Development and optimization of multimodal hubs is a very delicate and sensitive task that can only be managed by standardized simulation techniques. This is due to numerous occurring logistic processes and location-based circumstances according to the preliminary project Smart Hubs 2.0. Yet there are some isolated innovative solutions available; however, most of them lack holistic approaches, as well as the consideration of micro- and macroeconomic effects.

OptiHubs has addressed this lack by developing a standardized optimization system for multimodal hubs, which took into consideration new simulation algorithms and 3D visualizations. The tool can be used for analyzing, combining and optimizing processes (e.g. administrative, operational and logistic), as well as location-based conditions on multimodal hubs. By applying this technique, hydrophilic types of goods (goods with waterway affinity) were identified for further achievement of high occupancy of inland waterway infrastructures.

In addition to the analysis and good identification, an assessment system with major performance criteria e.g. incoming reliability, time gains or transportation costs has been developed. It can be used to investigate both micro- and macroeconomic effects of certain optimization measurements. Based on the identified optimization strategy the ideal approach of how to integrate new processes in existing workflows on a multimodal hub can be defined.

Micro simulation of multimodal hubs

Selection of a simulation tool

The simulation tool was selected based on reviews and assessments in line with the simulation concept and it is focused on future potential requirements regarding demanded goods eligible for inland waterway transports.

Available input data

Throughout the simulation model development OptiHubs benefited from extensive amounts of terminal data, as well as other data sources (e.g. vehicle permits from the in- and out-gate of a terminal, work schedules of a terminal management system, information regarding delays of incoming/outgoing trains, container depot information).

Simulation scenarios

The tool can be used for the assessment of the following scenarios, amongst others:

- Traffic queuing caused by HV in conjunction with existing traffic signals at existing and planned in- and out-gates of multimodal hubs
- Impact of heavy load cargo handling in combination with parallel running “normal” processes
- Effects of different train track lengths on cargo handling and key performance indicators
- Future layouts and changes of incoming/outgoing cargo volumes
- Effects of increased cargo transport along the inland waterways and its handling in addition to current handling processes at multimodal hubs
- Effects of different in gate configurations regarding traffic flow, dwell times, processing times, traffic queuing and checking procedures
- Comparison of different cargo handling machinery usage in terms of key performance indicators
optihubs

Optimizing logistic processes at multimodal hubs for hydrophilic types of goods using the example of the Vienna port - A research project

For more information on the project, please check www.donauhanse.net or contact:

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Services for multimodal hubs

Focusing on the most important and transferable findings of optihubs, a strategy handbook, as well as a blueprint highlighting the necessary steps for analyzing processes on multimodal hubs were outlined. By using these tools, the logistic processes of various multimodal hubs can be analyzed and improved.

Stakeholders who are interested in learning more about the analyzing processes are welcome to contact the optihubs team for information on the following services:

- introduction workshop on analyzing techniques
- status quo analysis of multimodal hubs
- simulation of logistic processes and implementation measures
- recommendations for analyzing and improving logistic processes

If you are interested in the optihubs services, feel free to try the enquiry tool to learn more about the improvement potential of your multimodal hub: www.donauhanse.net/analyse-tool

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Consortium Members

[List of consortium members]

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