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

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

Rail Baltica

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

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

Rail Baltica

Co-financed by the Connecting Europe Facility of the European Union
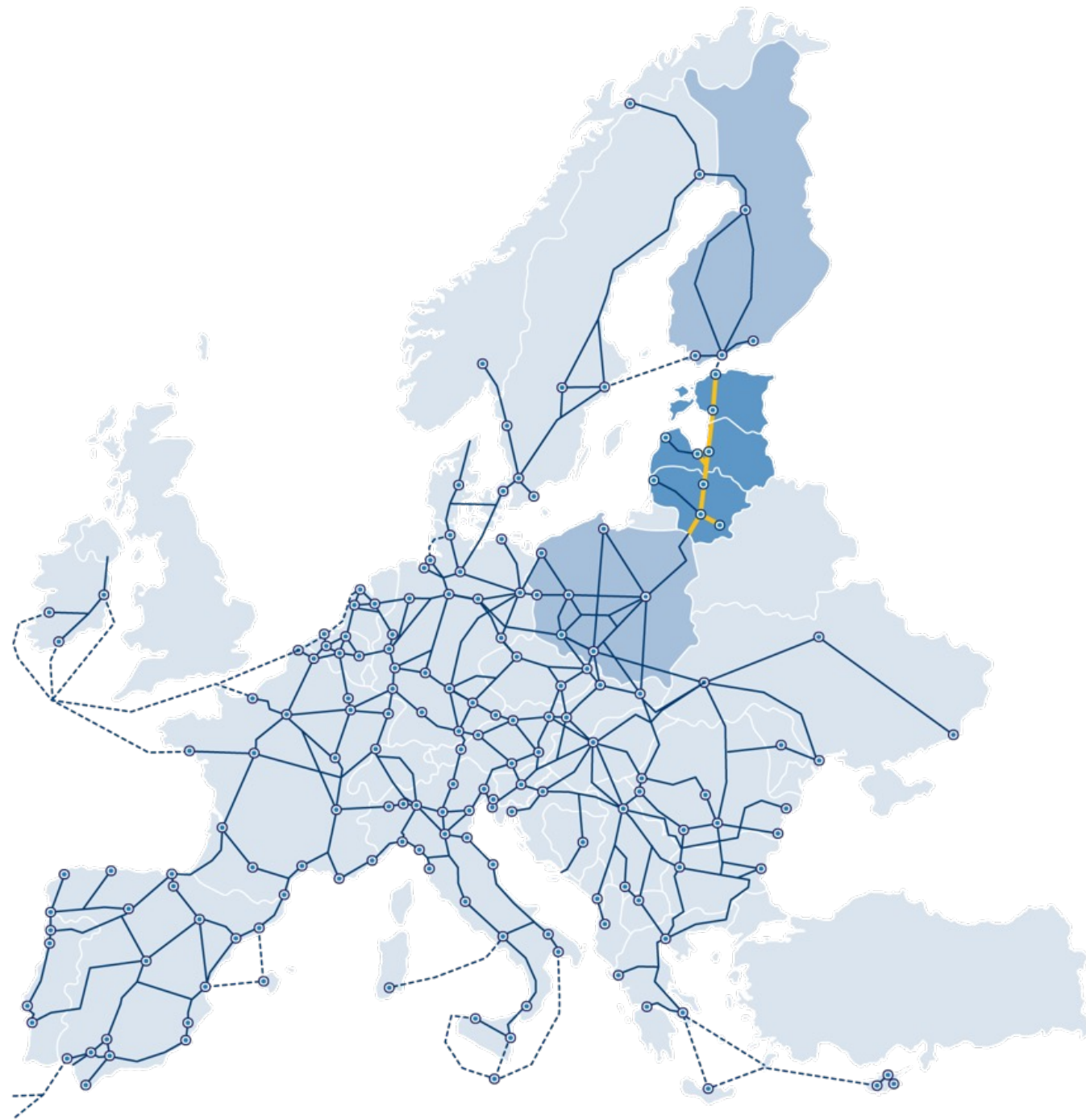
Basis for a New Economic Corridor and Military Mobility
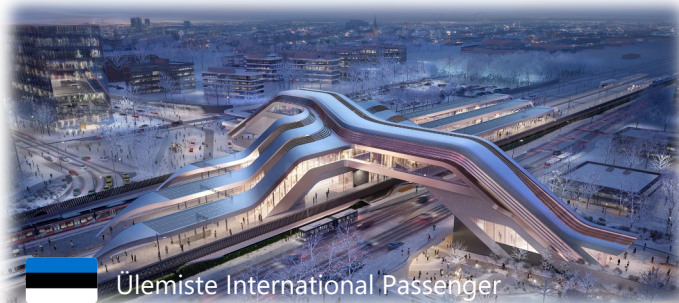
Ülemiste International Passenger terminal

RIX Airport Station

Riga Central Station

Vilnius Connect

Helsinki

Muuga

Tallinn

0:40 min

Pärnu

Pärnu

1 h

Rīga Central

0:08 min

Salaspils

Rīga Airport

0:45 min

Panevėžys

Panevėžys

0:37 min

Vilnius

Vilnius

Kaunas

3:27 min

Kaunas

Warszawa

0:38 min

Hamburg

Berlin

Warszawa

Rotterdam

Duisburg

Wien

Milano

High Speed
Night Train
Freight
Regional

- 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

Rail Baltica

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

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.)

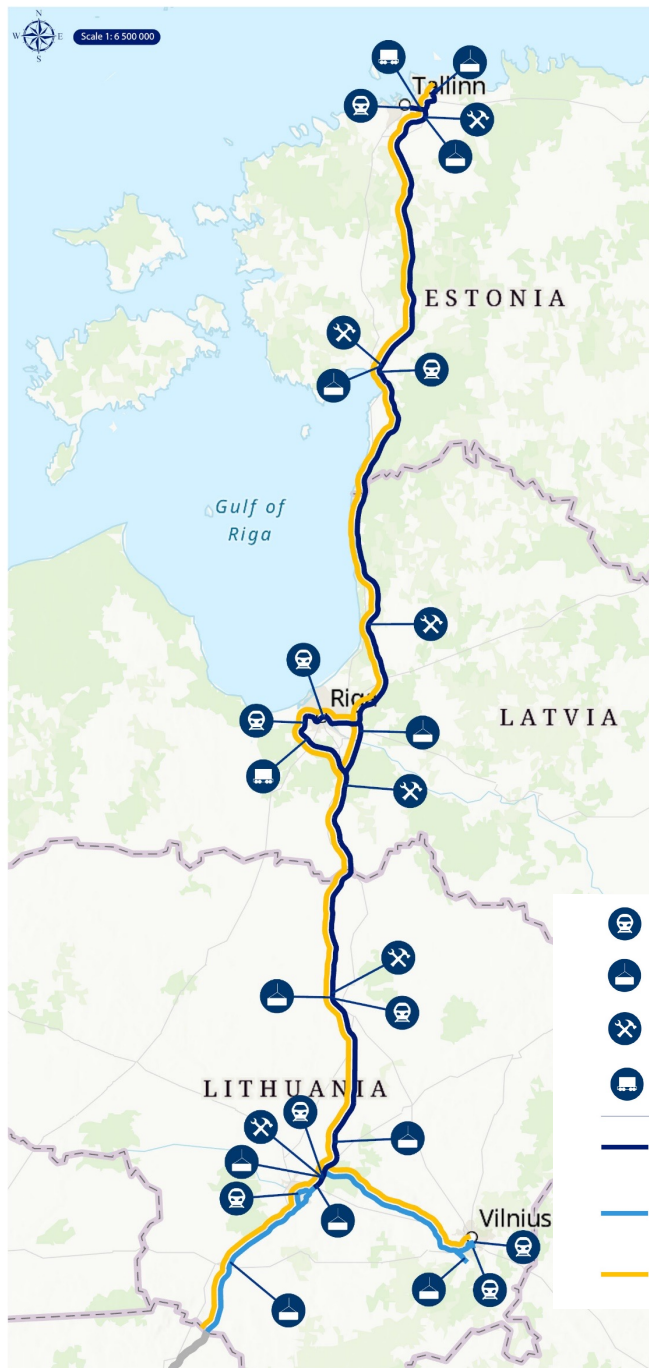## 2024-2027

- **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)

- Kaunas – 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)

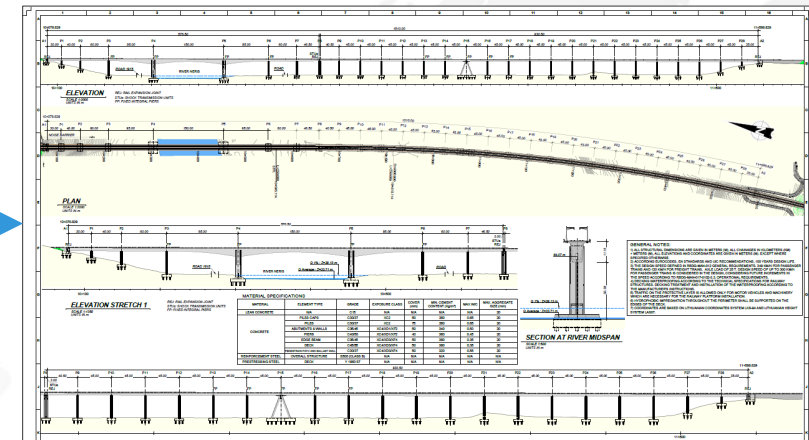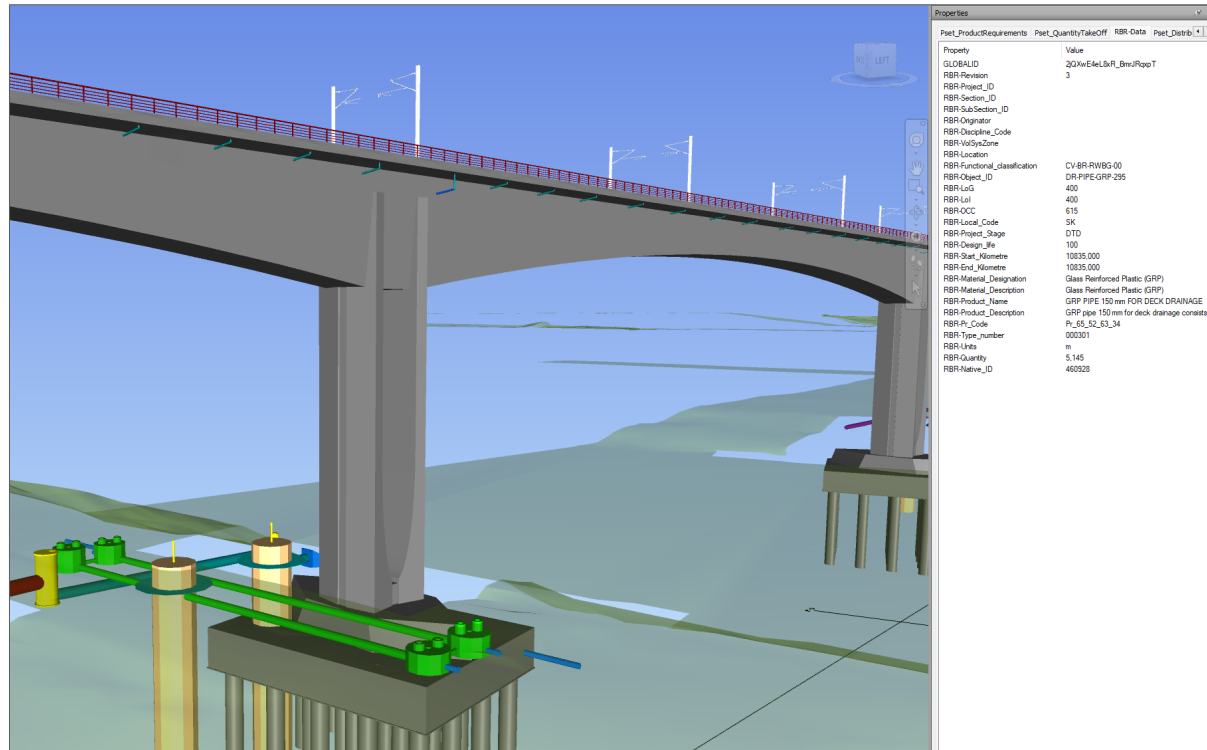- International and regional passenger stations

- 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
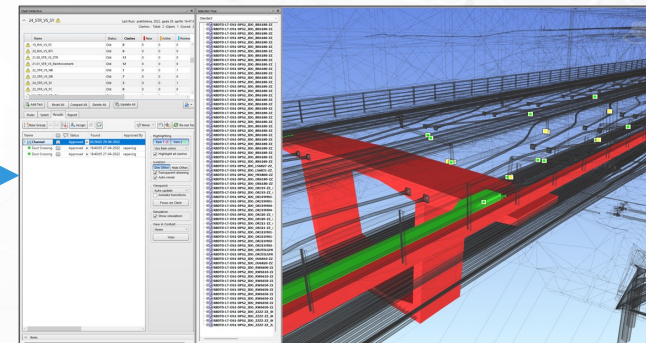
Rail Baltica BIM roadmap

BIM Framework

BIM Strategy

Software

Workflows and design

Rail Baltica project at the moment

Construction

Operations and maintenance

Developed BIM Strategy framework;

Sent a "BIM message" to the market;

Detailed set of rules, including BIM Manual;

Developing training material;

Communication with industry's professionals;

CDE and supporting technology implementation;

GIS implementation;

Asset Register and scheduling solution implementation;

Developing and defining workflows;

BEP, MIDP, TIDP;

Work with designers to check and verify their work;

Collecting and updating asset data;

Using BIM models and data in construction;

Educating construction sector;

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

Rail Baltica

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

BIM process – models, drawings, reports, data drops…
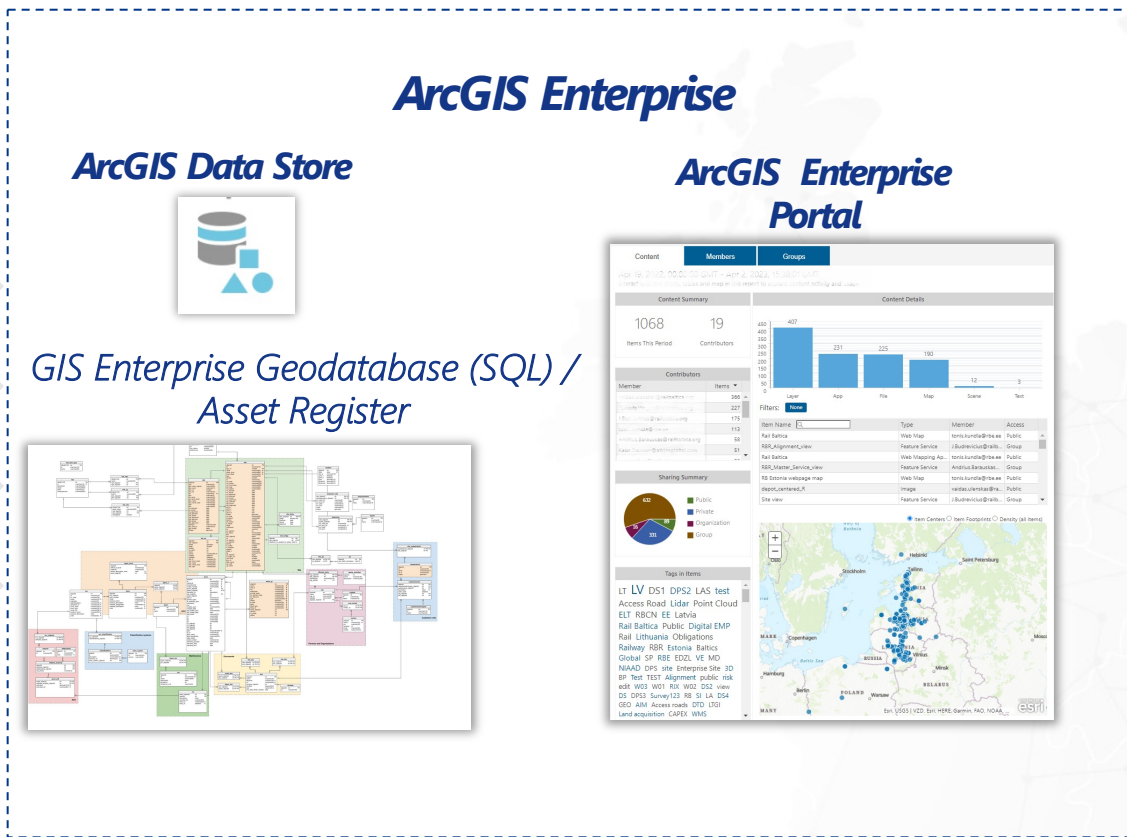
Attribute information in BIM models
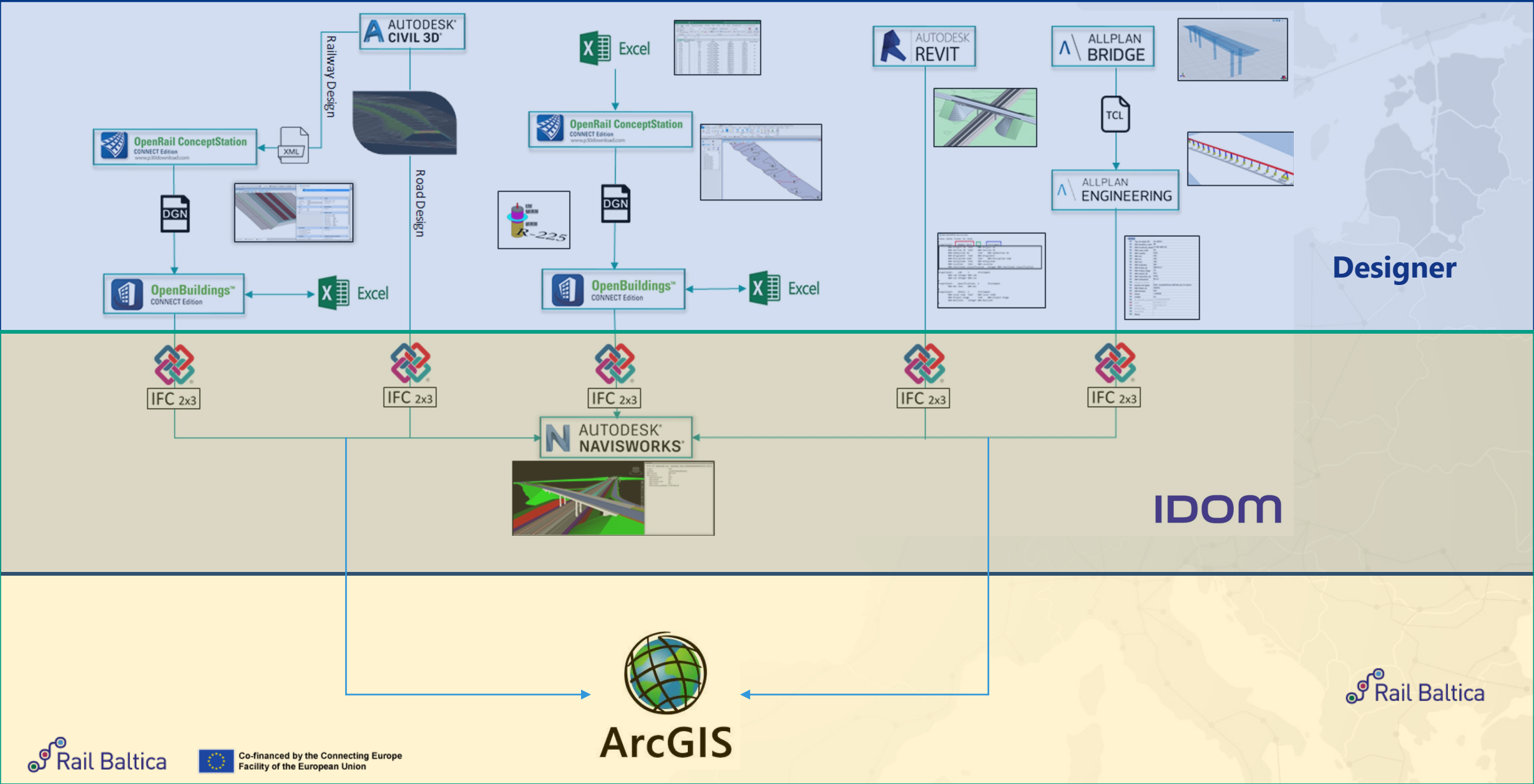
Data Workflows

Design Data
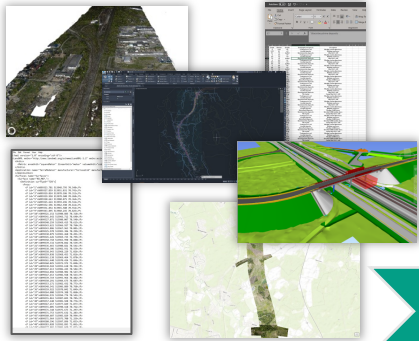
National/Worldwide Databases Open Data Portals

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
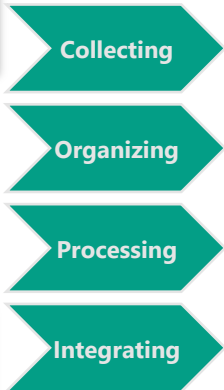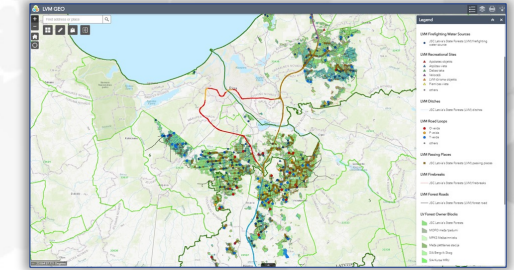
2D maps

3D maps

2D maps

3D Maps

Dashboards

Public Data

Dashboards

Public data

Rail Baltica

Co-financed by the Connecting Europe Facility of the European Union
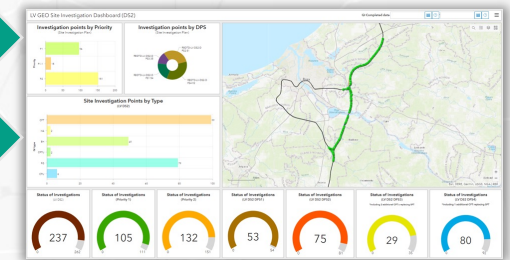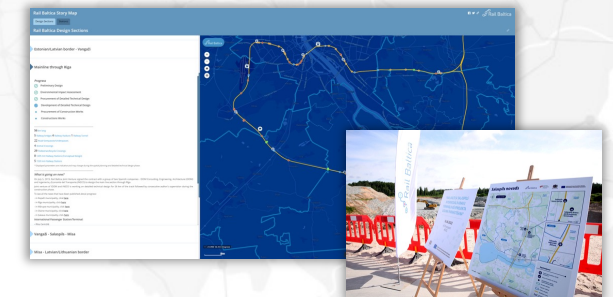
BIM to GIS (Asset Register)

BIM

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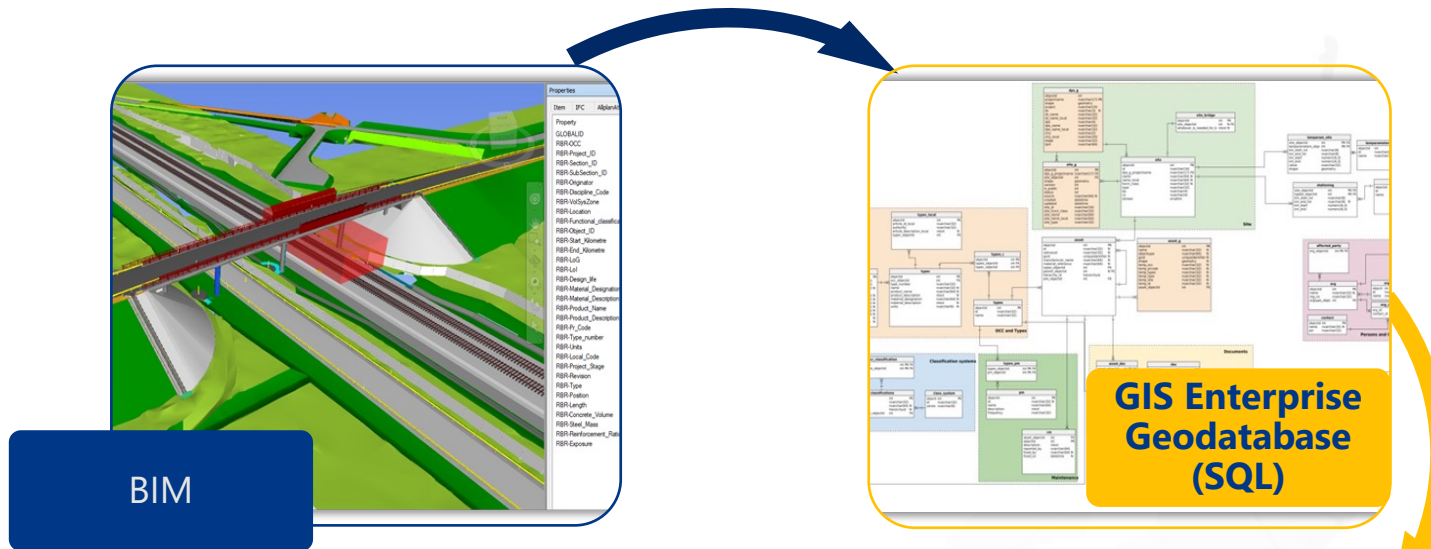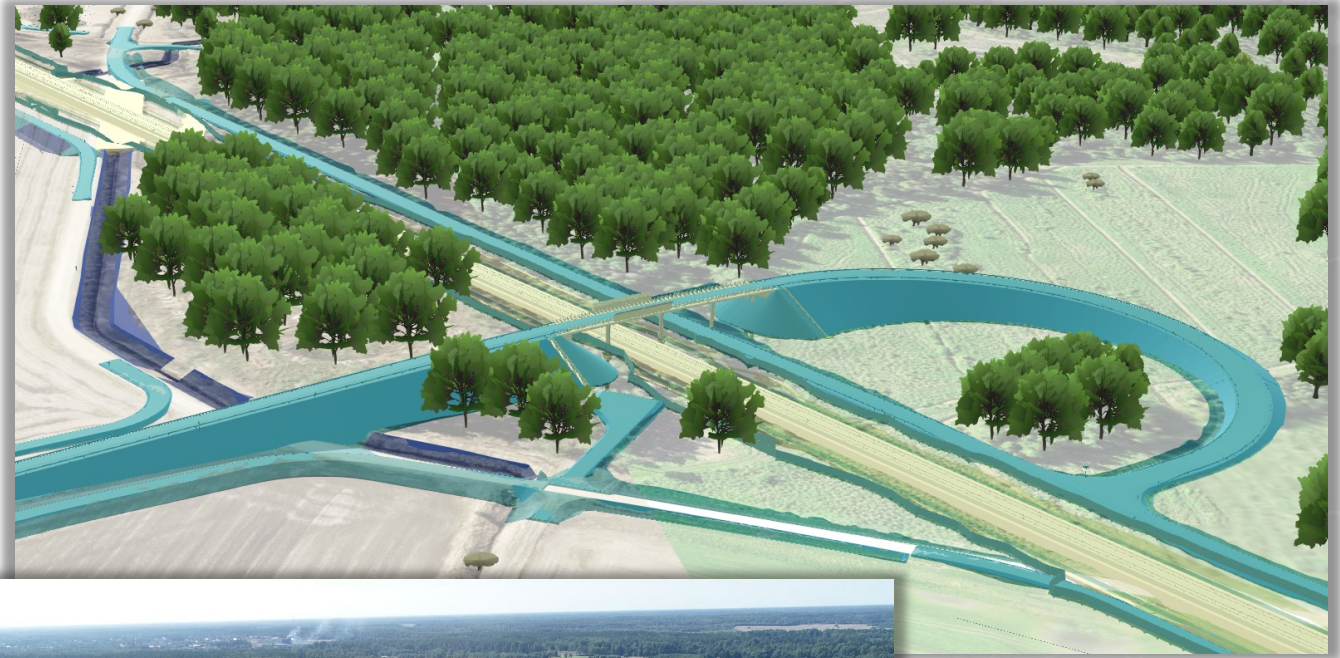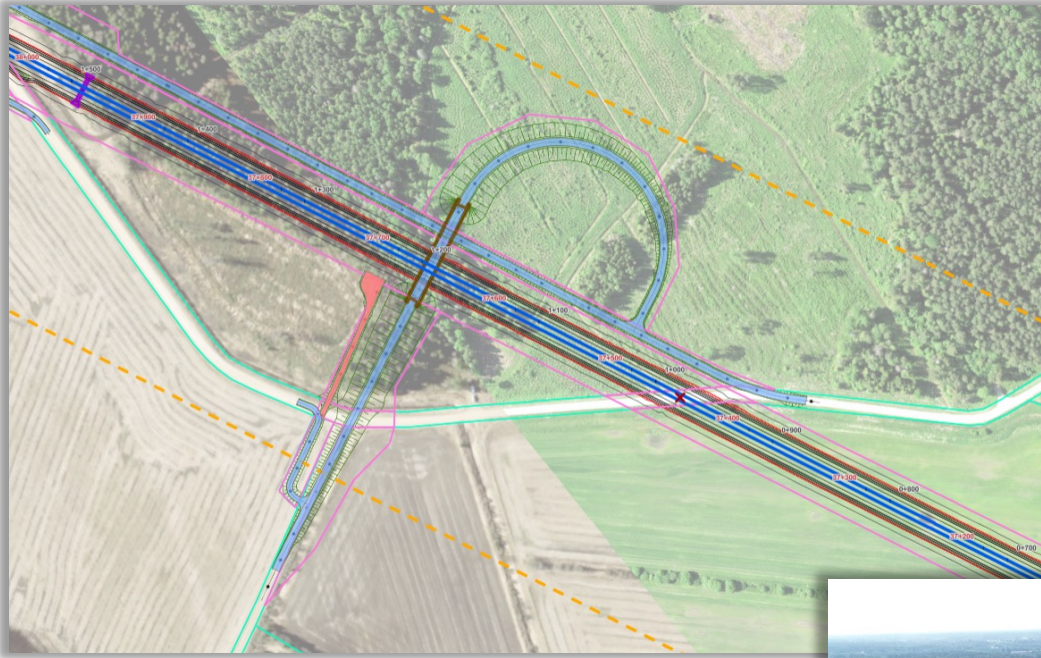
BIM is one of the main source of data for Asset Register.
After completing the import processes, BIM data is linked to other data and becomes an integral part of the overall GIS system.

Web Interface

Sites

2D Footprint

3D Representation
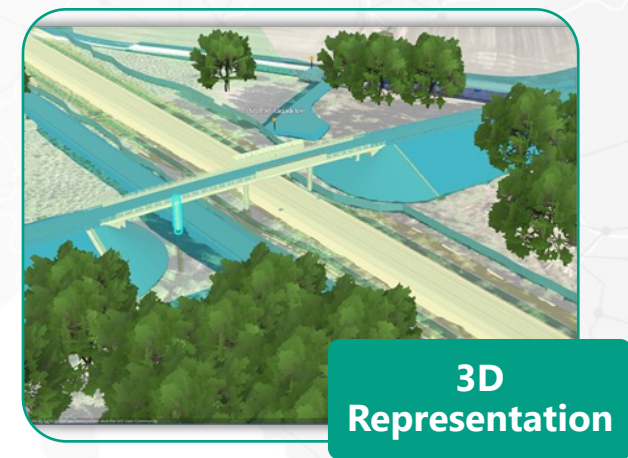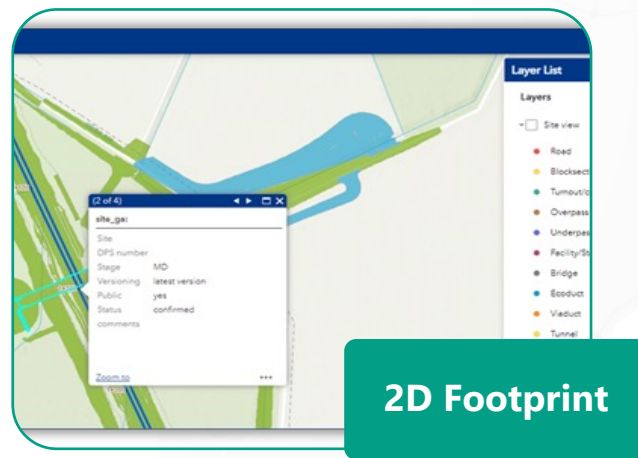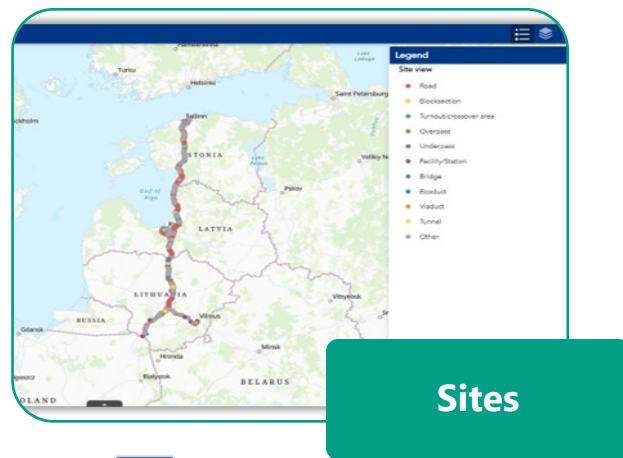
Digital Twin

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

Rail Baltica

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

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)

Rail Baltica

Co-financed by the Connecting Europe Facility of the European Union
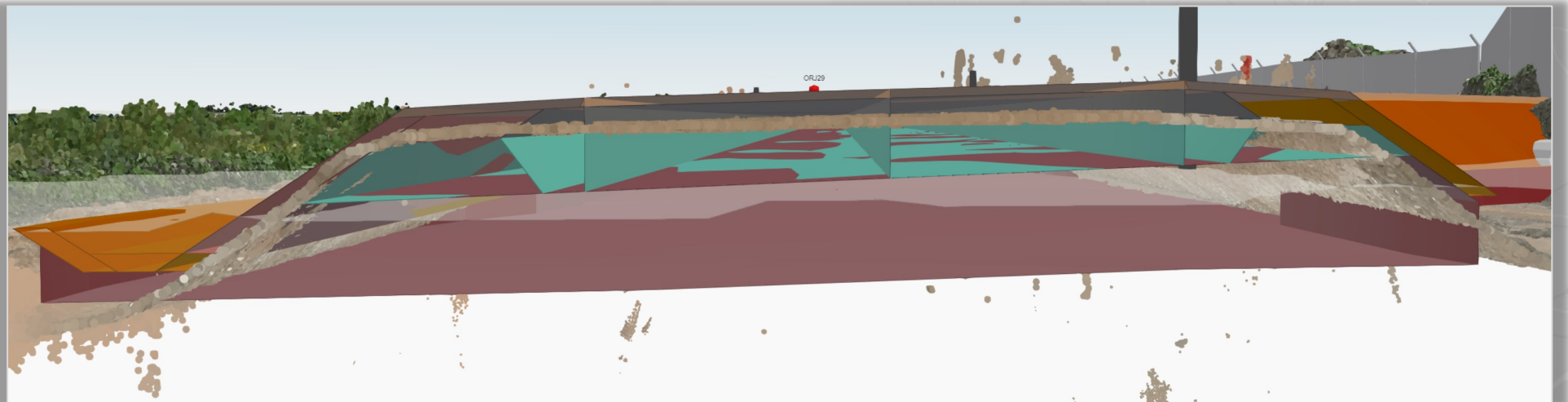
Shared Data Environment

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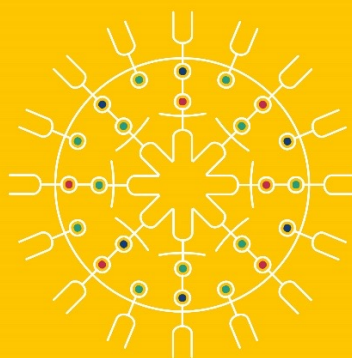
Rail Baltica
Coordinated by RB Rail

OUR VISION
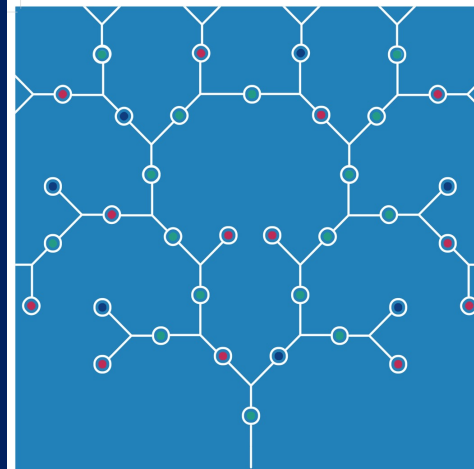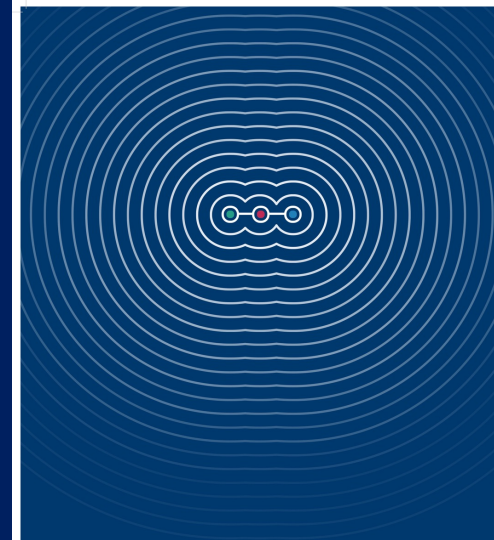
Connected Baltics in a connected Europe

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!