HPC to Implement Machine Learning Solution for Container Dwell Time Prediction

Successful collaboration between HHLA, INFORM and HPC to increase efficiency and safety of container handling operations

Hamburg, 10 July 2020 – Hamburg Port Consulting (HPC), the logistics consultant for planning, simulating and implementing a large range of transformation services for ports, marine terminals and intermodal rail, today announced to implement an innovative solution for predicted container dwell time at the HHLA's Container Terminal Burchardkai (CTB). Based on machine-learning technology, the new terminal operation systems (TOS) add-on solution assists to improve container stacking and optimize the pick-up handling.

The term "dwell time" is used to measure the period which a container remains at the terminal covering the interval from its seaside arrival up until leaving the terminal on truck, rail or vessel. So far, for so-called import containers there is no specific information available on the pick-up time by truck upon stack-in slot selection. This can lead to an inefficient container storage location in the yard. This in turn results in a high risk for additional shuffle moves requiring extra resources, maintenance, energy.

To mitigate this operational inefficiency, the joint project bringing together the terminal operator HHLA, the software specialist INFORM and logistics consultant HPC utilizes machine learning technology to predict the individual container dwell time aiming a reduction of container rehandling for import containers at terminals.

As a specialist in IT software integration and terminal operations, HPC uses the deep learning approach to identify hidden patterns from historical data of container moves at HHLA CTB over a period of two years and processed this information into high quality data sets. Assessed by the Syncrotess Machine Learning Module from INFORM and validated by the HPC simulation tool, the results show a significant reduction of shuffle moves resulting in a reduced truck turn time.

"Utilizing machine learning and artificial intelligence and integrating these technologies in existing IT infrastructure are the success factors for reaching the next level of optimizations", says Jens Hansen, as Executive Board Member responsible for IT at HHLA. "A detailed analysis, and a smooth interconnectivity between all different systems enable the value of the improved safety while reducing costs and greenhouse gas emissions."

"Data availability and data processing is an important key when it comes to utilising AI technology", says Alexis Pangalos, Head of Software Engineering at HPC. "It requires a detailed domain knowledge of terminal operations to unlock greater productivity of the terminal equipment and connected processes."

The integration into the slot allocation of the existing TOS system, Integrated Terminal Control System (ITS), ensures its user-friendly usability. The algorithm works in the background and further optimises its prediction, based on the running operational data.

"INFORM's Machine Learning Module allows CTB to leverage insights generated from algorithms that continuously learn from historical data," says Dr. Eva Savelsberg, Senior Vice President of INFORM's Logistic Division.

The TOS add-on solution Dwell Time Prediction is terminal-specific and can be adopted to other terminals as well.

For more information about HPC's IT consulting and latest updates on solutions for ports, marine terminals and intermodal rail, please visit www.hpc-hamburg.de.

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About HPC
Hamburg Port Consulting (HPC) operates as a maker-independent logistics consulting company specialised in planning, simulating, and implementing a large range transformation services for ports, marine terminals and intermodal rail. Since establishment in 1976, the Hamburg-based consulting company has delivered more than 1,600 projects in over 120 countries spanning six continents along the full port project development cycle. HPC employs about 100 domain experts with a background as terminal operators, software engineers, logistics managers and mathematicians. As a subsidiary of the Hamburg Port and Logistics Corporation (HHLA), HPC has its root in port handling of container, break bulk and multipurpose as well as hinterland operations.
www.hamburgportconsulting.com

About HHLA
Hamburger Hafen und Logistik AG (HHLA) is one of Europe's leading logistics companies. With a tight network of container terminals in Hamburg, Odessa and Tallinn, excellent hinterland connections and well-connected intermodal hubs in Central and Eastern Europe, HHLA represents a logistics and digital hub along the transport flows of the future. Its business model is based on innovative technologies and is committed to sustainability.
https://hhla.de/en/home.html

About INFORM
INFORM specializes in AI and optimization software to improve operational decision making. Based in Aachen, Germany, the company has been in the optimization business for 50 years and serves a wide span of logistics industries including ports, maritime, and intermodal terminals. With a broad range of standalone and add-on software modules, INFORM's unique blend of algorithmic-based software expertise, rich industry experience, and big world thinking delivers huge value for their customers. More Info: https://www.inform-software.de/