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

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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
We are delivering seamless mobility for people, goods and services to accelerate social and economic development in the Baltics and beyond.
Basis for a New Economic Corridor and Military Mobility

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 project timeline

2023

• Mainline designs’ completion
• 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
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;

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;

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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
BIM roadmap
Rail Baltica project at the moment
Operations and maintenance
BIM process – models, drawings, reports, data drops...
Attribute information in BIM models
Data Workflows

Design Data

- Collecting
- Organizing
- Processing
- Integrating

National/Worldwide Databases Open Data Portals

ArcGIS Enterprise

ArcGIS Data Store

GIS Enterprise Geodatabase (SQL) / Asset Register

ArcGIS Enterprise Portal

ArcGIS 2D maps

ArcGIS 3D maps

Dashboards

Public Data

Public data

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

BIM is one of the main sources 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.
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.
BIM and Lidar integration allows a quick and simple comparison between what has been designed (BIM) and what has been built (Lidar).
Shared Data Environment

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

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