

FOREWORD



Dear readers,

The advancing digitalization of the maritime economy not only has great potential but also poses particular challenges for all parties within the maritime supply chain.

In this issue of the CML Newsletter, you will find out more about the MITIGATE risk management software, which will provide ports in the future with comprehensive protection against cyber-crime. In addition, we present conceptual ideas for the digital networking of international seaports, which will ensure the competitiveness of the ports in the future and improve the security and efficiency of the entire maritime supply chain.

We also introduce our simulation model for the analysis and assessment of land and sea-based logistics concepts. The detailed simulation allows process optimization in the maintenance of offshore wind power plants.

Enjoy reading

Yours, Prof. Carlos Jahn
Head Fraunhofer CML

RISK ASSESSMENT CYBER SECURITY

MITIGATE PROTECTS MARITIME SUPPLY CHAIN

In the transport and traffic sector, ports are considered critical infrastructures because they are at the interface of information flows of many users from the globalized world. Their IT infrastructures are endangered with regard to cyber-criminal attacks as they have to provide increasingly accesses and exchange possibilities for digital information due to the digitalization of business processes.

International and European institutions and government agencies, therefore, demand binding standards and guidelines to ban the new dangers and hence work intensively on their development and implementation. The CML supports this project as well:

In the EU-funded project MITIGATE, the project partners have created a protected software environment in which companies in the maritime supply chain can carry out a self-test of the hardware and software they use. This enables even small businesses to have an easy-to-use but effective risk management system that can be used to detect threats from the cyberspace in a timely manner.

In the test runs that are now underway, participants are modeling their individual as well as cross-company business processes in the MITIGATE environment. Individual processes, such as goods' entry and exit of a container terminal, are already stored on the platform, and others can be added.

The software is available as a cloud solution; however, the participants have their own protected areas available, which are not accessible to other participants. When the processes of a company including the IT infrastructure that represents them are acquired, they are checked with information from external sources about current threats and possible protective measures.

The implementation phase for external partners, which starts in the spring, allows other companies to get to know and use this software.

Interested parties can find further information on the homepage: www.mitigateproject.eu

DIGITALIZATION THE READINESS CHECK

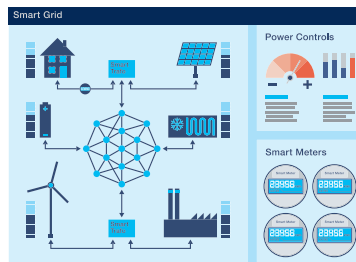
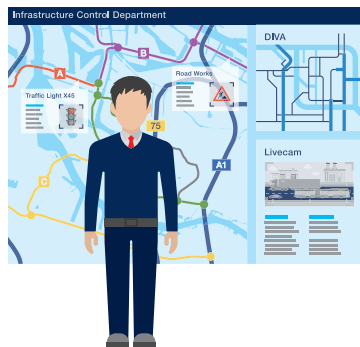
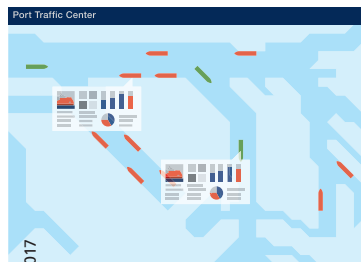
Fraunhofer CML offers companies in the maritime economy a new service: the Digitalization Readiness Check.

The keywords digitalization and Industry 4.0 are widespread, but it often remains unclear what opportunities and risks arise for transport and logistics companies as well as for other maritime service providers.

The Fraunhofer CML offers smaller companies in the industry the possibility to limit the digitalization of their business branches, to evaluate individual areas of their company, and finally to work with them to determine whether and how their company can make use of digitalization.

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The vision: seaports are networked digitally

A NEW GENERATION OF SEAPORTS PERSPECTIVES OF DIGITALIZATION

Digitalization has great potential to make maritime transport chains more efficient, more flexible and more agile. This opens up the possibility for ports to meet the challenges of globalization, demographic change and urbanization. And making use of digitalization might also reduce the risks of disruptive business models created by new market entries.

With the help of digital solutions, the efficiency of the operation of a single port and its specific transport chains can be improved, complex procedures can be simplified and energy consumption can be reduced. In the international environment of the maritime economy, the digital networking of seaports

also offers opportunities to improve efficiency and security along the entire maritime transport chain. By means of specific information and data exchange, the ports can develop and use new business models.

In order to support the digitalization process within the maritime supply chain, the Fraunhofer CML, together with the Hamburg Port Authority, elaborated conceptual ideas on future seaport requirements. Seaports should be able to meet these requirements, in order to secure their long-term competitiveness on the one hand and, on the other hand, to realize the vision of a network of seaports made possible by digitalization.

Through the presentation of different scenarios, the reader gains an insight into the possible nature of ports in the digital age, so-called Ports 4.0. These scenarios include maritime transport, transshipment and hinterland transports, the areas of infrastructure and energy as well as novel business models.

The book "Digitalization of Seaports - Visions of the Future" is published in English and can be obtained from Fraunhofer publishing house at www.verlag.fraunhofer.de.

The brochure „Digitalization of Seaports - First Ideas" can be downloaded for free at our homepage www.cml.fraunhofer.de/en.

OFFSHORE WIND POWER

COST REDUCTION THROUGH LOGISTICS SIMULATION



The maintenance of offshore wind turbines comes along with high time and financial efforts. Personnel, tools and spare parts must be transported by ship or helicopter to places of operation on the high seas, where heavy weather complicates logistical procedures. Furthermore, surveys show that experts see the highest cost savings in the operation of wind turbines in the field of logistics.

In order to support the selection and optimization of a suitable logistics concept, Fraunhofer CML scientists have developed a comprehensive simulation model that contributes to the long-term economic success of offshore wind parks. The model allows not only to investigate and evaluate a variety of different land and sea-based logistics concepts. The impact of operational incidents on the availability and operating costs of a wind park can also be presented

and analyzed in detail. The simulation model maps all the elements of the waterside environment that are necessary for the preventive and corrective maintenance of the offshore wind power plants.

In land-based logistics concepts, transfer vessels and helicopters take over the daily transfer of personnel and material to the wind turbine. If there are increased demands on the transport and lifting capacity, a self-driven lifting vessel with a large crane is used. In the case of sea-based logistics concepts, there is the choice between a mother ship and a manned platform which is supplied by means of a supply vessel.

The ease-of-use and efficient operation of the simulation model are ensured by the use of a spreadsheet application, through which all important parameters are entered.

IN BRIEF

On February 22, a workshop of the CML on the subject of 'off-shore wind energy - cost reduction through logistics simulation' took place at the Technical University of Hamburg. After introductory lectures, the numerous industrial representatives took the opportunity to exchange views on the supply concepts presented.

On April 3, the Fraunhofer CML presented its ship simulators and Shore Control Center as part of a performance show of innovative companies, which was held in connection with the 10th National Maritime Conference in Hamburg. Digitalization is one of the main topics of this year's event.

On May 18, the Logistics & Science Forum Hamburg 2017 will also focus on innovations and trends within the framework of Industry 4.0. The CML will contribute to the conference program with a lecture on 'Mathematical Optimization in Crew Management'. The aim is to create an optimal crew shift plan with regard to cost minimization, work and rest time rules and the workload distribution.

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- **Digital Ship CIO Forum 2017**
03.05.2017, Hamburg
- **transport logistic 2017**
09.-12.05.2017, Munich
- **Logistics and Science Forum 2017**, 18.05.2017, Hamburg

IMPRESSUM

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