BIM implementation for the Rail Baltica Global Project

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Co-financed by the European Union
Connecting Europe Facility

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

VIDEO

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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

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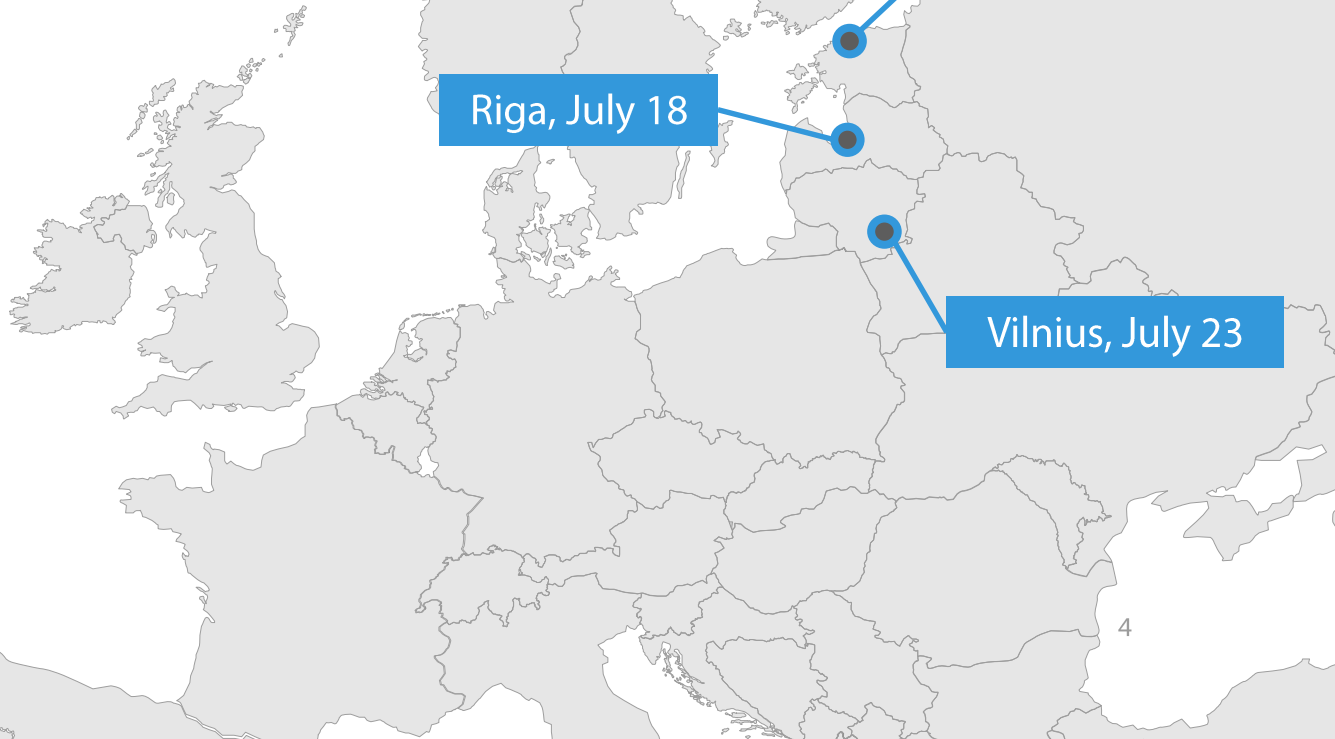
ROADSHOWS

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



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Agenda

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

General BIM approach

- 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

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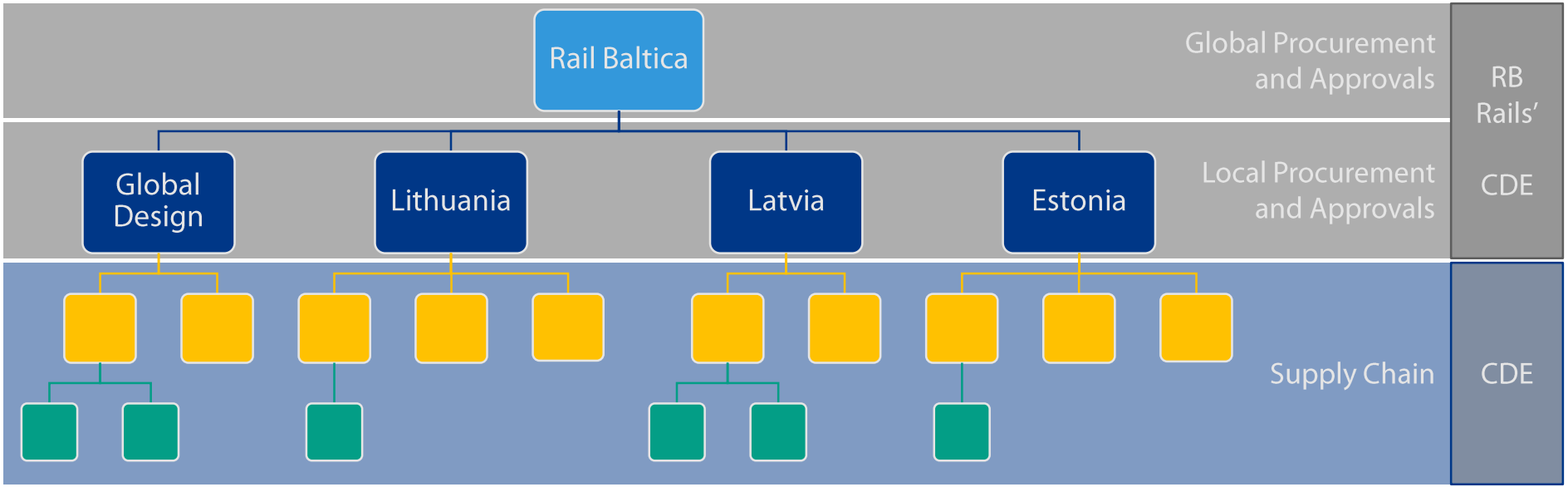
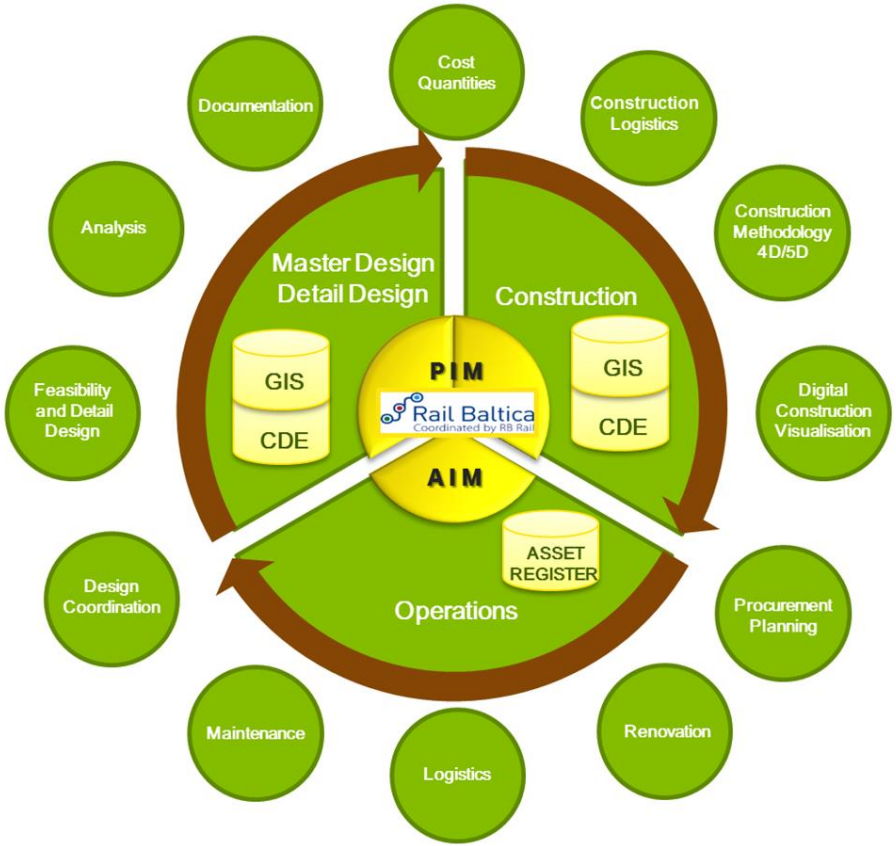
BIM Strategy Framework

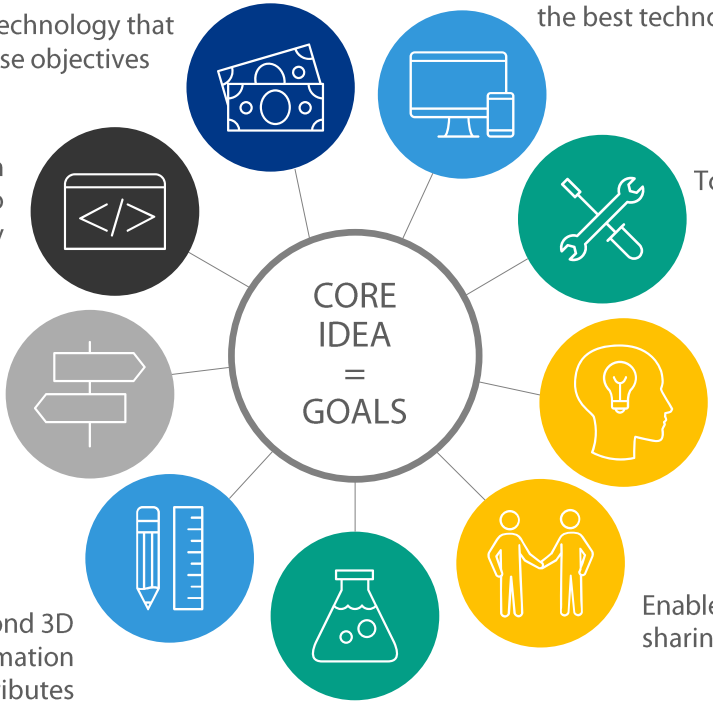
- General document which sets the main criteria for BIM implementation for Rail Baltica Global Project



BIM Strategy Principles



BIM Strategy Framework



Implement technology that supports these objectives

Encourage the supply chain to use the best technology

Encourage and support the design and construction supply chain to use BIM tools and technology

To build the railway twice

Capture operational and asset management information

Reducing duplication (of work)

Extend the use of BIM beyond 3D models to include wider information attributes

Enable cross project information sharing and coordination

Life cycle centric approach

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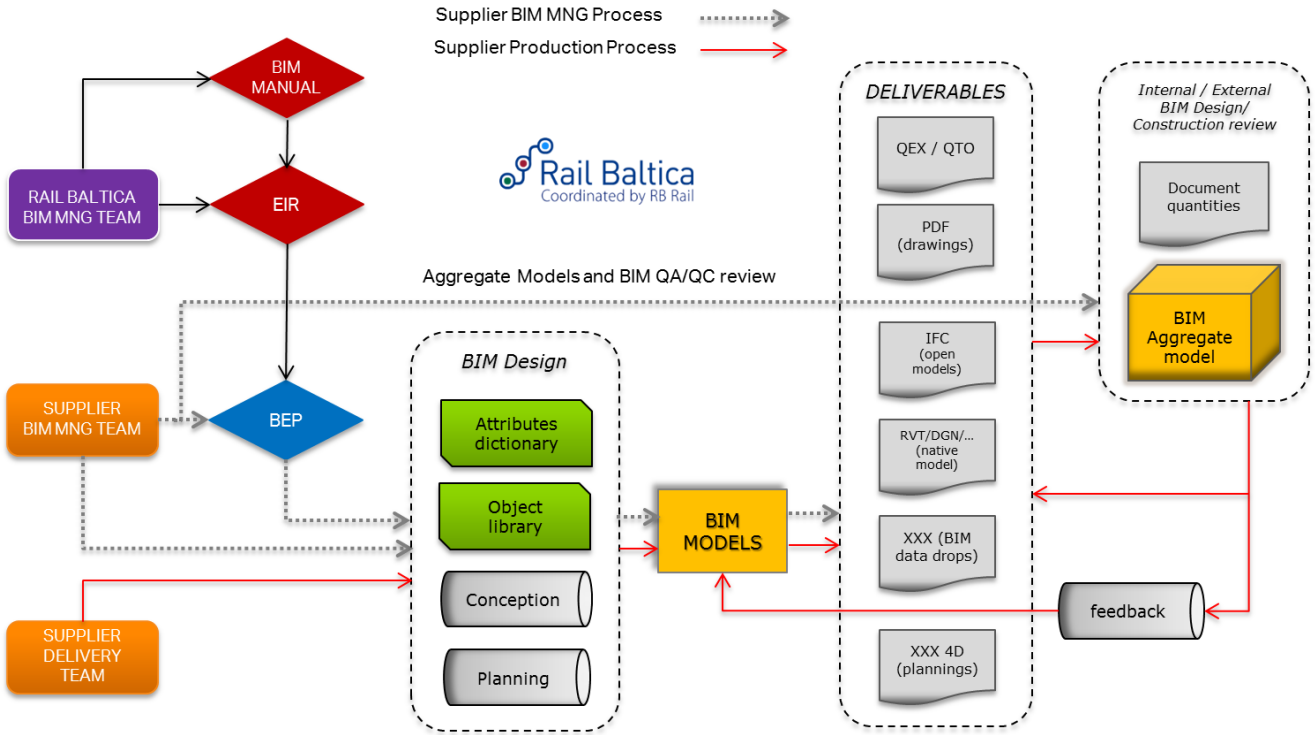
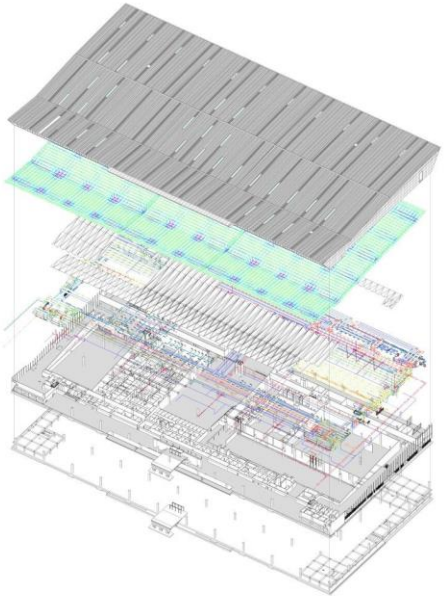
Roles and responsibilities

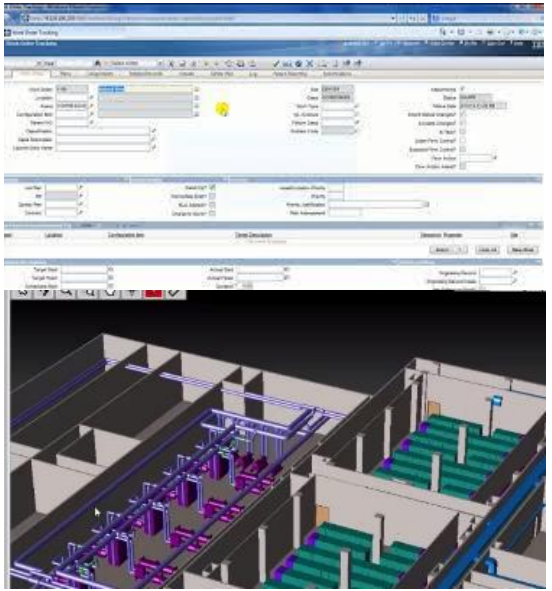


BIM Strategy Framework

- Project Information Model (PIM) – model based



- Asset Information Model (AIM) – database



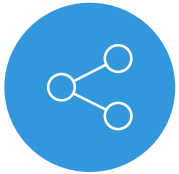
PIM CDE core functionality

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

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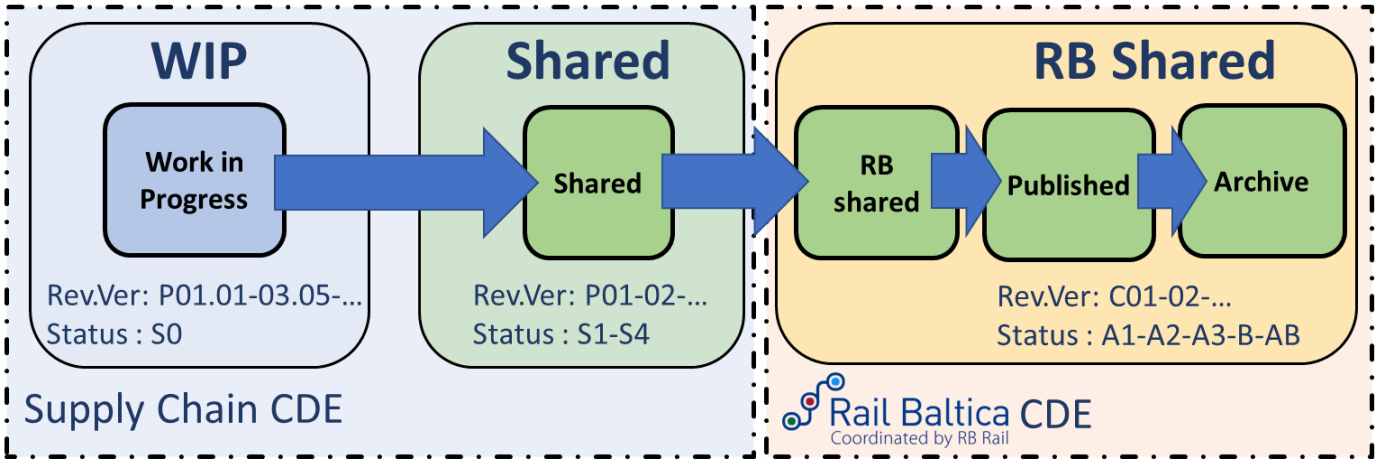
BIM Manual *(in development)*

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

Lifecycle approach
Enables 4D, 5D, 6D workflows

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

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

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)

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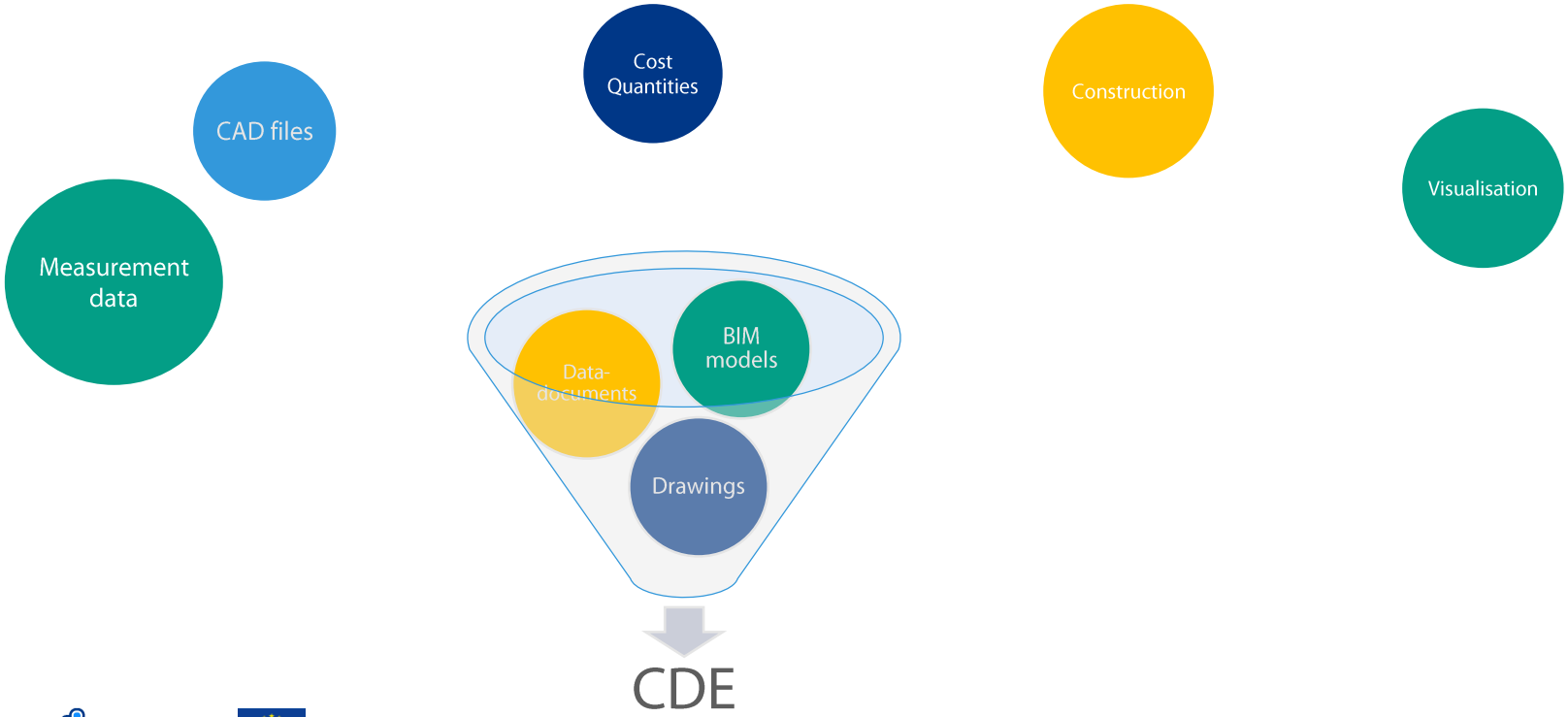
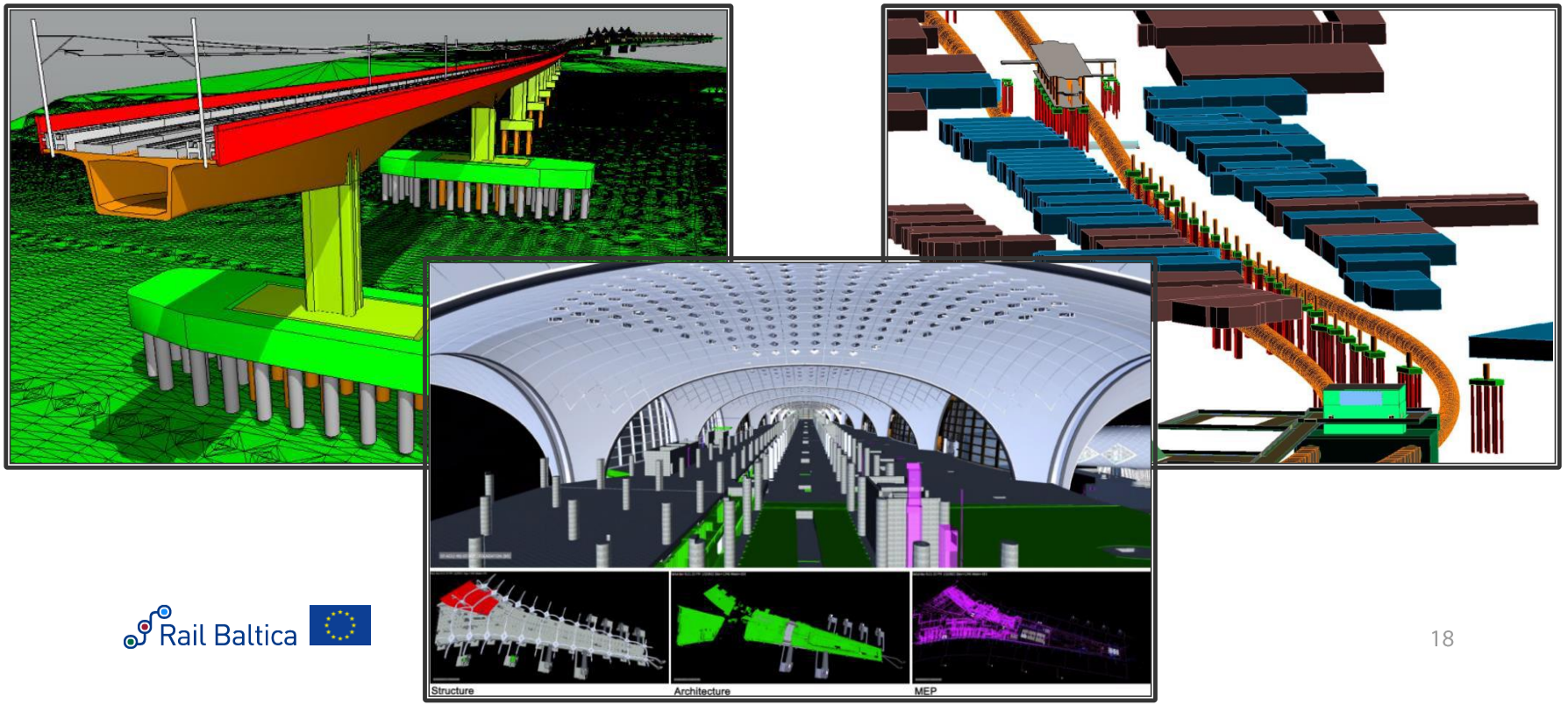
BIM EIR - Model types, content and file formats



BIM EIR - Model types and content



Level of Definition/Development (LOD)

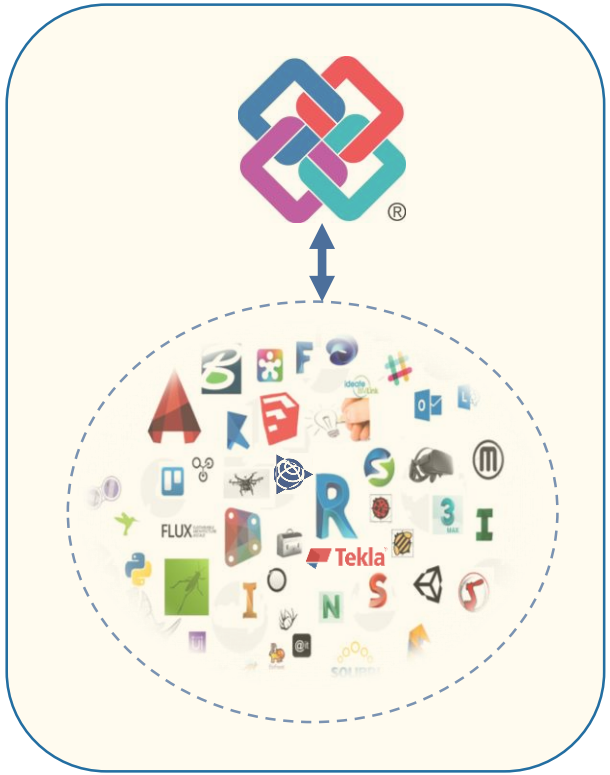
Under development

LOD = LoG + LoI LoG = Level of Geometric detail LoI = 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: PAS 1192-2) BIM object LoG (reference: BIM Manual + BIM Forum) BIM object LoI (reference: BIM Manual)	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 MODELS (Geometry + Data)		Project models within RB Rail scope			
Level of Geometric Detail (LoG)	LoG 200	LoG 300	LoG 400	LoG 400 / 500	LoG 500
Level of Information (LoI)	LoI 200	LoI 300	LoI 400	LoI 400 / 500	LoI 500
3D MODELS (Geometry)		Environment models / Existing Utilities models / Buildable & Non-buildable out-of-scope elements models			
Level of Geometric Detail (LoG)	LoG 200	LoG 300	LoG 400	LoG 400 / 500	LoG 300
Level of Information (LoI)	LoI 0	LoI 0	LoI 0	LoI 0 / Relocated utilities 300	LoI 0
All		BIM Models & 3D Models			
Geo-reference	Yes	Yes	Yes	Yes	Yes
Constrution 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 LoI	Yes, detailed according to LoI	Yes, according to LoI
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



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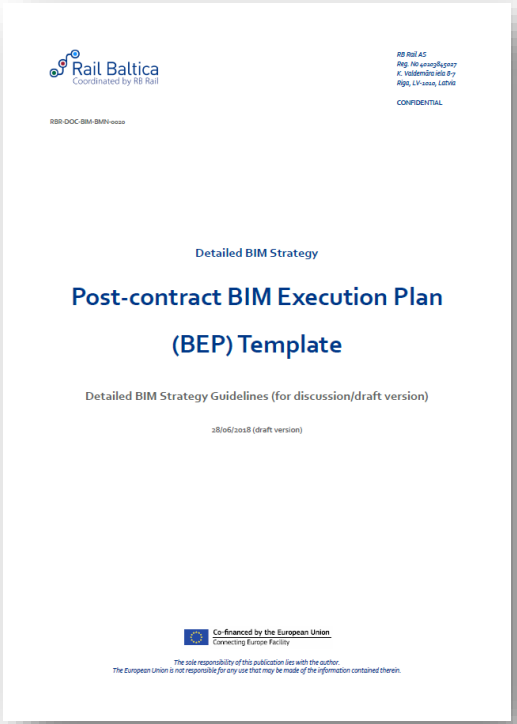
BIM Execution Plan (BIM)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Coordinated by RB Rail

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CONFIDENTIAL

RBR-DOC-BIM-BMPI-0020

Detailed BIM Strategy

Post-contract BIM Execution Plan

(BEP) Template

Detailed BIM Strategy Guidelines (for discussion/draft version)

28/06/2018 (draft version)

Co-financed by the European Union
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The European Union is not responsible for any use that may be made of the information contained therein.

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)

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CONTRACTING AUTHORITY: LĪGUMSLĒDZĒJA IESTĀDE:

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Reģistrācijas nu.
Registration no.
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IZPILDĪTĀJS:
CONTRACTOR:

„RAIL BALTICA „STARPTAUTISKĀS LIDOSTAS „RĪGA" DZELZCEĻA STACIJAS, SAISTĪTĀS INFRASTRUKTŪRAS UN ESTAKĀDES BŪVPROJEKTS"

CONSTRUCTION DESIGN OF RAIL BALTICA'S AIRPORT RIGA RAILWAY STATION, RELATED INFRASTRUCTURE, AND VIADUCT"

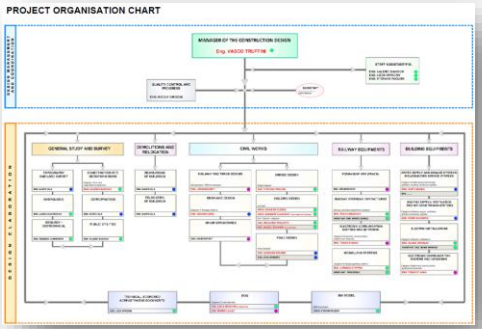
Nu. No.	Apraksts Description	Izstrādāts Elaborated	Datums Date	Pārbaudīts Verified	Datums Date	Apstiprināts Approved	Datums Date
0	Emisija Emission		03/05/2018		03/05/2018		03/05/2018

BIM IZPILDES PLĀNS — BIM EXECUTION PLAN

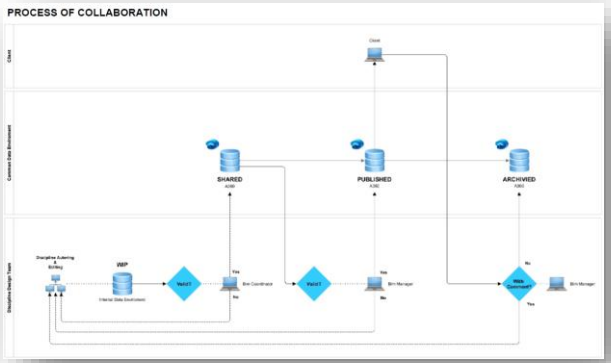
PROJEKTA KODS / PROJECT CODE	KOMPONENTS/ UZDEVUMS / COMPONENT/ TASK	PROJEKTĒŠANAS FĀZE / DESIGN PHASE	RAŽOŠANAS CENTRS / PRODUCTION CENTER	DOKUMENTA VEIDS / DOCUMENT TYPE	DARBA SADAĻĀJUMA STRUKTŪRA / WORK BREAKDOWN STRUCTURE	DOKUMENTA NUMURS / DOCUMENT NUMBER	INDEKSS PĀRSKATĪŠANA / INDEX REVIEW
RBRA	00	0	0S	IR	XX 00 0	002	0

File: RBRA.00.0.0S.IR.XX.00.0.002.DWG

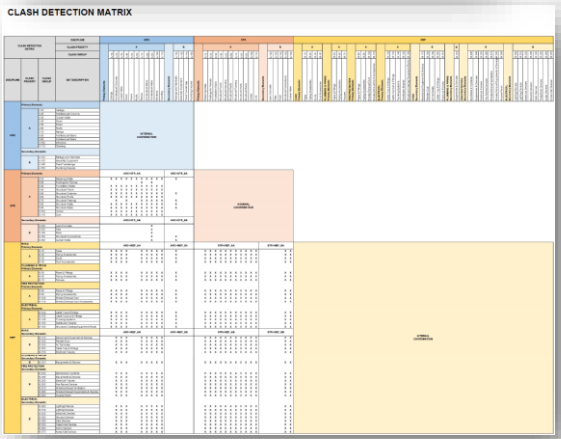
PROJECT ORGANISATION CHART



PROCESS OF COLLABORATION



CLASH DETECTION MATRIX



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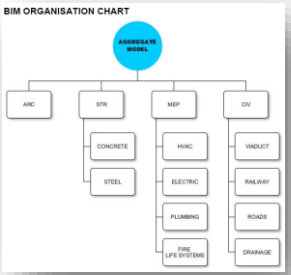

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Rail Baltica's BIM website – BIM Knowledge Center

Currently available

Future plans/ideas

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

Useful information
General information about BIM

Training materials, videos

Forum for the community

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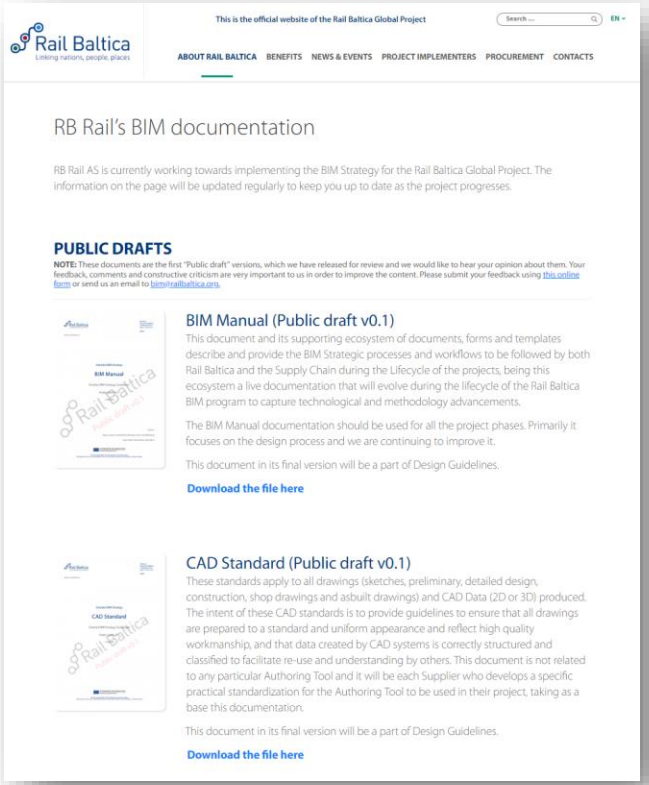
Published documents *(and updates coming)*



Rail Baltica
Linking nations, people, places

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.org.

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

CAD Standard (Public draft v0.1)

These standards apply to all drawings (sketches, preliminary, detailed design, construction, shop drawings and asbuilt drawings) and CAD Data (2D or 3D) produced. The intent of these CAD standards is to provide guidelines to ensure that all drawings are prepared to a standard and uniform appearance and reflect high quality workmanship, and that data created by CAD systems is correctly structured and classified to facilitate re-use and understanding by others. This document is not related to any particular Authoring Tool and it will be each Supplier who develops a specific practical standardization for the Authoring Tool to be used in their project, taking as a base this documentation.

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

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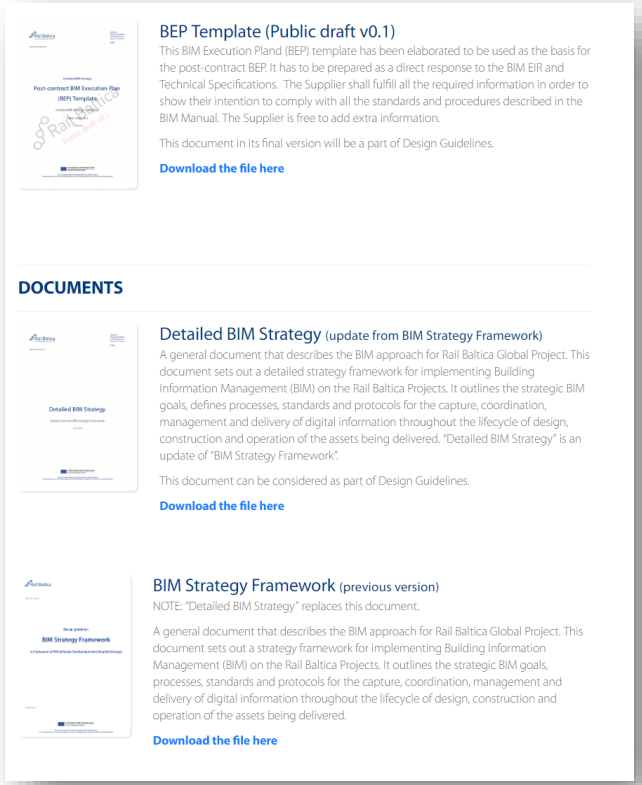


BEP Template (Public draft v0.1)

This BIM Execution Pland (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

Detailed BIM Strategy (update from BIM Strategy Framework)

A general document that describes the BIM approach for Rail Baltica Global Project. This document sets out a detailed strategy framework for implementing Building Information Management (BIM) on the Rail Baltica Projects. It outlines the strategic BIM goals, defines processes, standards and protocols for the capture, coordination, management and delivery of digital information throughout the lifecycle of design, construction and operation of the assets being delivered. "Detailed BIM Strategy" is an update of "BIM Strategy Framework".

This document can be considered as part of Design Guidelines.

Download the file here

BIM Strategy Framework (previous version)

NOTE: "Detailed BIM Strategy" replaces this document.

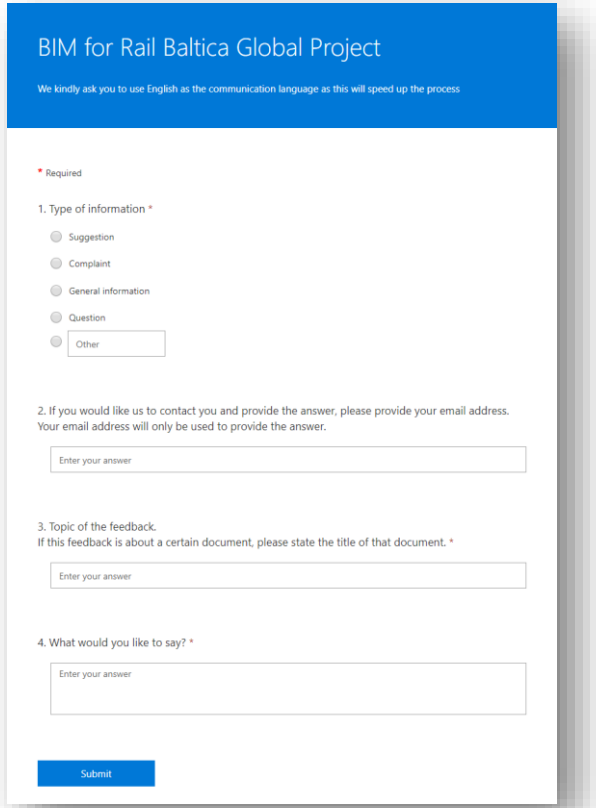
A general document that describes the BIM approach for Rail Baltica Global Project. This document sets out a strategy framework for implementing Building Information Management (BIM) on the Rail Baltica Projects. It outlines the strategic BIM goals, processes, standards and protocols for the capture, coordination, management and delivery of digital information throughout the lifecycle of design, construction and operation of the assets being delivered.

Download the file here

Feedback

WEB SITE 01
http://www.railbaltica.org/rb-rail-as-bim-documentation/

E-MAIL 02
bim@railbaltica.org



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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

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