

# Baltic Transport

bimonthly-daily companion

## Journal

№ 2, 2018 (82) APRIL/MAY

€37 (incl. 5% VAT)

ISSN 1733-6732



**Report**  
**Baltic port market in 2017**

**Focus**  
**Cruise industry  
in the Baltic and Europe**

**Logistics**  
**Interview with Alexey Grom, UTLC**

Official media partner of:

**BPO**  
BALTIC PORTS  
ORGANIZATION





Photo: INTERMODEL

# To be a model of multimodality

by Jan Nowak

According to a special report published in 2016 by the European Court of Auditors *Rail freight transport in the EU: still not on the right track*, the sector's share of the total inland cargo traffic in the EU went down from 19.7% in 2000 to 17.8% in 2013, despite enormous money allocated to various rail promoting projects (€28b in 2007-2013). The industry, therefore, needs to come up with some innovative solutions to reverse this pitting trend. The EU Horizon 2020-backed INTERMODEL project ([www.intermode.eu](http://www.intermode.eu)) intends to incorporate the Building Information Modelling (BIM) methodology into the process of designing and operating multipurpose rail cargo terminals – so that the end investment can be as well-thought-out as possible to benefit the economy, environment, and society alike.

The nearly €3.0m-worth INTERMODEL project kicked off on 1 September 2016, scheduled for completion on 31 August 2019. The initiative is coordinated by the Spanish IDP Ingeniería Y Arquitectura Iberia and comprises a consortium of 14 partners from seven EU Member States; Finland, Germany, Sweden, and Poland (the North-South Logistics & Transport Cluster) are representing the Baltic Sea region and are backed by Italy, Spain, and the Netherlands. The project is made up of a set of 10 activities (Tab. 1).

## By design

In essence, BIM is about generating and managing digital representations of physical and functional characteristics of a variety of infrastructures like water, refuse, electricity, gas, and communication utilities as well as roads, bridges, ports, tunnels, etc. The goal of INTERMODEL is to successfully add rail terminals to this list.

Specifically, the project aims at developing an integrated decision support platform to assess different pilot cases concerning rail cargo terminals against a wide range of key performance and risk indicators. Partners of the project believe that by integrating simulation modules of terminal operations and how a given facility will link to and interact

with the hinterland into a BIM design, both the speed and quality of the decision-making process will be significantly improved.

To turn these ambitions into reality, INTERMODEL proposes to develop an advanced ICT environment based on the BIM methodology. This dynamic multi-layered simulation platform will take into account

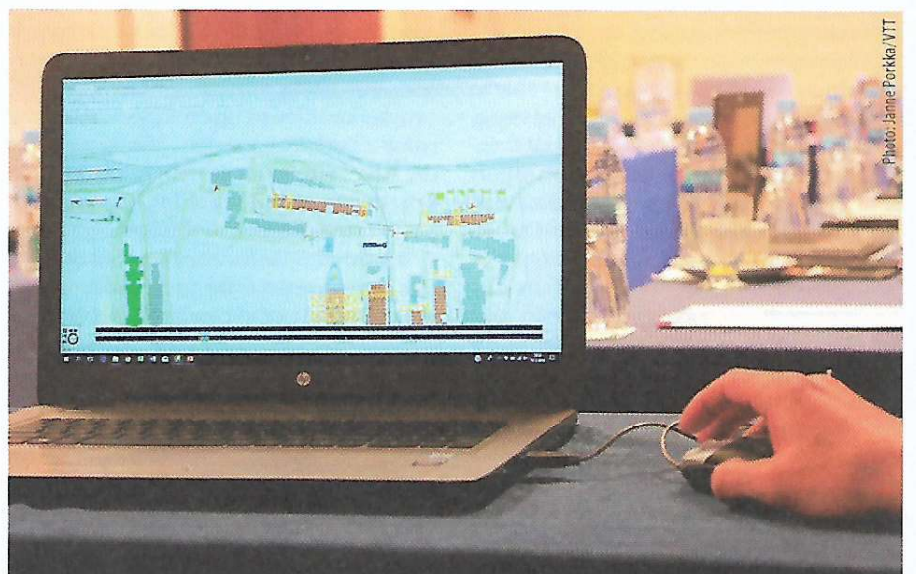


Photo: Janne Perkkio / VTT

#Inside  
#Rail#Terminal#Multimodality  
#Building Information Modelling (BIM)  
#Design#Decision-making#Life-cycle





## Technology

**Tab. 1. INTERMODEL's activity areas**

Nº	Activity	Tasks
1	Management	Governing, coordinating, and reporting
2	Integrated Planning environment and decision support	Collecting information and requirements for terminal use cases
		Developing an integrated planning environment architecture and interface specifications
		Implementing the integrated ICT environment
		Providing procedures for assisting in planning and designing as well as selecting an interface for exchanging the results of the project (model coordination)
3	Data & Indicators definitions	Developing work and decision processes within the integrated planning technology
		Defining key performance (KPIs) and risk (KRIs) indicators
4	BIM Intermodal terminal	Setting up two real and two virtual terminal pilot case studies
		Developing a BIM execution plan
		Building BIM models of the existing terminals in Melzo and La Spezia
5	Terminals operational simulation	Building the 7D BIM models of the virtual locations
		Optimizing the first 7D static KPIs and KRIs
		Developing a data model that describes all relevant data used in a simulation component library
		Developing a simulation component library (the decision support environment) for the operational simulation of all sorts of freight terminals
		Linking the developed simulation component library to external systems such as the integrated planning environment
6	External mobility effects	Performing operational simulation experiments by using the simulation component library as part of the two pilots
		Developing a data model for all sorts of intermodal freight terminals
		Setting a simulation model approach and linking it to the BIM model and the operation simulation
		Calculating the generated/attracted terminal traffic
7	External railway affectations	Simulating the hinterland mobility of the Melzo and La Spezia terminals and calibrating the model
		Estimating the external mobility KPIs and KRIs of the Melzo and La Spezia pilot cases
		Implementing the interconnection simulation to the actual state of the La Spezia-Melzo railway corridor to calibrate and validate the model
		Testing the case studies across the La Spezia-Melzo corridor
8	Functional, economic, and environmental analysis	Testing the pilots in a rail corridor connecting the two virtual terminals as a function of various test scenarios
		Testing the resilience of a rail link connecting two virtual intermodal terminals, a seaport and a dry port, using volumes comprising bulk and containerised cargoes
		Carrying out a functional, economic, and environmental analysis
9	Exploitation, dissemination, and communication activities	Assessing statistical data and current transportation and logistics studies as well as their implications for intermodal terminals
		Validating the results at selected terminals
		Integrating the key results
10	Ethics requirements	Protecting the intellectual property generated during the project
		Promoting and exploiting the results of the project

several factors such as geometrical, structural, and geotechnical characteristics, capital and operational expenditures, maintenance scheduling and associated costs, energy efficiency, productivity, capacity utilisation, reliability, and the impact a facility will have on the environment and the local community (e.g. due to lowering road-caused noise, pollution, and congestion). What's extremely important as well is that the ICT tool will be able to analyse how these indicators mix with each other throughout the whole life-cycle of a terminal.

The application of the project's main objective will thus allow for: a better design by making it possible to simulate and evaluate a facility's operational performance in advance, an easier and faster analysis of alternative layouts along with a quick estimation of construction and maintenance costs for the different options, integration of interoperability/multimodality criteria, and assessment of the role the terminals can play on a bigger stage of relations between the economy, society, and the environment.

In practice, more efficient terminals will make it easier to convince cargo owners and freight forwarders to shift their logistics from being 100% truck-based to being more rail-friendly. By dispatching more cargo units via the rail network, we'll ease road congestion, hence lower truck- and car-related pollution and the negative impact it has upon the health and condition of people and the ecosystem.

### Inter-

Ultimately, the ambition of INTERMODEL is to have a valuable input into developing the European rail industry of the future. The project partners are firmly convinced that thanks to the BIM methodology, the service quality of both already existing and yet to be set up intermodal terminals can be greatly enhanced. Through BIM, more heavy duty traffic shifts from roads onto rails, not as a result of fierce competition between the two modes but rather as an effect of combining their best features into one multimodal offering that will truly fit the requirements of next-generation digitally-infused logistics.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement No. 690658.