
- ▶ Guidelines

CEN/TC 442 standards map



Legend - shapes	Legend - colours
	data and schema, API
	dictionaries, terms, list of properties
	processes
	guidelines
	document developed by ISO/TC59/SC13
	document developed by CEN/TC442
	document developed by CEN/TC442 and ISO/TC59/SC13 under Vienna agreement
	document developed by other TC than ISO/TC59/SC13 and/or CEN/TC442

N° WI	N° standard	Name (ENG)	WHAT	HOW	WHEN	WHO
			main issue of the project	Simplified scope	Life cycle's phase of the construction/asset covered by the project	stakeholders to whom the project is addressed
	prEN ISO 23387 rev	Building information modelling (BIM) — Data templates for construction objects used in the life cycle of built assets — Concepts and principles	To enable the exchange of information between computers for all types of construction objects at all stages of the construction life cycle	By describing the principles and structure of data models for construction objects	all of Life cycle's phase	Software vendors
00442012	EN ISO 16757-1:2019	Data structures for electronic product catalogues for building services - Part 1: Concepts, architecture and model	Exchanging product information from building services in a consistent manner.	By providing data structures for electronic product catalogues to automatically transmit product data for building services	Products Design	Manufacturers Software vendors
00442013	EN ISO 16757-2:2019	Data structures for electronic product catalogues for building services - Part 2:	Exchange the geometry of building services products in a consistent way.	Describing the modelling of product geometry for building services.	Products Design	Manufacturers

CEN/TC 442 standards map – where to find



<https://www.cencenelec.eu/areas-of-work/cen-sectors/construction/>

Construction Products | Sustainability, Safety and Accessibility

The construction sector is one of Europe's biggest industries, representing about 9% of the EU's GDP and 50.5% of Gross fixed Capital formation. It employs more than 18 million EU citizens and it is estimated that 26 million workers in the European Union depend, in one way or another, on the construction sector.

CEN and CENELEC, as two of the official European Standardization Organizations (ESOs), support the construction sector, developing harmonized European standards in support of the Construction Products Regulation (Regulation EU 305/2011 - CPR). European product standards, the core of the harmonized standards, are an essential tool for all stakeholders in the construction sector. They enhance the internal market allowing the free movement of construction products in the European Union and increase the competitiveness within this industry.

The construction sector is fundamental in ensuring that the ambitions of the Recovery Plan and the Green Deal embrace the opportunity for a stronger and more sustainable Europe moving forward: take for example the **Renovation Wave**, issued last month by the European Commission which calls specifically for climate resilient building standards.

Given the importance and broad applicability of the construction sector, stakeholders working on standards in the field include manufacturers of construction products, national and European industry associations, laboratories and notified bodies, engineers, structural designers, the scientific community and the European Commission.

Construction activities

Construction contributes to our society by making our built environment a safe and pleasant place to live in. For this reason, European Standards (ENs) are developed to set out performance characteristics and assessment methods of construction products and materials and to provide the requisite testing and/or calculation methods for them. Key

- Technical Bodies +
- CEN-CENELEC Guides +
- Documentation and Materials +
- Policy Opinion +
- Useful links
 - Construction Products Regulation (CPR) on the European Commission's website
 - Construction Products Regulation (CPR) (EU) No 305/2011
 - Harmonised standards cited under Regulation (EU) No 305/2011 for Construction Products
 - Mandates to CEN/CENELEC concerning the execution of standardisation work on construction products

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Search Standards MY EXPERT AREA

CEN/TC 442 'Building Information Modelling (BIM)' develops standards that support the digitalization of the construction industry. It is active in the development of 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.

CEN/TC 442 has created a mapping to present an **overview of the BIM standards developed by CEN/TC 442** and to show the relationships between these different standards. This representation shows to which category a standard belongs, for what it is used and whom it is addressed. This information and a summary appear by clicking on the standard. It provides a snapshot of the standards published and standards under development, including some standards under development or published outside of CEN/TC 442.

Sector Forum on Construction

The CEN Sector Forum on Construction is an advisory and coordinating body to the CEN Technical Board on political and strategic matters related to the Construction sector. Members of the sector forum are Sector forum chair and secretariat, experts of CEN and CENELEC members and partner organizations, relevant European Commission DGs and the EFTA secretariat, Technical Bodies developing standards on horizontal aspects for construction and CEN-CENELEC Management Centre.



Espen SCHULZE

Group Vice President Research at Cobuilder -
CEN/TC 442/WG4 & WG7 Project leader and
CEN/TC 442/WG12 convenor



Implementing digitalization through the use of **data dictionary** and **machine-readable format**

*It is necessary to establish well-functioning information flows, including via electronic means and in a **machine-readable format***

Whereas: (4)

*To improve machine readability, it is necessary to establish **a common data dictionary based on European standards**, a tool to govern and publish the data structure and their meaningful definitions and descriptions for all relevant construction products. For each product family or category, the data dictionary should include all the essential characteristics and other properties as set out in the harmonised technical specifications as well as other information required according to this regulation. A data dictionary harmonised at the EU level allows for the classification and use of structured definitions by both competent national authorities and in the further digitalisation of the construction sector, in particular in Building Information Modelling, building logbooks, digital passports and registries.*

Whereas: (84a)



Digital Product Passport (including Declaration of Performance/Conformity)

Article 75

Construction digital product passport system

The construction digital product passport system shall:

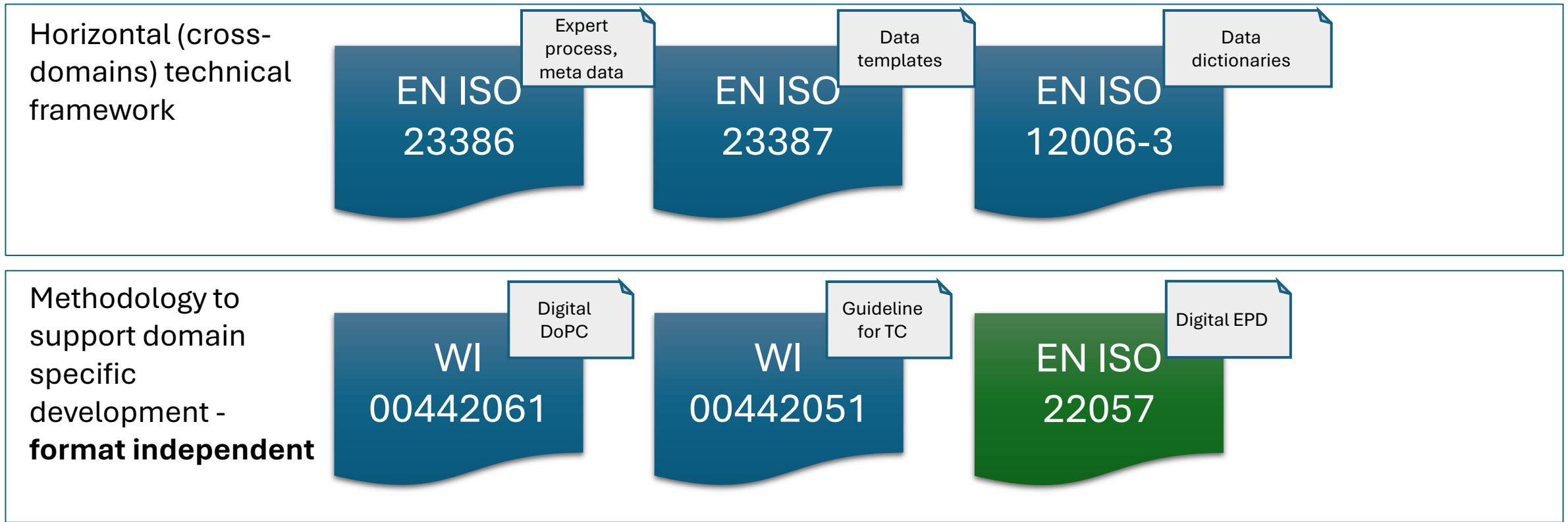
- *be compatible, interoperable and built on the digital product passport established by the regulation (EU) .../... [Regulation on eco design for sustainable products], without compromising interoperability with Building Information Modelling (BIM) while taking into account the specific characteristics and requirements related to construction products;*

Article 77

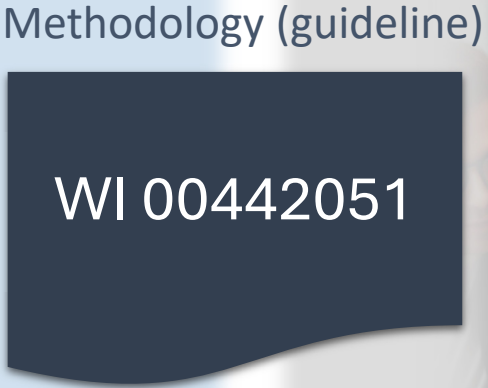
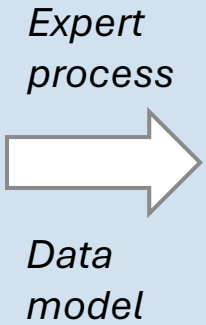
General requirements for the product passport

all information included in the product passport shall be based on open standards, developed with an interoperable format and shall be, as appropriate, machine-readable, structured, searchable and transferable

BIM standardization in CEN/TC 442 supporting data dictionaries



Methodology for CEN Technical Committees

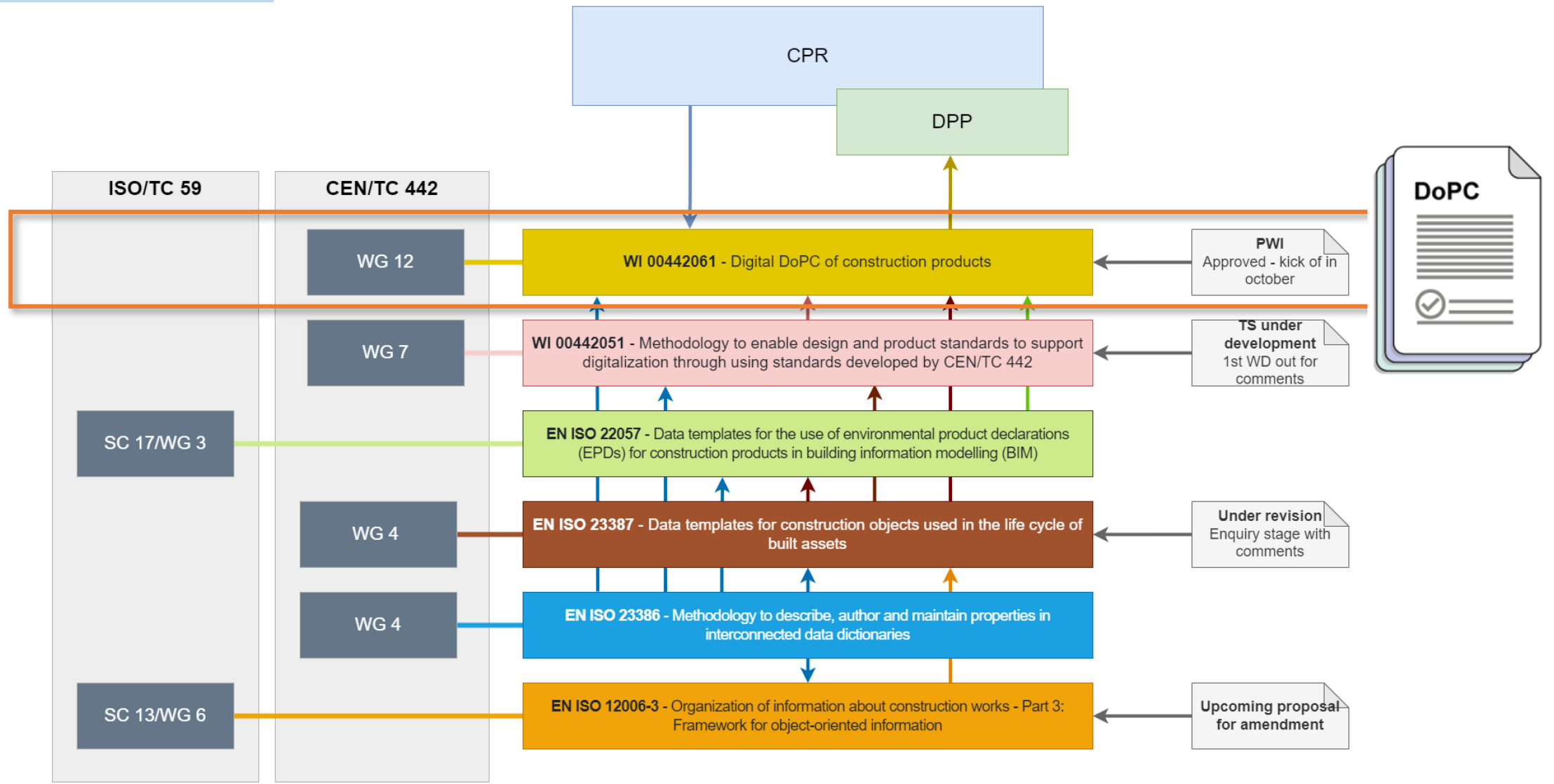


Methodology for CEN Technical Committees

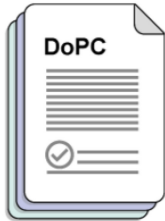


Name	Definition	Short name	Symbol	Reference document	Quantity kind	Unit	Data type	Possible values	Boundary values	Proxy dependency
maximum closing operating force acc. to EN 12046-2				EN 12046-2	force	N	real	user input		
maximum hardware operating force [lever handles] acc. to EN 12046-2				EN 12046-2	force	N	real	user input		
maximum hardware operating force [finger operated] acc. to EN 12046-2				EN 12046-2	force	N	real	user input		
maximum hardware operating torque [lever handles] acc. to EN 12046-2				EN 12046-2	torque	Nm	real	user input		
maximum hardware operating torque [finger operated] acc. to EN 12046-2				EN 12046-2	torque	Nm	real	user input		
water tightness				EN 14351-1:2006+A2:2016	Inherited	Inherited	Inherited	Inherited	Inherited	classification of water tightness [method A] acc. to EN 12208:1999; classification of water tightness [method B] acc. to EN 12208:1999
classification of water tightness [method A] acc. to EN 12208:1999				EN 12208:1999	nominal	unitless	string	1A; 2A; 3A; 4A; 5A; 6A; 7A; 8A; 9A; E750; E900; E1050; E1200; E1350; E1500; E1650; E1800		
classification of water tightness [method B] acc. to EN 12208:1999				EN 12208:1999	nominal	unitless	string	1B; 2B; 3B; 4B; 5B; 6B; 7B		
water tightness test result acc. to EN 1027:2016				EN 1027:2016	logical	unitless	boolean	pass; fail		
test pressure acc. to EN 1027:2016				EN 1027:2016	pressure	Pa	real	0; 50; 100; 150; 200; 250; 300; 450; 600; 750; 900; 1050; 1200; 1350; 1500; 1650; 1800		
air permeability				EN 14351-1:2006+A2:2016	Inherited	Inherited	Inherited	Inherited	Inherited	classification of air permeability acc. to EN 12210:2016
classification of air permeability acc. to EN 12207:2016				EN 12207:2016	nominal	unitless	string	1; 2; 3; 4		
classification of air permeability related to overall area acc. to EN 12207:2016				EN 12207:2016	nominal	unitless	string	1; 2; 3; 4		


Digital DoPC - supporting standards



DPP content



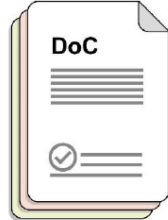
Declaration of performance and conformity




General product information, instructions for use and safety information



Technical documentation



Documentation required under other Union law



Label (when applicable)

Unique product identifier
dpp:GTIN:3234567890126

Unique operator identifier
dpp:VAT:AT U14589505

Unique facility identifier
dpp:ISO3166-2:BE



Data carriers
Key parts



CEN/TC 33 “Doors, windows, shutters, building hardware and curtain walling”



Dr. Kai Oberste-Ufer

Senior Manager EntriWorX Specification Software

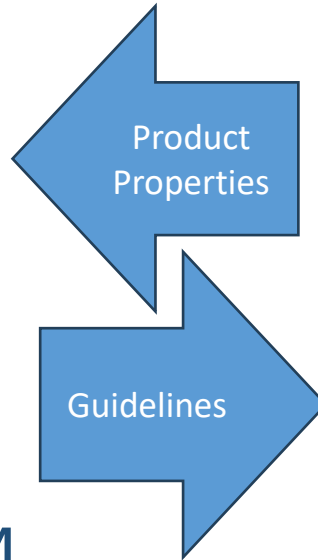
CEN/TC 33 WG4 TG18

Dormakaba International Holding GmbH

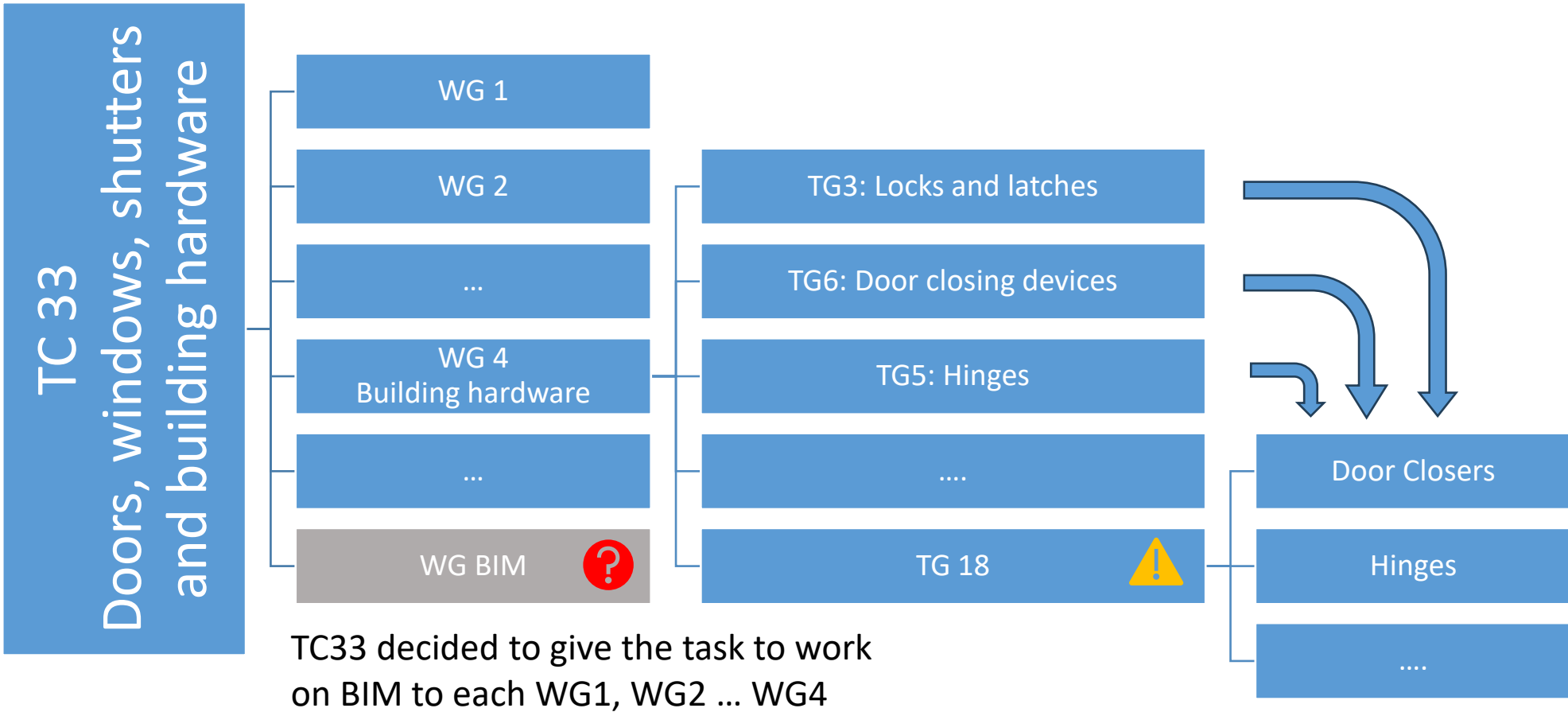
kai.oberste-ufer@dormakaba.com



- ▶ CEN/TC 33 - Doors, windows, shutters and building hardware
- ▶ CEN/TC 33/WG 4 - Building hardware
- ▶ CEN/TC 33/WG 4/TG 18 - BIM
 - ▶ Defining guideline for description of door & window hardware products in BIM



- ▶ The European Federation of Locks & Building Hardware Manufacturers
- ▶ Working Group Digitalisation
- ▶ TG BIM
 - ▶ Task Group « Door and Window Hardware properties » guided by a BIM Expert



- ▶ Technical Specification (on the basis of [EN ISO 23386](#)) for **BIM-Properties** for door and window Hardware

- ▶ Attachment to Technical Specification with Property-Collection
 - ▶ Step 1: Excel format
 - ▶ Step 2: European dictionary of door & window hardware properties (with the properties described according to Technical specification)
 - ▶ Common dictionary missing

- ▶ Both CEN documents will be at disposal of all BIM Stakeholders to describe Doors & Windows hardware

Excel Template EN ISO 23386

▶ Subset of properties for essential attributes

▶ Group of properties

A	B	C	D	E	F	G	H	I	J	K
Groups	Who is in charge?	Status of the work	LOI	TITLES UNIQ ISO 23386 03.2020	GA001 Global and unique identification	GA002 Status	GA003 Date of creation	GA004 Date of activation	GA005 Date of last change	GA006 Date of revision
				Normativ reference interconnected dictionaries management Change request management Explanation	NA Mandatory Useless Code provided by "quidgenerator" https://www.quidgenerator.com/	NA Mandatory Useless Status of the group of properties during its life	ISO 8601 Mandatory Useless May be produced by an application software	ISO 8601 Mandatory if Inutile May be produced by an application software	ISO 8601 Mandatory Useless May be produced by an application software	ISO 8601 Mandatory Useless In case of minor modificatio

▶ Properties

A	B	C	D	E	F	G	H	I	J
Properties	Who is in charge?	Status of the work	LOI	TITLES UNIQ ISO 23386 03.2020	PA001 Globally unique identifier	PA002 Status	PA003 Date of creation	PA004 Date of activation	PA005 Date of last change
				Normativ reference interconnected dictionaries management Change request management	NA Mandatory Useless	Mandatory Useless	ISO 8601 Mandatory Useless	ISO 8601 Mandatory Useless	ISO 8601 Mandatory if Useless



Content



PA021 Group(s) of properties	PA016 Names in language N	PA017 Definition of the property in language N	PA018 Description of the property in language N	PA019 Example in language N	PA39 Liste de valeurs possibles dans la langue N
Performances en-EN	corrosion resistance of the single point lock (temperature) en-EN	NF EN 12209:2003 (7.2.6) en-EN	ability of the single point lock to resist corrosion and temperature for a specified period of time according to EN 12209 edition 2003 or 2016 en-EN	High resistance ; no requirement en-EN	Liste déroulante
Performances en-EN	durability and load of the latch bolt lock en-EN	NF EN 12209:2003 (7.2.2) en-EN	ability of the latch bolt to withstand a force associated with a specified number of cycles in accordance with NF EN 12209:2003 standard (7.2.2) en-EN	100 000 cycles, 25N load en-EN	drop-down list
Performances en-EN	lock handing en-EN	DIN 18251-1 en-EN	intuitive direction of use of the lock which is characterized by the location of the lock on the door, on the left or on the right, on the hinge side en-EN	Reversible	drop-down list
Dimensions en-EN	overall lockcase depth en-EN	UNIQ_SERR-001 (dimension D) en-EN	measurement, in mm, of the overall lockcase depth of the lock in the door en-EN	76 en-EN	mm
Dimensions en-EN	overall lockcase height en-EN	UNIQ_SERR-001 (dimension S) en-EN	measurement, in mm, of the overall lockcase height of the lock in the door en-EN	145 en-EN	mm
Dimensions en-EN	overall lockcase thickness en-EN	UNIQ_SERR-001 (dimension F) en-EN	measurement, in mm, of the overall lockcase thickness without its forend en-EN	14 en-EN	mm
Dimensions en-EN	centre to centre measurement of the lock en-EN	UNIQ_SERR-001 (dimension P) en-EN	measurement, in mm, of the distance between the center of the follower (lever handle square) and the center of the locking element [locking square or keyhole] en-EN	70 en-EN	mm
Dimensions en-EN	backset of the lock (excluding forend) en-EN	UNIQ_SERR-001 (dimension A) en-EN	measurement, in mm, of the distance between the edge of the lockcase after its forend and the center of the locking element (locking square or keyhole) en-EN	47 en-EN	mm
Dimensions en-EN	backset of the lock (forend included) en-EN	UNIQ_SERR-001 (dimension C) en-EN	measurement, in mm, of the distance between the forend and the center of the locking element (locking square or keyhole) en-EN	50 en-EN	mm
Dimensions en-EN	lock follower size en-EN	UNIQ_SERR-001 (dimension T) en-EN	measurement, in mm, of the lever handle operating square size enabling the lock follower to be operated en-EN	7 en-EN	mm
Dimensions en-EN	deadbolt through en-EN	UNIQ_SERR-001 (dimension K) en-EN	measurement, in mm, of the deadbolt through outside the lock when it is fully deployed with the lock in locked position en-EN	20 en-EN	mm
Dimensions en-EN	latch bolt through en-EN	UNIQ_SERR-001 (dimension M) en-EN	measurement, in mm, of the latch bolt through outside the lock when it is at rest with the door closed and the handle at rest en-EN	11,5 en-EN	mm
Dimensions en-EN	forend height en-EN	UNIQ_SERR-001 (dimension G) en-EN	defines the total height of the lock forend en-EN	230 en-EN	mm
Dimensions en-EN	forend width en-EN	UNIQ_SERR-001 (dimension H) en-EN	defines the total width of the lock forend en-EN	20 en-EN	mm
Dimensions en-EN	forend thickness en-EN	UNIQ_SERR-001 (dimension E) en-EN	defines the total thickness of the lock forend en-EN	3 en-EN	mm

- ▶ Identification of gaps and touchpoints
 - ▶ [EN ISO 23386](#): Missing attribute for standard reference (TG18 uses PA017)
 - ▶ TC 33/WG7: Alignment of properties with other standards
- ▶ Open Discussions on how to enable other WG's in TC 33 to work on properties
- ▶ Help TC 33 to go from „BIM-Properties“ to DPP & Digital Standards



Robert HEINZE

CTO at RELUX (a lighting design software company). Electrical engineer and lighting designer.

Liaison officer between lighting TCs and BIM TCs on CEN and ISO level (CEN/TC 169 - CEN/TC 442 and ISO/TC 274 - ISO/TC 59/SC 13).

CEN/TC 169 - Problem

- Lighting systems have hundreds of properties
- there were not unified used in name or ID or value format
- Engineers / Designers needs to rename or recreate lists

TRILUX

Model_0	5051RMV-L/28/54 E
Luminous flux of luminaire (lm)	1953
Lamp_0	1T528G5
Dimming/Balast	- / E
Degree of protection	IP20
Connection Load	30.00 VA
Colour temperature (K)	4000

ZUMTOBEL

Elektro	
Lampe	T16+LED
Kommentare zu Wattzahl	
Elektro - Lasten	
Scheinlast	68.90 VA

PHILIPS

Elektro	
voltage	230.00 V
Kommentare zu Wattzahl	
Lampe	LED15S/830
Elektro - Lasten	
Scheinlast	31.00 VA

THORLUX

Elektro - Beleuchtung	
Lamp Wattage	1 x 28w
Voltage	230v
Elektro - Lasten	
Scheinlast	106.00 VA

Source: the same properties of luminaires in Revit

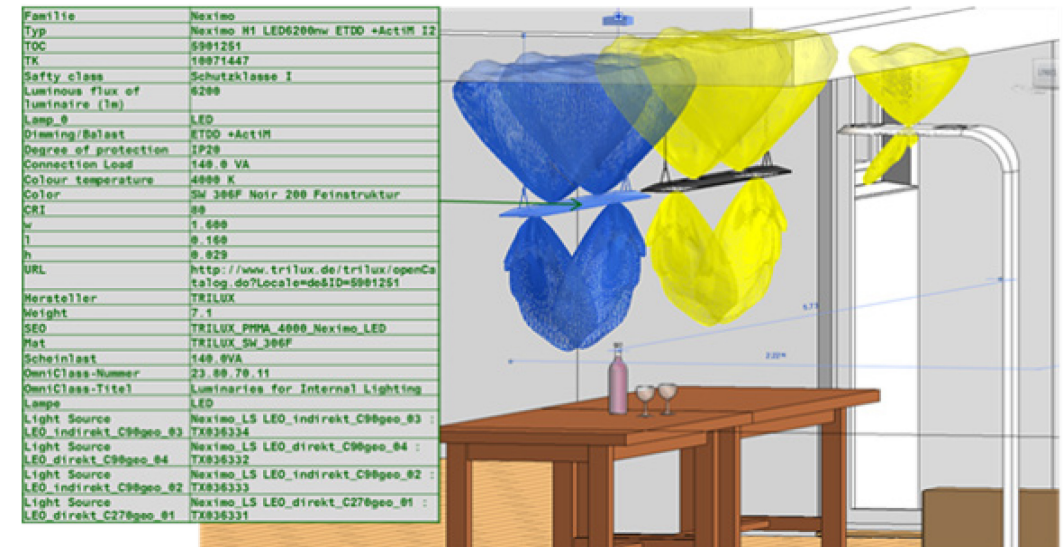
- CEN/TC 442 created the [EN ISO 23386](#)
- fundamental definition of building object properties
- defines the attributes of the properties (e.g. name, ID, ...)

Table 1 — Property attributes

Name	Description	Example	Interconnected dictionaries management rule	Request form management rule	Type	List of values
globally unique identifier	globally unique identifier generated using an algorithm in conformity with standard ISO/IEC 11578:1996 See RFC4122	936DA01F-9ABD-4D9D-80C7-02AF85C822A8	Mandatory, calculated		String Single-value	
Status	Status of the property during its life cycle.		Mandatory Calculated		enumeration Single-value	Active Inactive
Date of creation	Date of validation of the property creation request.	2014-04-30T10:39:53Z	Mandatory Calculated		Date In accordance with ISO 8601 Format=YYYY-MM-DDThh:mm:ssTZD	
Date of activation	Date after when the property can be used.		Mandatory if the property is validated. Calculated		Date In accordance with ISO 8601 Format=YYYY-MM-DDThh:mm:ssTZD	
Date of last change	Date of validation of the last change request		Mandatory Calculated		Date In accordance with ISO 8601 Format=YYYY-MM-DDThh:mm:ssTZD	

Source: EN ISO 23386

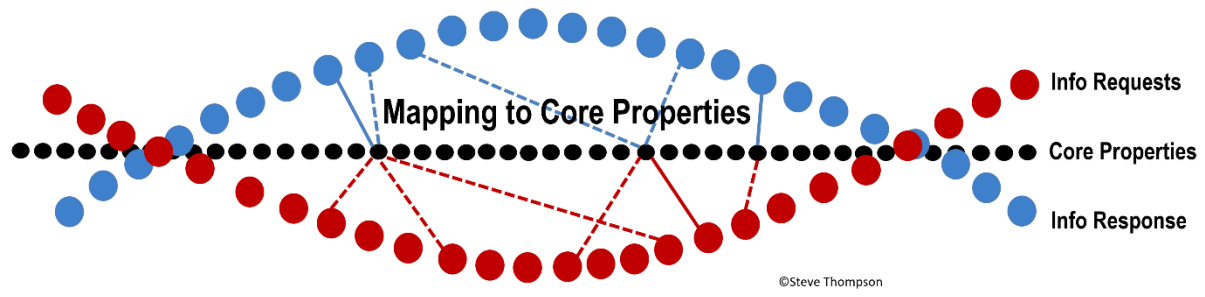
- Real life experts needed to define properties
- Lighting industry collecting and describing properties
- Start on association level - ZVEI
- Later on CEN and ISO level with liaisons to other TCs incl. IEC, CIE, ...
- No priorities, no use cases
- with IDs



Source: Luminaire properties in Revit

CEN/TC 169 – Lighting Properties

- CEN/TC 169 created the [CEN/TS 17623 \(CEN ISO/TS 7127\)](#)
- a list of all lighting fixture and sensing devices properties (e.g. voltage, luminous flux, ...)
- according the structure of [EN ISO 23386](#) (e.g. ID, name, description, ...)



Source: Mapping core, inspired by Steve Thompson

Table 4 (continued)

GUID	ID	Name	Description	Symbol	Format, Unit	Value set	Examples
2oxTEZw7TCPcnn-sapMO1u	04-0005	rated luminous flux of the luminaire	Value of the initial luminous flux of a given type of luminaire declared by the manufacturer or the responsible vendor, the luminaire being operated at a ambient temperature of 25 °C Definition of luminous flux could be found in CIE S 017:2020.		1E0, lm	n.a.	3 430
2gmo70bVX90u-Jh2YAvS62s	04-0006	rated luminous flux of the light source	Value of the initial luminous flux of a given type of light source declared by the manufacturer or the responsible vendor, the light source being operated at a ambient temperature of 25 °C Definition of luminous flux could be found in CIE S 017:2020.		1E0, lm	n.a.	2 600
1QmFILGbX6_BfU63rG5mrh	04-0007	luminous efficacy	Quotient of the luminous flux emitted by the luminaire and the power absorbed by the light source and associated circuits of the luminaire.		1E0, lm/W	n.a.	130
2gMYX1hk-HEE8kQmgimay3h	04-0008	optical light output ratio LOR	Quotient of the total luminous flux of the luminaire, measured under specified practical conditions with its own light source(s) and equipment, and the sum of the individual luminous fluxes of the same light source(s) when operated outside the luminaire with the same equipment, under specified conditions. According to CIE S 017:2020, 17-29-052. Always 1 for LED luminaires with integrated light sources.		1E0, %	n.a.	0,79
28T0Q968jDwvyx-AshmZRwz	04-0009	type of distribution	The classification of luminaires regarding the amount of luminous flux emitted into upper or lower half-space. Upward flux fraction (UFF) of 10 % means direct. Upward flux fraction of 30 % means direct/indirect. Upward flux fraction of 70 % means indirect/direct. Upward flux fraction of 90 % means indirect.		n.a.	direct, indirect, direct/indirect, indirect/direct	direct/indirect

Source: CEN ISO/TS 7127



Etienne CAILLEAU

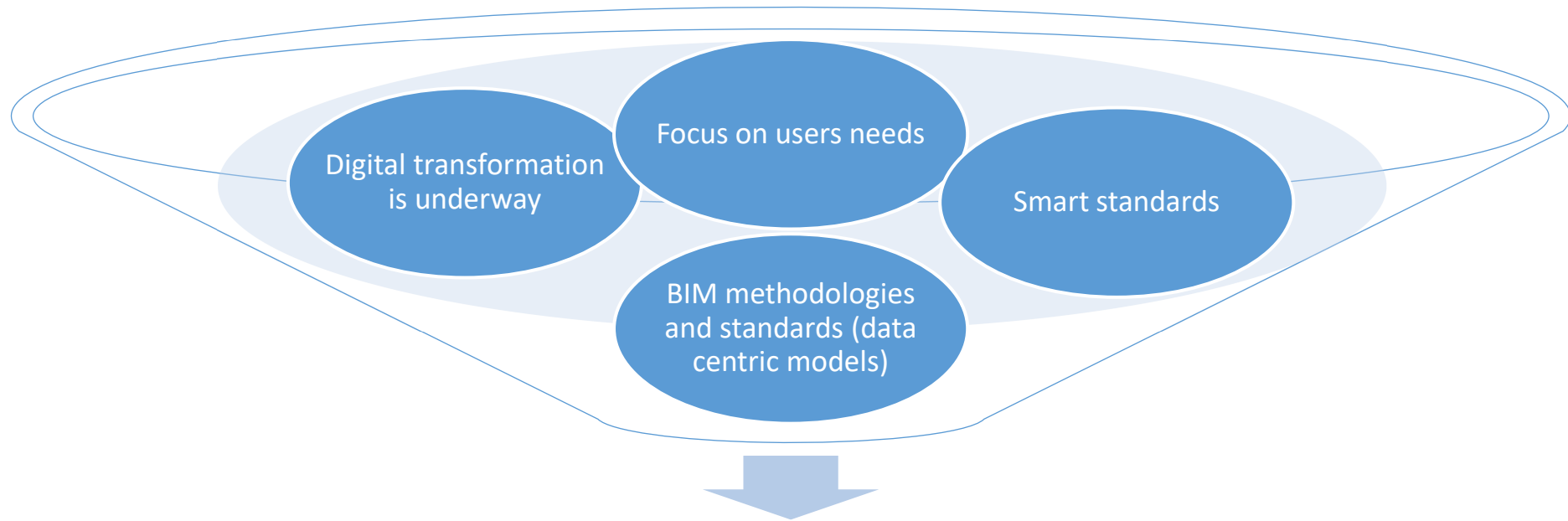
Head of SMART Standards
AFNOR Group

Approach and actions carried out by AFNOR

- Context
- Pilots conducted in 2023 and 2024
- Roadmap adapted to digital transformation
- Perspectives

Context of Digital Transformation

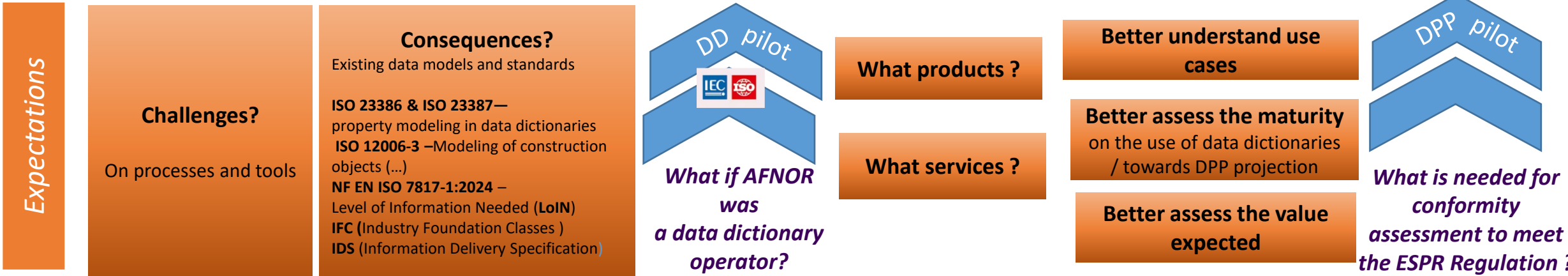
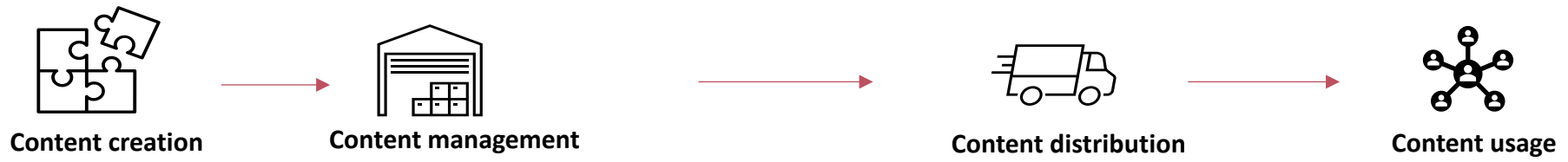
GENERAL CONTEXT BACK IN EARLY 2020 s



AFNOR's transformation is at stake to meet users' challenges

What if AFNOR be an operator of this transformation ?

Context of the 2 pilots conducted



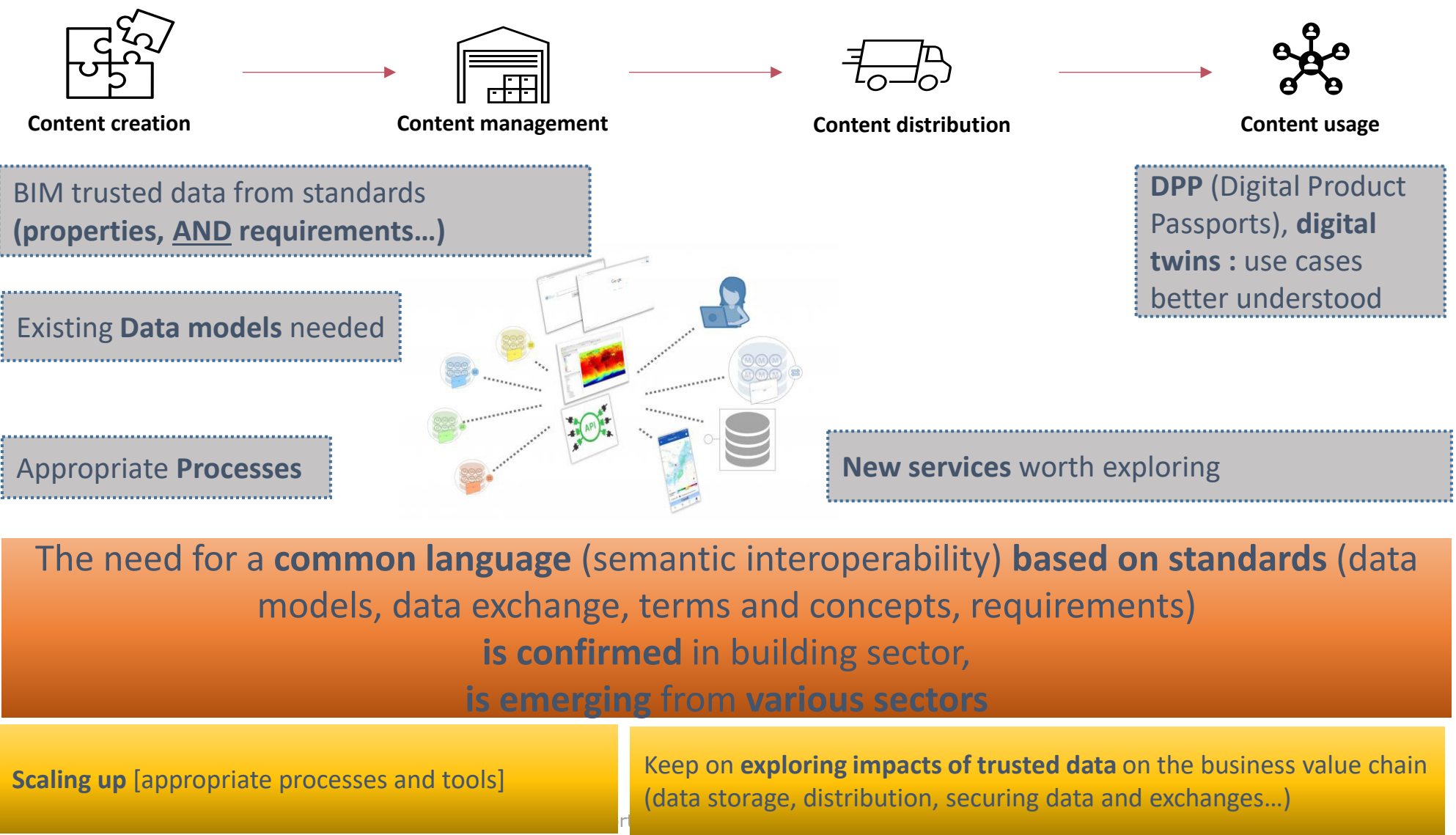
... learnings and impacts on the whole value chain ?

Learnings at a glance...

Standards ecosystem

Create and maintain trusted data

Smart Standards approach



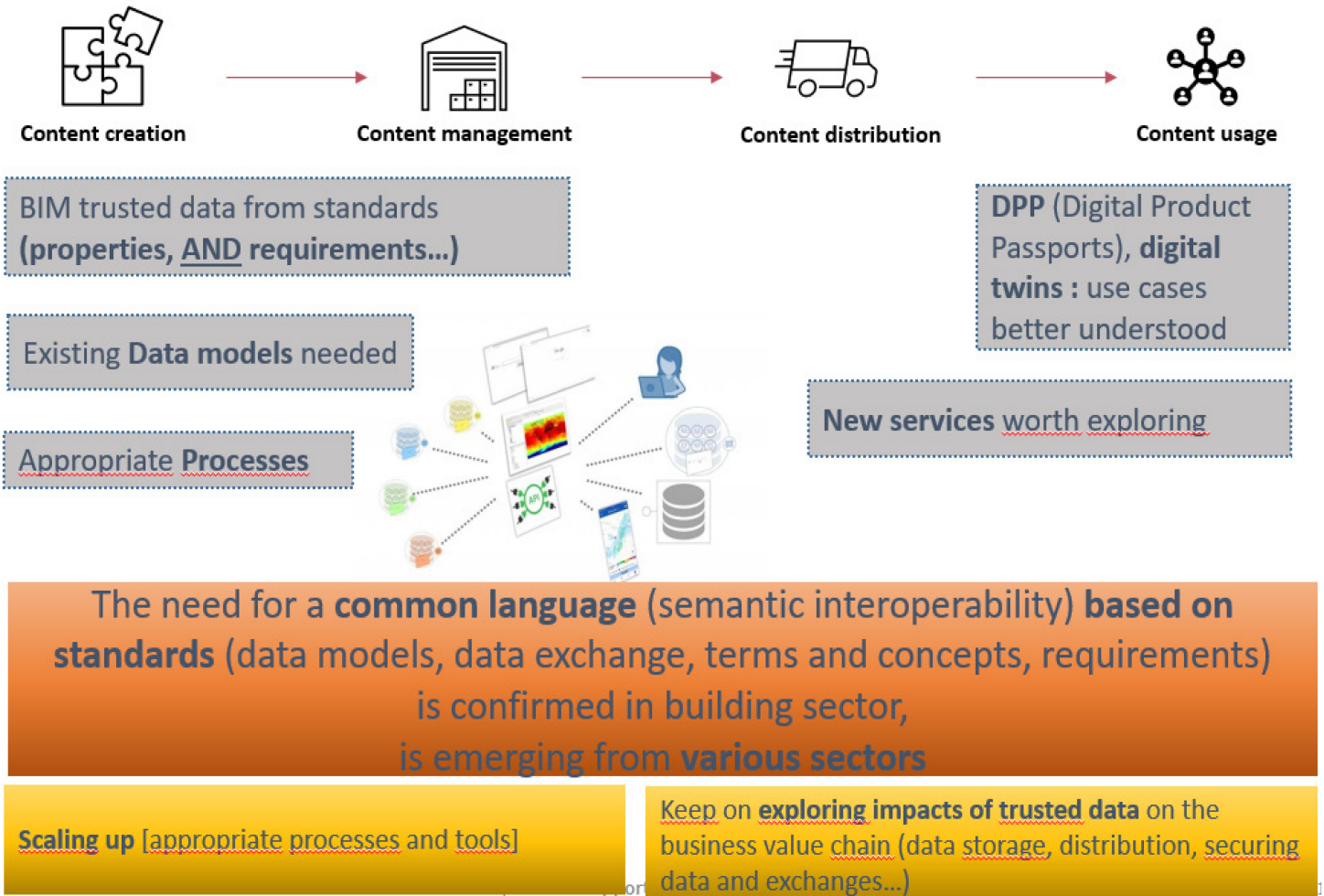
...and ongoing actions carried out by AFNOR Smart program



Standardisation organisations perspectives

Create and maintain trusted data

Smart Standards approach



SMART Program roadmap dedicated to data digitalization Construction sector

Smart processes & tools

Influence the standards ecosystem

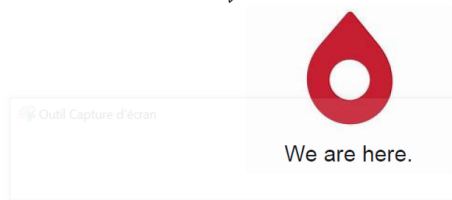
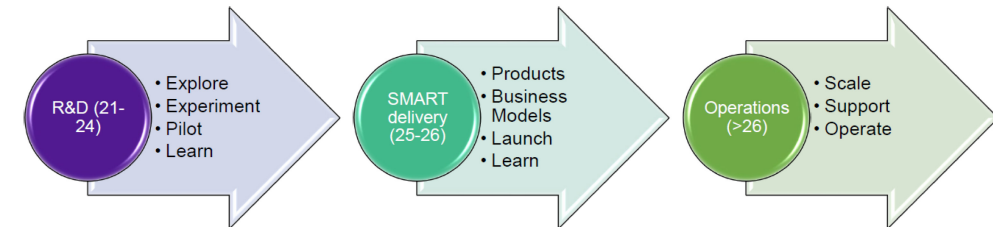
Users groups

Semantic interoperability
SIM-Standard Information Model/Core ontology)
Maintenance / Governance

SMART OVERVIEW

FROM ISO IEC SMART CONFERENCE (LAST DECEMBER)

SMART Overview

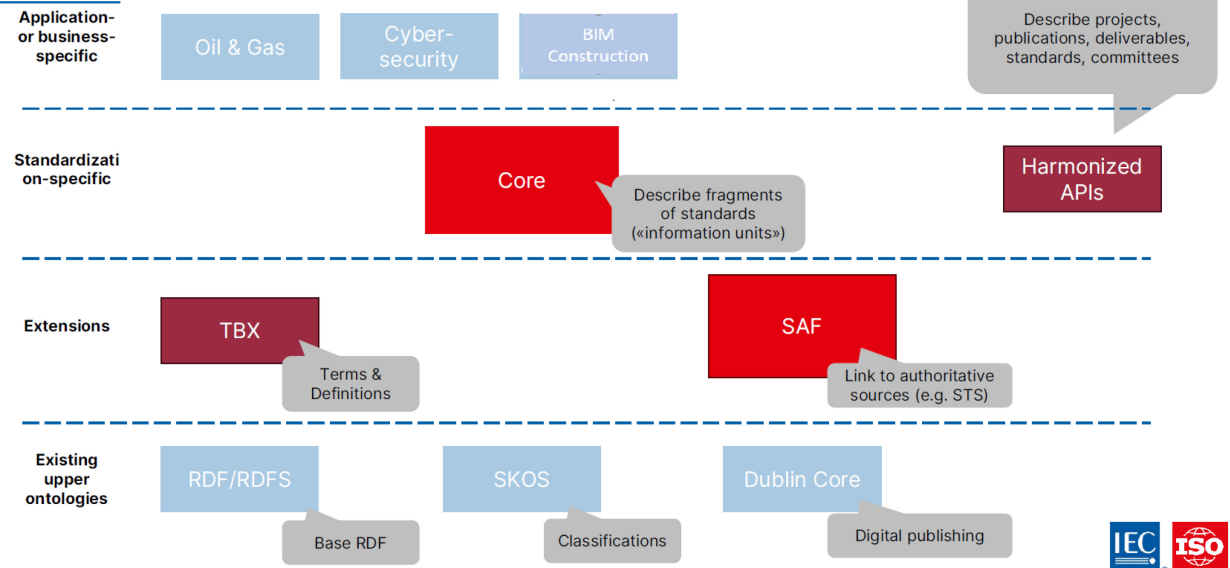


Why a "SMART Core Ontology"

Data is the fuel of SMART
SMART data is "Interoperability Layer" #1 / 6



The Core ontology is only part of the landscape



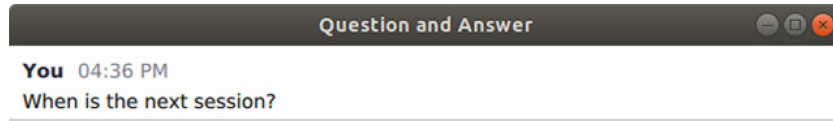
- ▶ Building Information Modelling (BIM) is about transforming data to information enabling digitalization of the Construction Industry value chain in the lifecycle of assets.
- ▶ Data must be structured and managed to become useful information that can be shared and support decisions in the whole lifecycle of an asset.
- ▶ In many ways TC 442 is only a facilitator
 - ▶ TC 442 standardize methods on how data can be exchanged, and information managed digitally
 - ▶ TCs must define their own properties, processes and elements using TC 442 methods.
 - ▶ TC 442 will support CEN and CENELEC TC's with tools, but TC 442 cannot do this alone.
- ▶ Be a liaison to TC 442 and join the work in WG7 and WG12. We need to digitize together to be successful.

Your feedback



Question time

▶ Use the Q&A panel to submit your questions



Type your question here...

Send anonymously

Send



European Standardization Organizations

Thank you for your participation!

Upcoming webinars/events

2025-03-18 - [Cyber Resilience Act : deep dive session](#)

2025-03-20 - Conference ['European standardization supporting new legislative cybersecurity landscape'](#)

2025-04-08 - Hybrid event [Cyber Resilience Act and the horizontal standards](#)