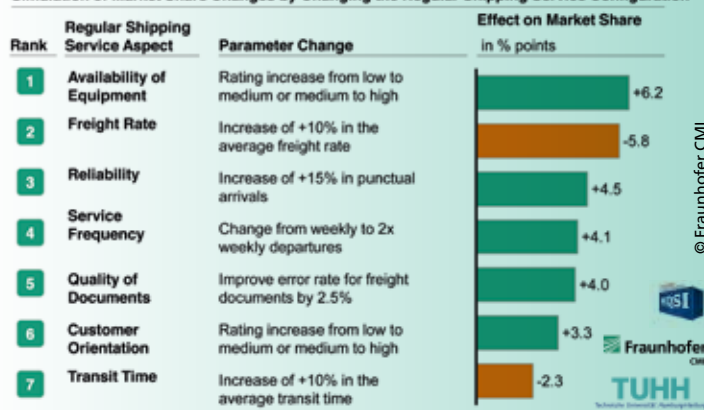


## PRICE OR QUALITY? SELECTION CRITERIA IN CONTAINER SHIPPING

Considering the highly competitive market for container transport by sea, it is generally assumed that the price, meaning the freight rate, is the main criterion when choosing a regular shipping service. Are financial aspects really the only criteria for shippers when making their booking decisions?

Fraunhofer CML, together with the Institute of Maritime Logistics at TUHH, has carried out a study on this issue. 130 container shippers in German-speaking countries were interviewed and booking decisions were simulated. The study showed that the freight rate is indeed a crucial factor when it comes to deciding in favor of a particular regular shipping service. At the same time, however, certain quality criteria such as the availability of equipment, reliability of the shipping service and service frequency were also identified. All of these are of similar impor-

Simulation of Market Share Changes by Changing the Regular Shipping Service Configuration



Many factors influence the selection of a regular shipping service.

tance when shippers and haulers are making their decision.

„Our investigation has revealed that container shippers book according to the respective market segment: For example, they rate the relevance of the regular shipping service attributes differently for contract or spot market bookings, various shipping routes and for the size and type of the

shipping company,” says Prof. Jahn from Fraunhofer CML. As a result of the study, the project team has developed a Quality of Service Index (QSI) aligned with the container shipping (a model also commonly used in the aerospace industry). This can be used to evaluate and compare regular container shipping services and simulate resulting market shares.

## FRAUNHOFER CML AND LEADING SHIP MANAGERS DEVELOP CREW PLANNING SOFTWARE

How many men does a vessel need to form a crew? Can the scheduled work and rest periods be maintained for the planned route? So far, these questions could only be answered retrospectively. Fraunhofer CML, E. R. Shipping and Bernhard Schulte Shipmanagement have developed a tool that provides helpful answers

before the trip begins: the Crew Compliance Optimizer (CCO).

The CCO consists of three main components: The office module is based on a jointly developed classification scheme of all essential tasks for running the ship, depending on the type of vessel. This module calculates the need for qualified crew depending on the route, the type of vessel and the work to be carried out. Using the on-board module, the ship's officers can respond to changes as they happen and update the work plans during the trip. The

reporting module cuts down on the administrative work that has been necessary up to now to record and document work and rest periods. “The maritime industry urgently needs an instrument that plans crew sizes and compositions exactly, taking into consideration the various relevant components,” says Ole John, Senior Research Associate at Fraunhofer CML. Crewmen, ship's officers, captains, ship managers and owners all benefit from the CCO, which the participating shipping companies are testing under real conditions this fall. Additional information is available at [www.cml.fraunhofer.de](http://www.cml.fraunhofer.de).

## FOREWORD



Dear Readers,

*Price and quality – what roles do these two aspects play in container transport by sea? Our institute's experts, together with their colleagues from the Institute of Maritime Logistics at TUHH, have investigated this question.*

*The results are displayed in this newsletter.*

*Fraunhofer CML has also contributed to an important development in container shipping: Using the Crew Compliance Optimizer, crew sizes and compositions can now be planned before and during the trip taking various conditions into consideration – a step forward that benefits all parties involved.*

*In September, Fraunhofer CML was also present at the SMM again. The start of the Vindskip™ project, which is developing a routing system for the sailing freighter, was a particular highlight.*

*Wishing you an enjoyable read,*

*Yours, Prof. Carlos Jahn,  
Head of the Fraunhofer CML*



## FRAUNHOFER CML INVESTIGATES THE EVALUATION OF TRANSPORT INFRASTRUCTURES



Example of an EU transport infrastructure project

The integration of Europe is continuing at a steady pace. Where exactly do infrastructures need to be upgraded or newly developed though? And how is investing in transport infrastructure connected to competitiveness and the economic growth of individual EU countries? The European Commission launched the I-C-EU project in

order to gain more information on this. In this project, the various project partners including Fraunhofer CML, studied and compared the methods used in different EU countries to evaluate transport infrastructure projects. One challenge was that, in the past, two evaluation models were in use; traditional economic models such

as cost-benefit analyses on the one hand and transportation models, for example on the accessibility of locations, on the other. However, up to now, there has usually been no relationship between the two models. Yet another problem complicated the work of the experts: One strand of the investigation tried use cost-benefit analyses from the past to assess the quality of forecasts made at that time. The models used, however, were poorly documented, unavailable or no longer functional. "One of the main findings of our study is that there is an urgent need for standardization in evaluation. This is the only way that we can make accurate statements in the future and thus make recommendations for policy decisions," says Ralf Fiedler from Fraunhofer CML. Additional information is available at [www.i-c-eu.eu](http://www.i-c-eu.eu).

## A REVOLUTION IN SHIPPING: SAILING FREIGHTER VINDSKIP™

A vessel which consumes up to 60 percent less fuel and discharges up to 80 percent less pollutants – these figures sound like visions of the future. Nevertheless, they could soon become reality: Fraunhofer CML presented the sailing freighter Vindskip™ at SMM 2014 together with its developer, Terje Lade from Norway. Its hull is shaped like a sail

and transforms oncoming wind into propulsion. The futuristic freighter is additionally equipped with an LNG-drive used in particular during maneuvers and low-wind passages. This environmentally friendly drive starts by bringing Vindskip™ to a cruising speed at which the wind potential can be optimally exploited and then provides a constant speed.

In order to find the best sailing route for the wind-induced drive, Fraunhofer CML is developing a customized weather routing module. Using meteorological data and navigation algorithms, this module contributes to making the best possible use of prevailing wind conditions. Additional information is available at [www.ladeas.no](http://www.ladeas.no).



Sailing freighter Vindskip™

### IN BRIEF

At the annual TOC Europe conference, decision makers, suppliers and service providers for the entire container supply chain meet to compare notes on terminal processes and to present technological innovations and operative solutions. This summer, TOC Europe was held in the European metropolis of London. More than 3,500 visitors attended the 3-day exhibition and learned about the industry's latest developments during technical presentations. At its stand, CML presented its solutions for terminal planning and improving energy efficiency in handling and transport. It also presented the new edition of its study "Terminal Operating Systems 2014".

CML exhibited innovative solutions and groundbreaking projects at the world's leading maritime trade show, the SMM in Hamburg, together with other Fraunhofer institutions. More than 50,000 visitors to the trade fair had the opportunity to learn about the compliance crew planning software and the design of the autonomous ship MUNIN. Many interested visitors took advantage of the opportunity to exchange ideas with the researchers in person at the stand.

### + + + DATES + + +

- **31. Deutscher Logistik-Kongress**  
22.–24.10.2014, Berlin
- **Hamburg Logistik Forum 2014**  
30.10.2014, Hamburg
- **Intermodal Europe 2014**  
11.–13.11.2014, Rotterdam

### IMPRESSUM

Fraunhofer Center for Maritime Logistics and Services CML

a unit of Fraunhofer IML  
Schwarzenbergstraße 95D  
21073 Hamburg, Germany  
Phone: +49 40 428 78-44 51  
Fax: +49 40 428 72-44 52  
[info@cml.fraunhofer.de](mailto:info@cml.fraunhofer.de)  
[www.cml.fraunhofer.de](http://www.cml.fraunhofer.de)

Konzeption und Gestaltung:  
RAIKESCHWERTNER GmbH  
[www.raikeschwertner.de](http://www.raikeschwertner.de)