

Integrating layout planning and simulation for logistic nodes



In order to meet the high demands for faster handling in a shorter time window and with higher quality, it is necessary that logistical nodes in ports and the hinterland continuously review their operational and administrative processes and adapt them as necessary. This applies in particular to container terminals and intermodal terminals due to the high transshipment numbers and the increasing requirements. Therefore, when planning new and existing logistic nodes, it is important to use space and technical systems for handling, transport and storage as efficiently as possible. Simulation has become increasingly important for securing and optimizing solutions for planning processes in logistics in general and especially for container terminals. It is increasingly important to integrate the simulation in early planning phases and with little effort.

When a new logistic node (e.g. a terminal) is planned or needs to be optimized, layout planning and simulation analysis are typically two separate tasks. While layout planning is an intuitive and visual but static approach, simulation is dynamic but more complex. Integrating both approaches would be highly beneficial. The idea of the integrated tool is to create first a static layout on a touch-screen planning table.

Main challenges for a successful integration are the logistic processes and strategies on the terminal. Both are not included in the layout planning but are essential for a valid and realistic simulation model. Therefore, relevant process and strategy variations as well as typical research questions are defined. The integrated approach is an innovative solution to optimize existing terminals, as well as those being planned.

In order to realize the integration of layout planning and simulation, two existing software tools are chosen. Thereby, the planning software visTABLE® by plavis and our simulation software Enterprise Dynamics® represent the respective software. The integration can reduce the required time to plan a logistic node significantly as simulation models have to be modelled otherwise by experts in extensive work based on the designed

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The ISI-Plan project takes terminal planning to a completely new level. It will become possible to evaluate existing processes and to determine different capacity expansion. Terminals can be planned more efficiently and governmental funding is optimally supported.

SGKV

layout. Further project partners are the Fraunhofer CML, the Institute for Maritime Logistics (MLS) and the Study Association for Combined Transport e.V. (SGKV).

Therefore, this innovation directly supports an efficient and rapid planning phase of logistic nodes to provision an extension of transport infrastructure suitable to the market needs. The integration of layout

planning and simulation studies is - in a first step - developed for inland waterway container terminals and terminals for inter-modal transport.

The goal of the research project ISI-Plan is the creation of a functional prototype consisting of the innovative integration of the planning table and the logistical process simulation. Therefore, that prototype will support the rapid and efficient planning and development of logistics hubs.

This innovative software tool directly supports efficient and fast planning of logistic nodes, which are necessary for a demand-oriented expansion of the transport infra-structure. In Germany alone, there are more than 300 logistic nodes that can benefit directly from the integrated planning and simulation tool.

This work was funded by the German Federal Ministry of Education and Research (BMBF) as part of the research project "ISI-Plan - Integration von ereignis-diskreter Logistiksimulation und Layoutplanung für logistische Knoten".



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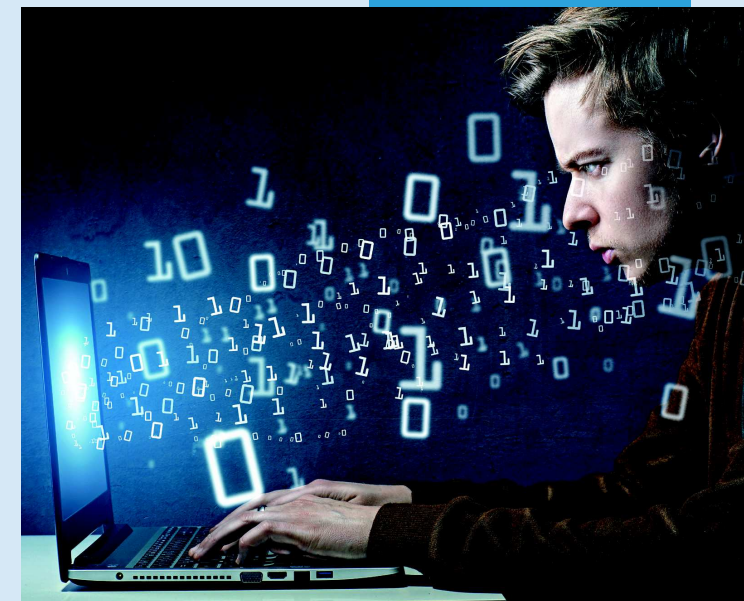
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