Solutions & Standards
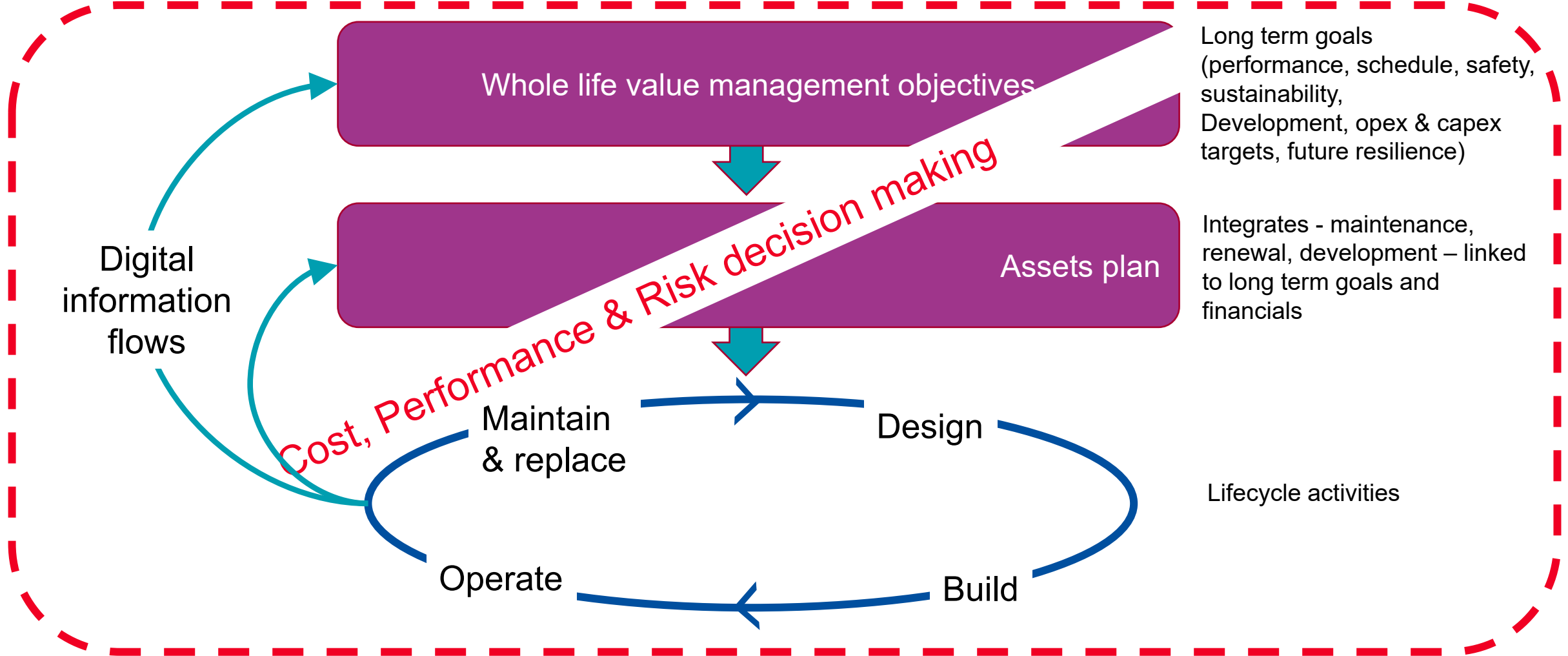
Richard Kelly

Operations Director

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Solutions & Standards Program

Digital whole life management

Asset system - software agnostic (requires international standards)

Whole life value management objectives

Long term goals (performance, schedule, safety, sustainability, Development, opex & capex targets, future resilience)

Assets plan

Integrates - maintenance, renewal, development – linked to long term goals and financials

Cost, Performance & Risk decision making

Digital information flows

Maintain & replace

Design

Operate

Build

Lifecycle activities

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$1.6tn

Standards Published

Candidate Standard

IFC Rail
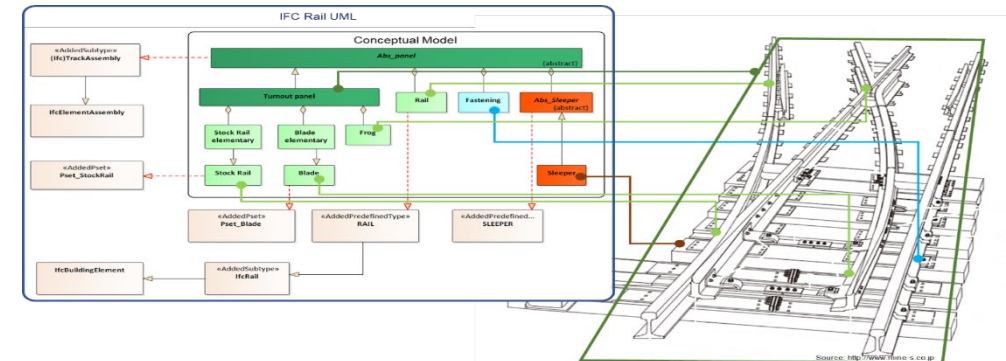
IFC Infra Extensions: Road Rail
Bridge Ports & Waterways

Standards Library: https://www.buildingsmart.org/standards/bsi-standards/standards-library/

Reports published

Benchmarking Railway clients for BIM expectation and utilization

User guide for Geo referencing in IFC

Analysis of IFC, CityGML & LandInfra

Rooms

Airport

Building

Construction

Infrastructure

+

Power

+

Chapter and Member Representatives lead the Rooms
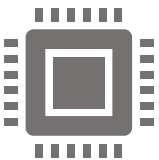
Product

Railway

Regulatory

Technical

+

Manufacturing

+

Balanced program

Knowledge & Leadership

Industry requirements
Info exchange requirements
Asset types & criticality

Leaders' workshop

Amsterdam – June 2018

London – Dec 2018

Madrid – Jan 2020

Balanced program

Knowledge & Leadership

Industry requirements
Info exchange requirements
Asset types & criticality

Fundamental technology
Workflow of deliverables
Adopt Technology
Roadmap
(modularization, IFC, IDM,
Psets, bSDD)

Balanced program

Knowledge & Leadership

Industry requirements
Info exchange requirements
Asset types & criticality

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Roadmap
(modularization, IFC, IDM,
Psets, bSDD)

Deployability
Loading of bSDD
Publishing platforms
(GitHub / other tools)
Software requirements
(import / export)

Balanced program

Knowledge & Leadership

Industry requirements
Info exchange requirements
Asset types & criticality

Fundamental technology
Workflow of deliverables
Adopt Technology
Roadmap
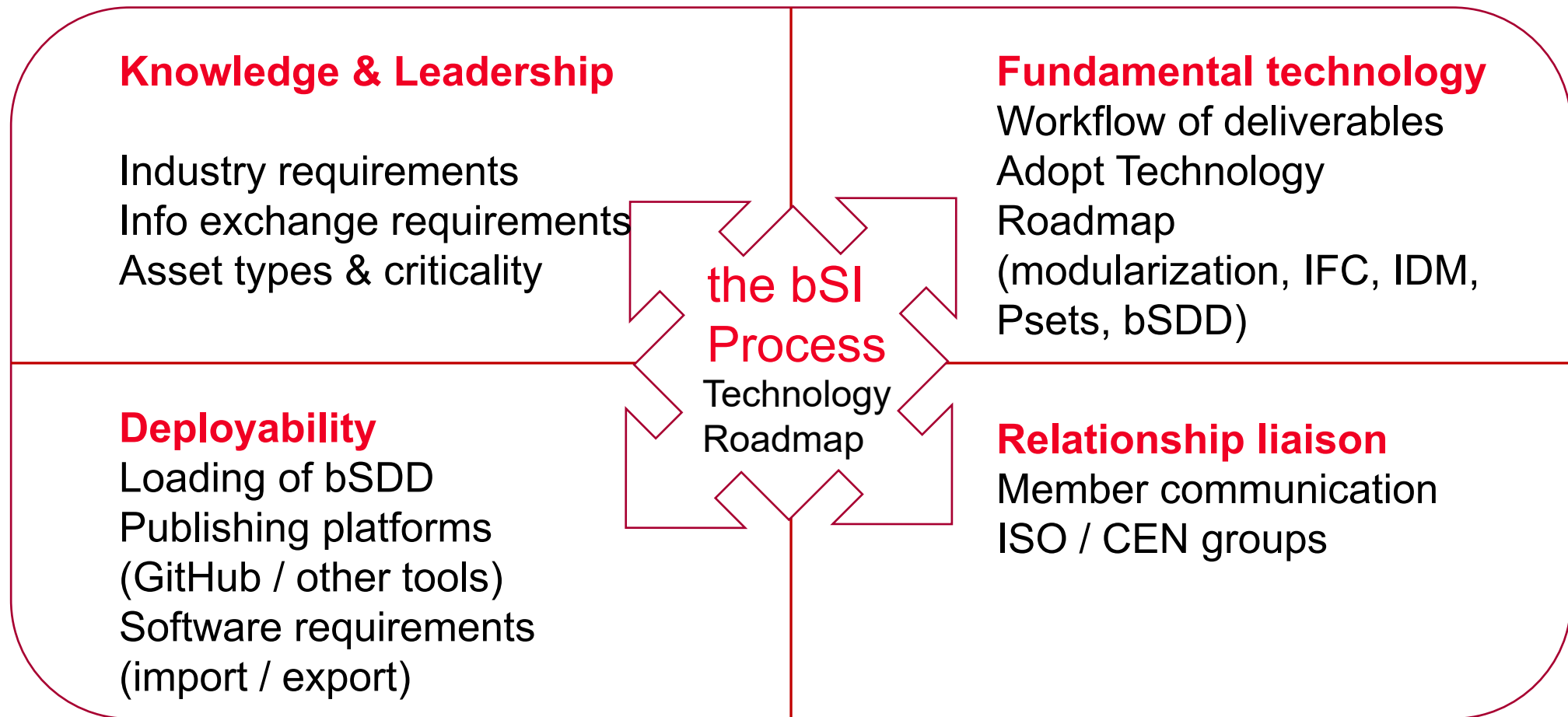(modularization, IFC, IDM,
Psets, bSDD)

Deployability
Loading of bSDD
Publishing platforms
(GitHub / other tools)
Software requirements
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Relationship liaison
Member communication
ISO / CEN groups

Balanced program

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the bSI Process
Technology
Roadmap

Deployability
Loading of bSDD
Publishing platforms
(GitHub / other tools)
Software requirements
(import / export)

Relationship liaison
Member communication
ISO / CEN groups

buildingSMART
International
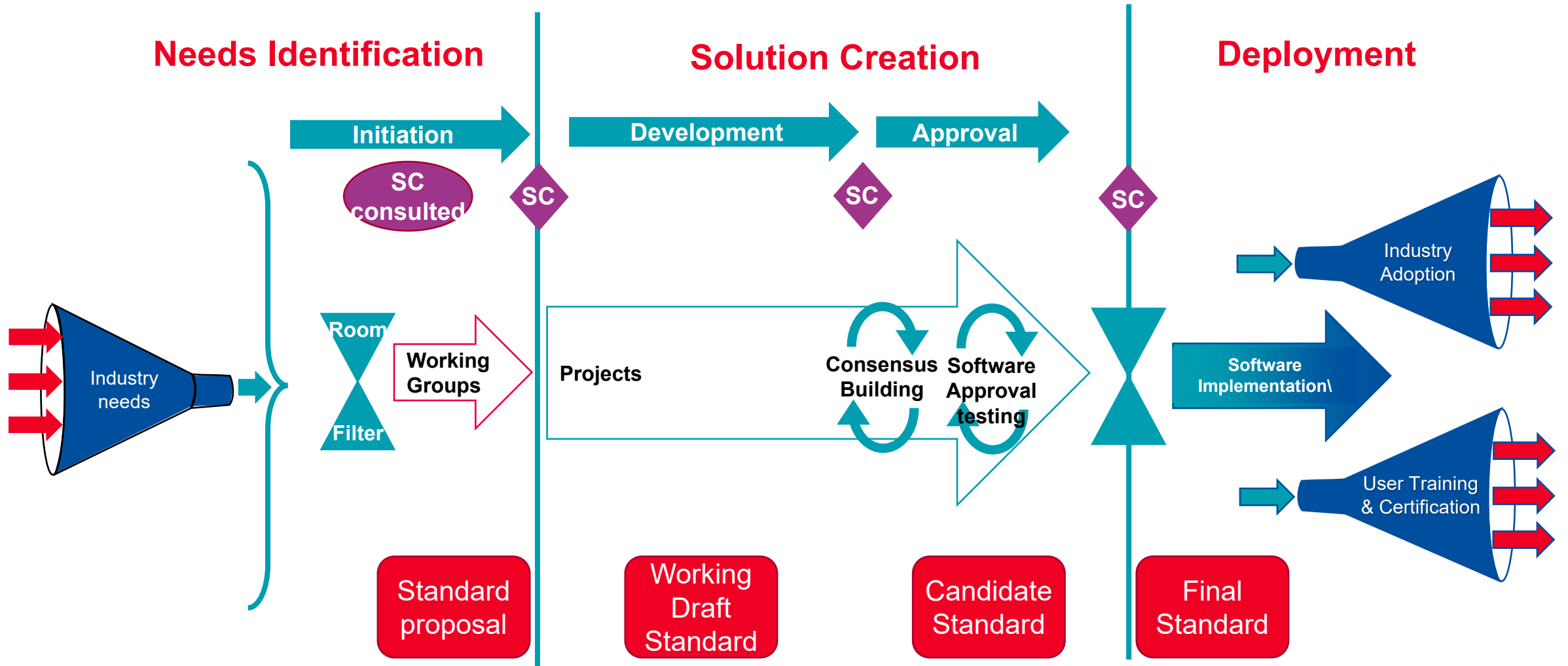
Quality

Assurance ⟷ Control

Assurance

Measures to ensure the process is always followed the correct way by everybody.

So well defined and designed to be intuitive that it is difficult to get wrong

Control

Measures to ensure output at each stage is checked by competent persons and systems

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bSI Process

Needs Identification **Solution Creation** **Deployment**

Initiation → Development → Approval

SC consulted · SC · SC · SC

Industry needs

Room / Filter · Working Groups · Projects · Consensus Building · Software Approval testing

Standard proposal · Working Draft Standard · Candidate Standard · Final Standard

Software Implementation\ · Industry Adoption · User Training & Certification

User Program | Solutions & Standards Program | Compliance Program | User Program

bSI & ISO Workshop
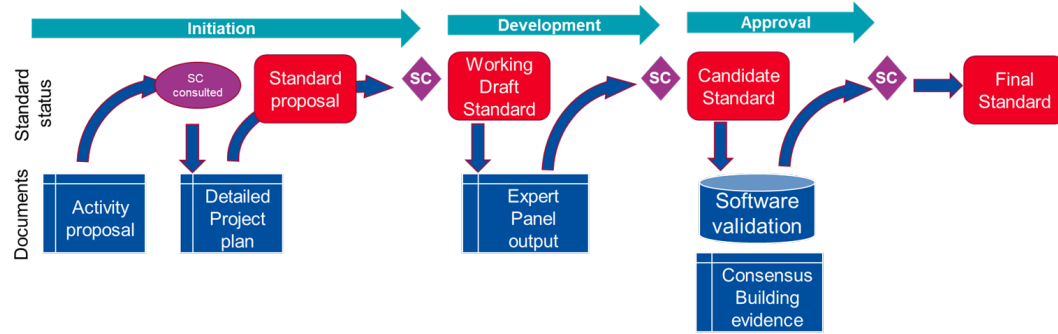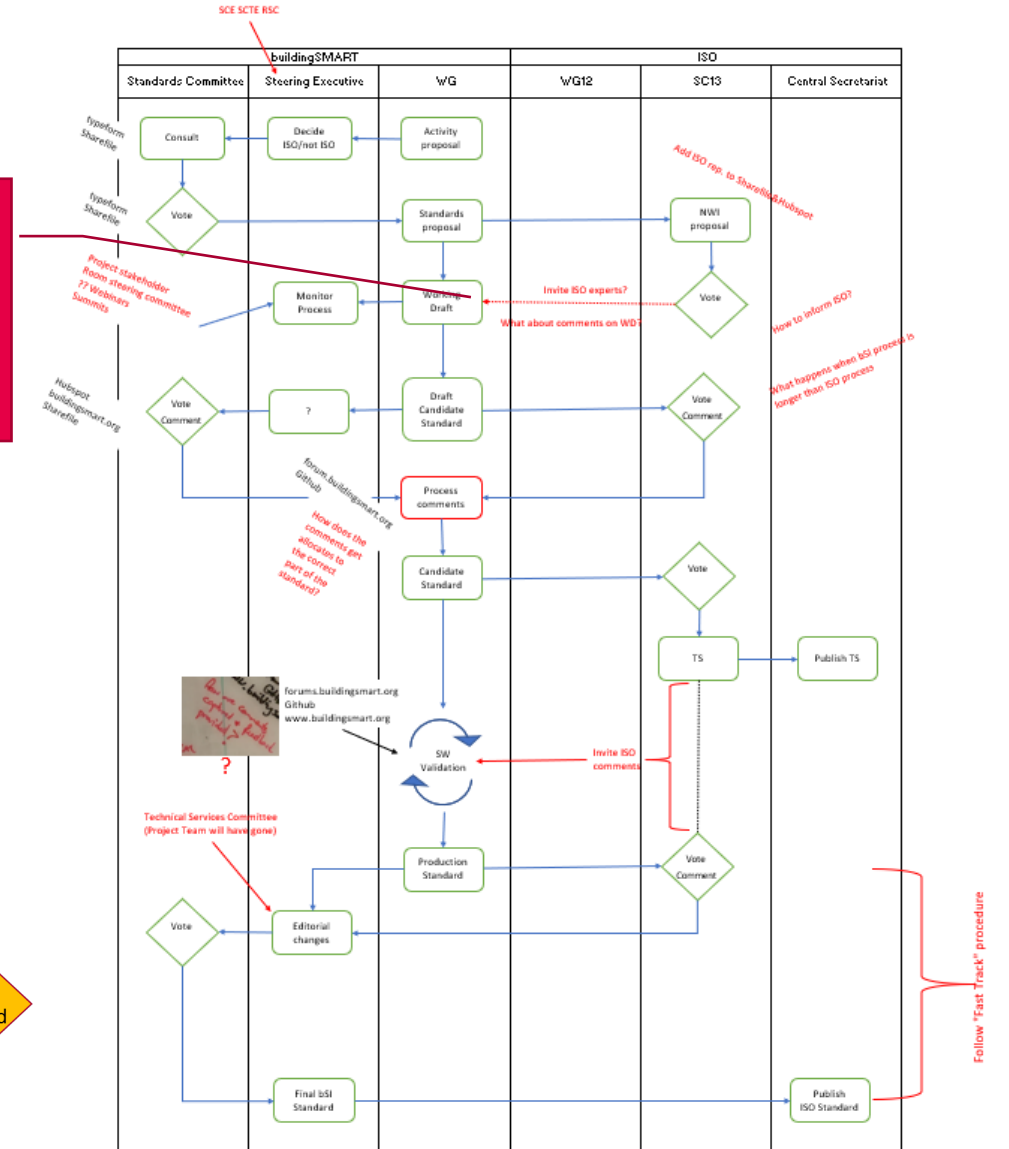## Oslo Jan 2020

ISO members invited to bSI Project Expert Panels

The bSI Process

The ISO Process
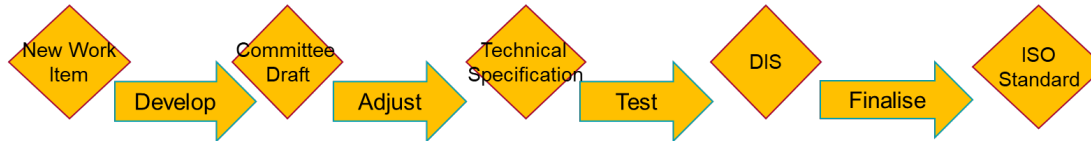
The Rooms

Infra & Rail standards

IFC4.2

Building   Bridge

Delivery projects

Road   Ports   Tunnel   Rail

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IFC4.2
- Building
- Bridge

Candidate standard 4.3
- Road
- Ports
- Tunnel
- Rail
- Building
- IFC Infra Extensions
- Rail

Production standard IFC4.3
- Building
- IFC Infra Extensions project
  - Road
  - Ports
  - Bridge
  - Rail
- Rail project
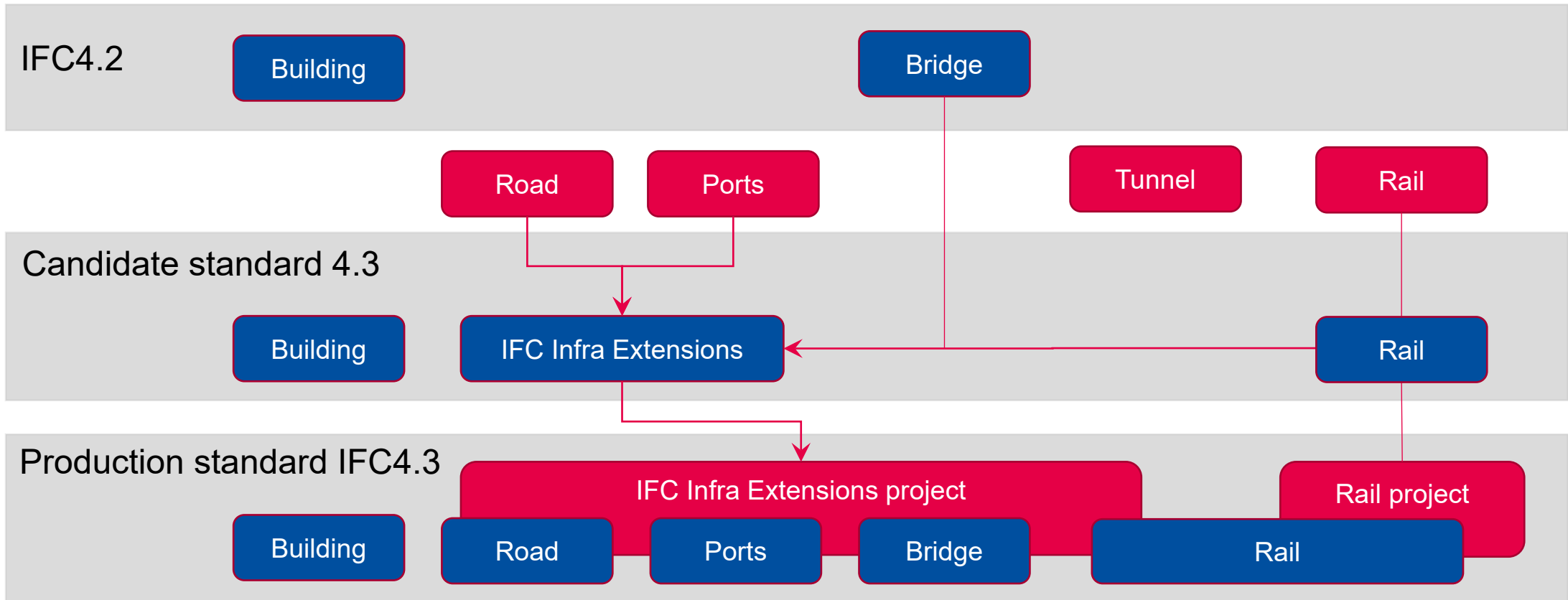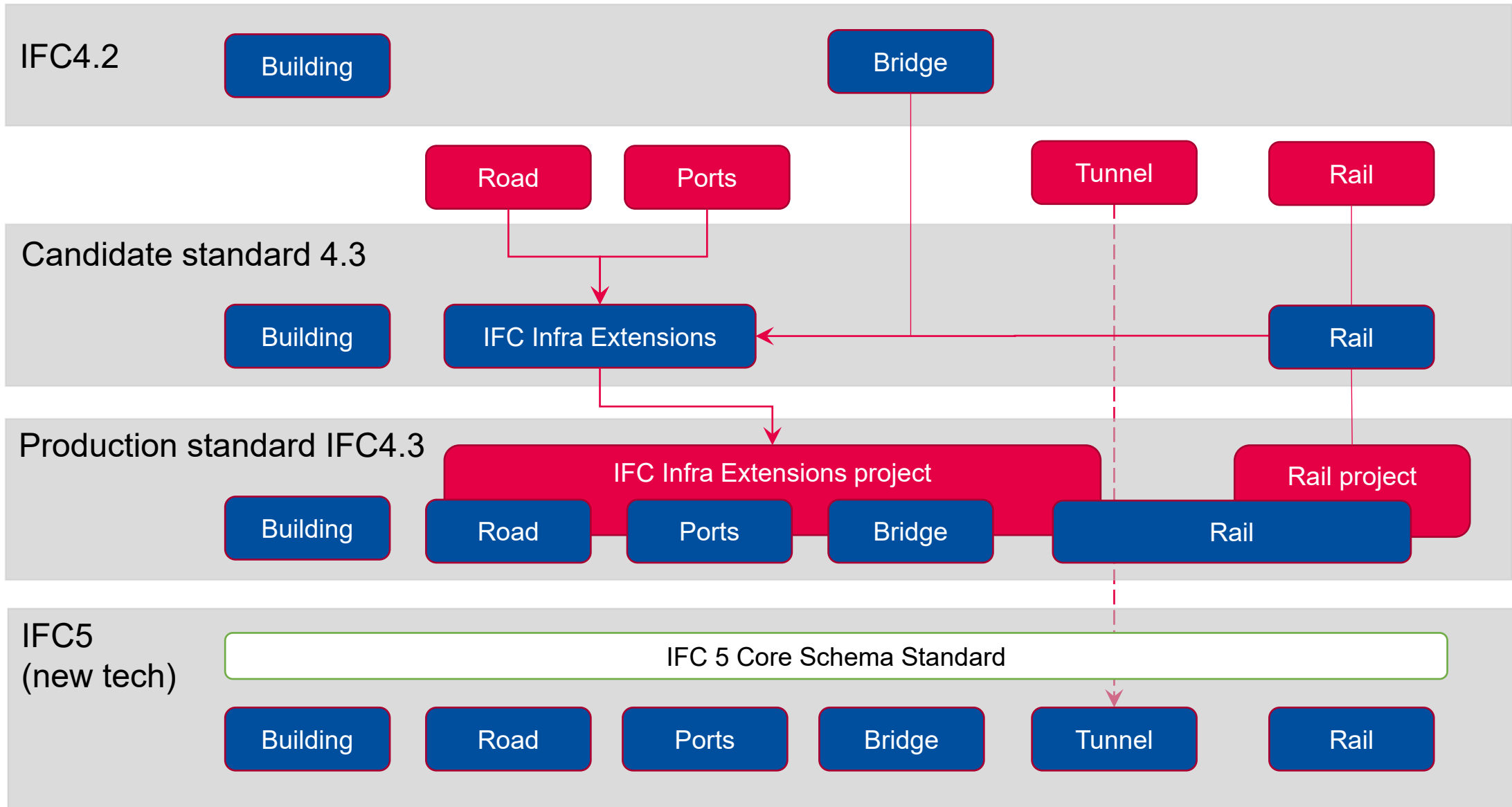
Infrastructure Room

Steering committee:
Tiina Perttula, Jim Plume, Nobuyoshi Yabuki,
Tristan McDonnell, Christophe Castaing,
Phil Jackson, Ronald Bergs, Benno Koehorst

Infra BIM Summit

Strong statement from Infra owners!

AIM – BIM – GIS – PIM
Its all about the information

Asset management is a core theme
(ISO 55000)

Organisations are investing in BIM in
multiple ways

IFC Infra Extension Project
Road, Rail, Bridge, Ports & Waterways

Need commitment from:

1) Stakeholders

2) Software vendors

Early adopters of Technology Roadmap IFC modernization aspects:

- Automatic ('instant') interoperability between modules & domains

- More reliable software implementation

- Guaranteed interoperability between domains

Railway Room

Courtesy of People's Daily

Steering committee:
Winfried Stix, Liming Sheng, Peter Axelsson, Adrian Wildenauer, Patrick Offroy, Pierre Etienne Gautier, Peer Franz Josef, Tarmo Savolainen, Xenia Fiorentini, Christophe Castaing

Phase 2
- Integration & validation into software
- Further Use Cases
    Earthworks
    Drainage
    Cabling
- Collaboration with IFC Infra Extensions

Additional stakeholders

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Building Room

Steering committee:
David Ivey, Geraldine Rayner, John Mitchell, Benjamin Gonzales, Kjell Ivar Bakkmoen, Rob Roef, Jan-Anders Jönsson, Inés Azpeitia, Francis Leung, Gianluca Genova, Mirbek Bekboliev

Site & landscape planning

Structural engineering

DfMA / Lean / Offsite

Quantity take off

Energy thro' thermal boundaries

Level of Definition / Development report

Concrete rebar
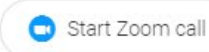
Precast concrete

Timber structures

Healthcare

Food services

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New: Building Room - Projects, Reports and activities ⭐

Here you will get a overview of all activities related to Building Room in buildingSMART International

▦ Main Table ⌄

New I

Initiation

		Project Manager	Activity Proposal	Project Proposal	Standard Proposal	Next milesto...	Working Draft Stand...	Next Miles
MVD Spacial Zones	💬2	Yoshinobu Adachi	Not Started	Not started	Not started			
MVD Lite	💬3		Not Started	Not started	Not started			
IFC Distribution Port	💬1		Not Started	Not started	Not started			
Fire Safety	💬8	Pete Thompson	Approved	Working on it	Not started	❗ Jun ...		
MVD Facility Management Handover (Cobie)	💬2	Mark Baldwin	Not Started	Not started	Not started			
IFC Rebar	💬5	Paul Walker/Ann Daugherty	Not Started	Not started	Not started			
DfMA and Lean for Manufactures	💬	TBA	Approved	Not started	Not started	❗ May ...		
IFC for Sites, landscape and urban planning	💬3	Jeffrey Ouellette	Approved	Not started	Not started			
Structural Requirements MVD	💬4	Anna Moreno	Working on it	Not started	Not started			
+ Add								

Development

		Project Manager	Activity Proposal	Project Proposal	Standard Proposal	Next milesto...	Working Draft Stand...	Next Miles
MVD Energy Simulation	💬6	Jeffrey Ouellette	Approved	Approved	Approved	✅ Apr...	Expert Panel	
LOX	💬2	James Vanderzande/David Ivey	Approved	Approved	Approved		Done	✅ May 26,
IFC4precast	💬12	Stefan Maier	Approved	Approved	Approved	✅ May ...	Development	
MVD QTO	💬11	Jan Karlshoej	Approved	Approved	Approved	✅ Jan...	Done	✅ Apr 28, 2
IDM Toolkit	💬3	Mark Baldwin / Ghang Lee	Approved	Approved	Approved	✅ Jun...		

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Airport Room

Steering committee:
Adam Rendek, Maya Tryfona, Arisca Droog, Xuan Dai, Christophe Carl Eichler, Fumiaki Kishida, Miika Kostamo,
Stefan van der Weide, Mohamad Salem, Mark Ricketson, Birgitta Schock

Creating a workplan to deliver for managing airport specific assets
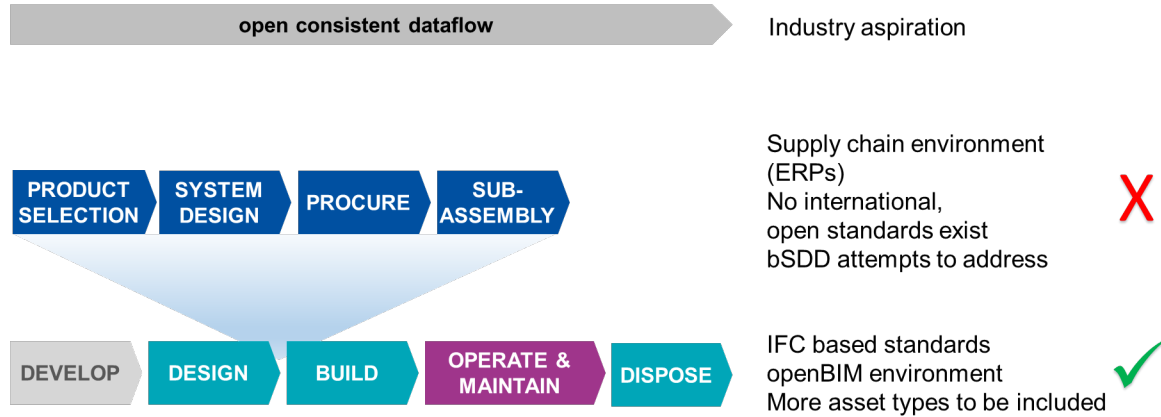
Usage of rules for IFC models at Airports

Linked data / ontology regarding library exchange specifications.

Development GIS-IFC interoperability

Missing IFC entities

Digital Twins

Product Room

open consistent dataflow — Industry aspiration

PRODUCT SELECTION | SYSTEM DESIGN | PROCURE | SUB-ASSEMBLY

Supply chain environment (ERPs)
No international,
open standards exist
bSDD attempts to address ✗

DEVELOP | DESIGN | BUILD | OPERATE & MAINTAIN | DISPOSE

IFC based standards
openBIM environment
More asset types to be included ✓

Steering committee:
Espen Schulze, Robert Heize, Lai Wei,
Hans Christoph Gruler, Hansueli
Schmid, Michel Bohren, Radboud
Bayen, Alesi Umberto, Frédéric Grand

Develop the tools and templates that support the buildingSMART Data Dictionary (bSDD)

Allow the efficient use of product data in building projects and subsequent asset management

Liaising with Digital Supply Chain group

Reworking the Room Charter

Construction Room

Site environment best practice

openBIM education to construction

IoT
Robotics
Construction Information Management
Wearables

Steering committee:
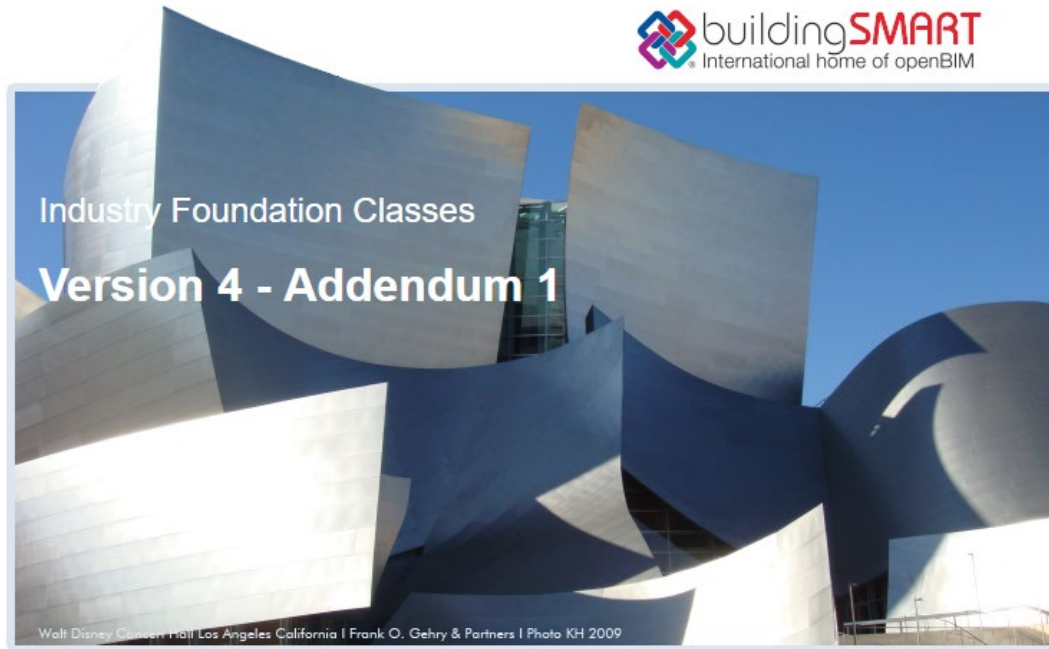Kazumi Yajima, Ken Endo,
Remainder to be confirmed

Regulatory Room

Building project owners and regulatory authorities

Open Standards for Regulation report

Auto code checking report

E-submission guidelines

Steering committee:
Nick Nisbet, Masaki Muto, Franco Coin,
Tamer El-Diraby, Tomi Henttinen

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Technical Room

Technical heart of standards and tools.
Includes the
- IFC 5 definition
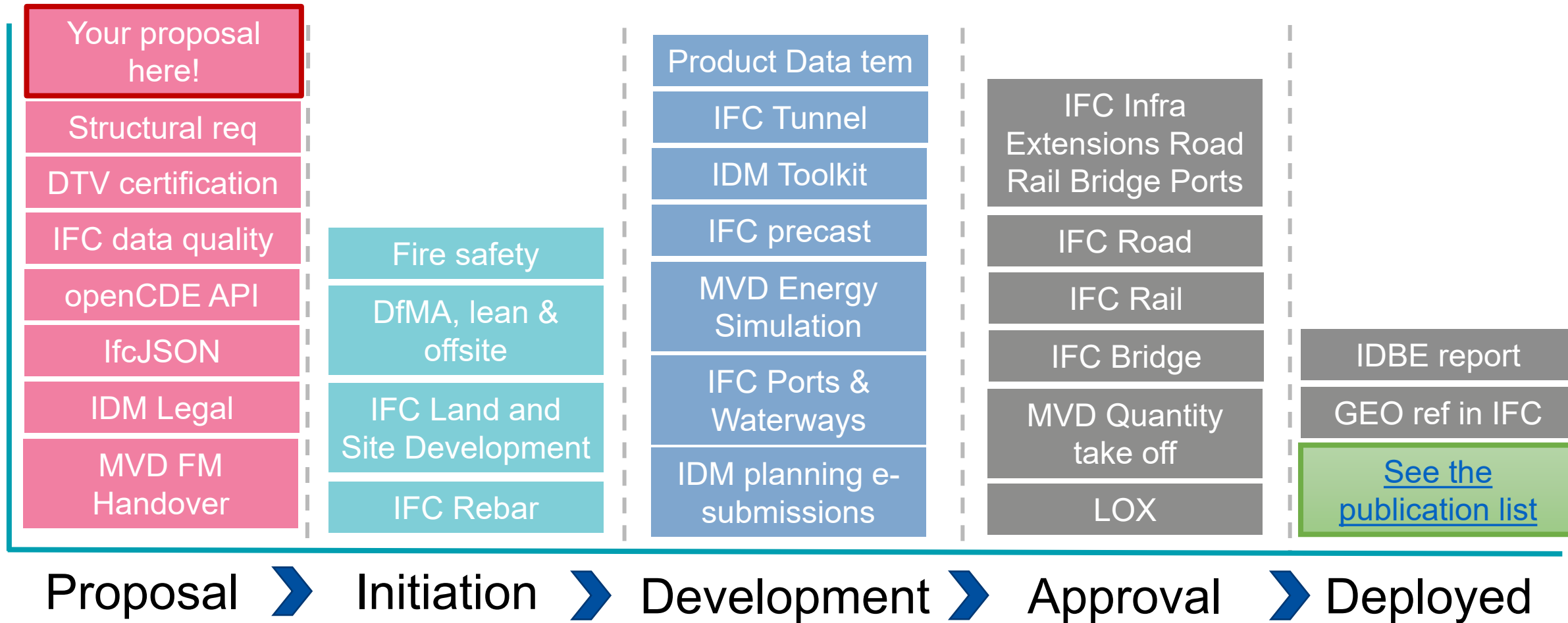- IFC & bSDD relationship

Strategic development of the
- IFC Schema implementations
- workflow enabling toolkits

Steering committee:
Greg Schleusner, Dennis Shelden, Christophe Castaing, Angel Velez, Wolfgang Hass, Jakob Beetz, Thomas Liebich, Bjørn Stangeland, Robert Anderson

Project Progress

IFC = Industry Foundation Classes
MVD = Model View Definition
IDM = Information Delivery Manual
DfMA = Design for Manufacture and Assembly
LOX=Level of Development/definition/…

Proposal	Initiation	Development	Approval	Deployed
Your proposal here!	Fire safety	Product Data tem	IFC Infra Extensions Road Rail Bridge Ports	IDBE report
Structural req	DfMA, lean & offsite	IFC Tunnel	IFC Road	GEO ref in IFC
DTV certification	IFC Land and Site Development	IDM Toolkit	IFC Rail	See the publication list
IFC data quality	IFC Rebar	IFC precast	IFC Bridge	
openCDE API		MVD Energy Simulation	MVD Quantity take off	
IfcJSON		IFC Ports & Waterways	LOX	
IDM Legal		IDM planning e-submissions		
MVD FM Handover				

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Enabling Digital Transformation

Thank You

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