The Family Tree of Success

- **Transparency** is the mother of trust
- **Trust** is the mother of cooperation
- **Cooperation** is the mother of success
- So **transparency is the great grandmother of success**

ifcRail Project

buildingSMART International

buildingSMART Spain | IFEMA Madrid | 15. January 2020

winfried.stix@buildingSMART.co.at Chair of Railway Room
christian.erismann@applitec.ch Project Leader ifcRail Project

ifcRail

BIM-Basics
for
Railway Infrastructure

- First Steps in the D.A.CH Region
- buildingSMART International
- ifcRail Project
- Deliverables from Phase 1
- Next Steps

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buildingSMART International

ifcRail Project

Deliverables from Phase 1

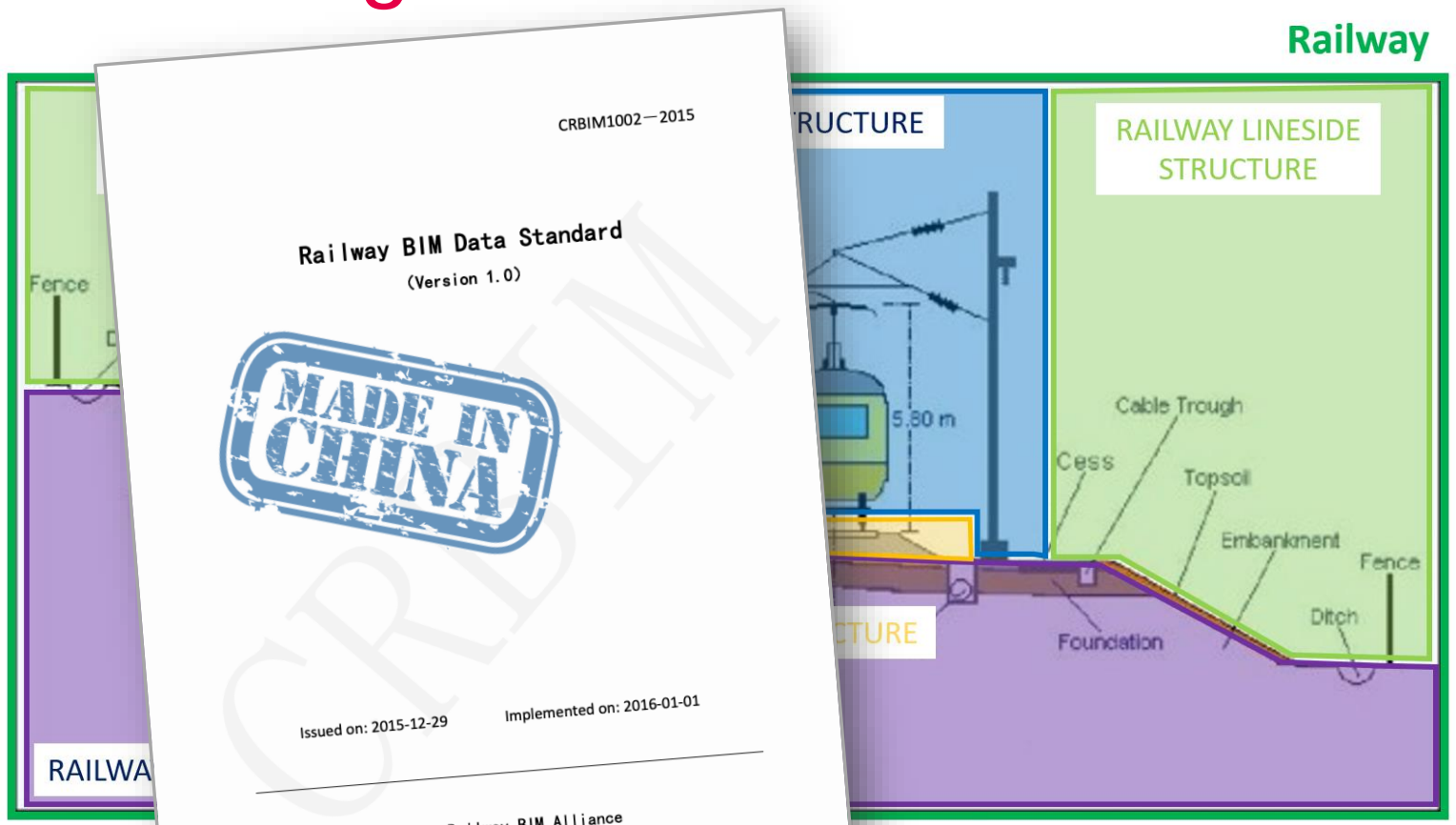
Next Steps

First Ideas in the D.A.CH Region

2015-2017

Ensure and distribute:

- **Digital Representation**
  completely | comprehensive | applicable
- **Entire**
  Railway Eco System
- **Entire System Lifecycle**

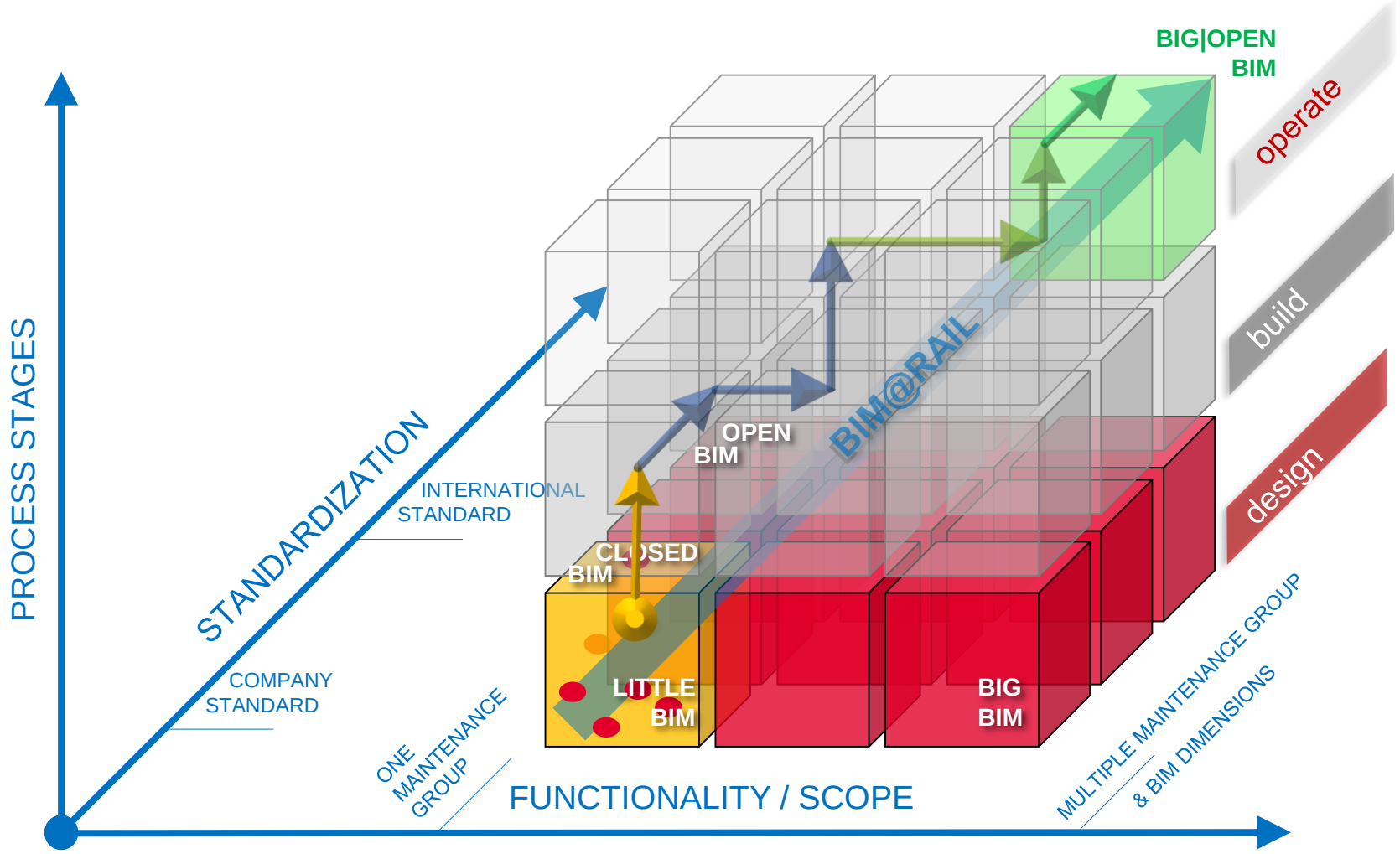


DEVELOPE MENT | PLANNING | BUILD | REMOVAL

HOMOGENEOUS C

BIM@rail Maturity Level Cube

Focus on Open Standards



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One Year from Signing the MoU until the Start of ifcRail Project & Railway Room

Signing MoU ifcRail
at bSI Summit Barcelona 04/2017

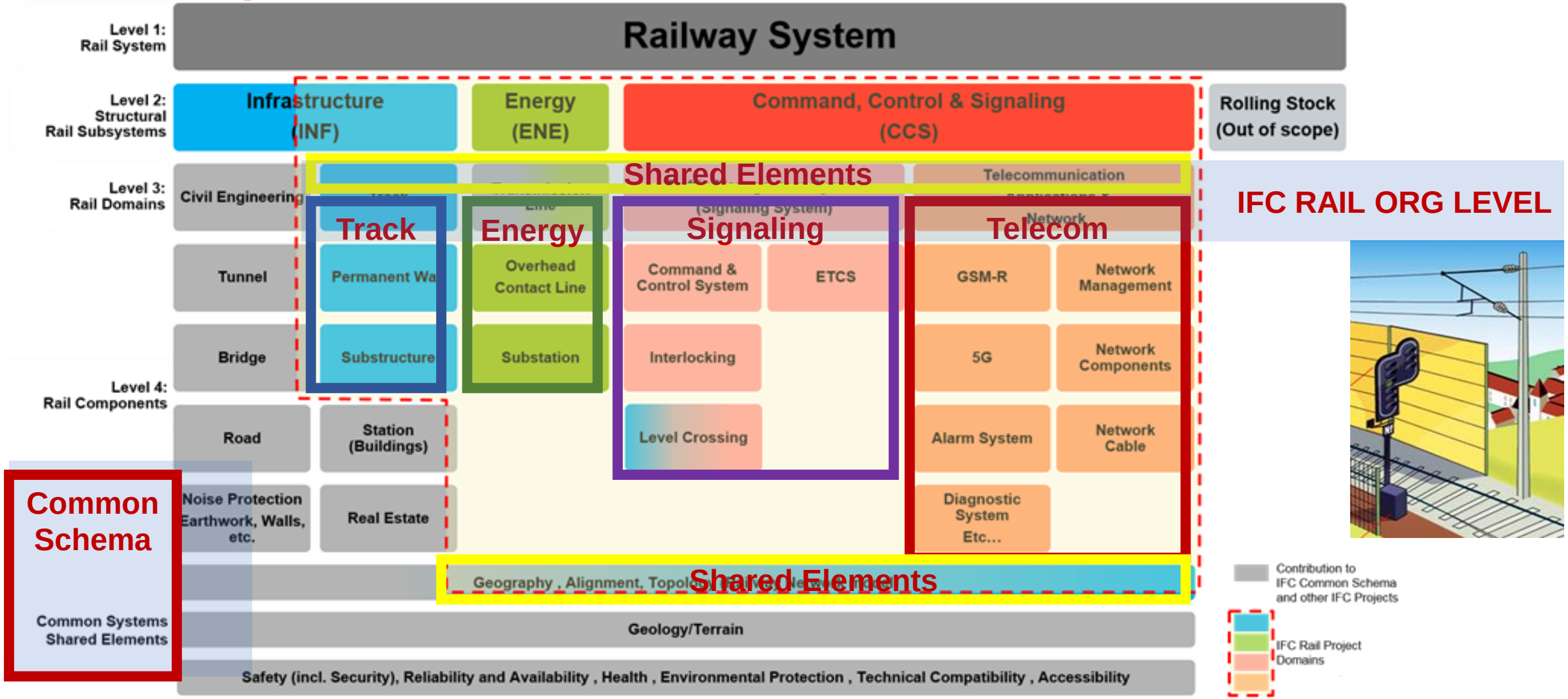
Foundation of RWR and signing ifcRail Project
at bSI Summit Paris 03/2018

Railway Infrastructure Owners

Research Group of French Transport Sector

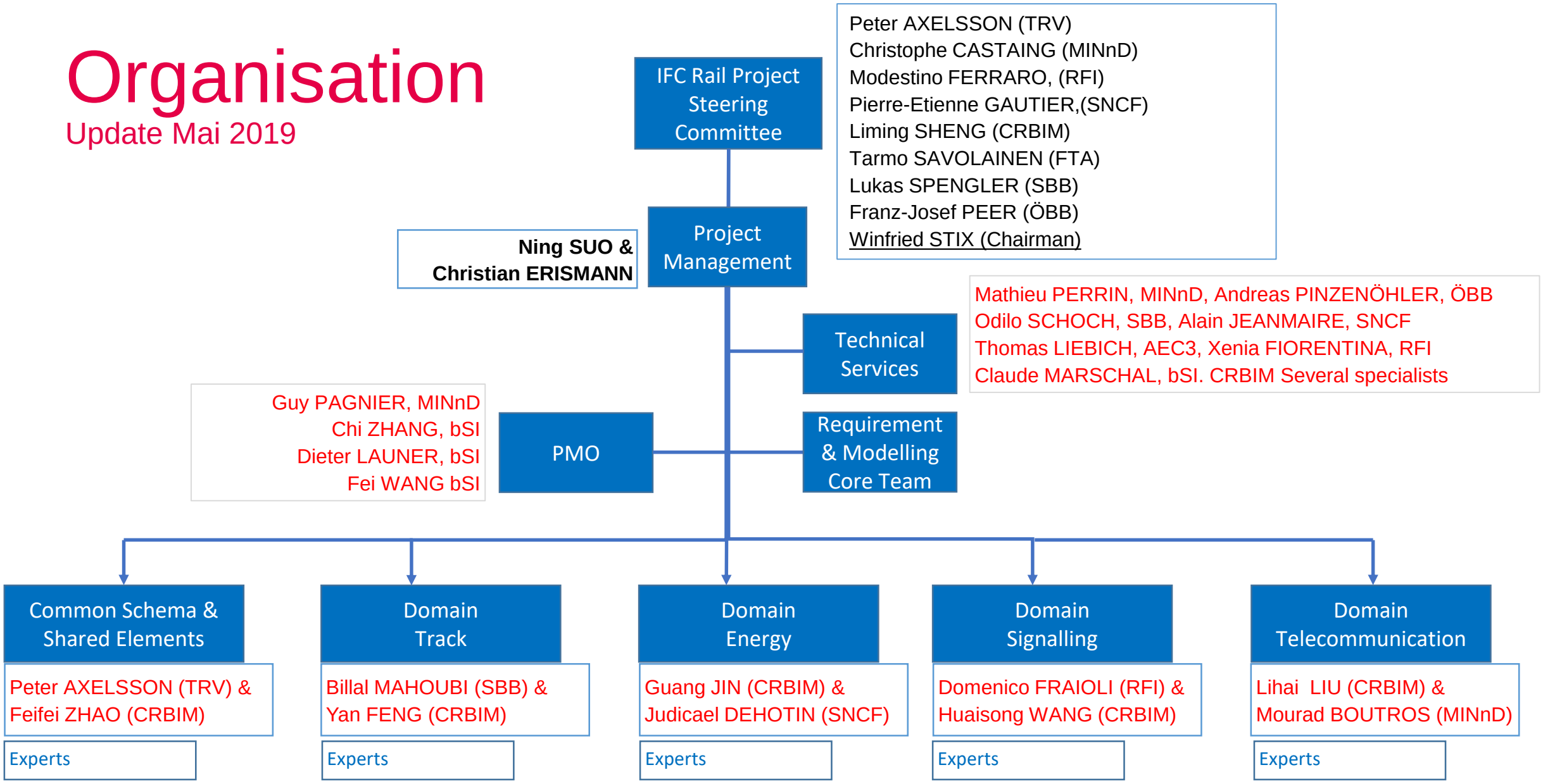
Swedish and Finish Transport Agencies

Scope | Railway: System of Systems



Organisation

Update Mai 2019



ifcRail Project in Numbers

2018 – 2019 | **24** Months

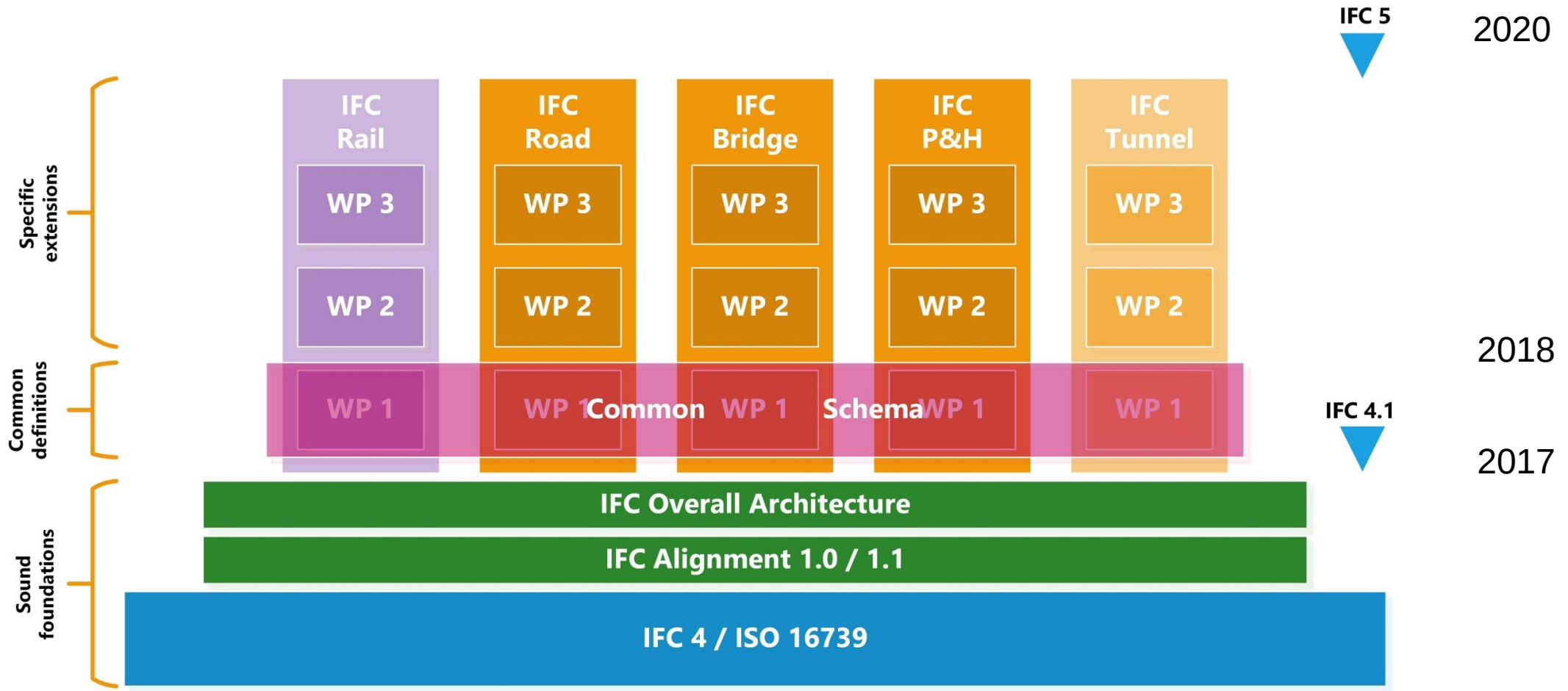
8 Stakeholders

Cash
2‘500‘000 EUR

100+ Domain &
Technical Experts

In-kind
3‘500+ Tage

bSI Infrastructur Projects
2017 – 2019 (2020)



Source: InfraRoom (2017). *InfraRoom Project Program 2017 - 2019*

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Railway Infrastructure

First Steps in the D.A.CH Region

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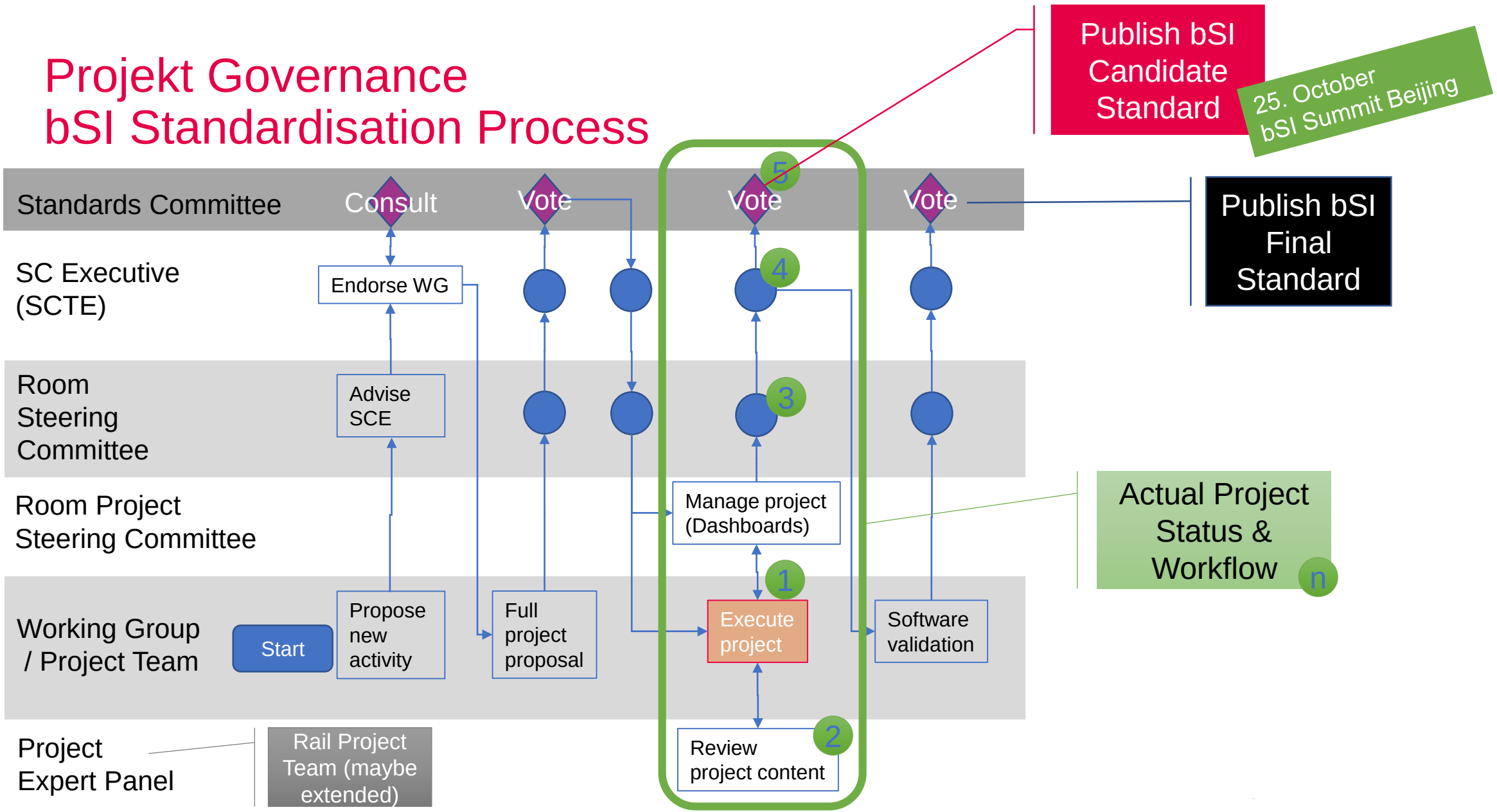
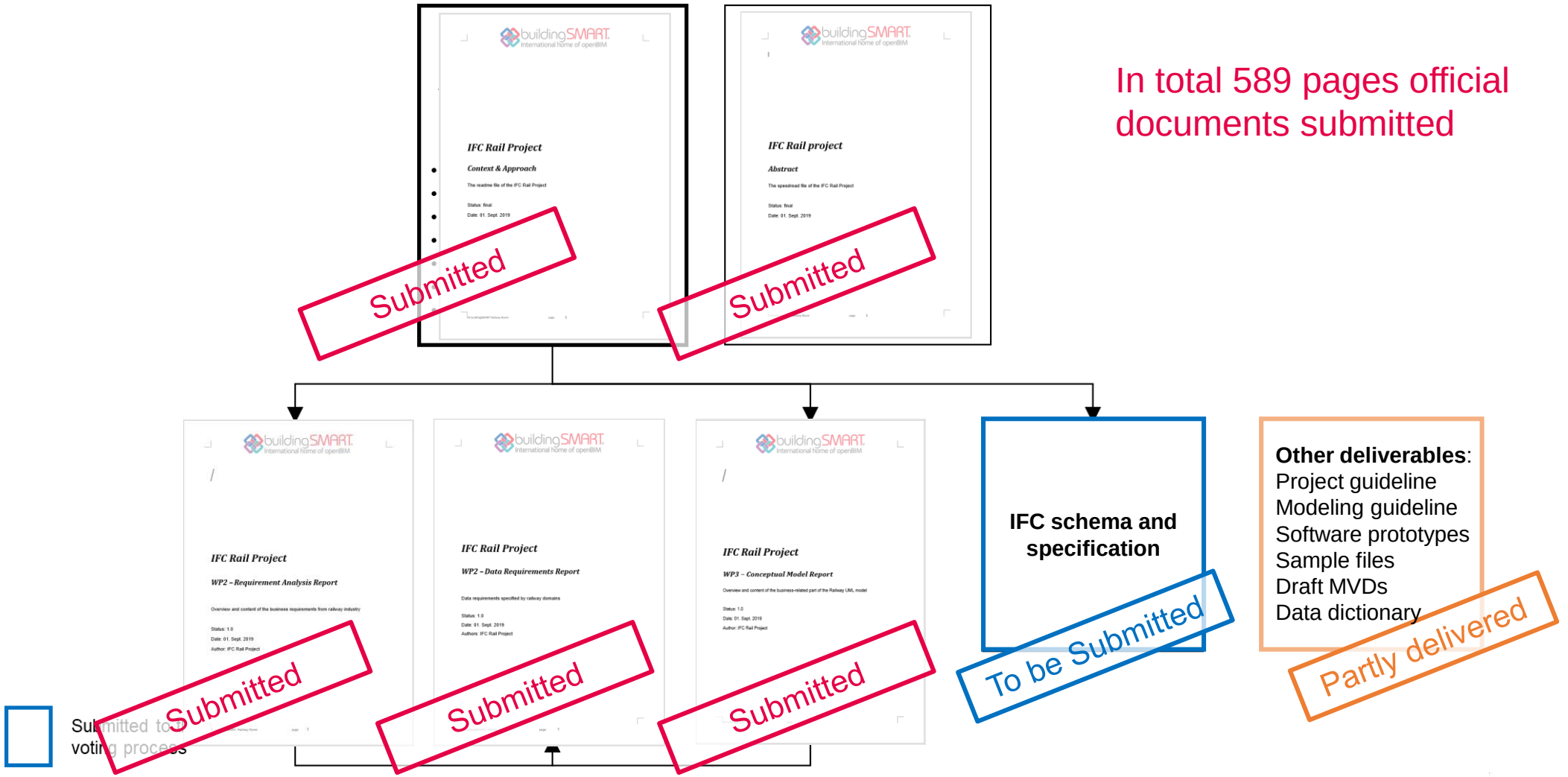
Deliverables from Phase 1

Next Steps

Projekt Governance
bSI Standardisation Process



Deliverables ifcRail | Phase 1



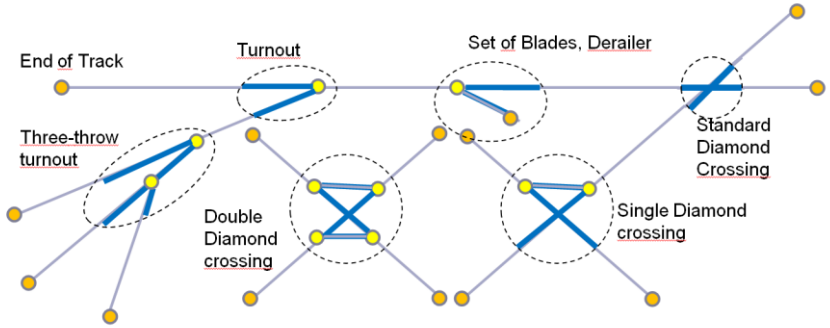
In total 589 pages official documents submitted

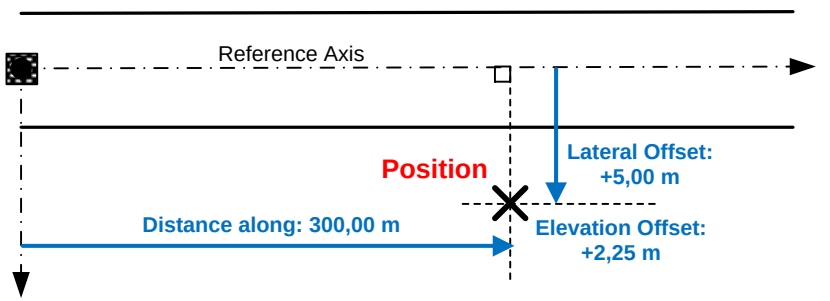
Prioritised Use Cases
6 von 38

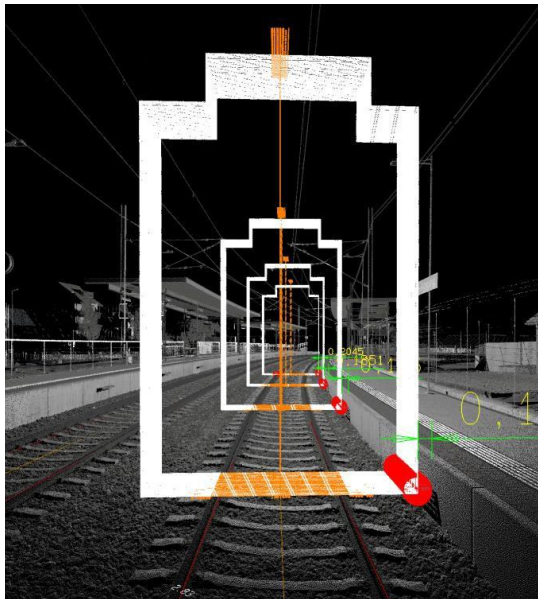
1. Existing Condition Modeling
2. Railway Design Modeling
   (Feasibility Studies for Railway and Railway Intermediate Design Modeling)
3. Interference and Coordination Management
   (Physical Interface, 3D coordination and clash detection, Signal Visibility Checking)
4. 3D Visualization
5. Quantity Take Off
6. Handover from Builder to Maintainer

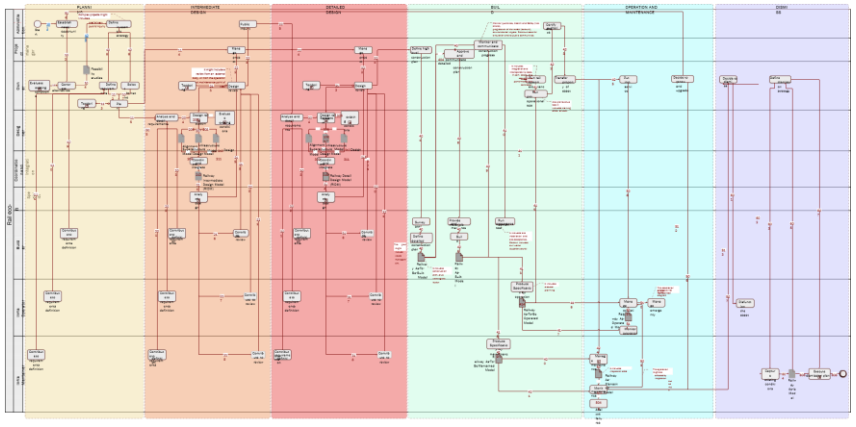
Requirement Analysis Report

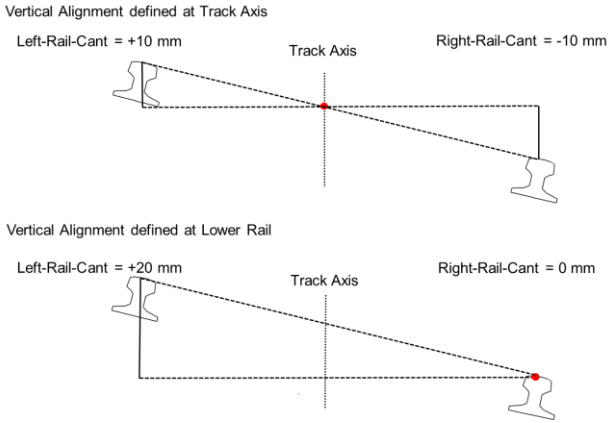
- Scope of railway domains
- Process Map
- **38 Use cases**
- Common requirements
  - Alignment requirements
  - Network specification
  - Linear Positioning
  - Spatial Structure
  - Geometric representations
- Model View Definitions











IFCRAIL Railway Room

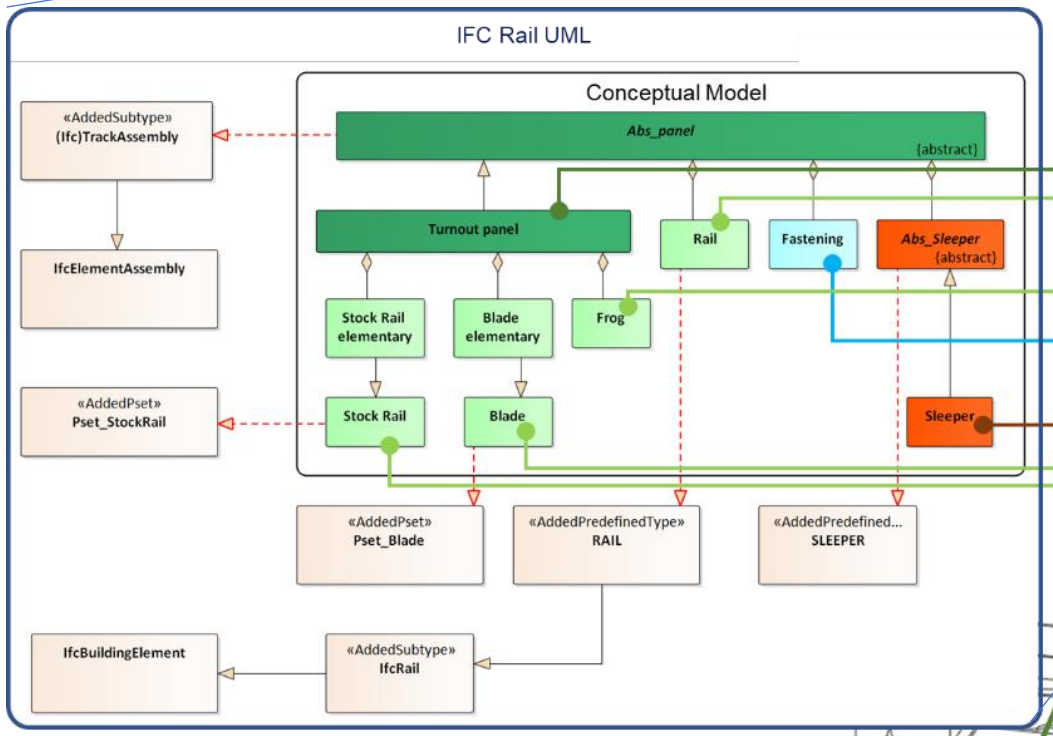
Data Requirements Report

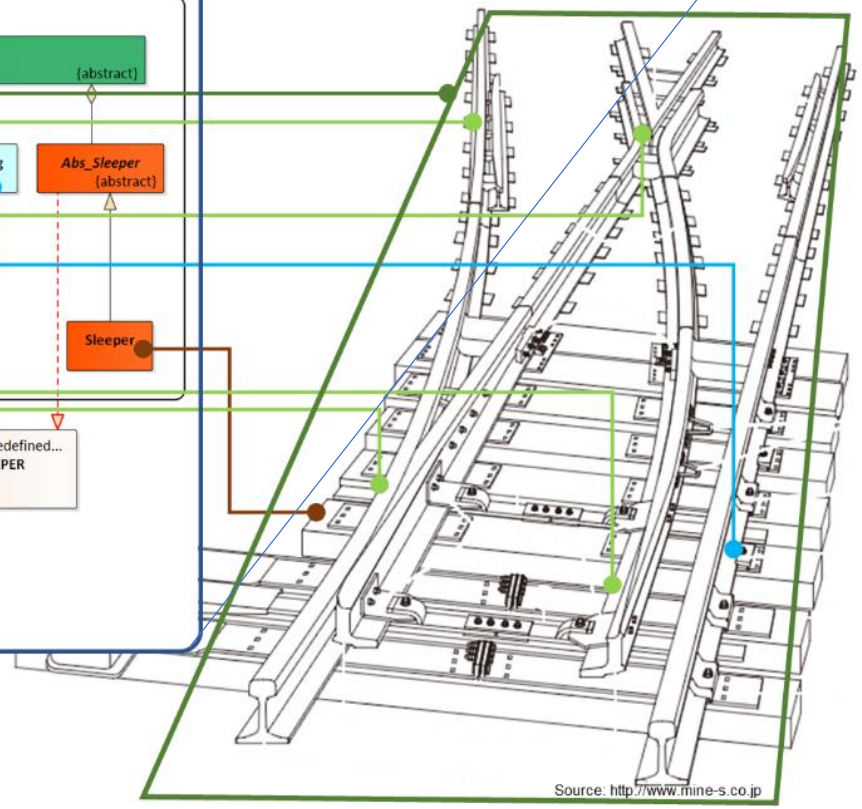
- Domain specific requirements
  - Track
  - Energy
  - Telecom
  - Signalling

- In total 2534 properties defined for railway objects!!!

Conceptual Model Report

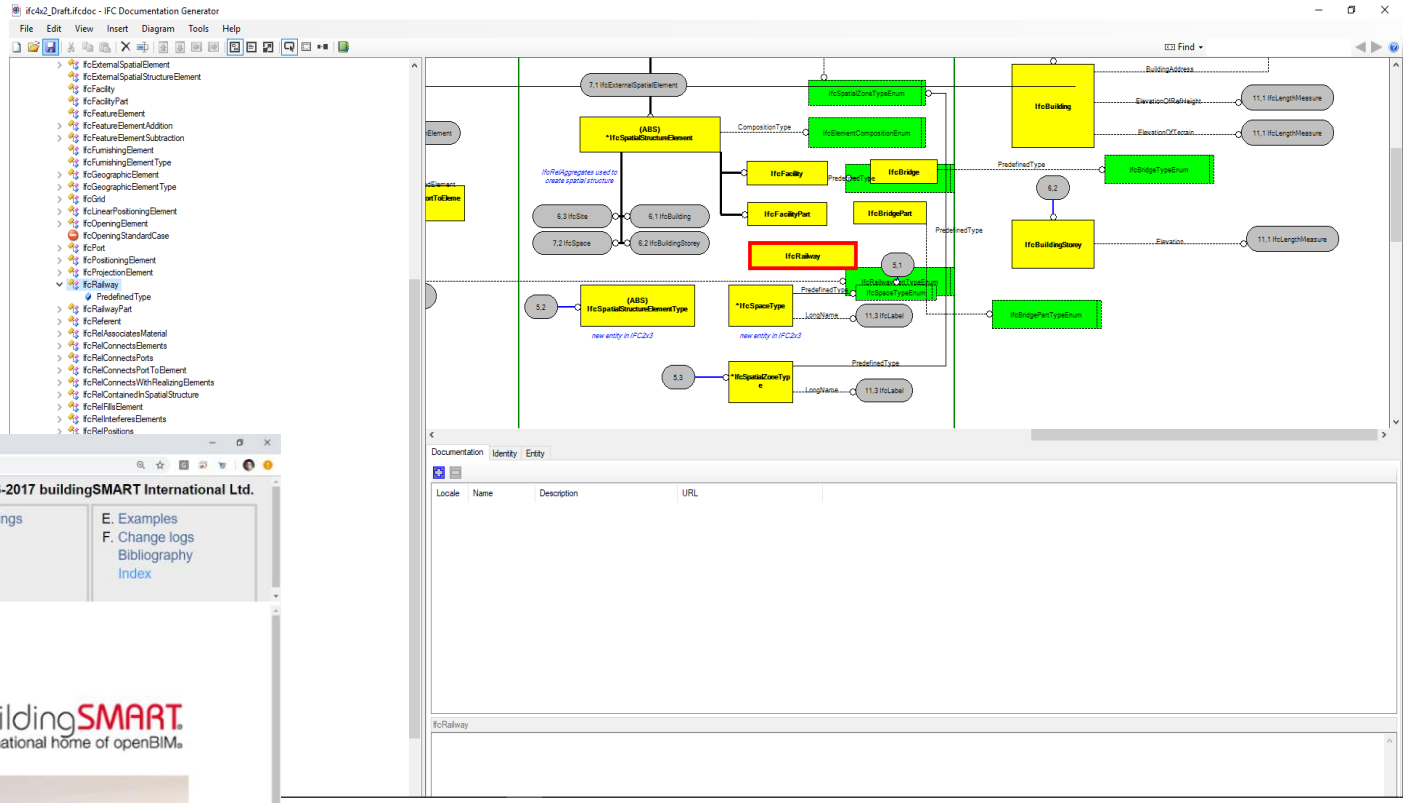
- Classes: 677 (all), 453 (Priority 1)
- Properties: 2534
- Divided by domains:
- Classes:
  - Track: 67
  - Energy: 143
  - Signalling: 80
  - Telecom: 101
  - Shared: 62
- Properties:
  - Track: 809
  - Energy: 1011
  - Signalling: 284
  - Telecom: 430

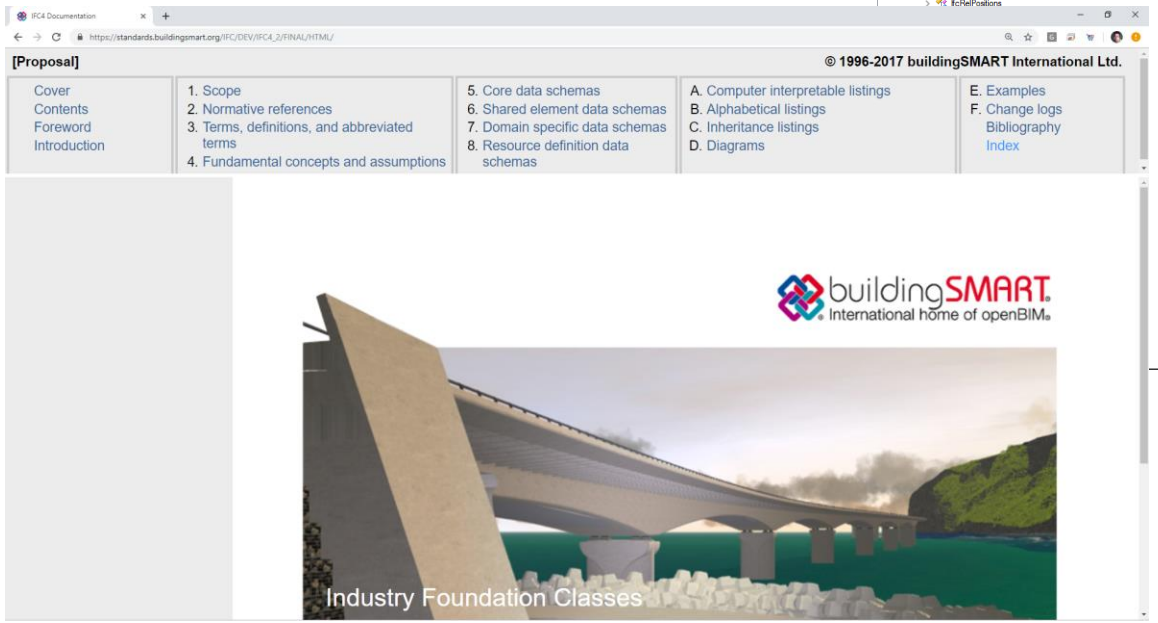




IFC Specification | ifcDoc

- New Alignment extension
- Spatial Structure
- Domain specific entities and types
- To be harmonized with other IFC infra projects

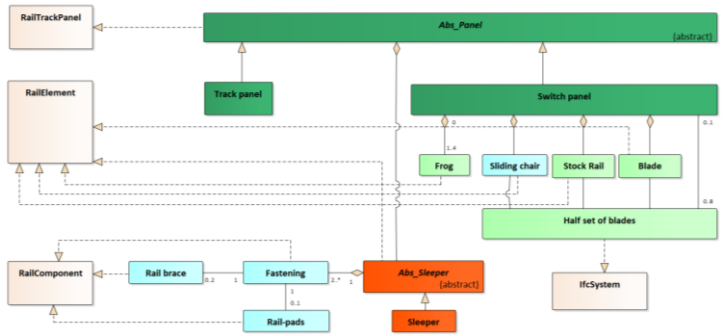


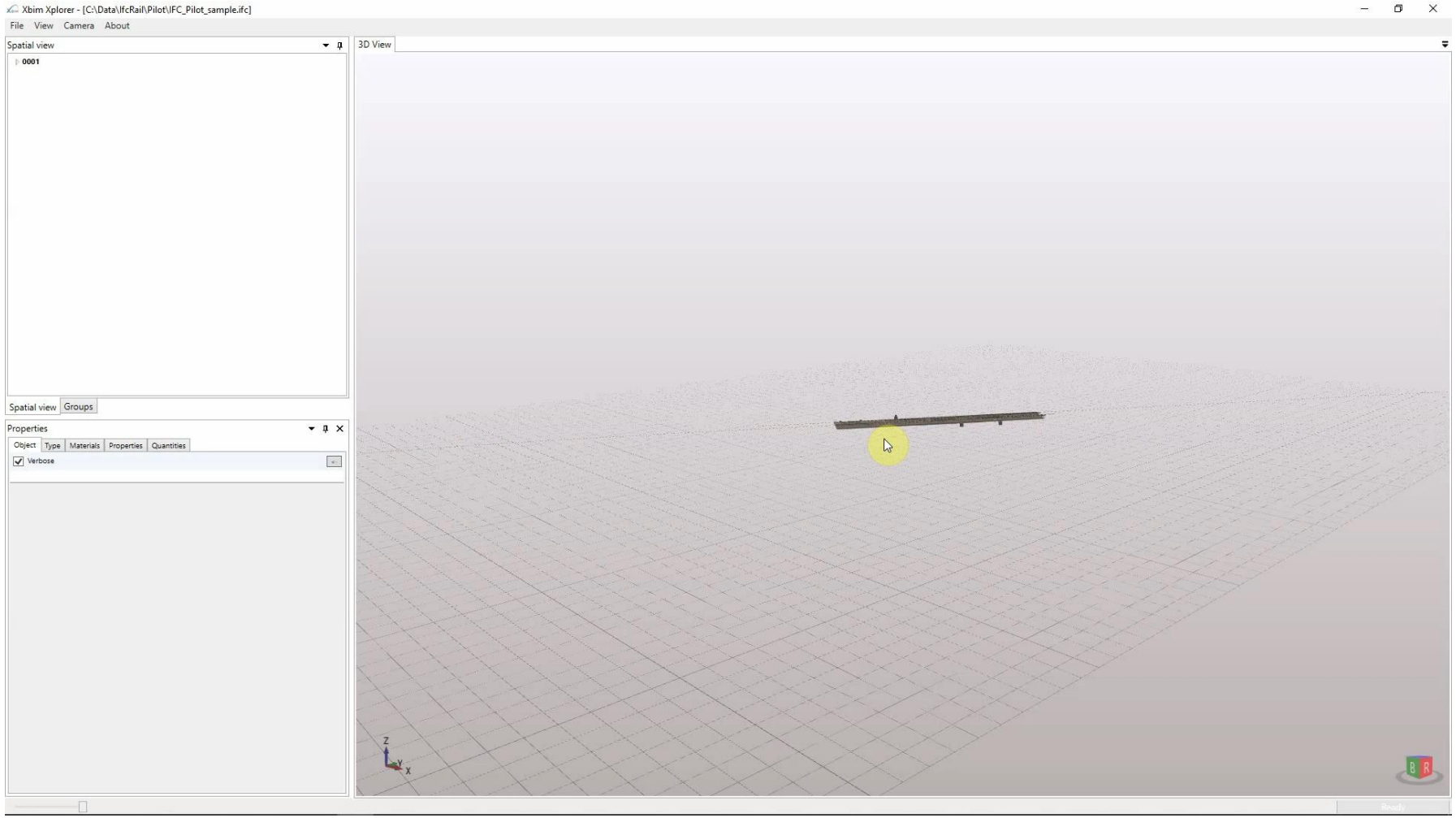


IFCRAIL Railway Room

Prototyp Implementation

Use Case: simple switch connection on a two track line





Conclusion ifcRail

- Challenge | Railways as a **"system of systems**"
- Challenge | **intercultural** project team
- Solution | **diversity** in the management team
- **Increase** in market power | international cooperation
- **Standardization process** | buildingSmart
  IFC-Rail> ISO> CEN> national standardization institutes
- Essential basis for "**openBIM**“
- **Learning** from each other
- **Further steps** are required

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7 Work Packages ifcRail Phase 2

1+2 Vendor Involvement

6 Finalise

MVD

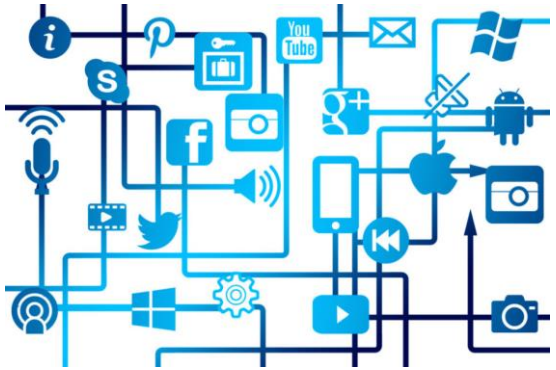
5 Other Initiatives

3 Data Dictionary

buildingSMART Data Dictionary

4 Extend Phase 1

7 Document and Communicate



ifcRail Project Phase 2

2020 – 2021 | **24** Months

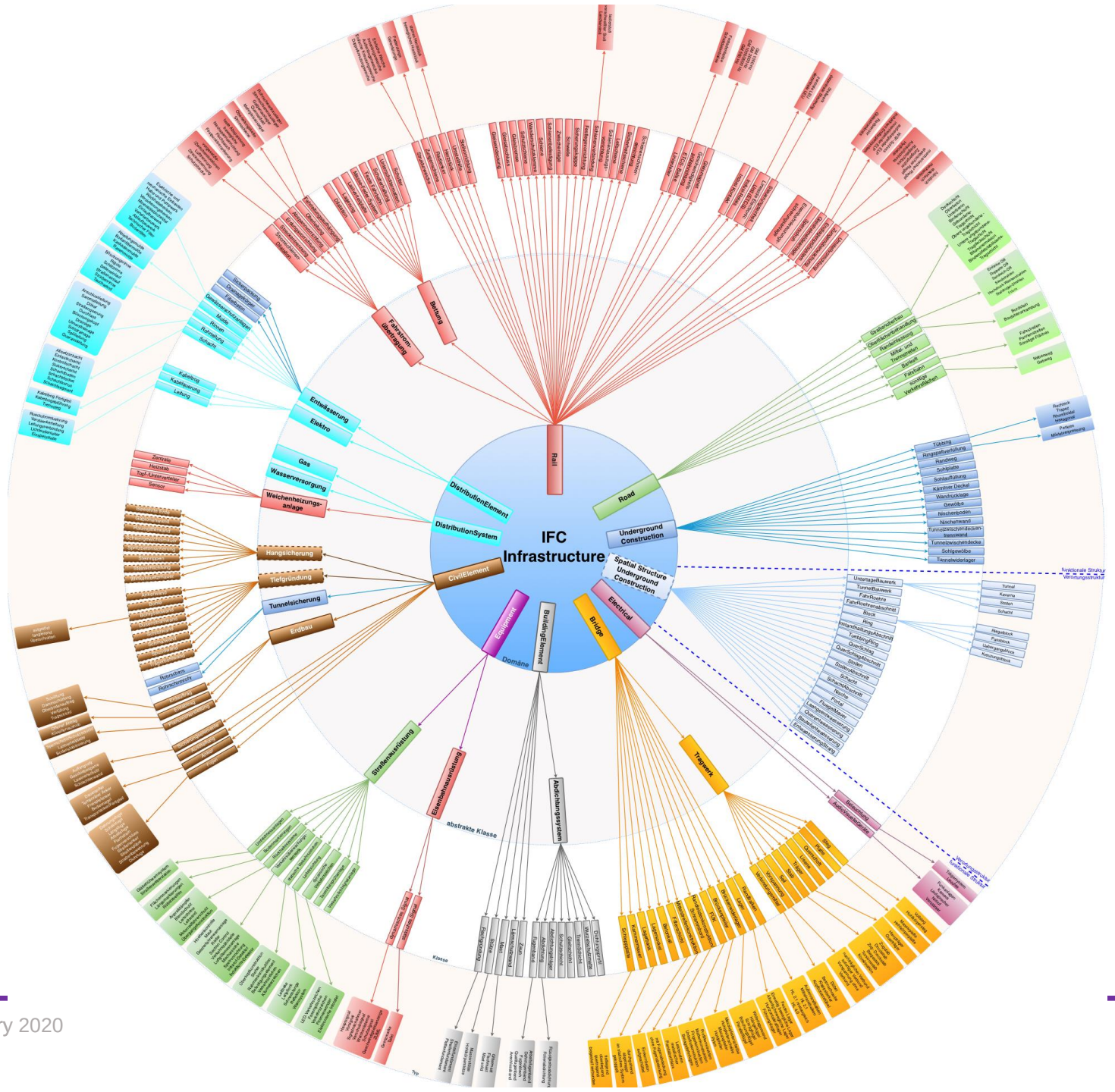
6-8 full Stakeholders

Cash
Est. **2-3** M€
Est. 350 T€/Stakeholder

100+ Domain & Technical Experts

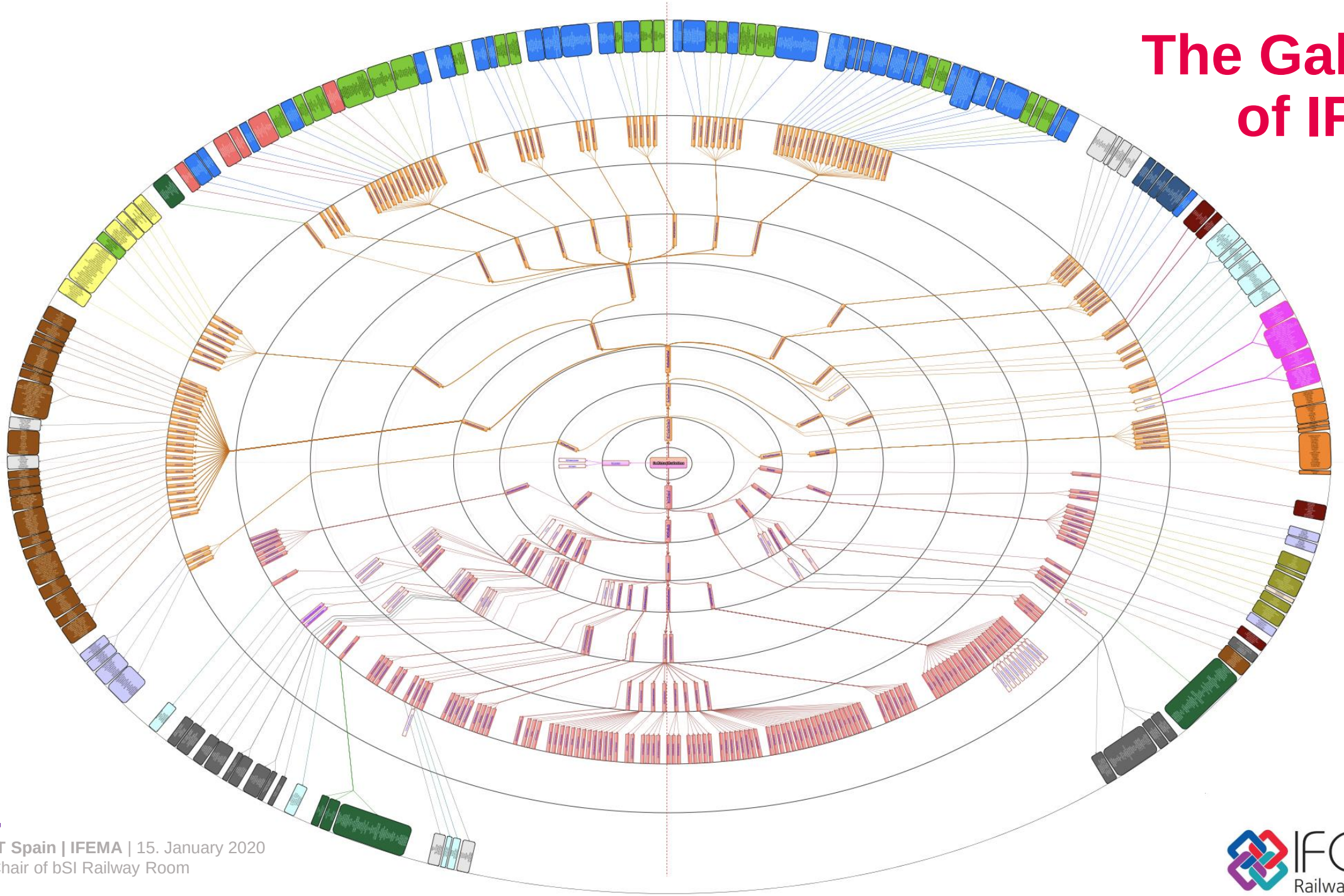
In-kind
Est. **4‘500+** Tage

The Sunsystem of ifcRail



IFCRAIL® Railway Room

The Galaxy of IFC 4



IFCRAIL® Railway Room

*Image Credit: NASA/ESALast Updated: Aug. 7, 2017Editor: Sarah Loff*Tags: Hubble Space Telescope, Universe

Can You Imagine the Future of Rail

REMARK:
THIS IS NO IMPLEMENTATION, IT IS DESIRE

Scene from the Italian movie (1984)

"NON CI RESTA CHE PIANGERE"

Winfried Stix
Christian Erismann

Chair of bSI Railway Room
Chair of bSAT WG Infrastructure
Member of PMO ifcRail Project

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thank you
xiè xiè ni
grazie
merci
kiitos
gracias
tack
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