Rail Baltica – BIM challenges

Kaupo Sirk
Head of Civil works and Station ,
RB RAIL AS
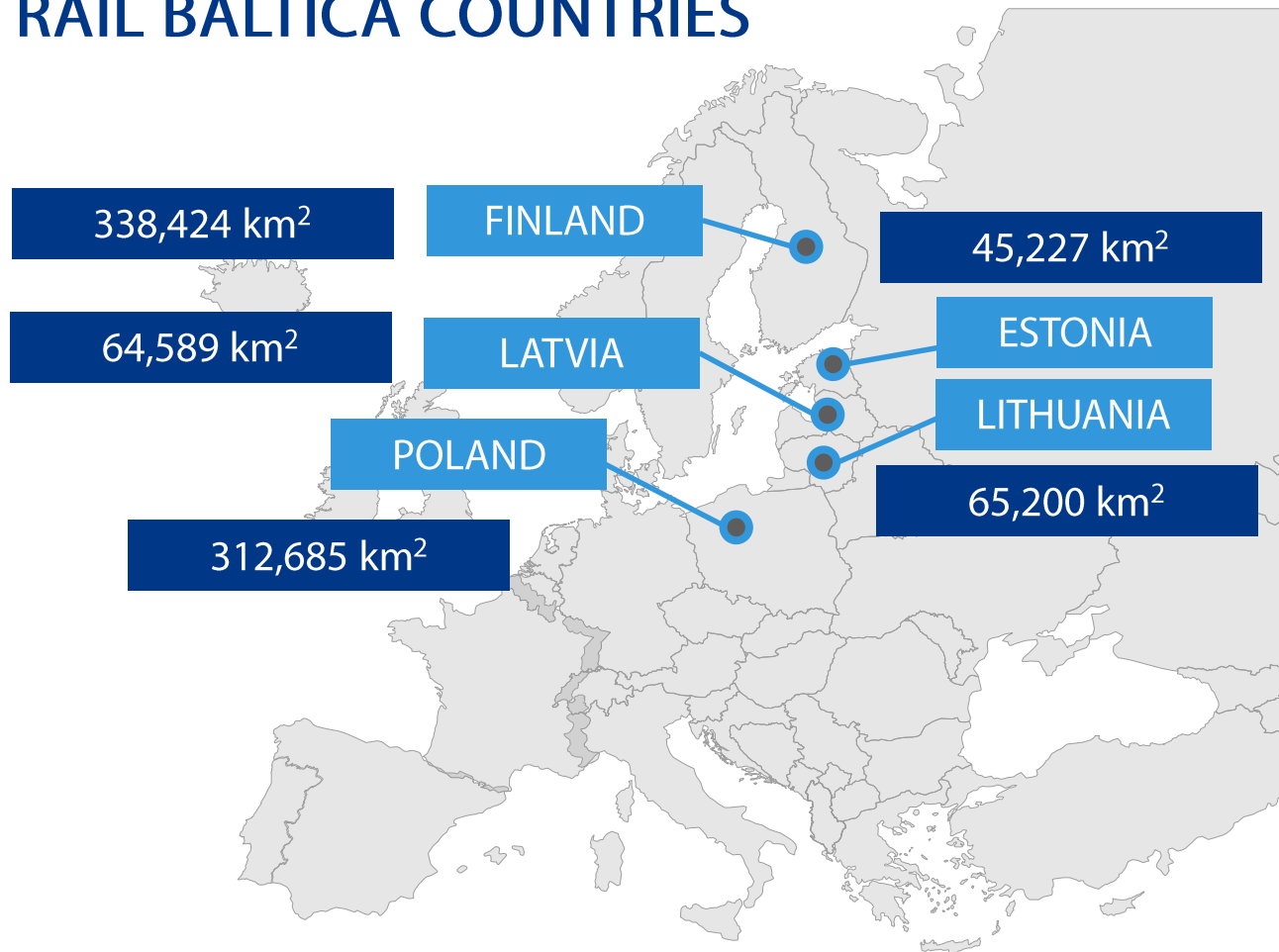
Co-financed by the European Union
Connecting Europe Facility
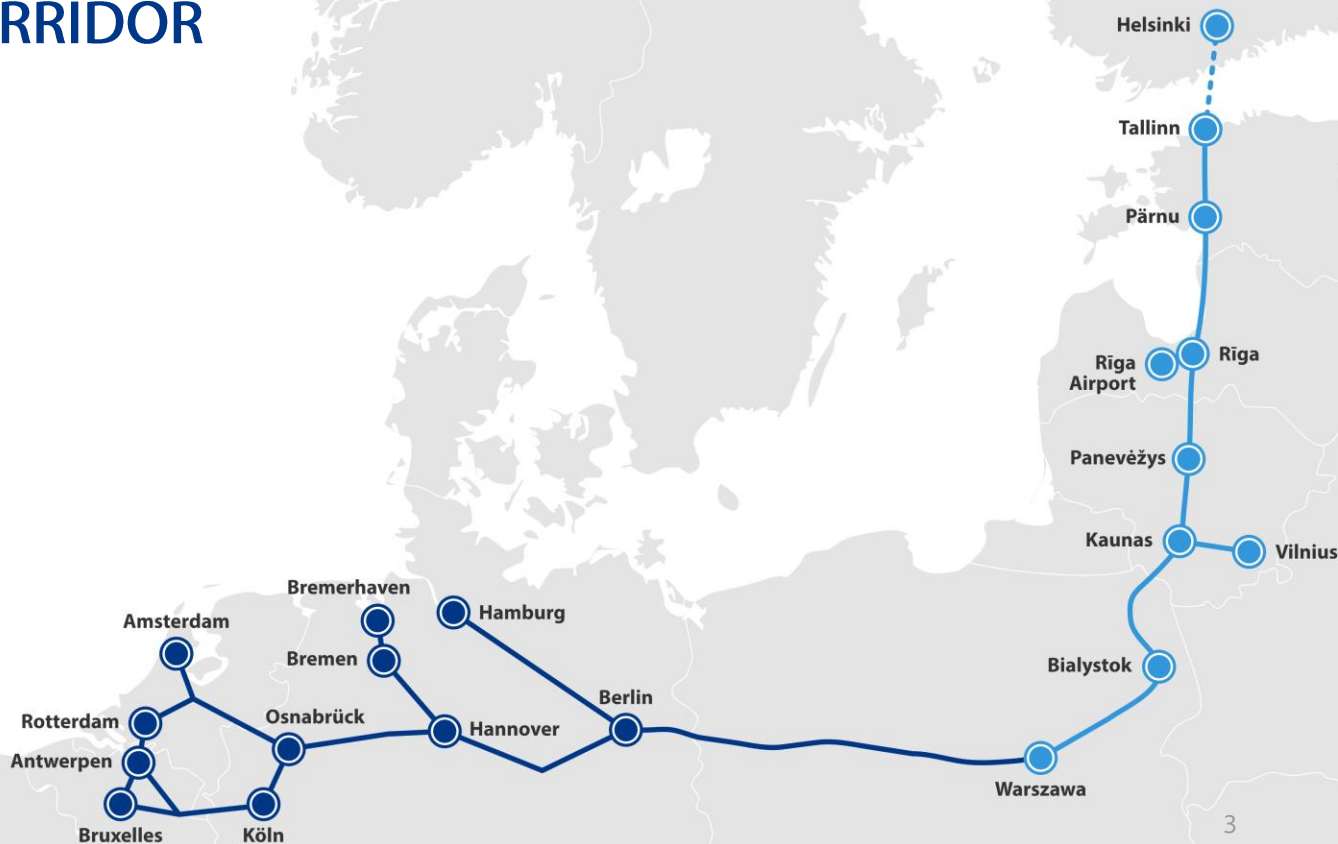
FIVE RAIL BALTICA COUNTRIES

TOTAL AREA:

826 125 km²
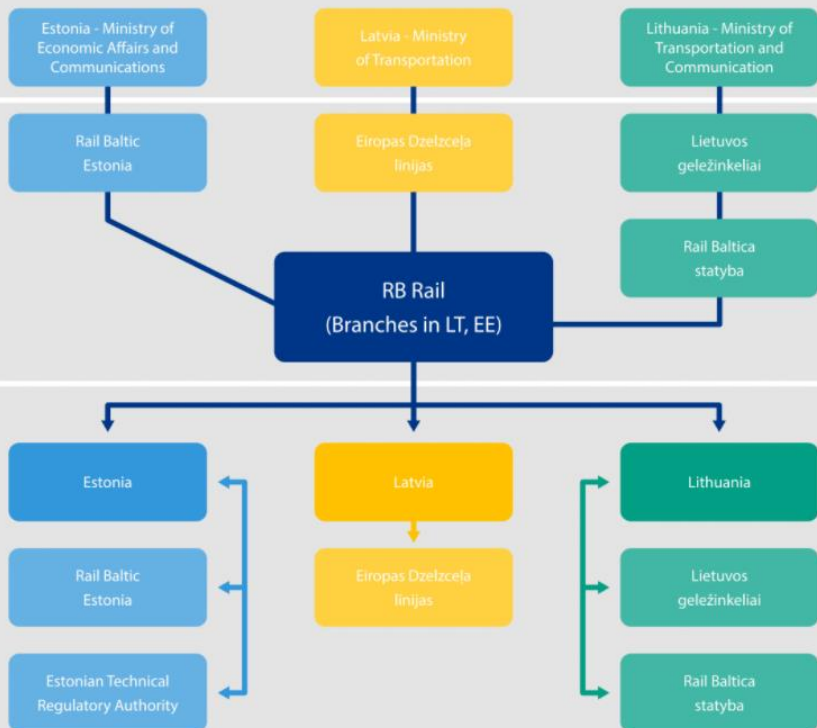
Almost **19%** of the EU territories

338,424 km²

FINLAND

45,227 km²

64,589 km²

LATVIA

ESTONIA

LITHUANIA

POLAND

65,200 km²

312,685 km²

Rail Baltica

RAIL BALTICA – PART OF THE NORTH SEA-BALTIC CORE NETWORK CORRIDOR

Rail Baltica

3

PROJECT IMPLEMENTERS

Estonia - Ministry of Economic Affairs and Communications	Latvia - Ministry of Transportation	Lithuania - Ministry of Transportation and Communication

Beneficiaries – three ministries

Rail Baltic Estonia | Eiropas Dzelzceļa linijas | Lietuvos geležinkeliai

RB Rail shareholders

Rail Baltica statyba

RB Rail (Branches in LT, EE)

Central project coordinator

National implementing bodies

Estonia | Latvia | Lithuania

Rail Baltic Estonia | Eiropas Dzelzceļa linijas | Lietuvos geležinkeliai

Estonian Technical Regulatory Authority | | Rail Baltica statyba

Rail Baltica

Design and design supervision tenders – the first sections

	🇪🇪	🇱🇻	🇱🇹
Announcement of the First Phase Tenders	29.12.2017	26.01.2018	29.12.2017
Opening of Tenders	21.02.2017	28.02.2018	21.02.2018
Number of participants	6	6	6
Announcement of Second Phase Tenders	Q2 2018	Q2 2018	Q2 2018
Opening of Second Phase Tenders	Q3 2018	Q3 2018	Q3 2018
Design Agreements signed	Q3 2018	Q3 2018	Q3 2018

Rail Baltica

- Supplier meeting days in November 2017
- Tenders in two stages and multiple sections
- Design service period is 24 months (Master Design period 12 months)

Design and design supervision tenders –
the next Rail Baltica sections

	Estonia	Latvia	Lithuania
2nd Sections			
Announcement of the First Phase Tenders	10.04.2018	Q2 (April) 2018	10.04.2018
Opening of Tenders	Q2/Q3 2018	Q2/Q3 2018	Q2/Q3 2018
Announcement of Second Phase Tenders	Q3 2018	Q3 2018	Q3 2018
Opening of Second Phase Tenders	Q4 2018	Q4 2018	Q4 2018
Design Agreements signed	Q4 2018	Q4 2018	Q4 2018
3rd Sections			
First Phase of Tenders	Q3 2018	2019	2021
Second Phase of Tenders	Q3 2018	2019	2021
Design Agreements signed	Q4 2018	2019	2021

Rail Baltica

My BIM journey as asset owner

◉ Declaration of Intent of the Estonian Public Sector Authorities and Policy Makers for the Implementation of the Building Information Model signed by Biggest Public clients **05.07.2017**

Rail Baltica official start in Estonia

⊙ Declaration of Intent of the Estonian Public Sector Authorities and Policy Makers for the Implementation of the Building Information Model signed by RB Rail 17.08.2017

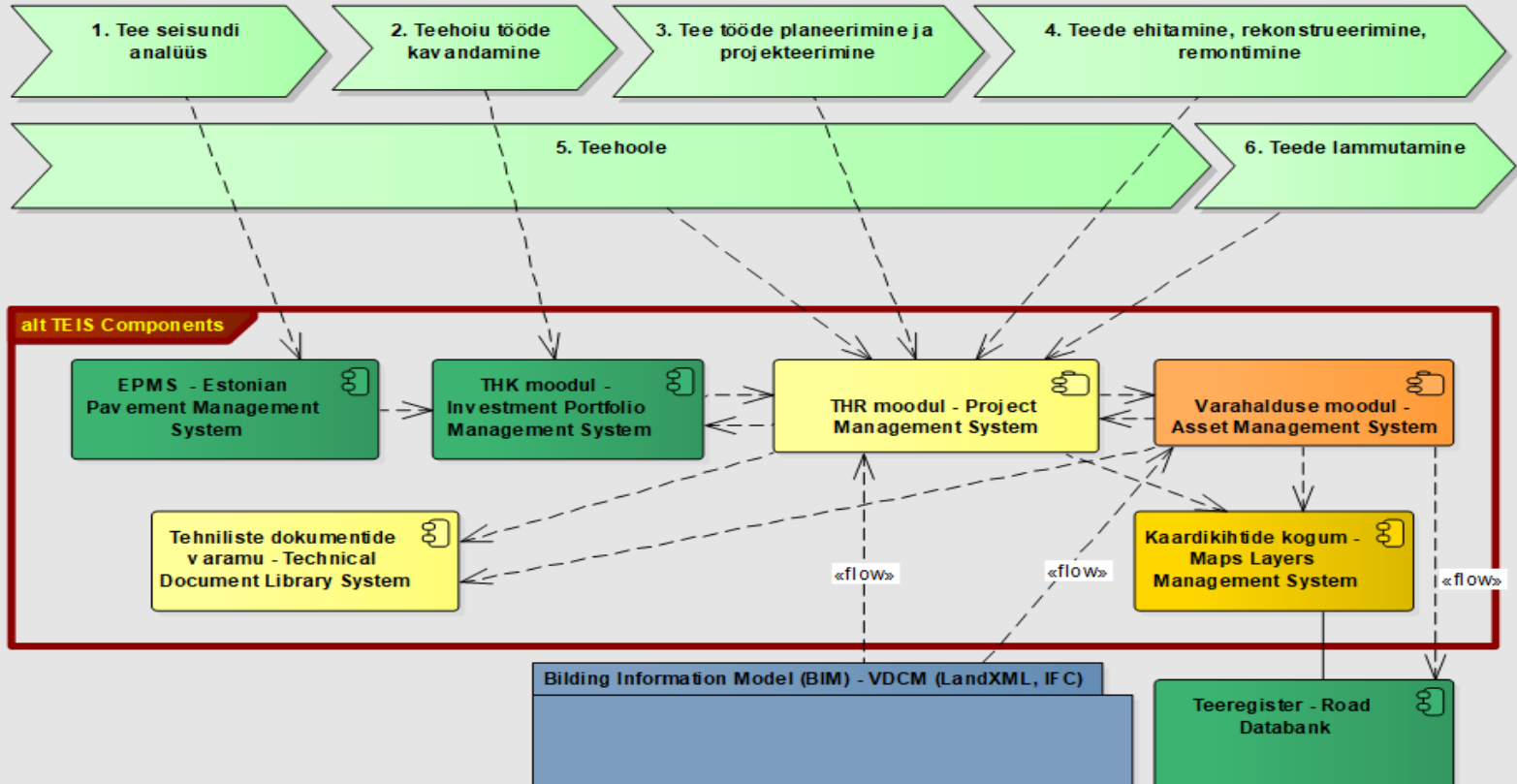# Estonian digital construction Timeschedule

Action plan for buildings

Period	2017		2018		2019		2020+	
Phase	I pa	II pa	I pa	II pa	I pa	II pa	I pa	II pa
1) Pre-build model								
a) Execution and improvement of the Pilot Project								
b) Enabling Evaluation Criterion				12.2018				
2) Implementation Model								
c) Creating guidelines								
d) Improvement and implementation of the Pilot Project								
e) Setting up an implementation model criterion						12.2019		
3) Continued development activities								
f) Implementation of the Action Plan for the Next Stage								

Action plan for infrastructure

Period	2017		2018		2019		2020+	
Phase	I pa	II pa	I pa	II pa	I pa	II pa	I pa	II pa
1) Preparation								
a) Guidelines development		12.2017						
b) Training/ increasing competency								
2) Pre-construction Model								
c) Execution and improvement of the Pilot Project								
d) Readiness to enable Evaluation Criterion				12.2018				
3) Implementation Model								
e) Improvement and implementation of the Pilot Project								
f) Readiness to enable Evaluation Criterion						12.2019		
4) Development of the Next Stage								
g) Implementation of the Action Plan for the Next Stage								

Rail Baltica

9

My BIM journey as asset owner

cmp TEIS Component View

1. Tee seisundi analüüs
2. Teehoiu tööde kavandamine
3. Tee tööde planeerimine ja projekteerimine
4. Teede ehitamine, rekonstrueerimine, remontimine

5. Teehoole
6. Teede lammutamine

alt TEIS Components

EPMS - Estonian Pavement Management System

THK moodul - Investment Portfolio Management System

THR moodul - Project Management System

Varahalduse moodul - Asset Management System

Tehniliste dokumentide varamu - Technical Document Library System

Kaardikihtide kogum - Maps Layers Management System

«flow» «flow» «flow»

Bilding Information Model (BIM) - VDCM (LandXML, IFC)

Teeregister - Road Databank

10

RB Rail is „green field" Project and all data will be collected during design and construction process
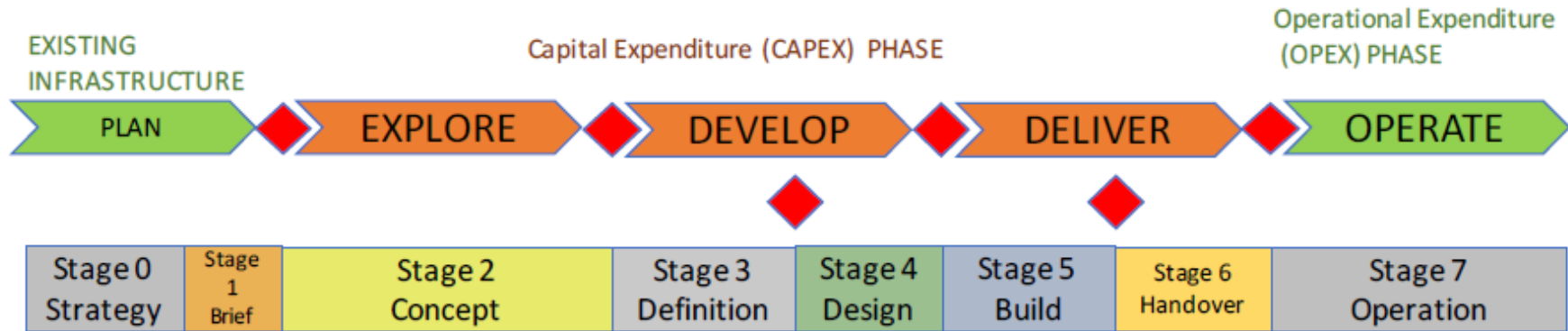
BIM challanges for Rail Baltica

⦿ How to create BIM system what will create added value during Railway lifecycle period ?(How to earn investments back?)

⦿ How to collect and manage data during design and construction process   in favour of future infrastructure manager

⦿ How to create during short period BIM data models what is understandable for European @ Baltic designers and will fit with all Baltic states legal requirements

⦿ How to use local BIM communities knowhow during short period and how local BIM communities can make step forward together with us.

⦿ I hope to find common understanding and start digital construction process in all Baltic states what is starting point for real „open construction process"

WHY BIM?

◉ DIRECTIVE 2014/24/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

- Europe 2020 strategy for smart, sustainable and inclusive growth

- Public procurement rules

◉ increase the efficiency of public spending

◉ facilitating in particular the participation of small and medium-sized enterprises (SMEs) in public procurement

◉ to enable procurers to make better use of public procurement in support of common societal goals

◉ contracting authorities can determine the most economically advantageous tender and the lowest cost using a life-cycle costing approach

◉ Research and innovation, including eco-innovation and social innovation

Rail Baltica

WHY THIS MEETING?

To **inform, start a dialog and engage** the industry's professionals in the discussion and development of the BIM implementation for the Rail Baltica Global Project

Tallinn, July 26
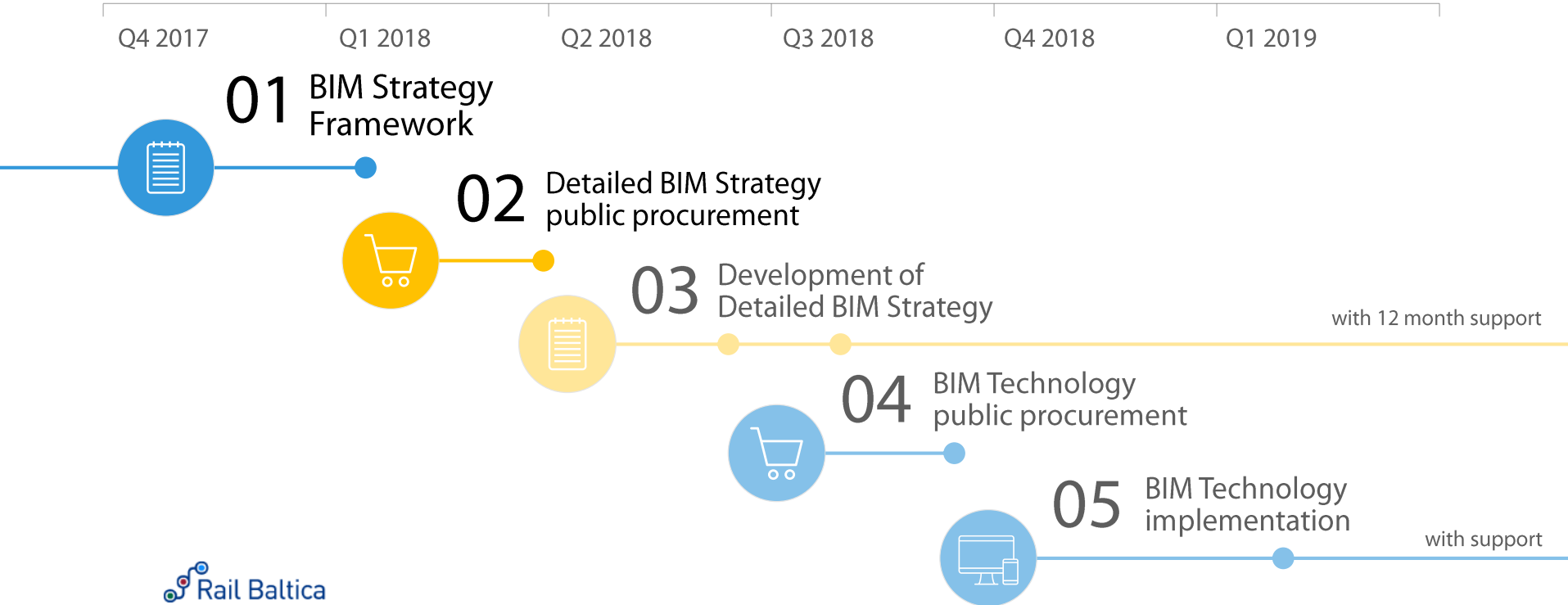
Riga, July 18

Vilnius, July 23

Rail Baltica
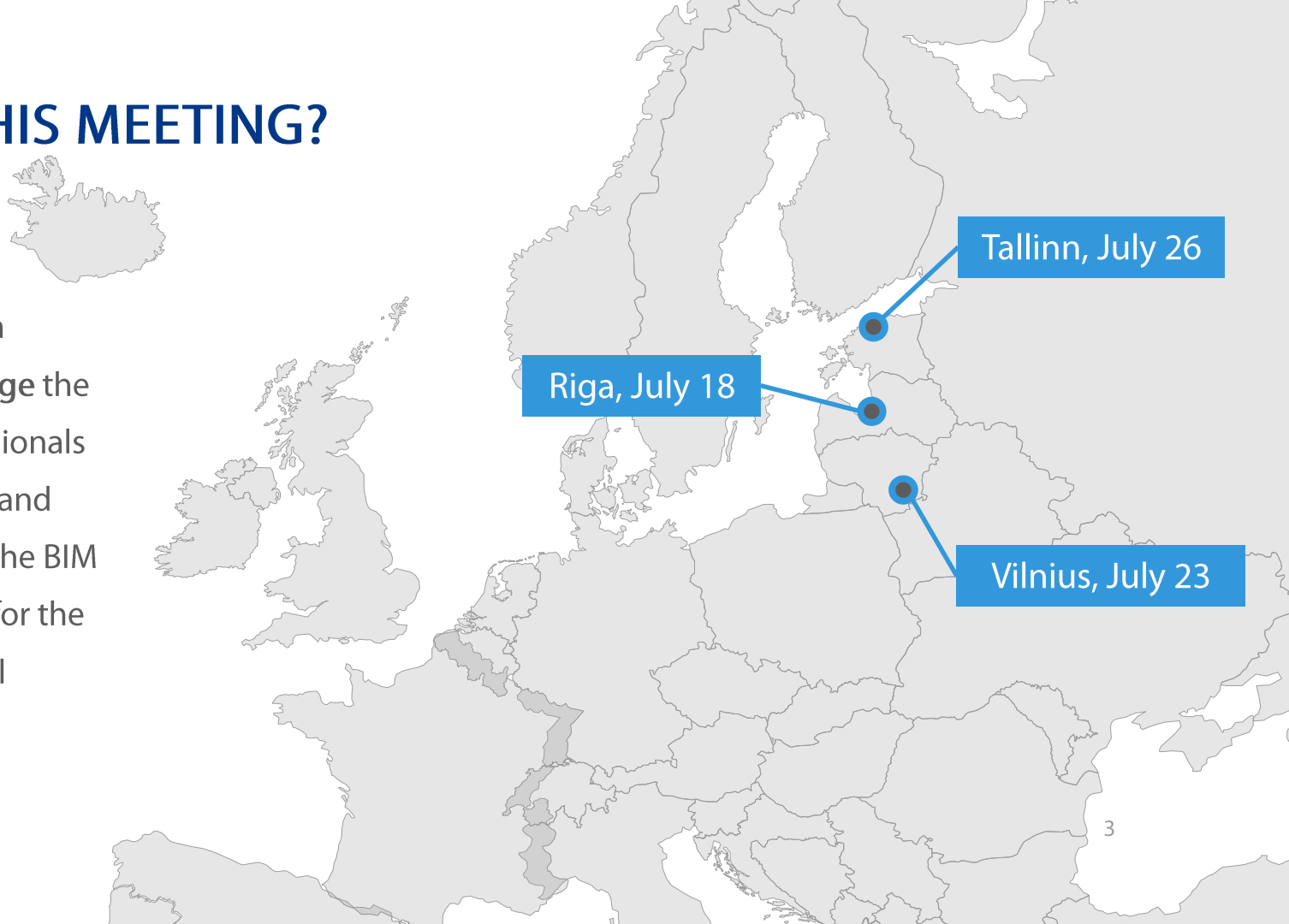
Agenda

⦿ BIM implementation plans

⦿ BIM Strategy Framework – the concept

⦿ BIM Manual, Employer's Information Requirements, BIM Execution Plan

⦿ Classification System

⦿ Common Data Environment

⦿ Communication channels

Rail Baltica

General BIM approach

◉ We are gathering and implementing the best BIM practices

- from UK, Finland, Denmark, Lithuania, Estonia, Sweden, Norway, Spain, Germany…

- OpenBIM approach (as far as it will be possible)

- Monitoring and following closely the newest developments and technologies (IFCRail, IFCRoad, IFCBridge, AR and VR…)

Rail Baltica

BIM implementation plans

Q4 2017 Q1 2018 Q2 2018 Q3 2018 Q4 2018 Q1 2019

01 BIM Strategy
Framework

02 Detailed BIM Strategy
public procurement

03 Development of
Detailed BIM Strategy

with 12 month support

04 BIM Technology
public procurement

05 BIM Technology
implementation

with support

Rail Baltica

BIM implementation plans

01 BIM Strategy Framework

- Set the base and approach for the Detailed BIM Strategy

- Develop the ToR for the Detailed BIM Strategy

- Send a message to market – BIM will be used for Rail Baltica Global Project

Rail Baltica

02 Detailed BIM Strategy public procurement

- Public procurement was announced on February 5, 2018.

- 2 proposal submissions

- AECOM Inocsa S.L.

BIM implementation plans

03 Development of Detailed BIM Strategy

- BIM, CAD manuals and standards
- Classification systems
- Roles and Responsibilities
- ToR for CDE and supporting technology
- Training materials
- Support

04 BIM Technology public procurement

- Common Data Environment (CDE) solutions
- Supporting technology and software for project needs
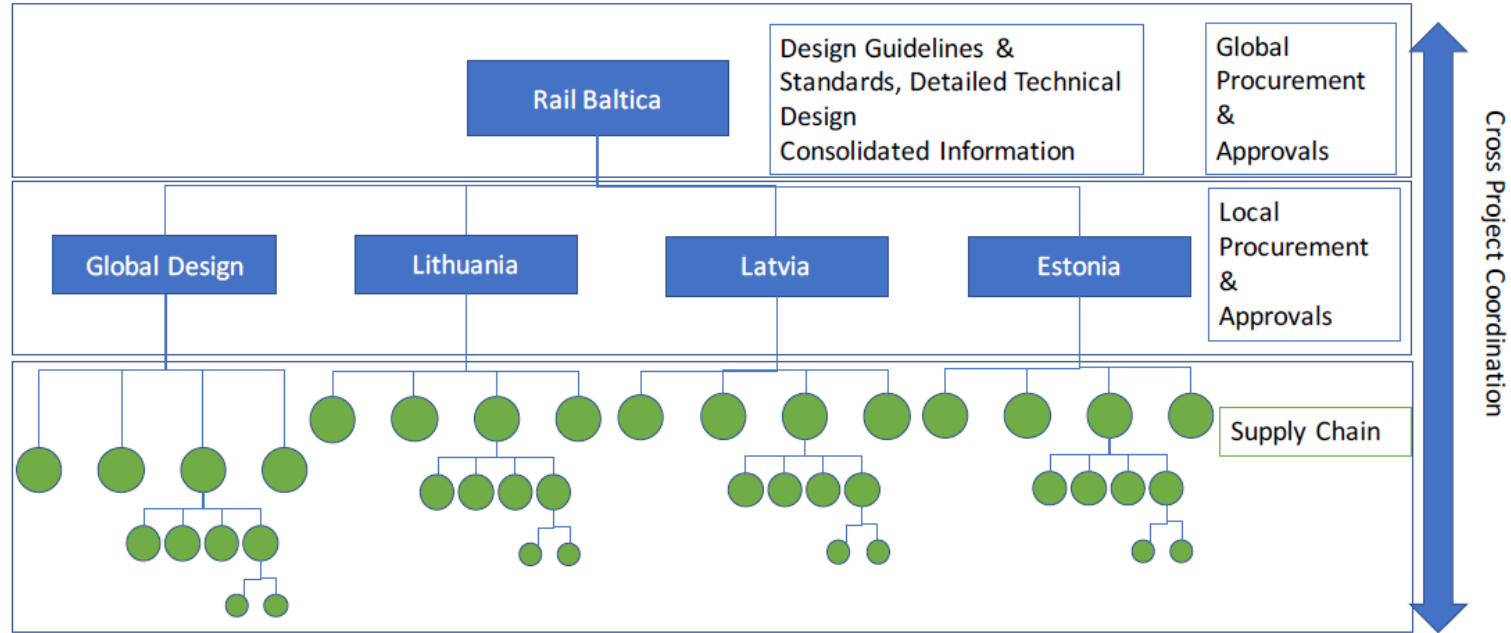- Training materials
- Support

05 BIM Technology implementation

- Implementation of the procured CDE and supporting technology solutions
- Testing
- Training
- Support

BIM Strategy Framework

- General document which sets the main criteria for BIM implementation for Rail Baltica Global Project
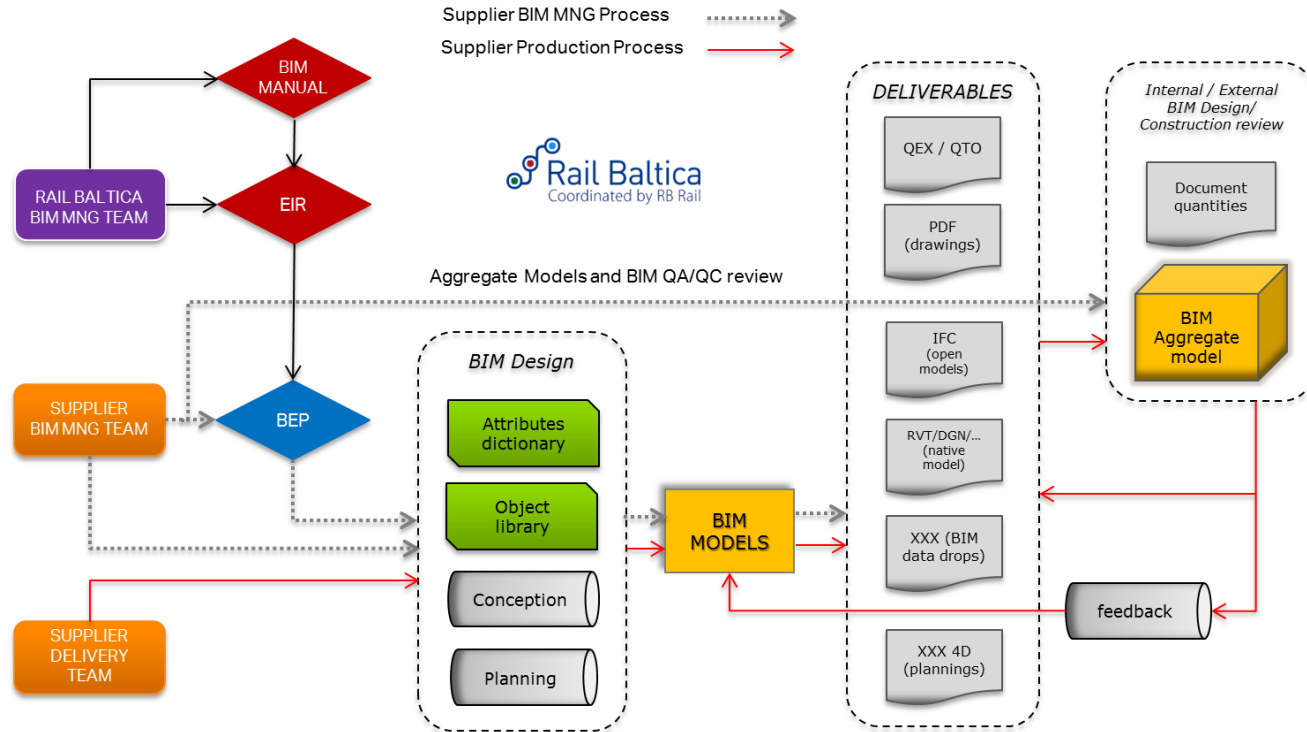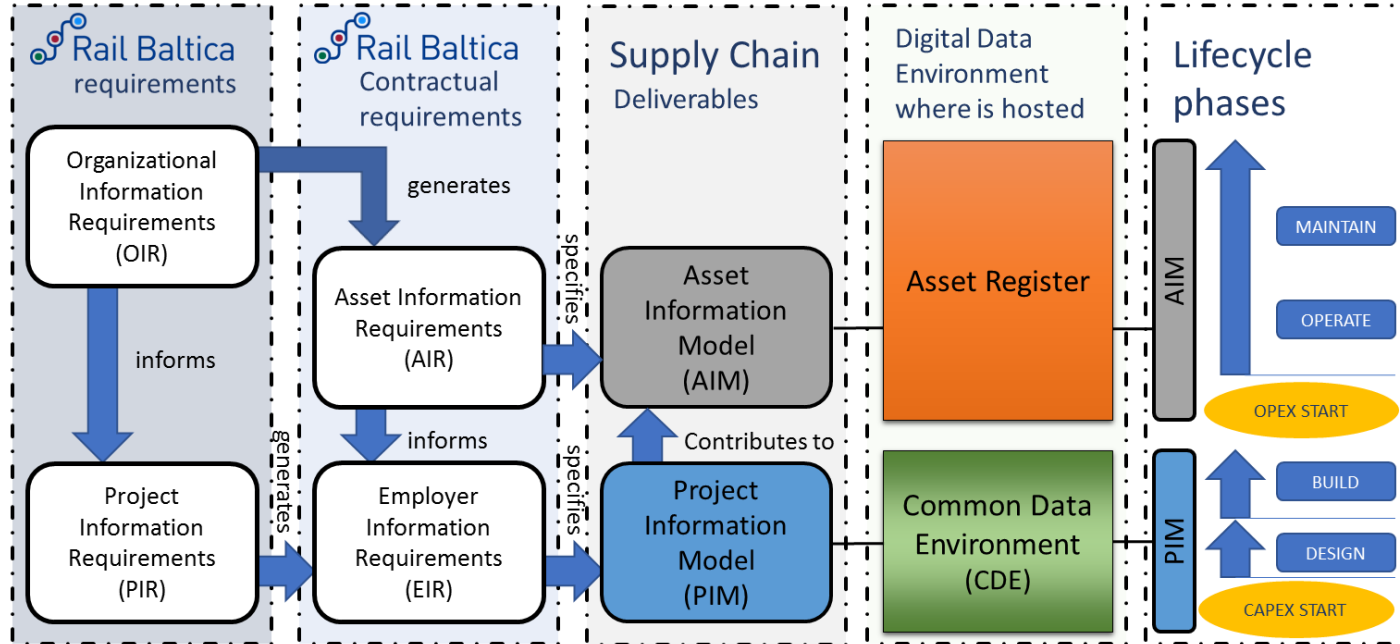
BIM Strategy Framework – goals

- A **life cycle centric approach** to information delivery and use.

- Using BIM to create virtual assets prior to construction and translating those virtual assets into physical assets. In other words, **to build the railway twice** – once as data and once physically eliminating potential issues before construction and capture vital information during the process.

- Capture relevant once information through the life cycle of the project programme, from step to step, stage to stage, but use it many times throughout the process, **reducing duplication** of effort and maximizing its use in analysis, procurement and eventual operation.

- To **extend the use of BIM beyond 3D models to include wider information attributes**, functional requirements, asset information together with linked documentation such as drawings, photographs, videos and related information sets.

- To **capture operational and asset management information** during the design and build process ready for handover to users once complete.

- **Enable cross project information sharing and coordination**.

- Developing a set of common shared asset object types.

- **Encourage and support the design and construction supply chain to use BIM tools and technology** in design and construction of the railway. With the specific aim of improved cross project coordination, removing errors early in the design process, reducing Requests for Information (RFI) between contracted parties, better quality and trustworthiness of deliverables.

- To **encourage the supply chain to use the best technology** to achieve the information requirements thus not restricting them to specific design tools.

- To **implement technology that supports these objectives** recognizing the evolving nature of BIM and related technology.
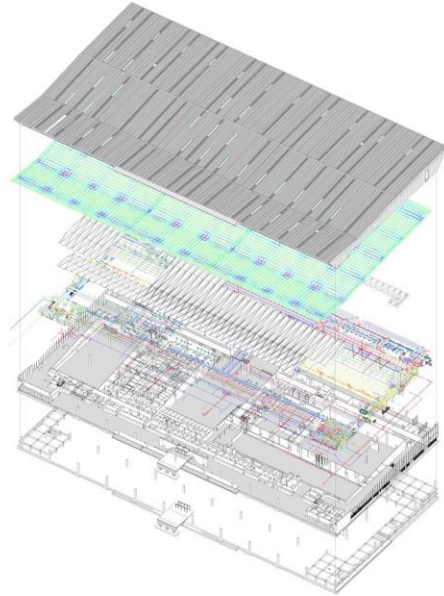
Rail Baltica

10

Roles and responsibilities

11

BIM Strategy Framework

BIM Strategy Framework

⊙ Project Information Model (PIM)
– model based

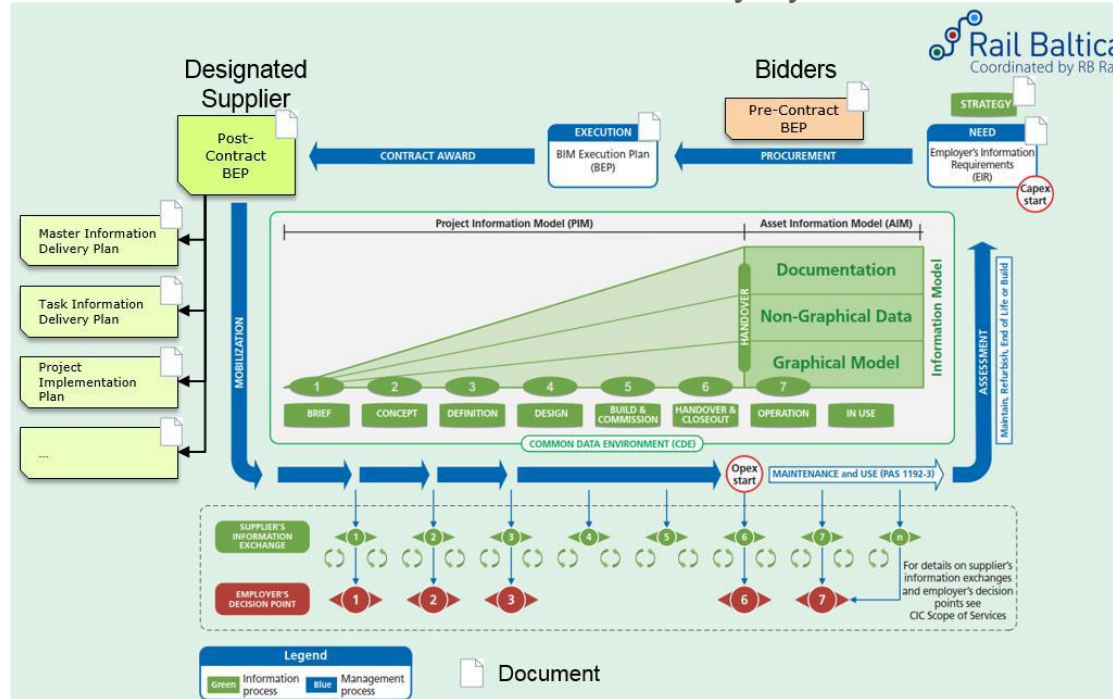⊙ Asset Information Model (AIM)
– database

Rail Baltica

13

BIM Strategy Framework

The information delivery cycle*

14

BIM Manual *(in development)*

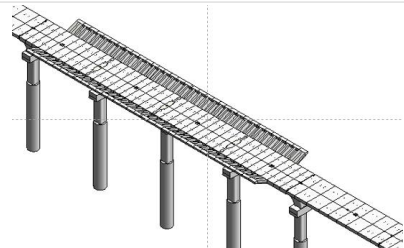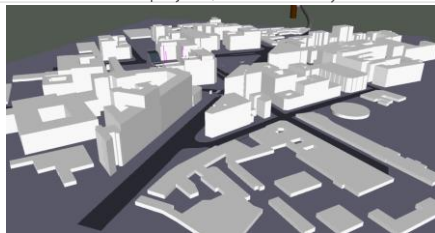| BIM Manual |
| :---: |
| **Supporting Documents** |
| CAD Standards |
| Codification Standards |
| Codification Tables |
| BIM Objects Parameter Matrix |
| Level of Definition (LOD) |
| BIM Objects LoG Matrix |
| **Mobilization Templates** |
| BEP Post-Contract template |
| TIDP template |
| MIDP template |
| **Delivery Templates** |
| BIM Delivery Report template |
| QAQC CAD/BIM Checklist Report template |
| Clash Check Report template |
| QEX template |
| QTO template |
| Data Drop template |

15

BIM Manual *(in development)*

- Principles and goals
- Purpose
- BIM Delivery Process
- Supplier's role
- BIM Execution Plan
- Model Delivery Plan
- Information and Codification principles
- BIM Models' Geo-reference
- BIM Modeling and CAD Standards

- Level of Definition
- BIM Objects' definition
- Deliverables from BIM models
- File Formats
- Roles & Responsibilities
- Interface Coordination
- Quality Control
- Rail Baltica CDE

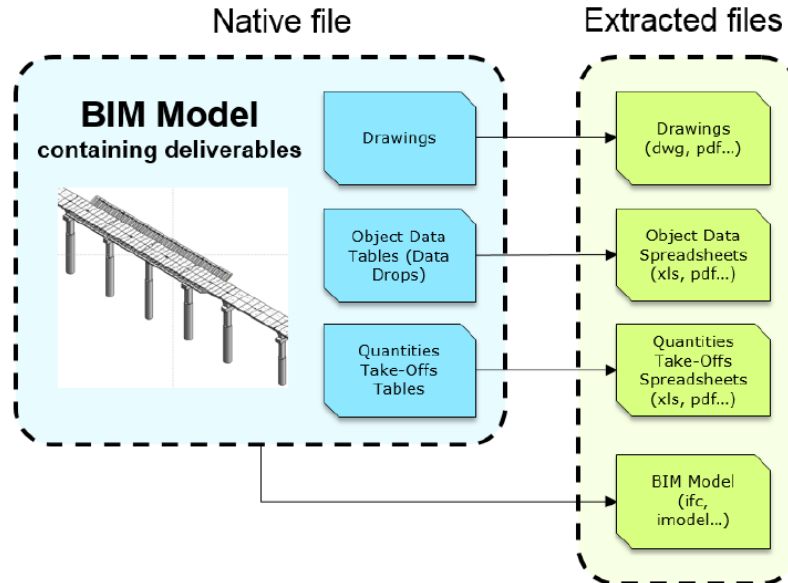Rail Baltica

BIM Manual – *highlights*

⊙ 3D vs BIM

	3D Model	BIM Model
Information Content	Only geometry	Geometry + Data Its elements must contain the required data in the form of attributes
Use	Project visualisation Source or input for the design	Project design Every asset to be designed and constructed
BIM Manual application	Does not need to follow the information data configuration, 3D models will follow the naming and the Work Breakdown Structure (WBS)	Must follow all the BIM Manual, information data configuration included.
Software	Made from any 3D software (BIM or not), provided that importing the model into BIM software retains all the generated forms	Made from any BIM software
Links	Linked as reference in the BIM models No linked models inside it	Linked as reference in other BIM models Can have 3D models and BIM models linked inside it
Examples	3D Terrain Models (topographic type similar to that provided on the area concerned by the works) materializing the ground and its immediate facilities involved in the operation, as well as their connection to the existing Existing utilities and infrastructures Environmental works of the projects, not affected by it	Infrastructure: architectural, structural, installations or utilities models Building: architectural, structural, installations or utilities models Railways or roads models

Rail Baltica

BIM Manual – *highlights*

◉ The BIM Deliverable

It is requested that all the deliverables will be extracted from the BIM Model and will be referred to a particular BIM model defined with a particular version, date, naming and WBS.

BIM Manual – *highlights*

FILE NAMING

Project	-	Originator	-	Volume_System/Zone		-	Location	-	Type	-	Role	-	Number
													6 integer numeric digits

Example: ABCDEF-RBR-E001AA-R001-BQ-AR-030201

Project	Originator	Volume_System/Zone		Location	Type	Role	Number
Between 4 and 6 charaters. Single common project identifier independent and recognizably distinct from any individual organization's internal job number.. See Sheet PROJECT	This will be 3 characters. See sheet ORIGINATOR	This will be 6 characters and can be a combination of letters or digits dependant on project needs. 4 characters for Volume/System and 2 for Zone . This should be formalised by the project and documented in any associated project support documentation (e.g. BIM Execution Plan) and managed by the Project Manager, Project Information Manager or BIM Manager.		This will be 4 characters and can be a combination of letters or digits dependant on project needs. 0000 is mandated for No Location. This should be formalised by the project and documented in any associated project support documentation (e.g. BIM Execution Plan) and managed by the Project Manager, Project Information Manager or BIM Manager.	This will be 2 characters and will be a combination of letters. This should be formalised by the project and documented in any associated project support documentation (e.g. BIM Execution Plan) and managed by the Project Manager, Project Information Manager or BIM Manager. See Sheet DOCUMENT TYPE	This will be 2 characters from the noted list and define the contributing Roles to the project. This list can be expanded and is managed by the Project Manager, Project Information Manager or BIM Manager. See sheet ROLE	This will be 6 digit characters. Disciplines can break this number into sections to manage aspects such as work packages and is managed by the Project Manager, Project Information Manager or BIM Manager.

Fixed (Examples)	Fixed (Examples)	Project Specific Volume/System (Examples)		Project Specific Zone (Examples)	Project Specific Locations(Examples)		Fixed: (Examples)		Fixed:(Examples)		Project Specific (Examples):
ABCDEF											100001
	RBR Rail Baltica Rail	E001	Station xx	ZZ Whole Zone	R000	LOCATION 0000	AF	Animation File	AR	Architect	
		E002	Station yy	00 No Zone applicable	R001	LOCATION 0001	AP	Application	BR	Building Surveyor	
		E001	Station xx	SS Substructure	R002	LOCATION 0002	BQ	Bill of Quantity	BM	BIM Management/ Coordination	
		E002	Station yy	EN Entrances	R003	LOCATION 0003	CA	Calculations	BS	Building Services Engineer	
		T001	Tunnel xx	AG Above Ground	R004	LOCATION 0004	CD	Contract	CE	Civil Engineer	
		B001	Bridge yy		R005	LOCATION 0005					
		R001	Railway section		R006	LOCATION 0006					
		0000	No Volume applicable		R007	LOCATION 0007					
		ZZZZ	Multiple volume applicable		R008	LOCATION 0008					
					R009	LOCATION 0009					
					0001	Chainage 15,00 to 15,100					
					0002	Chainage 15,100 to 15,200					
					0003	Chainage 15,200 to 15,300					
					0000	No Location applicable					
					ZZZZ	Multiple Location applicable					

BIM Manual – *highlights*

◉ Open BIM

The Open BIM approach of the Rail Baltica BIM Strategy does not impose the use of any specific authoring tool, and therefore the BIM and CAD Standards are not tool / software related.

This approach allows an interoperability among the different actors involved in the project lifecycle, leaving the Supply Chain to choose their own tools and solutions for the production of the information.

IFC2x3, IFC4, LandXML, InfraGML …

DWG, DGN…

BIM EIR – Model types, content and file formats

The following tables contains the provisional files formats for the deliverables.

All of the **BIM models, data** (including simulation and calculations models and data), **documents, CAD files and drawings** produced using the authoring tool/software, its plugins or addons **shall be submitted to CDE in their original native format** and latest version containing all of the native elements, e.g. alignments, corridors, profiles, surfaces, blocks, components and all other attributes and proxies. An exported, attribute-less and proxy-less copy of CAD files also shall be delivered.

Rail Baltica

BIM EIR – Model types, content and file formats

Under development

◉ Existing conditions/initial data

Model type	Content	Format
Existing terrain	Based on laser scanning of existing terrain supplied/combined with detailed topology surveys.	Terrain models: 3D DWG/DGN/ DTM/LandXML Point cloud files: LAS/LAZ/XYZ/ PTS/PTX/E57/
Existing subsurface	Indicative model of existing geological layers, based on information registered in geotechnical investigations. Geotechnical investigation results for each borehole shall be defined and described in 3D coordinated files with descriptions and technical parameters of the soils as included attributes	DGN/DTM DWG/XML
Existing track	Based on data from archive information (if available), laser scanning and surveying data	DWG/DGN/ALG/TXT/ Point cloud files: LAS/LAZ/XYZ/ PTS/PTX/E57/

Existing structures which will be renovated or will not undergo any changes (incl.	Based on existing drawings from archive information, surveys, regulations and documentation. All existing structures which will undergo the renovation, need to achieve the same LOD as the newly designed structures.	IFC2x3 (IFC4)/ DGN/DWG/I.DGN/ Point cloud files:
bridges, overpasses, viaducts, platforms, etc.)	All existing structures which will not undergo renovation or demolition, but are required as reference structures for the project, need to achieve a basic LOD containing the geometrical and attribute information about the structure.	LAS/LAZ/XYZ/ PTS/PTX/E57/
Existing structures (for complete demolishing)	Based on existing drawings from archive information, surveys, regulations and documentation. LOD shall be sufficient enough to calculate demolition quantities and schedules.	IFC2x3 (IFC4)/ DGN/DWG/I.DGN/ Point cloud files: LAS/LAZ/XYZ/ PTS/PTX/E57/
Existing utilities	Indicative model of existing utilities, based on information received from utility owners and surveying data (additionally with ground penetration radars) All indicative models of existing utilities shall be adjusted to implement in to 3D coordinates, with additional technical parameters and properties.	DGN/DTM/DWG

Rail Baltica

BIM EIR – Model types, content and file formats

◉ Recommendations for Designed models (Railway and other infrastructure)

Model type	Content	Format
Alignment for tracks	3D alignments for designed tracks	DGN/ALG/ DWG/XML/ASCII
Embankment	3D model of embankment	DGN/DWG/LandXML
Alignment for roads and paths	3D alignments for designed roads and paths	DGN/ALG DWG/XML/ASCII
Corridor for railway	Corridor for the new track	DGN/DTM DWG/XML
Platforms	Structures and fixtures for platforms at railway stations	IFC2x3, (IFC4)
Corridors for roads and paths	Corridors for designed or relocated roads and paths.	DGN/DTM DWG/XML
Road geometry and equipment	Model containing road geometry and equipment, e.g. curbs, grating, crash barriers	DGN/DTM DWG/XML
Clearance for railway	Clearance profile for railway	DGN/DTM DWG/XML
Clearance for crossing constructions	Clearance profile for crossing roads, paths and fauna passages	DGN/DTM DWG/XML
Groundwater level	Model indicating maximum level of groundwater	DGN/DTM DWG/XML

Structures of over- & underpasses and associated works	Model of over- and underpasses, retaining walls and similar structures	DGN/DWG/ IFC2x3 (IFC4)
Excavations	Model containing excavations and backfill for constructions and structures.	DGN/DTM DWG/XML
Technical installations	Model of e.g. signal control system, lighting masts and M&E.	DGN/DWG
Relocated Utilities	As-built model of relocated utilities	LandInfra InfraGML/ DGN/DTM DWG/XML
Rainwater basins	Model of rainwater basins incl. in- and outlets	DGN/DTM DWG/XML
Drainage	Model of drainage pipes and manholes	LandInfra InfraGML/ DGN/DTM DWG/XML
Spoil areas	Model of spoil areas	DGN/DTM DWG/XML
Terrain model	As-built model of the built terrain surface and objects for verification and clash detection	Terrain models: 3D DWG/DGN/ DTM/LandXML
		Point cloud files: LAS/LAZ/XYZ/ PTS/PTX/E57/

Rail Baltica

BIM EIR – Model types, content and file formats

Under development

⊙ Recommendations for Designed models (Railway stations)

Model type	Content	Format	Model type	Content	Format
Architectural model	Intelligent (with asset and attribute information) and detailed 3D models for the new buildings, including all non-load bearing structures and other architectural details	IFC2x3, (IFC4)	Utilities models	Intelligent (with asset and attribute information) and detailed 3D models for the new stations Shall include detailed (see LOD requirements): Electrical, telecommunications, security and IT systems; Fire protection systems; HVAC systems; Water supply and sewerage systems; Plumbing and drainage systems; etc.	IFC2x3, (IFC4)
Structural model	Intelligent (with asset and attribute information) 3D models for the new stations Shall include detailed (see LOD requirements): Foundation structures (incl. detailed reinforced concrete); All load bearing structures (incl. detailed reinforced concrete and/or steel beams, columns, walls, slabs, roof structures, etc.); etc.	IFC2x3, (IFC4)	As-built models	As-built model of newly build structures and utilities	3D DWG/DGN/ DTM/LandXML/ LandInfra InfraGML Point cloud files: LAS/LAZ/XYZ/ PTS/PTX/E57/

Rail Baltica

BIM EIR – Model types, content and file formats

◉ Recommendations for Designed infrastructure models (Railway and Road Bridges, viaducts, overpasses, eco-ducts, culverts, etc.))

Model type	Content	Format
Architectural model	Intelligent (with asset and attribute information) and detailed 3D models for the Railway and Road Bridges, viaducts, overpasses, eco-ducts, culverts, etc.	IFC2x3, (IFC4)
Structural model	Intelligent (with asset and attribute information) and detailed 3D models for the Railway and Road Bridges, viaducts, overpasses, eco-ducts, culverts, etc. Shall include detailed (see LOD requirements): Foundation structures; Span and deck structures; Retainers and railing; etc.	IFC2x3, (IFC4)

Utilities models	Intelligent (with asset and attribute information) and detailed 3D models for the Railway and Road Bridges, viaducts, overpasses, eco-ducts, culverts, etc. Shall include detailed (see LOD requirements): Electrical, telecommunications, security and IT systems; Fire protection systems; Drainage systems; etc.	IFC2x3, (IFC4)
As-built models	As-built model of newly build structures and utilities	3D DWG/DGN/ DTM/LandXML/ LandInfra InfraGML Point cloud files: LAS/LAZ/XYZ/ PTS/PTX/E57/

Rail Baltica

25

BIM Manual – *highlights*

◉ Coordinates and altimetry system
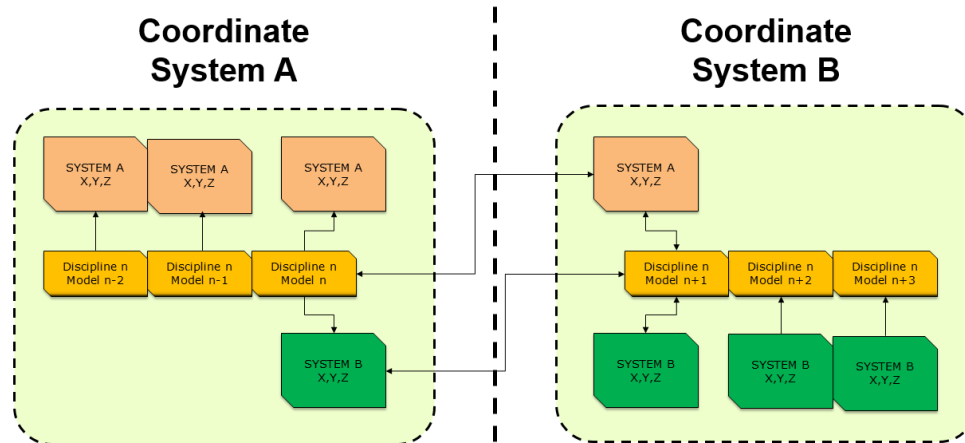
Estonia

EST97 and EH2000
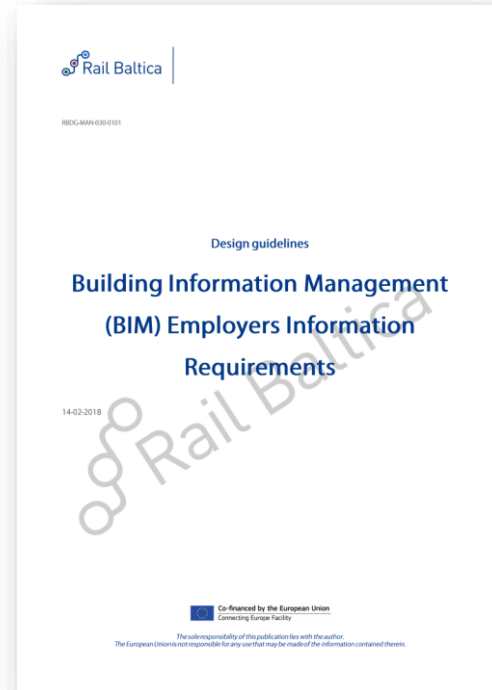
Latvia

LKS92 and LAS-2000,5

Lithuania

LKS94 and LAS07

In the interface zone between two coordinate systems, where the coordinate system changes from one to another, the limit models should be georeferenced in both systems, in order to allow both teams/projects/sectors to reference the others models correctly.
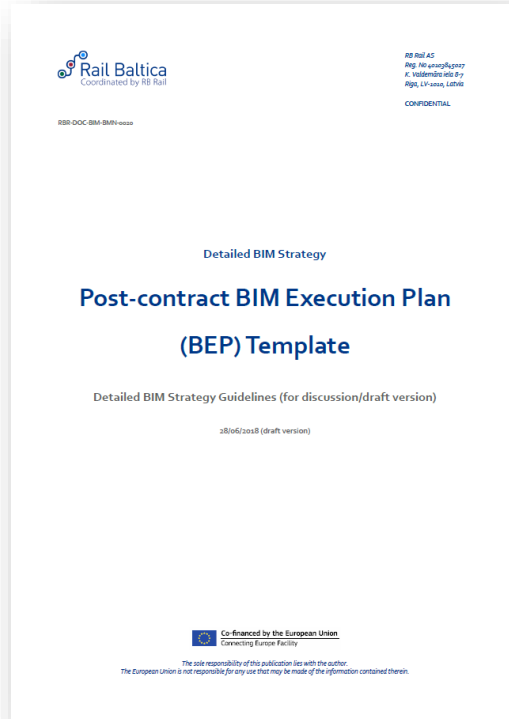
BIM Employer's Information Requirements (EIR)

⦿ Model types, content and file formats

⦿ BIM execution plan (BEP)

⦿ Consistency Control and BIM Coordination

⦿ Data Sharing

⦿ Level Of Development/Definition (LOD)

⦿ 2D CAD documents and drawing production

⦿ Simulations (4D and 5D)

⦿ Visualizations

⦿ Classification system

Rail Baltica

RBDG-MAN-030-0101

Design guidelines

Building Information Management (BIM) Employers Information Requirements

14-02-2018

Co-financed by the European Union
Connecting Europe Facility

The sole responsibility of this publication lies with the author.
The European Union is not responsible for any use that may be made of the information contained therein.

BIM Execution Plan (BIM)

A "BIM Execution Plan" (BEP) is a plan prepared by the suppliers to explain how the information modelling aspects of a project will be carried out. It is prepared as a direct response to the Employer's Information Requirements (EIR) and will detail the project deliverables stipulated by the contract and the information exchange requirements detailed in the BIM Manual.

BIM Execution Plan (BIM)

⊙ **Management**

- Roles, responsibilities and authorities

- Major project milestones consistent with the project programme (to be completed in the MIDP)

- Survey strategy including the use of point clouds, light detecting and ranging (LIDAR)

⊙ **Planning and documentation**

- Revised PIP confirming the capability of the supply chain

- BIM Use Cases

- Agreed project processes for collaboration and information modelling

- Agreed matrix of responsibilities across the supply chain

- TIDP (to be collated in the MIDP)

- MIDP (if not defined independently from the BEP)

BIM Execution Plan (BIM)

⊙ The standard method and procedure

- File Naming Convention, including volume strategy (Rail Baltica's BIM Manual Naming Convention will be used, any change will need to be approved by RB Rail AS)

- Geo-location & Coordinates system (which will be geo-referenced to the earth's surface using the specific projection and coordinate system defined for the project in the BIM Manual)

- Levels of definition

- Specific Annexes from the different disciplines and authoring tools, describing:

  - Modelling standards

  - Workflows

  - Layer naming convention, where used

  - Agreed construction tolerances for all disciplines

  - Drawing sheet templates

  - Annotation, dimensions, abbreviations and symbols

  - Attribute data (Rail Baltica's BIM Manual Attribute Data will be used, no changes are possible, however the Supplier is free to add any other Data in addition to Rail Baltica's one)

⊙ The IT solutions

Software versions

Exchange formats

Security & Extranet Access

Rail Baltica

30

Level of Geometrical Detail

Level of Geometrical Detail will be defined for such disciplines:

- ◉ Drainage and Flooding
- ◉ Architecture
- ◉ Drainage and Flooding
- ◉ Geotechnical
- ◉ Roads
- ◉ Tunnels
- ◉ Utilities
- ◉ Bridges
- ◉ Culverts
- ◉ Stations
- ◉ Rail Superstructure
- ◉ Rail Substructure
- ◉ Rail Systems
- ◉ Electrical, telecommunications, security and IT
- ◉ Fire protection
- ◉ HVAC
- ◉ Water supply and sewerage
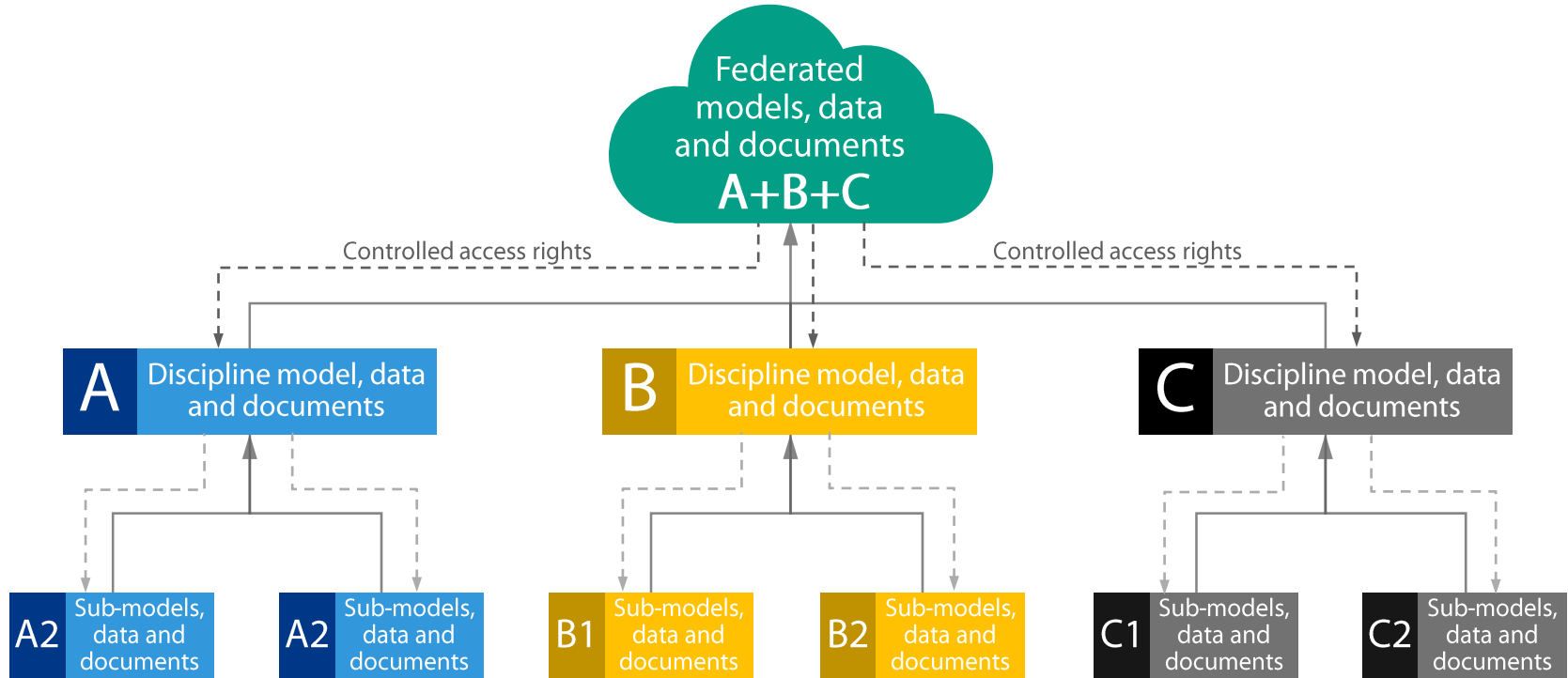- ◉ Pluming and drainage
- ◉ Site model

Rail Baltica
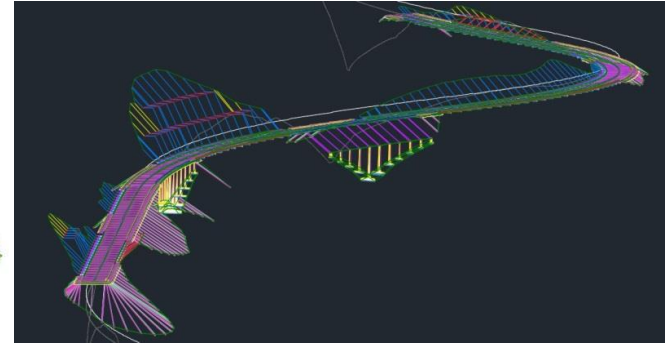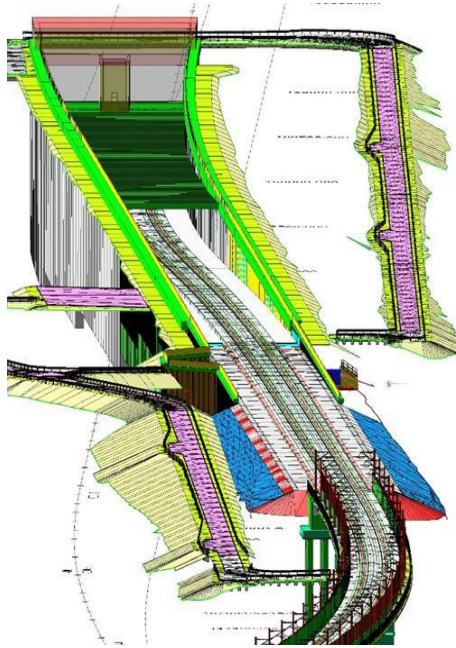
Level of Information

X:Mandatory O:Optional

| Parameter | Parameter Description | | | LOI | | | | | |
	Data Type	Units	Commentary	100	200	300	350	400	500
Global Parameters									
Member Mark									
RBR-Project	Text		See codification tables		x	x	x	x	x
RBR-Originator	Text		See codification tables		x	x	x	x	x
RBR-Role	Text		See codification tables		x	x	x	x	x
RBR-VolSysZone	Text		See codification tables		x	x	x	x	x
RBR-Location	Text		See codification tables		x	x	x	x	x
RBR-Function	Text		The overall purpose fulfilled by the asset, see codification tables		x	x	x	x	x
RBR-Object ID	Integer		See codification tables		x	x	x	x	x
Common Asset Data									
RBR-Asset ID	Text		Unique Asset ID			x	x	x	x
RBR-Asset classification	Text		Asset clasification			x	x	x	x
RBR-Asset Name	Text		Descritive name			x	x	x	x
RBR-Easting	Number					x	x	x	x
RBR-Northing	Number					x	x	x	x
RBR-Design life	Integer		Design Whole life, in years			x	x	x	x
Primary Asset Data									
RBR-Route code	Text		Specific code for Route			x	x	x	x
RBR-Start Kilometre	Number		Start Kilometre of a linear asset			x	x	x	x
RBR-End Kilometre	Number		End Kilometre of a linear asset			x	x	x	x
RBR-Track ID	Text		For Instances where the bridge does not span all			o	o	o	o

Rail Baltica

Classification

⊙ Each and every BIM object/element (instance) must be coded and classified according to "UNICLASS 2015"

⊙ In accordance with ISO 12006-2 – Building construction – Organization of information about construction works – Part 2: Framework for classification

⊙ "It contains consistent tables classifying items of all scale from a facility such as a railway down through to products such as a CCTV camera in a railway station". *(Sarah Delany, Technical Author and Head of Classification at NBS)*

⊙ Many software solutions have integrated this classification system or there are available plugins/addons to use

⊙ Enables 4D, 5D, 6D workflows

⊙ Accessible

Rail Baltica

Planned Common Data Environment model

Federated models, data and documents **A+B+C**

Controlled access rights

Controlled access rights

A	Discipline model, data and documents
B	Discipline model, data and documents
C	Discipline model, data and documents

A2	Sub-models, data and documents
A2	Sub-models, data and documents
B1	Sub-models, data and documents
B2	Sub-models, data and documents
C1	Sub-models, data and documents
C2	Sub-models, data and documents

Rail Baltica

Rail Baltica's BIM website – BIM Knowledge Center

To communicate RB Rail AS approach towards BIM implementation for the Rail Baltica Global Project

Currently available:

RB Rail's BIM documentation – All the published documents are and will be there

Useful information – General information about BIM

Future plans/ideas:

Training materials, videos

Forum for the community

…

Published documents *(but updates coming soon)*
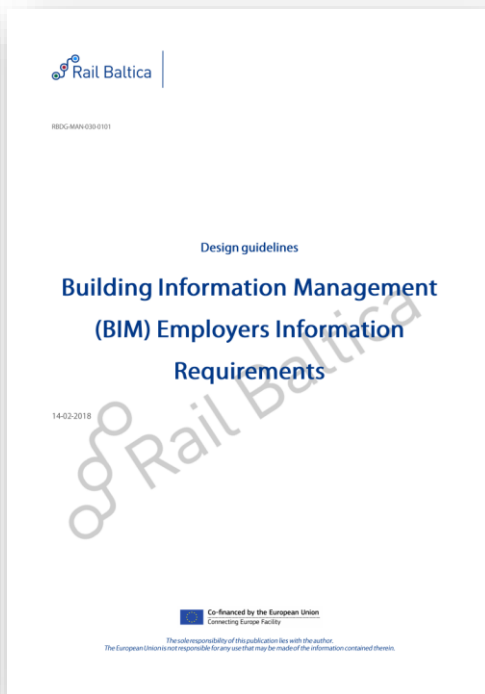
⊙ Available on railbaltica.org

Rail Baltica's BIM website – BIM Knowledge Center

bim@railbaltica.org

Rail Baltica

EU BIM Handbook
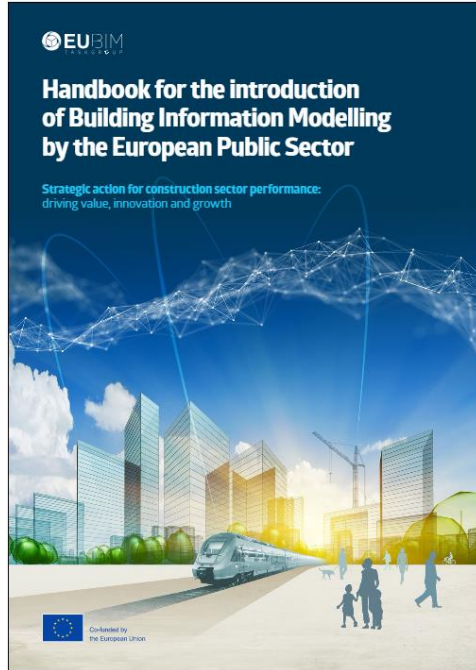
Eesti keel

in review

Lietuvių kalba

published

Latviešu valoda

in review

Initiative from RB Rail

http://www.eubim.eu/handbook-selection/

Contact us

f RailBalticaGlobalProject

@ info@railbaltica.org
bim@railbaltica.org

🌐 railbaltica.org

📍 K. Valdemara iela 8, 4th floor,
Riga, Lavia

📞 + 371 66 967 171

in linkedin.com/company/rb-rail
linkedin.com/in/raitisbusmanis

t @RailBaltica

RB Rail AS is a multi-national joint venture of the Republics of Estonia, Latvia and Lithuania, which has been established to implement Rail Baltica

Rail Baltica