

Port Model

Visualization of Innovative Solutions
for Terminals

Process Improvement Through Sensors, Cameras and AI

The Fraunhofer CML's novel port model visualizes digital processes. Quay and gantry cranes demonstrate automated container handling and transport from the truck via the terminal on board the ship and vice versa. In this real-digital environment, new applications can be illustrated and discussed before they find their use in the port.

Trucks arriving uncoordinated at terminal gates, damaged or dirty containers that have to be replaced unexpectedly - in the maritime transport chain, friction losses and inefficiencies can lead to avoidable costs and reduced productivity. In many cases, a targeted analysis of available information reveals weaknesses and potential for optimization. We at the Fraunhofer CML accept this challenge and develop solutions for your practice.

Focused Data Collection and Evaluation

The quality of the results of analyses and simulations depends to a large extent on the information entered. Large amounts of data are often available from IT-systems of terminal and port operators, logistics service providers, infrastructure providers and many more, so that a targeted evaluation hardly seems possible. With the help of the port model, the decisive

data points for a task can be jointly identified. Data acquisition, cleansing and interpretation as well as their analysis and optimization are carried out in the background on our servers. Processes and results are made visible on tablets, which display options and results by means of an individual user interface.

Especially in maritime logistics, there are many areas of application for this procedure, e.g. truck pre-announcements and waiting time forecasts, automated storage and retrieval processes as well as damage detection on containers.

Optimized Truck-Dispatch

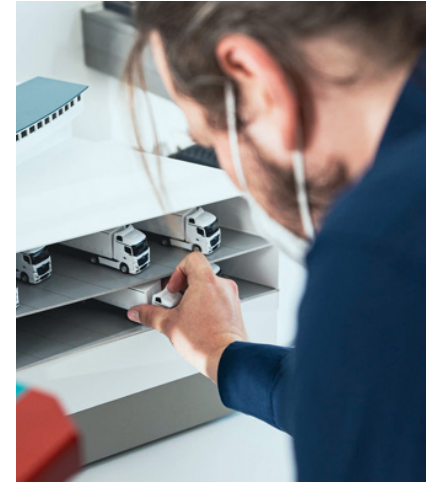
Data can be used, for example, to better forecast truck arrival times and thus improve the traffic flow in the port. For this purpose, the Fraunhofer CML developed a model that uses a digital image of the handling processes of logistical nodes such as port terminals to achieve optimized handling by predicting truck arrivals.

This procedure takes into account further influencing factors in the form of so-called forecast values and is the basis of some pro-

cesses that are visualized on the port model. With this basis, planning uncertainties can be reduced and optimal truck dispatching can be achieved for terminals, forwarders and truckers, which reduces avoidable costs.

Port Model live!

Get to know our port model and learn more about your options through our tool for visualising and optimising port processes. We look forward to meeting you!



Efficiency Jump Image Recognition

The use of AI-supported image recognition, or computer vision for short, offers great potential for maritime logistics. In addition to capturing digital images, it enables them to be processed into highly condensed numerical information that can be further evaluated by machines.

Computer vision is thus a key technology for the automated observation of conditions and the detection of changes. In the port model, visual damage detection and image-based repair prediction of empty containers is implemented through the use of cameras and other sensors. The information obtained in this way is analyzed and evaluated with AI support and output in a form that can be used by the user.

Damaged and dirty containers can thus be rescheduled at an early stage and inspection processes at the terminal gate are made more efficient.

