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Systemically relevant for the economy: the German ports

## CML DETERMINES EMPLOYMENT EFFECTS OF GERMAN SEAPORTS AND INLAND PORTS

For the German port industry, many locations already have reliable data for decisions on investments in infrastructure, training and other areas of regional development policy. In particular, political and administrative decision-makers need figures on employees, turnover and value added in order to be able to plan for the future.

But what is the position of the German port industry as a whole? How large is the employment potential of all port locations in common and which turnover of the German economy is dependent

on the services at these locations?

These questions are answered by the „Study of the Economic Importance of German Sea and Inland Ports on the Basis of their Employment Effect“, which the CML developed together with the Fraunhofer IML, the Institute for Shipping Economics and Logistics ISL, Economic Trend Research ETR and Prof. Holocher and Partner for the Federal Ministry of Transport and Digital Infrastructure BMVI. The aim of the study was to develop a methodology with which relevant data can be recorded and

evaluated uniformly and repeatedly in order to track parameter developments.

The result underlines the importance of ports: over 520,000 employees in Germany are directly or indirectly linked to port services via value chains. They generate annual sales of more than € 62 billion.

The complete study with all figures, conclusions and recommendations for action can be downloaded (only in German) from our website at [www.cml.fraunhofer.de](http://www.cml.fraunhofer.de).

## INFORMATION EXCHANGE IN PORTS MISSION OFFERS PLATFORM FOR ALL STAKEHOLDERS

An important step in the digitization of ports is the networking of the players, which extends beyond company boundaries into maritime transport and the hinterland. In many cases, this networking already takes place via commercial platforms, which are often developed and operated by companies in the port industry. Its scope of services is therefore focused on business areas that are important for the actual handling, storage and transport tasks of the port. Companies outside specific port that are also involved in the logistics chain are often excluded from these solutions. The same applies to smaller companies, which cannot use these platforms due to lower fi-

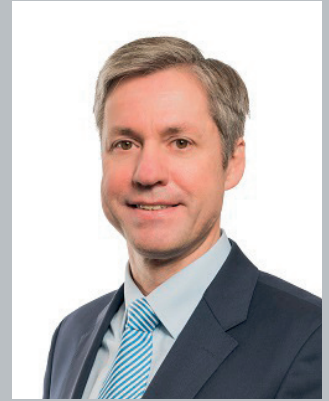
ancial or personnel resources. The project „MISSION - Manage Information Seamlessly in Ports and Hinterlands“ was initiated in order to make the advantages of the digitization of ports accessible to these companies as well. It is funded by the national IHA-TEC programme „Innovative Port Technologies“ of the German Federal Ministry of Transport and Digital Infrastructure.

Together with the Lübecker Hafen-Gesellschaft, Lufthansa Industry Solutions and the University of Lübeck, the Fraunhofer CML is developing a prototype for a non-discriminatory information network. An important design principle is the open infrastructure, in which as little data

as possible is centrally stored and data sovereignty remains with the provider.

The MISSION research project is now in the implementation phase. The first applications have already been implemented and can be used. The identification service, which provides logon information for the entire network, plays a central role. In addition to the option of single sign-on (one logon for many connected services), user administration is thus taken away from the service providers in the network and secure data exchange is made possible. In addition, modules are being developed that support the routing and tracking of trucks.

### FOREWORD



Dear Readers,

*Nothing less than surveying the German port industry was the task that we, together with four other partners, set ourselves for the Federal Ministry of Transport and Digital Infrastructure. More than half a million employees are connected to our ports throughout Germany! A dimension that once again underlines the importance of the maritime economy.*

*Furthermore, in this newsletter we report on projects in which the implementation of digitization plays an important role. The success of many projects and applications will also depend on the users and the companies involved. Without them, digitization will not be able to take place across the board. For this reason, we present the status of the development of a data exchange platform for all users as well as a qualification opportunity for future Big Data analysts in maritime logistics.*

*I hope you enjoy reading it!*

Your Prof. Carlos Jahn  
Head of Fraunhofer CML



Machine learning enables access to data treasures

## ENHANCING DIGITALIZATION THROUGH MACHINE LEARNING

Machine learning in theory and practice - what reads so excitingly and is abbreviated to MaLiTuP has great potential for harnessing data. MaLiTuP is a qualification measure developed by the Fraunhofer CML, the Institute for Maritime Logistics and the Institute for Software Systems, both at the TU Hamburg. MaLiTuP is funded by the German Federal Ministry of Education and Research and is aimed at both students and professionals. MaLiTuP aims at the use of increased data analysis in logistics.

Many companies collect and store large amounts of data, such as transport routes and

transshipment processes, but they are often only evaluated in part. MaLiTuP is intended to qualify the participants to analyse these data sets and to create and implement concepts for their evaluation. It quickly becomes clear that the same set of data can often contain many different insights. Thus, historical AIS data from ocean shipping are not only used to determine travel times from A to B under various conditions, but also ideal routes or manoeuvres during encounters or overtaking.

Three qualification levels are to be implemented by the end of the project: a basic level, which includes an introductory lecture

(incl. practical exercise), an advanced level, in which project work on practical tasks is carried out, and a professional level, in which practitioners from companies receive certified training. The first results of MaLiTuP were presented at the Hamburg International Conference of Logistics (HICL).

For further practical work, tasks from the real world are sought. A good opportunity for logistics companies to have their own data treasures evaluated individually or to develop ideas for meaningful analyses with project partners. Please do not hesitate to contact us!

## WHITE PAPER »SHIP OPERATION 4.0« DECISION SUPPORT FOR THE DIGITIZATION OF SHIP OPERATIONS

On board the latest generation of ships, a large amount of data is collected that maps different functional areas. These range from the deployment of personnel and cargo to individual technical components such as propulsion, power supply and auxiliary equipment.

As more and more information, measured values and sensor data is collected, the expectations of shipowners, ship managers and the maritime supply industry for an intelligent use of this data also rise: Processes should become leaner and more productive, ship operation more efficient, more sustainable and safer. However, it is far less clear today what the necessary prerequisites are for this, with which mechanisms the digitalisation of ship opera-

tion can create added value and which individual areas of design can evolve from this.

Over the past two years, experts from the maritime industry and the scientific community have been working in a working group of the Shipbuilding Society e.V. entitled „Ship Operation 4.0“ on the question of what value-adding use of digital data could look like in the future in order to increase the profitability of ship operation and further develop ship management functions on board and ashore.

The findings obtained are summarised in the form of solutions, fields of action and technology trends in the White Paper of the same name and can serve the maritime industry as a decision support for the data-

based increase in efficiency of ship operation. The white paper „Ship Operation 4.0“ has been published by Fraunhofer Verlag and can be obtained for a nominal fee.



The study „Ship Operation 4.0“ is now available from Fraunhofer-Verlag.

## IN BRIEF

New EU-funded project on pollutant measurement: 17 European research partners, including the CML, and the Hong Kong University of Science and Technology are investigating in the **SCIPPER: Shipping Contributions to Inland Pollution Push for the Enforcement of Regulations** project which tools can be used to measure pollutants in ship exhaust gases. In this project, the CML is developing an onboard sensor system and a monitoring center for pollutant monitoring.

Since this month, the CML has been a member of the **BSI Expert Group for More Cyber Security in Shipping** (BSI: Federal Office for Information Security). In this context, the **IT-Grundschutzkompendium for shipping companies** will be developed. The CML will contribute competences from the fields of information and software security for maritime applications as well as from organizational and technical ship operation.

## +++DATES+++

- **International Supply Chain Conference**, 23.-25. October, Berlin
- **Digital Platforms for Maritime Safety and Security Applications**, 23.-24. Oktober 2019, Bremerhaven

## IMPRINT

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