



Dear readers,

At this year's leading global trade fair for the maritime industry, SMM, we are once again represented at the Fraunhofer Gesellschaft's booth, where we demonstrate innovative research live to you. Five Fraunhofer Institutes are participating this year and showcasing solutions that support shipowners, shipyards, ports, as well as logistics providers and the maritime supply industry in fulfilling their tasks. Fraunhofer research is characterized by innovations tailored to the individual needs of customers and practical benefits.

With this newsletter, we want to pique your curiosity about the exhibits that we will show onsite. Visit us at our booth to learn about them and other research projects. We look forward to personal exchanges, suggestions, and discussions.

We hope you enjoy reading, Prof. Carlos Jahn Head of Fraunhofer CML

SeaDragon - latest addition to the CML fleet

Multi-talented on two skids: the Fraunhofer CML has been researching <u>solutions</u> for the automation of maritime shipping for more than ten years.

The Maritime Technologies team is delighted to present its latest research platform to SMM visitors. The SeaDragon is characterized by a modular design that enables a wide range of applications. Measurements of ship emissions, underwater installations and ship hulls as well as support for drone operations demonstrate the diversity of developments that are implemented at the CML using the research platforms.

And as the fleet grows, the researchers have also discovered potential here: the ships are now learning to carry out a planned mission together and to dynamically distribute the necessary tasks among themselves.



The SeaDragon underway in the Harburg Lotsekanal – unmistakable due to its orange skids.



marFM[®] is developed at the Fraunhofer CML in the radio and bridge laboratory.

marFM® simplifies communication at sea

Mayday, mayday – can you hear me? We are sinking, we are sinking!

Ah, hello? This is the German coast guard. What are you thinking about?

A large language school advertised its services in 2007 in a similar way, so funny and at the same time so tragic in terms of the serious background. The school's aim was to improve foreign language skills in order to avoid misunderstandings. <u>marFM®</u>, the Fraunhofer CML's speech recognition tool, also avoids misunderstandings by using artificial intelligence to transcribe and document the content of maritime radio messages in real time. This significantly simplifies maritime radio and avoids communication problems. The specialization in the maritime domain is unique: marFM® not only understands maritime terminology, but also ship and geographical names. Unlike conventional speech recognition software, which is geared towards everyday speech, marFM® can process even difficult-to-understand radio messages precisely. Language is no obstacle: marFM® already understands English and Finnish as well as German. Discover at our stand how marFM® is revolutionizing maritime communication.

Curbing the flood of data on the ship's bridge – Solution for task-oriented ship management

Developing new approaches to make navigation systems ergonomic is the aim of the <u>BEYOND</u> project. At the trade fair, we will be using the mobile ship simulator to show how it works.

Two questions for Robert Grundmann, Team Leader Nautical Solutions at Fraunhofer CML and former chief mate:

Robert, what exactly does "ergonomic design" mean in the context of navigation devices?

There are more and more digital systems on board ships that transmit information on ship operation, navigation, communication and safety. This means a growing flood of information for the crew, which has a negative impact on situational awareness. With BEYOND, we simulate and investigate various situations and the relevance of data, especially in an emergency.



Scientists are using the ship handling simulator to research how the flood of information on ship bridges can be reduced.

To what extent does this improve situational awareness?

By analyzing truly relevant data in different situations during a sea voyage, the design and layout of user interfaces can be adapted to the benefit of the crew.

Nautical maneuvers of the future – Possibilities through augmented and virtual reality

Technological progress, the development of network coverage and the coronavirus pandemic - these topics have "boosted" the spectrum for AR/VR applications.

At the Fraunhofer CML, research focuses on the development of digital solutions for <u>training</u> in nautical maneuvers, <u>remote control</u> of harbor tugs, simplification of complex mooring and casting off maneuvers and ship control on board and from shore.

On the one hand, the solutions make it possible to decouple the workplace from the actual area of activity and, on the other, to provide selected information for current situational awareness, resulting in efficiency gains and increased safety.

At SMM, visitors can enter the virtual world for themselves and experience new views of the ship's bridge and steering.



AR/VR applications support and simplify maritime processes.

ENC customized: Nautical charts - made for your company

"Something with animals" - until now, this wish at the Fraunhofer CML has been limited to the investigation of biomimetic properties, the robot dog Spot or our SeaDragon research platform.

The Octopus now stands for a new type of nautical chart server that provides companies with electronic nautical charts (ENC) at different locations and on different end devices.

Why is this important? Up to now, electronic nautical charts have primarily been provided in navigation systems on board, and their use in shore-based applications has only been possible to a limited extent due to their complex integration. As a result, the level of information on board can differ from that on land and represent an obstacle to the implementation of innovative applications.

The Octopus ENC Server developed at the CML, on the other hand, can be seamlessly integrated into existing maritime processes. It is an adaptable application that provides access to the same chart views and information, real-time chart display, geometry extraction and feature reporting tools via different interfaces. Don't miss the live demonstration at our stand!

Optimize maritime personnel planning at the touch of a button

Maritime HR management is extensive and demanding. It encompasses topics such as recruitment and retention, shipboard deployment, multinationality, crew composition, safety and health management, digitalization and much more. Managing these tasks at different levels is highly complex and requires an enormous amount of planning and communication.

The Fraunhofer CML has therefore developed a range of software solutions: <u>SCEDAS®</u> supports ship managers in making decisions with the aim of optimizing personnel planning. Automated suggestions speed up planning and help to comply with the multitude of regulations.

The SCEDAS[®] product family includes various tools, from time and task recording to contract planning, which can be used individually as required.

The result is solutions that meet customer requirements and support existing planning processes. At SMM, we will be demonstrating how it works.

Automated damage detection and versatile inspection solutions

Advances in computer vision are opening up new possibilities for automation in the maritime industry and revolutionizing the inspection of sea containers, for example. These are exposed to frequent stresses that can lead to various types of damage. The manual inspection of these containers requires a high level of human resources and is time-consuming. For this task, the Fraunhofer CML has developed an innovative solution that uses cameras and advanced image processing methods to check containers for damage in real time. Damaged containers can thus be sorted out and forwarded for repair. However, this technology is not limited to sea containers – it can be transferred to many other fields of application, from quality control in production to the monitoring of infrastructure projects.

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Experience how computer vision is changing maritime inspection and discover the potential of this technology live at our booth!

The model in the "Port Logistics Systems" laboratory is used to simulate the digitalization of handling processes.

Dates (selection)

Tuesday, 3.9.2024, 10:20 a.m.

Hall 6, Digital & Security Stage: "Steering Futurethe future of autonomous navigation in Germany"Panel discussion with Manfred Constapel, Fraunhofer CML

Thursday, 5.9.2024, 1:50 pm

During his tour of the trade fair, Dieter Janecek, Maritime Coordinator of the Federal Government, visits the Fraunhofer stand.

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