



BIM implementation for the Rail Baltica Global Project

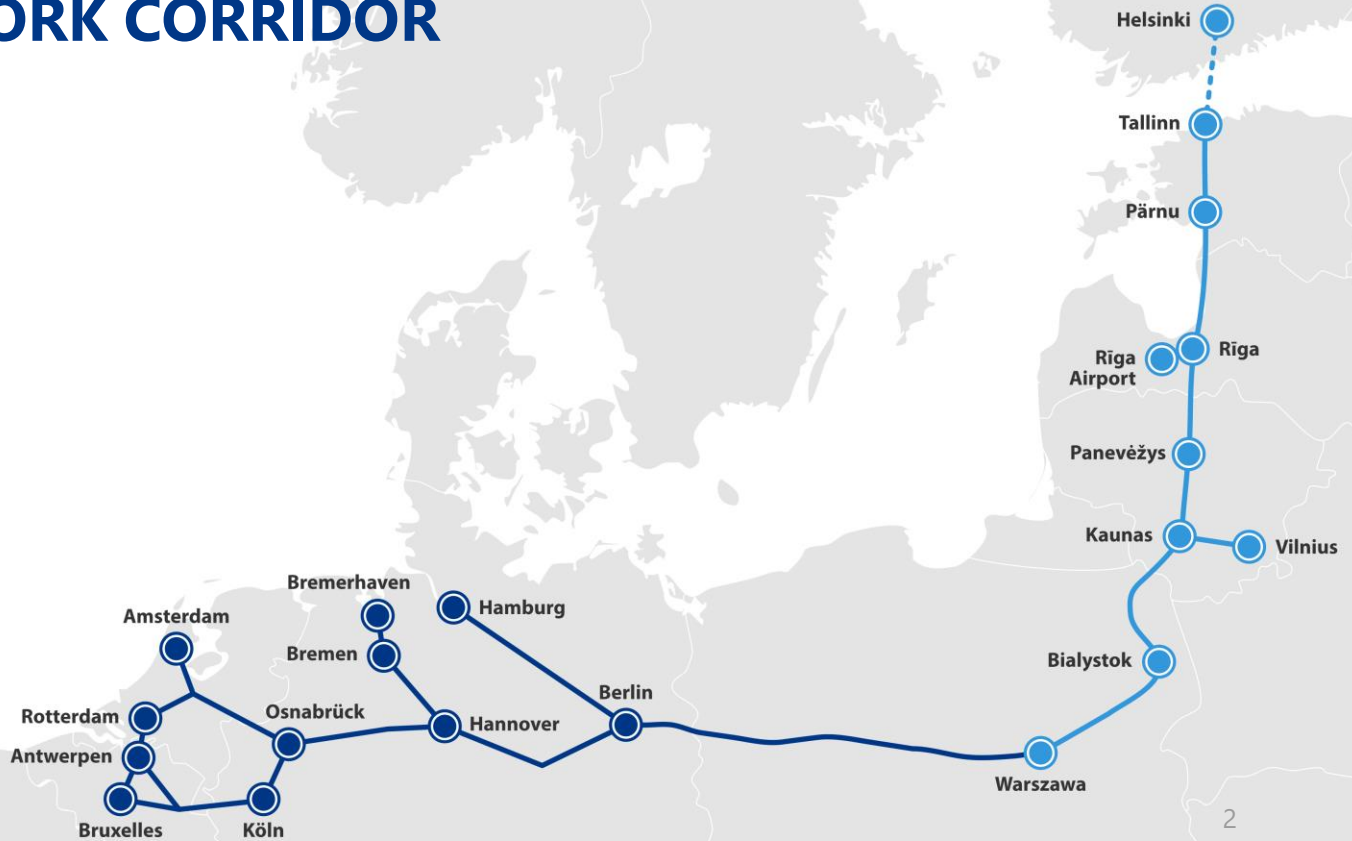
Jovita Starynina
Raitis Bušmanis

September 26, 2018



Co-financed by the European Union
Connecting Europe Facility

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





WHY

THIS

OLD TECHNOLOGY



It was MUCH cheaper

Could last a week with a single charge

Very durable and almost indestructible



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

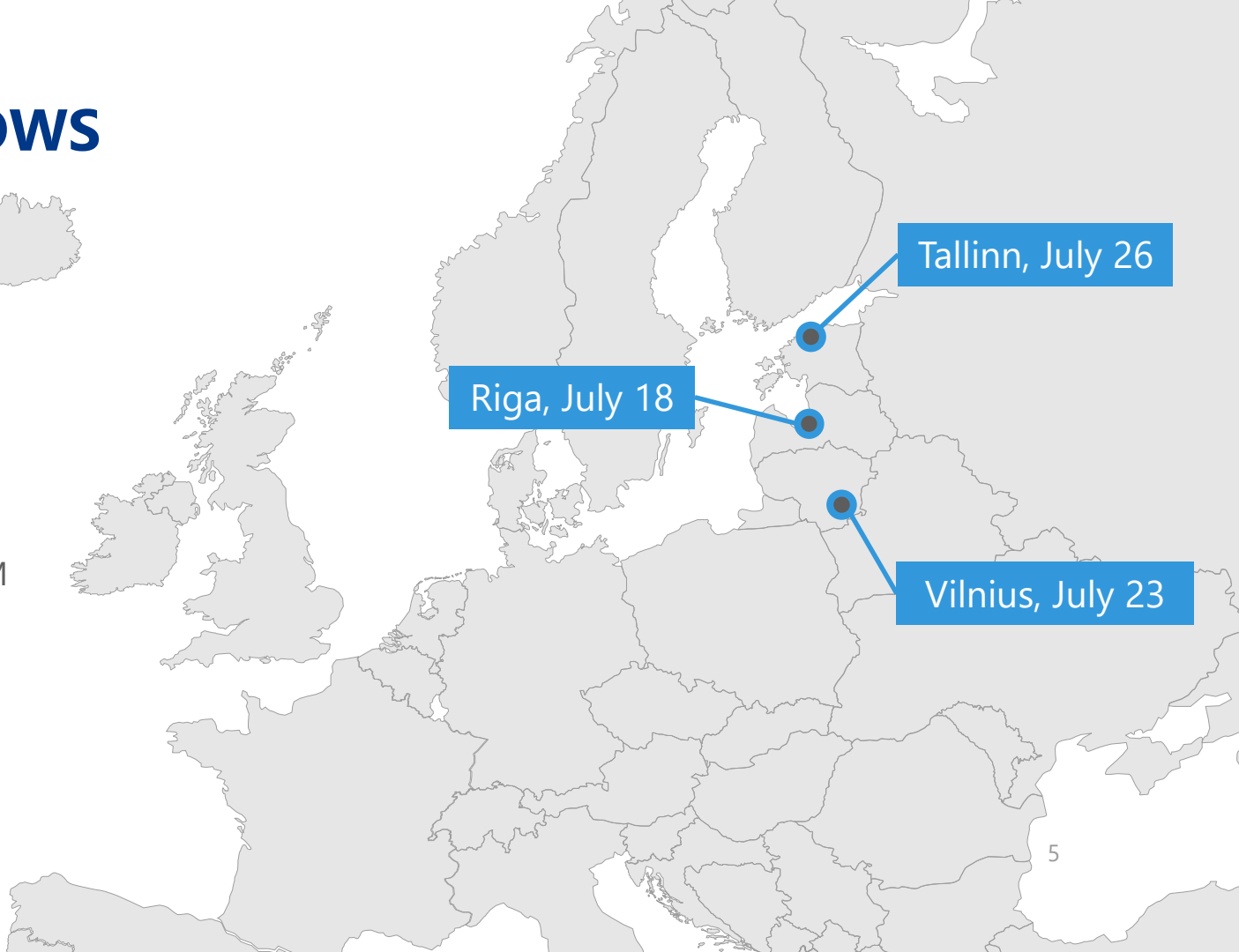
⦿ contracting authorities can determine the most economically advantageous tender and the lowest cost using a life-cycle costing approach

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

ROADSHOWS



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



Agenda

- ⦿ BIM implementation plans
- ⦿ BIM Strategy Framework – the concept
- ⦿ BIM Manual
- ⦿ Employer's Information Requirements
- ⦿ BIM Execution Plan
- ⦿ Communication channels

General BIM approach

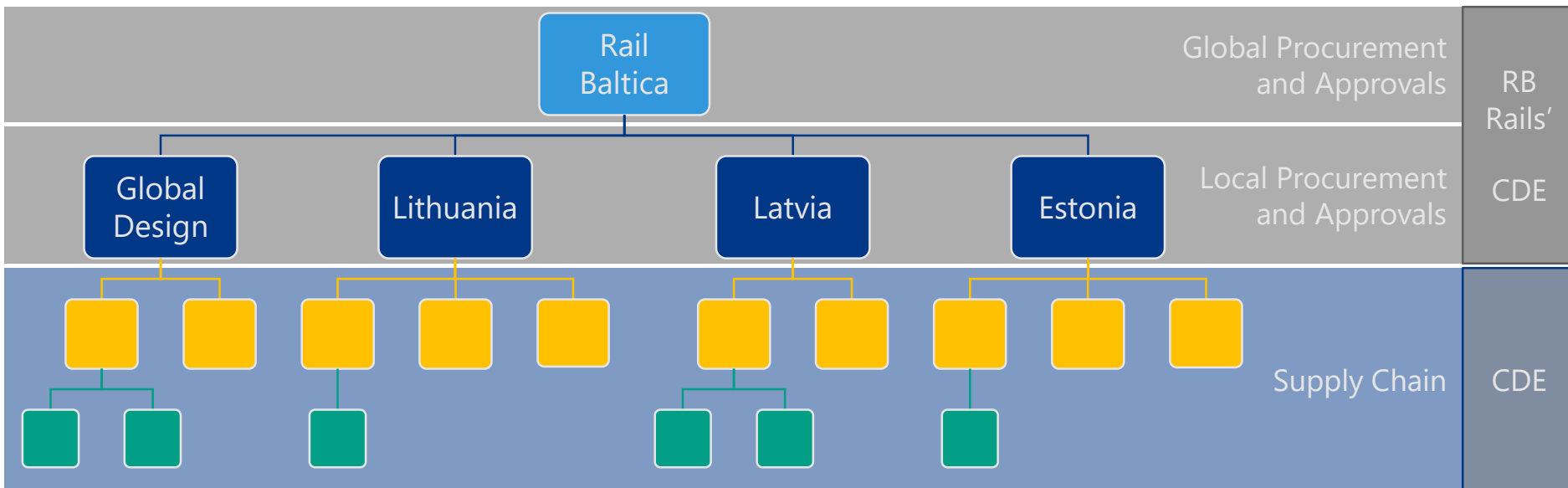
- ① We are gathering and implementing the best BIM practices
 - from UK, Finland, Denmark, Lithuania, Estonia, Sweden, Norway, Spain, Germany...
 - OpenBIM approach - the Rail Baltica BIM Strategy does not impose the use of any specific authoring tool, and therefore the BIM and CAD Standards are not tool / software related.
 - Monitoring and following closely the newest developments and technologies (IFCRail, IFCRoad, IFCBridge, AR and VR...)

BIM implementation plans



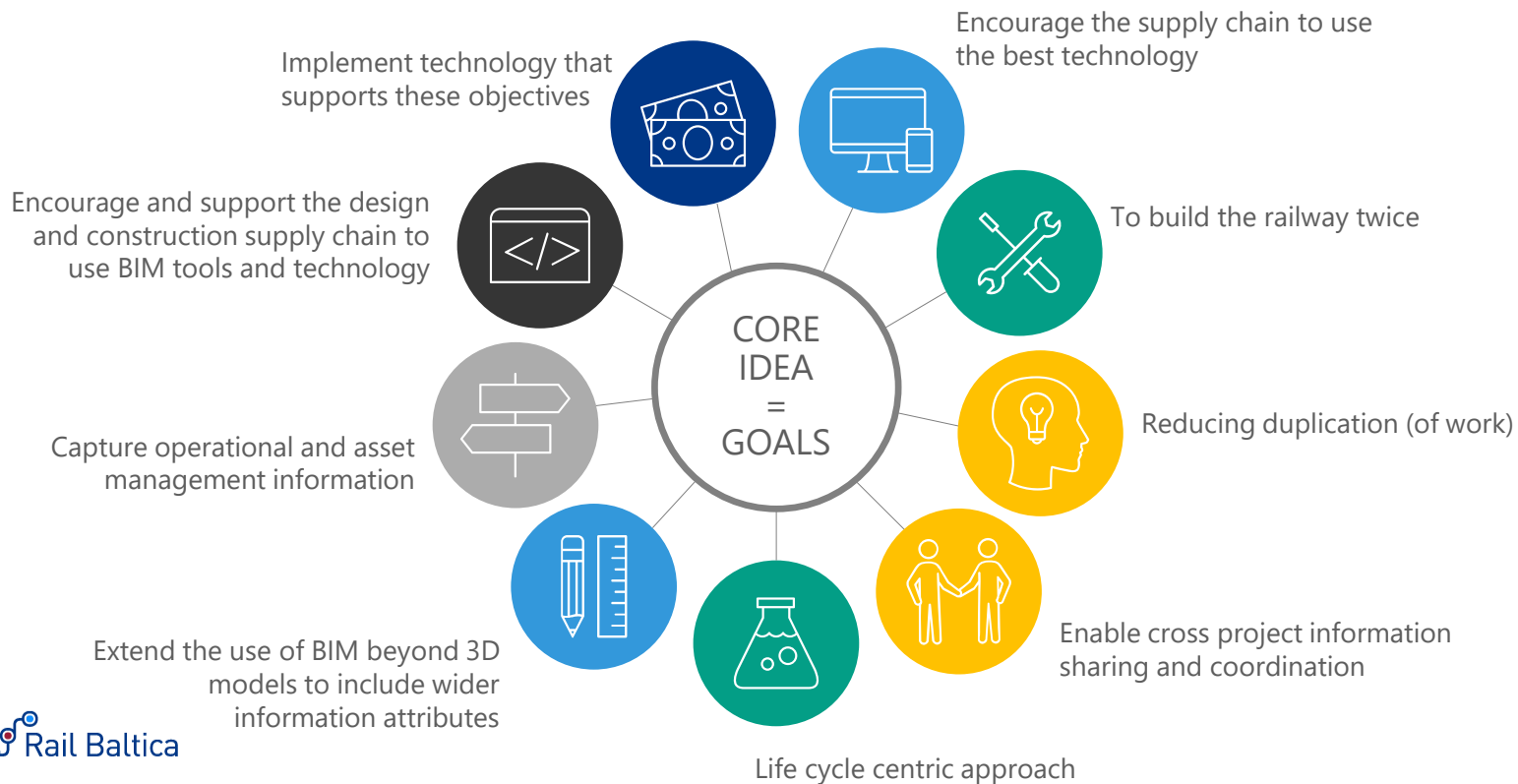
BIM Strategy Framework

- General document which sets the main criteria for BIM implementation for Rail Baltica Global Project

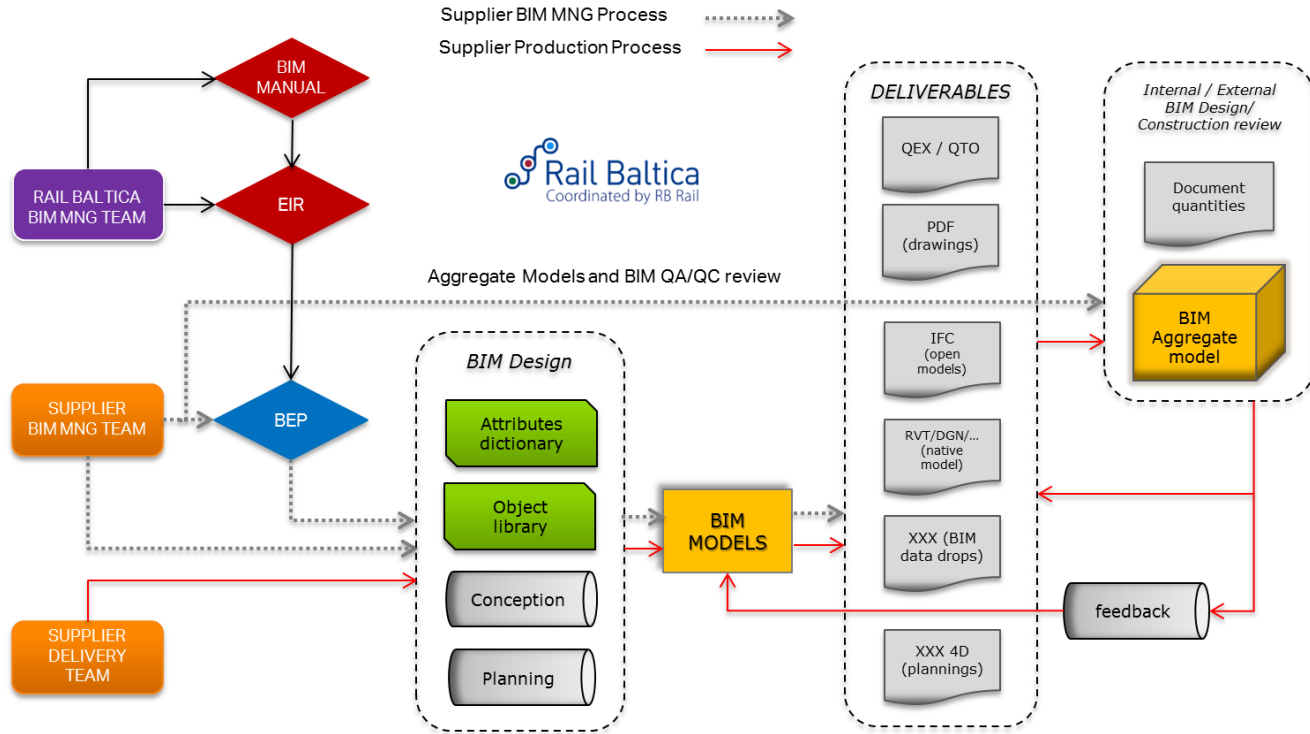


BIM Strategy Principles

BIM Strategy Framework

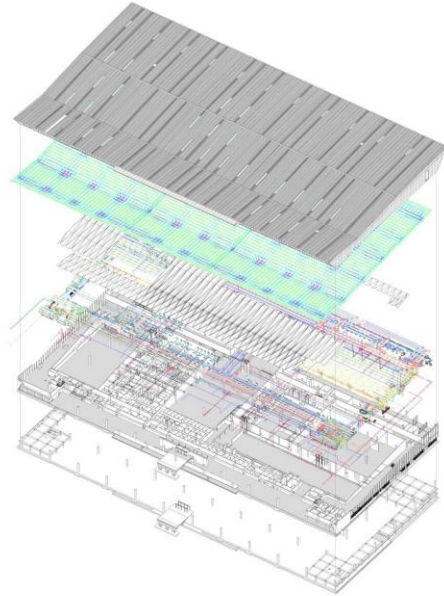


Roles and responsibilities



BIM Strategy Framework

- Project Information Model (PIM) – model based



- Asset Information Model (AIM) – database



PIM CDE core functionality

Reporting / Dashboarding	Integration Potential	Information Viewing Capabilities
File Publication	Document Management	Mobile/Field Support
Search Capability	Data Security	Information Deliverables Planning & Controls



Organization



Communication

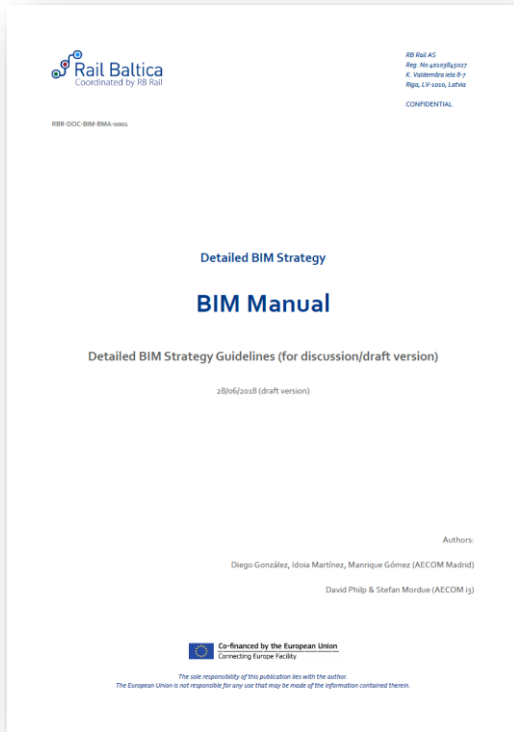


Management



Sharing/Viewing

BIM Manual *(in development)*



BIM Manual - Public draft published

Supporting Documents

CAD Standards – Public draft published

Codification Standards

Codification Tables

BIM Objects Parameter Matrix

Level of Definition (LOD)

BIM Objects LoG Matrix

Mobilization Templates

BEP Post-Contract template - Public draft published

TIDP template

MIDP template

Delivery Templates

BIM Delivery Report template

QAQC CAD/BIM Checklist Report template

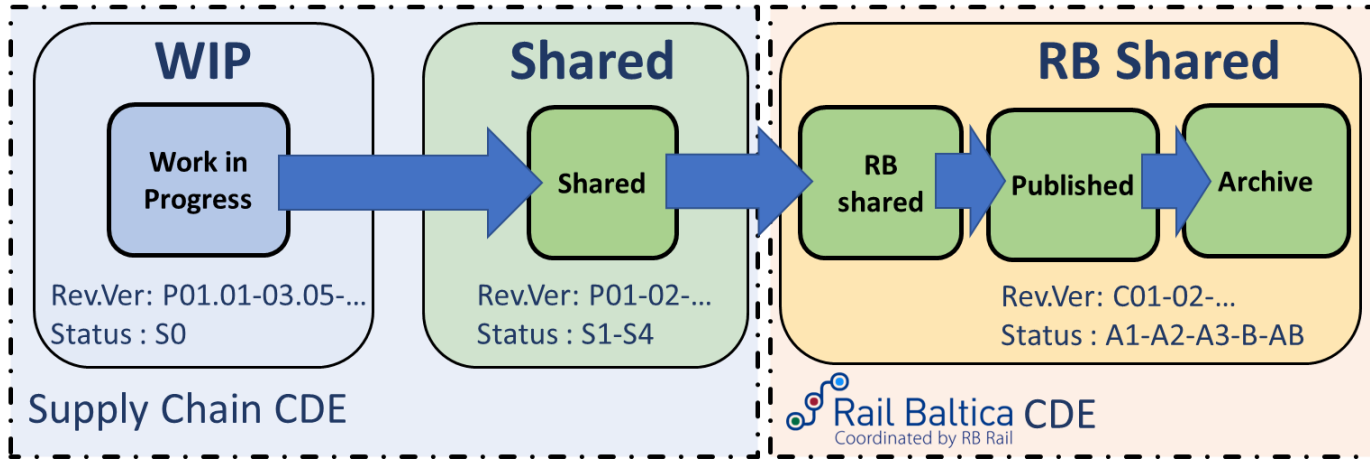
Clash Check Report template

QEX template

QTO template

Data Drop template

BIM Manual – Supply chain and Client's CDE



Classification – UNICLASS 2015



Accessible

Easily available and many international design and construction companies are familiar with it



Usability

Each and every BIM object/element (instance) is coded and classified accordingly



Lifecycle approach

Enables 4D, 5D, 6D workflows



ISO 12006-2

Building construction – Organization of information about construction works – Part 2: Framework for classification

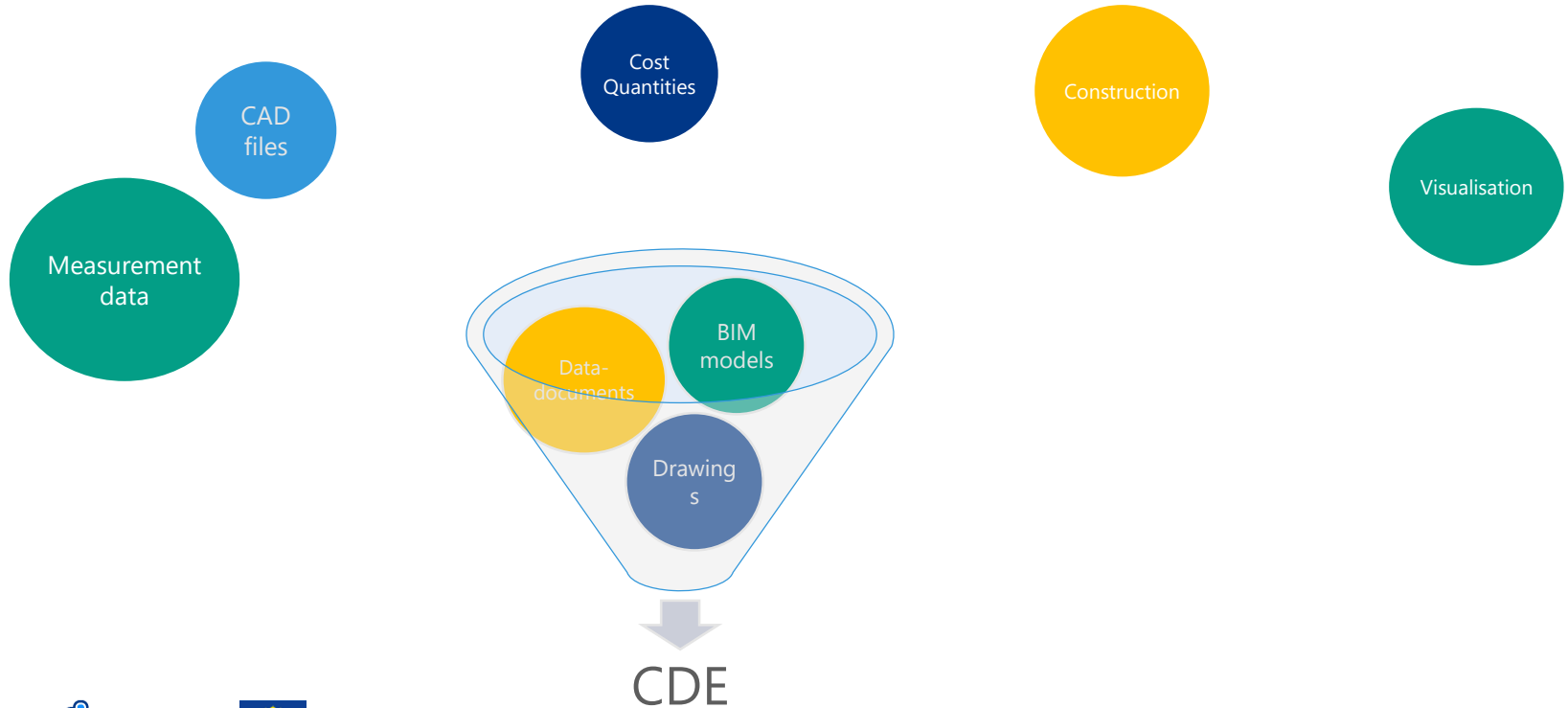


Global reach

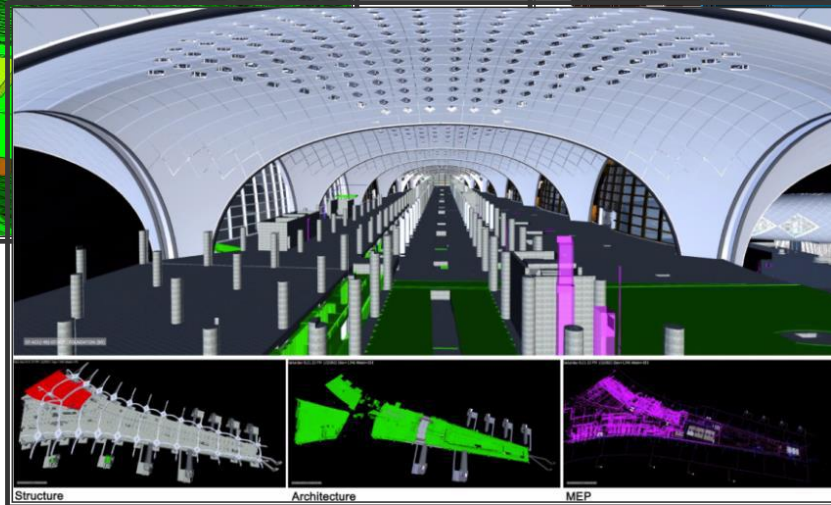
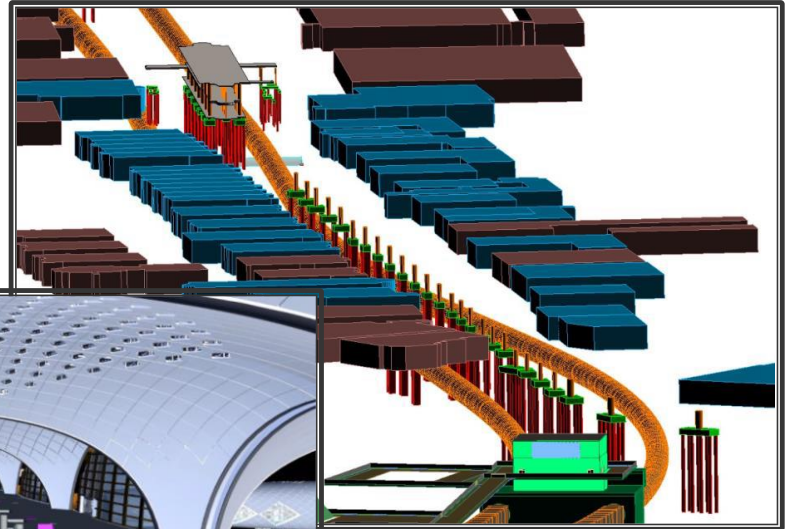
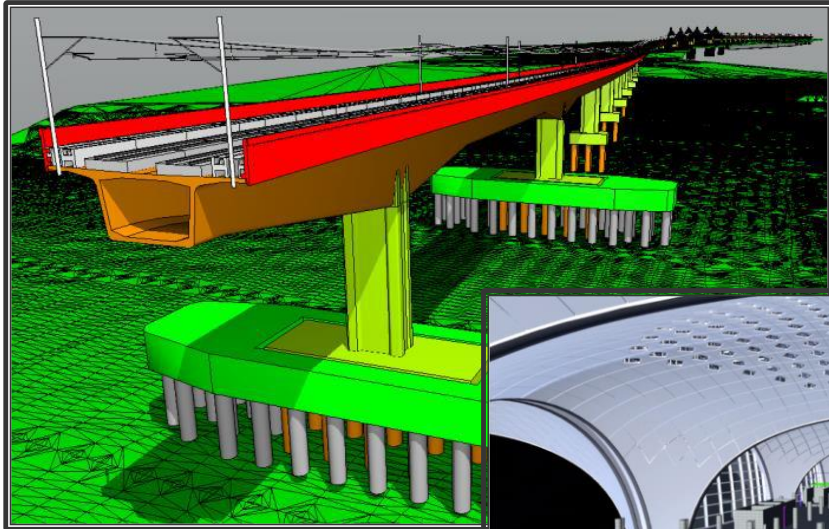
Many software solutions have integrated this classification system or there are available plugins/addons to use

“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”.

BIM EIR - Model types, content and file formats



BIM EIR - Model types and content



Under development

Level of Definition/Development (LOD)

LOD = LoG + Lol
= Level of Geometric detail

LoG

Lol = Level of Information

RAIL BALTICA BIM DEVELOPMENT PLAN	RAIL BALTICA PROJECT PHASES				
	Value engineering	Master Design	Detailed Technical Design	Construction	Operation
BIM Stage definition (reference: PAS1192-2)	Stage 3 - Definition / Stage 4 - Design	Stage 3 - Definition / Stage 4 - Design	Stage 4 - Design / Stage 5 - Build and commission (see EIR)	Stage 5 - Build and commission / Stage 6 - Handover and Closeout (see EIR)	Stage 6 - Handover and Closeout / Stage 7 - Operation (see EIR)
BIM object LoG (reference: BIM Manual + BIM Forum)					
BIM object Lol (reference: BIM Manual)					
BIM MODELS (Geometry + Data)	Project models within RB Rail scope				
Level of Geometric Detail (LoG)	LoG200	LoG300	LoG400	LoG400 / 500	LoG500
Level of Information (Lol)	Lol 200	Lol 300	Lol 400	Lol 400 / 500	Lol 500
3D MODELS (Geometry)	Environment models/ Existing Utilities models/ Buildable & Non-buildable out-of-scope elements models				
Level of Geometric Detail (LoG)	LoG200	LoG300	LoG400	LoG400 / 500	LoG300
Level of Information (Lol)	Lol 0	Lol 0	Lol 0	Lol 0 / Relocated utilities300	Lol 0
All	BIM Models & 3D Models				
Geo-reference	Yes	Yes	Yes	Yes	Yes
Construction scheduling / planning (4D)	No	Yes, briefly	Yes, approximate	Yes, accurate	No
Quantity Extraction (5D)	Partially, up to LoG detail	Partially, up to LoG detail	Yes	Yes	Asset Management related
Asset Management (6D)	No	No	Yes, basic according to Lol	Yes, detailed according to Lol	Yes, according to Lol
Analytical Calculations linked to BIM	Not a requirement	Not a requirement	Not a requirement	Not a requirement	Recommended

BIM EIR - File formats

Geotechnical

survey

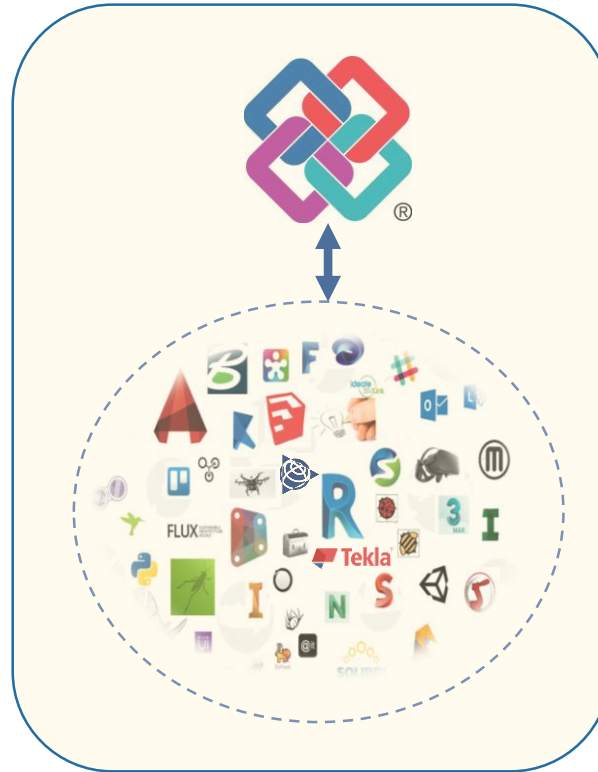
Geodetic survey

Architecture

Structure

Civil Engineering

Construction



BIM Execution Plan (BIM)

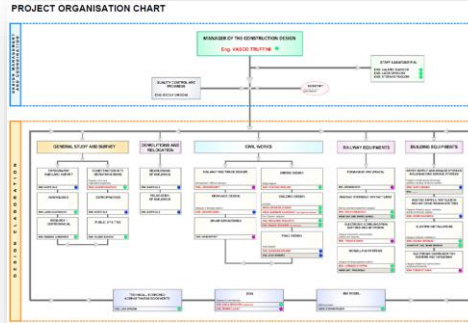


Prepared by the suppliers to explain how the information modelling aspects of a project will be carried out

It is prepared as a direct response to the EIR, TS, BIM Manual and contract documentation

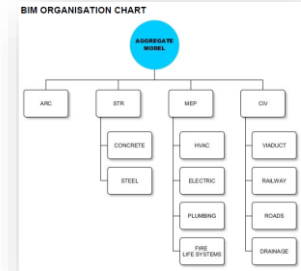
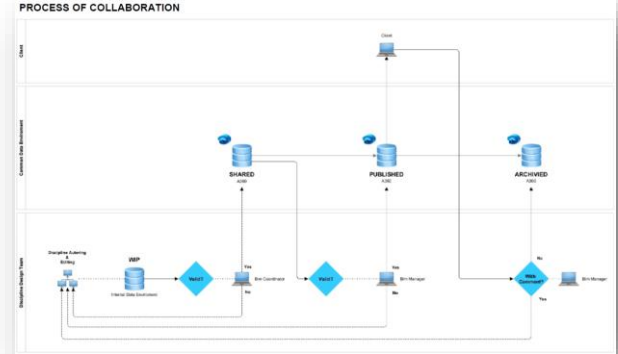
BIM Execution Plan (BIM)

  Co-financed by the European Union Connecting Europe Facility							
CONTRACTING AUTHORITY: LIGUMSLĒDZĒJA IESTĀDE:	 Eiropas Dzelzceļa Līnijas Reģistrācijas nu. Reģistrācija no. 4010366785						
IZPILDĪTĀJS: CONTRACTOR:							
„RAIL BALTICA „STARPTAUTISKĀS LIDOSTAS „RĪGA” DZELZCEĻA STACIJAS, SAISTĪTĀS INFRASTRUKTŪRAS UN ESTĀKĀDES BŪVPROJEKTS” CONSTRUCTION DESIGN OF RAIL BALTICA'S AIRPORT RIGA RAILWAY STATION, RELATED INFRASTRUCTURE, AND VIADUCT”							
Nu. No.	Apraksts Description	Izstrādāts Elaborated	Datums Date	Pārbaudīts Verified	Datums Date	Aptiprināts Approved	Datums Date
0	Emisija Emission		03/05/2018		03/05/2018		03/05/2018
BIM IZPILDES PLĀNS		BIM EXECUTION PLAN					
PROJEKTA KODS PROJECT CODE	KOMPONENTS UZDEVUMS COMPONENT/TASK	PROJEKTSĀNĀS FĀZĒ DESIGN PHASE	RAĪŠANĀS CENTRS PRODUCTION CENTER	DOKUMENTA VEIDS DOCUMENT TYPE	DARBA SĀDĀLLĪMĀ STRUKTŪRA WORK BREAKDOWN STRUCTURE	DOKUMENTA NUMURS DOCUMENT NUMBER	INDEKSS PĀRSKATĪŠANA INDEX REVIEW
R B R A	0 0	0	0 S	I R	X X 0 0 0	0 0 2	0
File: RBRA.00.0.03.RLXX.00.0.002.DWG							



CLASH DETECTION MATRIX

Category	Sub-category	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11	Item 12	Item 13	Item 14	Item 15	Item 16	Item 17	Item 18	Item 19	Item 20	
MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP
		MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP
MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP
		MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP	MEP



Rail Baltica's BIM website – BIM Knowledge Center

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

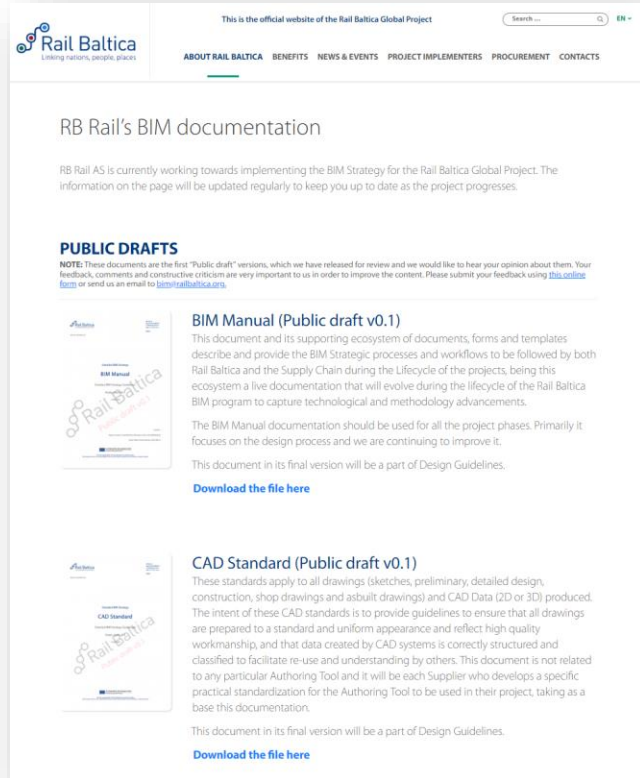


Training materials, videos



Forum for the community

Published documents (and updates coming)



This is the official website of the Rail Baltica Global Project

ABOUT RAIL BALTICA BENEFITS NEWS & EVENTS PROJECT IMPLEMENTERS PROCUREMENT CONTACTS

RB Rail's BIM documentation

RB Rail AS is currently working towards implementing the BIM Strategy for the Rail Baltica Global Project. The information on the page will be updated regularly to keep you up to date as the project progresses.

PUBLIC DRAFTS

NOTE: These documents are the first "Public draft" versions, which we have released for review and we would like to hear your opinion about them. Your feedback, comments and constructive criticism are very important to us in order to improve the content. Please submit your feedback using [this online form](#) or send us an email to bim@railbaltica.com.


BIM Manual (Public draft v0.1)

This document and its supporting ecosystem of documents, forms and templates describe and provide the BIM Strategic processes and workflows to be followed by both Rail Baltica and the Supply Chain during the Lifecycle of the projects, being this ecosystem a live documentation that will evolve during the lifecycle of the Rail Baltica BIM program to capture technological and methodology advancements.

The BIM Manual documentation should be used for all the project phases. Primarily it focuses on the design process and we are continuing to improve it.

This document in its final version will be a part of Design Guidelines.

[Download the file here](#)



BEP Template (Public draft v0.1)

This BIM Execution Plan (BEP) template has been elaborated to be used as the basis for the post-contract BEP. It has to be prepared as a direct response to the BIM EIR and Technical Specifications. The Supplier shall fulfill all the required information in order to show their intention to comply with all the standards and procedures described in the BIM Manual. The Supplier is free to add extra information.

This document in its final version will be a part of Design Guidelines.

[Download the file here](#)

DOCUMENTS

Feedback



WEB SITE **01**
[http://www.railbaltica.org/
rb-rail-as-bim-
documentation/](http://www.railbaltica.org/rb-rail-as-bim-documentation/)



E-MAIL **02**
bim@railbaltica.org

BIM for Rail Baltica Global Project

We kindly ask you to use English as the communication language as this will speed up the process

* Required

1. Type of information *

- Suggestion
- Complaint
- General information
- Question
- Other

2. If you would like us to contact you and provide the answer, please provide your email address. Your email address will only be used to provide the answer.

3. Topic of the feedback.

If this feedback is about a certain document, please state the title of that document. *

4. What would you like to say? *

Contact us

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



RailBalticaGlobalProject



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