

Data templates for construction objects

Espen Schulze

- Expert CEN/TC 442/WG 4
 - Leader of TG 2 – Data Templates
- Expert ISO/TC 59/SC 13
 - WG 11 – ISO 16757
 - WG 6 – ISO 12006-3
 - JWG 14 – BIM/GIS
- Expert ISO/TC 59/SC 17
 - WG 3 - ISO/NP 22057
- Member buildingSMART Product Room Steering committee
 - Leader of buildingSMART International Product Data Template Working Group
 - Committee member SN/K 257

Everyone creates information locally



Espen
Schulze



Thermal Transmittance



Heat transfer



Thermal Transmittance



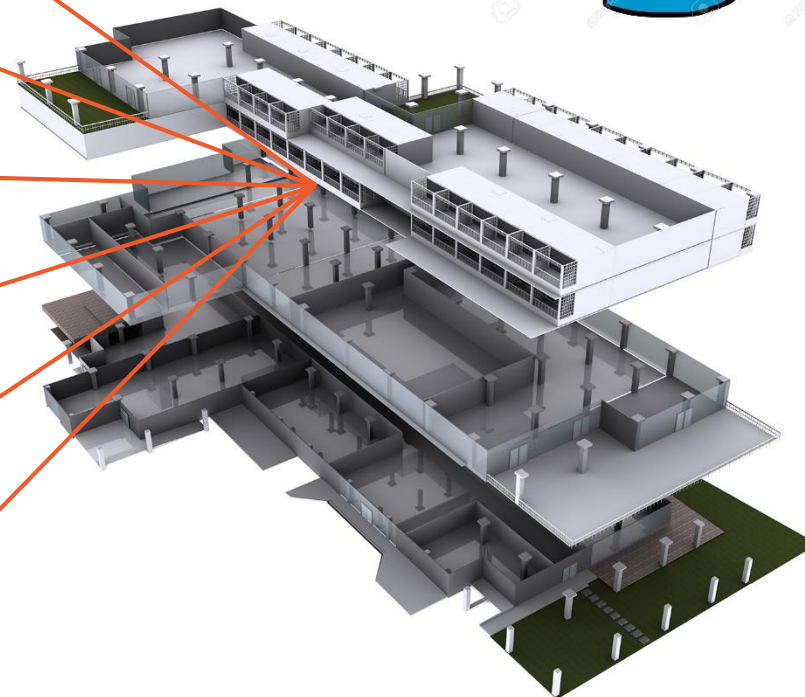
Thermal conductivity



U-value

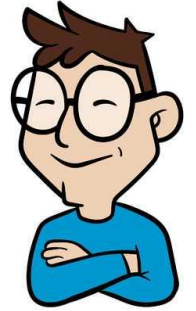


Thermal resistance



Espen
Schulze

Trust in reliable information



Thermal Transmittance
acc. to EN ISO 10077-1



Thermal Transmittance
acc. to EN 14351-1



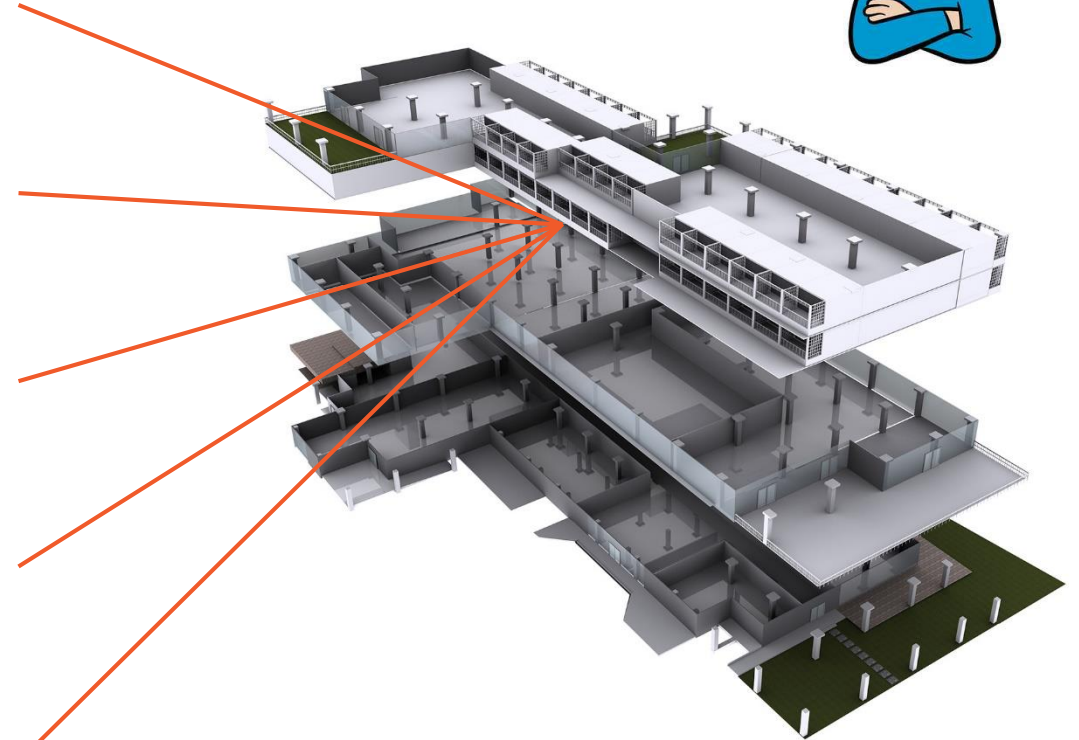
Thermal Transmittance
acc. to EN ISO 10077-2



Thermal Transmittance
acc. to EN ISO 12567-1



Thermal Transmittance
acc. to EN ISO 12567-2



Contractual agreement



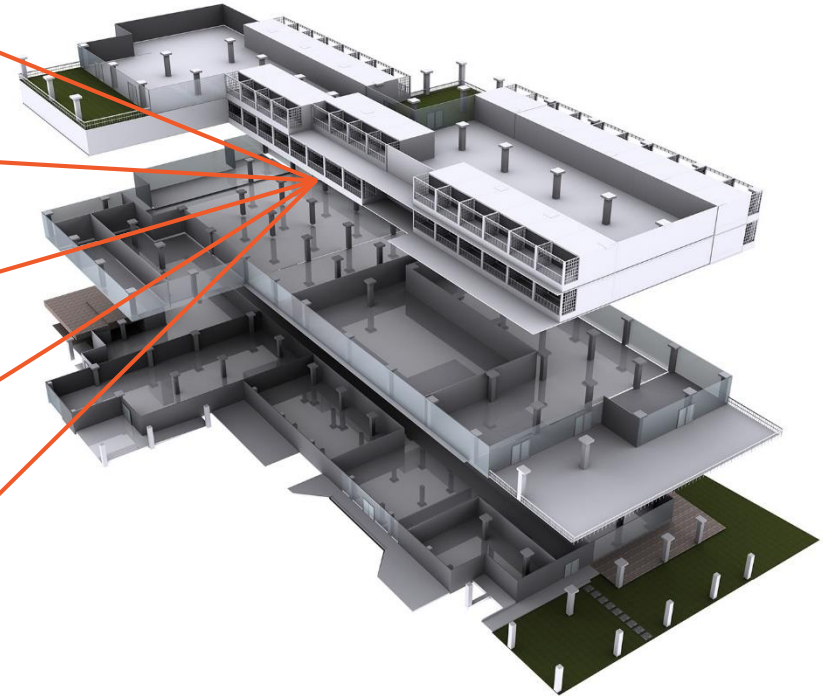
Thermal Transmittance
acc. to EN ISO 10077-1

Thermal Transmittance
acc. to EN 14351-1

Thermal Transmittance
acc. to EN ISO 10077-2

Thermal Transmittance
acc. to EN ISO 12567-1

Thermal Transmittance
acc. to EN ISO 12567-2



Development of International BIM standards



CEN/TC 442

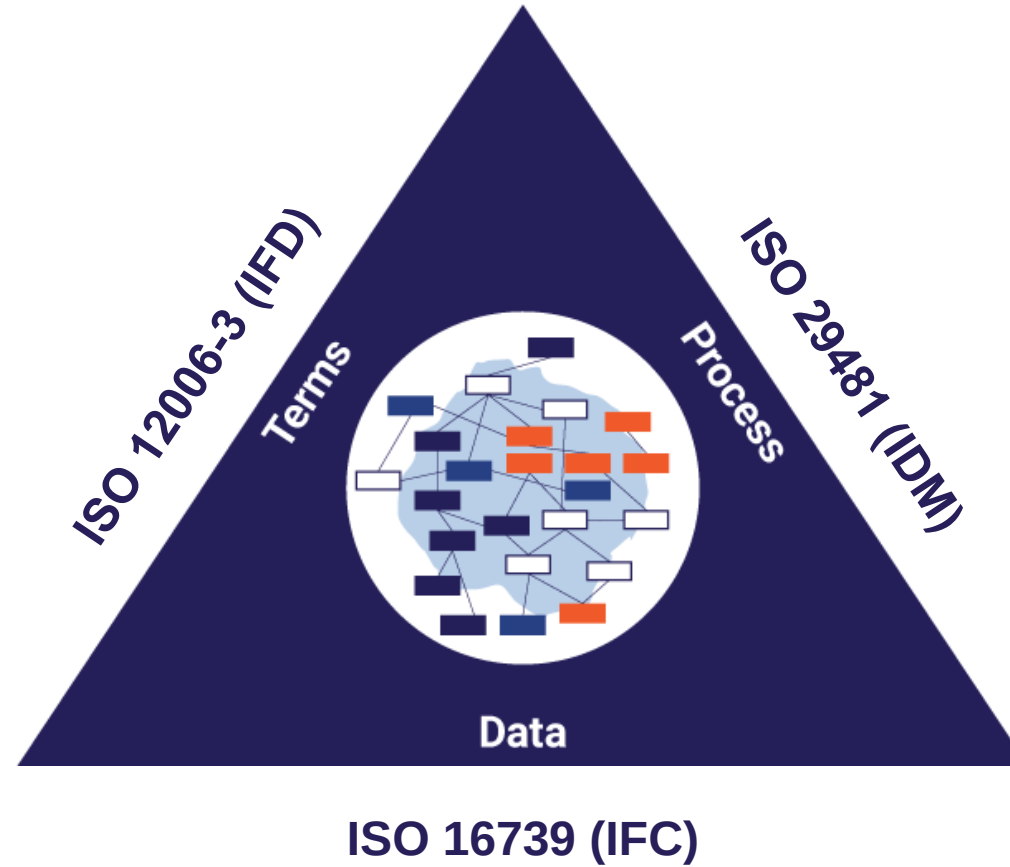


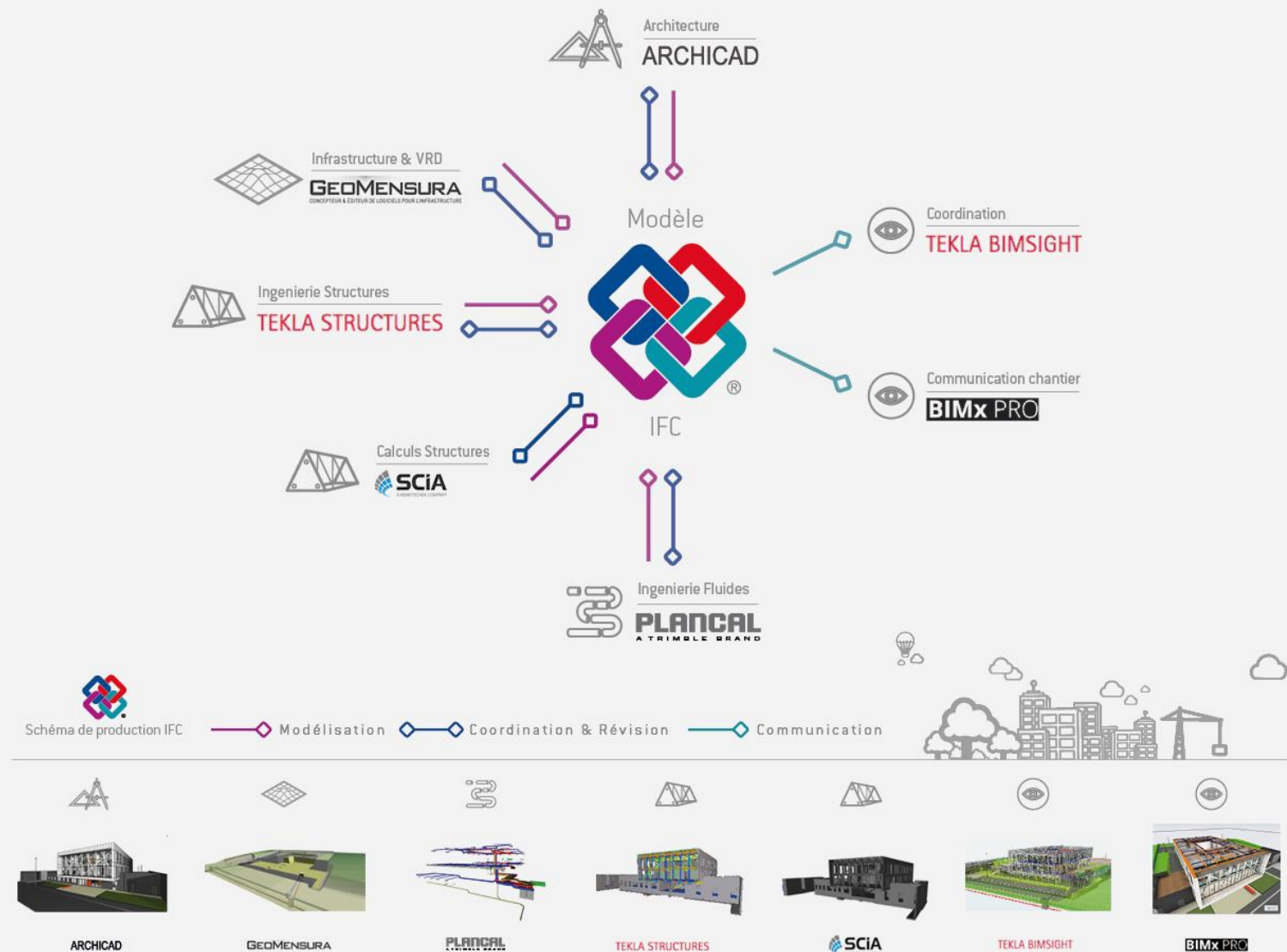
ISO/TC 59/SC 13

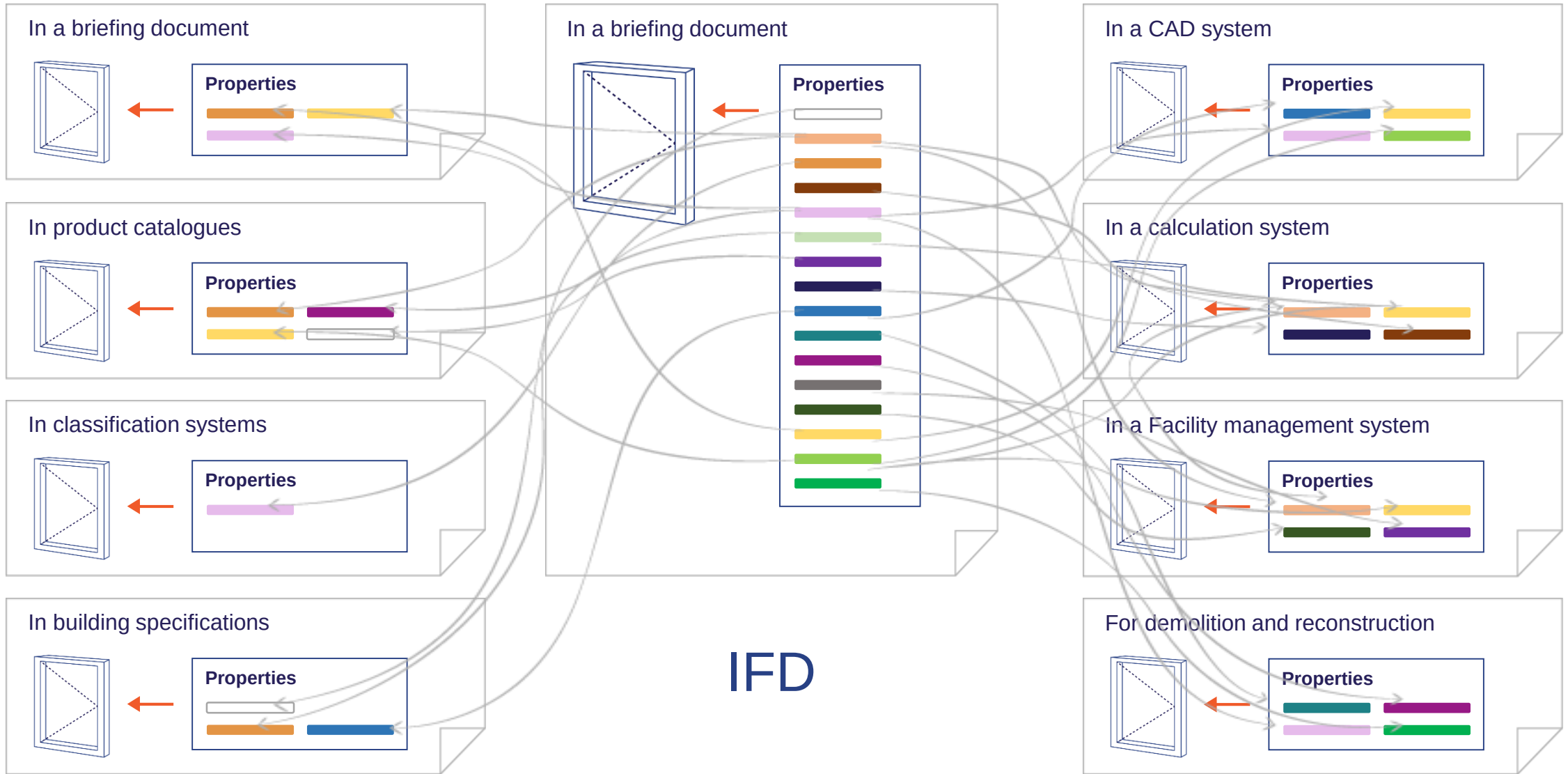


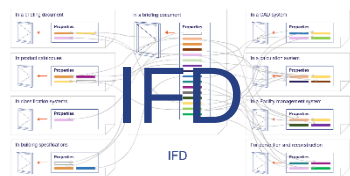
Espen
Schulze

The buildingSMART Triangle

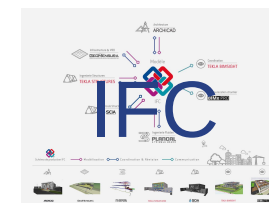








Building codes



cen **ISO** **afnor** NORMALISATION

Support Data Dictionaries CEN/TC 442/WG 04

Date: 2014-08-29 Doc. number: N 0019

Assistant: Your contact: Elzanne CALLEAU
Direct line: 01 41 52 85 71
elzanne.calleau@afnor.org

Data templates for construction objects – Concepts and principles

COMMENTARIES / Dear Member,

DECISIONS Please find below a draft NWIP Product data templates based on CEN/CENELEC standards in an open European data dictionary - Part 1: General structure of a product data template and how to relate it to Industry Foundation Classes (IFC).

This draft NWIP is submitted by Norway; it will be presented and discussed in Berlin before the official submission to CEN/TC 442.

Relations between the 4 NWIPs are explained in N-Document 21.

FOLLOW UP Meeting on: 2016-09-13

EN ISO 23387

cen **ISO** **afnor** NORMALISATION

Support Data Dictionaries CEN/TC 442/WG 04

Date: 2014-08-29 Doc. number: N 0019

Assistant: Your contact: Elzanne CALLEAU
Direct line: 01 41 52 85 71
elzanne.calleau@afnor.org

Expert process to describe, author and maintain properties

COMMENTARIES / Dear Member,

DECISIONS Please find below a draft NWIP Product data templates based on CEN/CENELEC standards in an open European data dictionary - Part 2: Framework for product data templates based on harmonised technical specifications under the Construction Products Regulation (CPR), and how to relate the product data templates to Industry Foundation Classes (IFC).

This draft NWIP is submitted by Norway; it will be presented and discussed in Berlin before the official submission to CEN/TC 442.

Relations between the 4 NWIPs are explained in N-Document 21.

FOLLOW UP Meeting on: 2016-09-13

EN ISO 23386

cen **afnor** NORMALISATION

Support Data Dictionaries CEN/TC 442/WG 04

Date: 2014-08-29 Doc. number: N 0020

Assistant: Your contact: Elzanne CALLEAU
Direct line: 01 41 52 85 71
elzanne.calleau@afnor.org

Data templates for construction objects – Data templates based on European product standards under CPR

COMMENTARIES / Dear Member,

DECISIONS Please find below a draft NWIP Product data templates based on CEN/CENELEC standards in an open European data dictionary - Part 2: Framework for product data templates based on harmonised technical specifications under the Construction Products Regulation (CPR), and how to relate the product data templates to Industry Foundation Classes (IFC).

This draft NWIP is submitted by Norway; it will be presented and discussed in Berlin before the official submission to CEN/TC 442.

Relations between the 4 NWIPs are explained in N-Document 21.

WI 442008

cen **ISO** **afnor** NORMALISATION

Support Data Dictionaries CEN/TC 442/WG 04

Date: 2014-08-29 Doc. number: N 0019

Assistant: Your contact: Elzanne CALLEAU
Direct line: 01 41 52 85 71
elzanne.calleau@afnor.org

IFC exchange structure for product data templates

COMMENTARIES / Dear Member,

DECISIONS Please find below a draft NWIP Product data templates based on CEN/CENELEC standards in an open European data dictionary - Part 1: General structure of a product data template and how to relate it to Industry Foundation Classes (IFC).

This draft NWIP is submitted by Norway; it will be presented and discussed in Berlin before the official submission to CEN/TC 442.

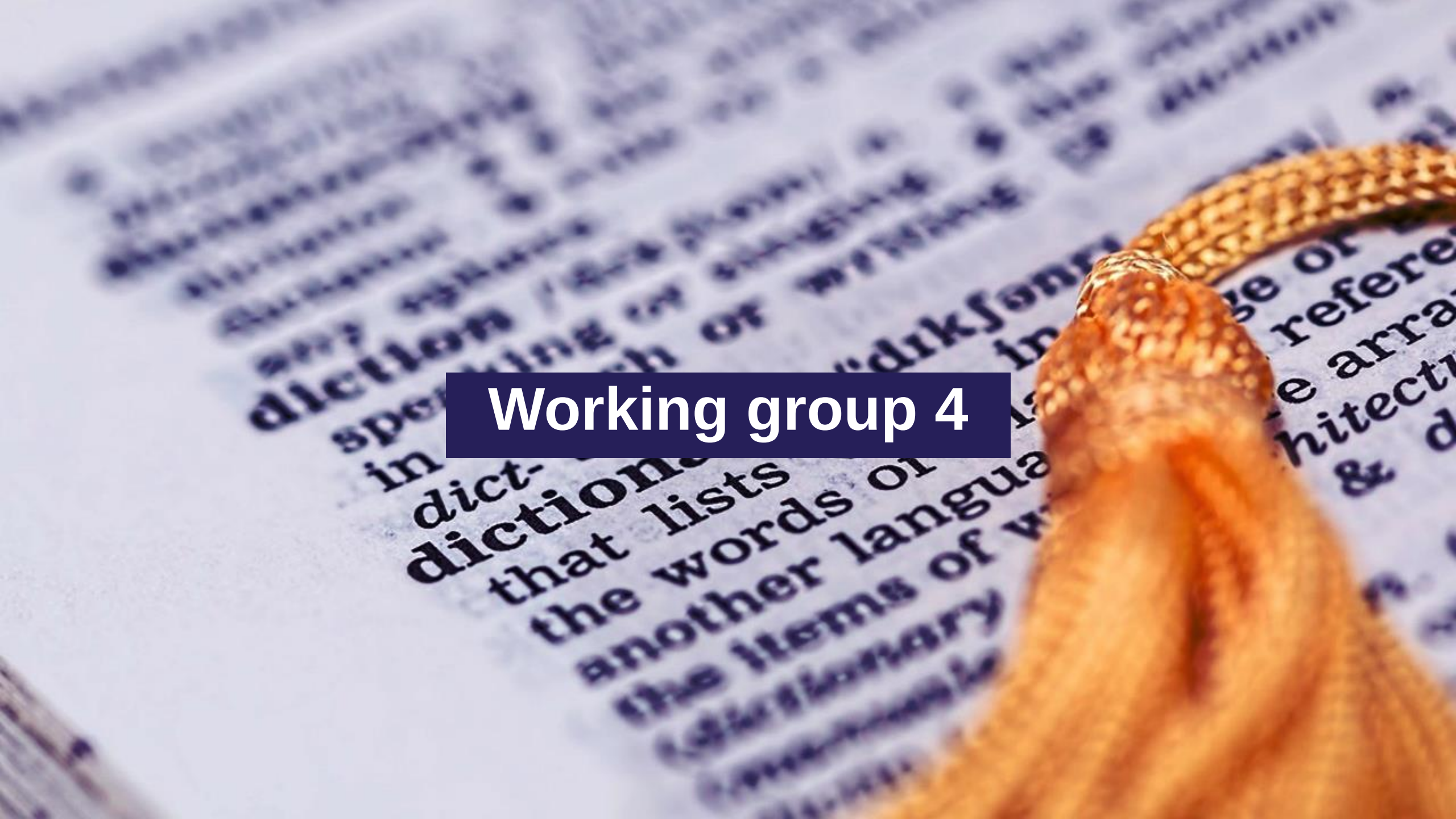
Relations between the 4 NWIPs are explained in N-Document 21.

FOLLOW UP Meeting on: 2016-09-13

WI 442018



CEN/TC 442



Working group 4





- ✓ Global Unique Identifier (GUID)
- ✓ One name and definition
- ✓ Translations

1

	
Support Data Dictionaries	CEN/TC 442/WG 04
Date: 2016-08-29	Doc. Number: N 0019
Assistant: Direct line :	Your contact: Etienne CAILLEAU Direct line : 01 41 62 85 71 etienne.cailleau@afnor.org

NWIP 3 - Part 1 General structure of a product data template

C OMMENTARIES /	Dear Member,
D ECISIONS	Please find below a draft NWIP Product data templates based on CEN/CENELEC standards in an open European data dictionary - Part 1: General structure of a product data template and how to relate it to Industry Foundation Classes (IFC).
	This draft NWIP is submitted by Norway ; it will be presented and discussed in Berlin before the official submission to CEN/TC 442.
	Relations between the 4 NWIPs are explained in N-Document 21.
F OLLOW UP	Meeting on 2016-09-13
S OURCE	CEN/TC 442/WG 4 Secretariat

2

	
Support Data Dictionaries	CEN/TC 442/WG 04
Date: 2016-08-29	Doc. Number: N 0019
Assistant: Direct line :	Your contact: Etienne CAILLEAU Direct line : 01 41 62 85 71 etienne.cailleau@afnor.org

NWIP 3 - Part 1 General structure of a product data template

C OMMENTARIES /	Dear Member,
D ECISIONS	Please find below a draft NWIP Product data templates based on CEN/CENELEC standards in an open European data dictionary - Part 1: General structure of a product data template and how to relate it to Industry Foundation Classes (IFC).
	This draft NWIP is submitted by Norway ; it will be presented and discussed in Berlin before the official submission to CEN/TC 442.
	Relations between the 4 NWIPs are explained in N-Document 21.
F OLLOW UP	Meeting on 2016-09-13
S OURCE	CEN/TC 442/WG 4 Secretariat

3

	
Support Data Dictionaries	CEN/TC 442/WG 04
Date: 2016-08-29	Doc. Number: N 0020
Assistant: Direct line :	Your contact: Etienne CAILLEAU Direct line : 01 41 62 85 71 etienne.cailleau@afnor.org

NWIP 4 - Part 2 Framework for product data templates under CPR

C OMMENTARIES /	Dear Member,
D ECISIONS	Please find below a draft NWIP Product data templates based on CEN/CENELEC standards in an open European data dictionary - Part 2: Framework for product data templates based on harmonised technical specifications under the Construction Products Regulation (CPR), and how to relate the product data templates to Industry Foundation Classes (IFC).
	This draft NWIP is submitted by Norway ; it will be presented and discussed in Berlin before the official submission to CEN/TC 442.
	Relations between the 4 NWIPs are explained in N-Document 21.
F OLLOW UP	Meeting on 2016-09-13
S OURCE	CEN/TC 442/WG 4 Secretariat



Thermal Transmittance

Light transmission

Length

Color

Load bearing

Global warming

Compressive strength

Flow rate

Warranty time

Reaction to fire

Bending strength

GUID
Name
Definition
Status
Date of creation
Date of revision
Symbol
Visual representation
Country of use
Country of origin
Data type
Tolerance
Physical quantity
Dimension
Number of values

Thermal Transmittance

Light transmission

Length

Color

Load bearing

Global warming

Compressive strength

Flow rate

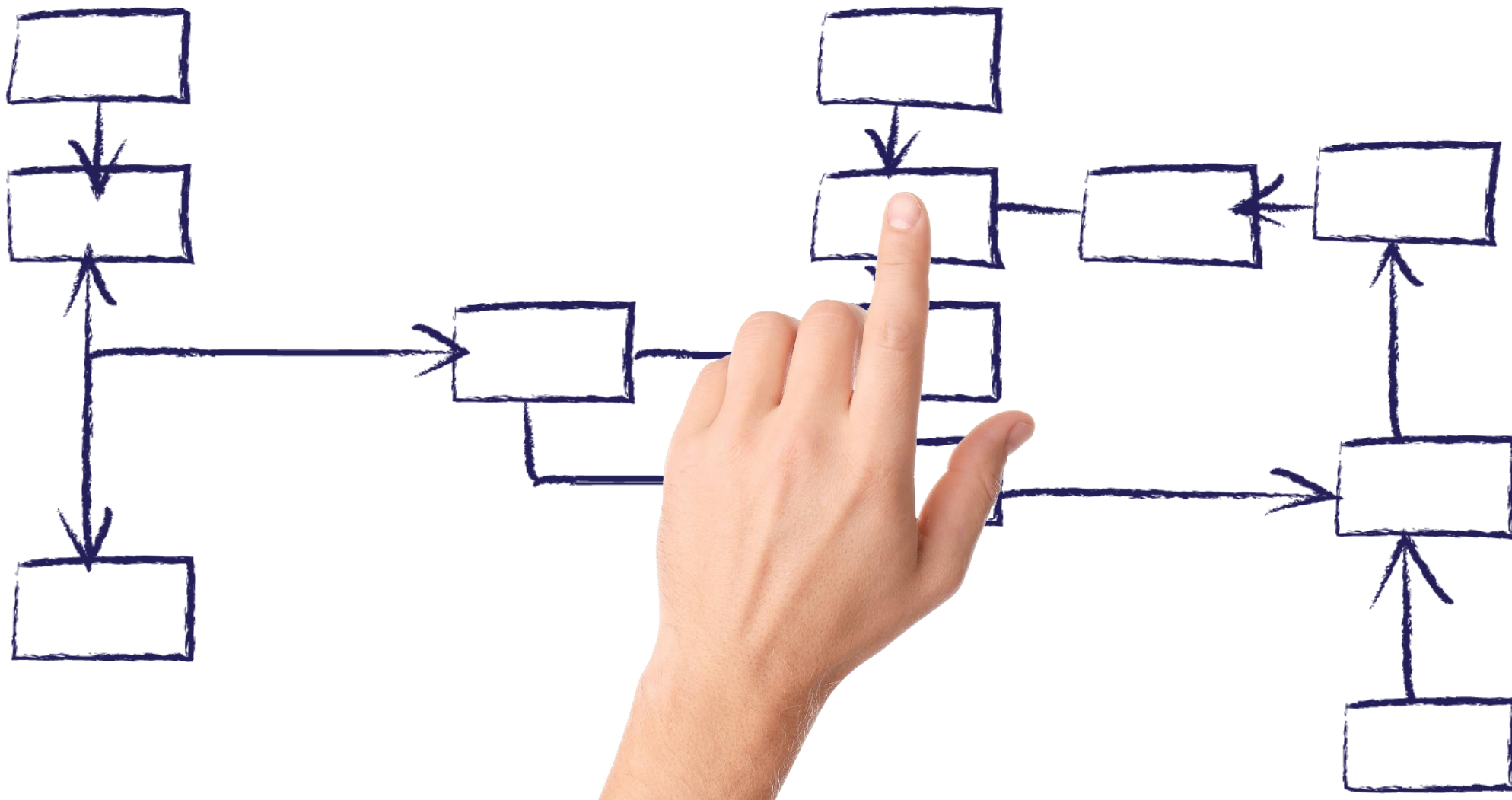
Warranty time

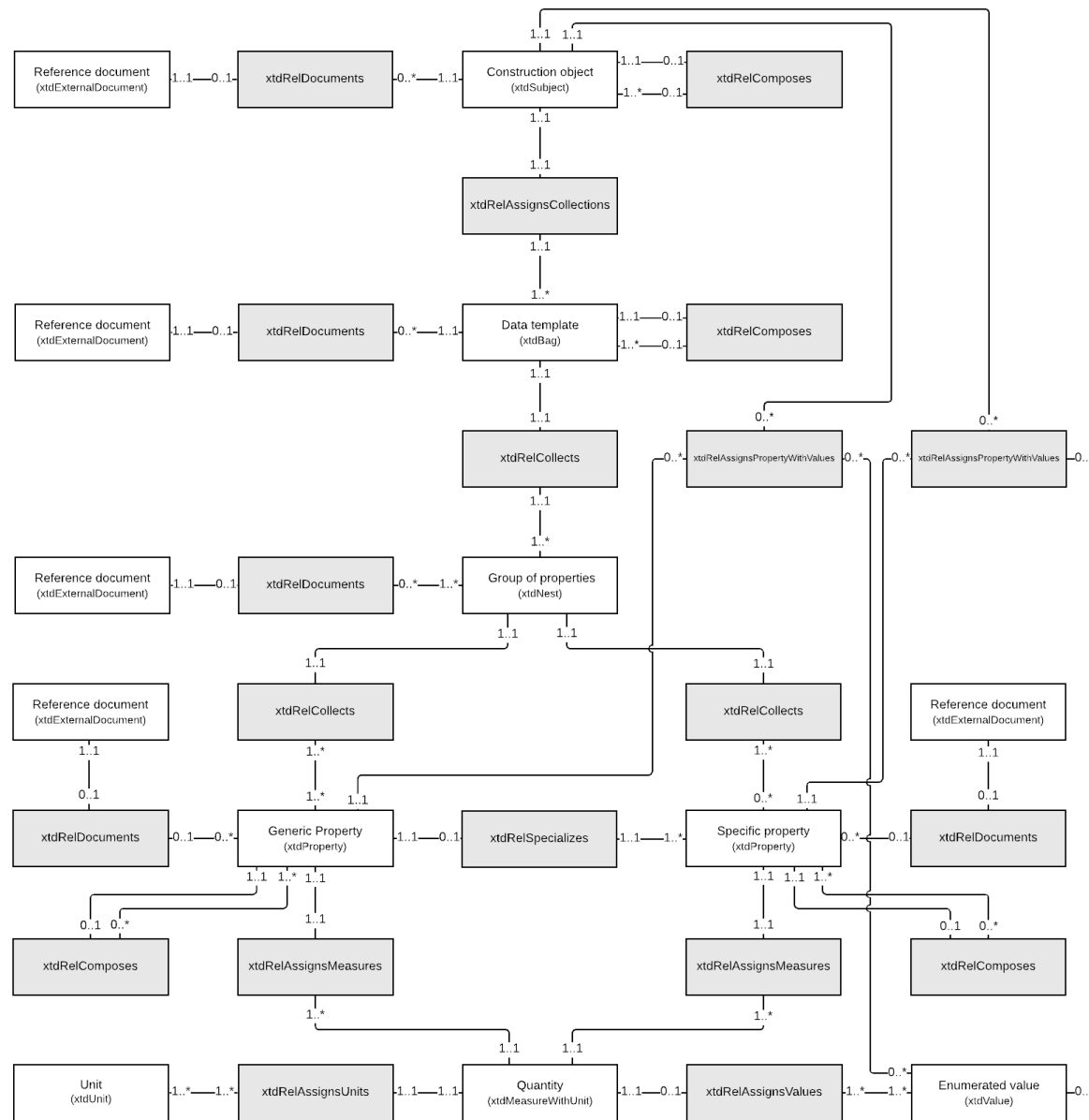
Reaction to fire

Bending strength



2





3



Standards

CE

9.21.15-0:00 T-TS

- | | |
|------------------------------------|---|
| 1. Produkttype: | Toppolyrt vindu med hopving (Husmanvinde) |
| 2. Produktets identifikationskode: | 7-75 |
| 3. Brukskode: | I yttervegg på bopninger |
| 4. Produzent: | |
| 5. Godkjent representant: | |
| 6. System for samsvaretskontroll: | 3 |
| 7. Hensiktsmessig standard: | NS - EN 14351-1:2006 + A1:2010 + NA:2013 |
| 8. Utpekt kontrollorgan: | DVV sertifikatnr. 142 # (Teknologisk institutt) |
| 9. Angitte ytter: | |

[illegible]

20. Ytelse for denne byggevarer, som er anført ovenfor, er i overensstemmelse med de angivne planer. Denne yteforpligtelse er stærket i overensstemmelse med forordning (EU) nr. 305/2011 under henvisning til producenten, som er anført ovenfor.

Underskrevet for producenten og på dennes vegne av:

Overlander

Opgeleid den 17.08.2015

TM 21 93 95 68

Construction Products Regulation (CPR)

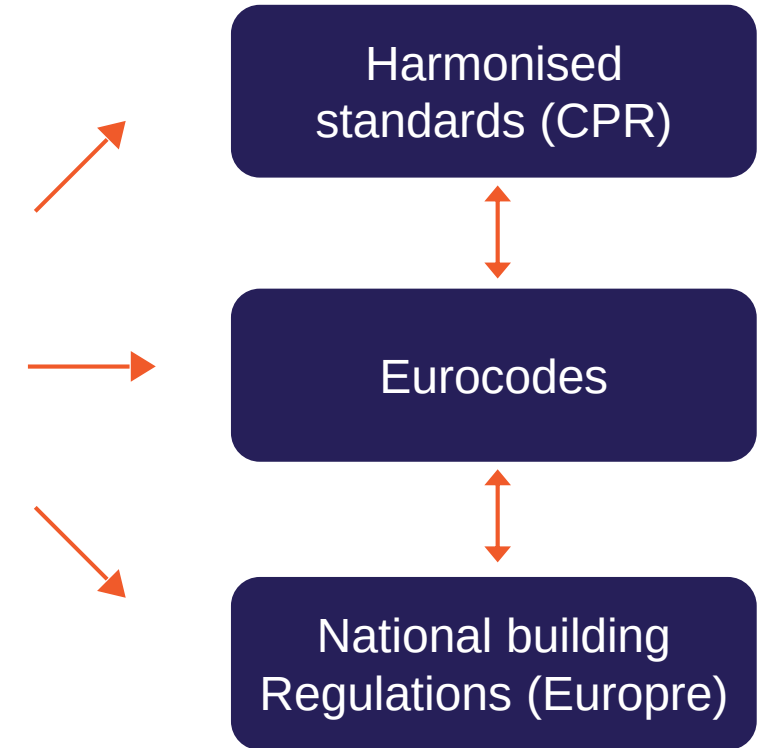
- Lays down harmonised rules for the marketing of construction products in the EU
- Provides a common technical language to assess the performance of construction products
- Ensures reliable information is available to professionals, public authorities, and consumers, so they can compare the performance of products from different manufacturers in different countries



CPR – Basic requirements for construction works



1. Mechanical resistance and stability
2. Safety in case of fire
3. Hygiene, health and the environment
4. Safety and accessibility in use
5. Protection against noise
6. Energy economy and heat retention
7. Sustainable use of natural resources



Annex ZA

Table ZA.1 — Relevant clauses and intended uses for lifting plants for wastewater containing faecal matter

Product: Prefabricated lifting plants and lifting plants delivered as prefabricated kits for wastewater containing faecal matter. Intended use: Drainage of locations below flood level in buildings and sites to prevent any backflow of wastewater into the building.			
Essential characteristics	Clauses in this European Standard related to essential characteristics	Regulatory classes	Notes
Reaction to fire ^a	4.7	A1 to E	A1 WT or tested and classified in accordance with EN 13501-1
Watertightness, airtightness			
— Watertightness	4.2.2	None	Test according to 5.2.1, expressed as "no leakage"
— Odourtightness	4.2.3	None	Test according to 5.2.2 expressed as "no leakage"
Effectiveness (Lifting effectiveness)			
— Pumping of solids	4.3.1	None	Test according to 5.3, expressed as "no accumulation of solids"
— Pipe connections	4.3.2, 4.3.6 and 4.3.7	None	Test according to 5.1 and 5.2.3, measured value expressed as "DN xxx"
Minimum dimensions of ventilating pipe system	4.3.3	None	Measure to the minimum value, expressed either as "DN 50" or "DN 70"
— Minimum flow velocity	4.3.4	None	Test according to 5.1.2 and 5.3, measured to the minimum value expressed as "0,7 m/s"
— Minimum free ball passage of the plant	4.3.5	None	Test according to 5.1 and 5.3, measured against the minimum value expressed as "40 mm"
Effectiveness (Lifting effectiveness)			
— Useful volume	4.3.8	None	Test according to 5.1 and 5.3, value measured and declared either as "10 l" or "20 l"

DoP



Declaration of performance as per Regulation (EU) No 305/2011, Annex III

Declaration of performance as per Regulation (EU) No 305/2011, Annex III

No.	DoP2317.1-01
For the product	mini-Compacta
(1) Product type	Sewage lifting unit to EN 12050-1
(2) Series code	See name plate
(3) Intended use	For collecting and automatically lifting waste water with or without faeces above the flood level.
(4) Manufacturer	KSB AG 67225 Frankenthal (Germany)
(5) Authorised representative	Not applicable
(6) System of assessment and verification of constancy of performance	System 3
(7) Harmonised standard	The notified body, TÜV Rheinland LGA Products -0197-, performed determination of the product type on the basis of type-testing under system 3 and issued test report 5371065-02.
(8) European Technical Assessment	Not relevant

(9) Declared performance

Essential characteristics	Performance	Harmonised technical specification
Effectiveness		EN 12050-1:2001
Handling of solids	Passed	
Pipe connections	Passed	
Ventilation	Passed	
Minimum flow velocity	≥ 0.7 m/s	
Minimum cross-section of the system	≥ 40 mm	
Minimum cross-section of the discharge-side connection	DN 80	
Fastening elements	Passed	
Electrical equipment enclosures		
Motor	IP68	
Contactors	IP68	
Corrosion resistance of materials	Passed	
Hydraulic and electric characteristic values	Passed	
Water and air-tight		
Water-tight	0.5 bar 10 min	
Odour-proof	0.5 bar 10 min	
Noise level	≤ 70 dB	

(10) The performance of the product identified in points (1) and (2) is in conformity with the declared performance in point (9). This declaration of performance is issued under the sole responsibility of the manufacturer identified in point (4).

Frankenthal, 1 July 2013



Esen
Schulze

Annex ZA

Table ZA.1 — Relevant clauses and intended uses for lifting plants for wastewater containing faecal matter

Product: Prefabricated lifting plants and lifting plants delivered as prefabricated kits for wastewater containing faecal matter.
Intended use: Drainage of locations below flood level in buildings and sites to prevent any backflow of wastewater into the building.

Essential characteristics	Clauses in this European Standard related to essential characteristics	Regulatory classes	Notes
Reaction to fire ^a	4.7	A1 to E	A1 WT or tested and classified in accordance with EN 13501-1
Watertightness, airtightness			
— Watertightness	4.2.2	None	Test according to 5.2.1, expressed as "no leakage"
— Odourtightness	4.2.3	None	Test according to 5.2.2 expressed as "no leakage"
Effectiveness (Lifting effectiveness)			
— Pumping of solids	4.3.1	None	Test according to 5.3, expressed as "no accumulation of solids"
— Pipe connections	4.3.2, 4.3.6 and 4.3.7	None	Test according to 5.1 and 5.2.3, measured value expressed as "DN xxx"
Minimum dimensions of ventilating pipe system	4.3.3	None	Measure to the minimum value, expressed either as "DN 50" or "DN 70"
— Minimum flow velocity	4.3.4	None	Test according to 5.1.2 and 5.3, measured to the minimum value expressed as "0,7 m/s"
— Minimum free ball passage of the plant	4.3.5	None	Test according to 5.1 and 5.3, measured against the minimum value expressed as "40 mm"
Effectiveness (Lifting effectiveness)			
— Useful volume	4.3.8	None	Test according to 5.1 and 5.3, value measured and declared either as "10 l" or "20 l"

Watertightness

Dop



Declaration of performance as per Regulation (EU) No 305/2011, Annex III

Declaration of performance as per Regulation (EU) No 305/2011, Annex III

No. For the product	DoP2317.1-01 mini-Compacta
(1) Product type	Sewage lifting unit to EN 12050-1
(2) Series code	See name plate
(3) Intended use	For collecting and automatically lifting waste water with or without faeces above the flood level.
(4) Manufacturer	KSB AG 67225 Frankenthal (Germany)
(5) Authorised representative	Not applicable
(6) System of assessment and verification of constancy of performance	System 3
(7) Harmonised standard	The notified body, TÜV Rheinland LGA Products -0197-, performed determination of the product type on the basis of type-testing under system 3 and issued test report 5371065-02.
(8) European Technical Assessment	Not relevant

(9) Declared performance

Essential characteristics	Performance	Harmonised technical specification
Effectiveness		EN 12050-1:2001
Handling of solids	Passed	
Pipe connections	Passed	
Ventilation	Passed	
Minimum flow velocity	≥ 0.7 m/s	
Minimum cross-section of the system	≥ 40 mm	
Minimum cross-section of the discharge-side connection	DN 80	
Fastening elements	Passed	
Electrical equipment enclosures		
Motor	IP68	
Contactors	IP68	
Corrosion resistance of materials	Passed	
Hydraulic and electric characteristic values	Passed	
Water and air-tight		
Water-tight	0.5 bar 10 min	
Odour-proof	0.5 bar 10 min	
Noise level	≤ 70 dB	

(10) The performance of the product identified in points (1) and (2) is in conformity with the declared performance in point (9). This declaration of performance is issued under the sole responsibility of the manufacturer identified in point (4).

Frankenthal, 1 July 2013



Esen
Schulze



Essential characteristics

Watertightness

↳ EN XXXXX

↳ ISO XXXXX

Reaction to fire

↳ EN XXXXX

Effectiveness

↳ EN XXXXX

None-Essential characteristics

Property 1

↳ EN XXXXX

Property 2

↳ EN XXXXX



Essential characteristics

Watertightness

↳ EN XXXXX

↳ ISO XXXXX

Reaction to fire

↳ EN XXXXX

Effectiveness

↳ EN XXXXX

None-Essential characteristics

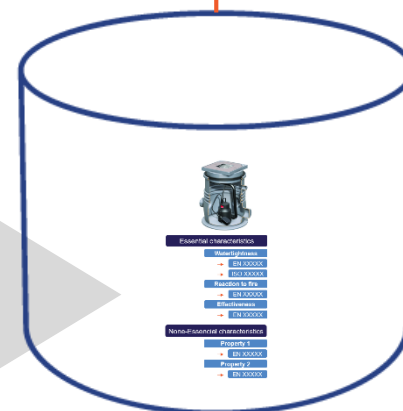
Property 1

↳ EN XXXXX

Property 2

↳ EN XXXXX

Common European
technical language in a
data dictionary based on
EN ISO 12006-3





Essential characteristics

Watertightness

↳ EN XXXXX

↳ ISO XXXXX

Reaction to fire

↳ EN XXXXX

Effectiveness

↳ EN XXXXX

None-Essential characteristics

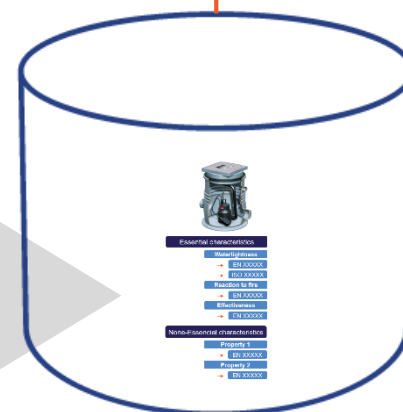
Property 1

↳ EN XXXXX

Property 2

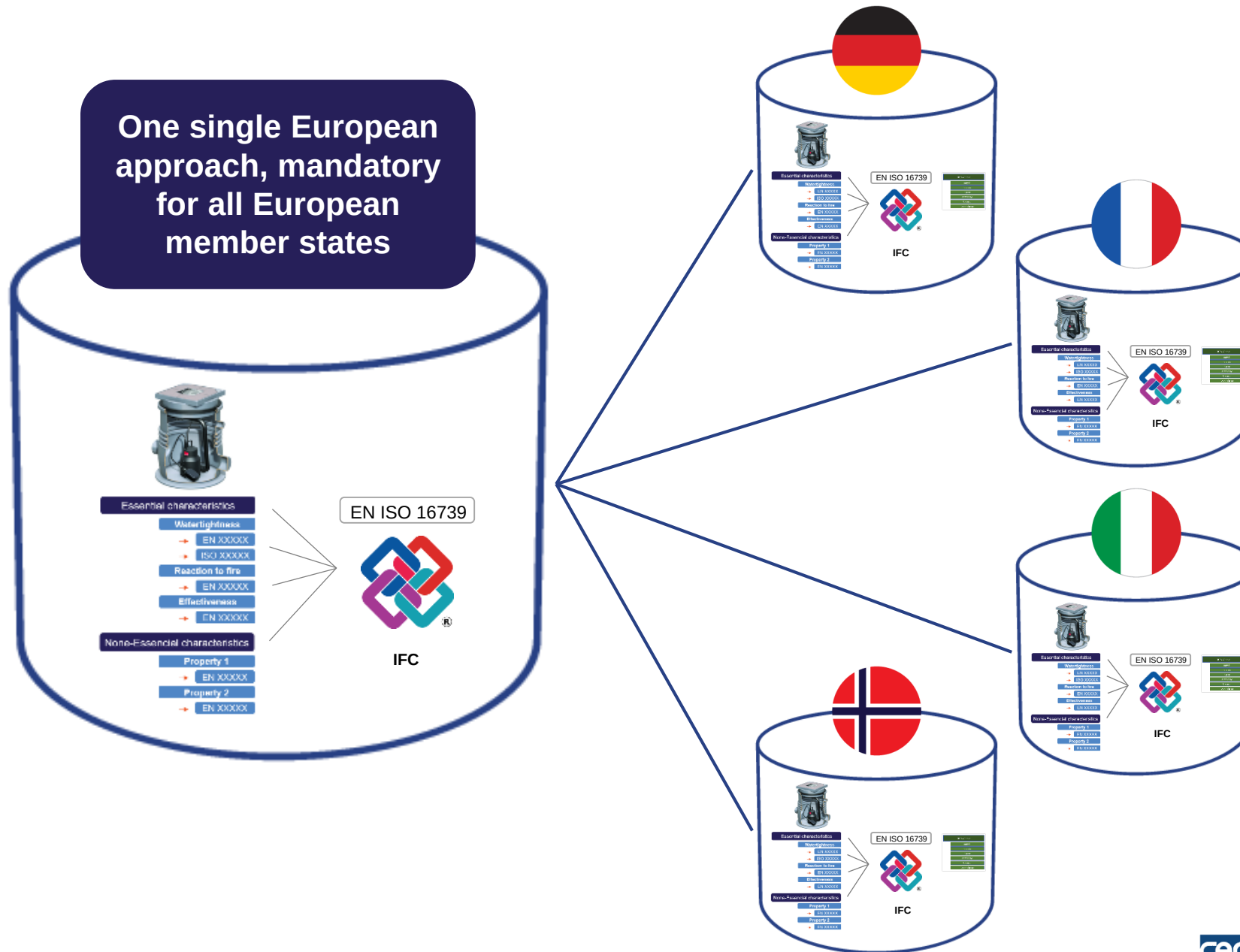
↳ EN XXXXX

Common European
technical language in a
data dictionary based on
EN ISO 12006-3

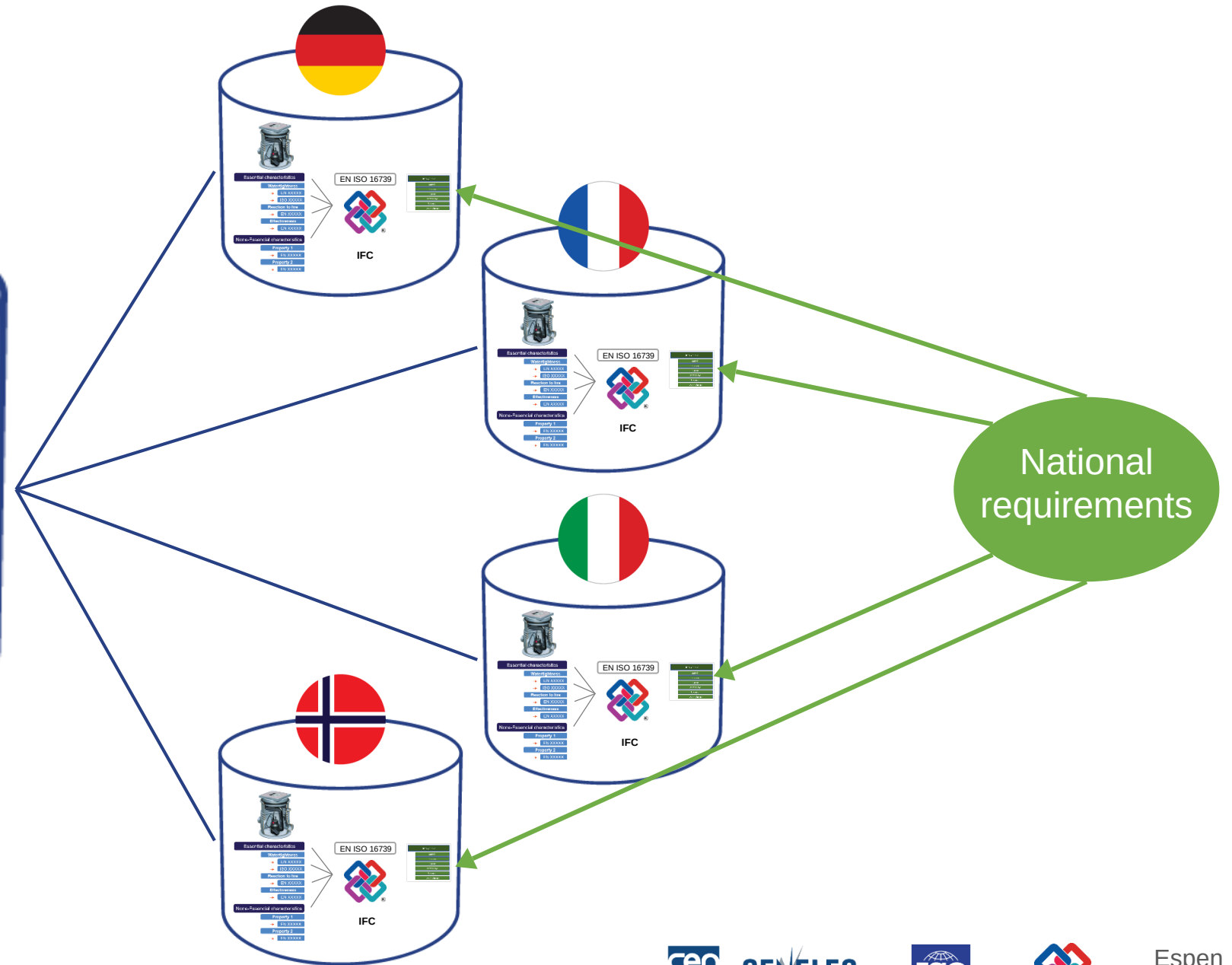
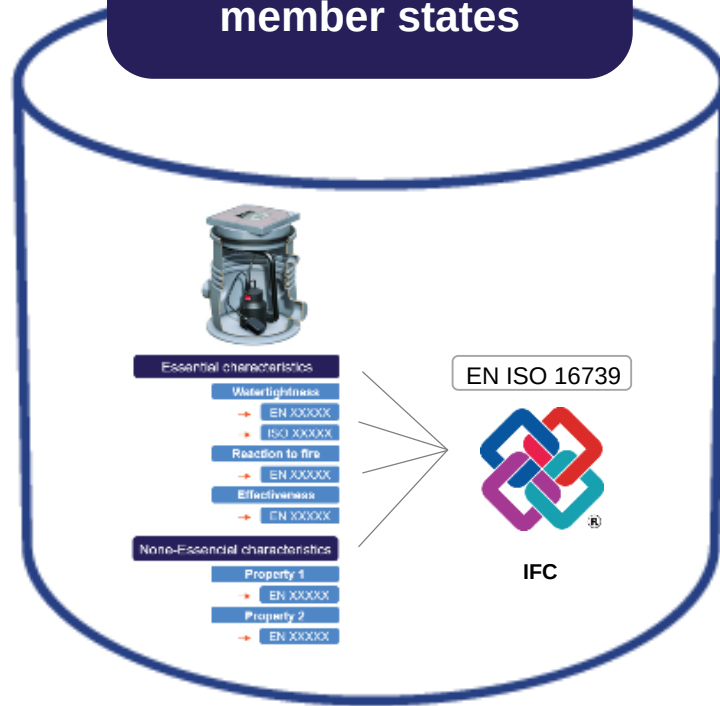


Following CEN/TC 442
expert process

One single European
approach, mandatory
for all European
member states



One single European approach, mandatory for all European member states





Common European
technical language in a
data dictionary based on
EN ISO 12006-3

Essential characteristics

Watertightness

↳ EN XXXXX

↳ ISO XXXXX

Reaction to fire

↳ EN XXXXX

Effectiveness

↳ EN XXXXX

None-Essential characteristics

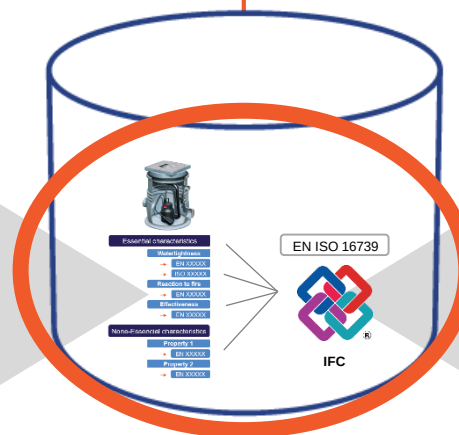
Property 1

↳ EN XXXXX

Property 2

↳ EN XXXXX

EN ISO 16739

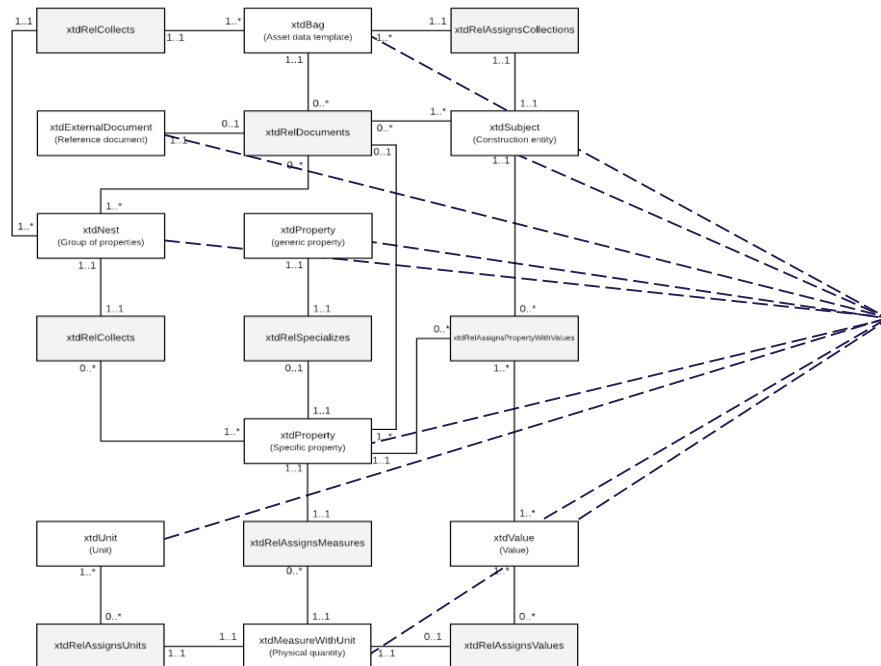


CEN/TC 442

Data structure

Data exchange

Model

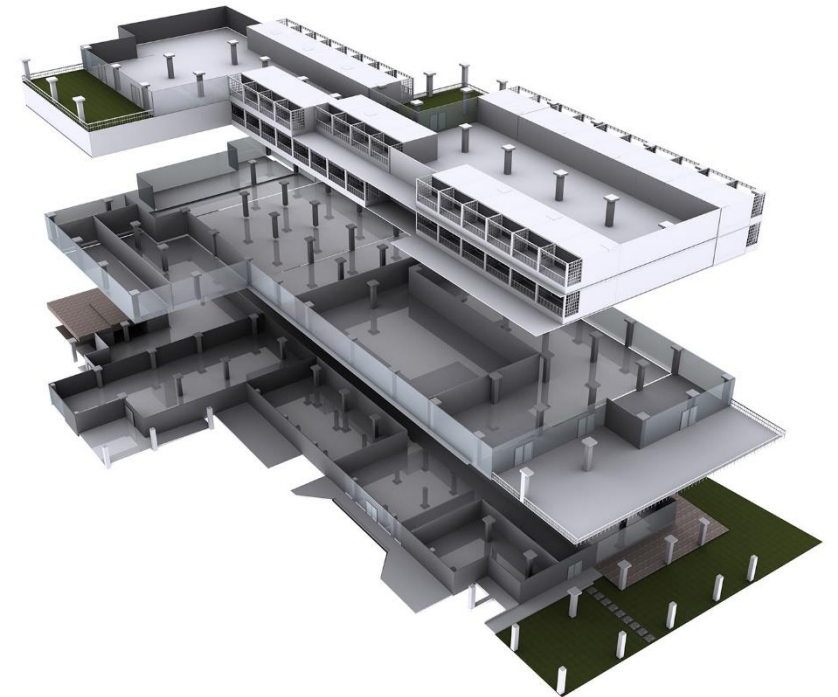


Request



IFC

Receive





CE

9.21.15-0:00 T-TS

- | | |
|---|--|
| 1. Produkttype: | Toppulst vindu med t oppving (Husmervindu) |
| 2. Produkts identifikasjonskode: | 7-75 |
| 3. Bruksområde: | i yttervegg på ksjninger |
| 4. Produsent: | |
| 5. Godkjent representant: | |
| 6. System for samsvarende teknisk info: | 3 |
| 7. Harmonisert standard: | RS - EN 14351-1:2006 + A1:2010 + NA:2013 |
| 8. Utpekt kontrollorgan: | DVV sertifikat nr. 142 # (Teknologisk institutt) |
| 9. Angitt ytterle: | |

[illegible]

30. Ytterligere for denne byggevarer, som er anført ovenfor, er i overensstemmelse med de angivne planer. Denne ydelseserklæring er udstedt i overensstemmelse med forordning (EU) nr. 305/2011 under ansvar af producenten, som er anført ovenfor.

Underskrivet for producenten og på dennes vegne af:

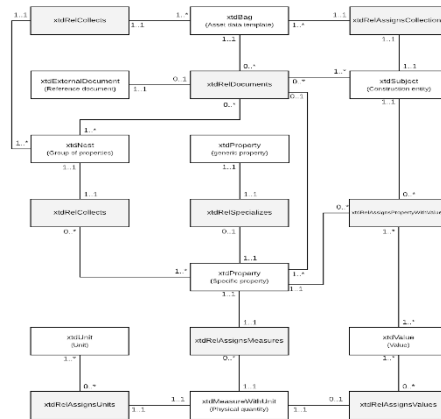
Overlander

Geprüft den 17.08.2015

TM 21 93 95 68

CEN/TC 442

Data template



Product data exchange



Resource use	Unit	A1-A3	A4	A5	B1-B5	C1	C2	C3	C4
CO ₂ e	kg	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01
CO ₂ e	kg	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01

LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.
The transport distance from the production place to consumer is an average distance based on factory location and typical customer location for this product.

Transport from production place to user (A6)

Item	Capacity utilization (prod. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Value
Truck	75 %	Truck (max. 40 t)	100	0.001	0.001
Truck	75 %	Truck (max. 40 t)	100	0.001	0.001

A6 includes energy use in building materials.

Assembly (A6)

Resource use	Unit	A6	Total
Energy consumption	kg	1.10E+01	1.10E+01
Energy consumption	kg	1.10E+01	1.10E+01
Energy consumption	kg	1.10E+01	1.10E+01
Energy consumption	kg	1.10E+01	1.10E+01
Energy consumption	kg	1.10E+01	1.10E+01

The wall elements are demolished and separated at the site. Steel is recycled. Concrete is either disposed (25.8 %) or used in roadfills etc. (74.2 %).

End of life C1-C3 and C4

Resource use	Unit	Total
Construction waste disposal	kg	1.10E+01
Construction waste disposal	kg	1.10E+01
Construction waste disposal	kg	1.10E+01
Construction waste disposal	kg	1.10E+01
Construction waste disposal	kg	1.10E+01

The transportation in C2 is from the site to recycling or landfill. It is assumed that waste processing happens at the site.

Transport to recycling and disposal (C2)

Item	Capacity utilization (prod. return) %	Type of vehicle	Distance km	Fuel/Energy consumption	Value
Truck	75 %	Truck (max. 40 t)	100	0.001	0.001

LCA: Results

Results for 1 house (House) concrete wall element

System boundaries (X=excluded, M=module not declared, MPR=module not relevant)

Product stage	Assembly stage	User stage	End of life stage	Beyond the system boundaries
Raw materials	Transport	Transport	Transport	Transport
Manufacturing	Assembly	Use	Disposal	Disposal
Transport	Transport	Transport	Transport	Transport
Assembly	Assembly	Use	Disposal	Disposal
Use	Use	Use	Disposal	Disposal
Disposal	Disposal	Disposal	Disposal	Disposal
Recycling	Recycling	Recycling	Recycling	Recycling
Recycling	Recycling	Recycling	Recycling	Recycling
Recycling	Recycling	Recycling	Recycling	Recycling
Recycling	Recycling	Recycling	Recycling	Recycling
Recycling	Recycling	Recycling	Recycling	Recycling

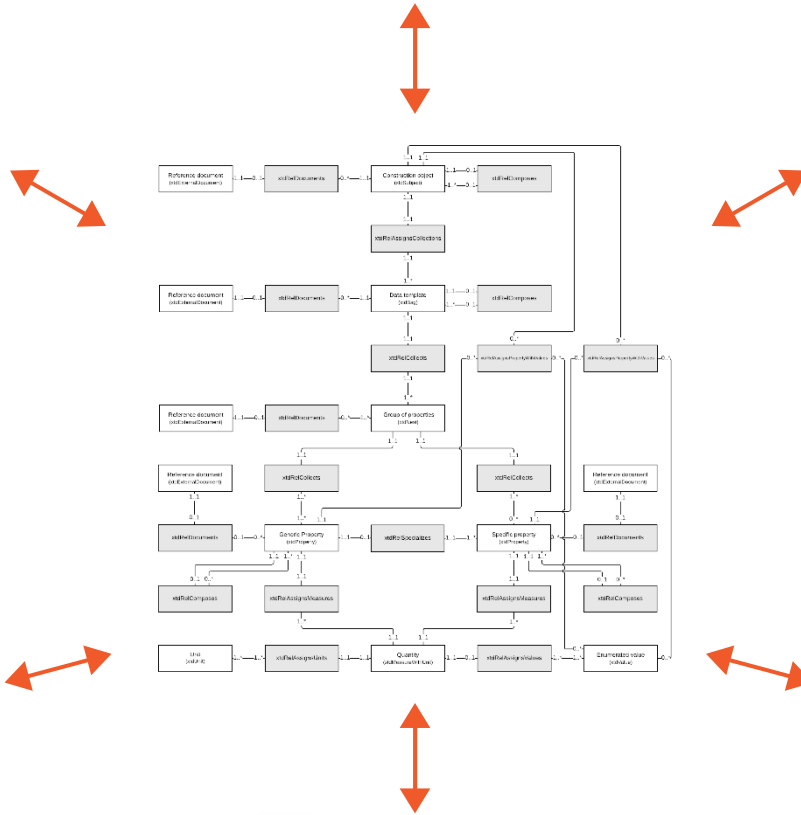
Resource use	Unit	A1-A3	A4	A5	B1-B5	C1	C2	C3	C4
CO ₂ e	kg	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01
CO ₂ e	kg	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01
CO ₂ e	kg	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01
CO ₂ e	kg	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01
CO ₂ e	kg	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01	1.10E+01

EPD Global warming potential (GWP) based on the potential of the greenhouse gases. Source: IPCC. Global warming potential (GWP) based on the potential of the greenhouse gases. Source: IPCC. Global warming potential (GWP) based on the potential of the greenhouse gases. Source: IPCC.

Everyone creates information locally

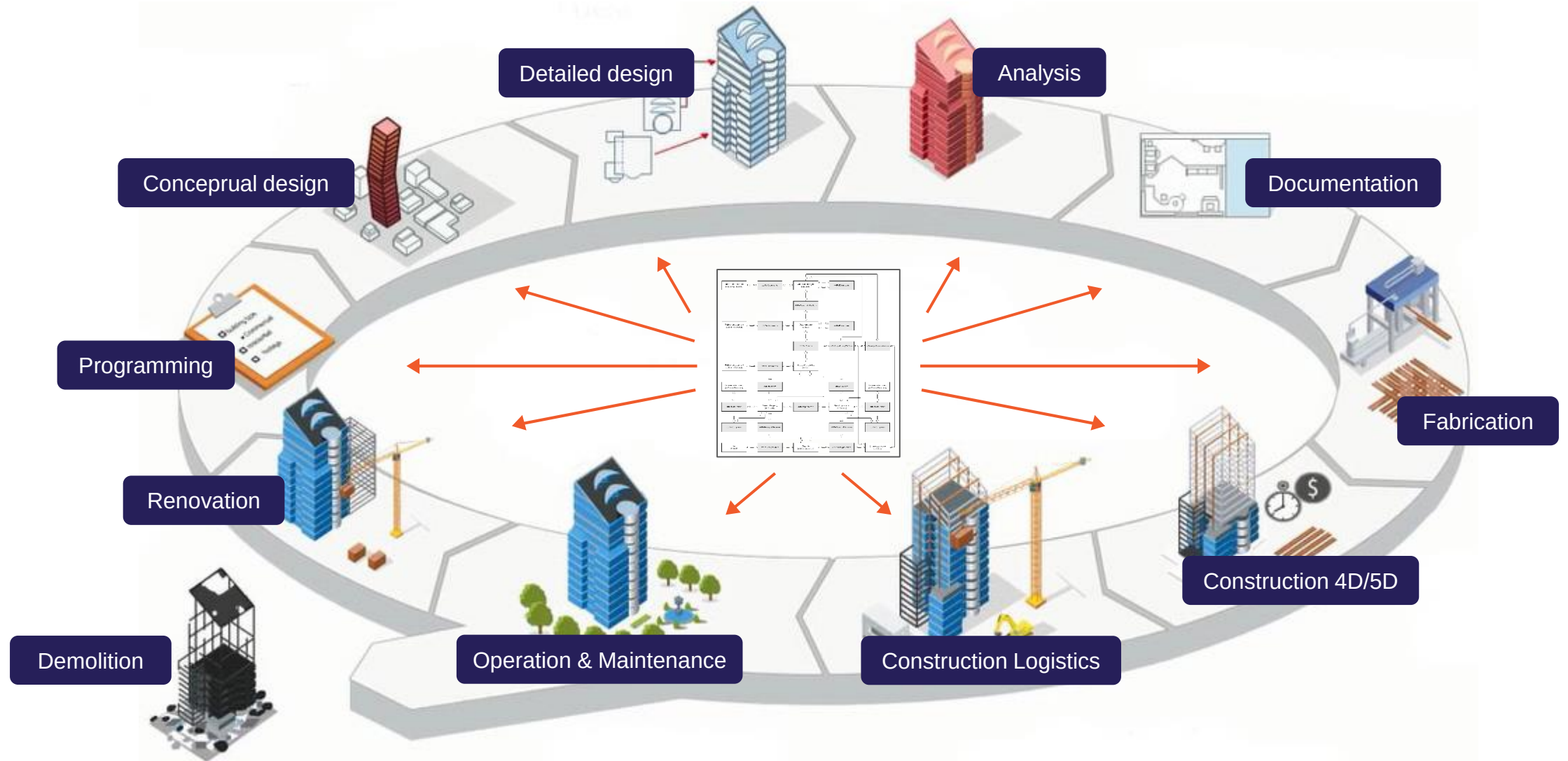


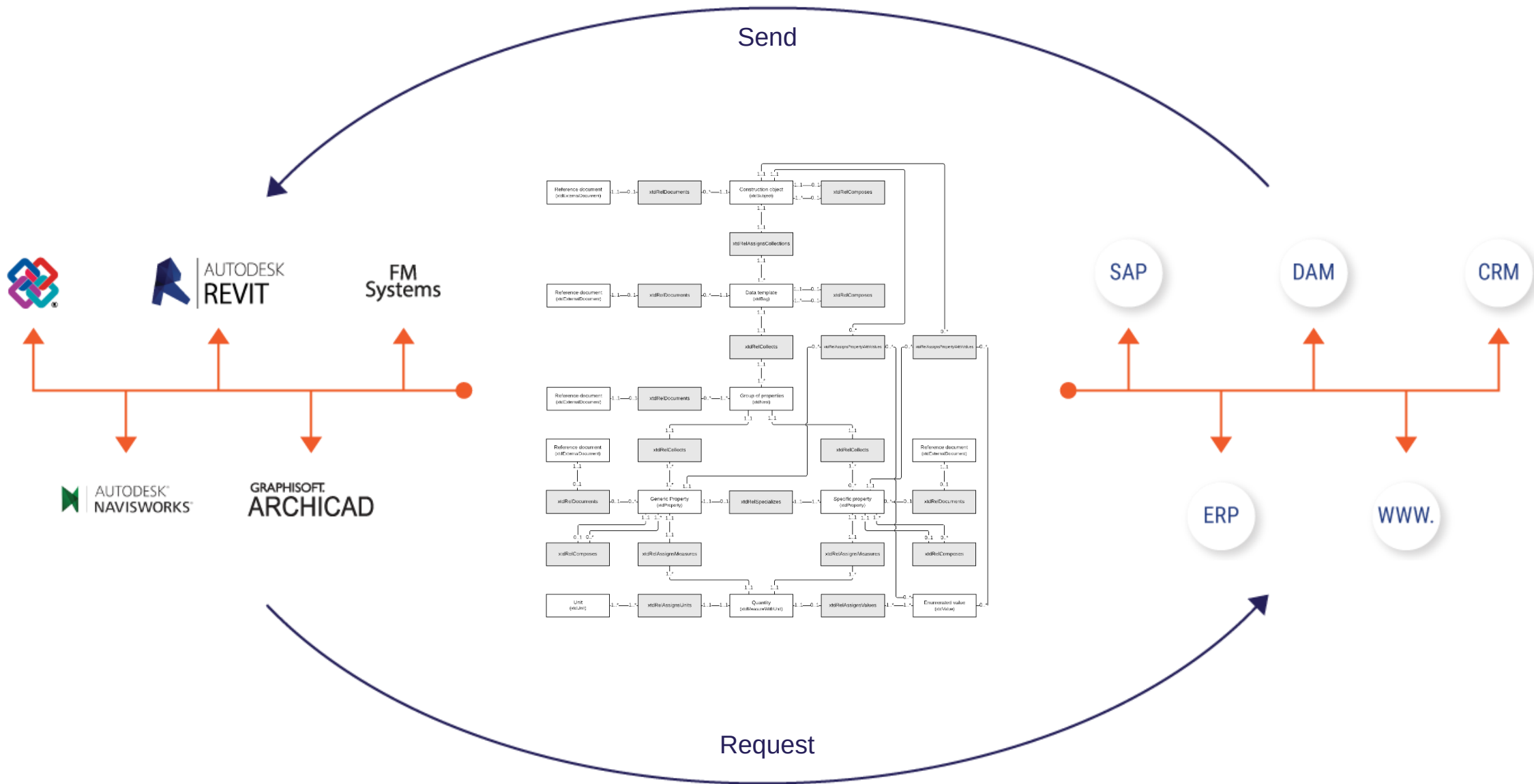
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BIM according to ISO 19650





Thank you for the attention!

 schulze@cobuilder.no

 @espenschulze



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