

COOPERATION WITH DSME CML DEVELOPS NAUTICAL PROTOTYPE SYSTEM



Successful: Presentation of the Autonomous Navigation System in Korea, jointly developed by DSME and CML

Long-term records and evaluations of accidents show: In accidents at sea mostly human error is in the game. Recent developments point to ways to assist the officers in charge with technological innovations.

Since last April, CML and Daewoo Shipbuilding & Marine Engineering (DSME) cooperate on the development of two main solutions: an Autonomous Navigation System (ANS) and a Shore Operator Console (SOC).

The idea of the ANS is to combine information from various sources

into one holistic system to make autonomous navigation possible and guide a ship safely across the ocean. The ANS includes three assistance systems:

The Collision Avoidance Controller takes over action and calculates a deviation course in situation of a collision risk. The Strategic Weather Routing optimizes the given route concerning fuel consumption based on meteorological forecasts for wind and waves.

The Harsh Weather Controller continuously determines the ship stability status and takes control of it

while navigating in a storm.

The SOC is designed to monitor and to control a fleet of ships from land. In addition, it offers extensive interaction possibilities for remote ship control: voyage plans are edited, new courses are possible to command, and the ship's rudder and engine can be controlled directly.

In autumn 2015 the developed test-bed had officially been put into operation and demonstrated to DSME's management. The next co-operation meeting will take place in summer 2016 to evaluate the previous results.

DIGITAL SHIP 2016 CML PRESENTS STM VALIDATION PROJECT

The event Digital Ship took place on February 25-26, 2016 for the 7th time in Hamburg. About 25 exhibitors meet annually at the event to present latest products and developments in the field of maritime IT to more than 220 visitors. A sophisticated lecture program also provides insight into actual topics and those of the coming years.

A special focus of this year was laid

on the ship-to-shore communication. Still a permanent, uninterrupted and affordable transfer of large amounts of data on the world's oceans is not available. Thus, this is the necessary condition for a number of efficiency-enhancing, communication-oriented, but also safety-related applications.

The solution of the ship-to-shore communication is also an important prerequisite for the realization of the European Sea Traffic Management STM. The same applies to the detachment of nautical charts by

the electronic chart display and information system ECDIS. Visitors at the Fraunhofer stand were very interested in the STM Validation project and were informed in detail about the project's objectives.

The researchers from Fraunhofer CML used the occasion to gain participants for the next test runs of the simulator network. Experienced masters, nautical officers and pilots are needed to ensure the suitability, quality and use of the designed system.

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FOREWORD



Dear readers,

human error often plays a role in maritime accidents: This has been shown through long-term records and analysis of accidents. In our latest Newsletter, read about the key solutions on which the CML is working in partnership with Daewoo Shipbuilding & Marine Engineering (DSME) in order to support the responsible officers on the bridge with technological innovations.

Learn interesting background information about the C-BORD project as well: Smuggling, drug trafficking or transporting of dangerous illegal substances – international container traffic is exposed to many risks. To this end, the C-BORD project partners are developing new technologies for security and customs inspection of containers.

I hope you enjoy the read!

Sincerely,

Prof. Carlos Jahn
Head of Fraunhofer CM

FOR GREATER CONTAINER SECURITY CML PARTICIPATES IN C-BORD PROJECT



Maintaining an overview: Almost 9 million TEU were transhipped through the Port of Hamburg in 2015.

International container traffic is exposed to many risks: Freight containers can be misused for smuggling, illegal immigration, drug smuggling or to transport dangerous illegal substances, such as explosives or chemical and biological weaponry. The demand for security solutions in the supply chain has increased significantly, since a larger number of containers have to be inspected on account of EU directives. Effective and efficient non-intrusive inspection (NII) of container freight by customs is therefore of great importance to industry and trade.

The C-BORD project (effective Container inspection at BORDER control points), funded by the EU commission within the Horizon 2020 program until the end of 2018, intends to respond to these challenges: Based on state-of-the-art technology, it is developing comprehensive and cost-effective NII solutions with which better monitoring and inspection of containers at the EU ocean and land borders will be possible in future. To this end, the participating project partners prepared a methodical illustration of the developed techno-

logies for security and customs inspection of containers. Through the use of innovative detection technologies such as X-ray, passive radiation measurement or gas detectors, C-BORD significantly increases the likelihood of detecting illegal or dangerous content. Among other tasks, the CML is responsible for developing guidelines for use of the technologies by end users and for the logistics integration of the technological solutions into the existing terminal processes. Further information is available at www.cbord-h2020.eu.

IT SECURITY IN PORTS MITIGATE DEVELOPS SOFTWARE SOLUTION



The European ports are hubs for the flow of goods and information

Individual threats and individual IT infrastructure elements in the maritime supply chain were already studied in earlier research projects. The MITIGATE research project, headed by CML, is examining the security of connected IT infrastructure systems along the maritime supply chain. MITIGATE focuses on ports as hubs. The IT infrastructure of ports is particularly vulnerable, because it is located at the interface of information flows from many different users and countries, which on account of the continuously increasing digitization of businesses pro-

cesses have to offer access and exchange capabilities for digital information. In order to ensure that these processes don't allow malware to shut down operations or allow manipulation of data for illegal purposes, a solution to identify threats along the supply chain is urgently needed. The objective of MITIGATE: Develop a dynamic software solution which allows port, logistics or administration companies to check the software and hardware they use for vulnerabilities and gateways for cyber-attacks. This software is based on a thorough analy-

sis of user requirements, actual real-time threats and potential countermeasures. To date, the project partners have compiled the requirements of the future users and developed a system for entering the threats. In addition to conventional sources of information, social networks are also queried in order to analyze the threat scenarios. Cascade effects, through which risks are carried forward along the supply chain, are taken into consideration as well. Further information is available at www.mitigateproject.eu.

IN BRIEF

The first annual conference of the International Association of Maritime Economists (IAME) will take place on August 23 - 26 in Hamburg. The event is an excellent opportunity for CML scientists to exchange information with experts from all over the world.

On Supply Chain Day on April 21st, we invite you to an informative introductory presentation during which you will have the opportunity to familiarize yourself with the CML digital planning surrounding.

Hamburg is among the world's leading shipping locations and is able to hold this position. That is the result of the new study „Shipping Hub Hamburg - Strengths, Challenges and Opportunities“, which the CML presented in early March at the Behörde für Wirtschaft, Verkehr und Innovation (Department for Economics, Traffic and Innovation) together with Senator Frank Horch and the auditors from EY. The study can be downloaded at www.cml.fraunhofer.de.

On June 21- 23, Hans-Christoph Burmeister from CML will be represented at the Autonomous Ship Symposium in Amsterdam and will hold a presentation on the topic of „Autonomous navigation – results from the MUN-IN unmanned vessel testbed“.

+++ DATES +++

- **Supply Chain Day**
21. April 2016, Fraunhofer CML
- **European Maritime Day**
20. Mai 2016, Turku
- **Autonomous Ship Symposium**
21.-23. Juni 2016, Amsterdam

IMPRESSUM

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