Rail Baltica

#StandWithUkraine

Digital Rail Baltica. GIS and BIM Solutions for Railway Megaproject Management

Raitis Bušmanis,
Head of Virtual Design and Construction Department (VDC)

Vaidas Ulenskas,
GIS Team Leader at RB Rail AS

Co-financed by the Connecting Europe Facility of the European Union

Speakers

Raitis Bušmanis

Head of Virtual Design and Construction Department

- In Rail Baltica Global Project since January 2018
- "Involved" with BIM since 2012
- Learning about GIS

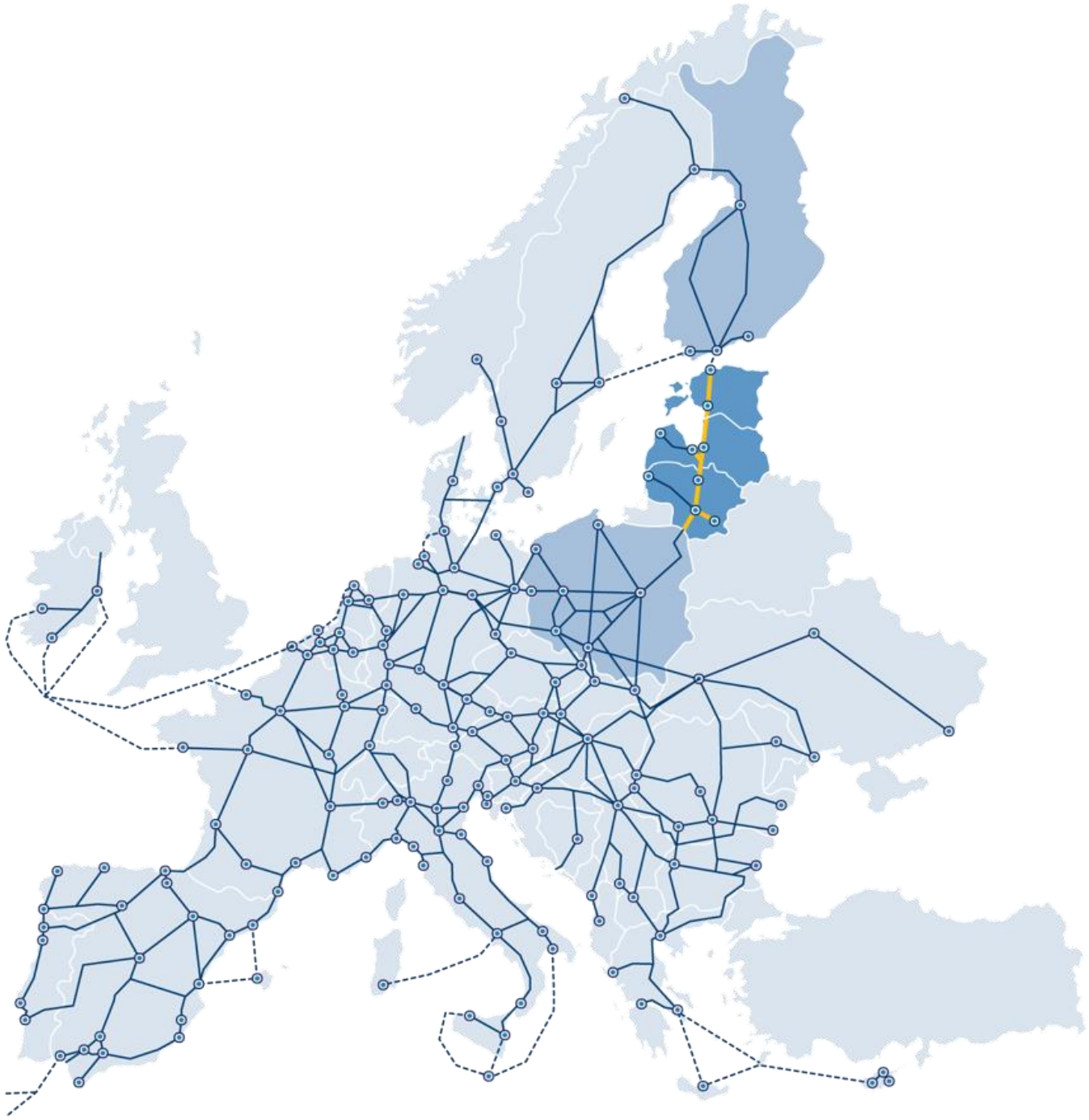
Vaidas Ulenskas

GIS Team Leader

- In Rail Baltica Global Project since March 2019
- "Involved" with GIS since 2011
- Learning about GIS

Connected Baltics in a Connected Europe

We are delivering seamless mobility for people, goods and services to accelerate social and economic development in the Baltics and beyond



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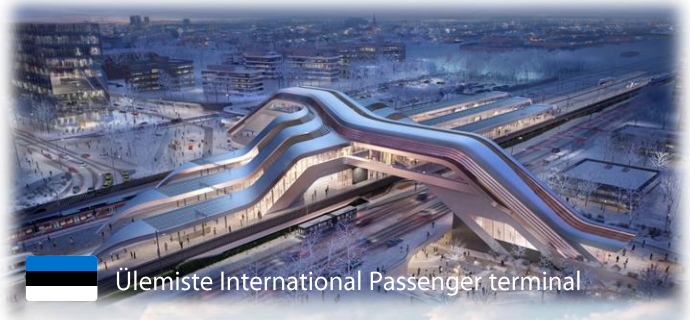
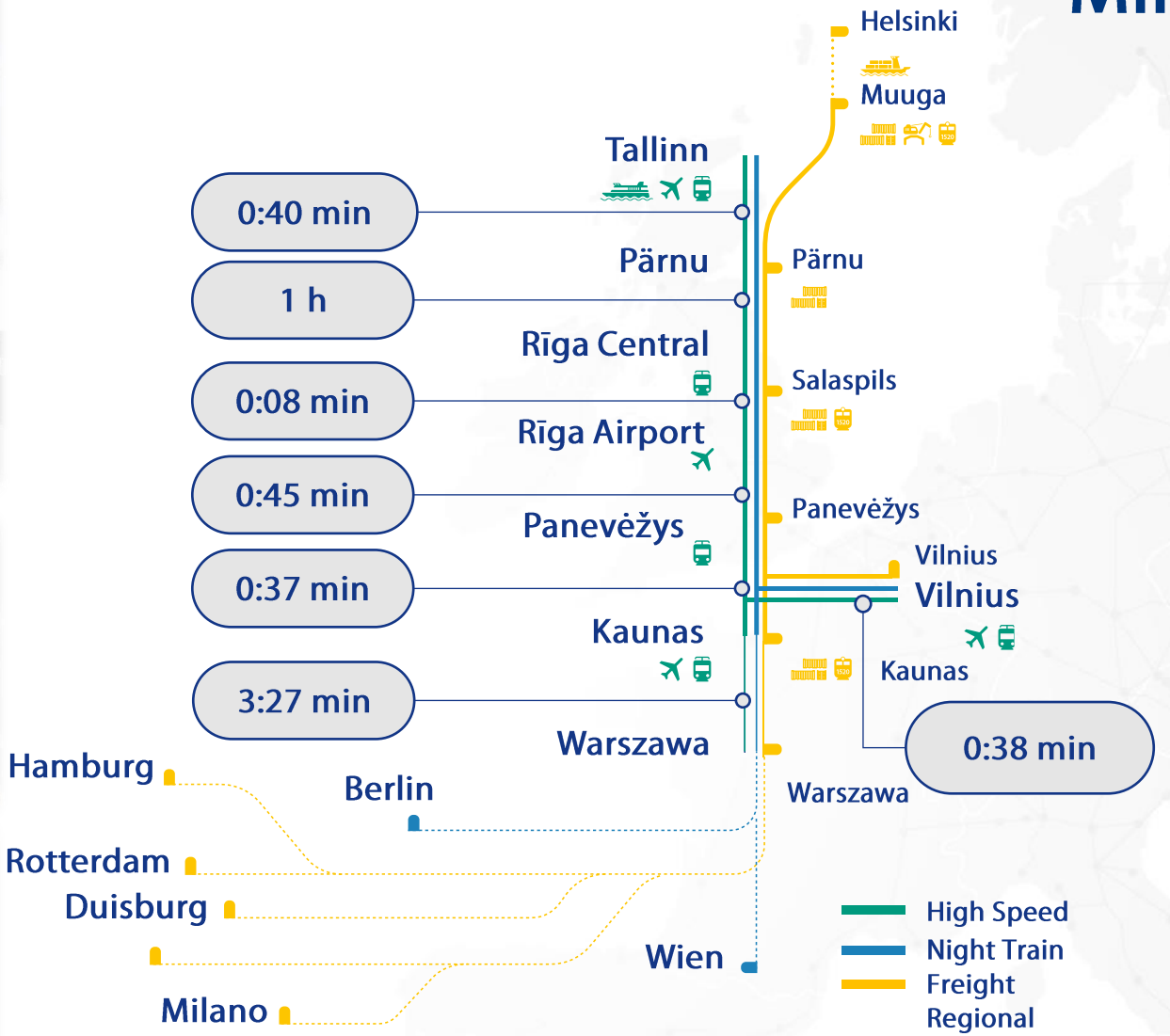
Basis for a New Economic Corridor and Military Mobility


Ülemiste International Passenger terminal


RIX Airport Station


Riga Central Station


Vilnius Connect



870 km greenfield railway infrastructure

1435 mm
Double track

ERTMS Level 2 + FRMCS*

Electrified 2x25kV AC

Maximum length of freight trains: 1050m

Axle load 25t

Design speed:
249 km/h for passenger trains
120 km/h for freight trains

SE-C (Swedish) loading gauge

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Rail Baltica project timeline

2023

- Mainline designs' completetion
- Delivery programme 2030
- Market readiness for material supply & logistics (incl. consolidated material procurements)
- New generation Cost-Benefit Analysis and Business Plan
- Decisions to ensure operational readiness (IGA on infra management and exploitation model, rolling stock etc.)

2024-2027

- **Construction!**

2028-2030

- Testing
- Validation
- Operations & full interoperability ensured
- New economic and security network corridor developed

Construction in progress

Gradual start of operations

Progress across all project disciplines

Mainline

- Design works for the mainline approaching completion (advanced on > 640km)
- Precizēts trases vKaunas – Lithuanian/ Polish border chosen; on section Kaunas – Vilnius, procurement ongoing, design works to commence in 2023
- Synchronizing schedule with Poland

Local facilities

- Infrastructure maintenance facilities (construction logistics sites)
- International and regional passenger stations
- Intermodal freight terminals
- Rolling stock depots

Railway subsystems development

- ENE subsystem 870km design & build procurement ongoing
- CCS subsystem Design & Build procurement launched
- Engagement with EU and UIC partners on FRMCS standardisation ongoing

Rail Baltica BIM roadmap

Rail Baltica project at the moment

BIM Framework

Developed BIM Strategy framework;

Sent a "BIM message" to the market;

BIM Strategy

Detailed set of rules, including BIM Manual;

Developing training material;

Communication with industry's professionals;

Software

CDE and supporting technology implementation;

GIS implementation;

Asset Register and scheduling solution implementation;

Workflows and design

Developing and defining workflows;

BEP, MIDP, TIDP;

Work with designers to check and verify their work;

Construction

Collecting and updating asset data;

Using BIM models and data in construction;

Educating construction sector;

Operations and maintenance

Handover of Project BIM data;

Utilizing Project BIM data to manage assets;

ArcGIS

Enterprise solution

Web maps and apps

Asset Register

GIS Strategy

Information sharing platform with other stakeholders

Integration with other project systems

2D, 3D, 4D project data representation

First public information

Construction progress monitoring

Continue integration with other project systems

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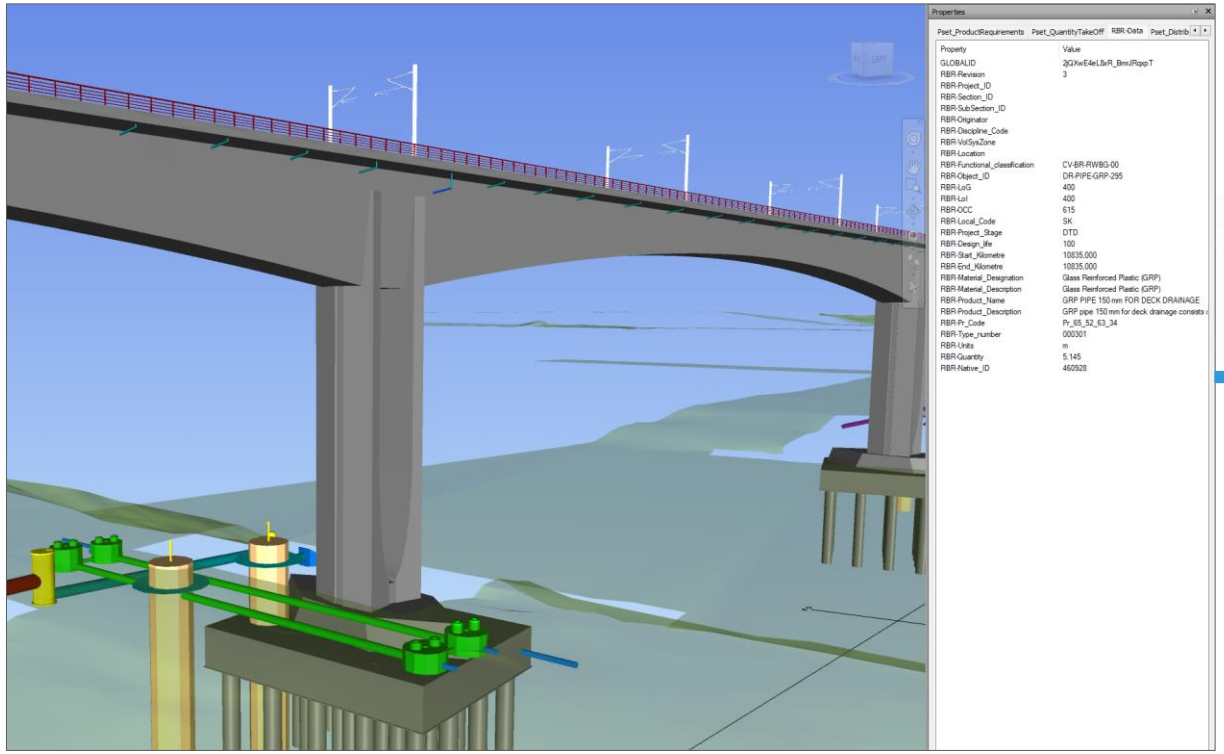
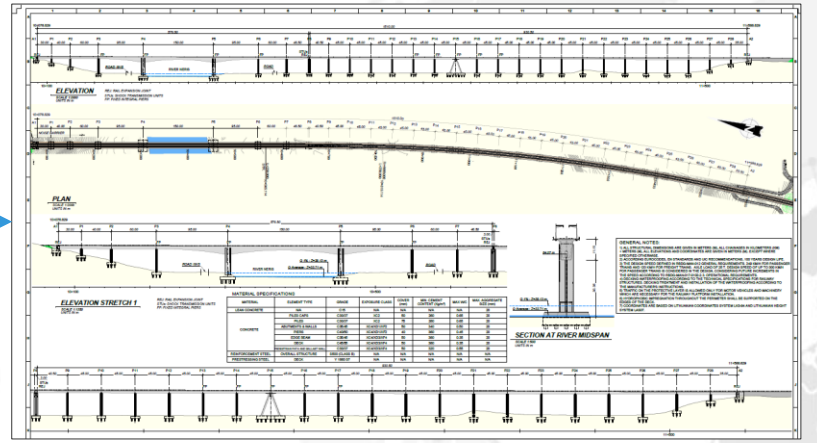
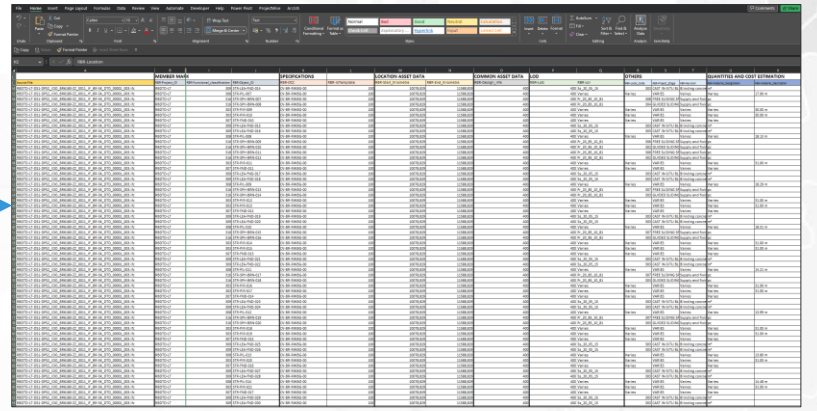
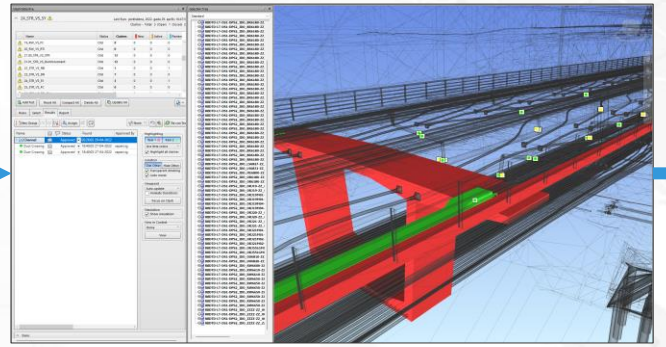
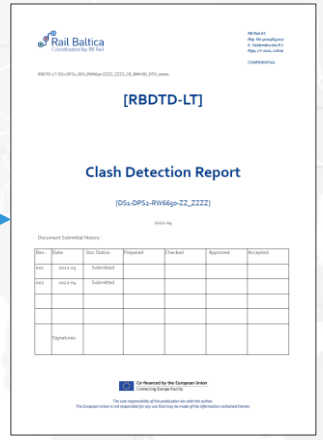
BIM process – models, drawings, reports, data drops…



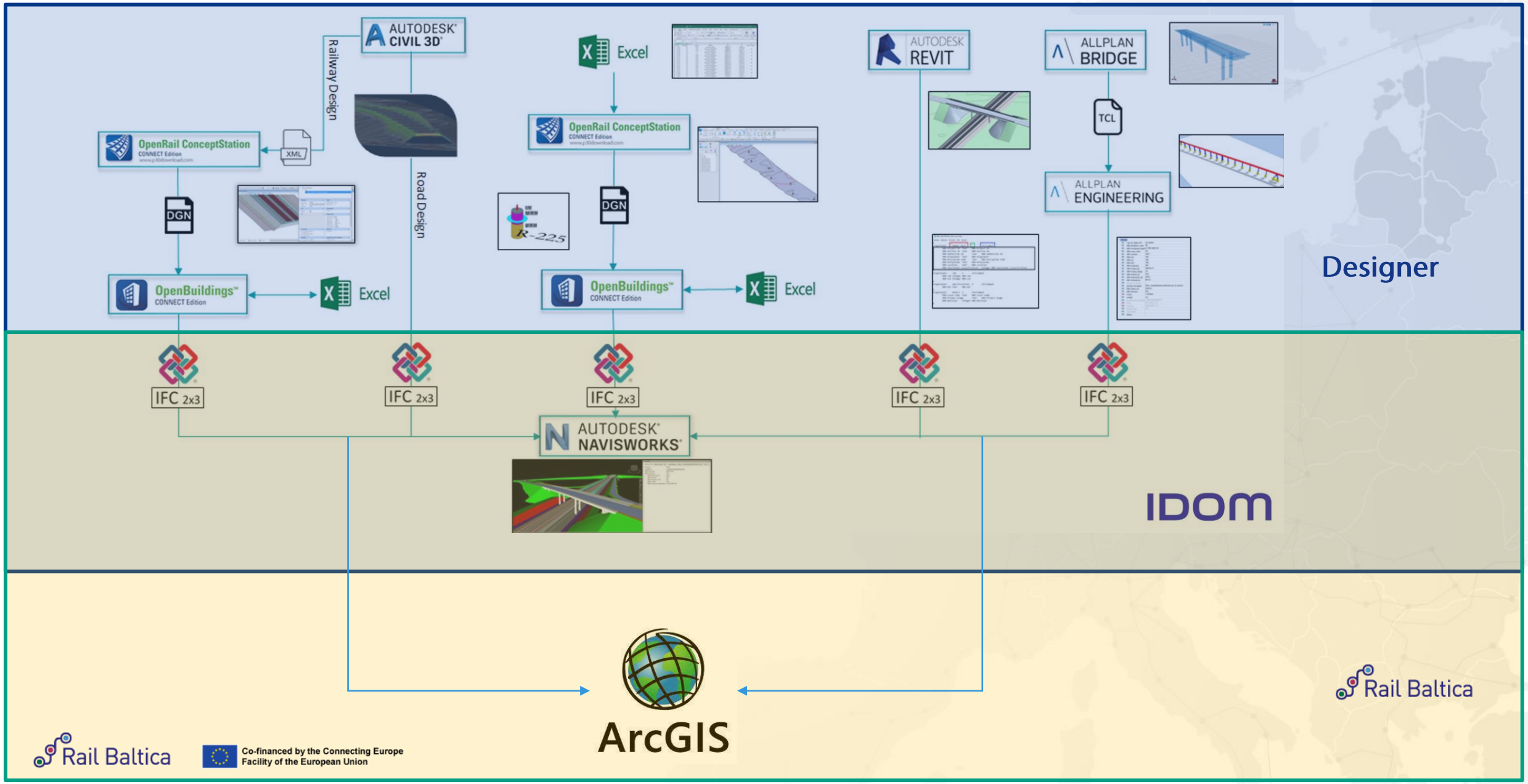






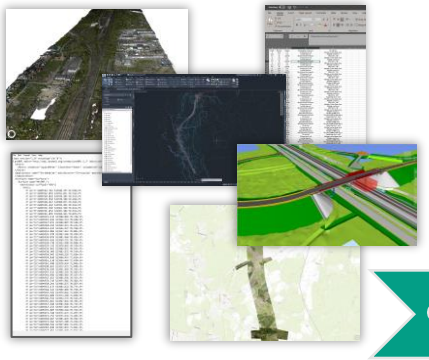


Attribute information in BIM models



Data Workflows

Design Data



National/Worldwide Databases Open Data Portals

MAA-AMET

Eesti avaandmed

geoportal.lt

GEO Latvija.lv

INSPIRE GEOPORTAL
Enhancing access to European spatial data
European Commission > INSPIRE > Geoportal

Collecting

Organizing

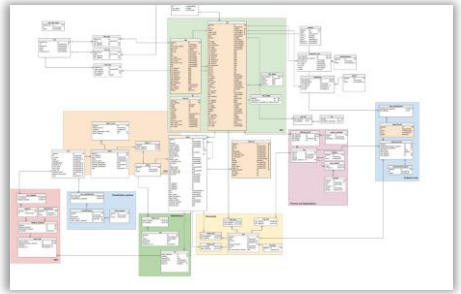
Processing

Integrating

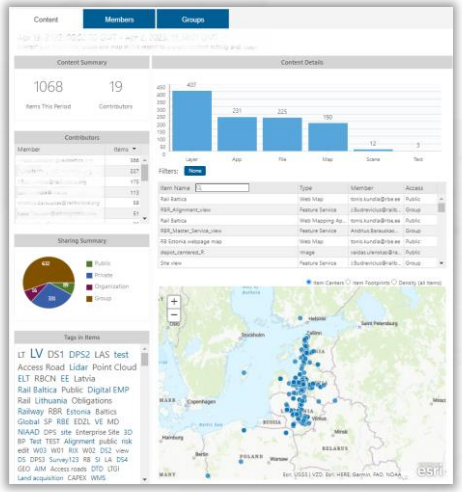
ArcGIS Enterprise

ArcGIS Data Store

GIS Enterprise Geodatabase (SQL) / Asset Register



ArcGIS Enterprise Portal



2D maps

3D Maps

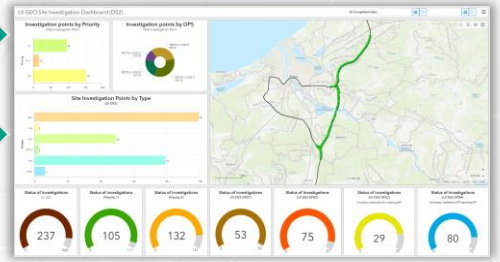
Dashboards

Public Data

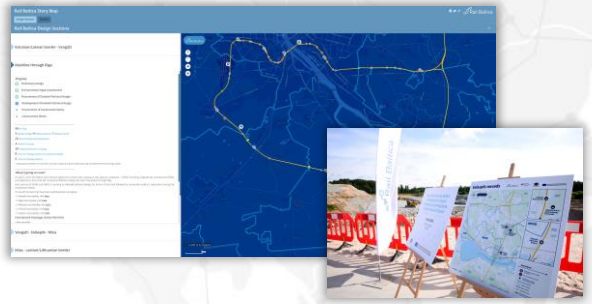
2D maps

3D maps

Dashboards



Public data



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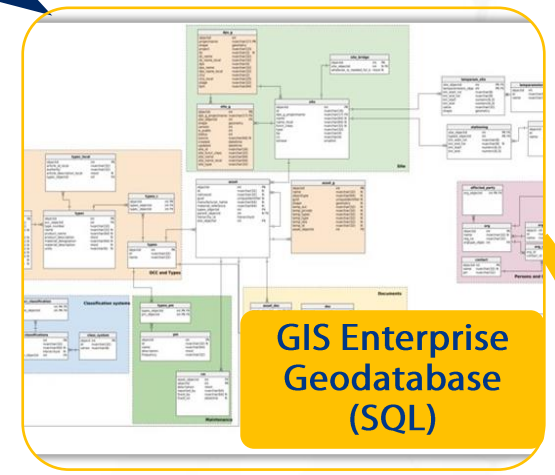
BIM to GIS (Asset Register)

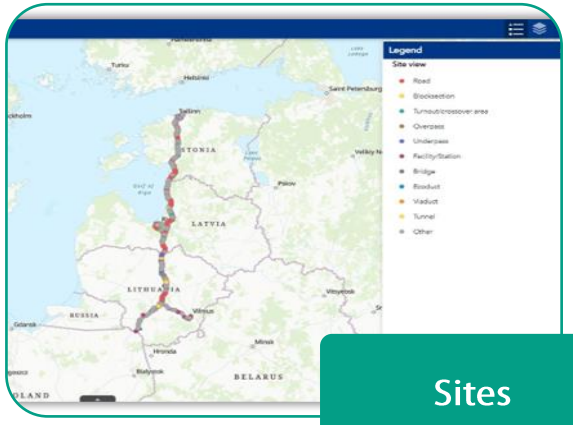
BIM



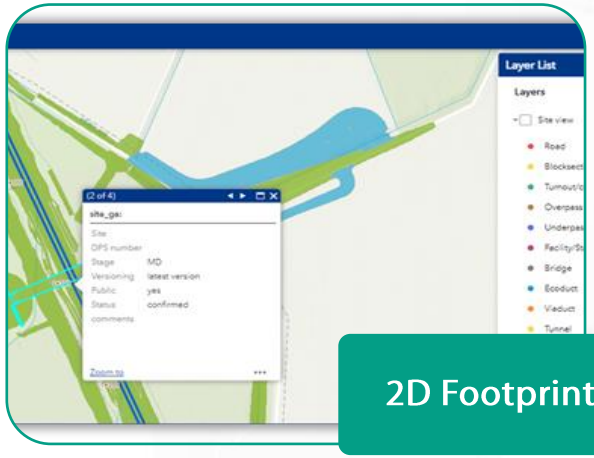
GIS Enterprise Geodatabase (SQL)

Web Interface

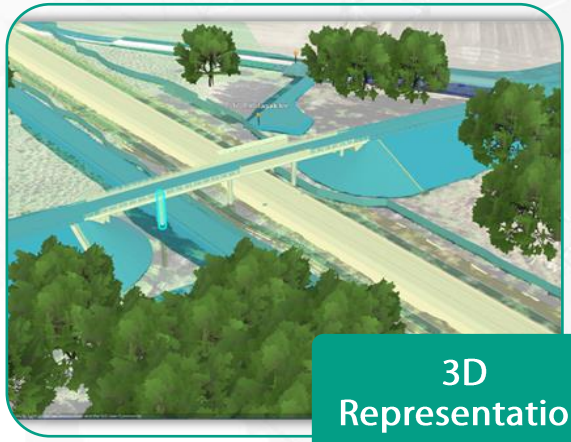
BIM is one of the main source of data for Asset Register.
After completing the import processes, BIM data is linked to other data and becomes an integral part of the overall GIS system.



Sites



2D Footprint



3D Representation

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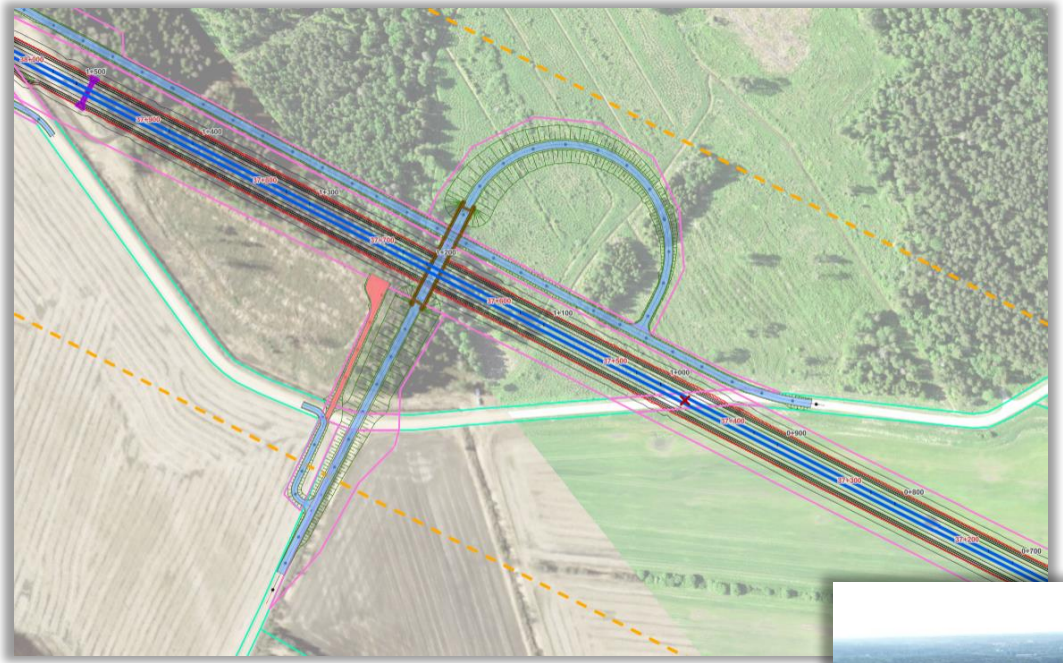
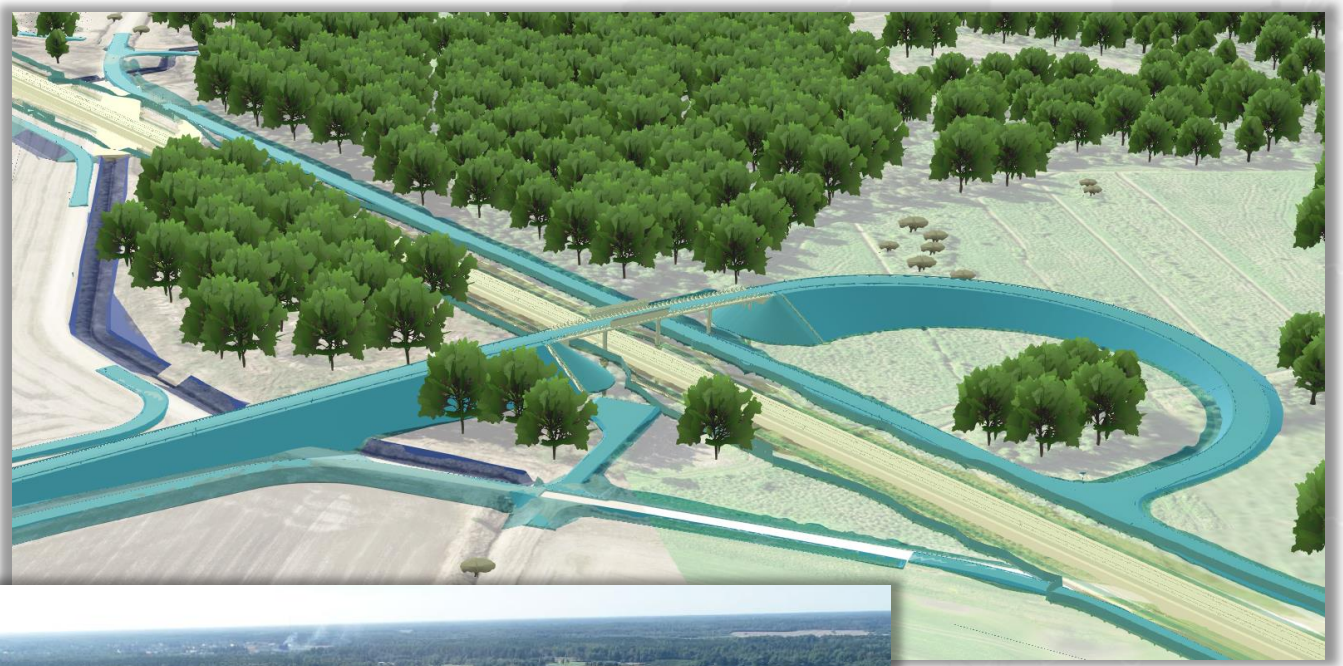
Digital Twin





A digital twin in the early stages of a project (when the physical infrastructure is not yet in place) allows the real world to be modelled and adjustments easily made

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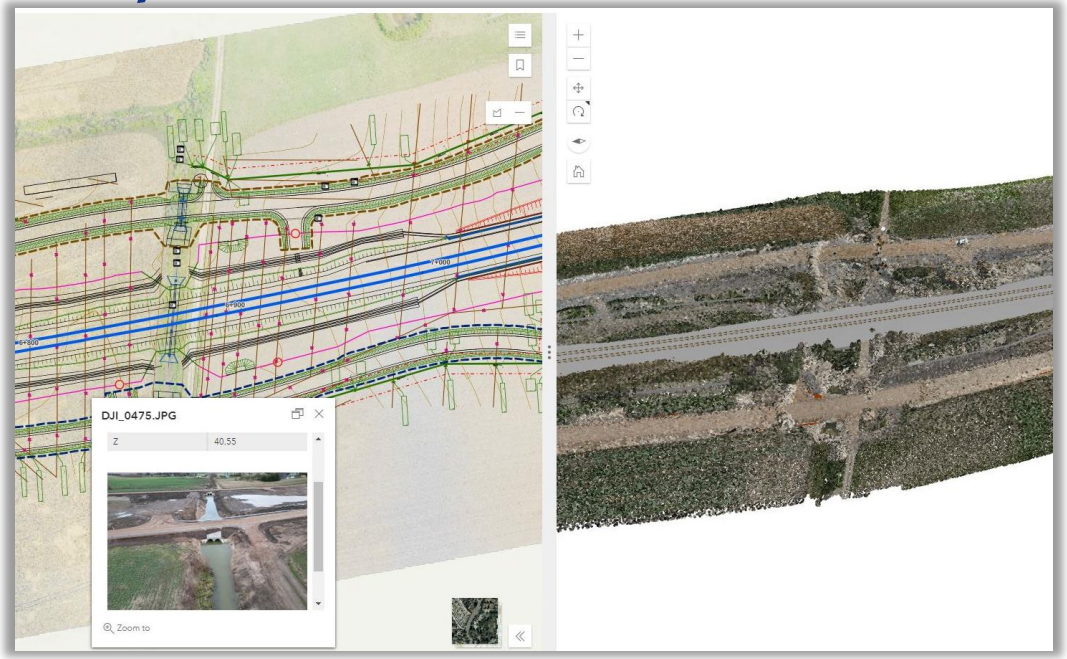
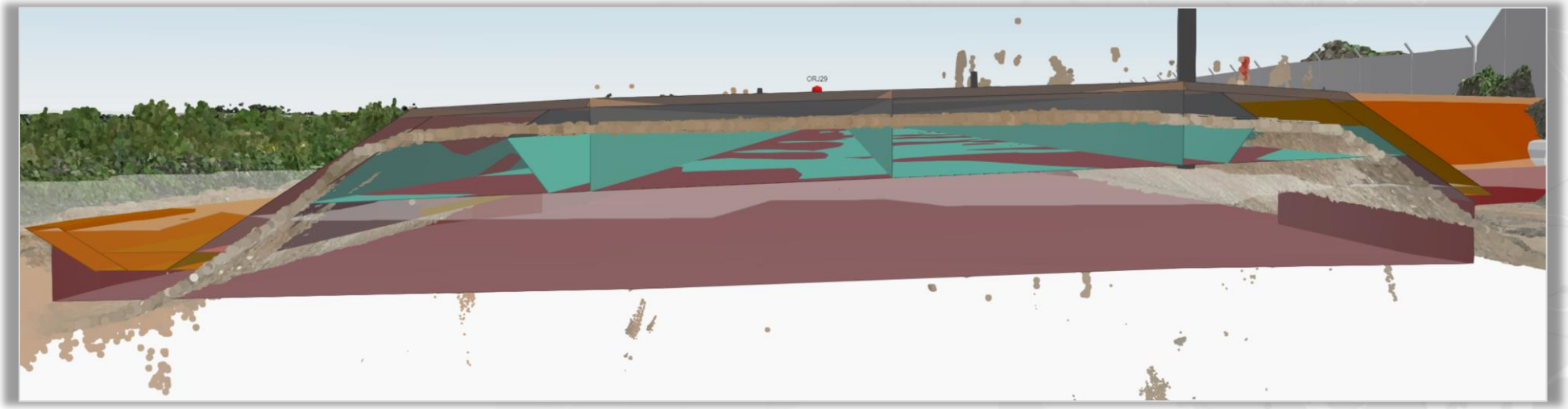
BIM, GIS and Remote Data Collection (UAV)



BIM and Lidar integration allows a quick and simple comparison between what has been designed (BIM) and what has been built (Lidar)



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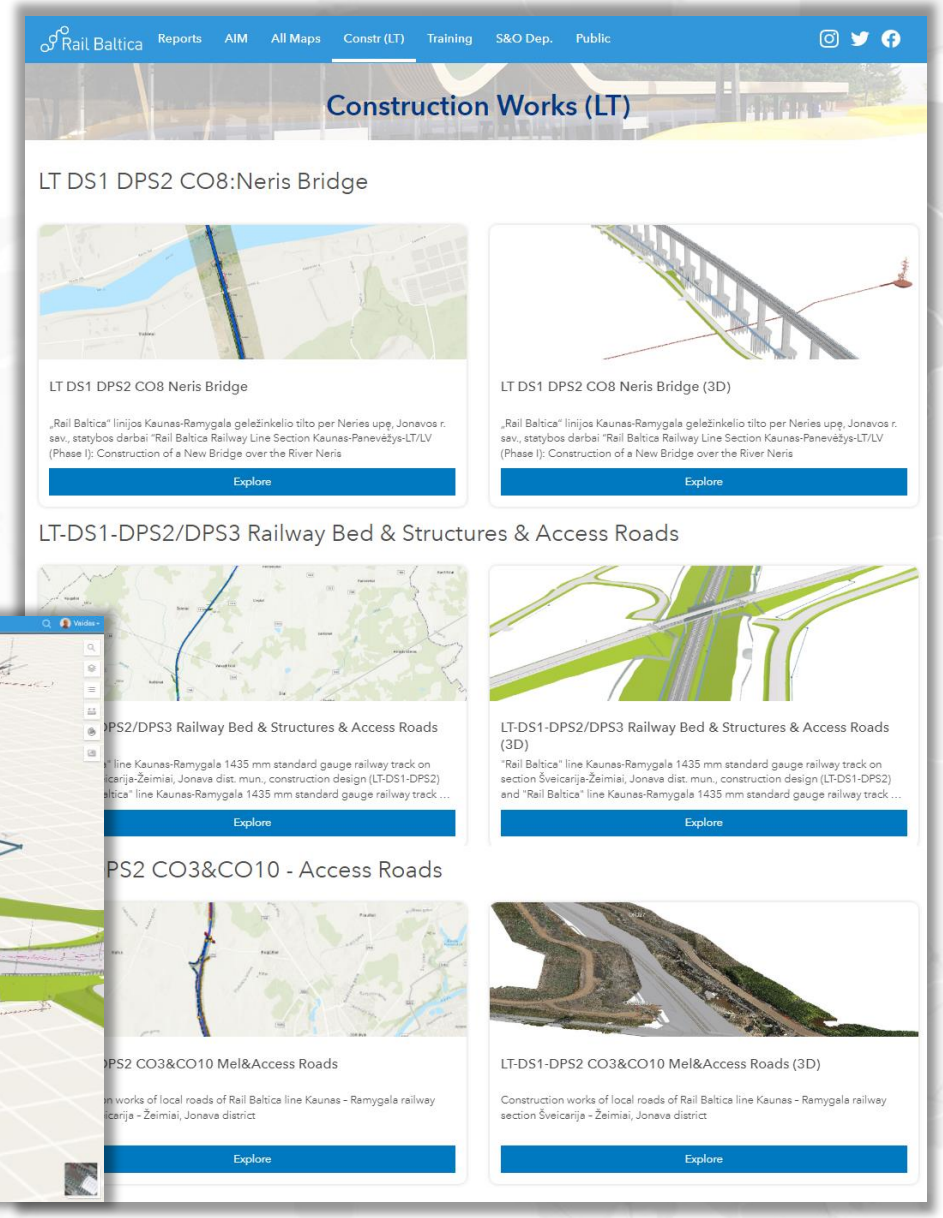
Shared Data Environment



Fast and efficient live information sharing between all participants in the construction process: implementing bodies, coordinators, contractors.

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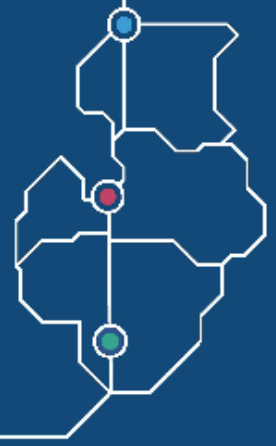
Rail Baltica
Coordinated by RB Rail

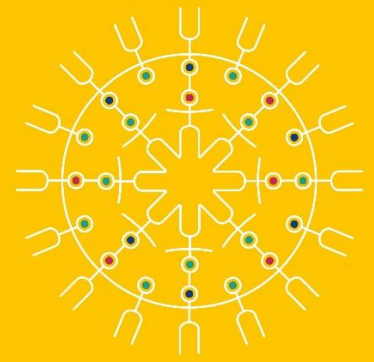


OUR VISION

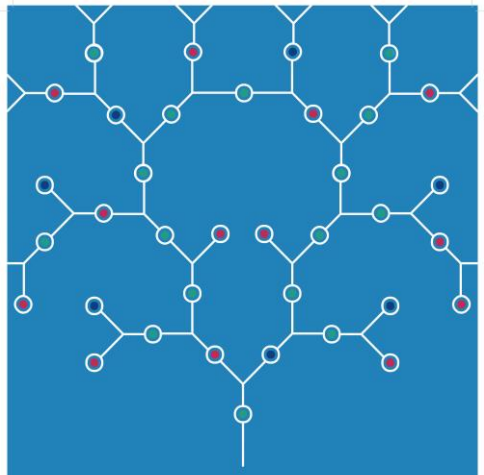
Connected Baltics in a connected Europe

OUR MISSION

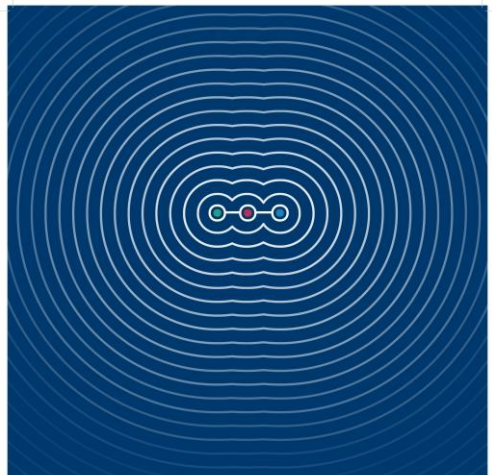
We are delivering a seamless mobility for people, goods and services to accelerate social and economic development in the Baltics and beyond



WE VALUE PEOPLE



WE VALUE PROFESSIONALISM



WE VALUE PURPOSE

Thank you!