

Teknisk frukost:

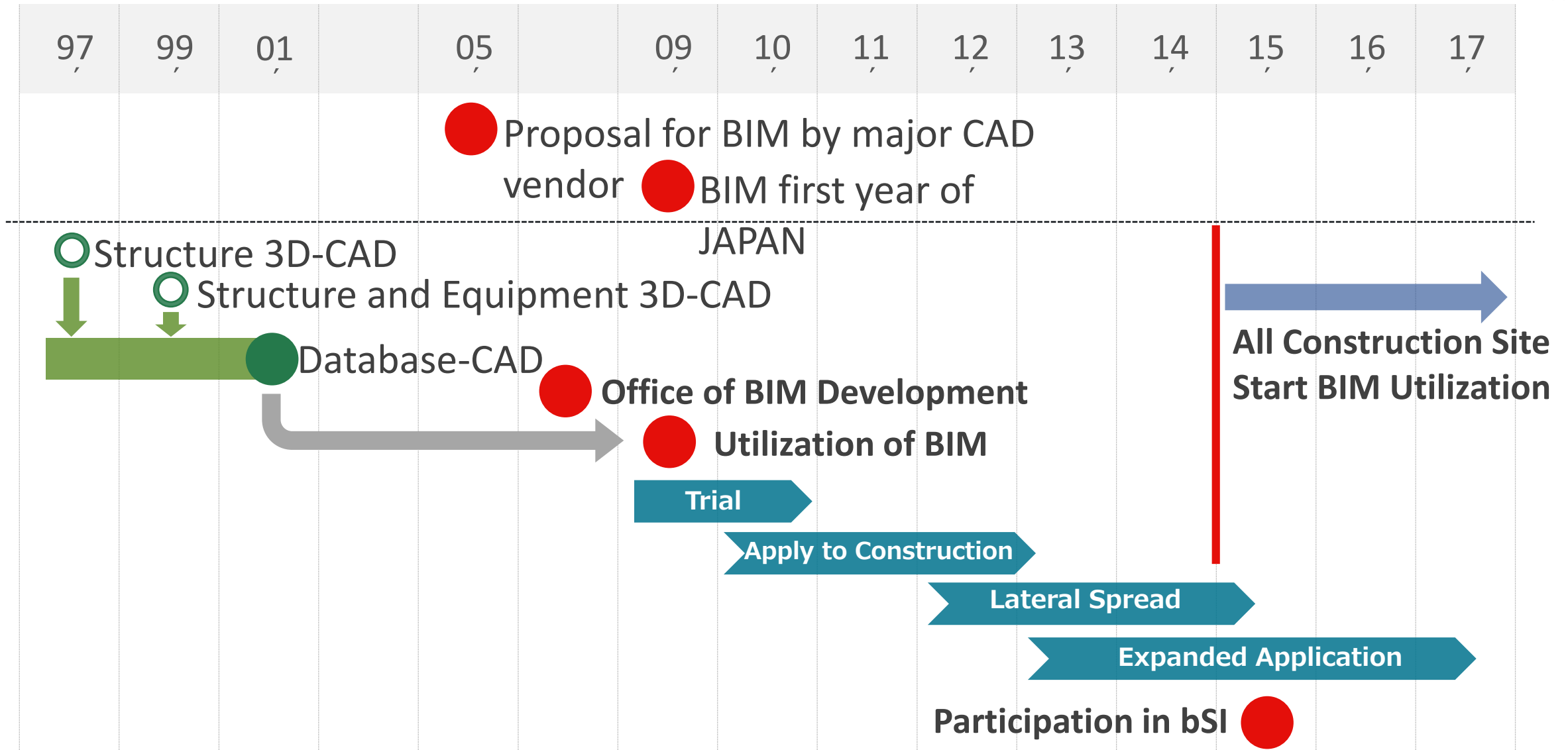
- senaste nytt om internationell standardisering

Fördjupa dina kunskaper om BIM och standardisering tillsammans med Tekniskt råd. Under frukostmötet bjuder vi på färsk rapportering från det senaste toppmötet i Tokyo, inklusive spännande exempel från buildingSMART Awards 2018.

- 8:00 Välkomna
- 8:01 Infra room (Väino Tarandi)
- 8:10 Regulatory room (Hans Lif)
- 8:20 Inte bara hus (Karin Anderson)
- 8:30 Railway room (Peter Axelsson)
- 8:40 buildingSMART Awards (Väino Tarandi)
- 8:50 Övriga frågor – Svenskt chapter m m (Mikael Malmkvist)
- 9:00 Slut!

Infra room – övergripande grupp för infraområdet

- Diskussioner i flera olika grupper om livscykelhantering, product lifecycle management (PLM) och system.
- Digitala tvillingar efterfrågades också i flera grupper, dock utan tydlig definition av begreppen.
- Många börjar tänka på att hantera projekt över flera skeden av processen och ett allt mer obrutet informationsflöde.
- Ports and Waterways (tidigare Harbours), Roads, Railways, Bridges m fl – börjar beskriva sina "byggnadsverk" som spatiala strukturer.
- Det motsvarar den nerbrytning som redan finns för byggnader i form av våningar.
- Huvudsakligen 2D-områden, men även 3D för t ex broar och lagringsplatser i hamnar.
- Det innebär en topologisk struktur som möjliggör navigation mellan områdena i datamodellerna.
- Brukarna börjar nu förvänta sig att öppen BIM fungerar, att IFC-filerna också ska gå att öppna i framtiden.
- De förväntar sig att nya förbättrade versioner av standarden och programvarorna ska komma regelbundet.
- Det innebär ökade krav på planerade releaser och också certifiering och nya funktioner i programvarorna.
- Assets och asset management håller på att få en stor uppmärksamhet med tillhörande studier och utveckling.



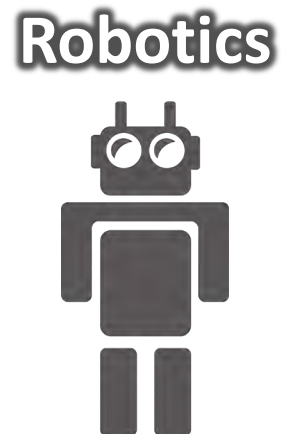
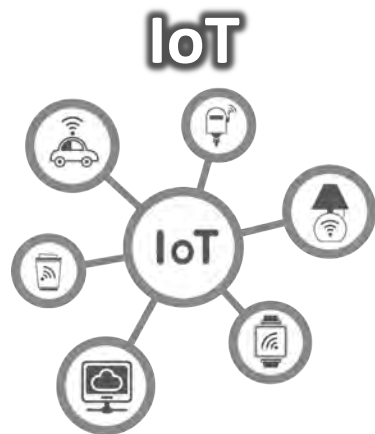
- BIM expanding to Infrastructure area
- BIM process reaching Operation and Maintenance phases

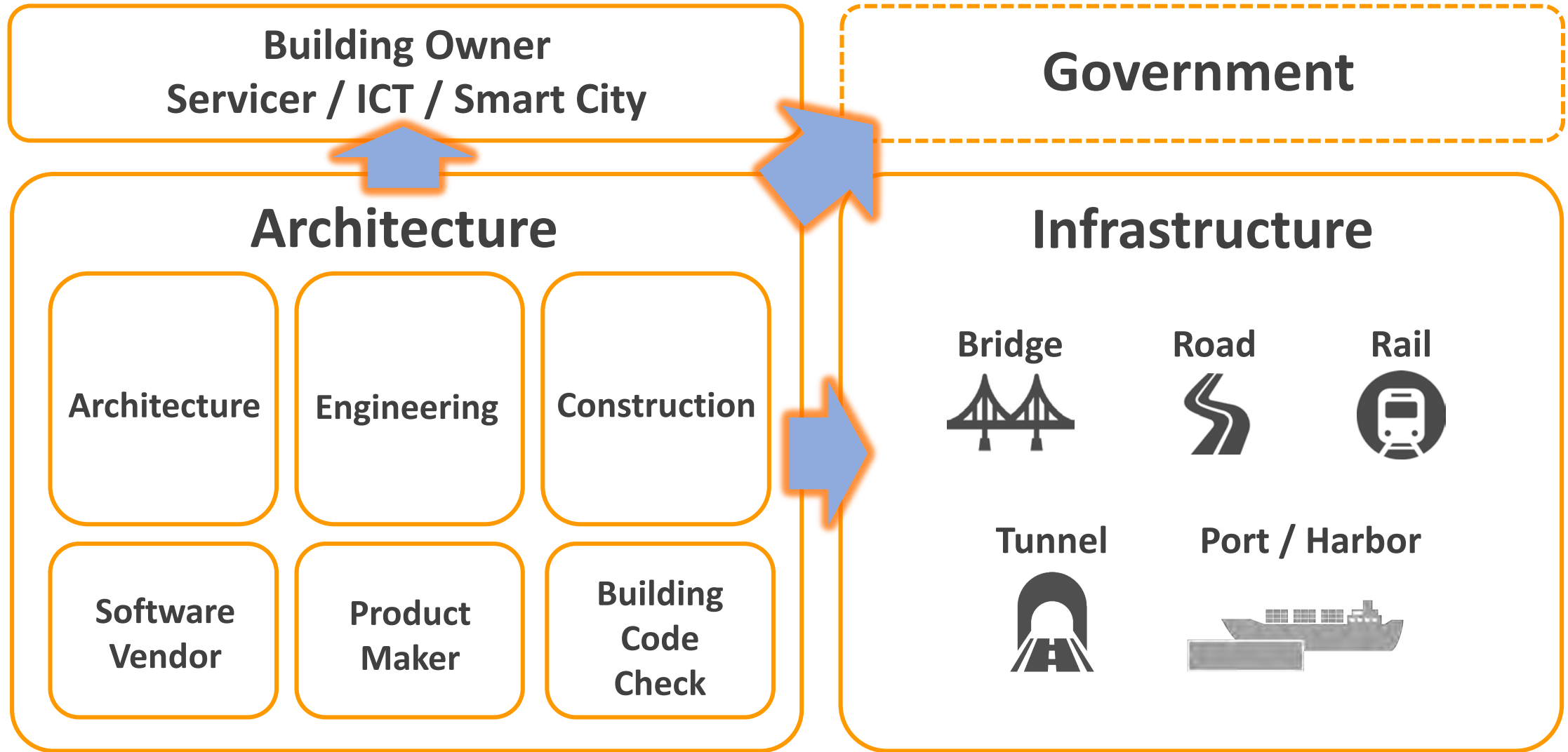
The Building Owner involvement is one of Key issues.

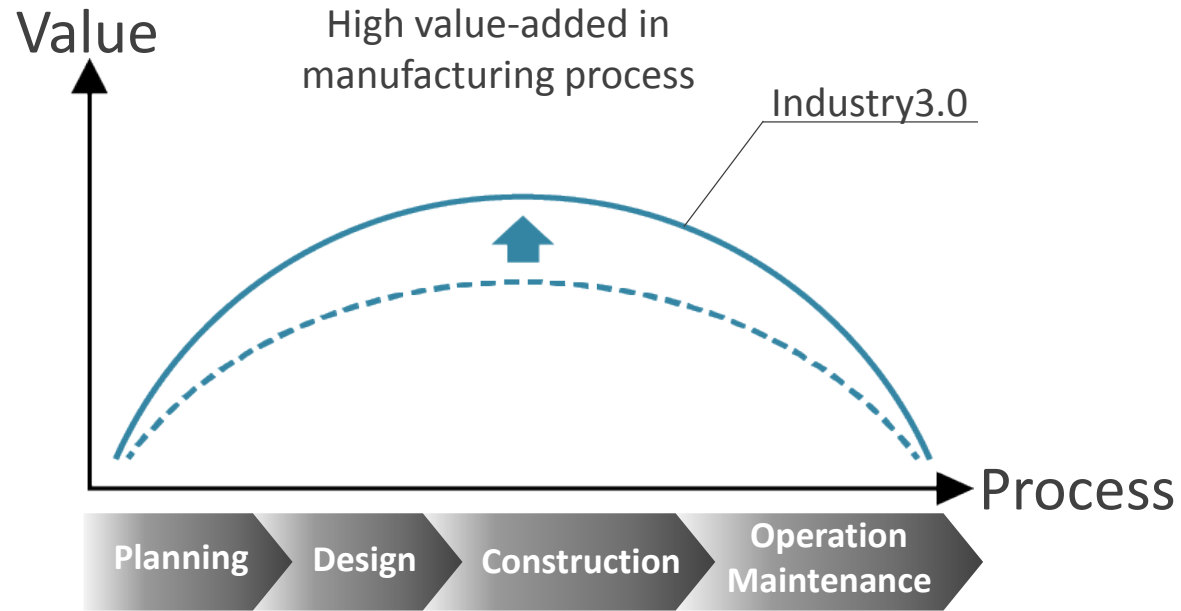
bSJ seeking new BIM users area to identify the new value of BIM digital twin.



buildingSMART Japan responses to the New Opportunity for BIM frontier:

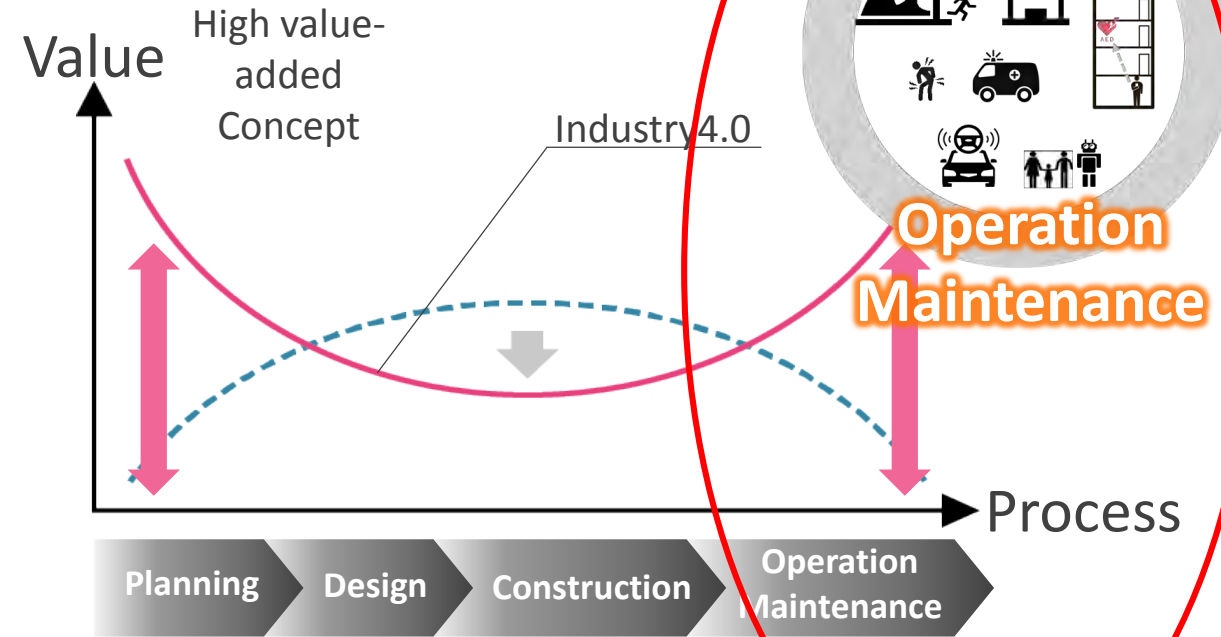






3rd Industrial Revolution

BIM Data

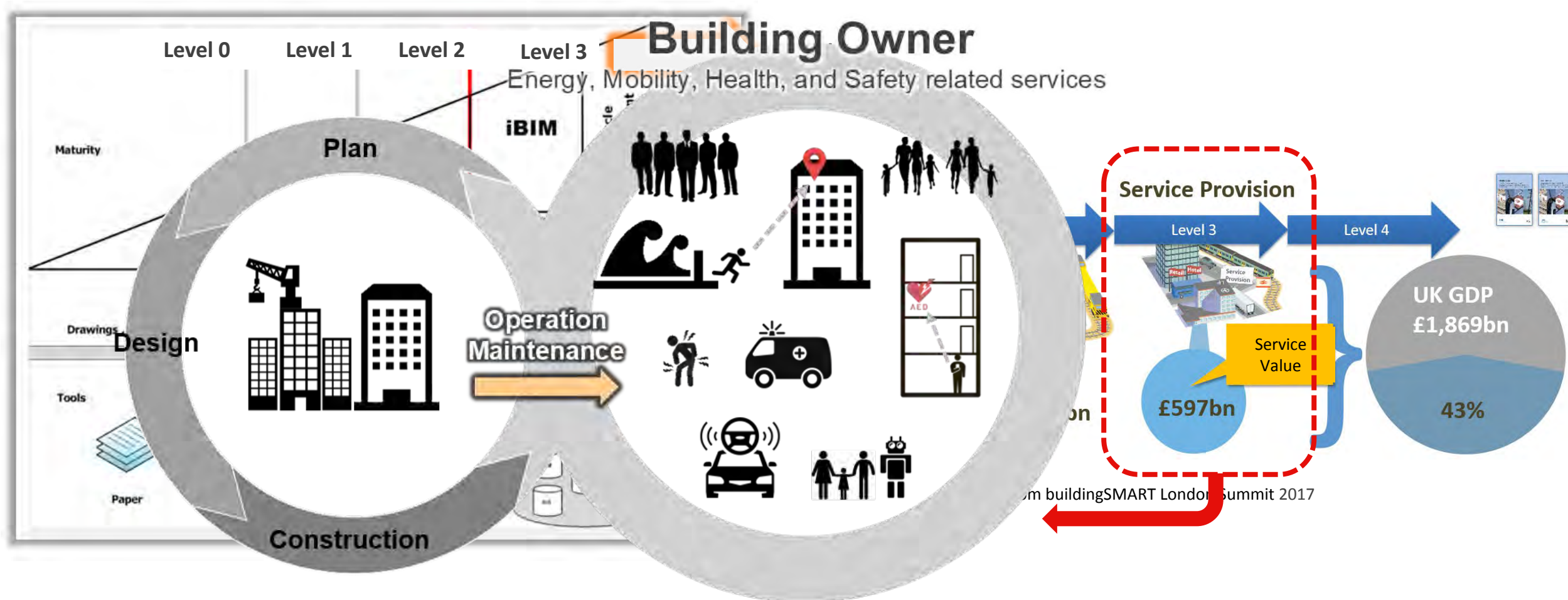


4th Industrial Revolution

BIM Value

Change of BIM Value 7

- **Beyond BIM Level 3: BIM Level 4 connects BIM and Smart City**



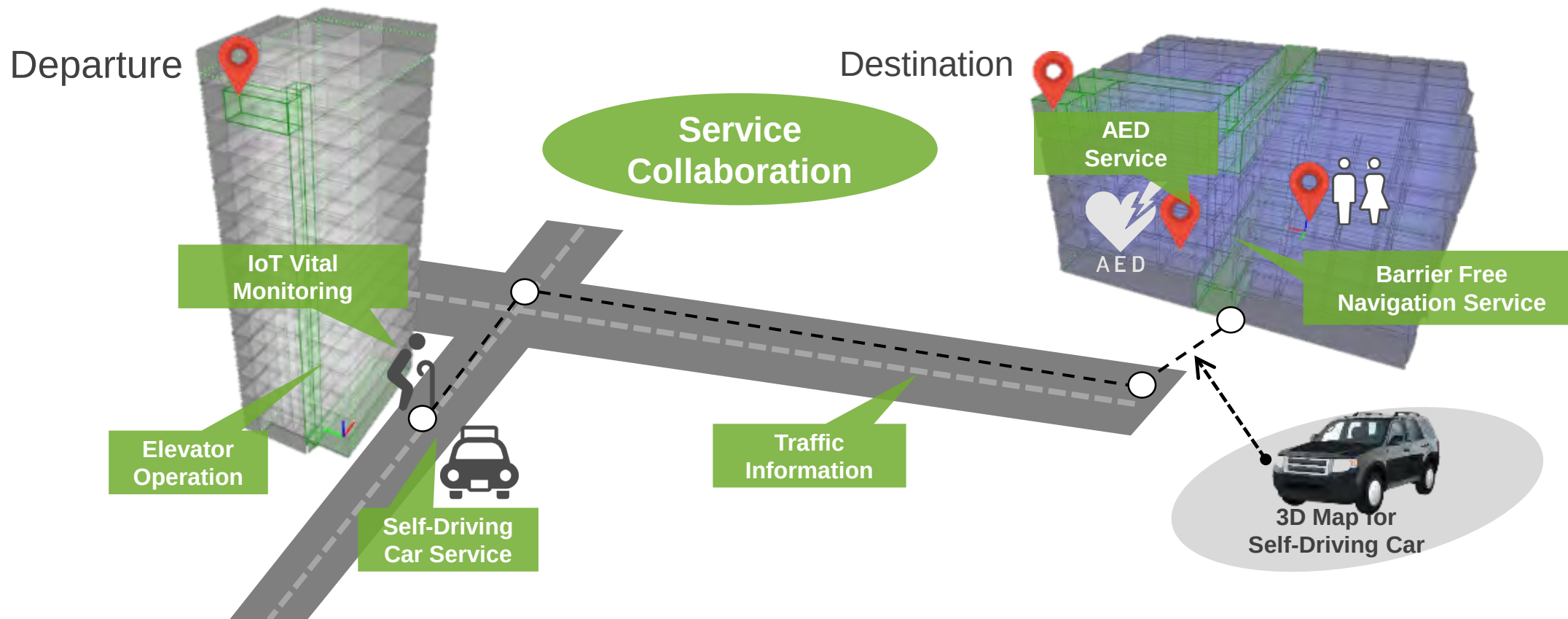
Smart Mobility

Efficient Traffic

Seamless Indoor &
Outdoor Navigation

Service
Interoperability

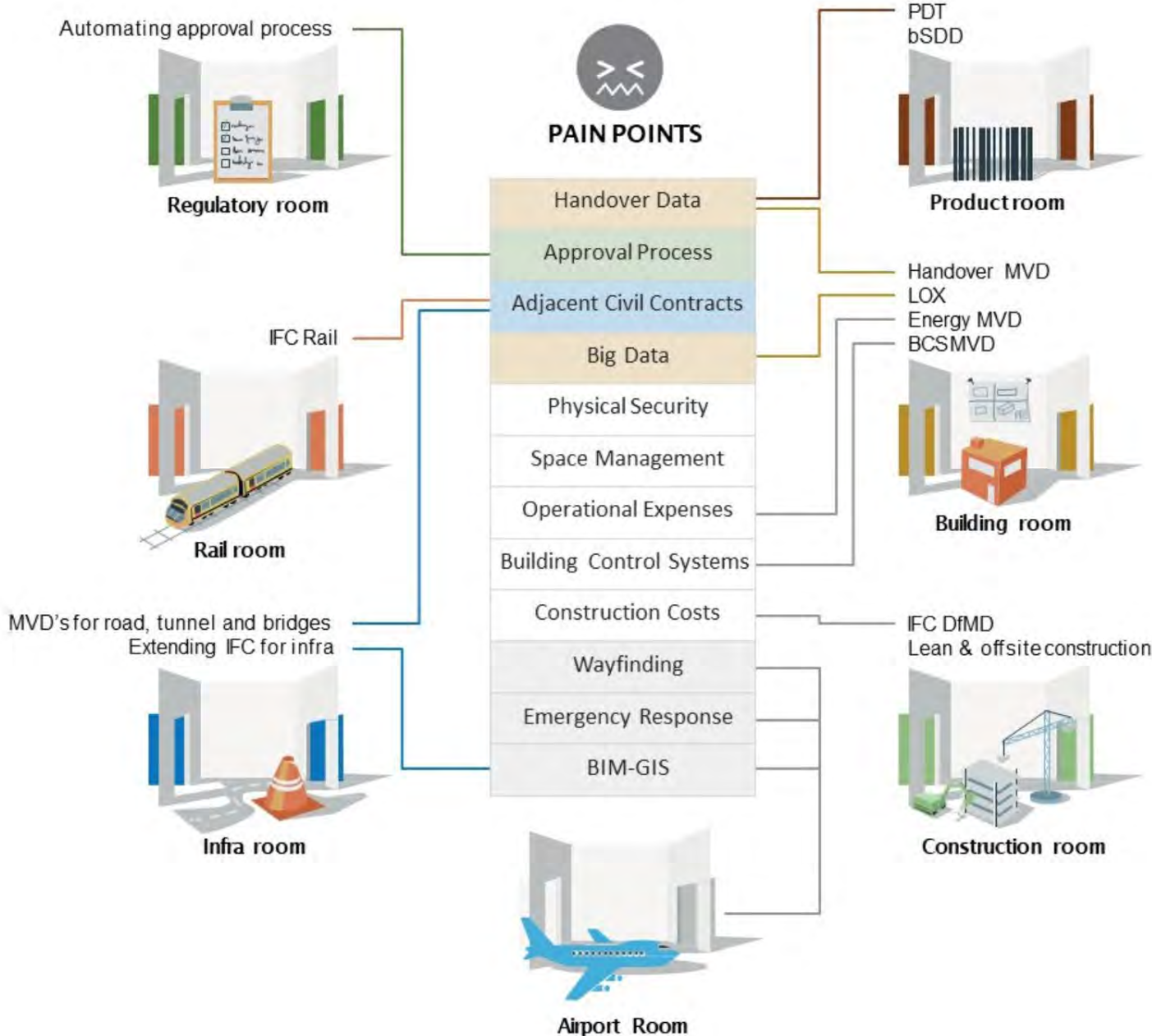
BIM × GIS × Traffic × Building Automation × Facility Information...



Example

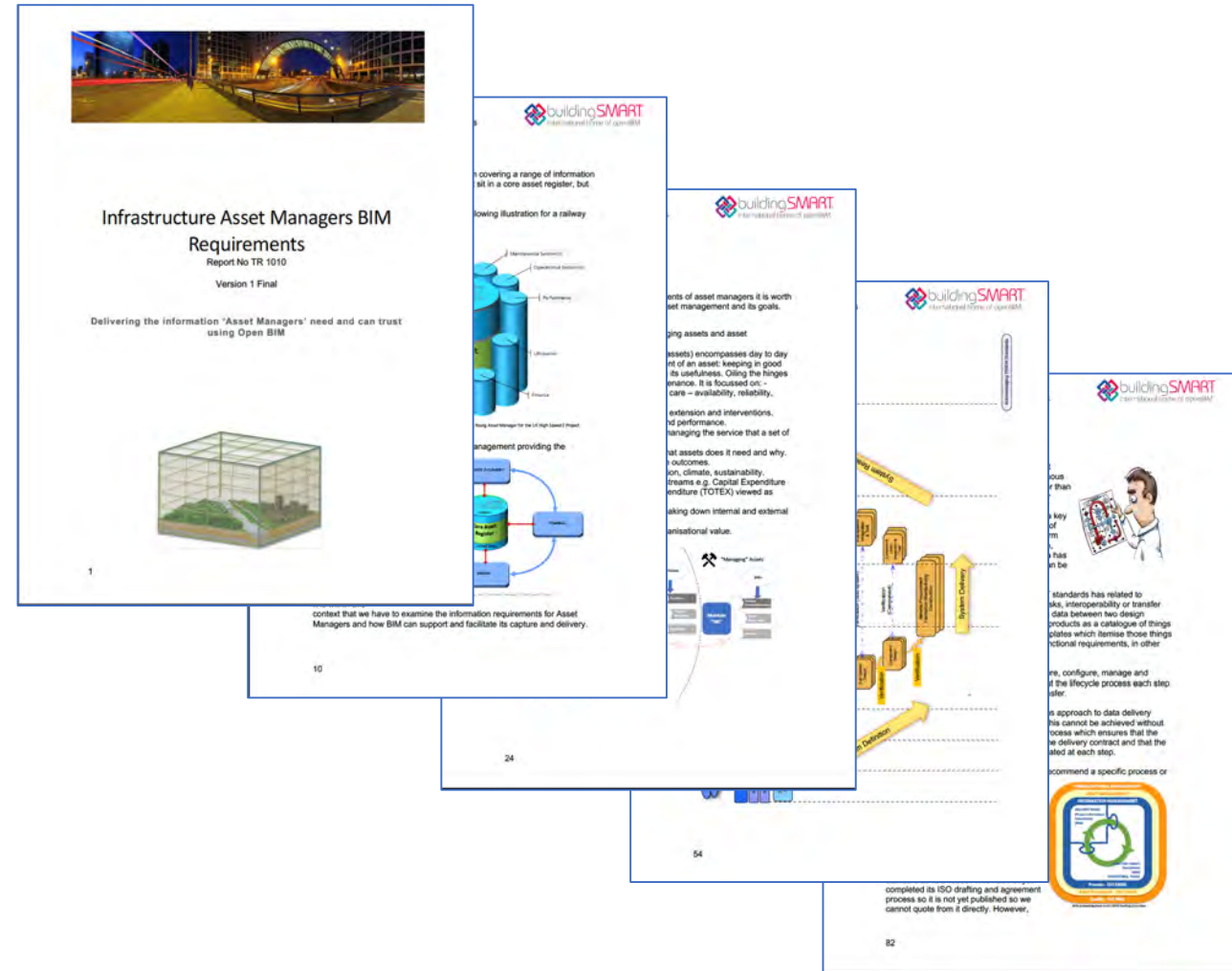
Mobility Service with BIM based indoor spatial information

The diagram below illustrates the relationship between the bSI Rooms.



Background

- Technical Report 'Asset Managers BIM Requirements' published by InfraRoom January 2018
 - Recognised asset managers information requirements as a key deliverable of BIM
 - Brought into focus those requirements and informed the commissioning and development of bSI Open Standards.
 - Incorporate into overall Roadmap currently being developed by InfraRoom

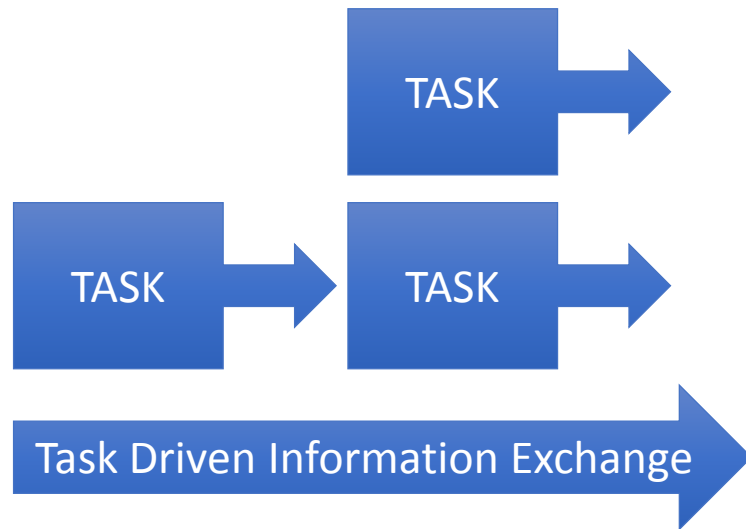


Report <https://buildingsmart-1xbd3ajdayi.netdna-ssl.com/wp-content/uploads/2018/01/18-01-09-AM-TR1010.pdf>

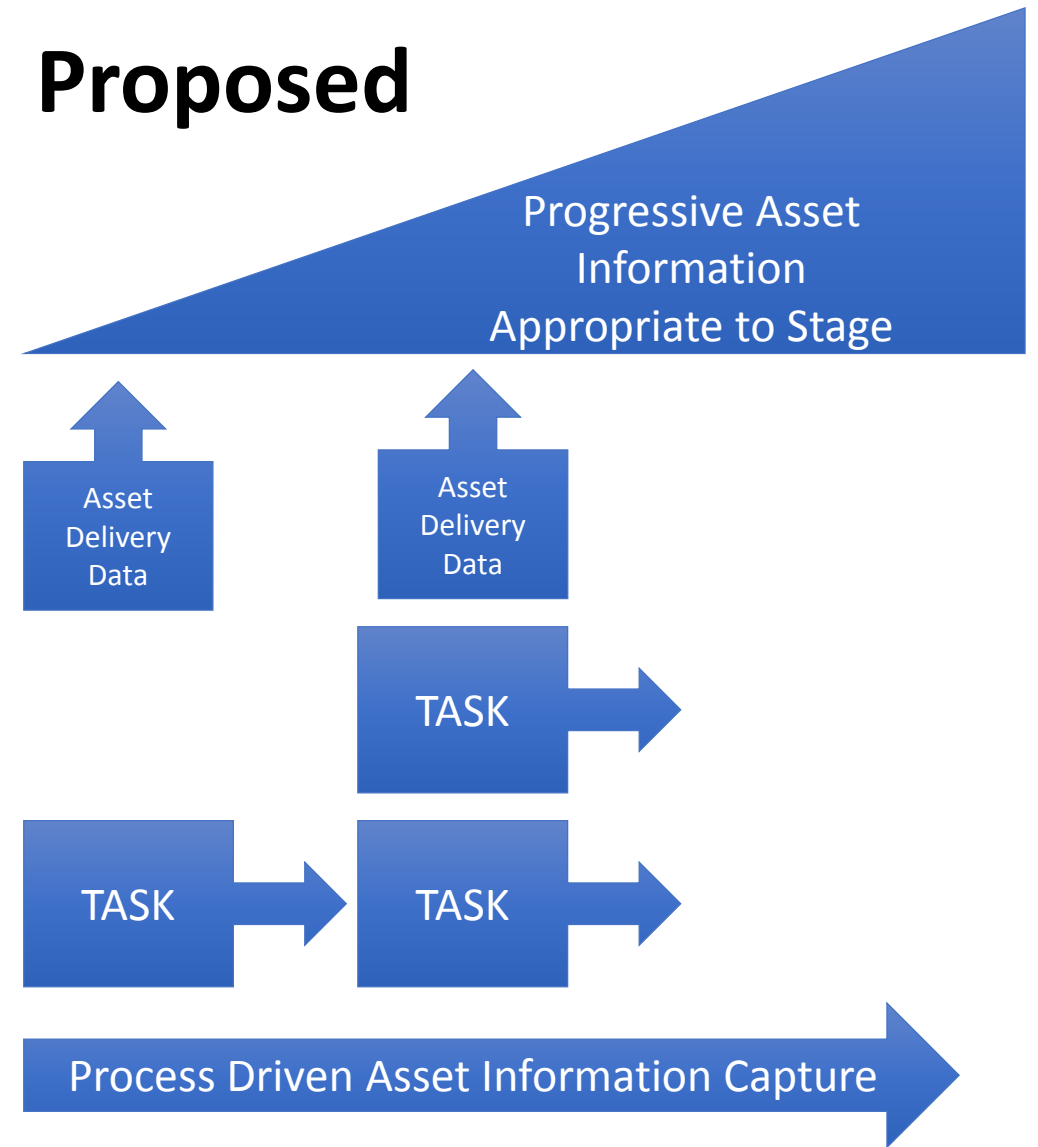
An Asset Centric Process

Not a Handover MVD

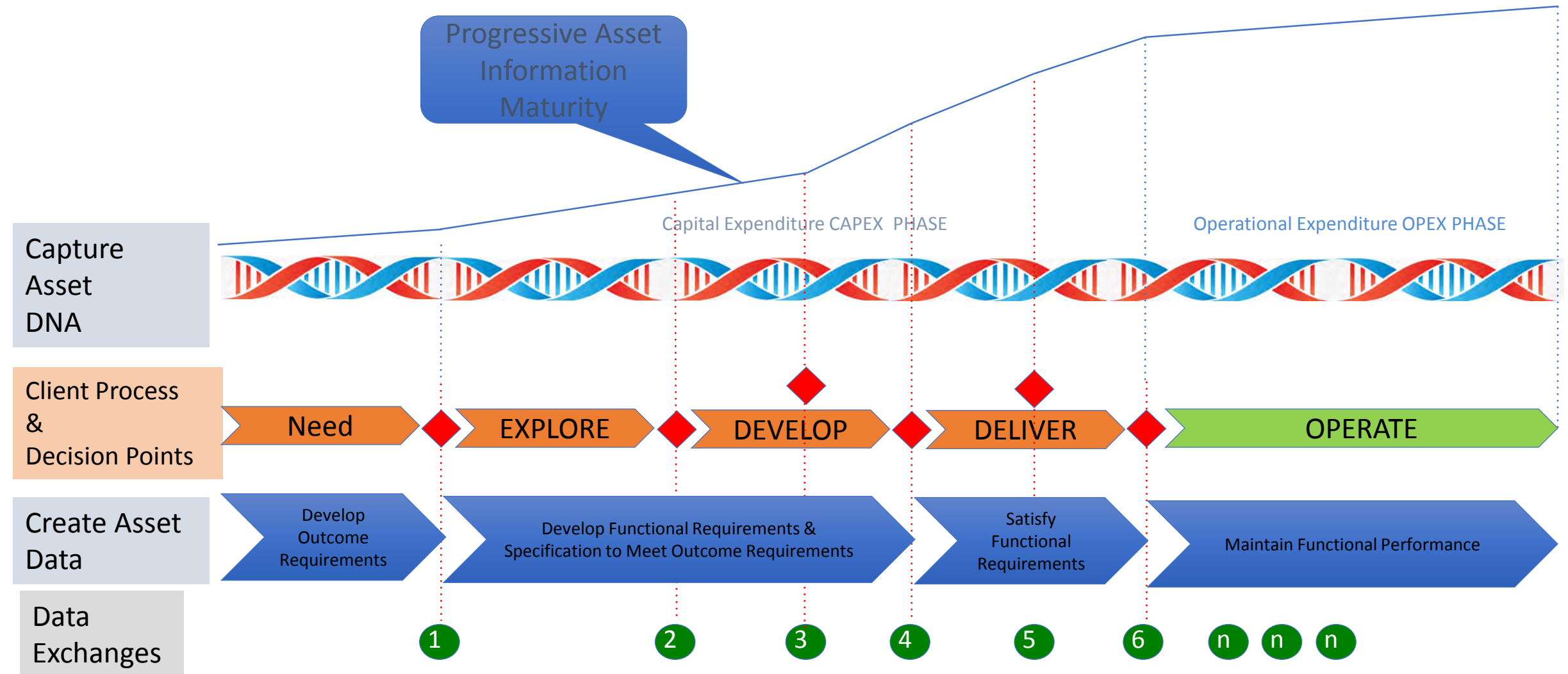
To Date



Proposed



Asset Managers BIM Requirements – Life Cycle Asset Centric ‘Systems Engineering’ Approach



Step by Step Asset Centric Roadmap

Information Requirements

White Paper Introducing asset information requirements to IFC development

Develop IDM guidelines for stage by stage asset information

Produce example IDMs for typical assets

Systems Engineering

White paper introducing the concept of continuous stage by stage asset information requirement delivery as part of process

Develop MVD guidelines for systematic asset information delivery and validation

Produce example MVDs for typical assets

Delivery Process

Extend BCF to cover asset information delivery

Match process to information requirement validation/verification

Add systematic delivery messaging
Supporting ISO 19650

Object Type Library

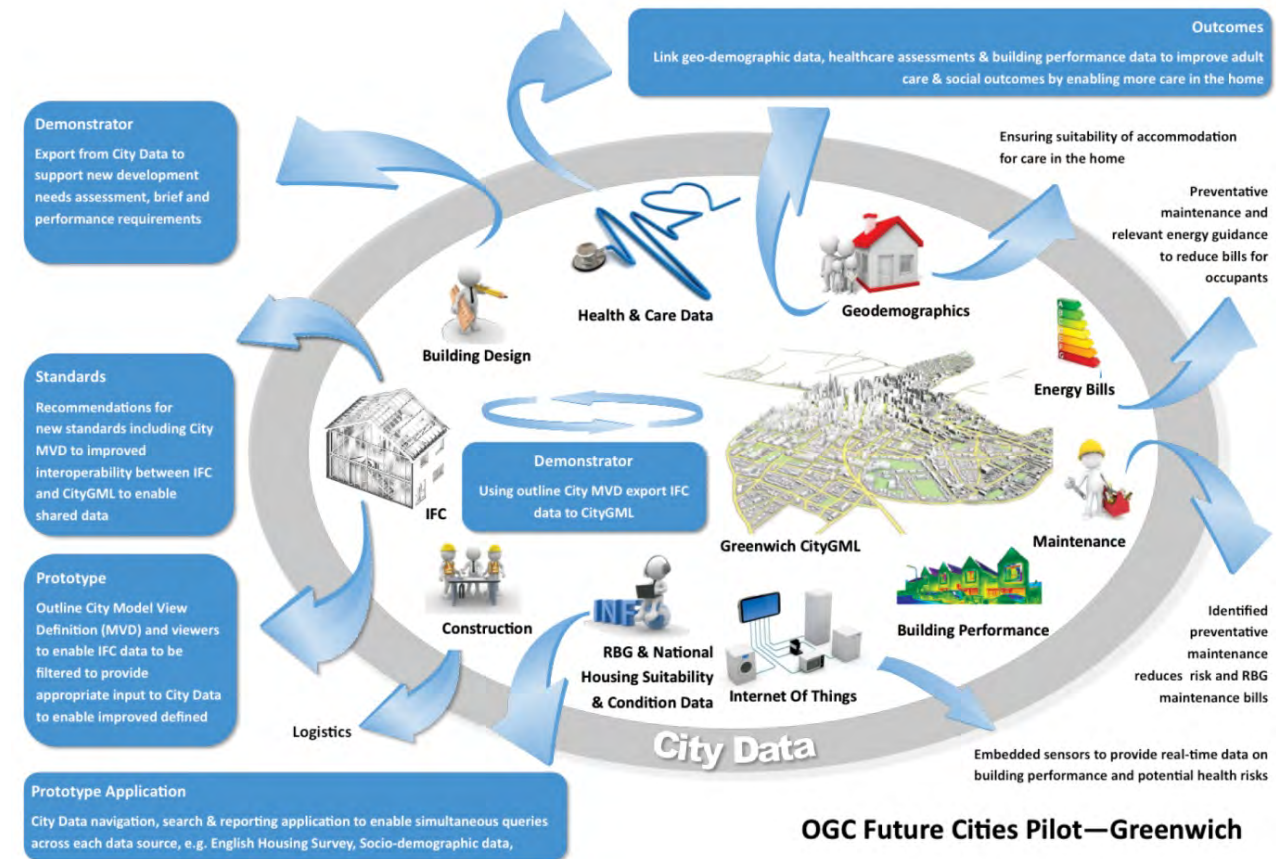
Working with bSDD develop hierarchical object type library principles

Support the acceleration of IFC OWL development

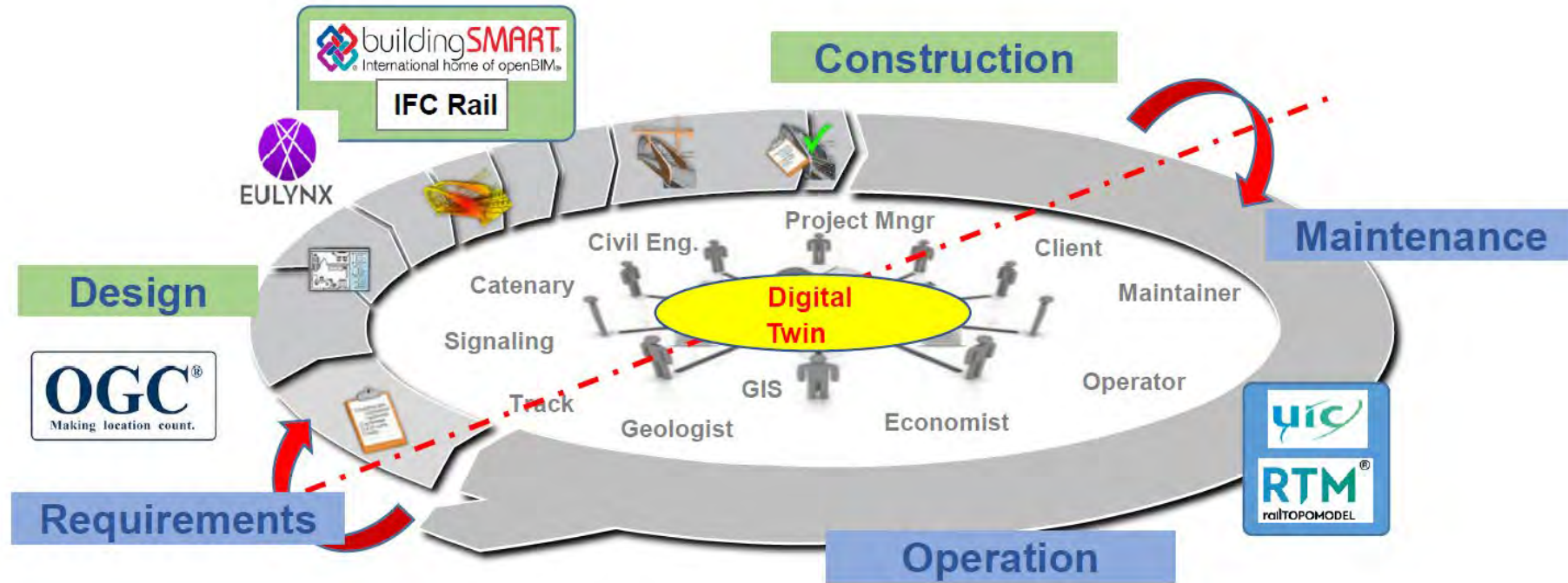
Develop guidelines for semantic linking to multiple data dictionaries

Liaison: buildingSMART & OGC

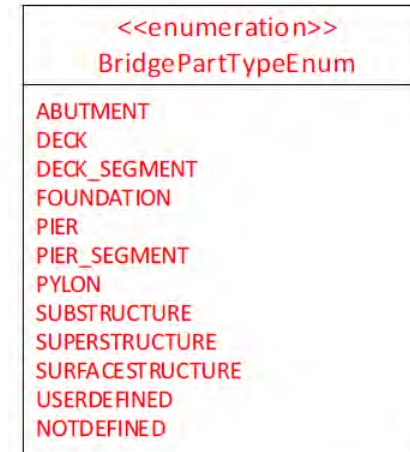
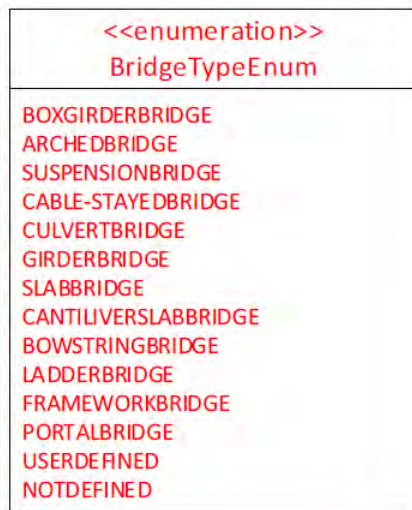
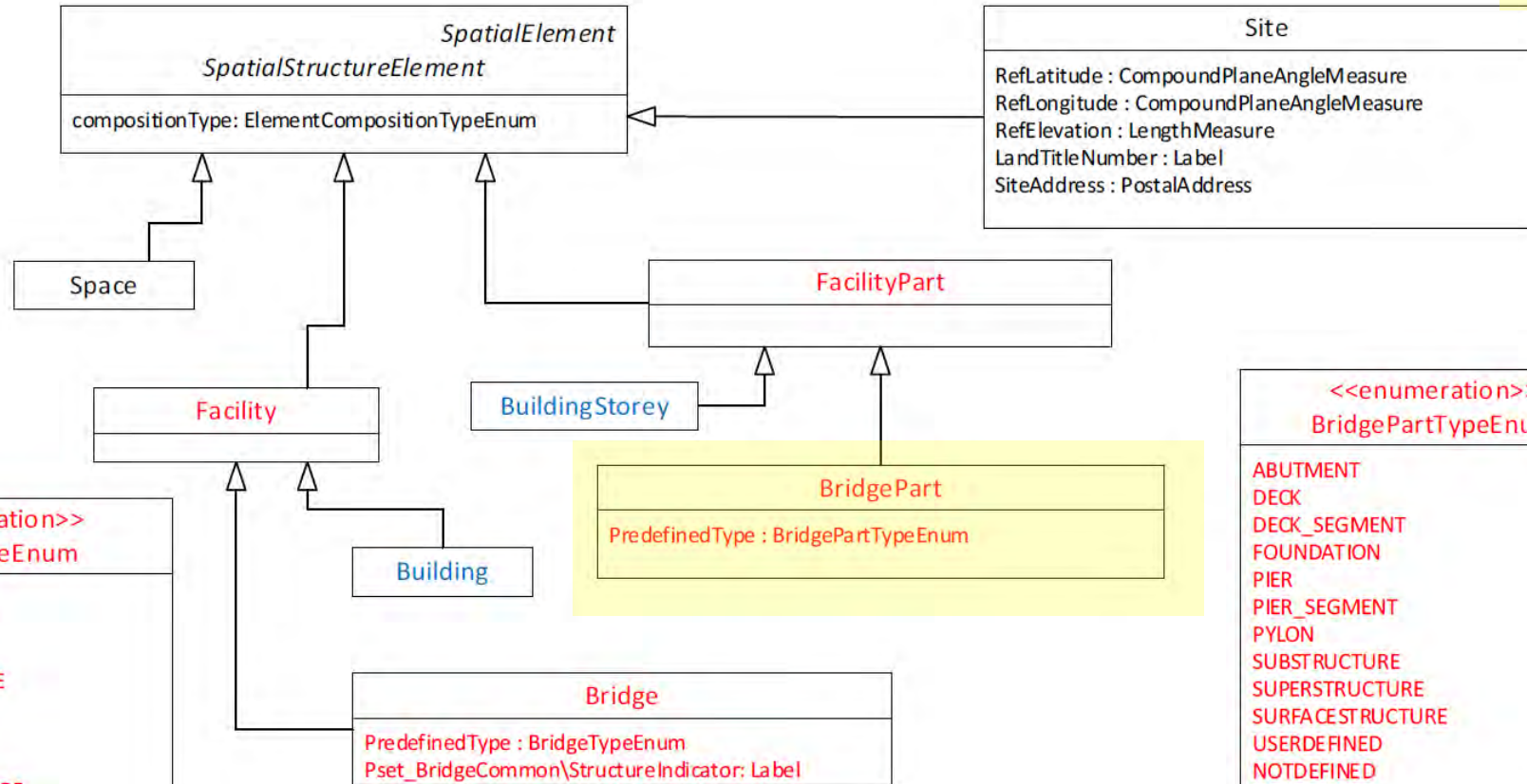
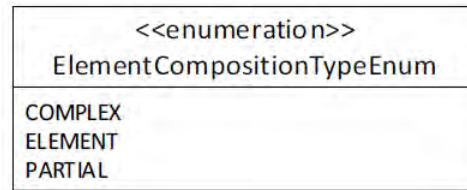
- Integrated Digital Built Environment
 - Liaison with OGC
 - The challenge is to think beyond the constraints of existing approaches in either the construction or spatial domains.
- OGC & InfraRoom have worked together on:
 - Alignment 1.0 & 1.1
 - Overall Architecture



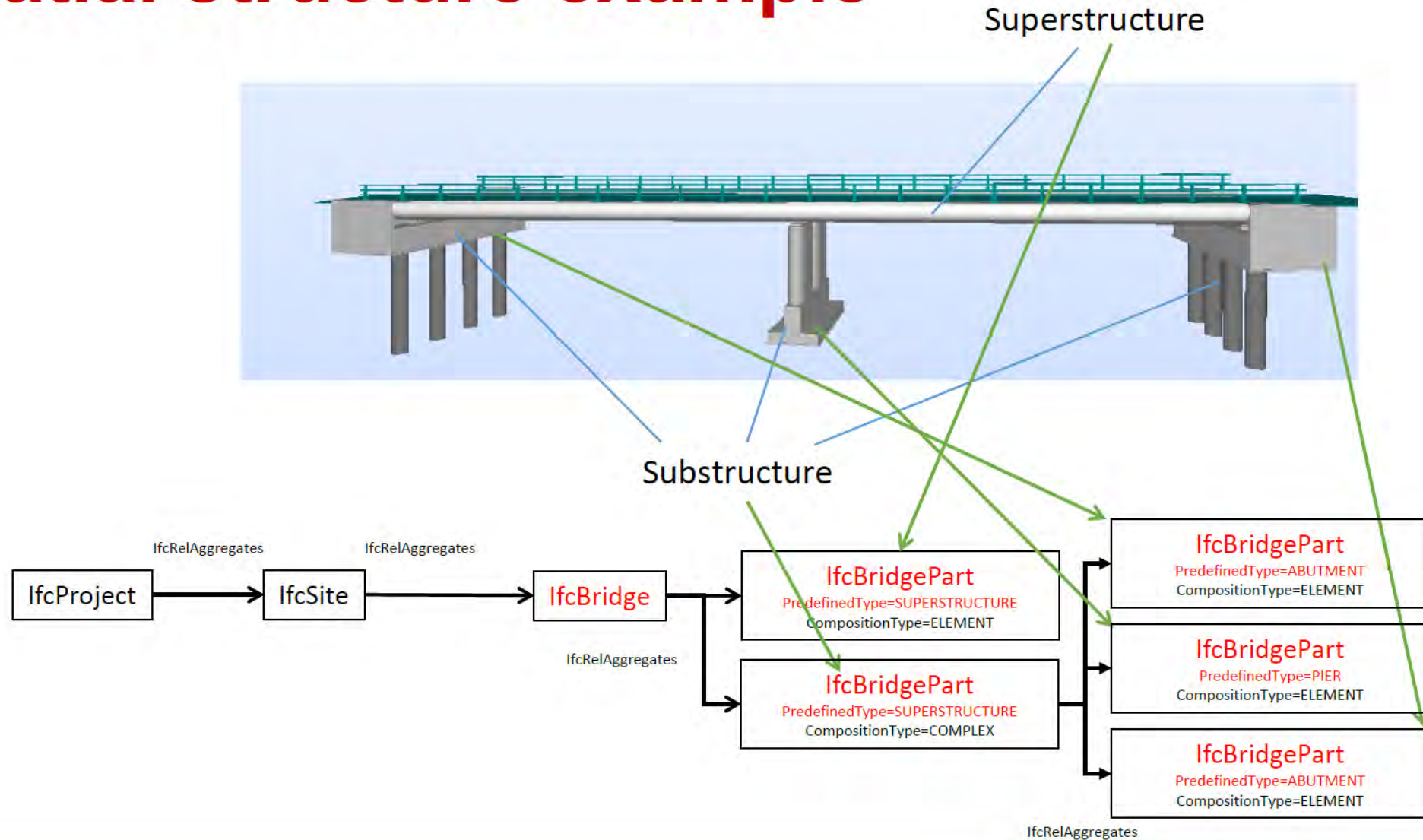
Relations and overlap with other standards



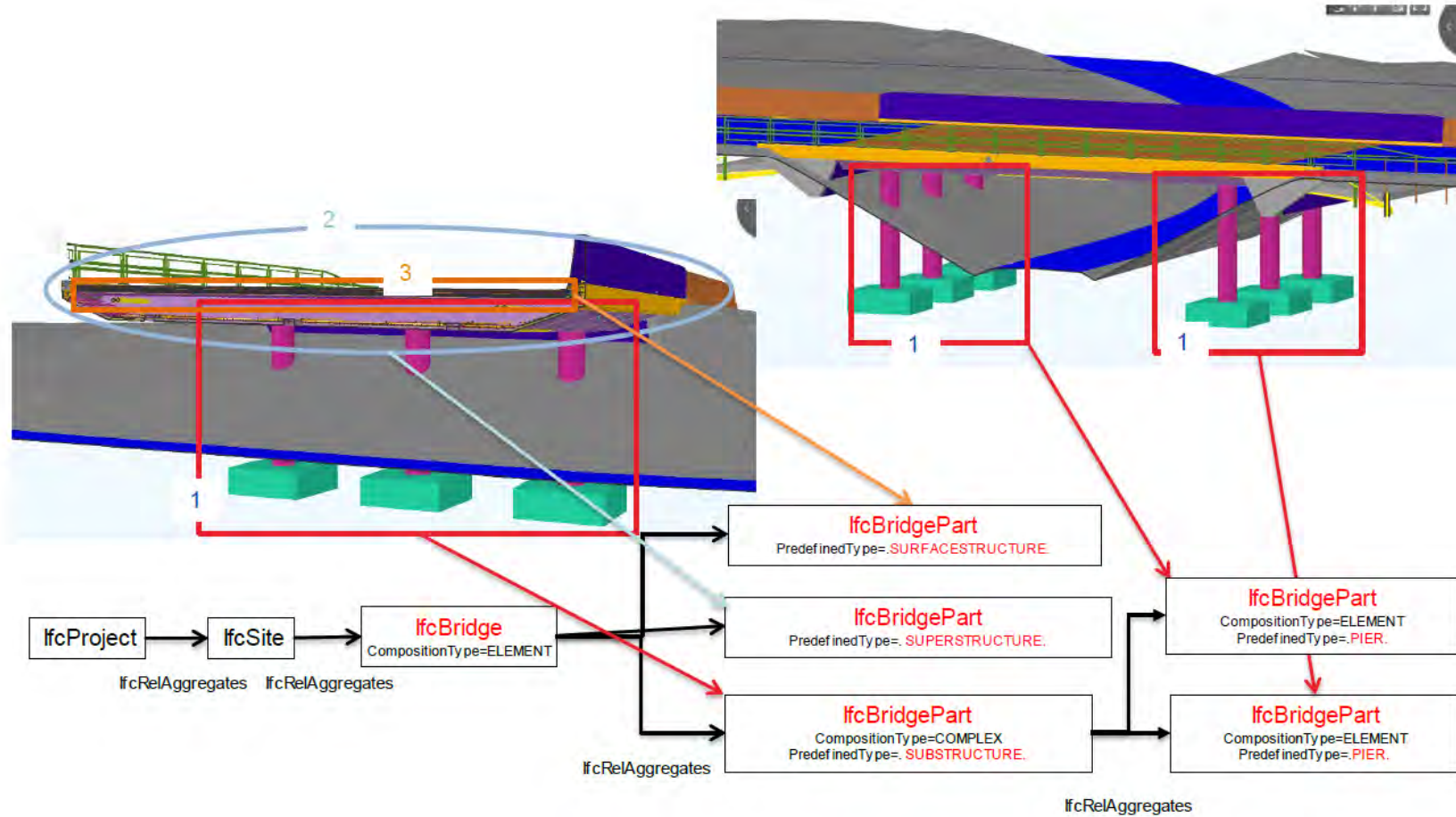
Spatial Concepts



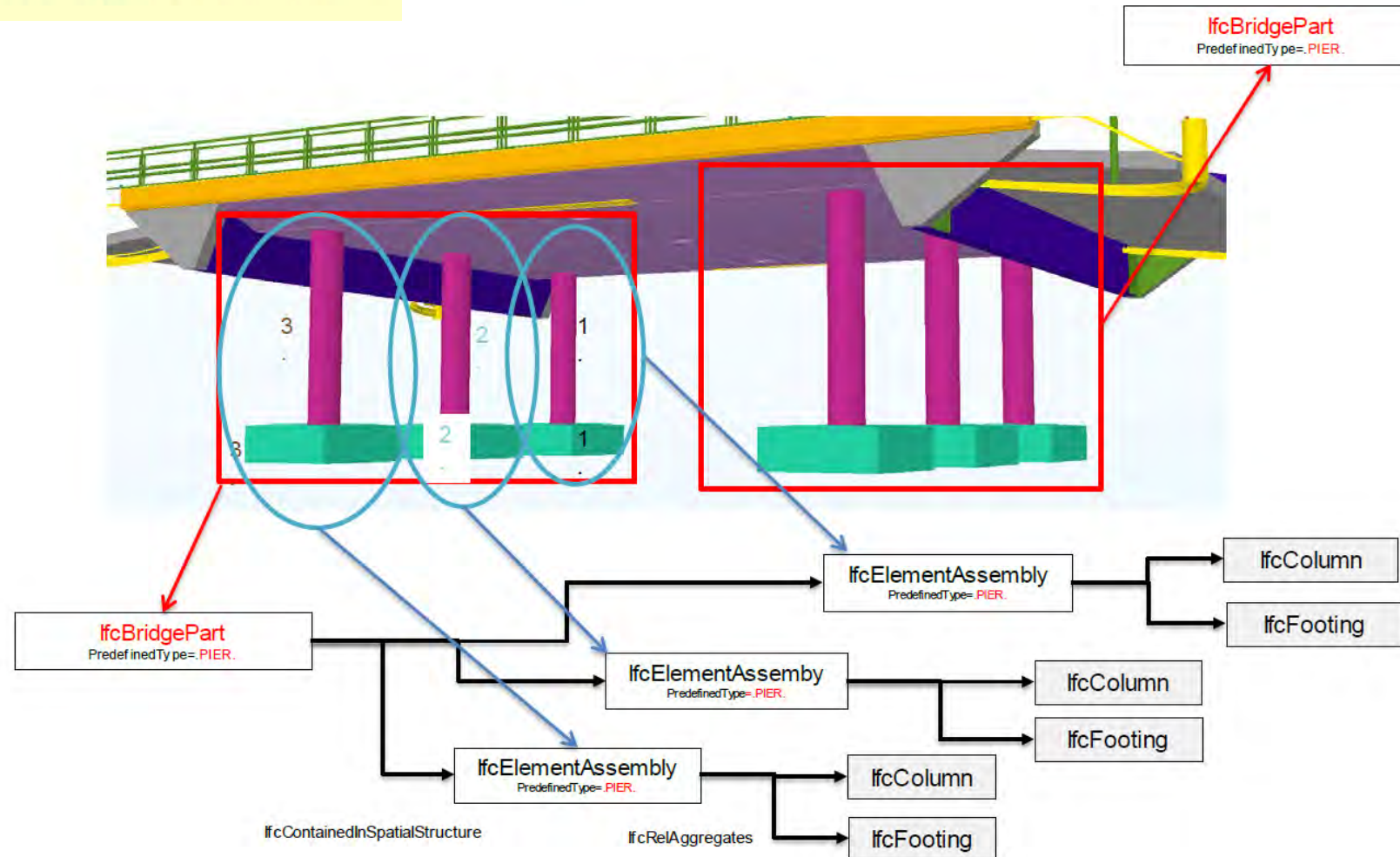
Spatial structure example



5.1 Spatial hierarchy



5.2 Spatial containment



RAR: Information Breakdown Structures

Breakdown Structure Type	Requirement & Remarks
Spatial	P&W requires the high-level spatial breakdown from catchment & complex to individual spaces/locations to divide areas up by purpose/usage.
Containment	P&W requires containment of physical elements within spatial elements, such as cranes or bollards within a quay facility.
Assembly	P&W requires the assembly of elements into larger physical elements such as a lock gate made up of steel gates, hydraulics, sides and sill.
Placement	P&W requires support for grid/cartesian placement for node structures such as buildings and areas, and alignment placement for linear structures such as breakwaters.
Functional	P&W requires physical elements to be typed (by intrinsic properties) and be grouped into systems (extrinsic functionality with performance & capacity) for asset & Operations management
Work (Process)	P&W requires tasks & projects to be typed (by intrinsic job-type or method statement) and grouped in functional/responsibility packages.
Classification	Association and representation of local & national classification is required by P&W for additional breakdown views and property definition.

RAR: Spatial Requirements

- Basis for Buildings:
Site → Building → Storey → Space
- Generic Basis
Site → [Complex] → Facility → Region → Space
- Lowest Unit
 - Space – Enclosed
 - Location – Open Air
- Groupings
 - Zone – Functional grouping
 - Region – Spatial grouping – X-Y plane
 - Storey – spatial grouping – Z plane

Site

Complex

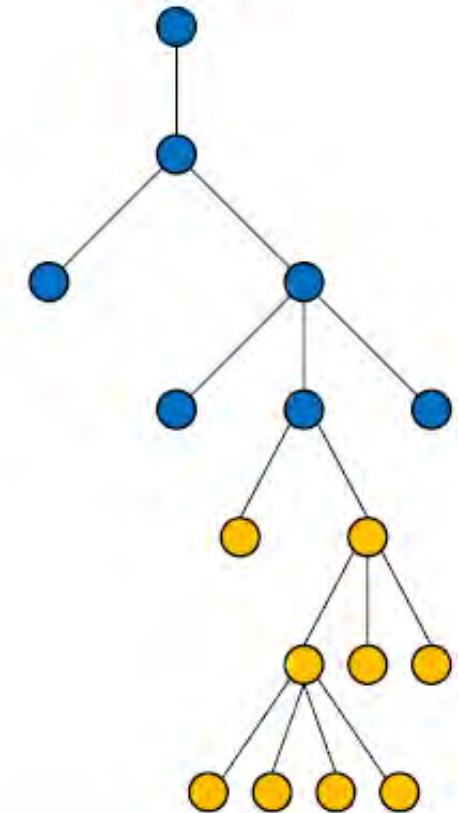
Facility

Region/Storey

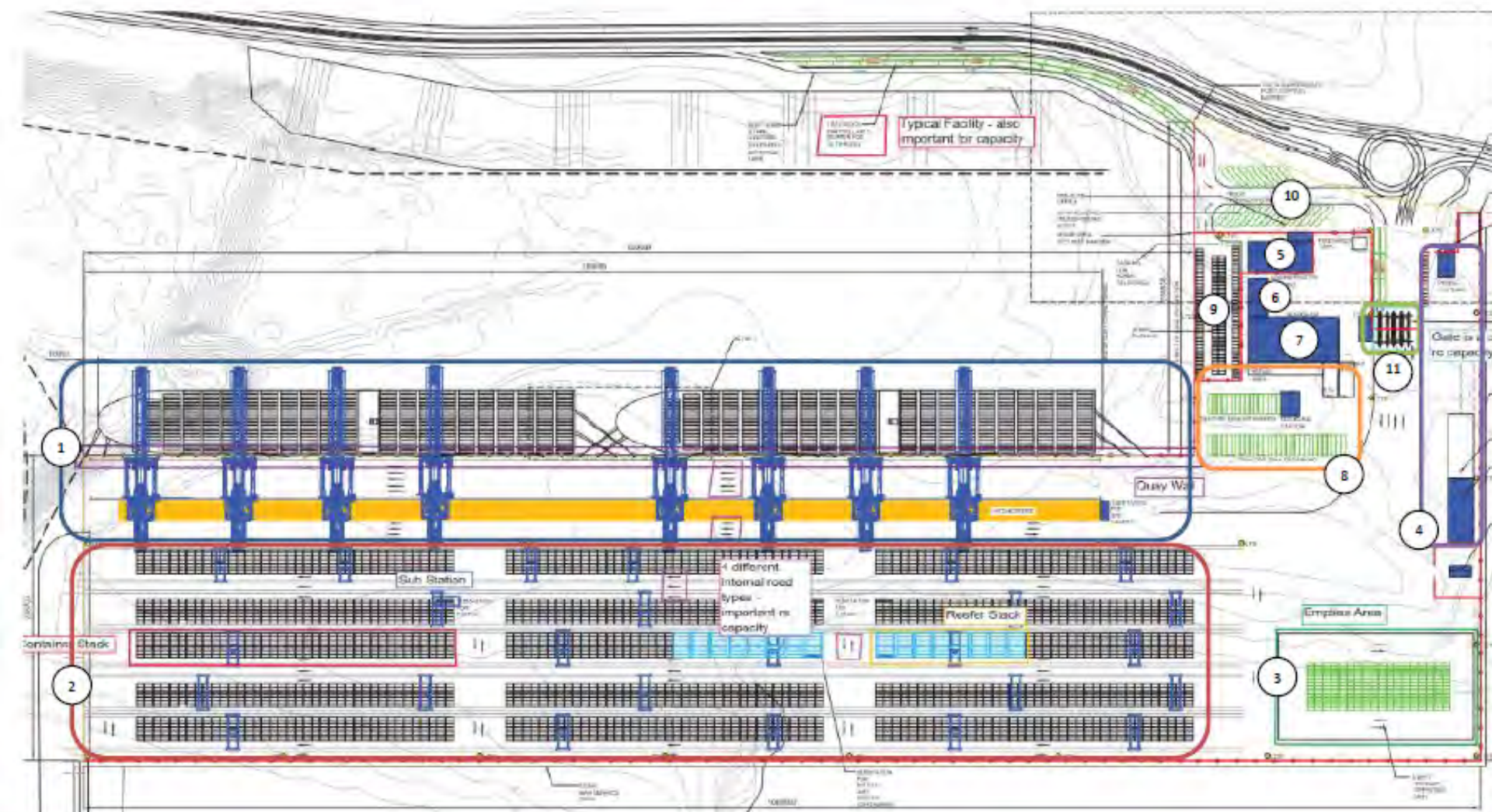
Assembly

Element

Part



RAR: Spatial Requirements



Container Terminal Complex Facilities	
1	Main Quay
2	Container Stacks
3	Empties Area
4	Customs & Police Facility
5	Administration Building
6	Power Station
7	Workshop
8	Tractor Trailer Service/Storage
9	Staff Parking
10	Truck Parking & Waiting
11	Entrance Gate



Regulatory Room Tokyo Summit Report 2018-10-19



東京国際交流館
Tokyo International
Exchange Center
プレイザ平成
Plaza Heisei







Activity Matrix Evaluation of Presented Case Studies

Terms and Definitions

Project

Name of the Project

Presenter

Name and organization of the presenter

Event

Event where the project was presented

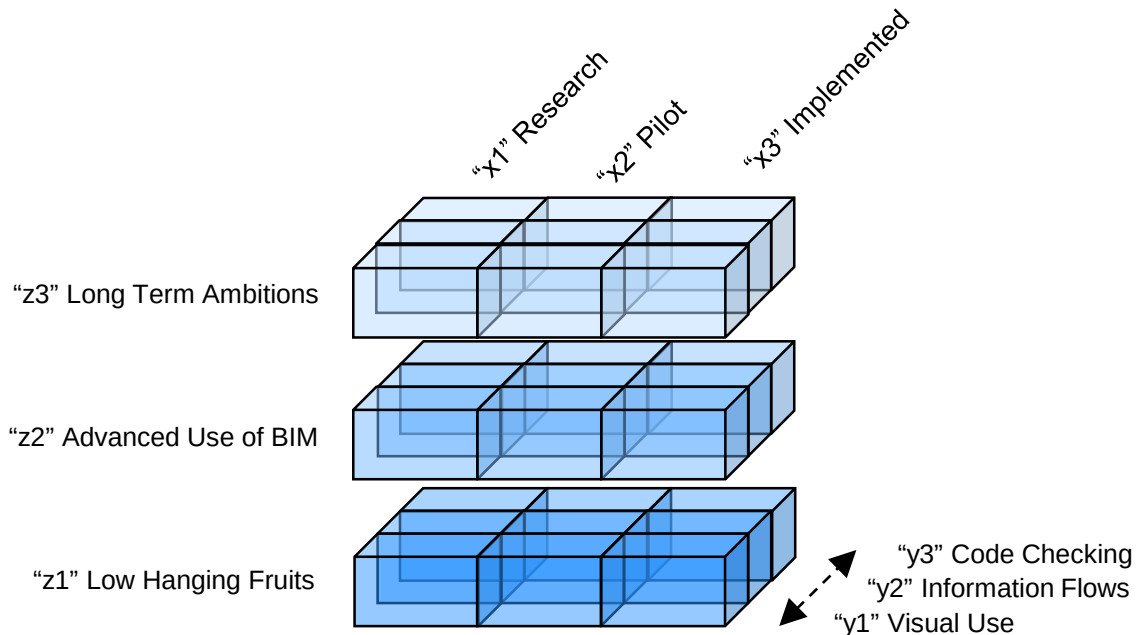
Open BIM



Level 0 = none, 1 = some, 2 = extensive, 3 = fully integrated

AME rating

Combination of evaluation axels of the Matrix Cube



"x1" Research

Proof of Concept, research or a study project.

"x2" Pilot

Project that is in testing phase or close to implementation.

"x3" Implemented

Solution that is in every-day use or widely shared and can be used without external guidance.

"y1" Visual Use

This is the level of the jury expects the function of Visualize of BIM model, the value of BIM property is not actively used.

"y2" Information flow

This is the intermediate level between Visualized and Automated Code Checking, the value of BIM property is actively used for specific code checking.

"y3" Code Checking

This is the level of auto code checking by computer, the value of BIM property is used for holistic code checking.

"z1" Low Hanging Fruits

The use of BIM at this stage can be limited to necessary parts and it can be said that it is a stage where solution can be easily solved for practical implementation.

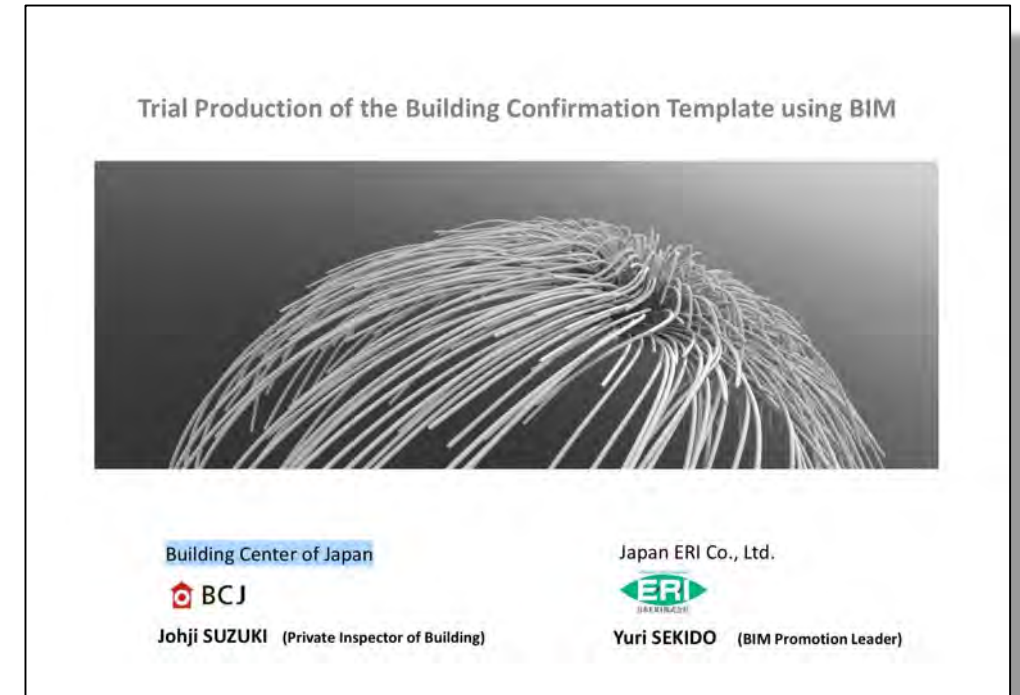
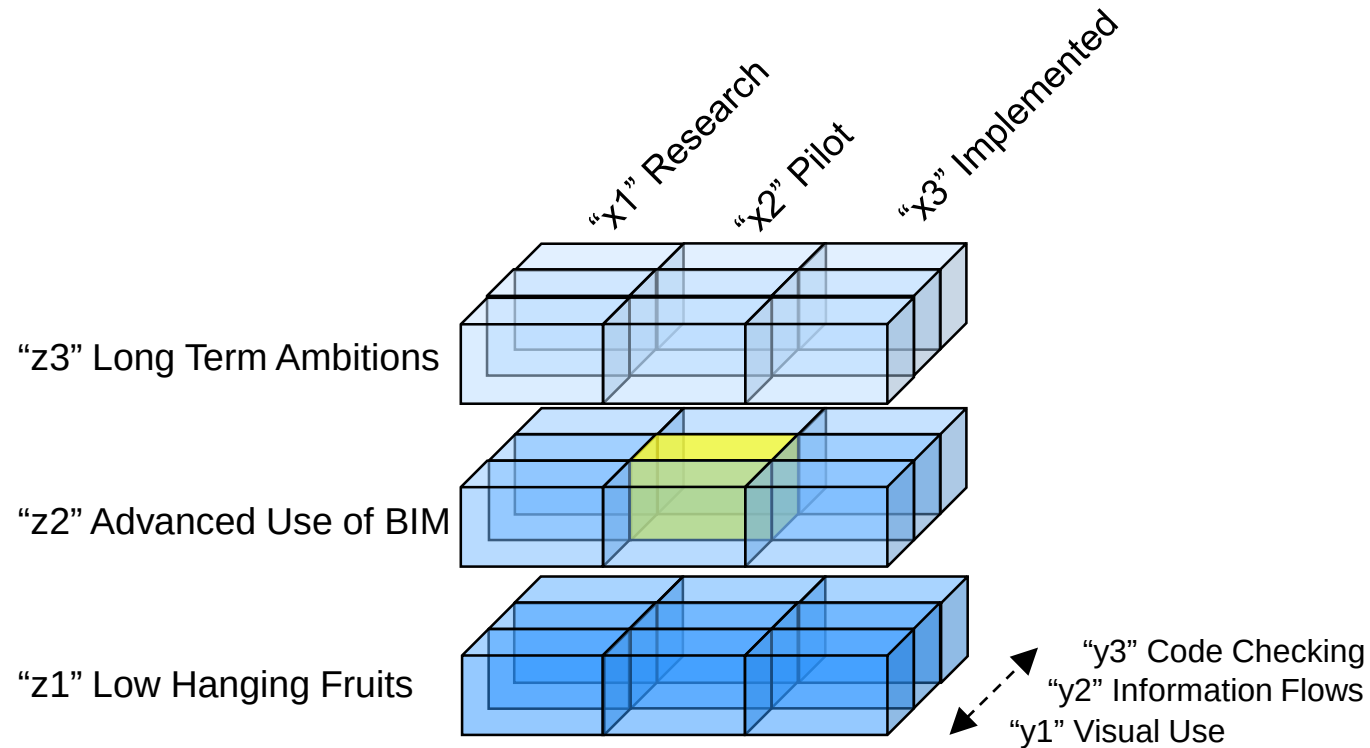
"z2" Advanced Use of BIM

The scope of information exchange at this stage is not necessarily holistic, and manual procedures may be present in some procedures. In that sense, the use of BIM is advancing more than BIM initiation level.

"z3" Long Term Ambitions

At this stage, the information exchange between the applicant and the Building Authority is automated and manual procedures are completely eliminated. Therefore, machine-readable laws, integration of information necessary for review into BIM models, and Open Standard that does not depend on the software environment must be prepared.

Project: Trial Production of the Building Confirmation Template using BIM
Presenter: Johji SUZUKI, Building Center of Japan
Event: bSI Summit Tokyo 2018
Open BIM: Level 0
AME rating: x2-y2-z2





Japan ERI information

Japan ERI Co., Ltd

E stands for Evaluation

R stand for Rating

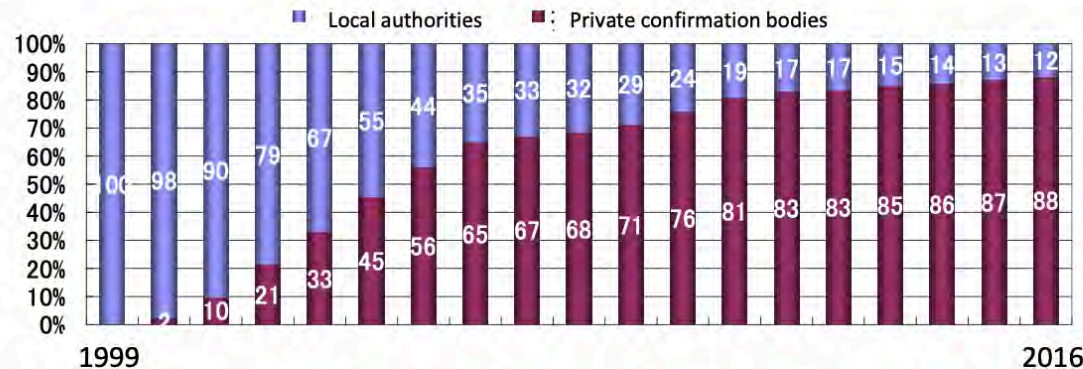
I stands for Inspection



- **Established** Nov. 11th, 1999
- **Main Service** : Building Confirmation and Inspection,
Housing Performance Evaluation and Other services.
- **Revenue** : 92 million USD (FY2017)
- **Employee** : 941 includes 579 inspectors
- **Headquarters** : Tokyo, Japan

ERI is the largest building confirmation body

- A person who plans to construct a building must submit an application for confirmation to local authorities or to a private confirmation body to prove that the building conforms to the corresponding standards.
- Recently, almost 90% of building confirmations have been done by private confirmation bodies.

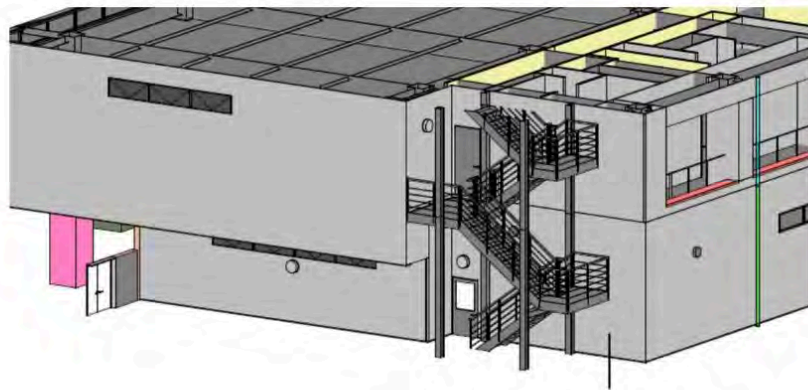
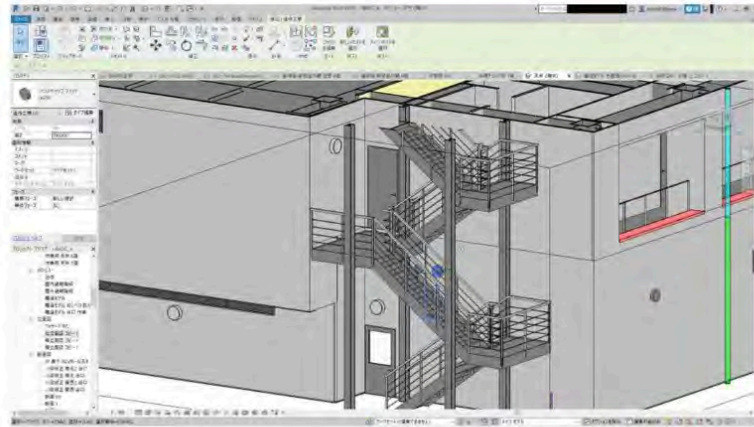


Share of building confirmation between local authorities and private confirmation bodies

Step		Level of development	Additional Contents from conventional application	Certain about Compatibility	In-service*
0	CAD BIM	Conventional application		-	○
0+	CAD BIM	Added Some data contents with Step0 paper docs.	CVS/XML form data of application's by data media	-	○ (1993~)
1	CAD BIM	Just scanned or e-published application forms and drawings	(same as conventional application)	-	○ (2015.1~)
1+	BIM	e-published application forms and drawings with BIM certification	Footprint of BIM certification for each view of e-documents	○	-
2	CAD BIM	Added Some data contents with Step1 docs.	CVS/XML form data of application's	-	○ (2015.1~)
2+	BIM	Added essential IFC model data with Step1 docs.	IFC Model data incl. form data	○○	-
3-	BIM	Available partial auto code checking	IFC Model data compatible with partial ACC	○○	-
3	BIM	Available full auto code checking	IFC Model data compatible with full ACC	○○○	-



We are here



Openings are not permitted within 2m of outside evacuation stairs

An example using 3D view
-Confirmation of outside evacuation stairs

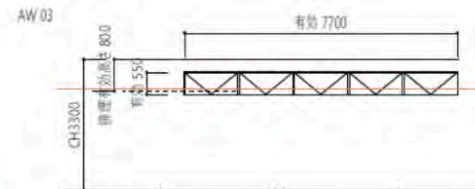
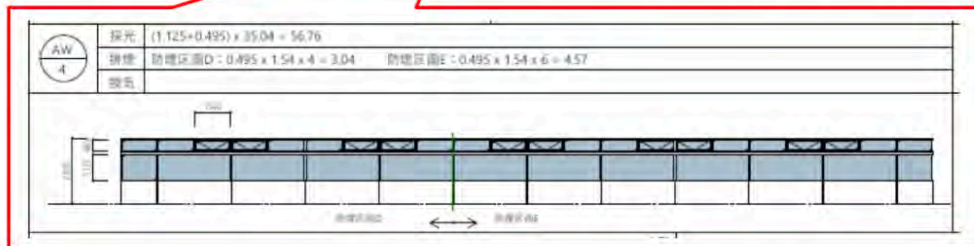
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The image shows a detailed architectural drawing of a building facade, likely a section or elevation. The drawing is organized into a grid of rectangular units, each representing a window or door. Red arrows point to specific elements: one points to a window unit in the upper left, and another points to a door unit in the lower left. The drawing includes various annotations, dimensions, and a legend at the bottom left. The legend identifies the drawing as a 'Section' and provides a scale of 1/4" = 1'-0". The drawing is a technical representation of a building's exterior, showing the arrangement and details of the openings.

For each habitable room
 Floor area = Fm^2
 Window area = Wm^2

- Natural Lighting & Ventilation
 $W \geq F \times 1/20$ (0.05%)
- Smoke exhaust system
 $W \geq F \times 1/50$ (0.02%)

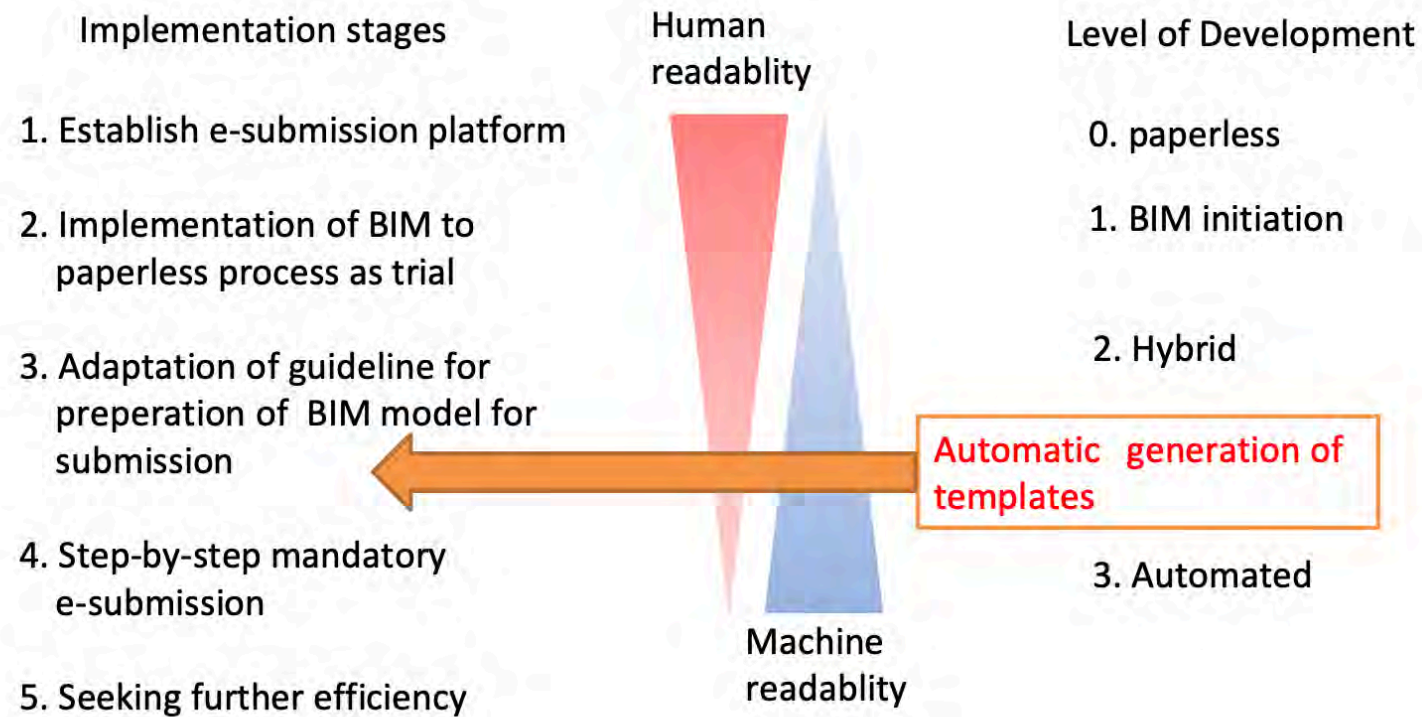
※ effective smoke venting area
= window area within 80cm of
the ceiling



- Integration of 'Window LVS check diagram - building joinery table'
(L: natural Lighting V: Ventilation S: Smoke exhaust system)

the road to initiation and institutionalization of BIM on e-submission

Relationship between Institutionalization stages and level of development (LOD)



Project: Daiwahouse case study

Presenter: DaiwaHouse

Event: bSI Summit Tokyo 2018

Open BIM: Level 0

AME rating: x2-y2-z1



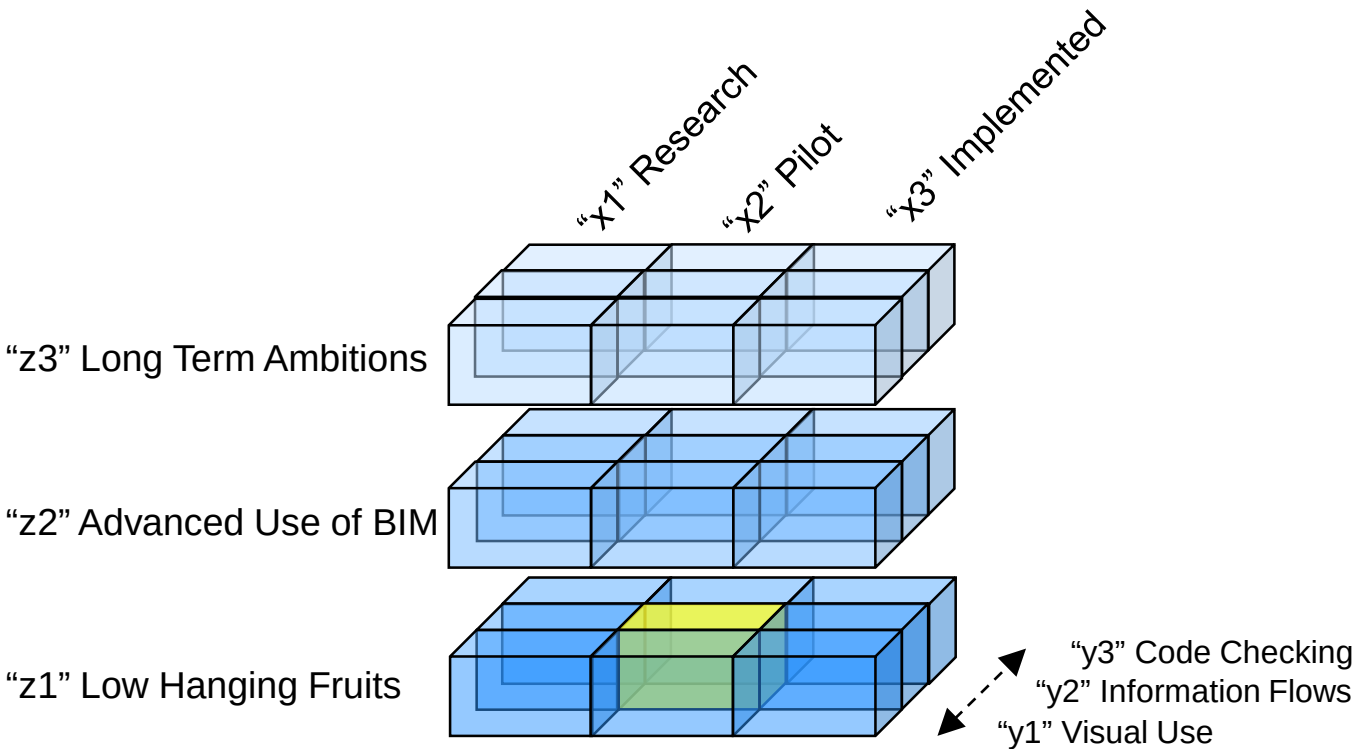
“D’s BIM”

~a key to the \$100B company

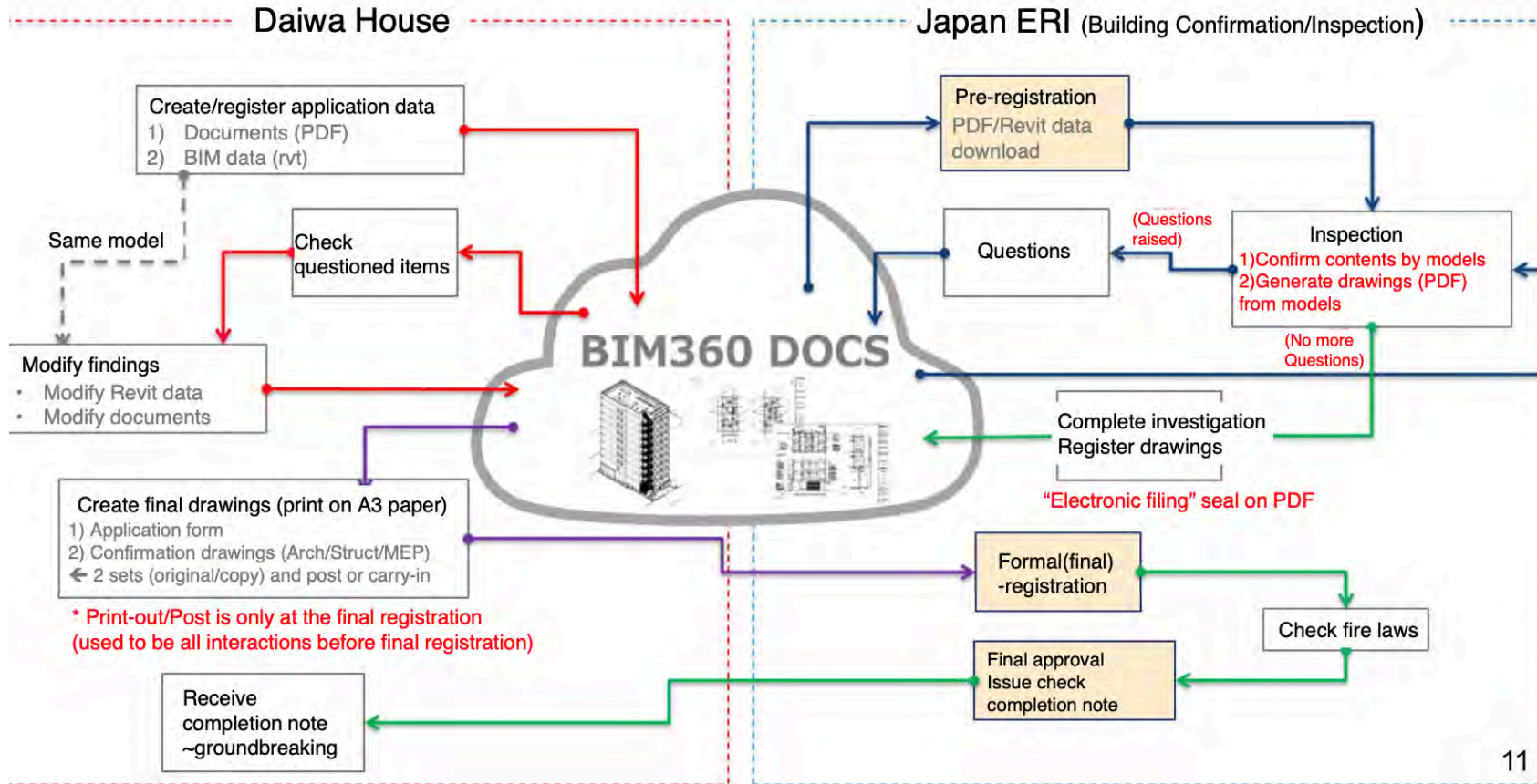
※“D’s BIM” =DaiwaHouse group BIM

Revenue ranking in Japan (FY2017)

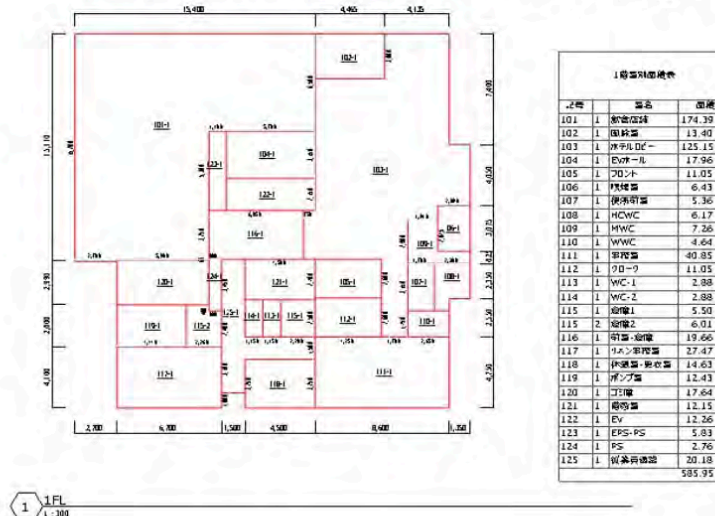
No.	Company	Industry	Revenue (trillion JPN)	Revenue (billion)
1	Toyota	Automotive	27.597	248.373
2	Honda	Automotive	13.999	125.991
3	JP Post	Postal Service	13.326	119.934
4	Nissan	Automotive	11.720	105.480
5	NTT	Telcom	11.391	102.519
29	Daiwa House	Construction	3.512	31.608
55	Sekisui House	Construction	2.026	18.234
63	Oobayashi	Construction	1.872	16.848
68	Kajima	Construction	1.821	16.389
84	Shimizu	Construction	1.567	14.103
92	Taisei	Construction	1.487	13.383



- Utilize BIM360 Docs in Building code conformity application
- Achieved productivity enhancement by digitized application on Cloud, replacing paper-based transactions.



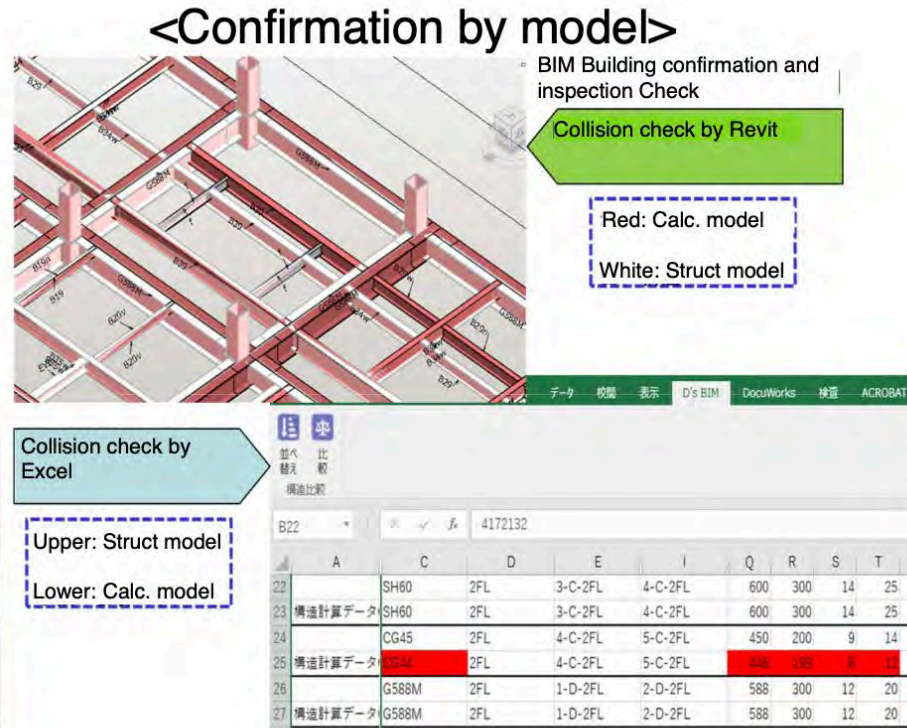
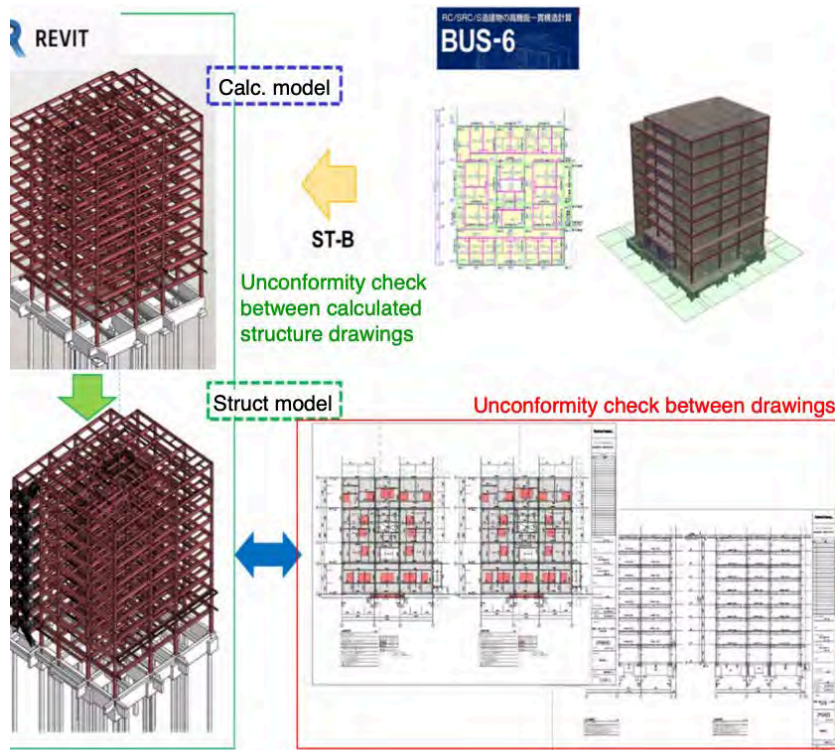
- <Link information on the internal finish table with plan view>

[illegible]

Building code conformity application (3)

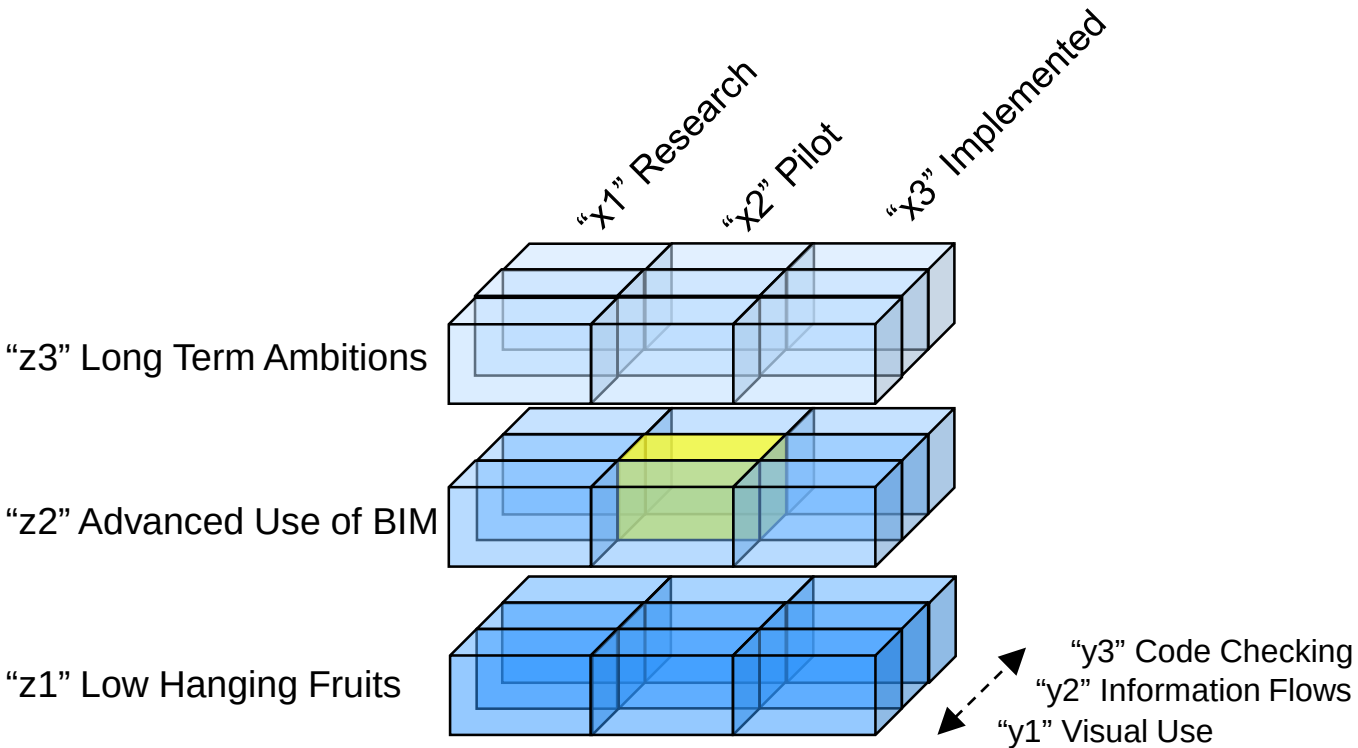
Daiwa House®

- We have established a method of comparing the structural calculation model and the application (structure) model



<Comparison by Excel>

Project: BIM application for Building confirmation
 Case studies -ARCHICAD
 Presenter: Yuri Sekido, BIM Promotion Center Japan ERI Co. Ltd
 Event: bSI Summit Tokyo 2018
 Open BIM: Level 0
 AME rating: x2-y2-z2



2 . Case studies -ARCHICAD

ARCHICAD Case study

Contents

- ①BIM x -Viewer- example
- ② e-submission

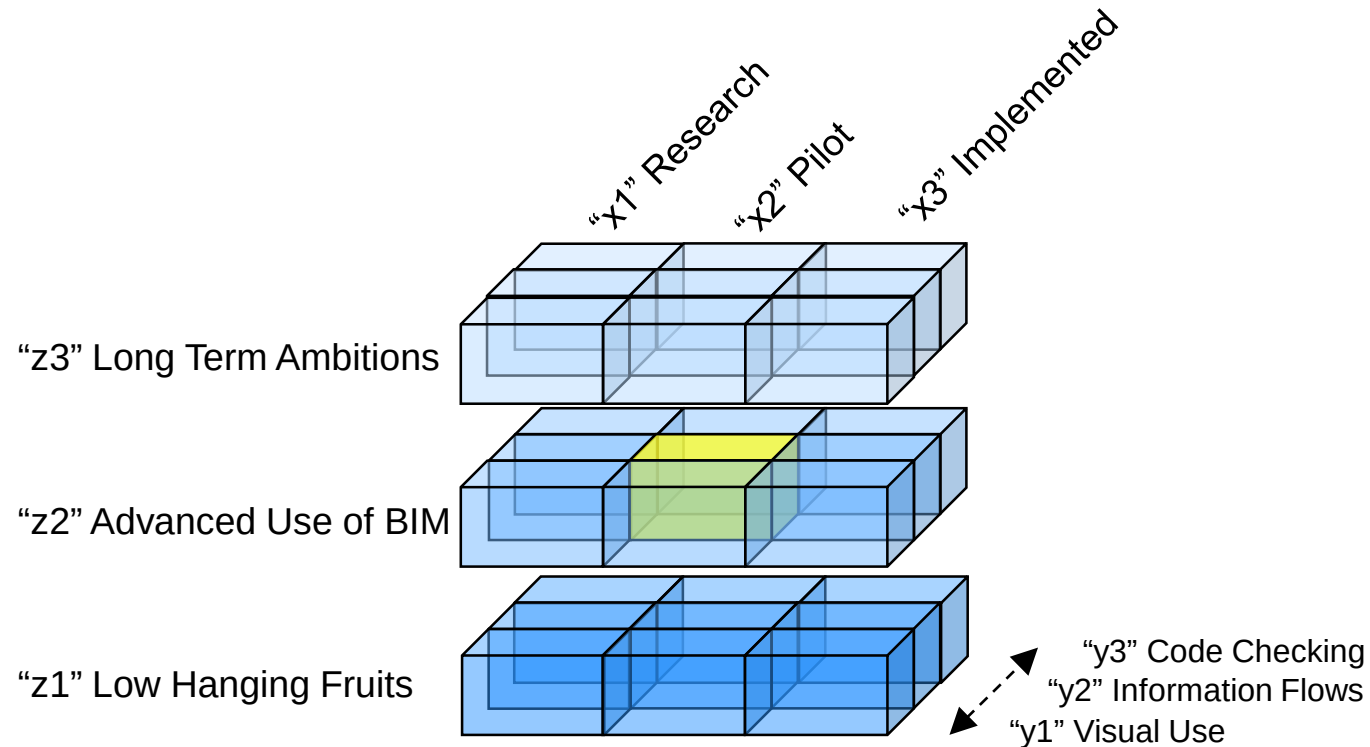
◆Example summery

- Type : detached house reinforced concrete construction
- Stories : 2 stories
- Architect : Earnest Architects

MUTO's Development step

- STEP 1
- STEP 1+
- STEP 2
- STEP 2+**
- STEP 3-
- STEP 3

Project: BIM application for Building confirmation
 Case studies -GLOOBE
 Presenter: Yuri Sekido, BIM Promotion Center Japan ERI Co. Ltd
 Event: bSI Summit Tokyo 2018
 Open BIM: Level 0
 AME rating: x2-y2-z2





MUTO's Development step

STEP 1

STEP 1+

STEP 2

STEP 2+

STEP 3-

STEP 3

2. Case studies -GLOOBE

GLOOBE Case study

Contents

- ① Examples of Template and explanatory notes for building confirmation
- ② Examples of legal check function
- ③ e-submission

◆ Example summery

- Type : apartment houses reinforced concrete construction
- Stories : 6 stories
- Architect : Starts CAM



11

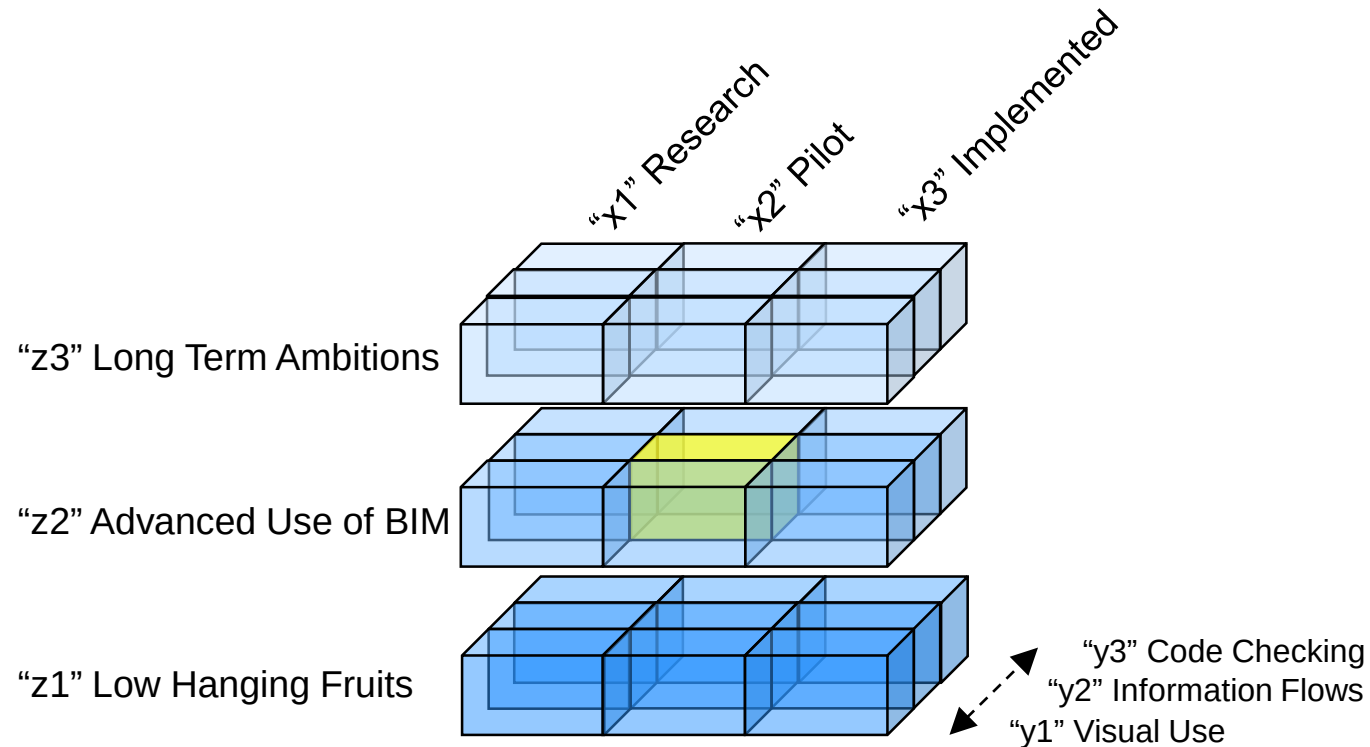
Project: BIM application for Building confirmation
Case studies -Revit

Presenter: Yuri Sekido, BIM Promotion Center Japan ERI Co. Ltd

Event: bSI Summit Tokyo 2018

Open BIM: Level 0

AME rating: x2-y2-z2



2 . Case studies - Revit

Revit Case study

MUTO's Development step

STEP 1

STEP 1+

STEP 2

STEP 2+

STEP 3-

STEP 3

①Examples of Template and explanatory notes for building confirmation

②Examples of all of design documents architectural design, structural design and facilities

◆Example summery

•Type : hotel reinforced concrete construction

•Stories : 9 stories

•Architect : Daiwa House

RE V I T (BIM made in U.S.A.)

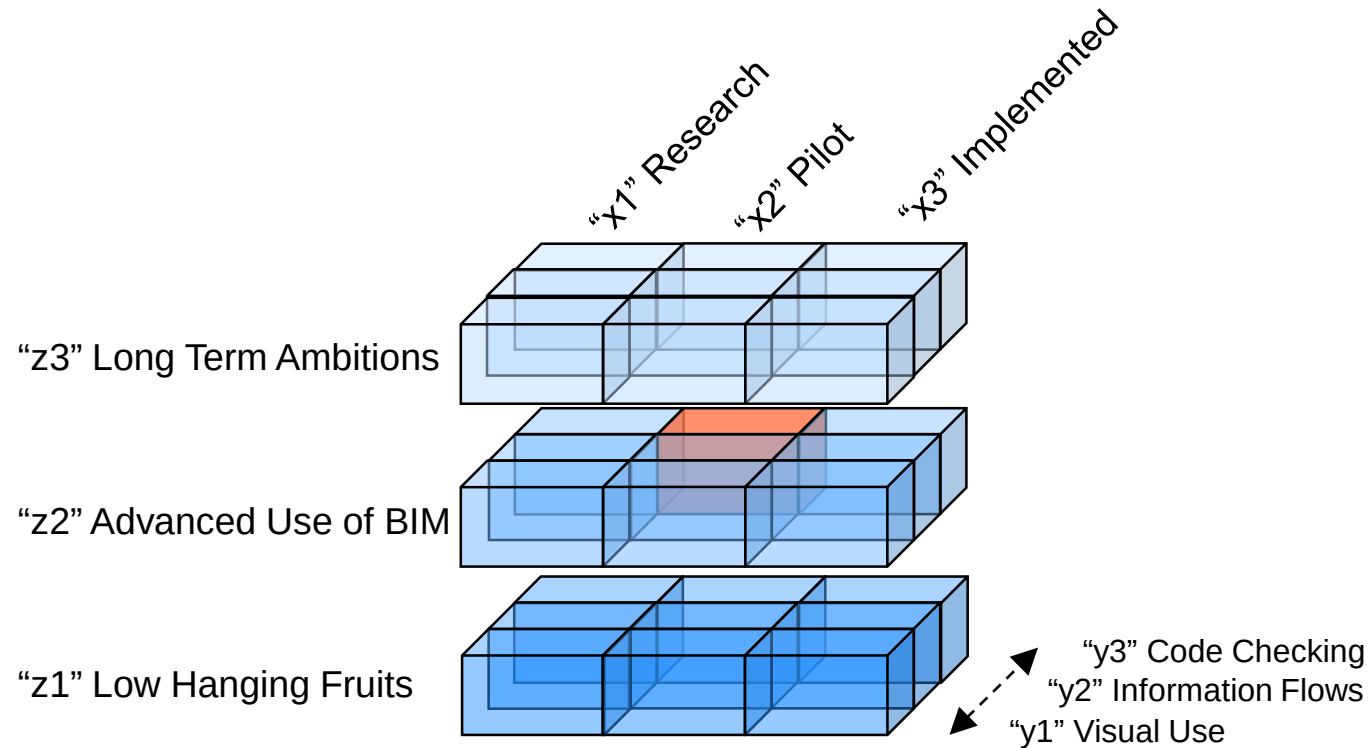
◆Feasibility study of using data of design, structure facilities to electrical application

Project: The BIMChecker tool and code checking practice in China
Presenter: Prof. Hehua Zhang, Tsinghua University, China
Event: bSI Summit Tokyo 2018
Open BIM: Level 2
AME rating: x2-y3-z2

The BIMChecker tool and code checking practice in China

Hehua Zhang
BIM Research Group
School of Software, Tsinghua university

Oct 17, 2018



GB/T 36456-1 Domain Information Model Framework



清华大学
Tsinghua University

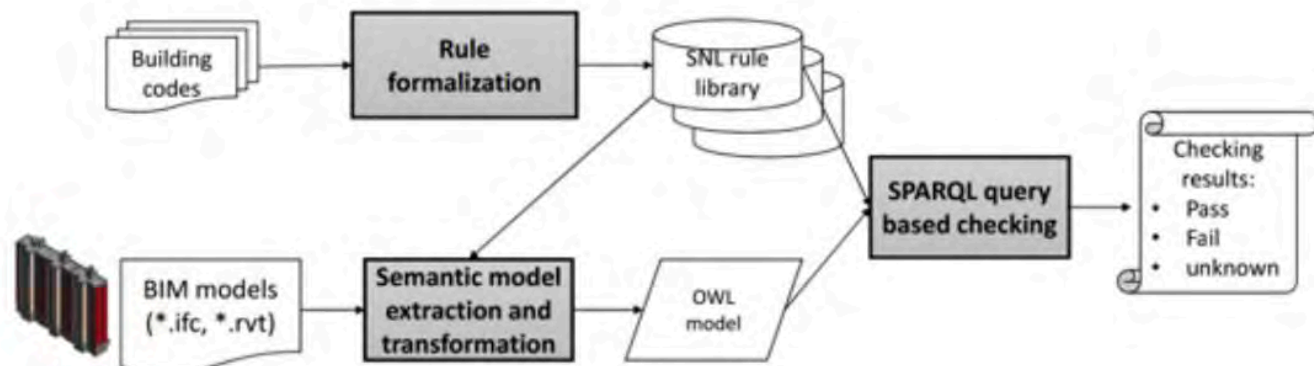
- Provides a method for **representing** engineering data with LD.
- Standardizes the requested structure, the objects, the set of properties and the relationships between objects.
- Feature:
 - Making use of the existing **semantic web technology** as a basic for information sharing
 - Establishing the **logical foundation** of data mapping, reasoning and validation.
 - Integrated solution for **data and knowledge management**



2. Introduction of BIMChecker



● Rule based automatic BIM checking tool

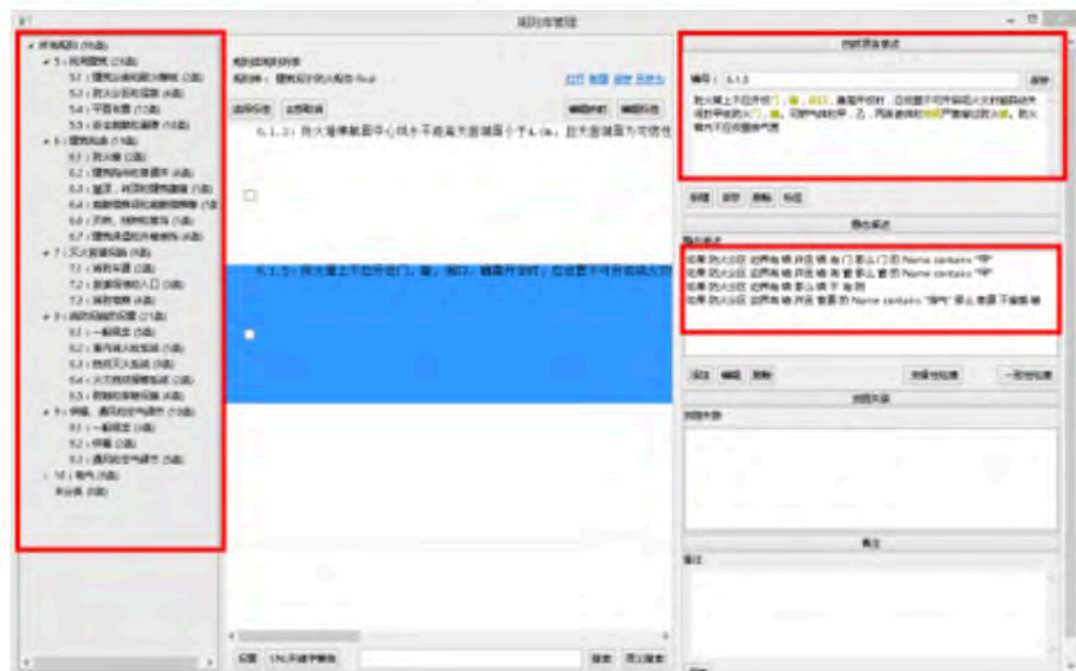


■ Code description language: SNL

- 1 *Every* Bedroom Has Window.
- 2 *Every* LivingRoom *its* area ≥ 10

- 1 *If* Building Has Space *and* Space *its* elevation > 0 *and* Space *not* Has Window *and* Space *its* area > 50
Then Space Has ExhaustOutlet.

2.1 Rule base tool online



Stand alone tool



Online tool(Web pages)

Feature 1: Share and cooperation
Feature 2: Easy to update

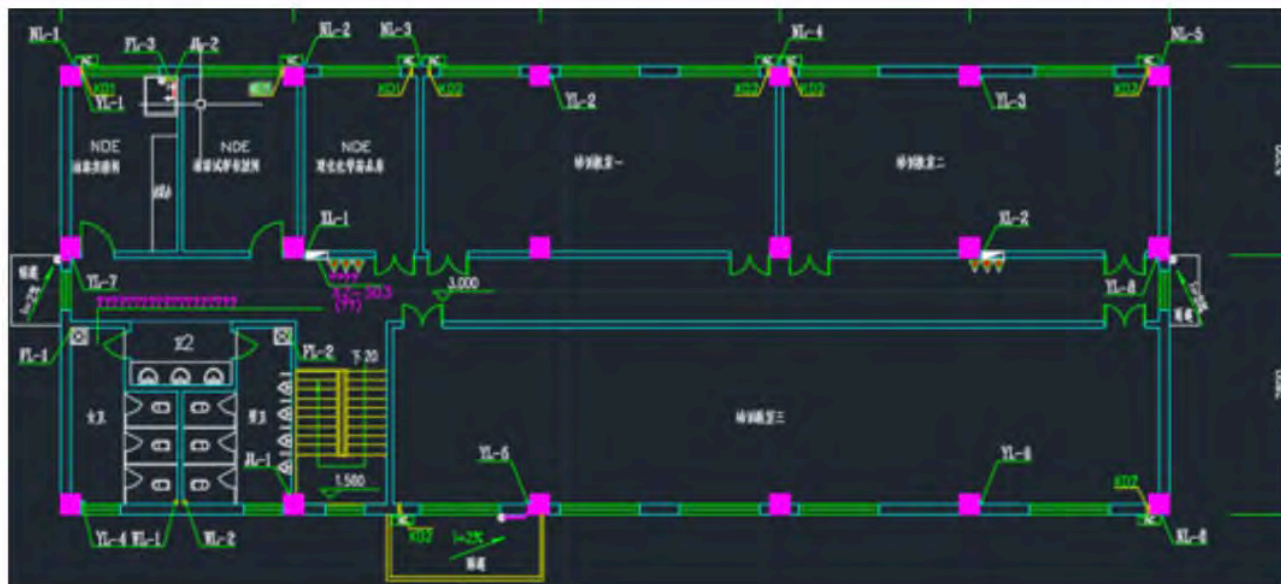
3.1 Rule base for fire protection domain



- Research->Tools->**Pilot projects**->widespread applications
- Building the computational rule case (with the SNL language) for Fire protection code(GB 50016-2014) has been completed.
 - Completed all the **165 mandatory items (with more than 3000 SNL rules)**
 - Factories, warerooms, storage tanks, civil constructions (public buildings, residence buildings), wooden constructions, tunnel, etc.
- Rich domain knowledge



3.2 Fire protection code checking(case 1)



Building information:

- civil building -> laboratory building
- The 2nd floor

- Item 5.5.8: When the area of a fire compartment $\geq 200\text{m}^2$, there should be at least 2 safety exits.
- Checking result: fail
 - Area: 260m^2
 - Only 1 evacuation stair

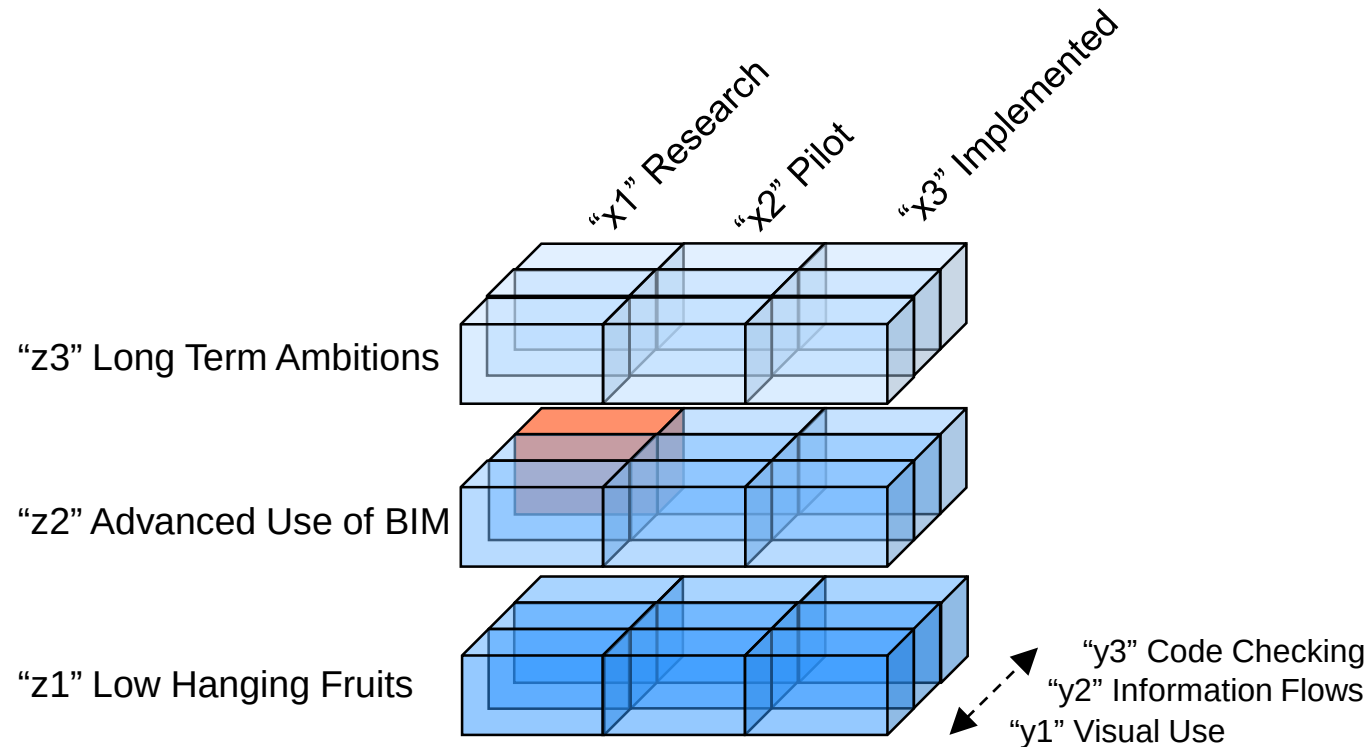
Project: Application for building confirmation by digital data

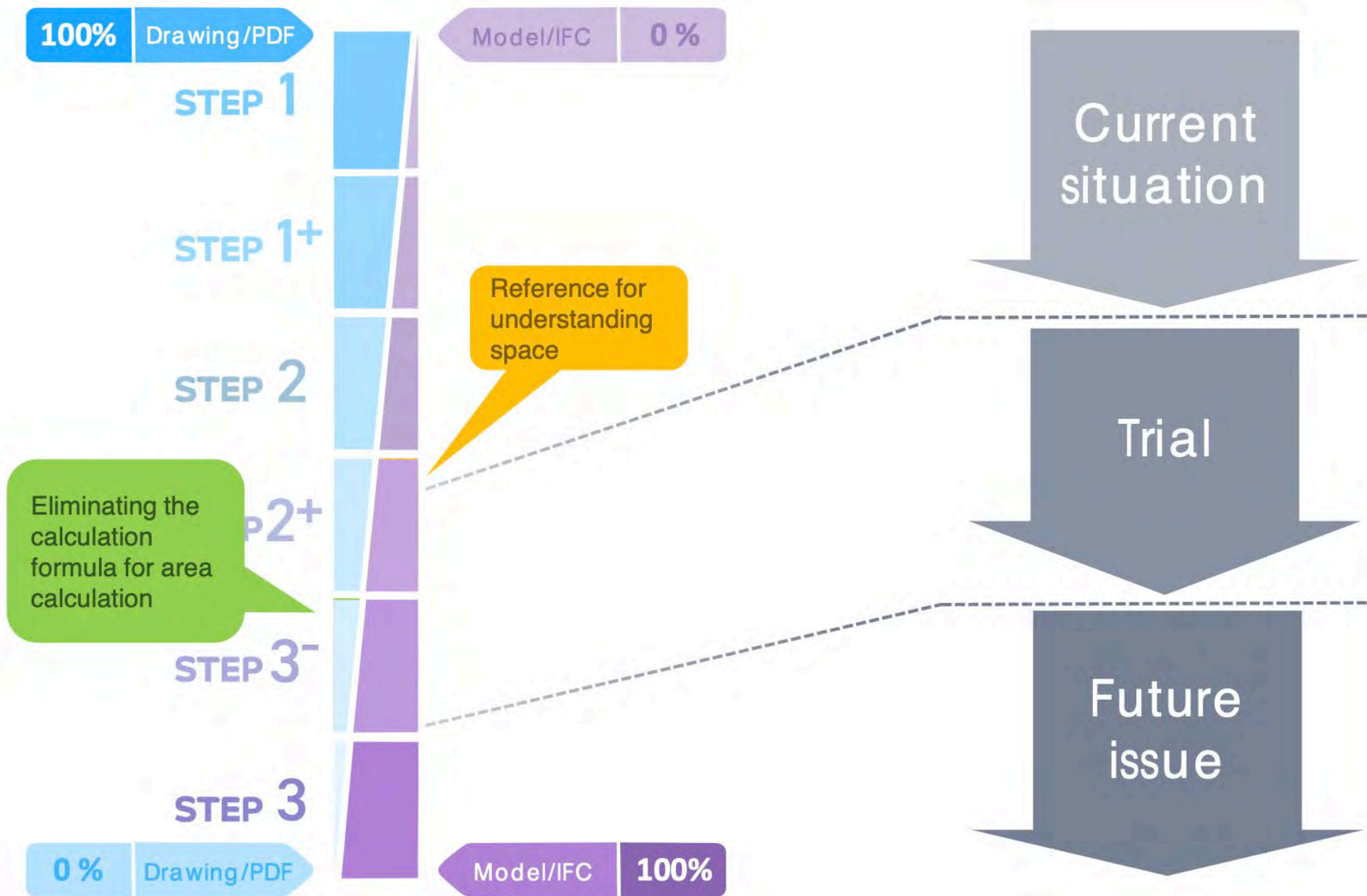
Presenter: Kensuke Yasui, Nikken Sekkei, Japan

Event: bSI Summit Tokyo 2018

Open BIM: Level 2

AME rating: x1-y3-z2





Save labor of making and checking area calculation using by IFC model data

Under discussion

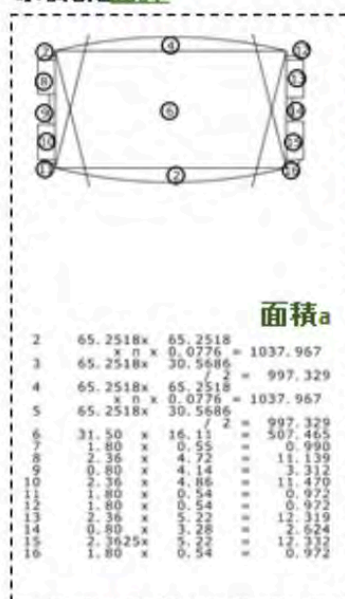
area by four arithmetic operation

area by BIM data

area by IFC data

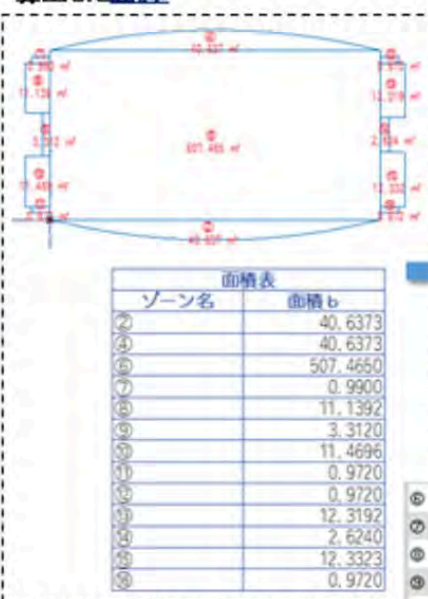
verification of area information transfer method which increase efficiency both for applicants and confirmation bodies.

床面積を分割し四則演算で
求積した面積a



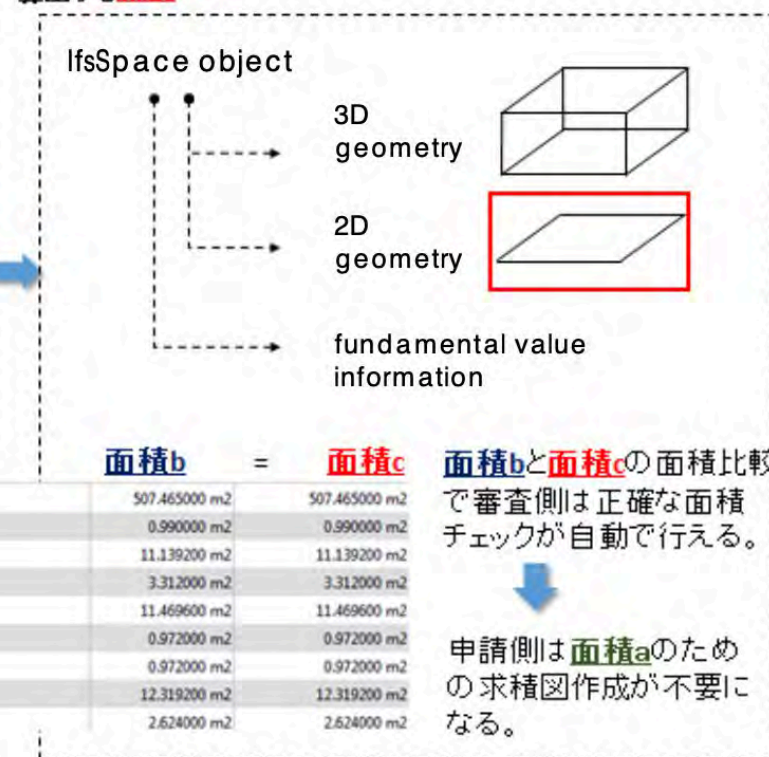
現状は面積aを申請と審査
で使用している。

BIMソフトが部屋の形状座標から
算出した面積b

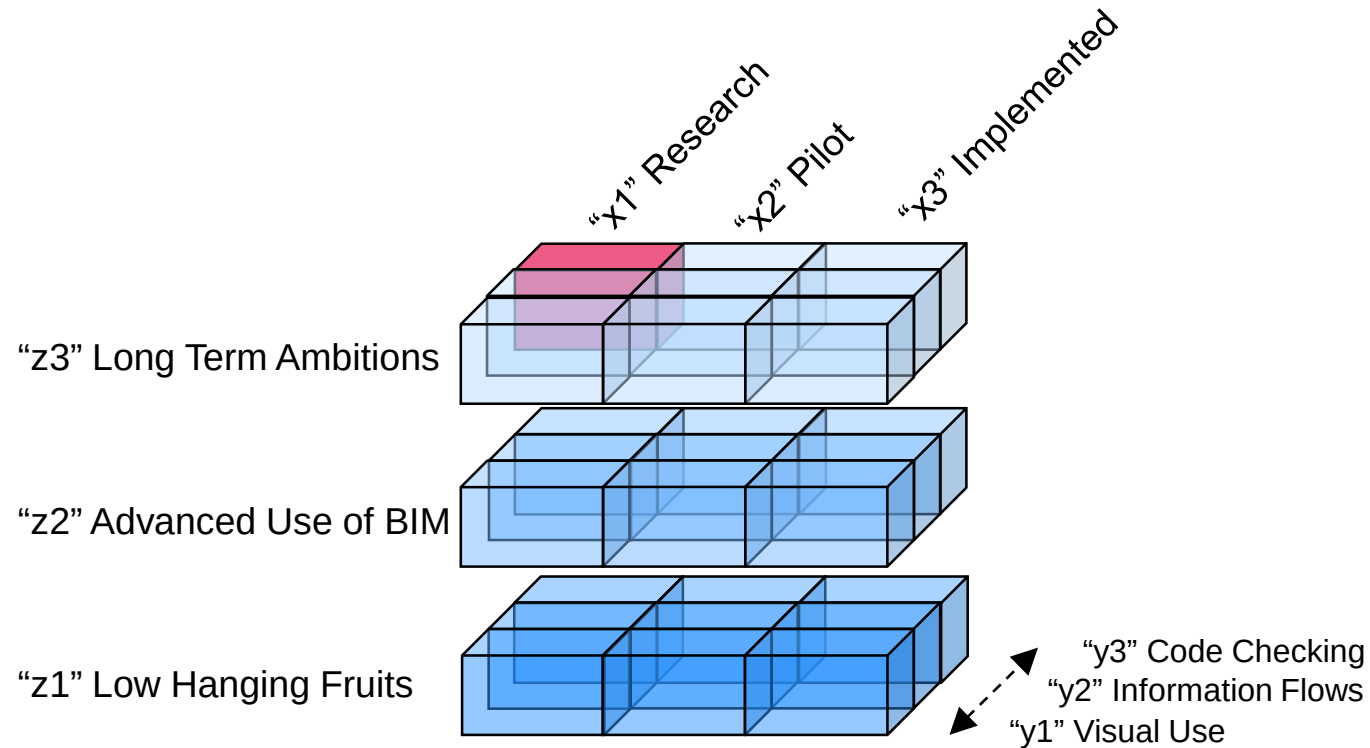


BIMモデルが算出した面積bは形状を分割
した四則演算による面積aと計算手法が
異なるため差異が生じる。
⇒IFCによるデジタル申請は面積bの
信憑性の実証が必要

ifcSpaceの2D幾何形状座標から
算出する面積c

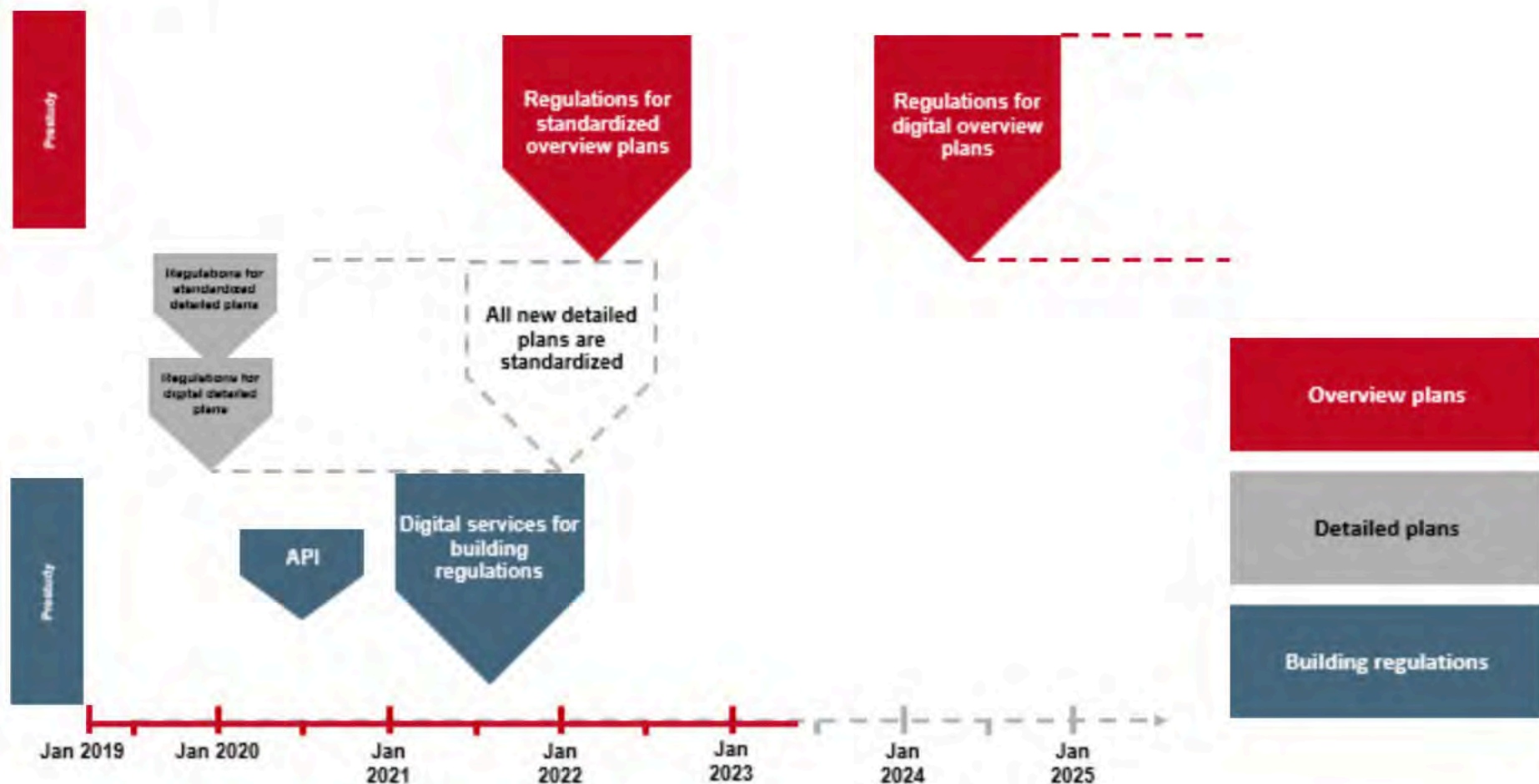


Project: Digital application of the Planning and Building Act,
Auto Code Check in Sweden
Presenter: Nicholas Alven, Boverket, Sweden
Event: bSI Summit Tokyo 2018
Open BIM: Level 3
AME rating: x1-y3-z3



Milestone Schedule

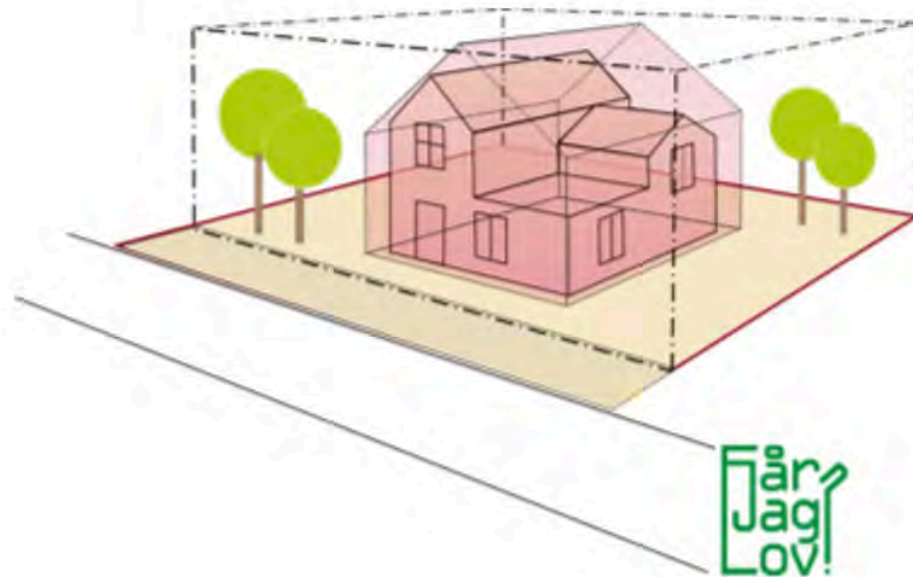
- Deliverables



"Får Jag lov?" – "Shall we dance?" (1)



1. Drag and drop the BIM-model onto the chosen site
2. The digital detailed plan and the digital building regulations automatically approves or rejects the building permit



Digital building regulations (1)



- **Milestones**
 - API for software developers in 2020
 - Market ready digital services for building regulations
- **Current building regulations**
 - Digitized – text in pdfs
 - Mainly function bases regulations
- **Prestudy: "Future-proof plan for digital building regulations"**
 - **Idea:** "Structure building regulations to enable machine learning algorithms help designers and engineers make sure all regulations are fulfilled from at the right time"
 - **Status analysis** – Internal processes
 - **PoC** Method for digitalization
 1. Identificiton for specific regulation
 2. Classification for specific regulation
 3. Connect specific regulation to activity in building permit process
 - **Future analysis**
 - Required structure for future digital transformation and enable AI – Machine learning algoritms

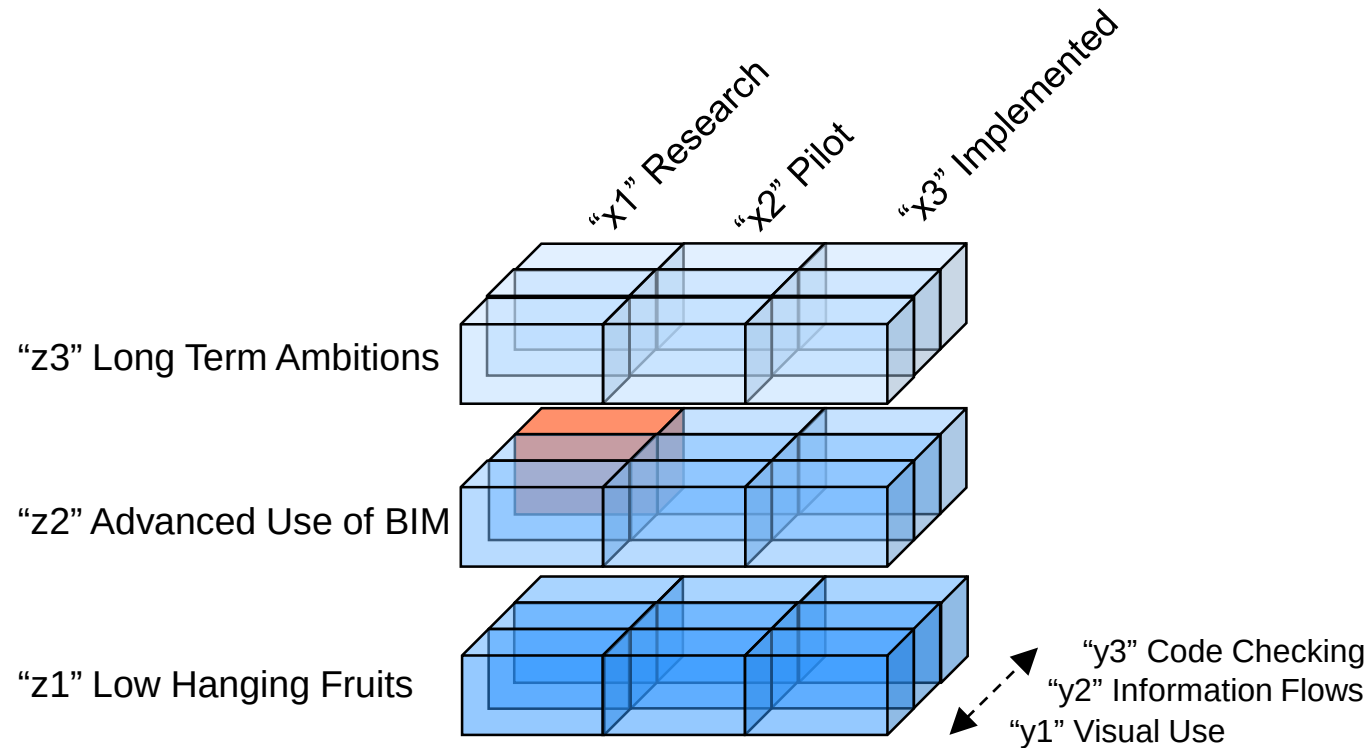
Project: Towards 'operable' H&S knowledge Using RIDDOR mandatory accident reports

Presenter: Nicholas Nisbet, AEC3, UK

Event: bSI Summit Tokyo 2018

Open BIM: Level 2

AME rating: x1-y3-z2



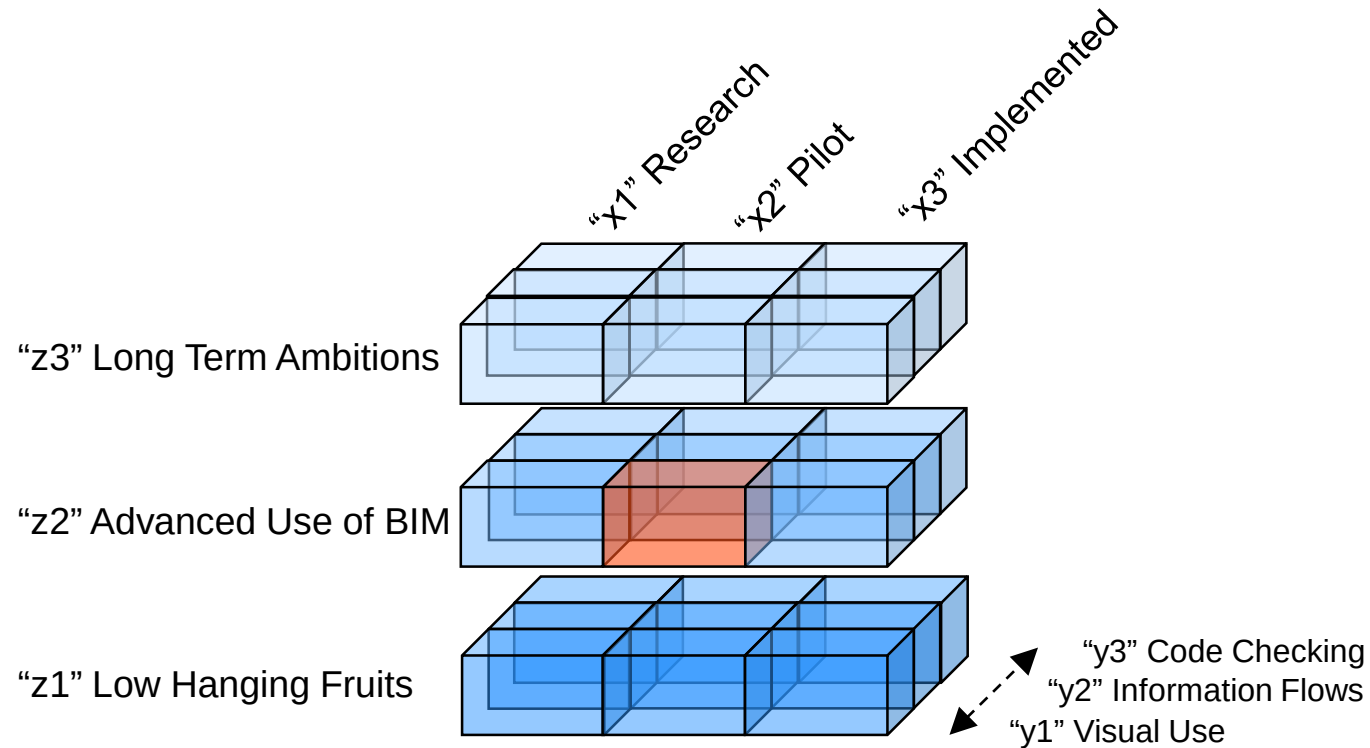
Project: Building Permit Should be Granted Within One Second

Presenter: Jani Muhonen, Evolta, Finland

Event: bSI Summit Tokyo 2018

Open BIM: Level 2

AME rating: x2-y1-z2



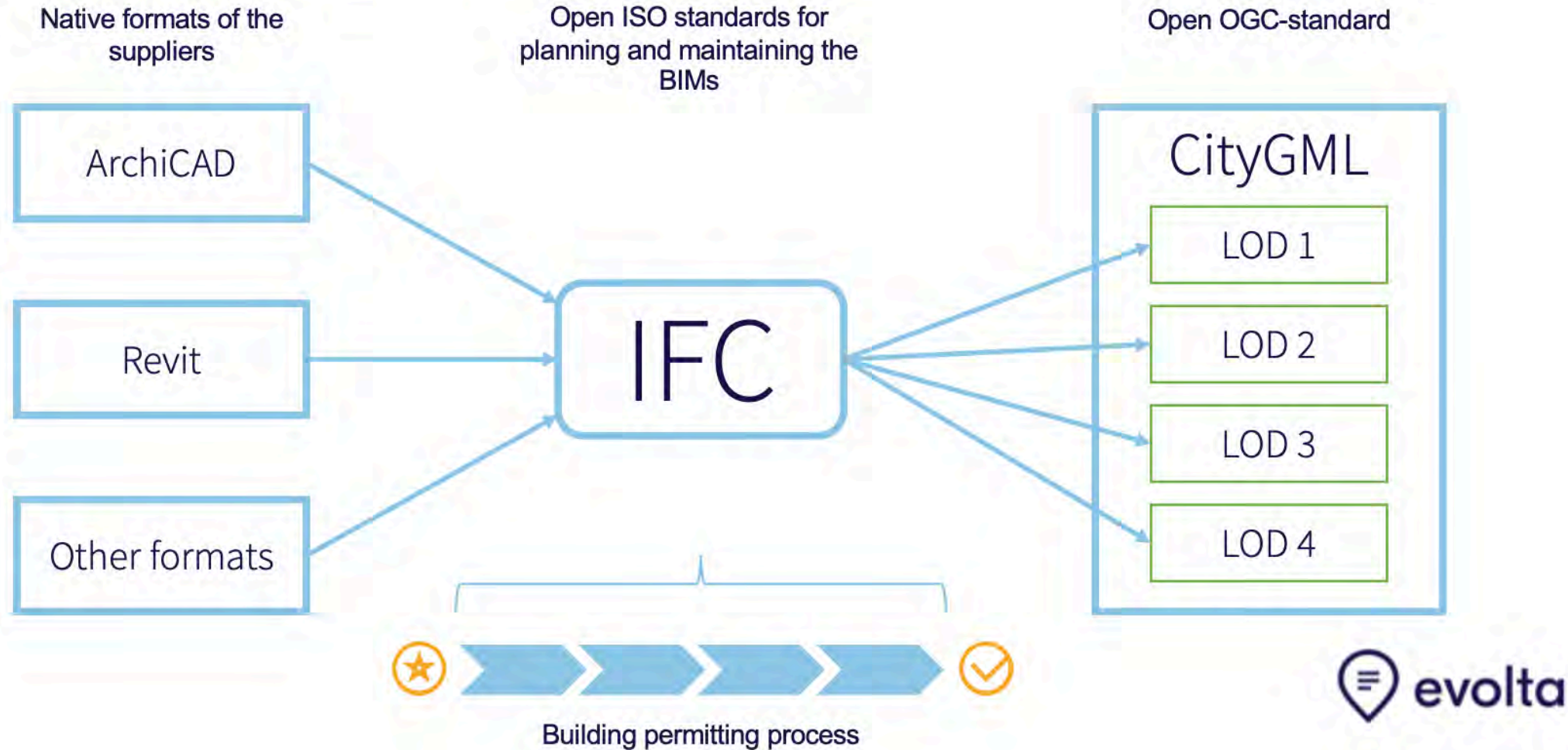
Building Permit Should be Granted Within One Second

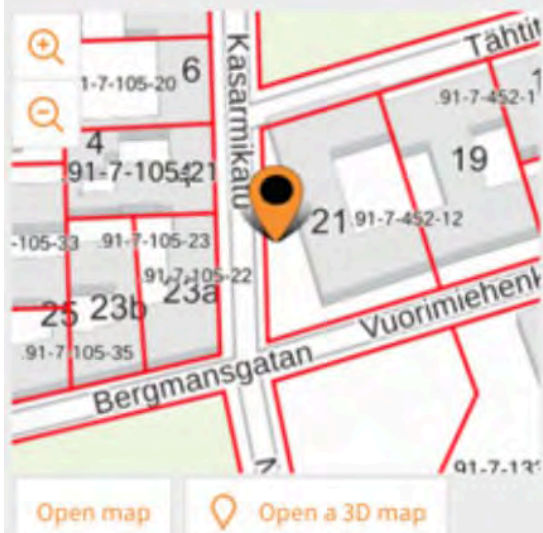
Jani Muhonen
CEO, Evolta Group
BIM and ePermit Seminar, Tokyo
October 17th 2018



We Want to Revolutionize Building Control Globally

From BIMs to City Models





Kasarmikatu 1



Edit

Construction of a residential block of flats or terraced house**Draft**

Visible to authority

Application submitted

Being processed

Draft mode, you can leisurely prepare the application and invite other parties to the application. If necessary, you may speak with the authority via the Discussion Thread. Otherwise, the authority will process your application only after it has been submitted.

Property ID: 91-7-452-12

Edit...

Transaction municipality: Helsinki

Application submitted:

Application ID: LP-091-2015-00271

Municipality permit ID:

Assignee(s):

+ Add action

Print application

+ Add reference permit

X Cancel the application



DISCUSSION



INSTRUCTION

Project description

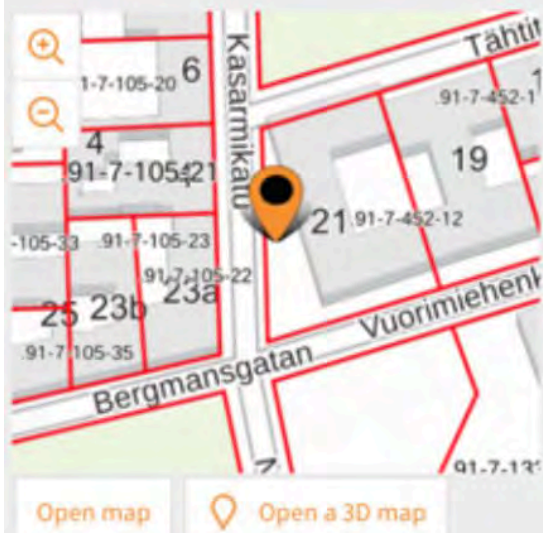
The parties

Plans and Attachments

Submitting the application

PROJECT DESCRIPTION ?

Draft mode, you can leisurely prepare the application and invite other parties to the application. If necessary, you may speak with the authority via the Discussion Thread. Otherwise, the authority will process your application only after it has been submitted.



Kasarmikatu 1



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DISCUSSION



INSTRUCTION

Project description

The parties

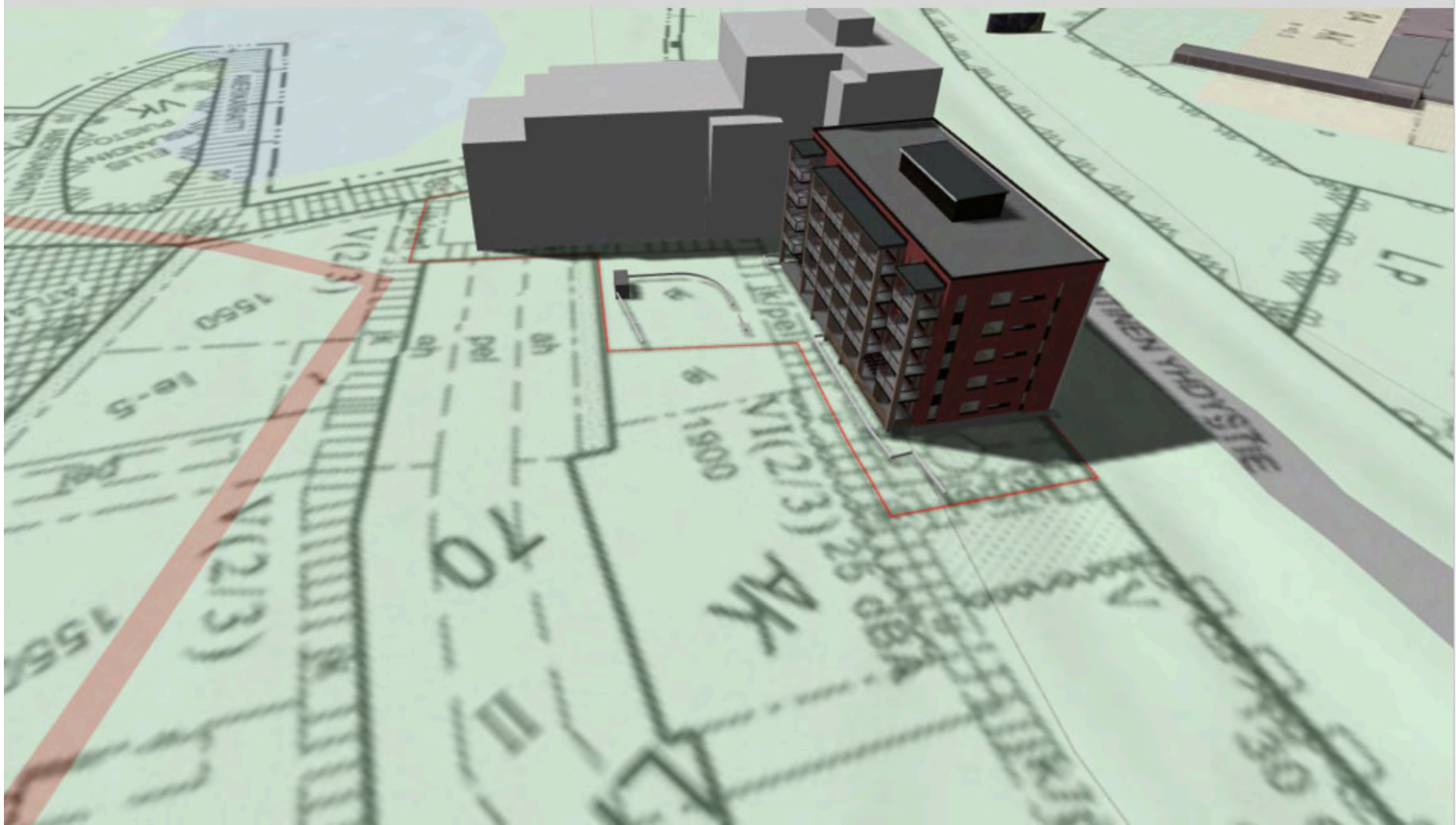
Plans and Attachments

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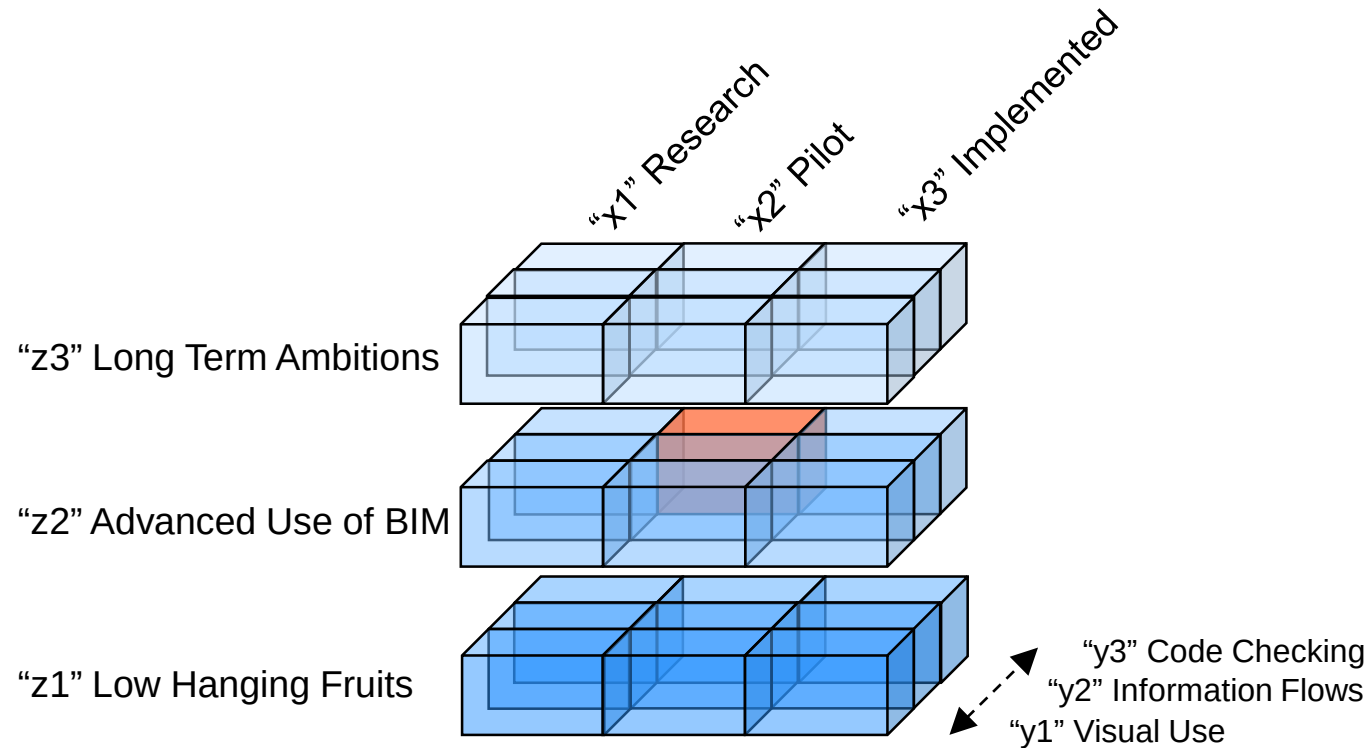
Project: *usBIM.code, BIM Code Checking*

Presenter: *Anna Moreno, Italy*

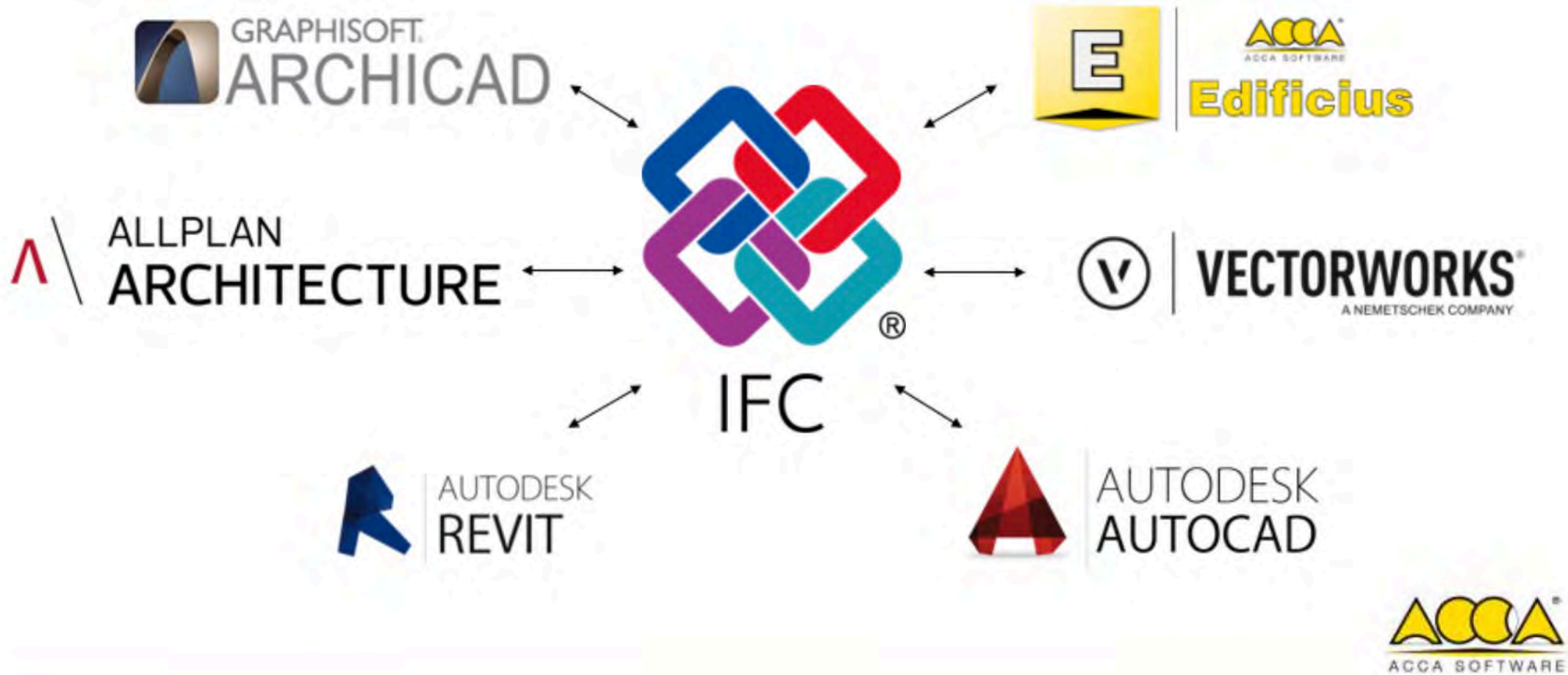
Event: *bSI Summit Tokyo 2018*

Open BIM: *Level 2*

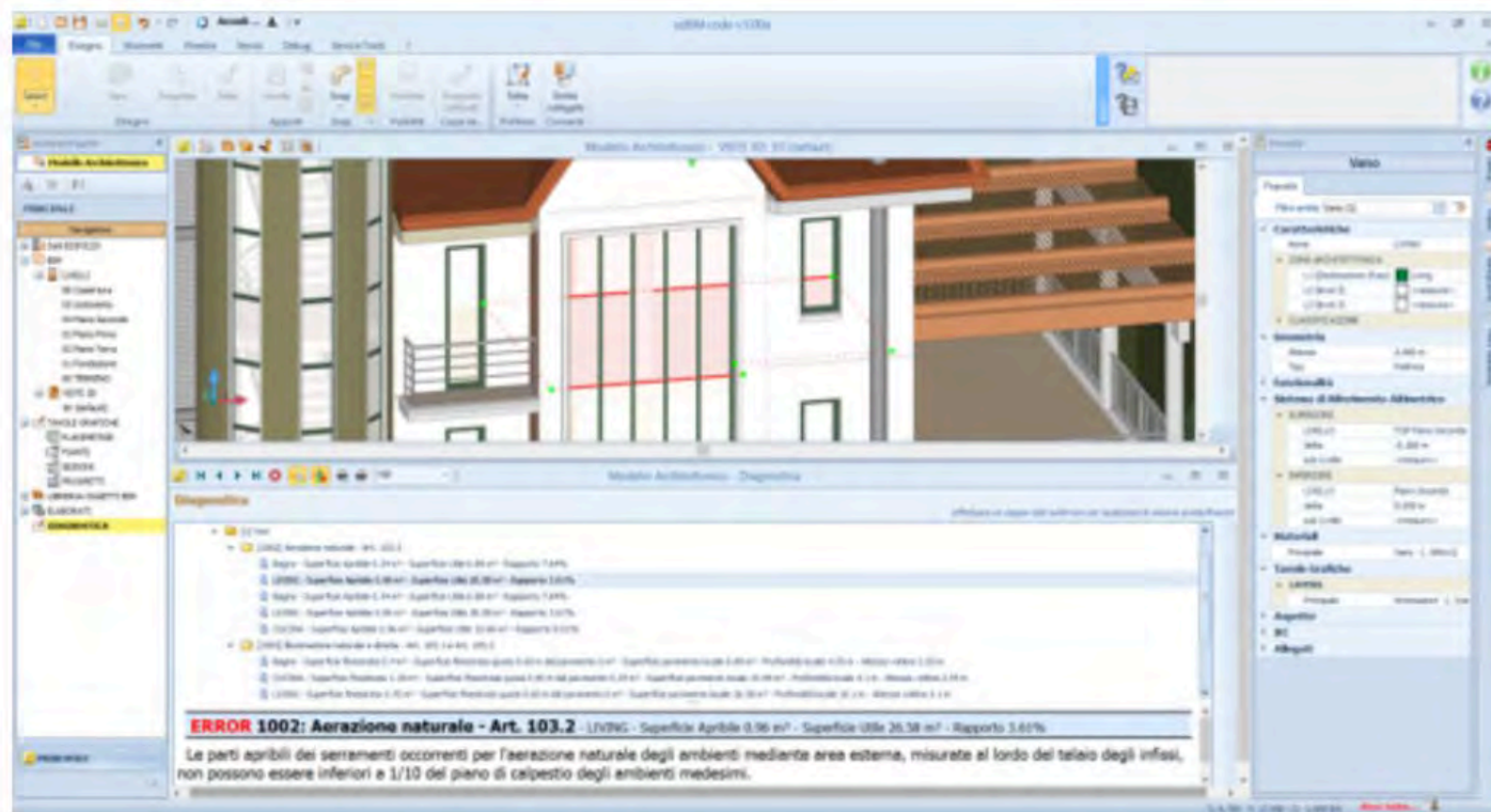
AME rating: *x2-y3-z2*



The common knowledge



Focus: CODEcontroller (3/3)



Both provides a detailed diagnostic with errors/warnings allowing to trace back the entities that do not respect the required regulations

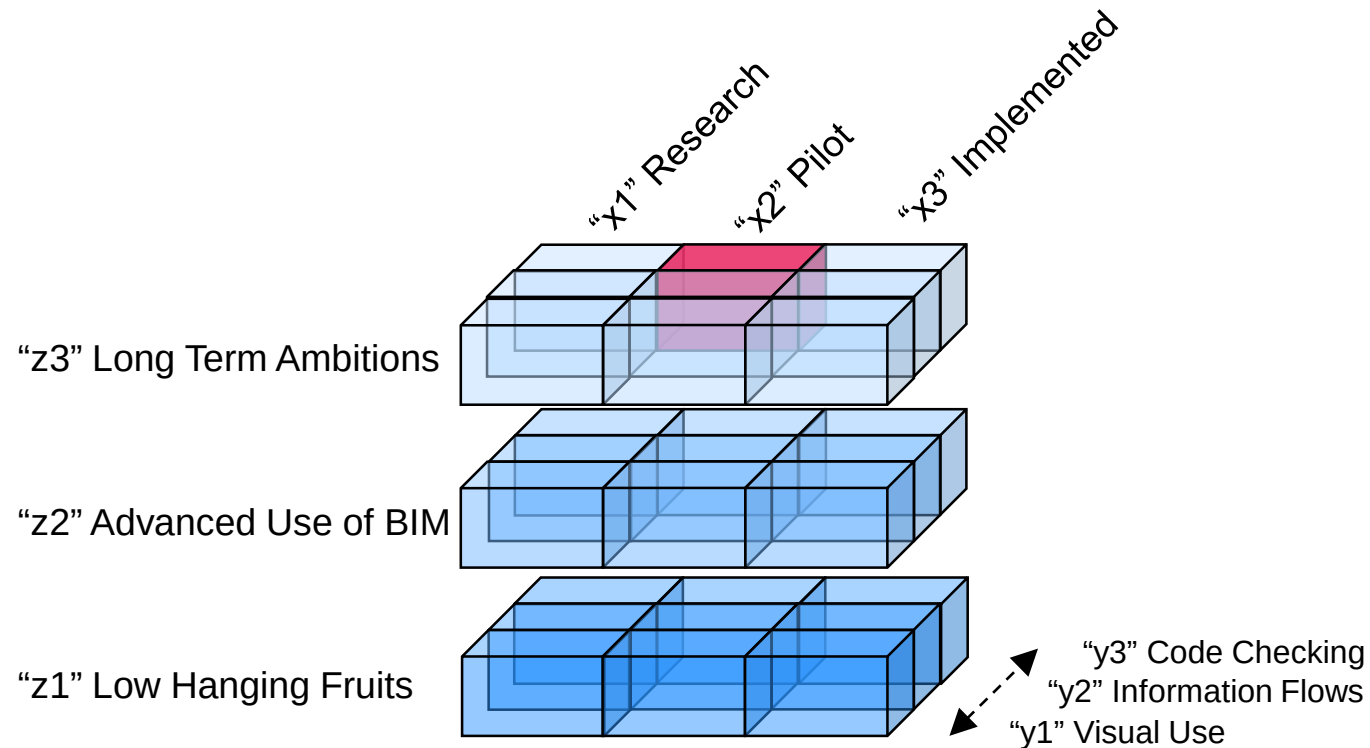
Project: French Feasibility Study on « Digitalisation of Construction Regulation »

Presenter: Bruno Fies, CSTB, France

Event: bSI Summit Tokyo 2018

Open BIM: Level 3

AME rating: x1-y3-z3



Assistant Sémantique de contrôle IFC

Maquette

Protocoles

Résultats

BCF

PDF

Règle

Description

Statut

GT5_PE5_1_stable_feu.sparql

Alerie

GT5_PE11_2_couleur_vitrage_nc.sparql

Alerie

GT5_PE14_2_surface_evacuation_fumees_nc.sparql

RAS

GT5_PE26_1_extincteurs_type_conforme.sparql

RAS

GT5_PE27_1_alarms_presence.sparql

RAS

Q Filtrer

Corbeille

9.37 Mo

8.57 Mo

8.57 Mo



Example of the transformation process (fire safety)

Initial Rule

Establishments wholly occupying the building with the lowest floor of the highest storey located more than 8 meters from the access level of the fire brigade shall have a 1-hour fire-resistant structure and fire-rated floors of the same degree.



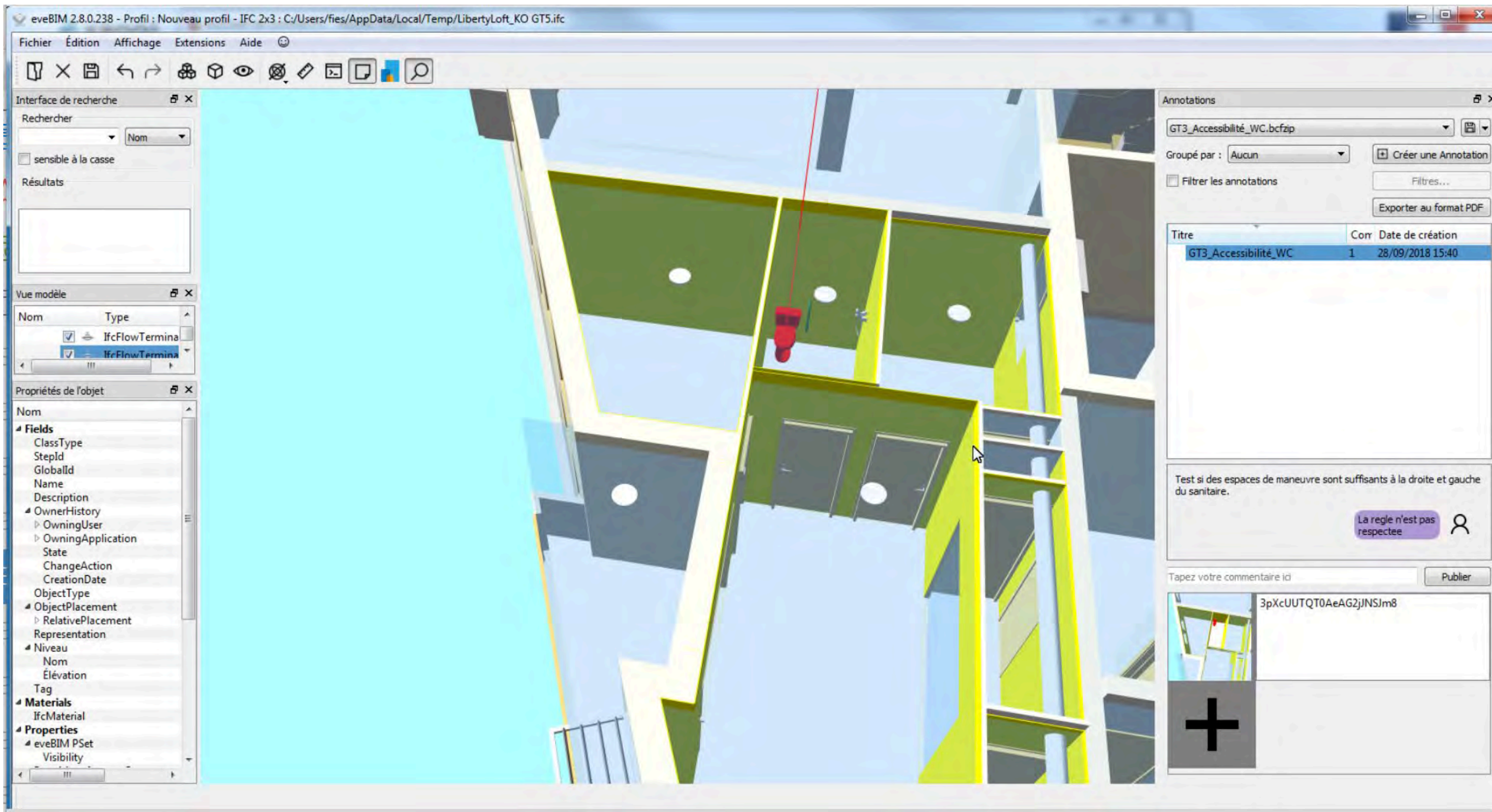
Semi-Formal Rule

```
si hauteur du "plancher_bas_etage_plus_eleve" par rapport au "niveau_acces_pompier" > 8 m
  si "structure" "Stable_Feu" < 1h alors_non_conforme
  si plancher "Coupe_Feu" < 1h alors_non_conforme
```

Formal Rule

```
SELECT ?gid ?e
WHERE {
  ?e a :Structure ; :hasProperty ?p ; :in ?s ; :gid ?gid .
  ?s :inStorey ?b .
  ?b :hauteurPlancherBas ?hauteurPlancherBas .
  ?p :name "Stable_Feu" ; :value ?Stable_Feu .
  FILTER (?Stable_Feu < 1)
  FILTER (!hauteurPlancherBas > 8000)
}
```





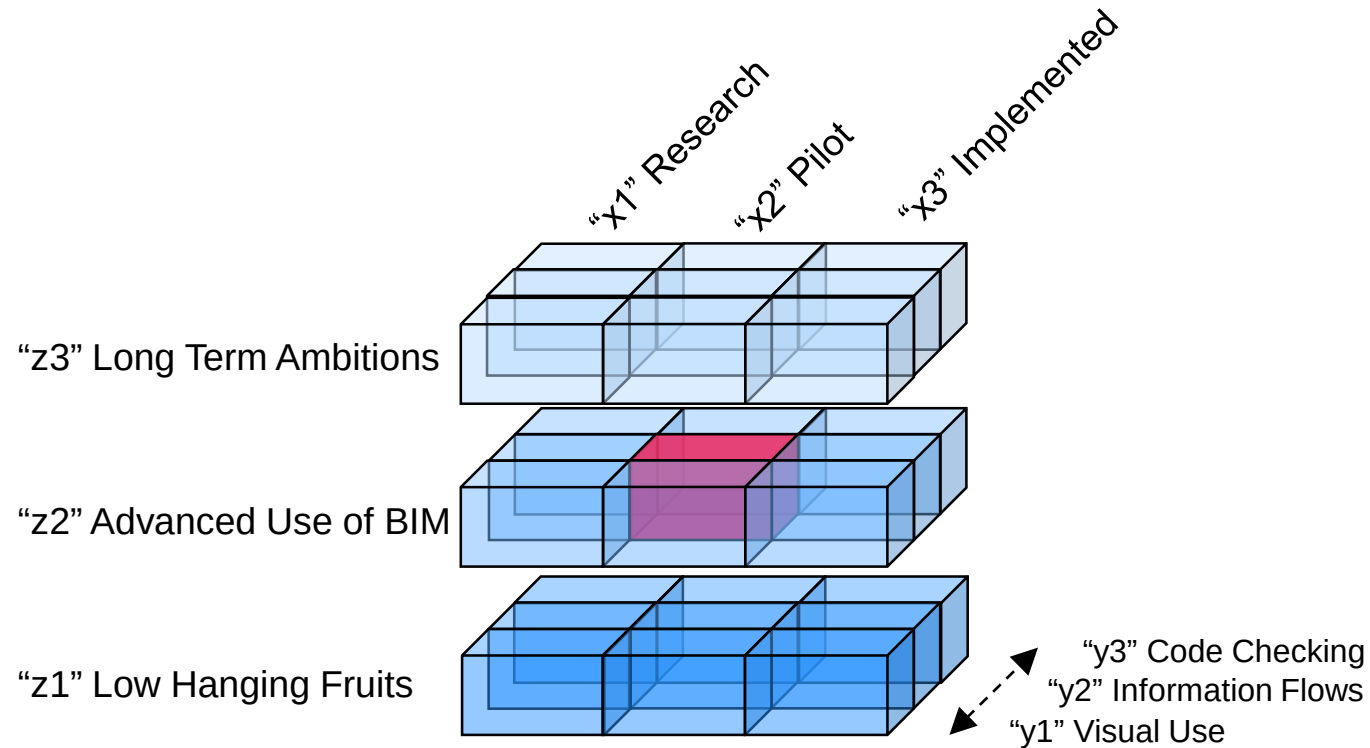
Project: Common services for Construction
 Government services for building applications

Presenter: Øivind Rooth, Norway

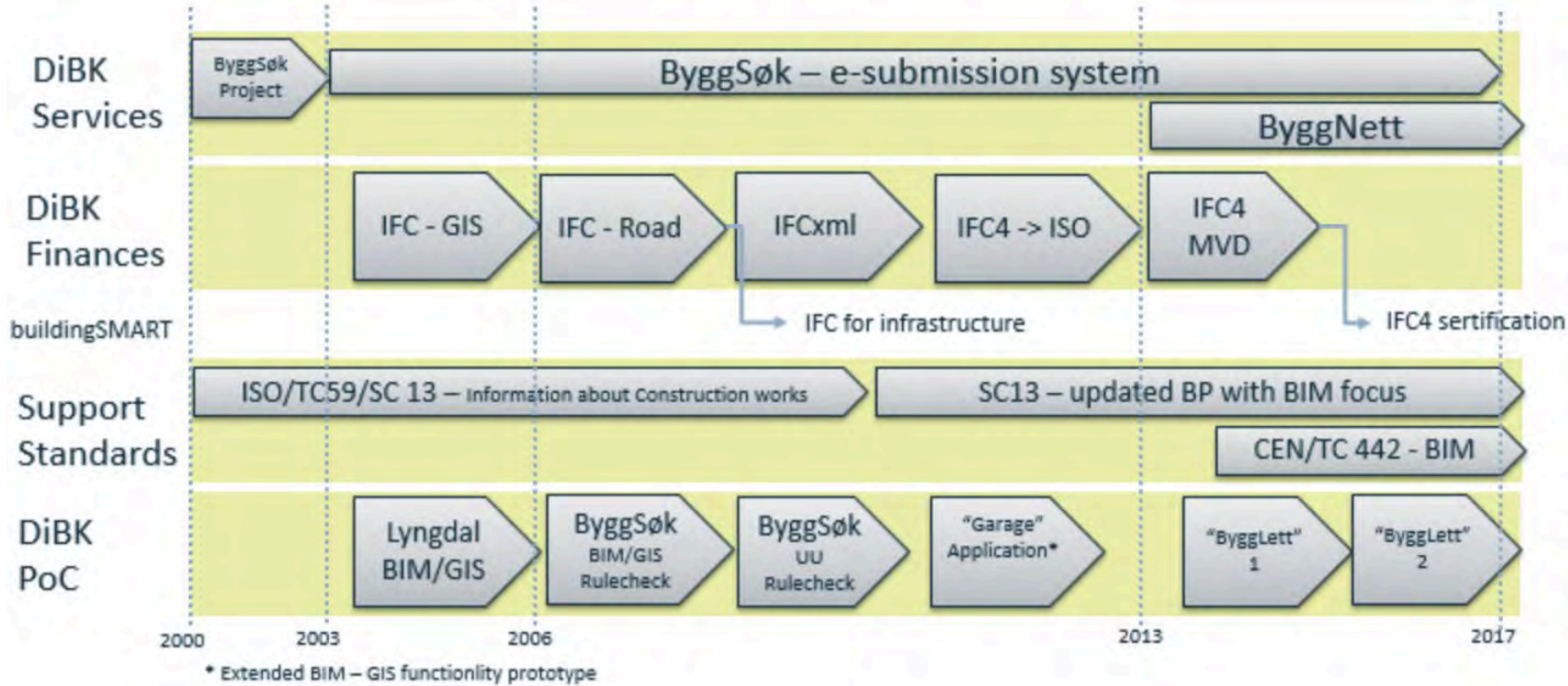
Event: bSI Summit Tokyo 2018

Open BIM: Level 3

AME rating: x2-y2-z2



Norwegian e-submission timeline



What is needed to use BIM in e-Permit processes



- Develop a process map –(EN ISO 29481)
- Specify Information Exchange Requirement (EN ISO 29481)
- Describe ER in mvdXML format (EN ISO 16739)
- Provide a BIM validation tool
- Machine readable rules on a open format
- BIM checking software in the market
- Open API to access the rules

National checklists for building permits

ID	Underpunkt	Type (sjekk)	Sjekkpunkt	Hei ja	Hei nei	Veiledning/ hjelpetekster	Spørsmål	Medislinjer regel
8								
8.1								
8.1		Auto	Er eiendommen tilknyttet offentlig avløp?	Ok	Sjekk underpunkt		§ 27-2, https://lovdata.no/lov/2008-06-27-71/§27-2; og SAK38 § 5-4, L.3, 8, https://virk.no/byggesaker/sak/2/5/5-4/	
8.2	8.1	Vurdering	Skal det kreves tilknytning til offentlig avløpsledning?	vedtakspunkt	Sjekk underpunkt	Vurder om kommunen skal kreve at bygningen skal knyttes til offentlig avløpsledning når særlige hensyn tiler det. Forutsetningen for tilknytningsplikten i slike tilfeller må	§ 27-2, L.3, § L.4, https://lovdata.no/lov/2008-06-27-71/§27-2;	Dersom ID 8.1 = nei
8.3	8.1	Vurdering	Foreligger tilstrekkelig utslippsstatistikk?	Ok	Mangel/Avslag	Hvis nei, vurder om bortledning av avløpsvann er sikret i samsvar med forureningsloven før det gis tillatelse til deling, endring av eiendom, til byggetilrette eller ved oppkjøp om oppføring av ny bygning.	§ 27-2, L.1 (1. punkt, https://lovdata.no/lov/2008-06-27-71/§27-2)	Dersom ID 8.1 = nei
8.4		Utsjekk	Skal avløp ledes over annen matts grunn?	Sjekk underpunkt	Ok			
8.5	8.4	Utsjekk	Foreligger tilgjengelig erklæring for avløp over annen matts grunn?	Ok	Mangel			Dersom ID 8.4 = ja
8.6		Vurdering	Er avledning av grunn- og overvann kortstakt?	Ok	Manuell behandling	Påse at avledning av grunn- og overvann er sikret før oppføring av bygning blir som i gang. Nytt krav om dokumentasjon! Nytt krav om dokumentasjon!	§ 27-2, L.5, https://lovdata.no/lov/2008-06-27-71/§27-2;	
8.7		Vurdering	Er avledning av grunn- og overvann kortstakt for eksisterende bygning?	Ok	Manuell behandling	Påse at avledning av grunn- og overvann er sikret ved vedlikehold av drenering for eksisterende bygning. Nytt krav om dokumentasjon!		
9								
9.1								
9.1		Utsjekk	Har eiendommen offentlig vannforsyning?	Ok	Sjekk underpunkt		§ 27-1, https://lovdata.no/lov/2008-06-27-71/§27-1; og SAK38 § 5-4, L.3, 8, https://virk.no/byggesaker/sak/2/5/5-4/	
9.2	9.1	Vurdering	Skal tilknytning pålegges?	vedtakspunkt	Sjekk underpunkt	Vurder om det foreligger en overvekt av hensyn som taler for å pålegge tilknytning. Kommunen kan i andre tilfeller enn nevnt i plan- og bygningsloven § 27-1, annet ledd, kreve at bygningen skal knyttes til offentlig vannledning når særlige hensyn tiler det.	§ 27-1, L.3, § L.4, https://lovdata.no/lov/2008-06-27-71/§27-1; Dersom ID 9.1 = nei	
9.3	9.1	Vurdering	Kan tilknytningsplikten fravikes?	Sjekk underpunkt	Avslag	Vurder om det foreligger en klar overvekt av hensyn som taler for å fravike tilknytningsplikten. Vil dette etter kommunens skjønn være fornuftig med uforholdsmessig stor kostnad, eller særlige hensyn tiler det, kan kommunen godkjenne en annen ordning.	§ 27-1, L.2, 2. punkt, § L.4, https://lovdata.no/lov/2008-06-27-71/§27-1;	Dersom ID 9.1 = nei
9.4	9.1	Vurdering	Er rettigheter til privat vannforsyning sikret?	Ok	Mangel/Avslag	Påse at bygning ikke oppføres eller tas i bruk til opphold for mennesker og dyr, med mindre det er forsvarlig adgang til hygieniske betraggende og tilstrekkelig drikkevann, samt skikkesvann. Avklare om bygningen har forsvarlig adgang til hygieniske betraggende og tilstrekkelig drikkevann, samt skikkesvann.	§ 27-1, L.1, 1. punkt, https://lovdata.no/lov/2008-06-27-71/§27-1;	Dersom ID 9.1 = nei
9.5		Utsjekk	Skal vannforsyning ledes over annen matts grunn?	Sjekk underpunkt	Ok			
9.6	9.5	Utsjekk	Foreligger tilgjengelig erklæring for vannforsyning over annen matts grunn?	Ok	Mangel/Avslag			Dersom ID 9.5 = ja

Room Projects

WG2: Application Forms

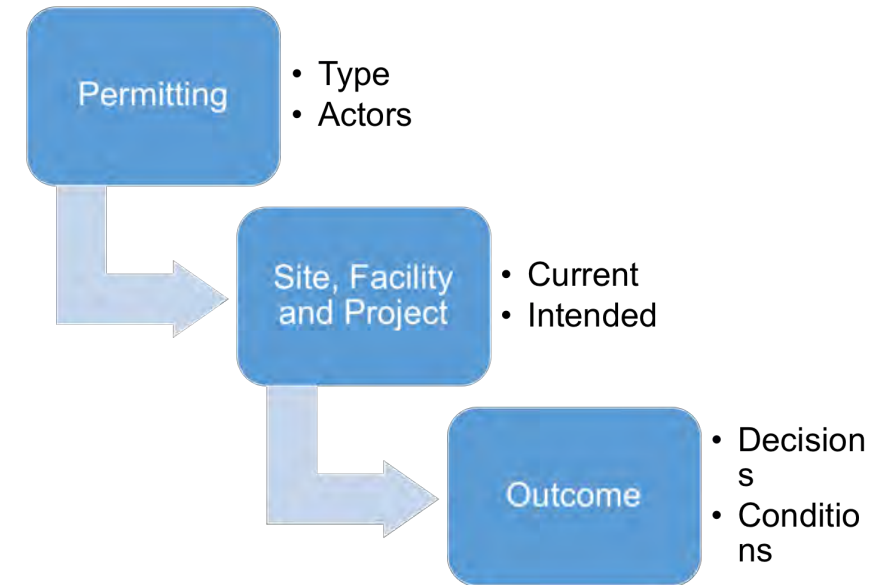
Questions that need to be solved

- What is situational and what is separate?
- What is in the project plan and what is out of scope ?
- What are the inputs and outputs of the project?
- What non-situational (non BIM/GIS) information is commonly required ?
- What situational (BIM/GIS) information is commonly required ?
- Can the situation model(s) represent input and/or outcome data of the impact reports ?
- How is current and intended situational information represented ?
- Should the situational information be delivered as one or two models ?

Forms		
Application Purpose • Scope • Type of application • New or renewal/continuation • Past permits • Initial or full or supplementary application • Regulator • Other parties • Name • Role • Address • Telephone • Email	Applicant details • Applicant(s) • Agent(s) • Interest in land • Builder / electrical contractor • Notified neighbours • Site Keyholder • Name • Role/Profession • Address • Telephone • Email • Payment as required • Certifications as required • Competency • Ownership • Declaration of interest	Impact reports • Environmental impact assessments • Species, habitat and geology conservation • Landscape • Microclimate • Contaminated land • Energy • Flood • Water services • Electrical safety • Economic impact assessment • Economic and employment • Social impact assessment • Community impact • Access and Disability assessment • Heritage • Noise • Consultation

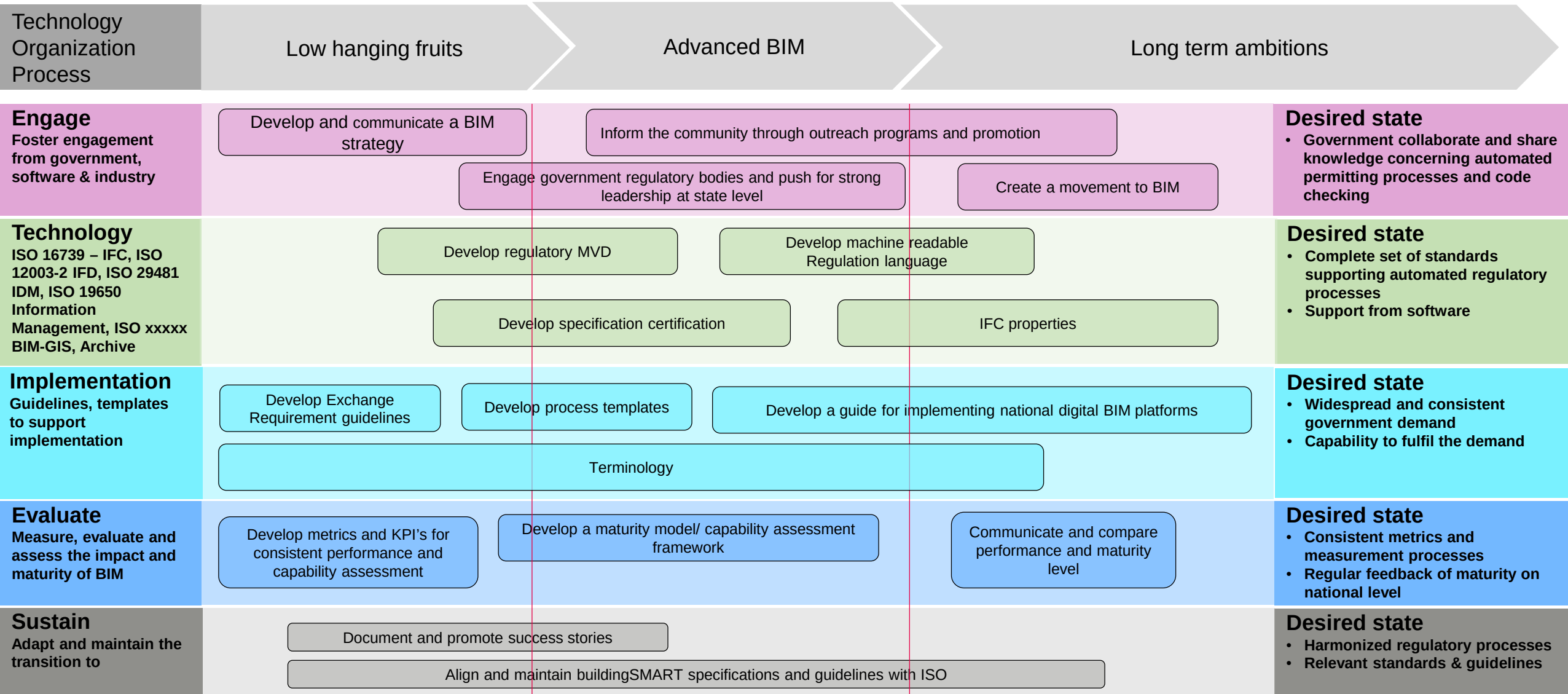
What non-situational (non BIM/GIS) information is commonly required ?

buildingSMART
International home of openBIM



Roadmap to automated regulatory processes in construction through BIM

Inspired by buildingSMART Canada Roadmap



Resolutions

▪ **WG1 e-Submission Common Guideline**

- The final draft of the bSI Technical Report for "e-submission common guideline for introduce BIM to building process" was published for comments
- Deadline for comments is Dec 19th 2018.

▪ **The road map proposal made by the Road Map Task Group was accepted**

- The road map will be revised in the following Summits.
- The Road Map TG will start to implement the road map by collection use case proposals from regulatory room members.
- RR will organize a *Use Case Workshop* in the next Summit to specify future RR projects.

▪ **Formation of Business Case Task Group**

- The new TG will develop a Business Case based on the road map.
- The Business Case will be used to engage the stakeholders that are addressed in the road map.
- The new TG is lead by Franco Coin.



Regulatory Room Tokyo Summit Report 2018-10-19

IFC Road

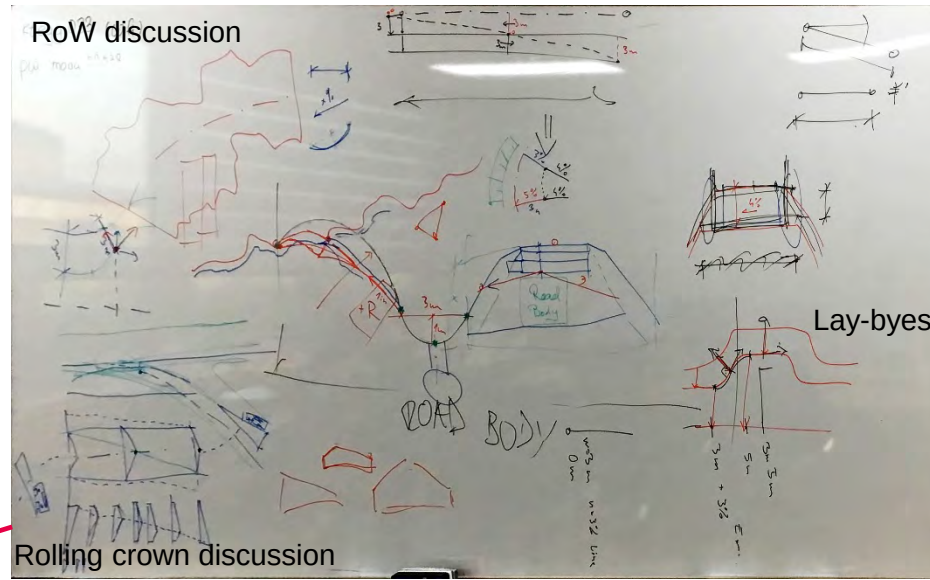
Project proposal, Workpackage - Phase 1 & 2

- WP0 – Project Execution Plan (Completed)
- WP1 – Contribution to common schema (To be Continued)
- **WP2 – Requirement Analysis (finalized) – PHASE 1**
- WP3 – Schema extension (New)
- WP4 – International consensus (To be Continued)
- WP5 – IFC Road Software Deployment (New)
- WP6 – Project Management (To be Continued)

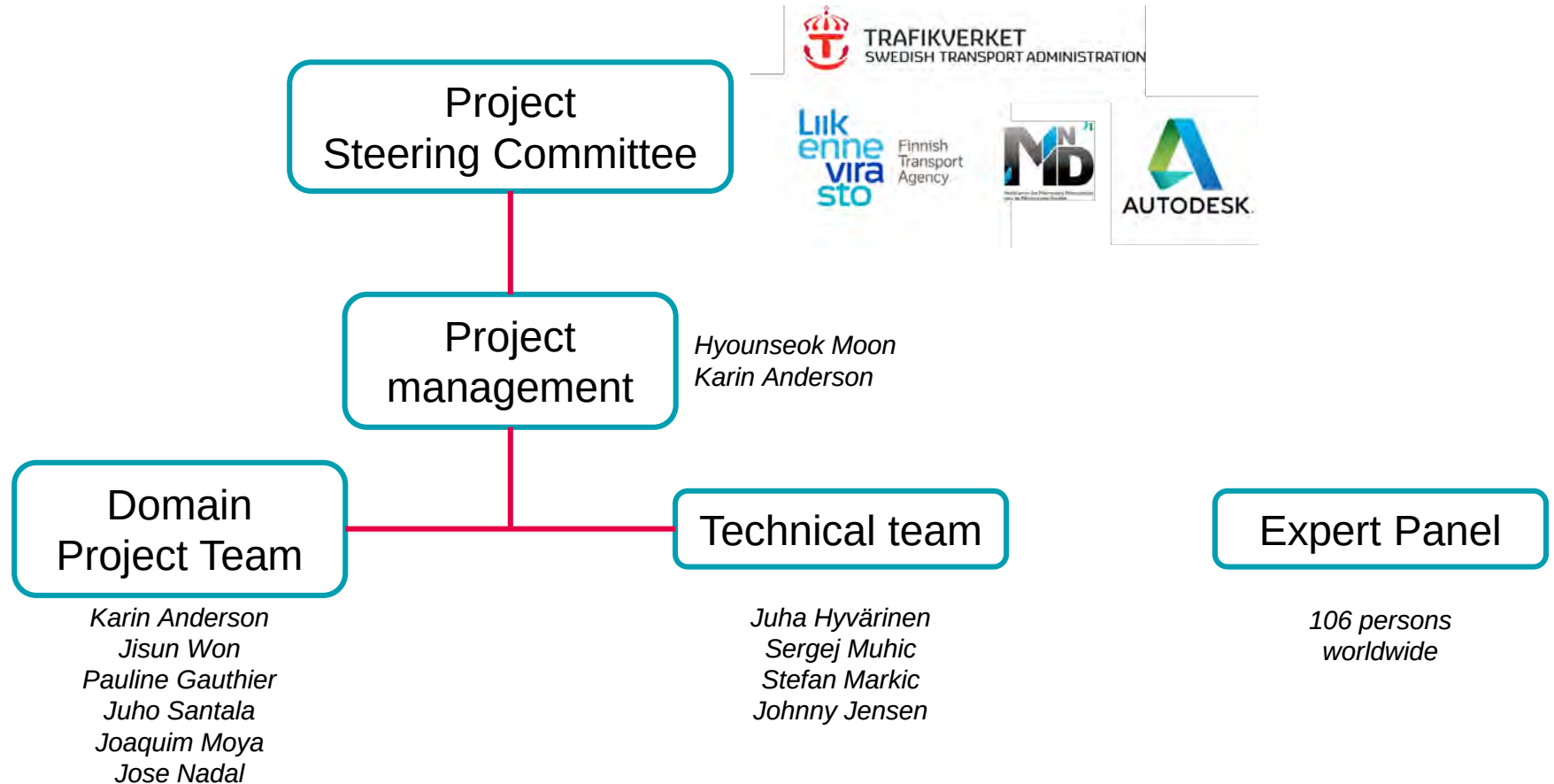
IFC Road Project Phase 1 WP2 - Requirement Analysis Report 2018.01 – 2018.11



18 Online and 2 live Team meetings



IFC Road organisation



Leverabler Fas 1

- Innehållsförteckning:
 1. Metodologi / sammanfattning
 2. Omfattning
 - Spatial Requirements
 - Representation of systems
 - Process map + Annex 1
 3. Användarfall
 4. Geometrier
 5. MVDs
- Taxonomy (levereras som databas med vägobjekt och koncept) och egenskaper som mappas till befintliga koncept för att begränsa utbyggnaden av det befintliga schemat

C1-Methodology

Work based on IFC 4.1 and Overall Architecture guidelines

3 Expert panels collecting feedback:

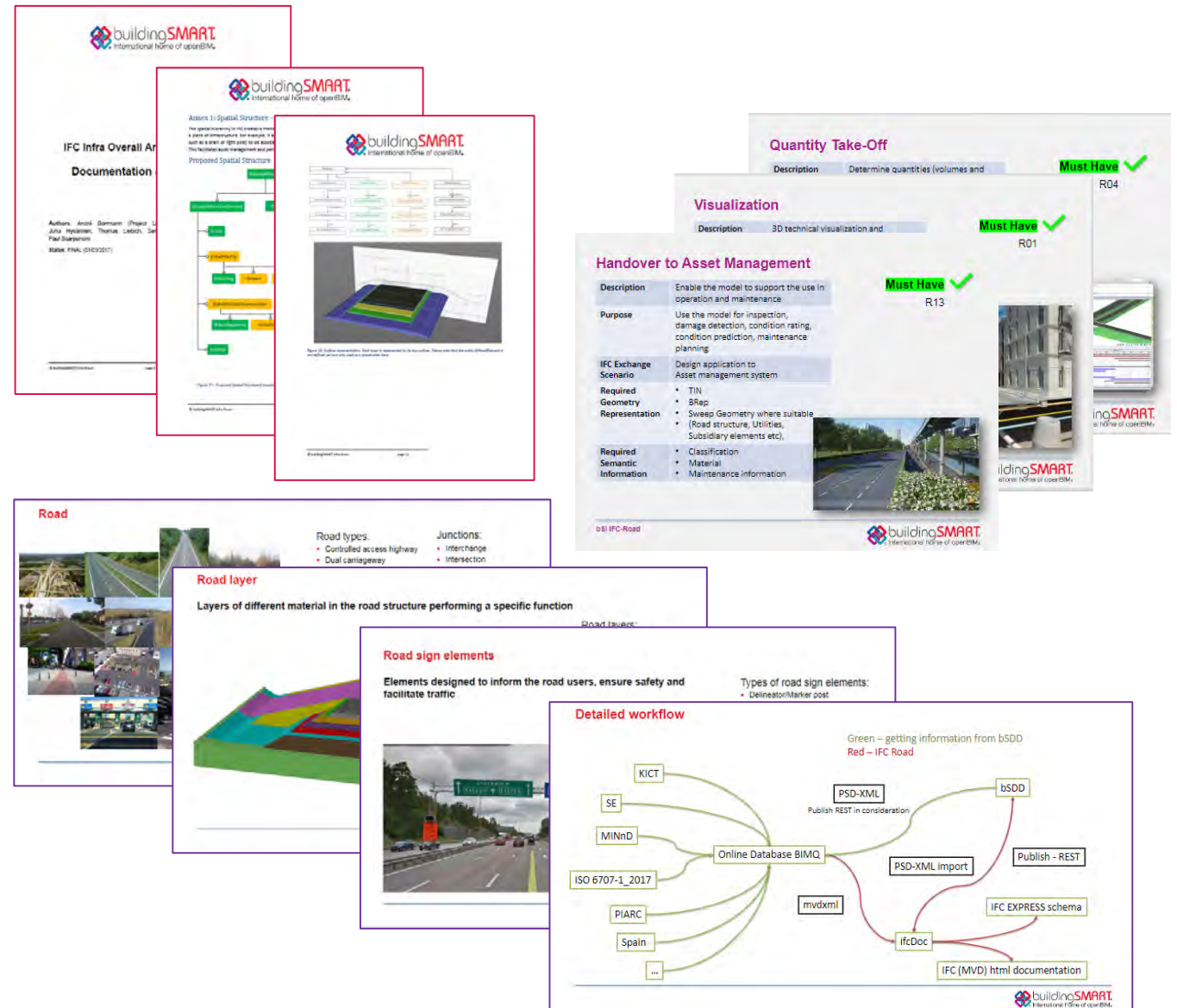
- EP1, Use cases
- EP2, Taxonomy
- EP3, Draft Report

Database

Workshops

Experience from previous IR projects

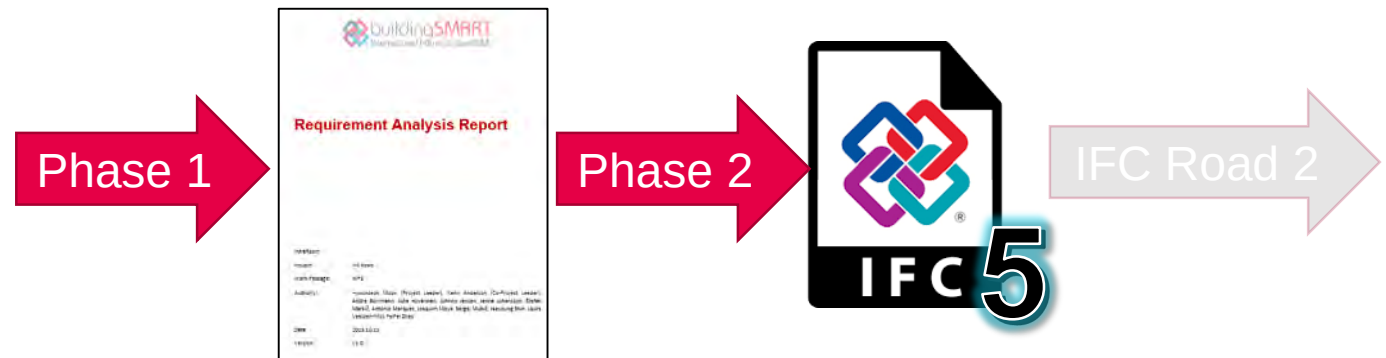
Sharefile file sharing with experts



C1 - Next steps

Geometric and semantic information
Continue work on IFC Road Taxonomy
Participation and requirement delivery
for Common Schema project
Conceptual model, UML diagram
Properties included in the
documentation and bSDD
Candidate Standard (IFC schema
extension for roads)
Definition of MDVs
Testing and deployment of the
Candidate standard by software
vendors

The report describes in and out of scope decisions on which the current IFC Road schema extension will be based. **Not all identified Use cases can be covered at this time**, due to restricted resources or complexity of the use case. It is, therefore, expected that **further extension might be needed** and, depending on the needs from stakeholders, the **bSI InfraRoom is open to starting a new project in the future**.



Founding Railway Room Starting IFC Rail Project



Founding RWR at bSI Summit Paris 2018



Activities

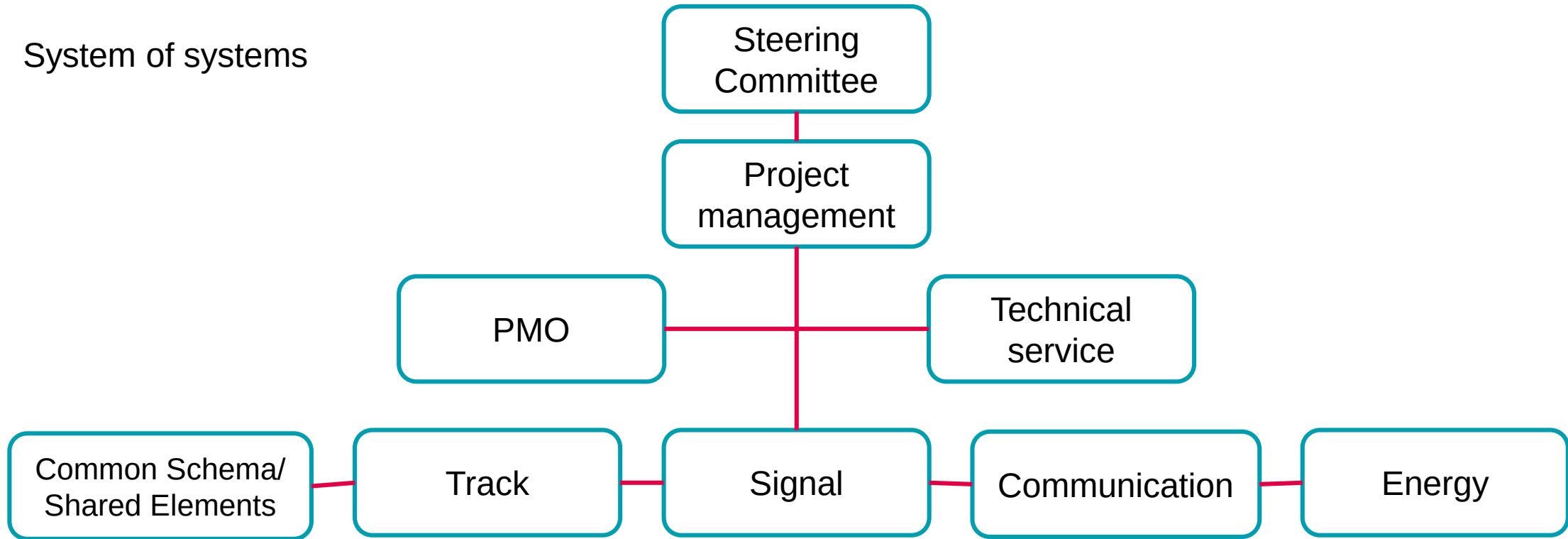
Growth continues

Railway Room

IFC extension for exchange of information during the lifecycle and in particular from construction to maintenance

IFC Rail organisation

System of systems

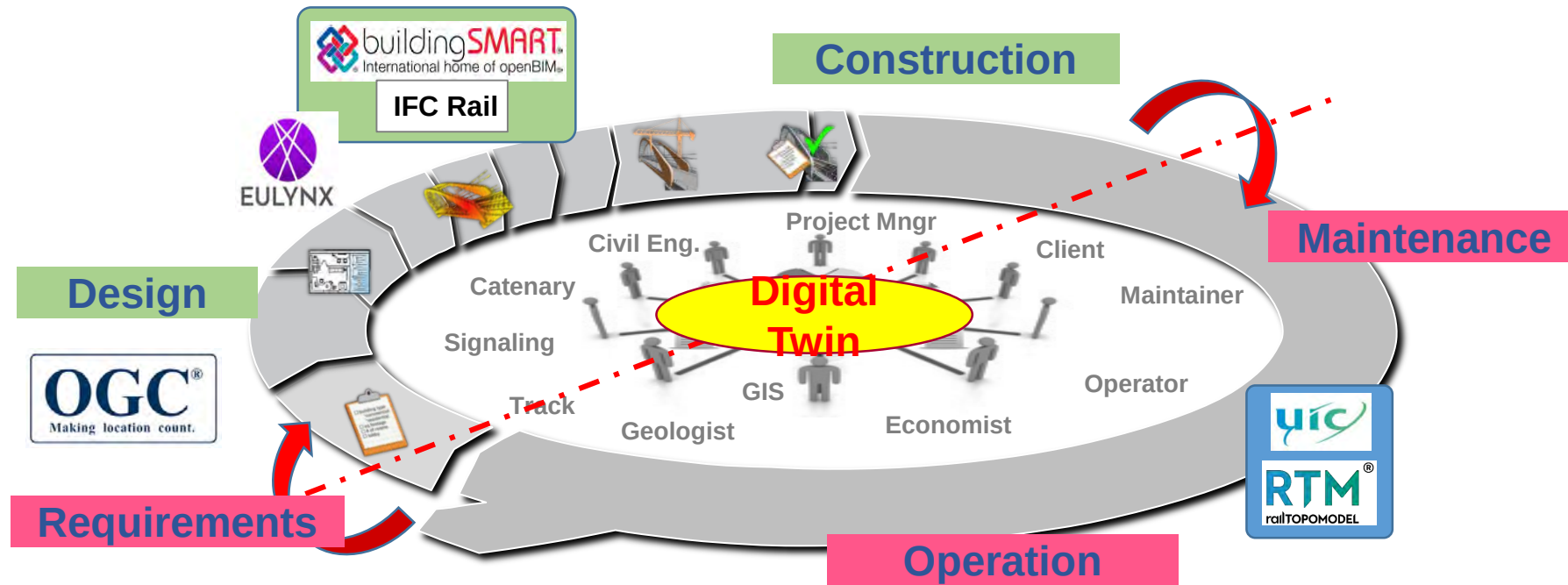


Peter Axelsson, TRV
Feifei Zhao, CRBIM

Issues and Cultural Observations During the Rail Project

- Cultural differences between
 - Different technical spaces and
 - Different stakeholders
 - Established processes
- Formal approach vs creativity
- Traditional deliverables vs. New deliverables
e.g. from EXPRESS to UML
- Establishing a new process „Traceability“
 - Validation (are the demands addressed) and
 - Verification (are the demands correctly implemented)

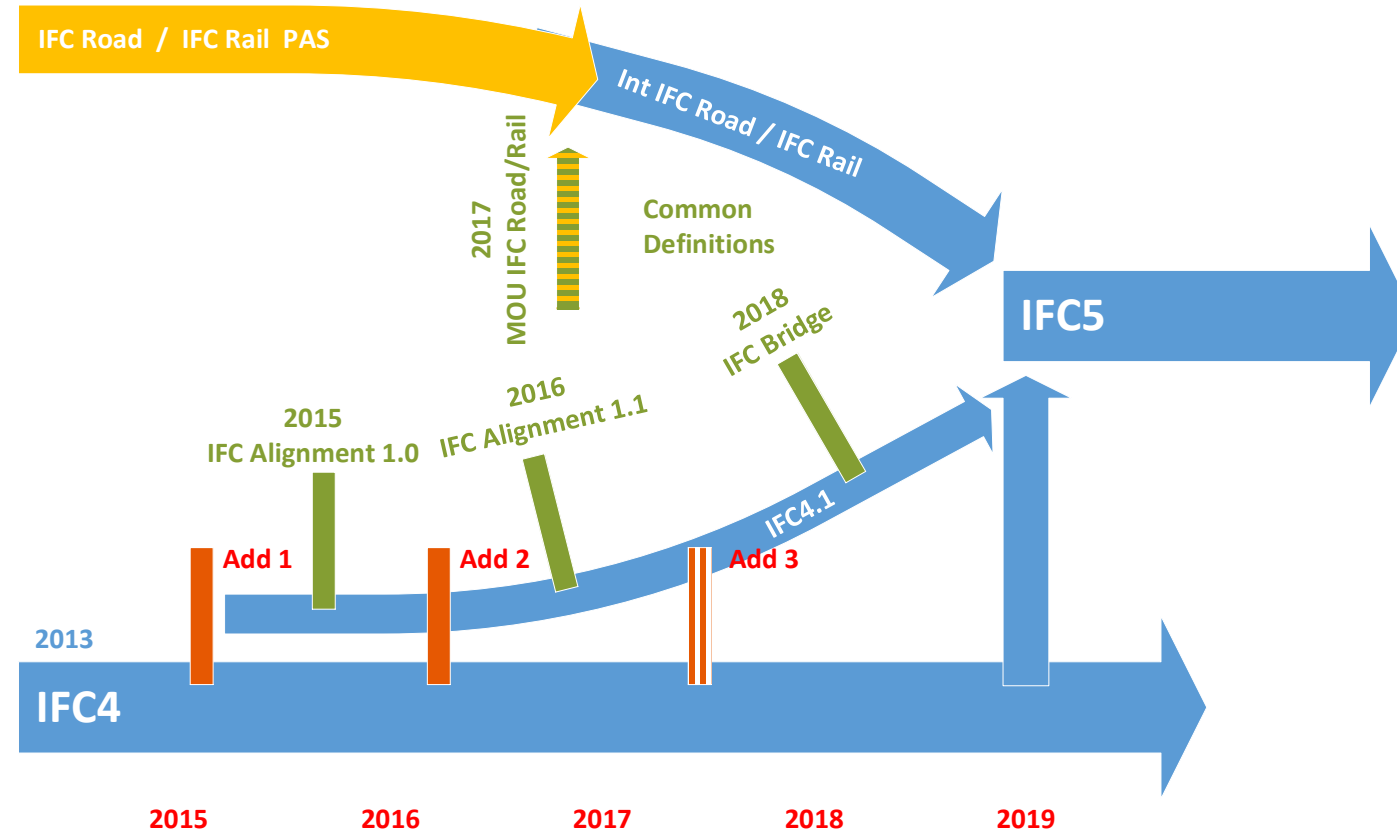
Relations and overlap with other standards



Fork and Merge in upcoming IFC developments

- Parallel work

- IFC4 → building, products
- IFC4.1 → Alignment, Terrain
- IFC4.x → if needed e.g. IFC Bridge
- IFC5 → Infrastructure



Informationsleveranser, idag och i framtiden



	Idag	Tillfällig/intermediate	Målbild
BIM-modeller (PIM)	Proprietära format, IFC för enstaka byggnadsverk	IFC, proprietära format	IFC 5 (Road, rail, bridge m fl)
Objektbaserad information	Projektspecifika laddmallar	Standardiserade laddmallar typ CoBie	IFC 5 InfraGML
Klassificering/identification	BSAB 96, SB11 CAD-lager, Projektspecifik klassning	CoClass, BSAB 96, Kodhandboken	CoClass/ReferensID
Drawings	dgn, dwg, pdf	dgn, dwg, pdf	pdf
Dokument	pdf	pdf	pdf

BIM Alliance Sweden – Frukostmöte

Individual Swedish Chapter & buildingSMART Nordic Hub

Nytt förslag som på sikt innebär att varje Medlems-
organisation ska vara av ett eget Chapter

Agenda

- Bakgrund
- Syfte & mål
- Nuläge vs. framtid
- Medlemsavgifter & röstandel
- Hur påverkas BIM Alliance
- Viktiga datum
- Slutsatser & rekommendationer



Bakgrund

- **Orättvisa medlemsavgift mellan olika stora länder**
 - Exempelvis betalar USA och Norge lika mycket i medlemsavgift
 - Nordic Chapter består av sex länder men betalar lika mycket som ett individuellt Chapter gör
- **Reglerna för Development Chapters har varit otydliga, nya regler har tillkommit som i vissa fall inte följts**
 - Länder som exempelvis Sverige har varit Development Chapters i många år trots att medlemsavtalet säger att ambitionen ska vara att bilda ett eget Chapter inom tre år
- **Avsaknad av tydliga regler för Chapters**
 - Nordic Chapter har enligt nuvarande regler kunnat bjuda in nya organisationer som Development Chapters vilka tillåtit att enbart betalat en avgift till Nordic Chapter
- **Svårt för nya organisationer som vill engagera sig inom buildingSMART att få hjälp att organisera sig**
 - Krångliga- och i viss mån otydliga regler
 - Hög medlemsavgift för små länder/organisationer

Syfte & mål

- **Bättre fördelning av medlemsavgifter mellan länder av olika storlek**
 - Åstadkoms genom en nya modell för medlemsavgifter som baseras på BNP
- **Skapa plattformar för ökat regionalt samarbete**
 - Åstadkoms genom bildande av regionala hubbar (ex. Nordeuropa = Baltikum & Norden)
 - Åstadkoms genom ett enklare förfarande för nya medlemmar som endast vill engagera sig på regional nivå eller som behöver hjälp att komma igång på lokal och/eller internationell nivå
- **Få fler personer från nationella branschorganisationer och företag involverade i arbetet med framtagande av öppna standarder**
 - Åstadkoms genom att resurssättning kan koordineras på hubbnivå, vilket i sin tur innebär att flera länder kan hjälpas åt att hitta domänkunniga personer för tillexempel ett projekt
- **Skapa tydligare kopplingar mellan nationella behov och internationell standardisering**
 - Åstadkoms genom ökad nationell närvaro från Nordic Hub vid olika nationella event och sammankomster
 - Gemensamma konferenser. Ett exempel på detta är InfraBIM
 - Möjlighet för intressenter att delta på Nordic Hub temamöten (detta görs idag men inbjudan har i princip endast omfattat NBC*-medlemmar)
 - Möjlighet att ta fram gemensamt riktlinjer och rekommendationer samt tillhandahålla implementationssupport
 - Gemensamma webinar, möjlighet att ta del av och sprida informationsmaterial od. från andra länder

*NBC är ett forum för nordiska väg- och banmyndigheter som syftar till att ta fram gemensamma nordiska riktlinjer och krav

buildingSMART Nordic Chapter – 2018

Rooms

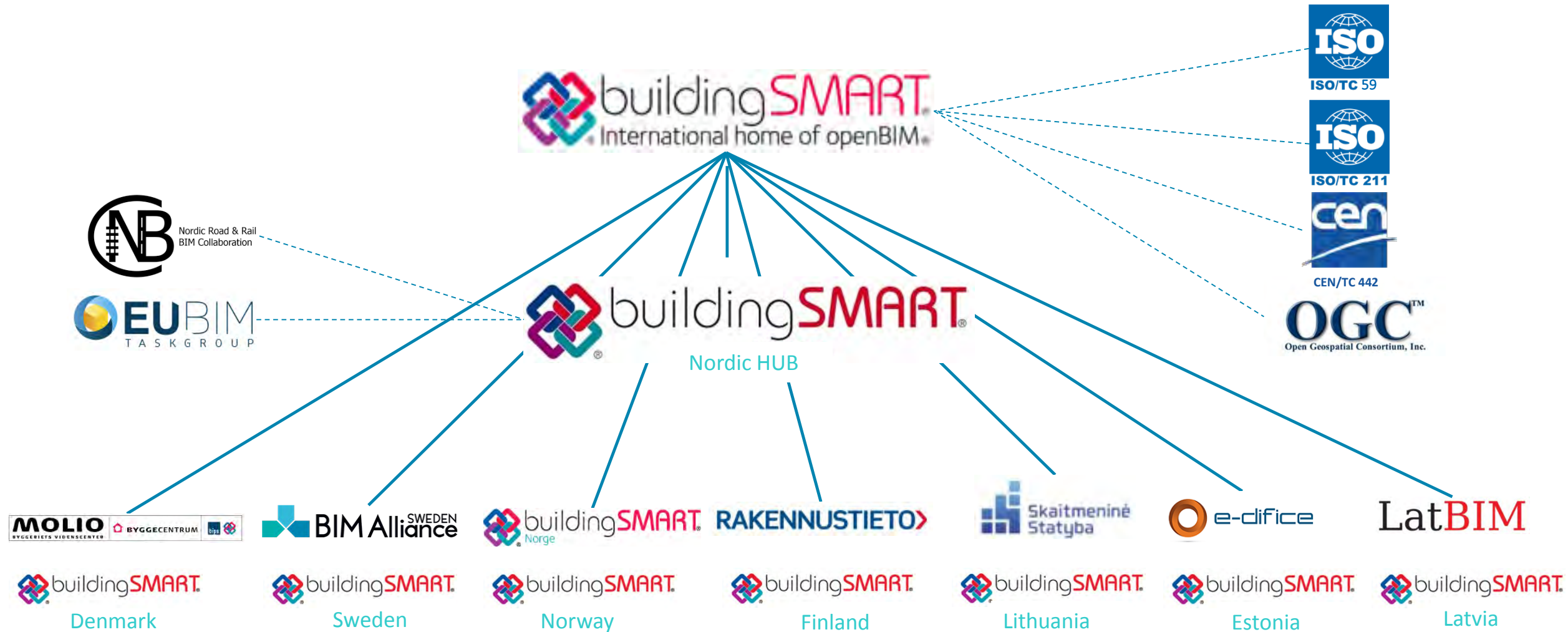
- [Technical Room](#)
- [Building Process Room](#)
- [Infrastructure Room](#)
- [Product Room](#)
- [Regulatory Room](#)

Groups

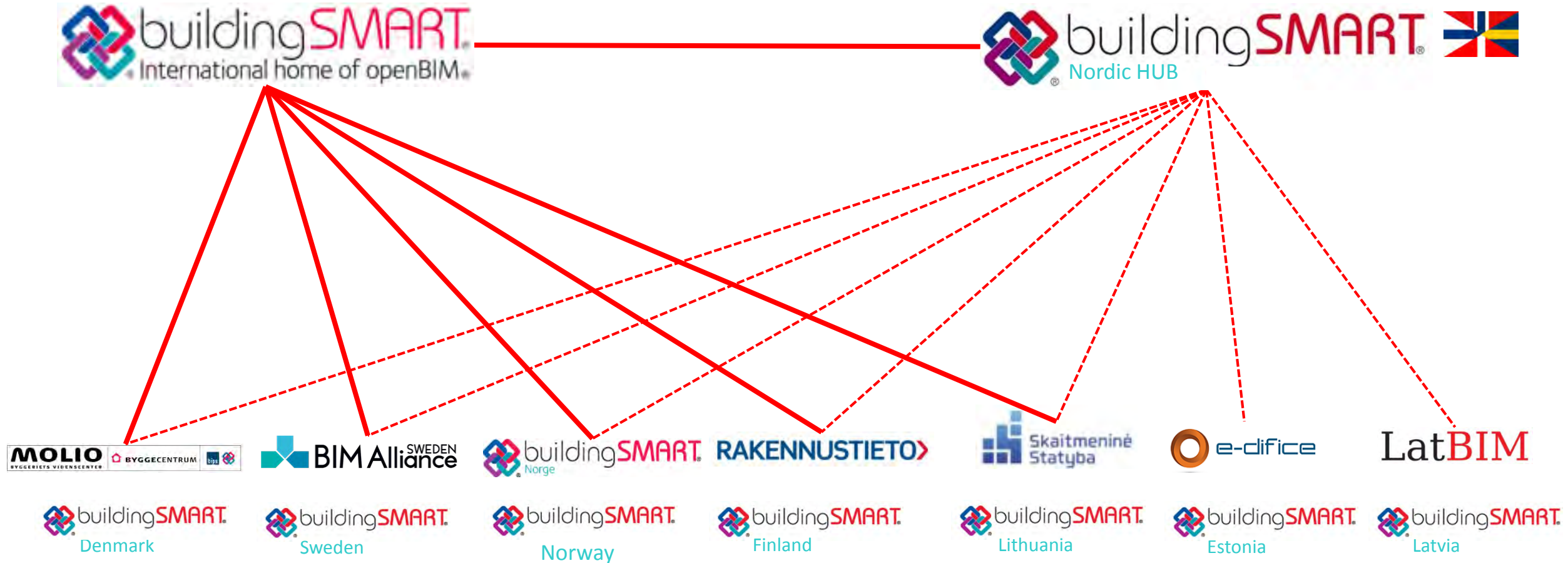
- [Implementation Support Group](#)
- [Model Support Group](#)
- [Dictionaries Technical Support Group](#)
- [bSDD Working Group](#)
- [Guidelines Working Group](#)
- [Linked Data Working Group](#)



buildingSMART Nordic HUB – 2020



buildingSMART Nordic Hub 2020



Nuvarande situation – 2018

- BIM Alliance Sweden betalar idag € 10.000 till buildingSMART Nordic
- buildingSMART Nordic betalar € 20.000 till buildingSMART International

	Single chapter	Country Organization	Status	Fee to buildingSMART International (EUR)	Fee to buildingSMART Nordic (EUR)	Standards Committee Votes	International Council Votes
1	buildingSMART Norway	buildingSMART Norway*	Single Chapter	20 000		2	1
2	buildingSMART Nordic	buildingSMART Nordic	Chapter	20 000		2	1
	1	BIM Alliance Sweden	Part of Nordic Chapter		10 000	-	-
	2	Molio (Denmark)	Part of Nordic Chapter		10 000	-	-
	3	Rakennustieto (Finland)	Part of Nordic Chapter		10 000	-	-
	4	Skaitmeninė statyba/ Digital construction (Lithuania)	Part of Nordic Chapter		3 500	-	-
	5	LATBIM** (Latvia)	Part of Nordic Chapter		3 500	-	-
	6	Estonian digital construction clusters (Estonia)	Part of Nordic Chapter		3 500	-	-
				40 000 €	40 500 € (20 500 after bSI fee)	4	2

* buildingSMART Norway ingår ej i buildingSMART Nordic men deltar aktivt på mötena

** LatBIM saknar formellt avtal med buildingSMART Nordic och buildingSMART International

Förslag - 2020

GDP / year	bSI fee €	HUB fee €	SC votes Chapter/Hub only	IC votes Chapter/Hub only	Hub fee discount for chapter	Home chapter discount €
GDP > 1000 b€	20 000	5000	2/1	1/0	50%	According to bylaws
200 b€ < GDP < 1000 b€	15 000	4000	2/1	1/0	50%	According to bylaws
50 b€ < GDP < 200 b€	10 000	3000	2/1	1/0	50%	According to bylaws
GDP < 50 b€	5 000	2000	2/1	1/0	50%	According to bylaws

Single chapter	Country Organization	Status	Fee to buildingSMART International	Standards Committee Votes	International Council Votes	Fee to buildingSMART Nordic HUB	Votes at HUB
		bS Nordic HUB*	3 250			(-25% fee to bSI)	
buildingSMART Norway	buildingSMART Norway	Chapter & HUB member	15 000	2	1	2 000	1
BIM Alliance Sweden	BIM Alliance Sweden	Chapter & HUB member	15 000	2	1	2 000	1
Molio	Molio (Denmark)	Chapter & HUB member	15 000	2	1	2 000	1
Rakennustieto	Rakennustieto (Finland)	Chapter & HUB member	15 000	2	1	2 000	1
	Skaitmeninė statyba/ Digital construction (Lithuania)	Chapter & HUB member	5 000	2	1	1 000	1
	LATBIM (Latvia)	HUB member		1		2 000	1
	Estonian digital Construction clusters (Estonia)	HUB member		1		2 000	1
	Aspiring Chapter Organization - new countries	Observers in HUB	-	-	-	1 000**	-

Total: **68 250 €** **11** **5** **13 000 €** **7**

(9 750 € after fee to bSI)

* Minimum of one international Chapter

** Minimum fee for Hub observers (maximum of 2 years)

Hur påverkas BIM Alliance Sweden?

Resurser

- 1. Ett ökat inflytande kräva även ett ökat engagemang**
 - Det kommer krävas att någon håller koll på olika omröstningar, utlysningar och förfrågningar
 - Därtill behöver personen delta vid olika möten (både via webb men också fysiskt)
- 2. Det kommer bli svårt att driva på arbetet enbart med hjälp av frivilliga**
 - Det kan komma krävas att någon eller några personer engagerar sig på halvtid alternativt en person på heltid
- 3. Hubben skapar möjligheter för ett bättre resursutnyttjande**
 - Förhoppningsvis kommer hubben leda till ett bättre resursutnyttjande mellan länder vilket framförallt kommer synas vid genomförande av olika projekt eller aktiviteter (webinar, seminarier o.d.)

Kostnader

- 1. Kostnadsökning på 7.000 EUR/år (Kostnad efter rabatt = 3.000 EUR/år)**
 - Enskilda medlemsföretag exempelvis Trafikverket ger rabatt (ca 4.000 EUR)
- 2. Det är för tidigt att bedöma om det kommer tillkomma personalkostnader eller om resursfrågan kan lösas på annat sätt**
 - Det bör exempelvis utredas om något/några företag (exempelvis Trafikverket) är villiga att bistå med dedikerade resurser

Viktiga datum inom buildingSMART

- **BIM Alliance Sweden Styrelse 3 oktober 2018**
 - Presentation av förslaget för Chapter & Hub
- **buildingSMART Tokyo Summit, 16 – 19 oktober 2018**
 - Planeringsmöte samt allmän diskussion om förslaget
- **buildingSMART Nordic board, 26 november 2018**
 - Presentera ny prissättningsmodell för Chapter*
- **buildingSMART International, 20 december 2018**
 - Nya stadgar (bylaws) ska finnas framme
- **buildingSMART Nordic Board 13 februari 2019**
 - Förslag till nytt Charter** för buildingSMART Nordic Hub ska presenteras
- **buildingSMART Düsseldorf Summit, 25 – 28 mars 2019**
 - buildingSMART International Charter ska finnas framme
 - Avstämning progress för respektive Chapter
- **SAC-möte Helsingfors 3 – 4 Juni 2019**
 - Omröstning av förslaget (medlemmarna förväntas godkänna förslaget)
- **buildingSMART Peking summit, 29 okt – 1 nov 2019**
 - Respektive Chapter ska vara klara med sina anpassningar
- **De nya principerna börja gälla från och med 1 jan 2020**
 - BIM Alliance förväntas vara ett eget Chapter

* Ett Chapter kan bestå av ett eller flera företag och branschorganisationer inom ett eller flera länder

** Dokument som beskriver roller, ansvar och befogenheter inom en viss grupp



Slutsatser och rekommendationer

Slutsatser

1. **BIM Alliance Sweden kommer inte behöva byta namn till buildingSMART Sweden men har rätt att använda namnet**
2. **Det Nordeuropeiska samarbetet stärks och blir mer formellt än tidigare**
3. **Kostnaden för BIM Alliance kommer att öka och det kommer krävas ett större regionalt engagemang**

Rekommendationer

1. **BIM Alliance rekommenderas bilda en arbetsgrupp i syfte att ta fram en handlingsplan för övergången till individuellt Chapter.**
 - Arbetsgruppen kan med fördel bestå av personer från Tekniskt råd men bör även inkludera någon/några från intressentgrupperna och styrelsen
2. **BIM Alliance rekommenderas medverka vid framtagande och remiss av olika buildingSMART-dokument:**
 - Nordic Hub – Charter (principer och regler för hur hubben)
 - BIM Alliance Sweden - Charter (principer och regler för BIM Alliance)
 - Chapter agreement (Avtal mellan buildingSMART och BIM Alliance)

Tack!



svensk **bygg**tjänst

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Produktchef CoClass

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Direct +46 (0) 8 457 10 64

E-mail: mikael.malmkvist@byggjanst.se



Gala Dinner

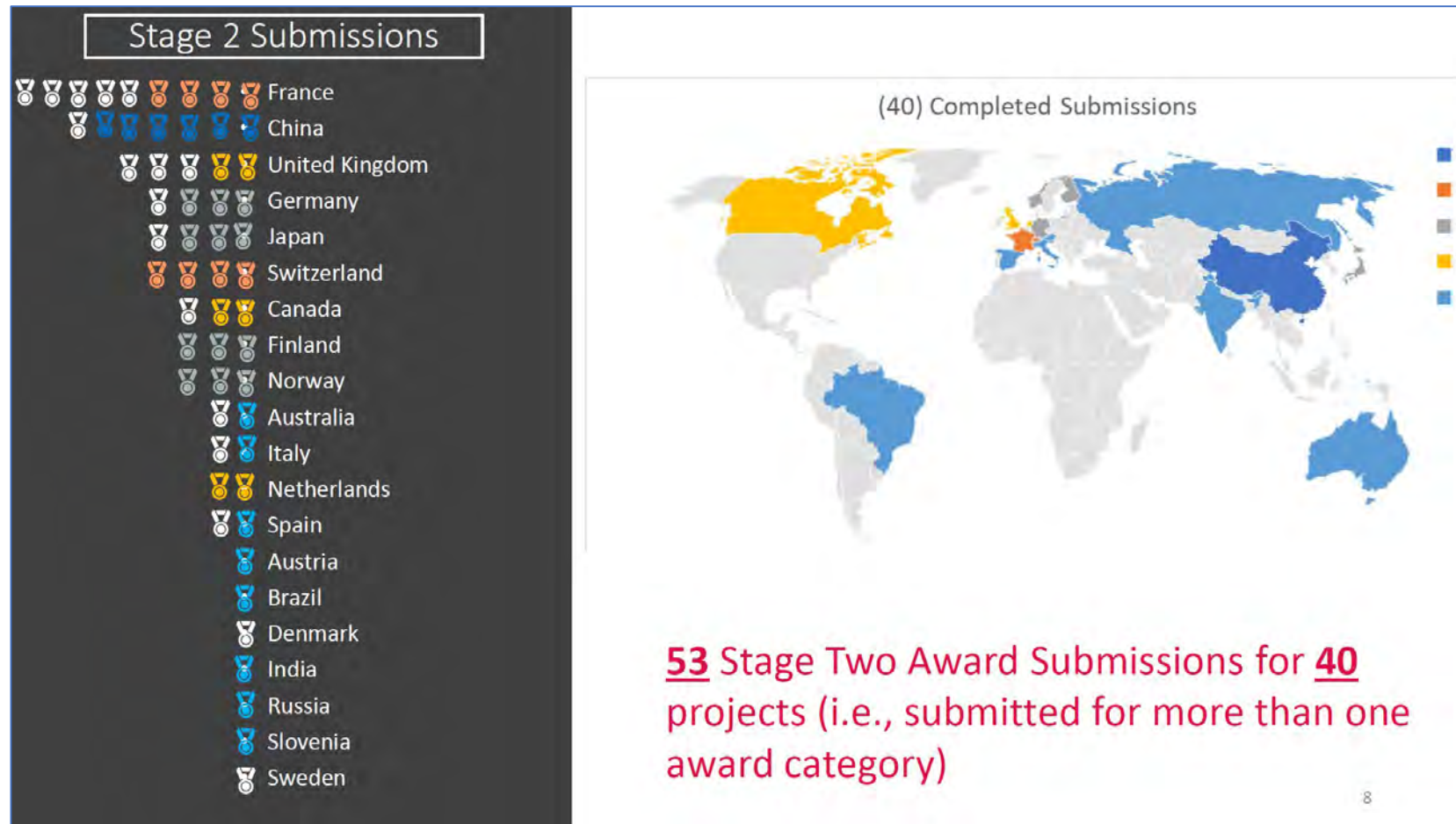
Technical Summit

Tokyo, Japan

Tuesday, October 16th, 2018

buildingSMART Awards

BIM Awards delades ut till bästa projekt för Design, Construction, Operation & Maintenance samt Student. Över 40 projekt deltog och de bästa projekten var både stora och mycket bra avseende den öppna informationshanteringen.



“This isn’t a beauty contest.”

-Need to see evidence of open BIM use

[40 PROJECTS]

openBIM/bSI Standards, Tools and Services

82.5%	52.5%	75.0%				47.5%					30.0%
33	21	30	12	14	13	19	6	9	6	6	12
IFC 2x3	IFC 4	Coordination View	Reference View	Design Transfer View	FM Handover View	BCF	mvdXML	bSDD	COBie	LandXML	Other

Operate

Design										Procure					Assemble					Operate																													
Existing Conditions Modeling (ECM)	Site Utilization Planning (SUP)	Site Analysis (SA)	Architectural Programming (AP)	Visualization (VIZ)	Simulation (SIM)	Spatial Analysis (SPA)	Specification Production (SP)	Quantity Take Off (QTO)	Cost analysis / Estimation (CA)	Total Cost of Ownership/ Service Life (TCO)	Design Authoring and Briefing (DAB)	Design Reviews (DR)	Sustainability Evaluation (SE)	Design to Maintain Analysis (D2M)	Structural Analysis (STR)	Lighting Analysis (LA)	Energy Analysis (EN)	Mechanical Analysis (MA)	Electrical Analysis (ELA)	Other Engineering Analysis (OEA)	Building System Analysis (BSA)	3D Coordination (3DC)	3D Control and Planning (3DP)	Product Library (PL)	Manufacturers Information (MI)	Product Selection (P.S)	Perform procurement (PP)	Code Validation (CV)	Construction System Design (CSD)	Phase Planning (PP)	Digital Fabrication (DF)	Field & Material tracking (FMT)	Digital Layout - BIM 2 Field (B2F)	QA/QC - Consistency control (CC)	Owner Approval (OA)	Pay Applications (P\$A)	Laser Scanning (LS)	Commissioning (COM)	Record Modeling (RM)	As Constructed Modeling (ACM)	Asset Management (AM)	Space Management and Tracking (SMT)	Maintenance & Repair Information (MRI)	FM Documentation (FMD)	Building (Preventative) Maintenance	Disaster Planning / Emergency Preparedness	Security & Key Management (SKM)	Communication move/add/change	Way finding (WF)
10	2	3	7	20	7	4	3	15	9	1	11	17	1	0	7	4	1	4	2	3	2	25	5	6	6	1	1	6	1	9	8	3	3	4	3	2	7	3	2	2	4	2	3	4	2	0	1	0	1

BIM Use Case	BIM Use Case	BIM Use Case Descriptions	BIM Use Case Descriptions
Phase		Select from list	Description
	1	Existing Conditions Modeling (ECM)	• A process in which a project team develops BIM(s) of the existing conditions for a site, facilities on a site, or a specific area within a facility. • This model can be developed in multiple ways depending on what is desired and what is most efficient. • Once the model is constructed, it can be queried for information, whether it be for new construction or a modernization project.
	2	Site Utilization Planning (SUP)	• A process in which BIM(s) is used to graphically represent both permanent and temporary facilities on site, often with the construction activity schedule. • Because the 3D model components can be directly linked to the schedule, site management functions such as visualized planning, short-term re-planning, and resource analysis can be analyzed over different spatial and temporal data • Additional information incorporated into the model can include labor resources, materials and associated deliveries, and equipment location.
	3	Site Analysis (SA)	• A process in which BIM/GIS tools are used to evaluate properties in a given area to determine the most optimal site location for a future project. • The site data collected is used to first select the site and then the position the building based on engineering criteria (e.g. solar path, utility availability, hazardous material).
	4	Architectural Programming (AP)	• A process in which an architectural BIM(s) is used to efficiently and accurately assess design performance in regard to spatial requirements. • The developed BIM allows the project team to analyze space and understand the complexity of space standards and regulations, which saves time and provides the team with opportunity of doing more value-adding activities. • Critical decisions are made in this phase of design and brings the most value to the project when needs and options are discussed with the client and the best approach is analyzed.
	5	Visualization (VIZ)	• A process in which BIM(s) is used for creating images, diagrams, or animations to communicate a message. • Used for rendering, understanding natural lighting, supporting site selection and positioning, for the purpose of marketing, understanding design intent and constructability. • Visualization through visual imagery has been an effective way to communicate both abstract and concrete ideas. • The development of augmented and virtual reality also supports advance visualization.



China Railway Design Corporation
Mudanjiang-Jiamusi Passenger
Dedicated Railway
China



Honorable Mention

Special Distinction for Infra (Rail) IFC Standards
Development for Infrastructure Design

China Railway Design Corporation - Mudanjiang-Jiamusi Passenger Dedicated Railway - China

Location: Heilong, China

- length of 371km
 - 141 bridges of 143km,
 - 34 tunnels of 64 km,
 - subgrade 160km and
 - 8 stations,
- Divided into nine tenders

The aims of **BIM** design are to:

- verify the implementation of **China Railway BIM Data Standard**;
- to explore the feasibility of BIM delivery in railway engineering design;
- to collaborate between various participants based on BIM technology;
- to improve construction management using BIM technology.



subgrade

bridge

railway

railway

railway

turnout

fence

drainage

Honorable Mention:
Special Distinction for Infra (Rail) IFC Standards Development
ShareFile: China Railway Design Corporation
Project: Mudanjiang-Jiamusi passenger dedicated railway
Category: Design
Chapter: China
Country: China

ballast

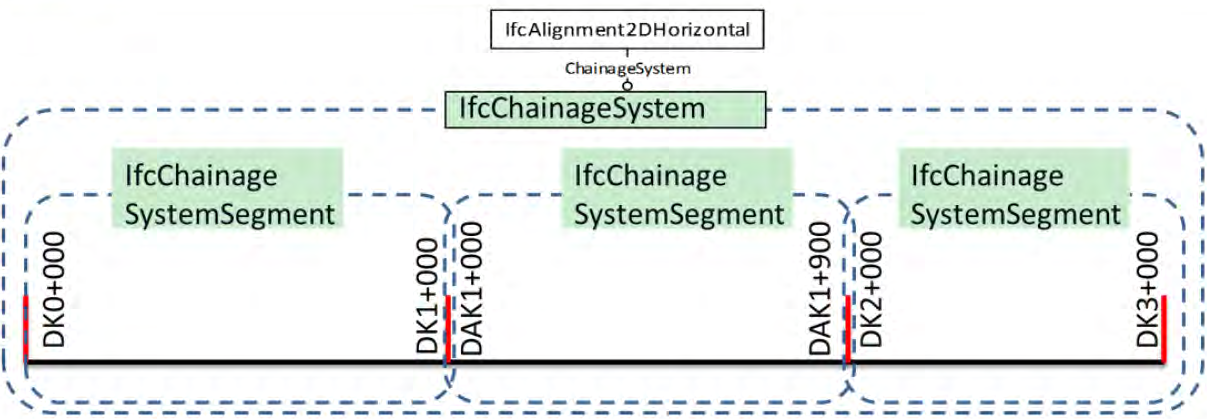
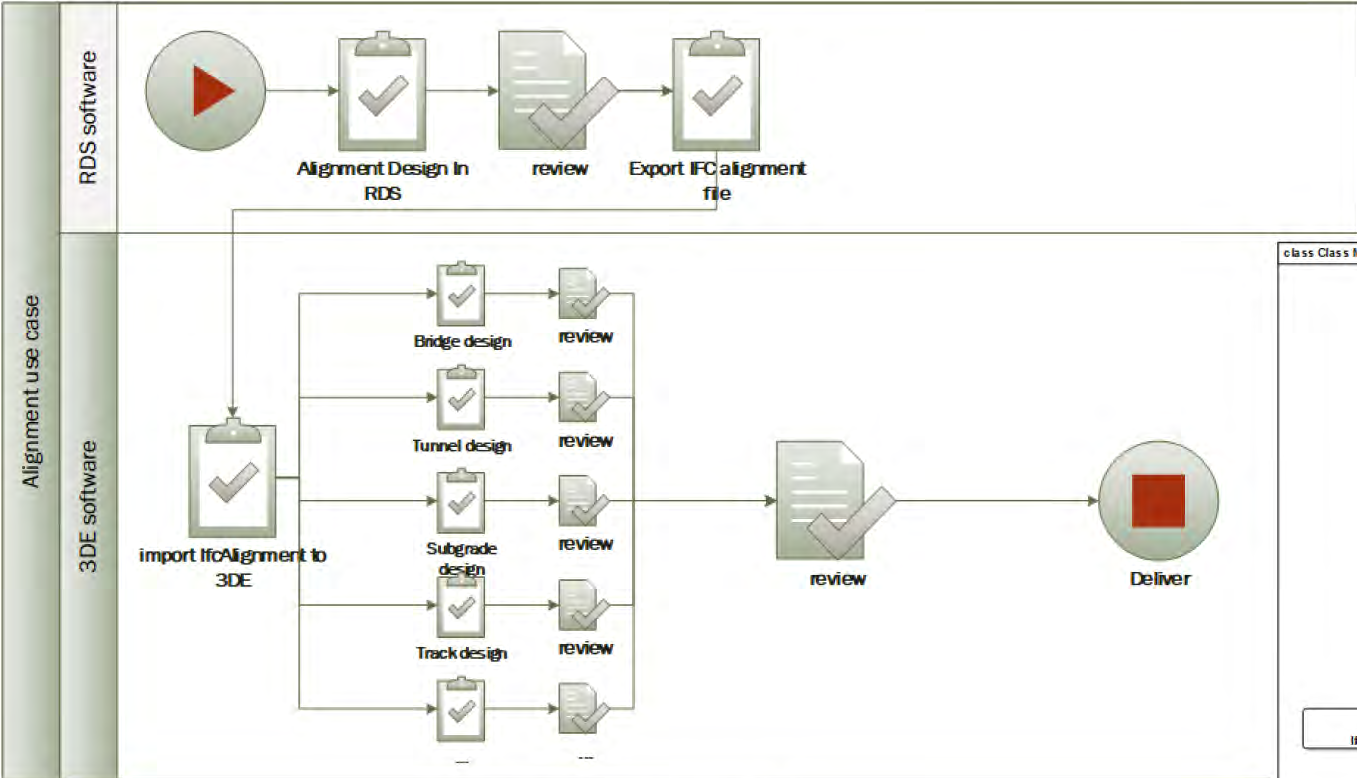
culvert

IFC 2x3	IFC 4	BCF	mvdXML	tsDD	COBie	LandXML	Other
No	Yes	No	No	No	No	No	Yes

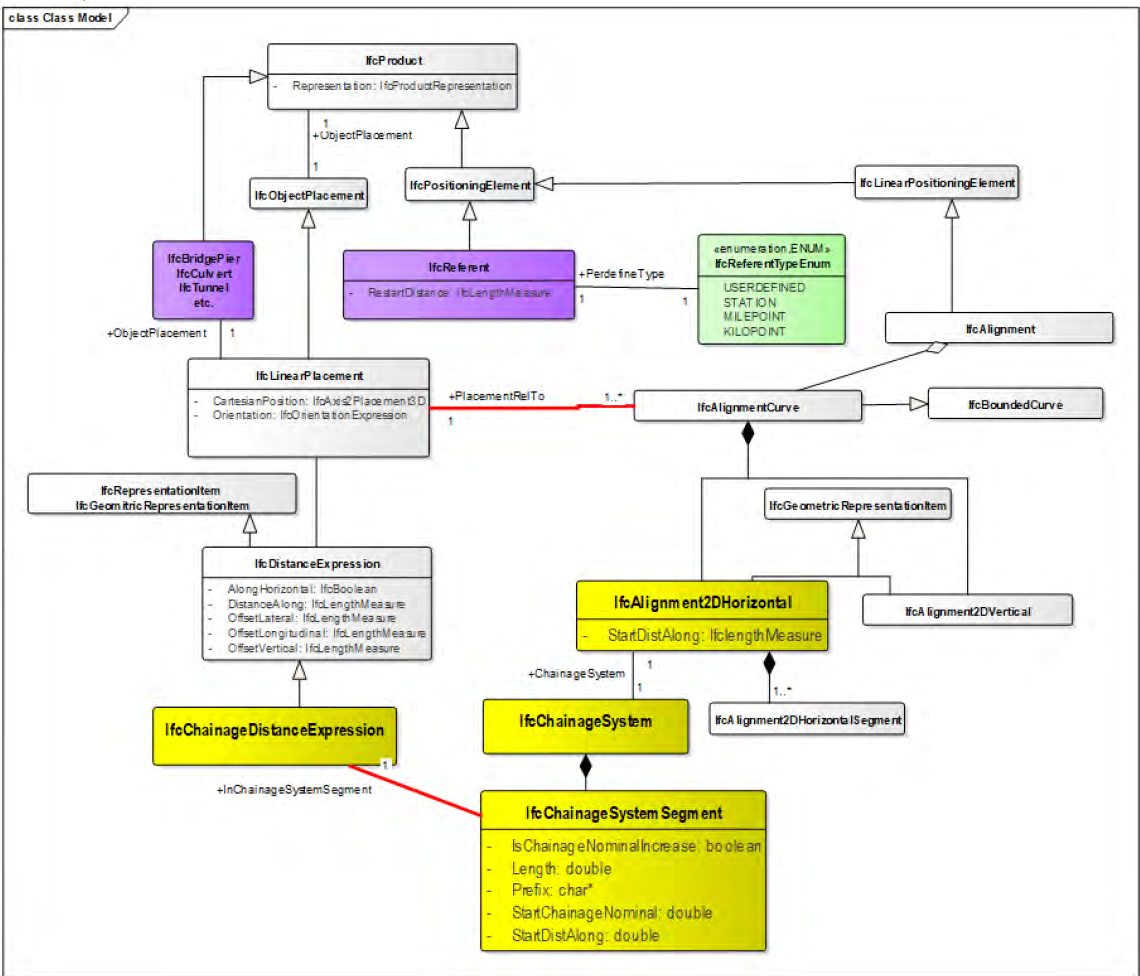
station

Written Documents	Interviews/ Testimonials	Images & Photos	Presentations	Videos	Use Case Doc
Design	Design	Design	None	Design	10

China Railway Design Corporation - Mudanjiang-Jiamusi Passenger Dedicated Railway - China



System and Data Models

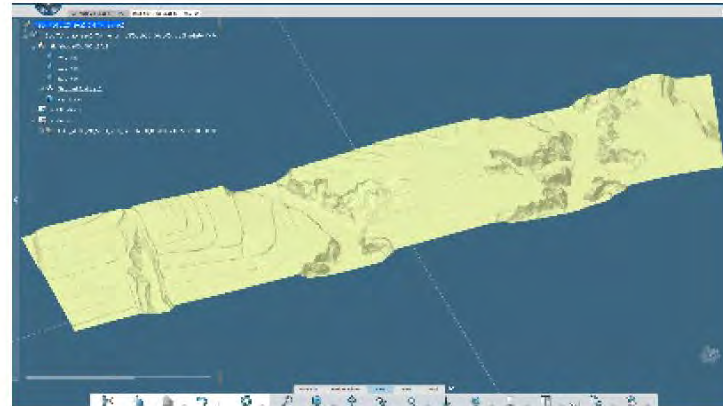


China Railway Design Corporation - Mudanjiang-Jiamusi Passenger Dedicated Railway

Use Cases



Design Authoring and Briefing (DAB)



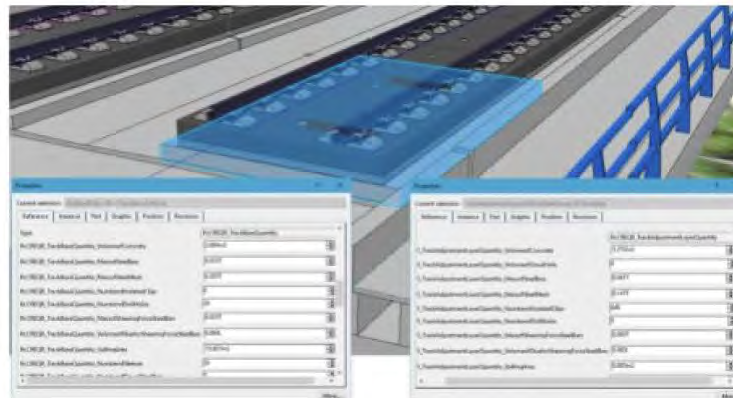
Existing Condition Modeling (ECM)



Visualization (VIZ)



3D Coordination (3DC)



Quantity Take Off (QTO)



Owner Approval (OA)



Losinger Marazzi

Quai Vernets

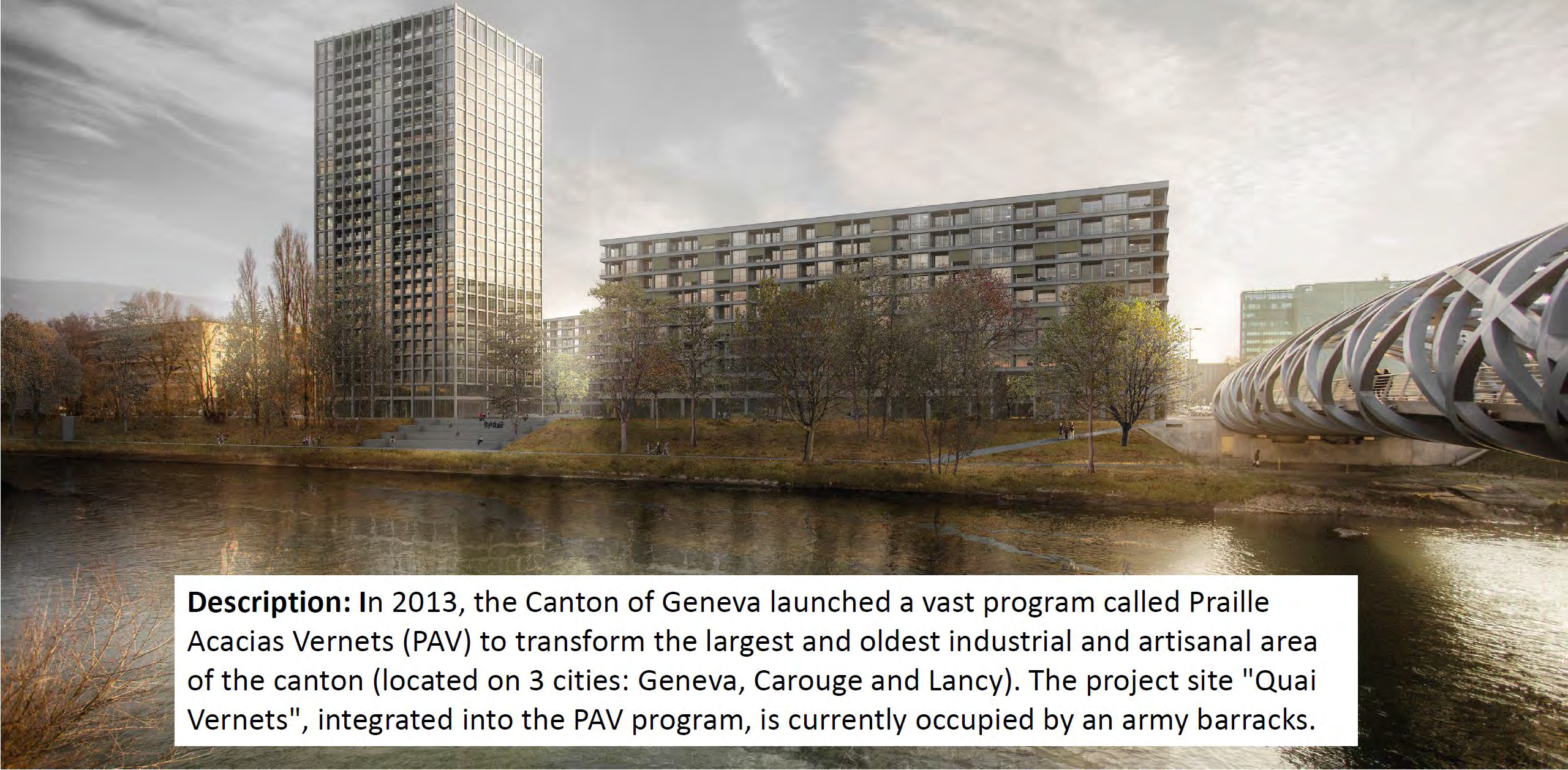
Switzerland



Honorable Mention

Special Distinction for Extensive OpenBIM
Implementation for Design

Losinger Marazzi - Quai Vernets – Switzerland



Description: In 2013, the Canton of Geneva launched a vast program called Praille Acacias Vernets (PAV) to transform the largest and oldest industrial and artisanal area of the canton (located on 3 cities: Geneva, Carouge and Lancy). The project site "Quai Vernets", integrated into the PAV program, is currently occupied by an army barracks.

Honorable Mention for Design

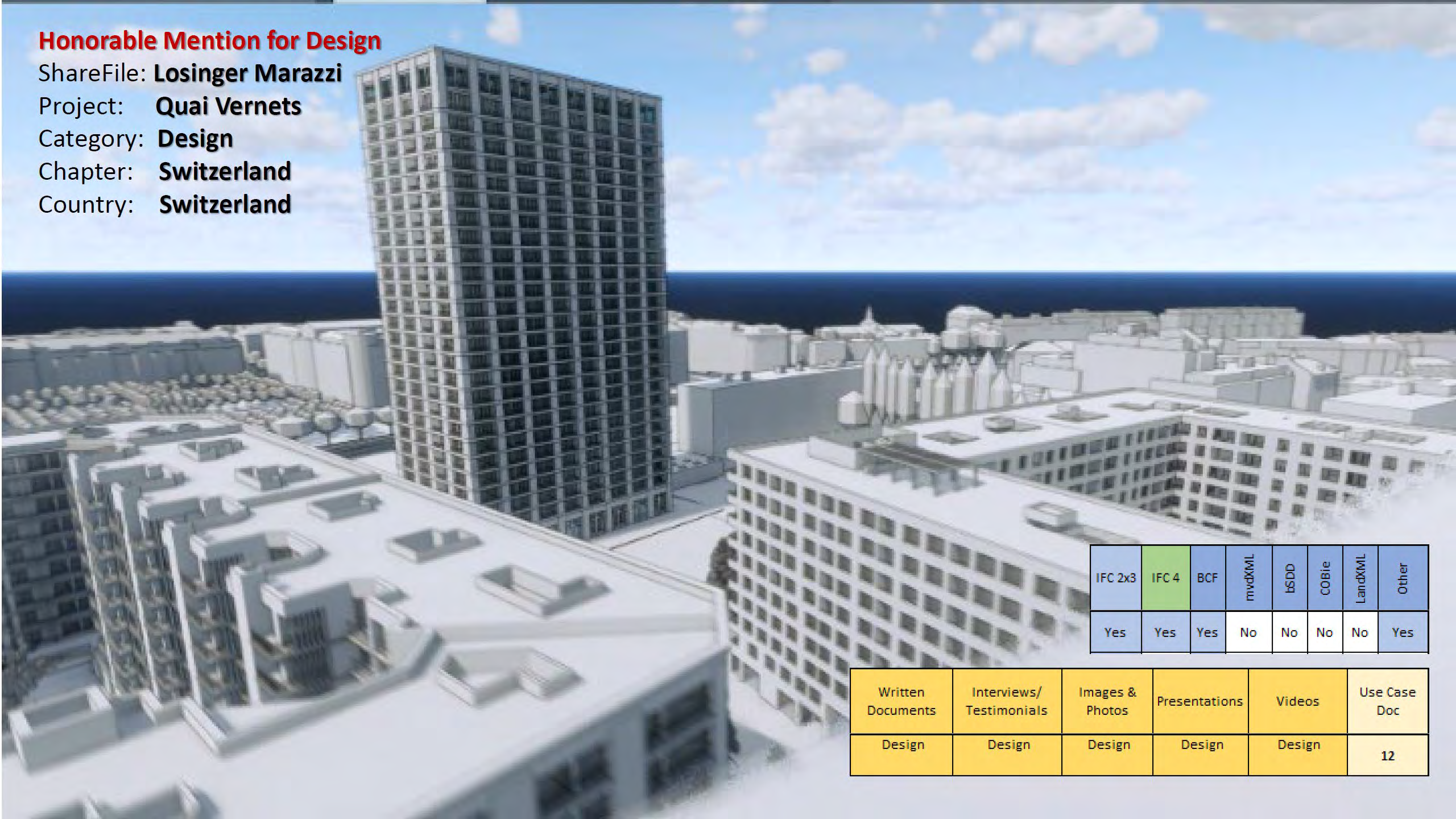
ShareFile: Losinger Marazzi

Project: Quai Vernets

Category: Design

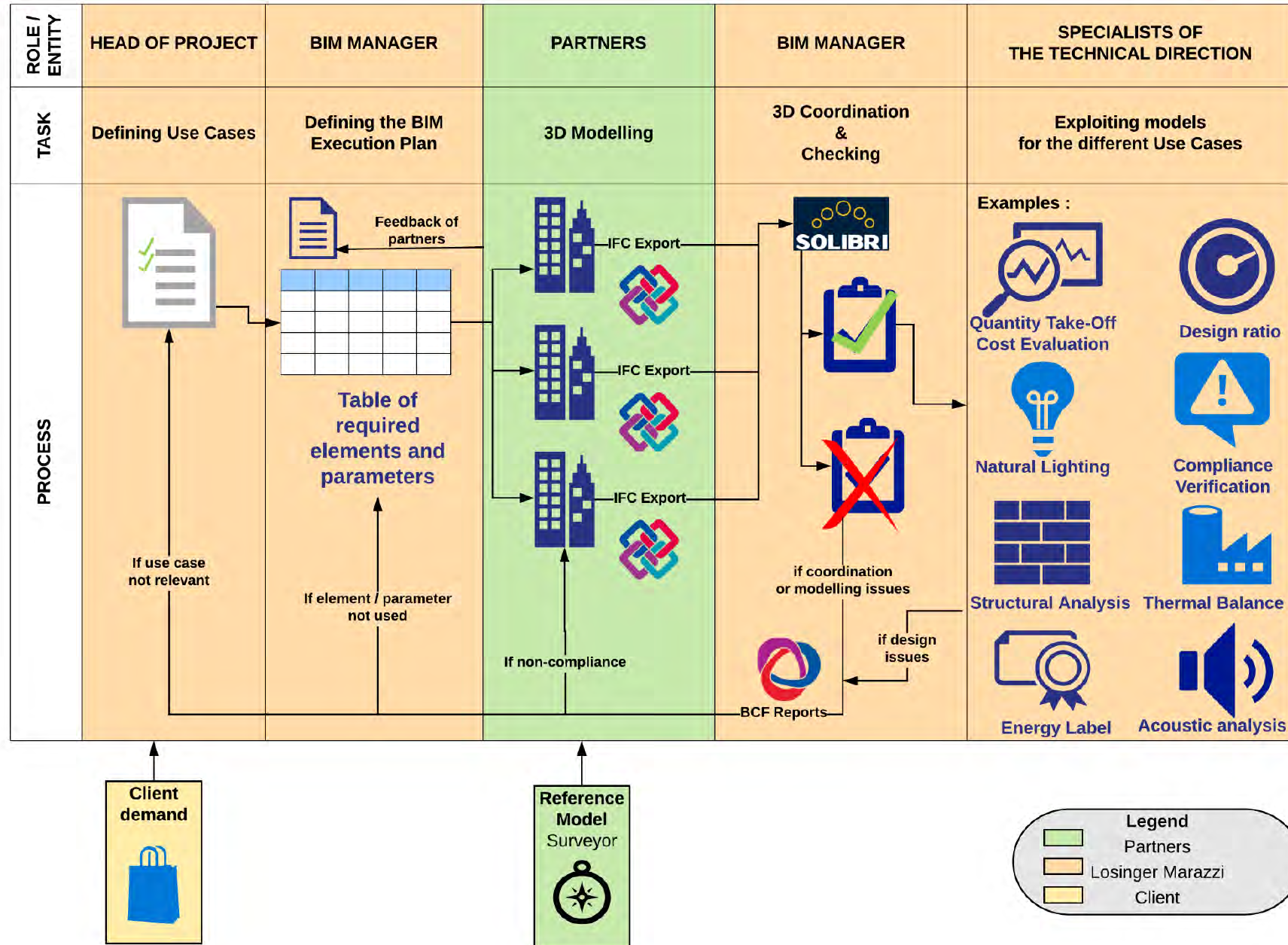
Chapter: Switzerland

Country: Switzerland



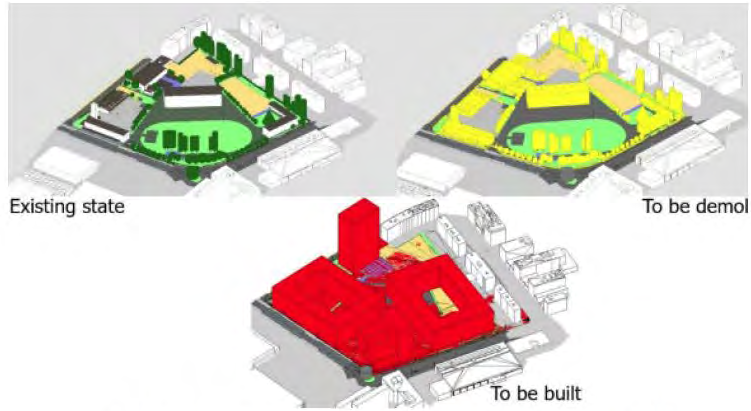
IFC 2x3	IFC 4	BCF	mvdXML	bSDD	COBie	LandXML	Other
Yes	Yes	Yes	No	No	No	No	Yes

Written Documents	Interviews/ Testimonials	Images & Photos	Presentations	Videos	Use Case Doc
Design	Design	Design	Design	Design	12



Losinger Marazzi - Quai Vernets – Switzerland

Use Cases



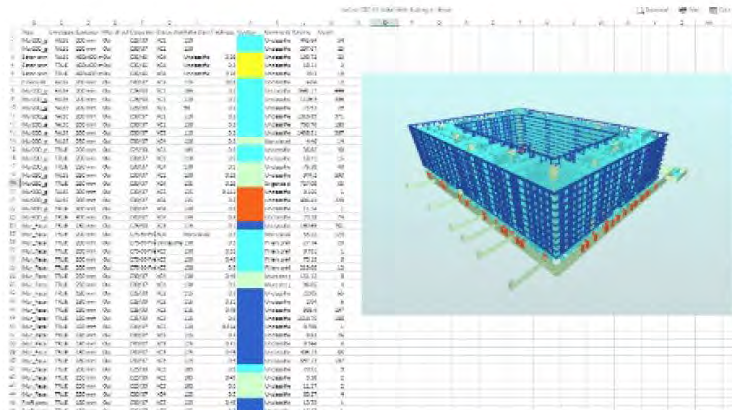
Existing Conditions Modeling (ECM)



Architectural Programming (AP)

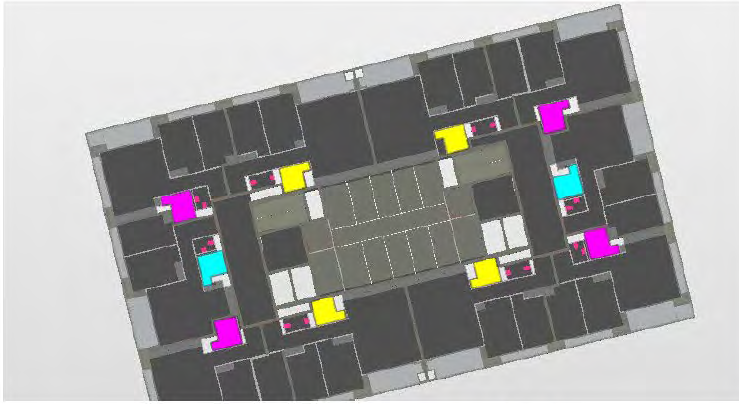


Visualization (VIZ)

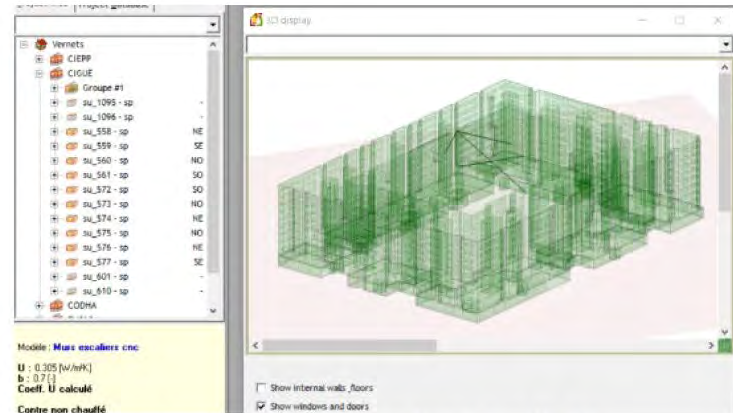


Losinger Marazzi - Quai Vernets – Switzerland

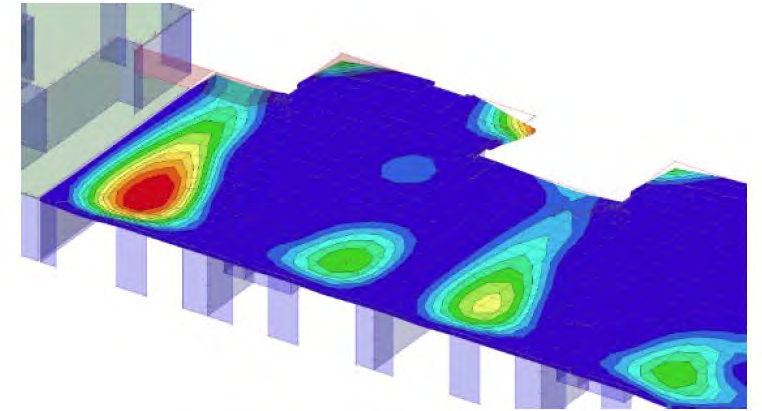
Use Cases



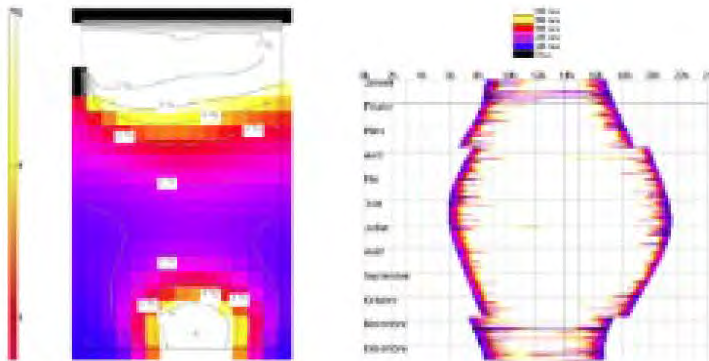
Design Reviews (DR)



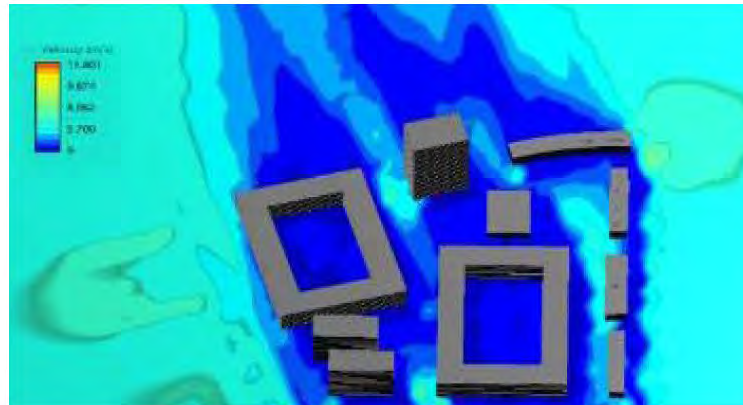
Sustainability Evaluation (SE)



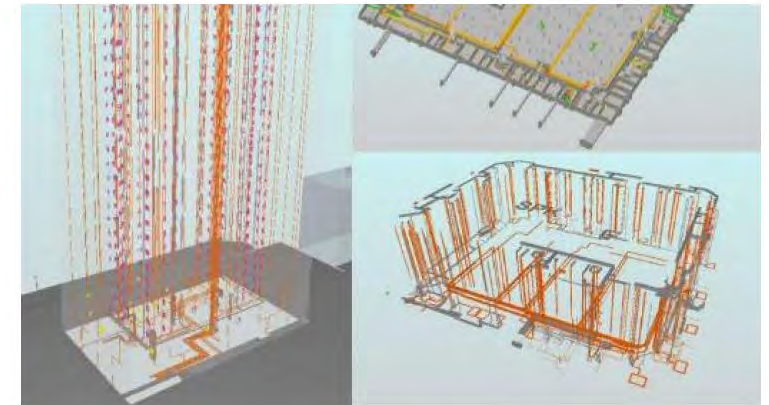
Structural Analysis (STR)



Lighting Analysis (LA)



Other Engineering Analysis (OEA) – Wind & Noise



3D Coordination (3DC)



Losinger Marazzi

VORTEX Chavannes-près-Renens

Switzerland



Honorable Mention

Special Distinction for Extensive OpenBIM
Implementation for Construction

Losinger Marazzi - VORTEX Chavannes-près-Renens - Switzerland

Description: The investor decided to build a students residence for The University of Lausanne (UNIL) & the EFPL (École Polytechnique Fédérale de Lausanne) at Chavannes-près-Renens. This building will be the Olympic village during the Youth Olympic Games 2020 (JOJ 2020).



Honorable Mention for Construction

ShareFile: **Losinger Marazzi**
Project: **VORTEX Chavannes-près-Renens**
Category: **Construction**
Chapter: **Switzerland**
Country: **Switzerland**

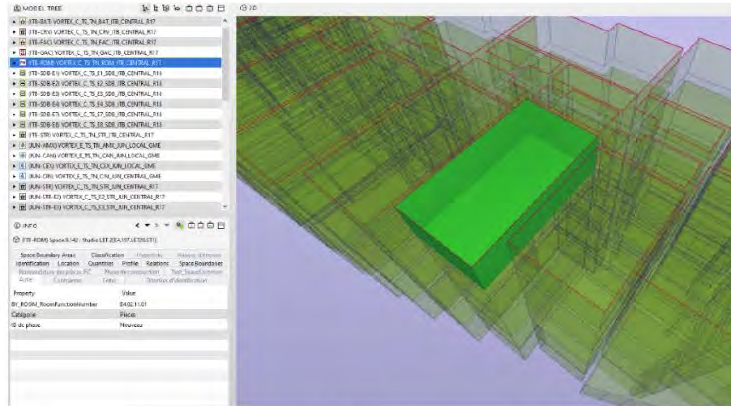


IFC 2x3	IFC 4	BCF	mvdXML	ISDD	COBie	LandXML	Other
Yes	Yes	Yes	No	No	No	No	Yes

Evidence					
Written Documents	Interviews/ Testimonials	Images & Photos	Presentations	Videos	Use Case Doc
Construction	Construction	Construction	Construction	Construction	7D+5C

Losinger Marazzi - VORTEX Chavannes-près-Renens - Switzerland

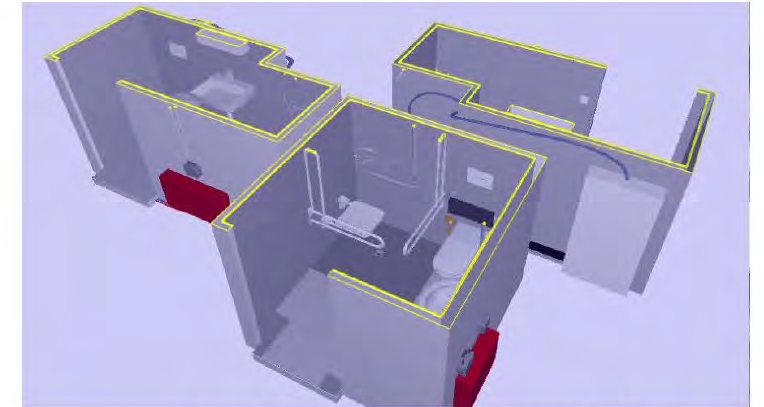
Use Cases



Architectural Programming (AP)



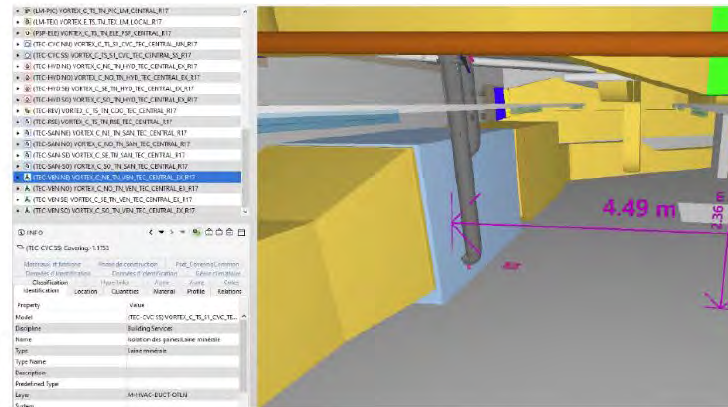
Visualization (VIZ)



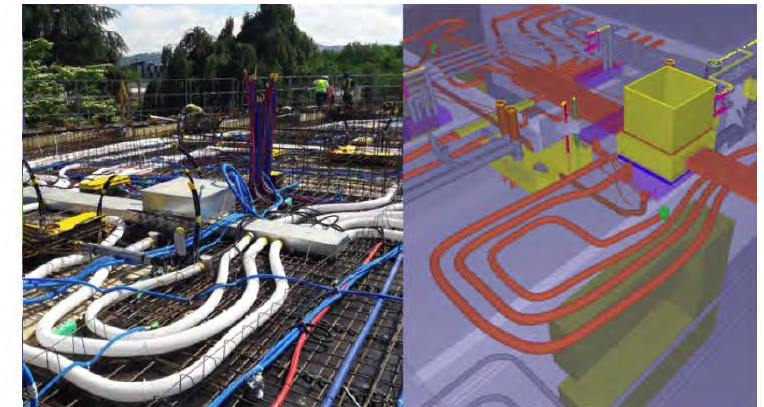
Specification Production (SP)



Quantity Take Off (QTO)



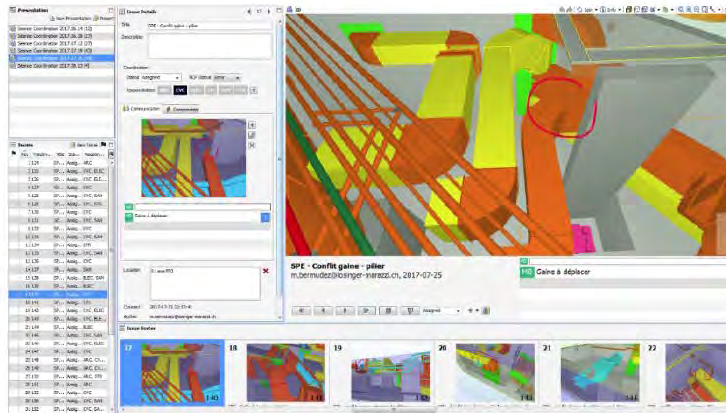
Design Authoring and Briefing (DAB)



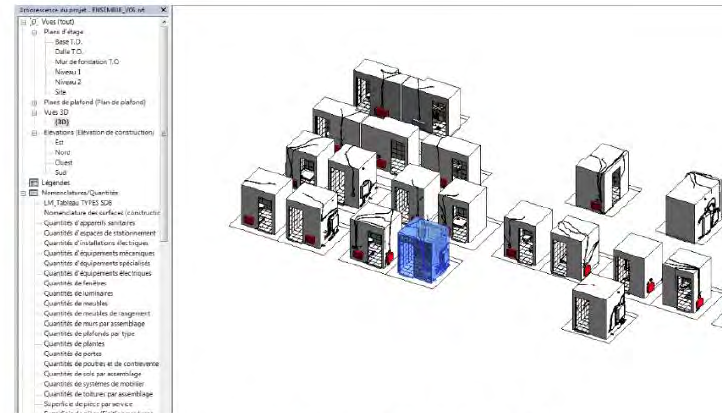
Design Reviews (DR)

Losinger Marazzi - VORTEX Chavannes-près-Renens - Switzerland

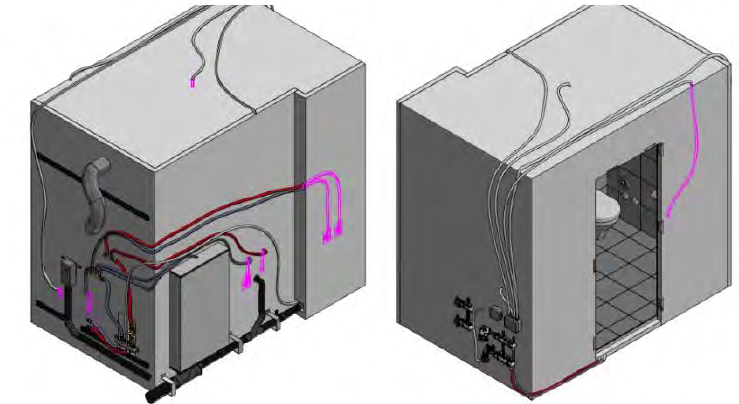
Use Cases



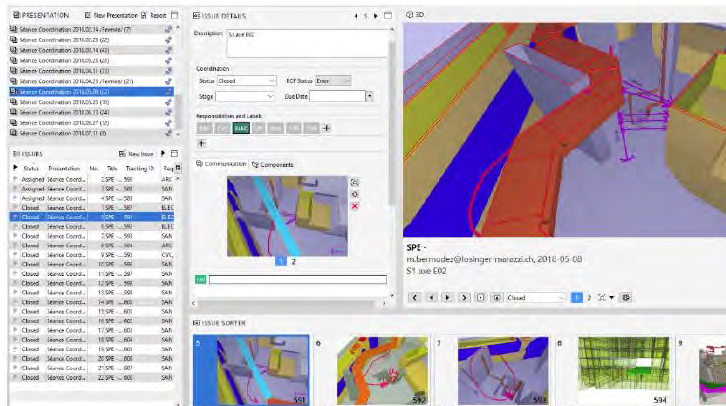
3D Coordination (3DC)



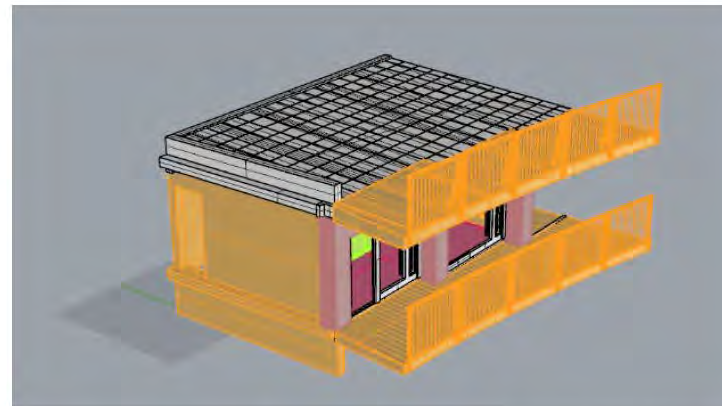
Product Library (PL)



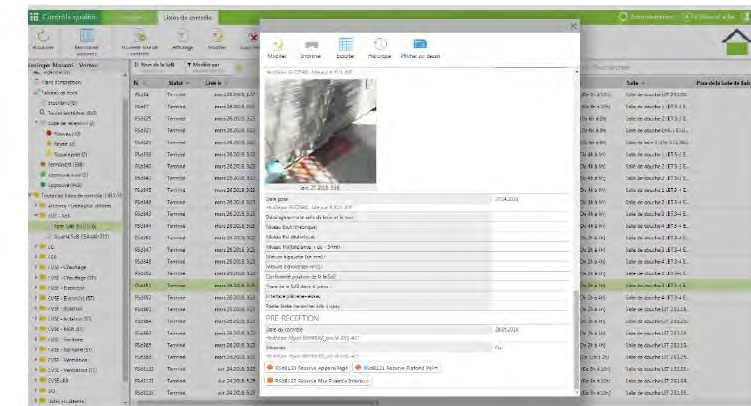
Manufacturers Information (MI)



Construction System Design (CSD)



Design Authoring and Briefing (DAB)



Digital Layout – BIM to Field (B2F)



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2018 AWARDS

...and the winners are...



“The strength of this submission is that it was achieved through a central model server, combining federated sub-models to make a single model. This is not born out in each use-case, but is very significant, especially when many people worldwide are hesitant that it is possible.”

Design Category

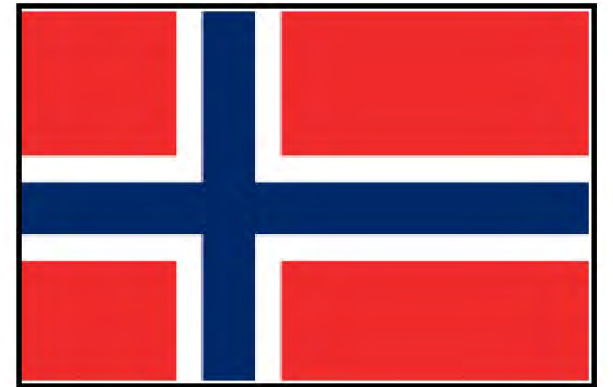


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International home of openBIM

Aas-Jakobsen AS

Terminal 2 - Oslo Airport Gardermoen

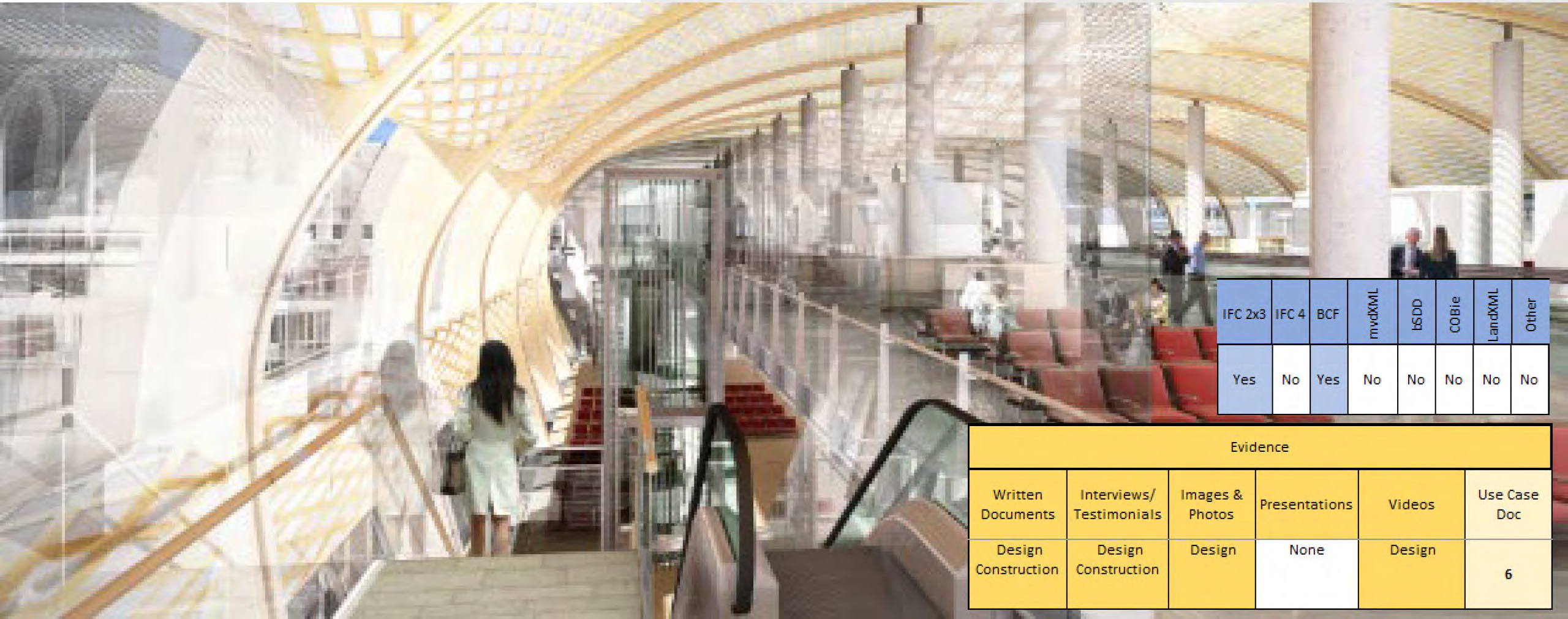
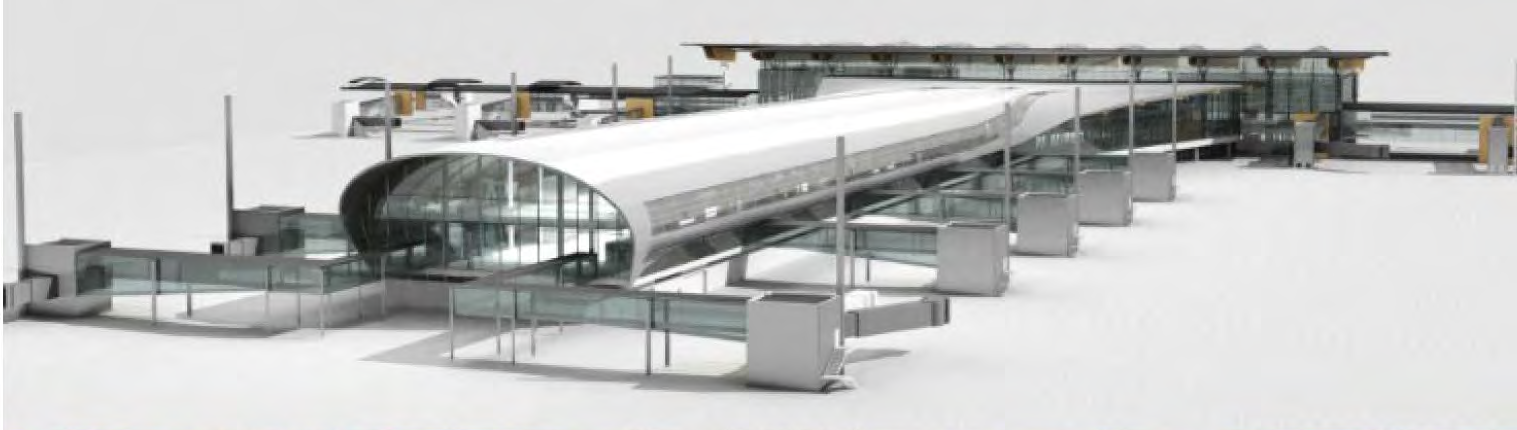
Norway



Design Category

Winner – Design Category

ShareFile: **Aas-Jakobsen AS**
Project: **Terminal 2 - Oslo Airport Gardermoen**
Category: **Design (also Construction)**
Chapter: **Norway**
Country: **Norway**

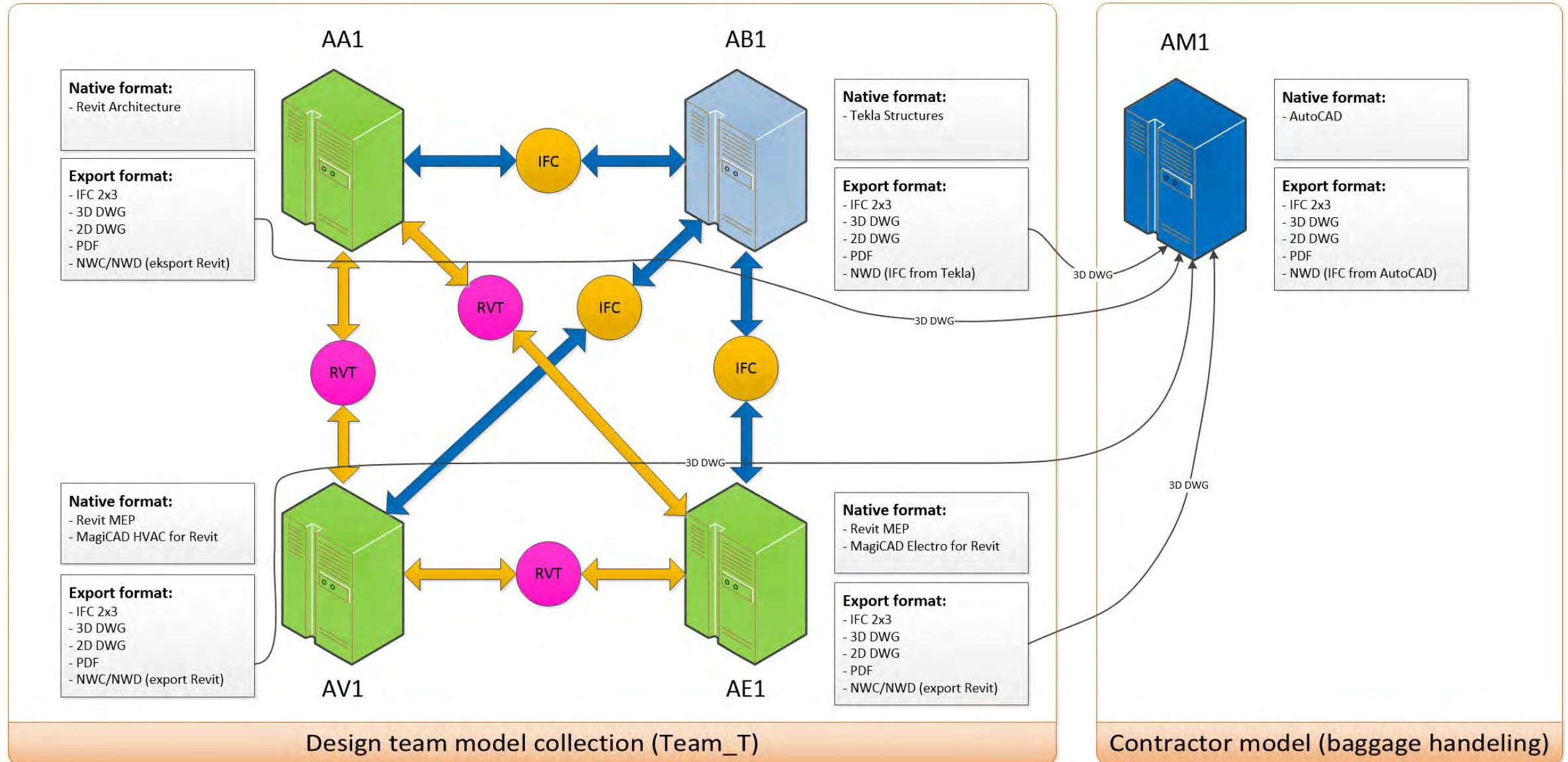


IFC 2x3	IFC 4	BCF	mydXML	bsDD	COBie	LandXML	Other
Yes	No	Yes	No	No	No	No	No

Evidence					
Written Documents	Interviews/ Testimonials	Images & Photos	Presentations	Videos	Use Case Doc
Design Construction	Design Construction	Design	None	Design	6

Aas-Jakobsen AS - Terminal 2 - Oslo Airport Gardermoen – Norway

Main File Flow – Design Team



Aas-Jakobsen AS - Terminal 2 - Oslo Airport Gardermoen – Norway

Contractor Design-Build Models

LP#



Native format:

- Various formats

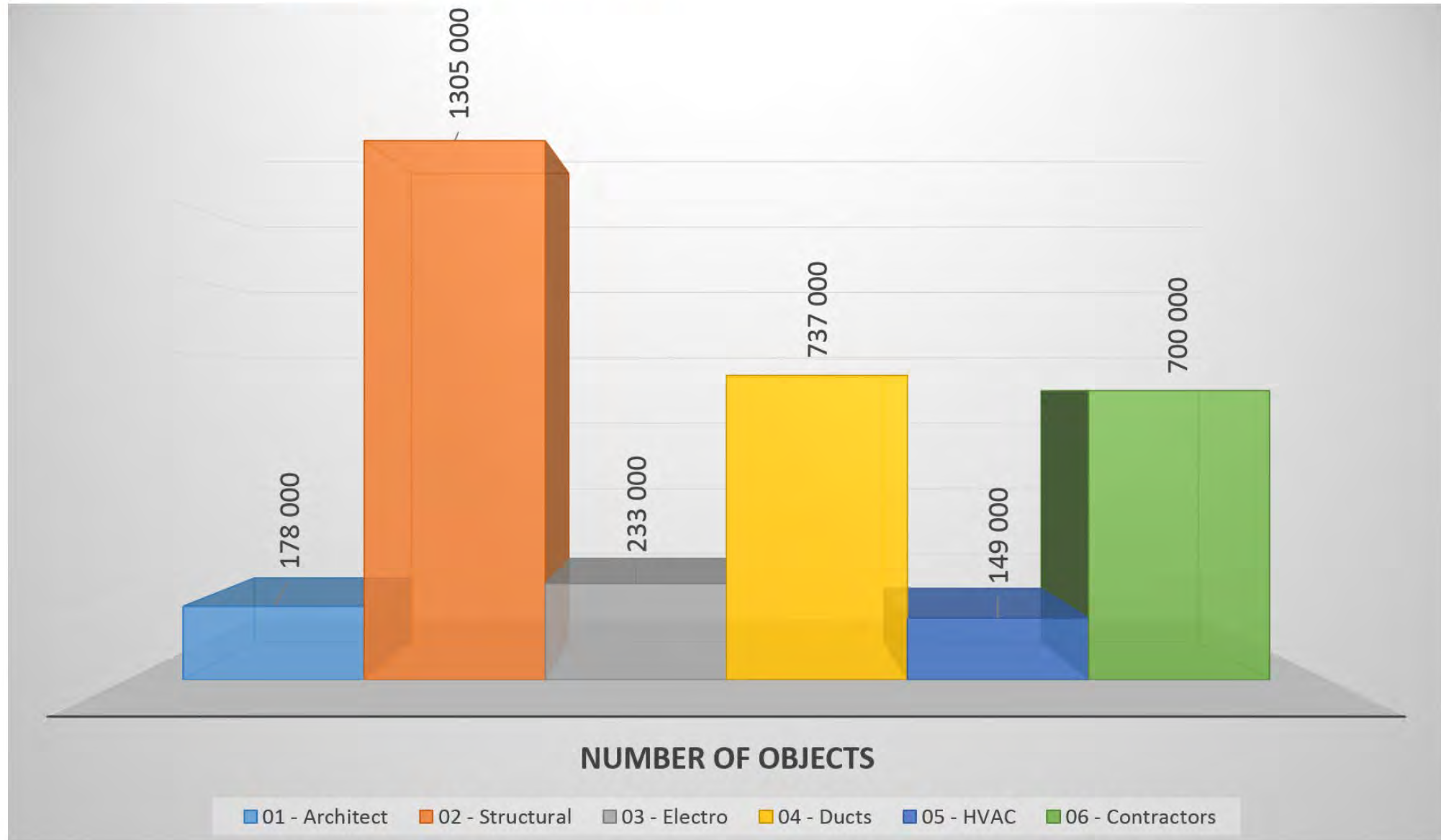
Export format:

- IFC 2x3
- 3D DWG
- 2D DWG
- PDF
- NWD (IFC from AutoCAD)

No.	Contract name DB	Contractor	BIM application	Distributed format	Format submitted
K-72221	Ground and concrete	NCC	Tekla Structures	Original + IFC	Original + IFC
K-72222	Prefab steel og concrete	Contiga	Tekla Structures	Original + IFC	Original + IFC
K-72223	Roof and facades	SGS	Tekla Structures	Original + IFC	Original + IFC
K-72226	Roof SBW	Kruse Smith	Tekla Structures / Revit	Original + IFC	Original + IFC
K-72227	Roof railway station	SGS	Tekla Structures	Original + IFC	Original + IFC
K-72229	Maintaince system	Noracon	Revit	IFC	Original + IFC
K-72233	Interior work	Hent	Tekla Structures	IFC	Original + IFC
K-72242	Prefab steel og concrete	Spenncon	Tekla Structures	Original + IFC	Original + IFC
K-72245	Roof and facades Peir north	Kruse Smith	Tekla Structures / Revit	Original + IFC	Original + IFC
K-72246	Ceilings	SGS	Tekla Structures / Rhino	Original + IFC	Original + IFC
K-72249	Maintaince system	Noracon	Revit	IFC	Original + IFC
K-72251	Fixed passenger bridges	Ø.M. Fjeld AS	Tekla Structures	Original + IFC	Original + IFC
K-72252	Movable passenger bridges	CIMC	Inventor / Revit	IFC	Original + IFC
K-72253	Interior work	Hent	Tekla Structures	Original + IFC	Original + IFC
K-72411	Heat pumps	Nordisk Kulde AS	Ukjent	-	Original + IFC
K-72421	Pipes Terminal	Oras AS	Revit via Team_T	-	Original + IFC
K-72431	HVAC Terminal	GK Norge AS	Revit via Team_T	-	Original + IFC
K-72441	Waste facilities	Envac Norge AS	Ukjent	-	Original + IFC
K-72522	Elevators	Kone Heiser	Revit	IFC	Original + IFC
K-72523	Moving walkways	Kone Heiser	Revit	IFC	Original + IFC
K-72527	Electro infrastructur	OneCo	Revit via Team_T	-	Original + IFC
K-72528	Electrical power distribution	Satema	Revit via Team_T	-	Original + IFC
K-72529	Electro infrastructur	Bravida	Revit via Team_T	-	Original + IFC

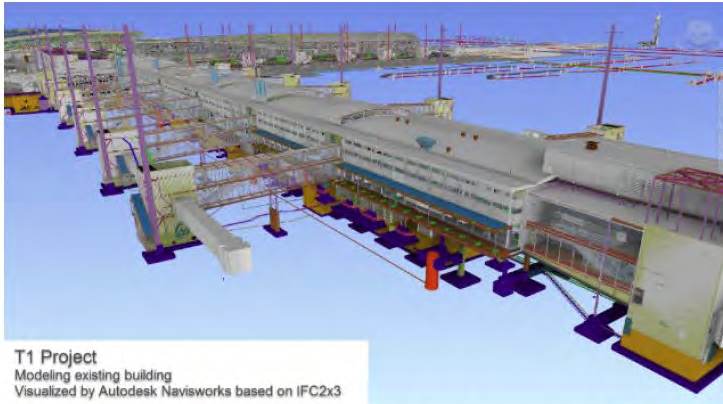
Aas-Jakobsen AS - Terminal 2 - Oslo Airport Gardermoen – Norway

Number of Objects in IFC Files

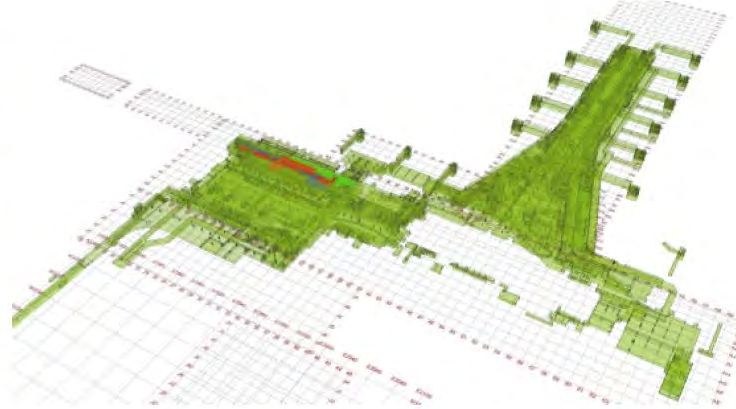


Aas-Jakobsen AS - Terminal 2 - Oslo Airport Gardermoen – Norway

Use Cases



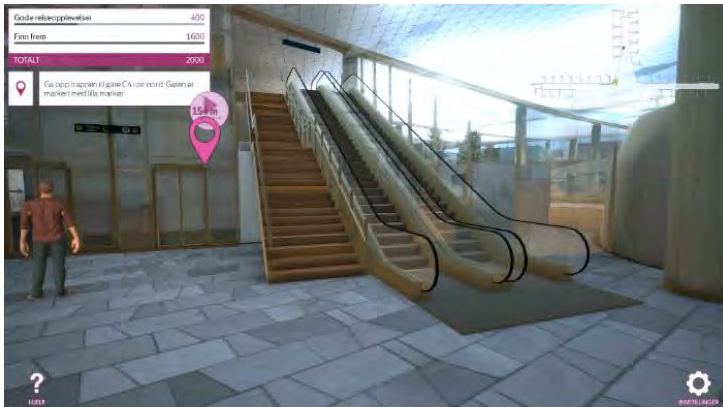
Existing Conditions Modeling (ECM)



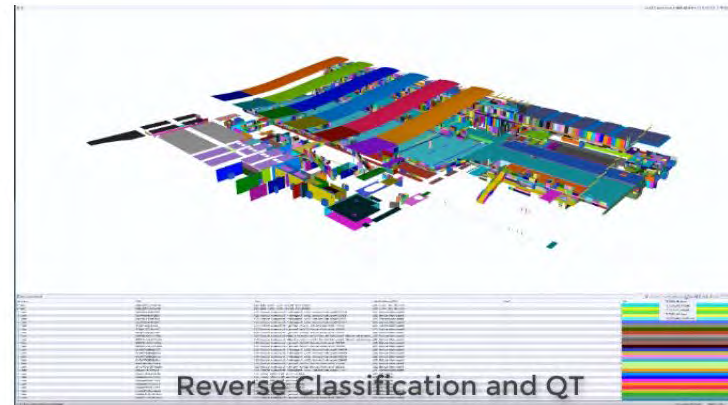
Architectural Programming (AP)



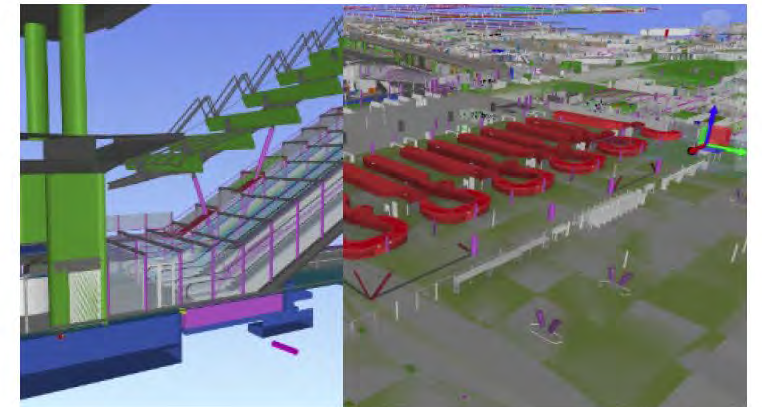
Visualization (VIZ)



Simulation (SIM)



Quantity Take Off (QTO)



3D Coordination (3DC)

Aas-Jakobsen AS - Terminal 2 - Oslo Airport Gardermoen – Norway

Use Cases



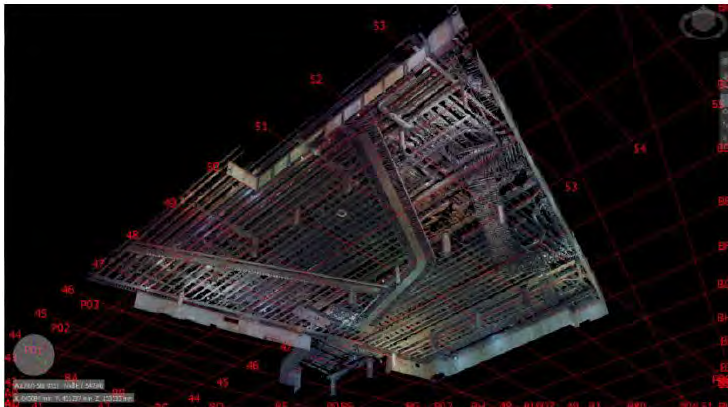
Code Validation (CV)



Phase Planning (PP)



Digital Fabrication (DF)



Laser Scanning (LS)



Commissioning (COM)



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Bouwcombinatie Pontsteiger

90m Luxury Residential Housing Project

Netherlands



Construction Category

Winner – Construction Category

ShareFile: **Bouwcombinatie Pontsteiger**

Project: **Pontsteiger**

Category: **Construction**

Chapter: **Benelux**

Country: **Netherlands**

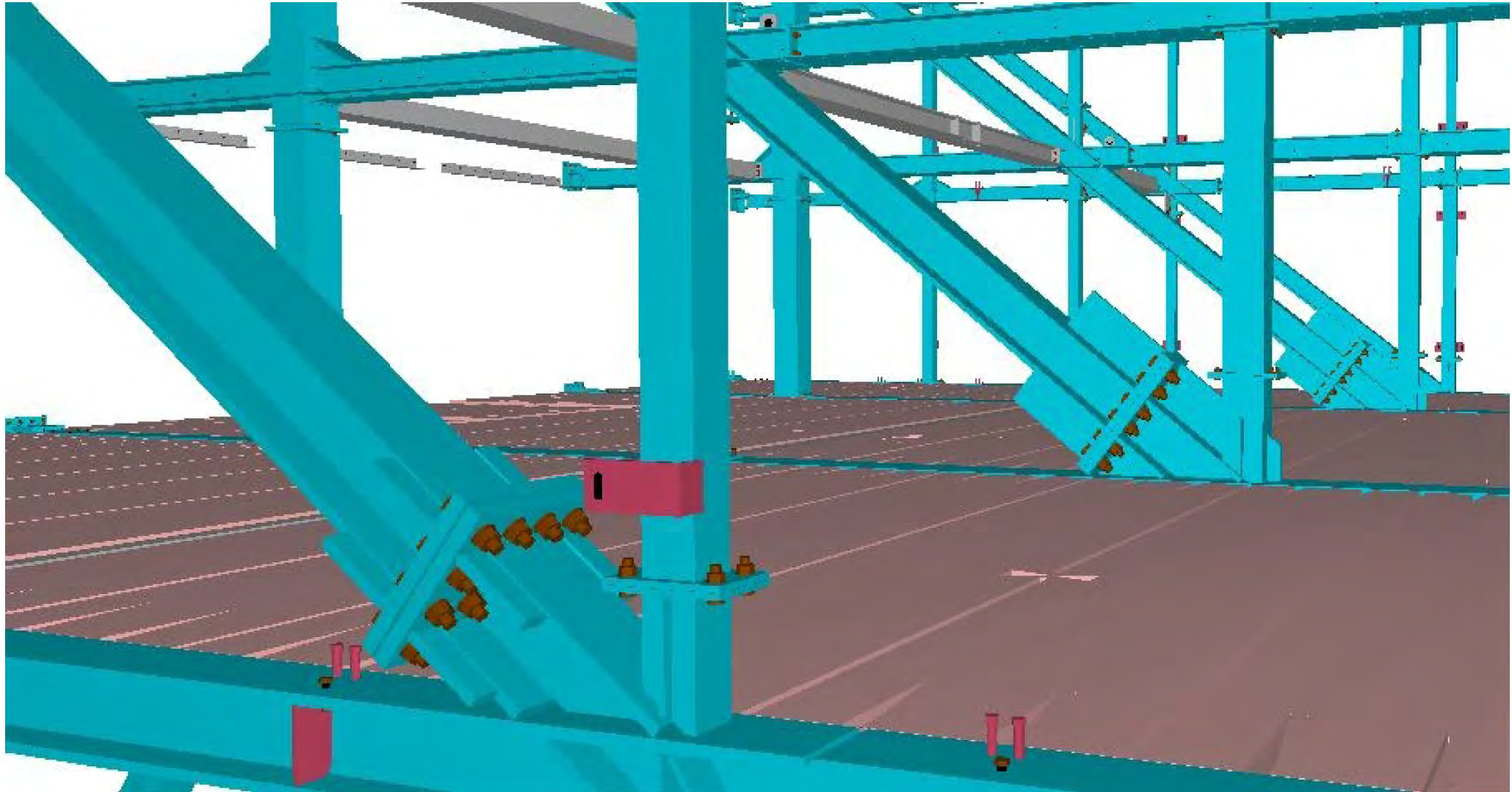


IFC 2x3	IFC 4	BCF	mvdXML	bSDD	COBie	LandXML	Other
Yes	No	Yes	No	No	No	No	No

Evidence					
Written Documents	Interviews/ Testimonials	Images & Photos	Presentations	Videos	Use Case Doc
Construction	Construction	Construction	Construction	Construction	1D+1C

Bouwcombinatie Pontsteiger - 90m Luxury Residential Housing Project – Netherlands

Level of Detail Modeled



Bouwcombinatie Pontsteiger - 90m Luxury Residential Housing Project – Netherlands

OpenBIM Software Used

Software

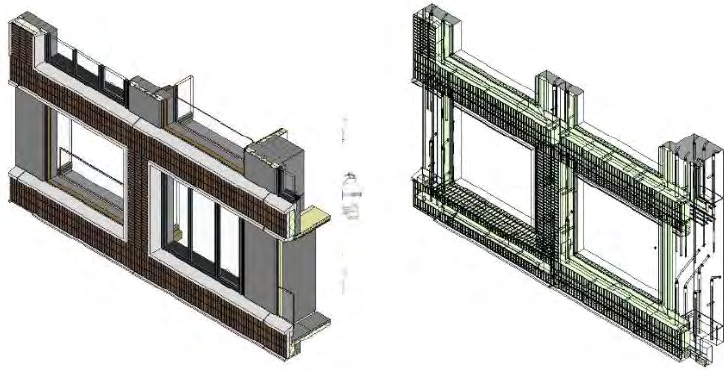
Autodesk Revit Architecture 2015
BIMCollab
Docstream
Kubus BCF-connector
Solibri Model Checker
Solibri Viewer
Sourceforge
Tekla Structures
Tekla BIM Sight

Use

Models are updated weekly and exported as IFC file
Coordinate the comments.
Tool used to share files
To find the issues we needed to solve
All models were checked on a regular basis
All designers, project managers and quality surveyors use.
Exporting to IFC was done with the open-source IFCexporter
Complete 3D steel construction - IFC-export
Used to view models separately

Bouwcombinatie Pontsteiger - 90m Luxury Residential Housing Project – Netherlands

Use Cases



3D Coordination (3DC)



Digital Fabrication (DF)



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Minnucci Associati
Naples Central Station
Italy



O&M Category

Winner – O&M Category

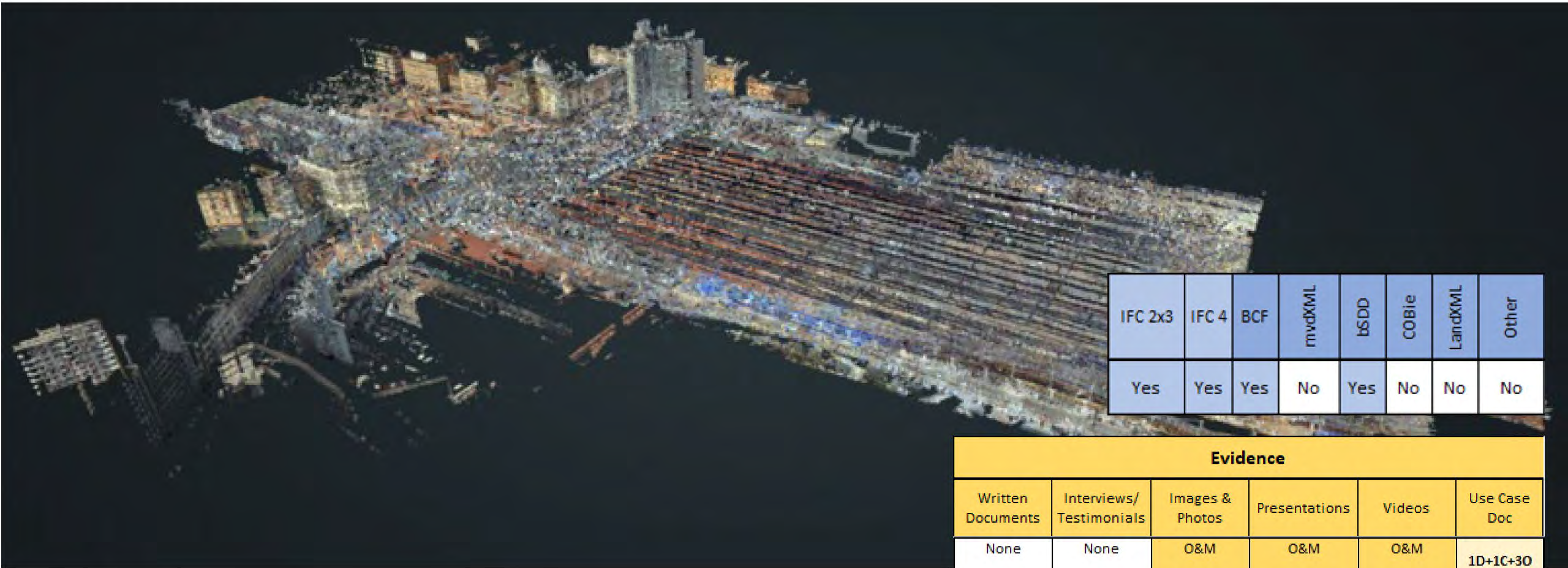
ShareFile: Minnucci Associati

Project: Bim process application case study: Naples Central Station

Category: O&M

Chapter: None

Country: Italy

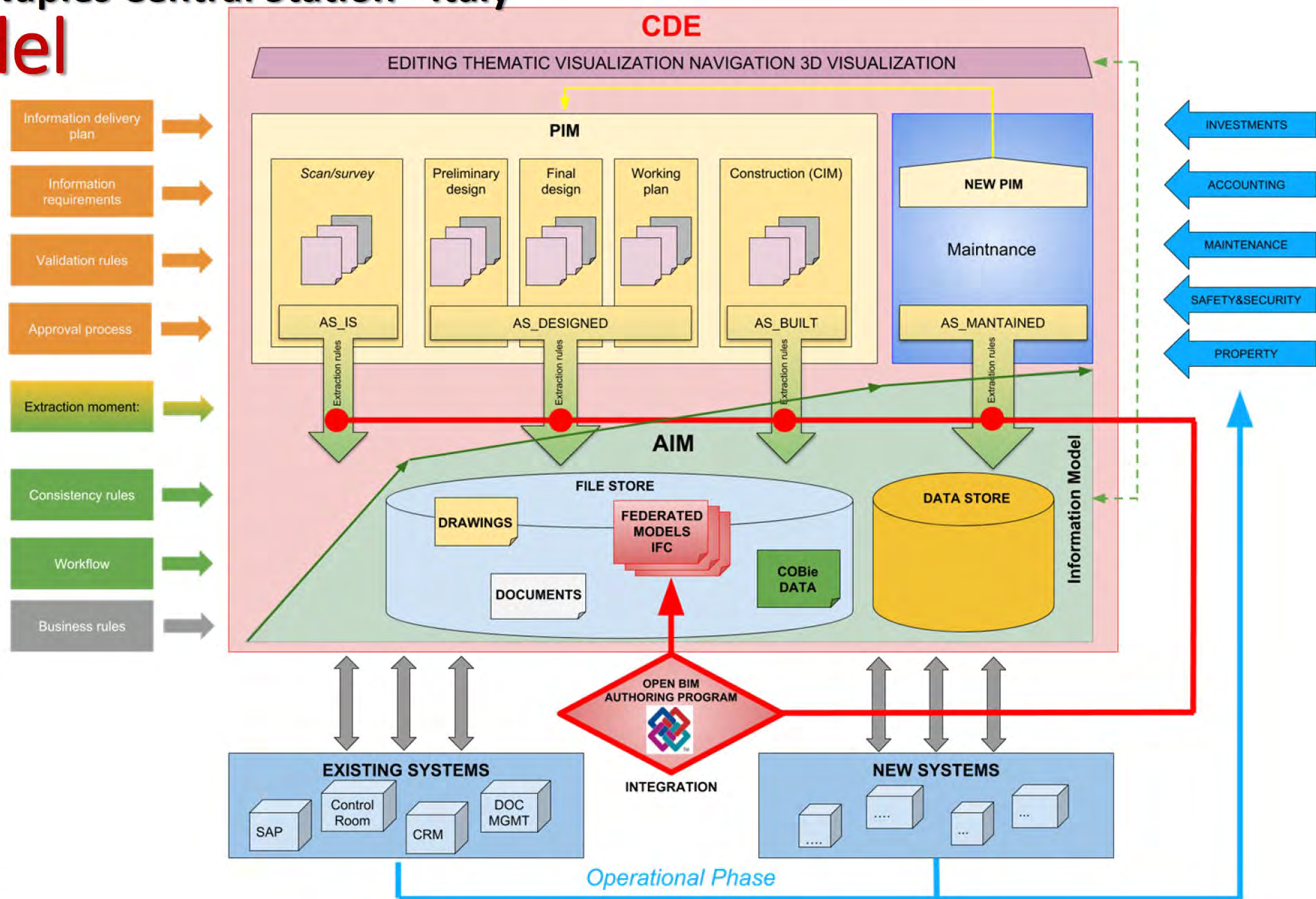


IFC 2x3	IFC 4	BCF	mydXML	bSDD	COBie	LandXML	Other
Yes	Yes	Yes	No	Yes	No	No	No

Evidence					
Written Documents	Interviews/ Testimonials	Images & Photos	Presentations	Videos	Use Case Doc
None	None	O&M	O&M	O&M	1D+1C+30

Minnucci Associati - Naples Central Station - Italy

Process Model



Software Used During Design

Name

Leica Cyclon 9
Leica TrueView
Cloud Compare
Smart City 3D
Graphisoft Archicad v.20
Graphisoft BIM Cloud v.20
Graphisoft Bimx PRO
Solibri Model Checker (SMC)
Tekla BIMsight
STR Vision AM
Smart Build CDE Suite
Lumion 7

Use

3D point cloud processing software
Viewing and sharing orbital picture and point cloud
Free 3D point cloud and mesh processing software
Web application for viewing and processing point cloud
BIM authoring software
Teamwork cloud platform
Model viewer program
Clash, Code e Model checker and verify detection
Free BIM collaboration tool
Facility Service and Property Manager Suite
Common data environment
Dynamic video render program

Thank you, Jury



PHILLIP
MCNEIL



CHRIS
PENN



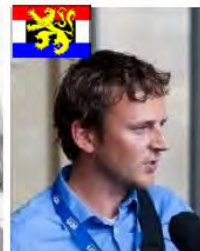
KURT
BATTISTI



STEFAN
BOEYKENS



LAURA
MOL



MATHIJS
NATROP



LAURA KAY
SMITH



BLAIR
BIRDELL



LAI
WEI



HUAISONG
WANG



BERNARD
FERRIES



RAINER
SAILER



JAKOB
PRZYBYLO



LORENZO
NISSIM



KENSUKE
YASUI



VAINO
TARANDI



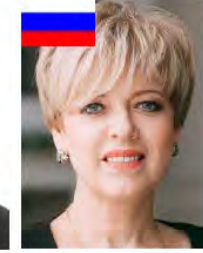
SUNIL
SUWAL



VAIDOTAS
SARKA



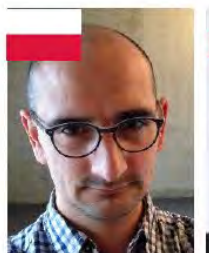
JACKY CHI
HO LAU



MARINA
KOROL



MARIA JOSE
ESCOBAR



JUREK
RUSIN



TOMASZ
OWERKO



LESZEK
WLOCHYNSKI



ADAM
GLEMA



ANDREA
LEU



BIRGITTA
SCHOCK



PHILIPP
DOHMEN



ALAR
JOST



ADRIAN
WILDENAUER



WILLIAM
LAU



NICK
NISBET

buildingSMART Awards - fortsättning

Målet inför nästa år är att varje land/chapter lämnar in minst ett bidrag. Något som vi redan nu vill verka för inför 2019.

chapter involvement is
paramount

Feb-Apr 2019: Call for Submissions

May-Jun 2019: Jury Scoring

2019 GOAL:

At least one jury member from **every chapter** +

At least one project submission from **every chapter**

