The Future of Maritime Transportation: The CML at the ITS World Congress
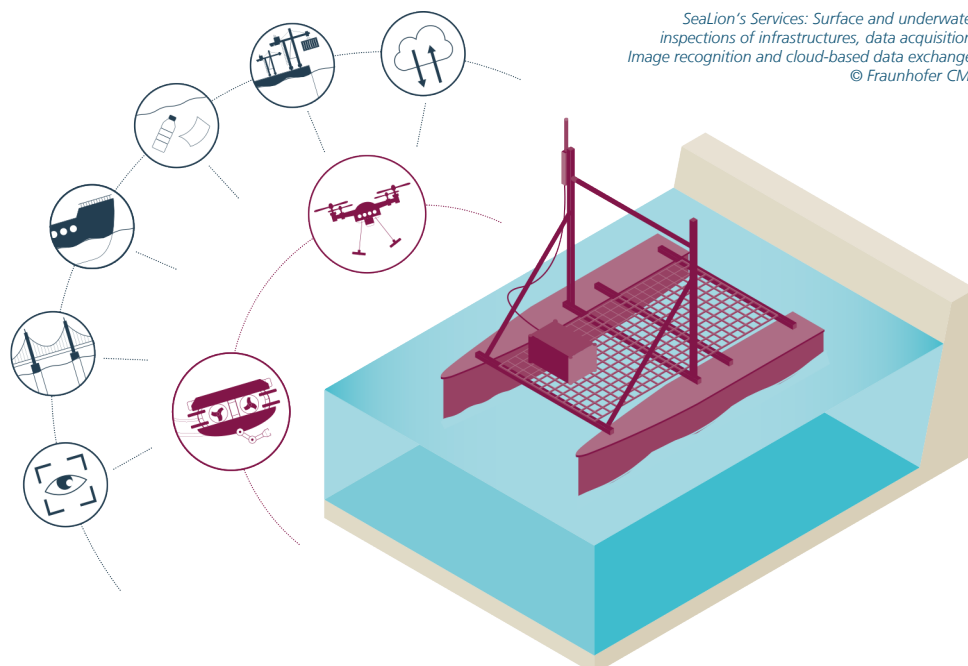
From October 11 to 15, 2021, the global transportation and mobility community will be in Hamburg for this year's ITS World Congress. Around 15,000 trade visitors are expected to attend the event. We will be there and present numerous of our projects and newly developed, innovative technologies of Fraunhofer CML.

Innovative products in exhibition halls and in the port

On the exhibition grounds, we are present at the booth of the Fraunhofer Gesellschaft (Hall B7, Booth 330). We are also represented at the joint booth of the scientific institutions of the Hamburg Ministry of Science, Research, Equality and Districts (Hall B4, Booth 310). In addition, we will show some of our new developments in the maritime sector at homePORT opposite Landungsbrücken, the HPA's real laboratory and innovation port in the Port of Hamburg.

Insights into the underwater world

The exploration and development of services above, on and below the water surface will be the focus at ITS. The CML has developed a modular test platform - the autonomous research vessel SeaLion. As a carrier system for underwater robots and drones, it is equipped with modern sensor technology such as echosounder and LIDAR. In combination with a diving robot investigations of riverbeds, ship hulls or quay walls can be performed. Five state-of-the-art services of the RoboVaaS project (Robotic Vessels as a Service) will be presented at ITS. A demonstrator of the autonomous research platform SeaLion will be presented **at the Fraunhofer booth** on the exhibition grounds. And live demonstrations will be available for you.

In the homePort, the entire service pipeline will be presented live on Wednesday. The SeaLion and specially developed sensor technology will be available for demonstration and reviewing. A RoboVaaS booth with detailed information as well as our experts are happy to answer your questions during at the fair.

SeaLion's Services: Surface and underwater inspections of infrastructures, data acquisition, Image recognition and cloud-based data exchange.
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Foreword

Dear Readers,

It is now over one and a half years since our last exhibition. A long time in which we sorely missed the direct exchange and discussion with you and our stand visitors. All the more reason for us now to look forward to the opportunities offered by the ITS World Congress.

In the Port of Hamburg, we will present our new research vessel SeaLion, which can be used as a mobile, autonomous research platform for a wide variety of purposes. In addition to recording underwater information, we are testing its integration into different formats of digital information exchange. In collaboration with flying drones and a crawler, further possibilities are opening up for recording data through cameras and sensors and transmitting it in a timely manner for analysis.

Enjoy reading about these and other topics in this newsletter, which is appearing for the first time in a new, modern look for its 10th anniversary.

Yours,

Prof. Carlos Jahn
Head of Fraunhofer CML

Smart Logistics and Networked Ports

Optimizing traffic flows in today's often congested ports is also a pressing issue and another focus of our researchers, also at our booth on the exhibition grounds. Visitors can get to know the Fraunhofer CML port model and simulate digital port processes with a tablet. In addition to truck pre-registrations, waiting time forecasts, automated storage and retrieval processes and many other processes are mapped.

On our planning table, we will show a simulation model for visualizing traffic in the port and at the terminals. The focus here is on the interaction between conventionally controlled and autonomously driving vehicles, both of which have their advantages. Digital and analog port worlds are thus increasingly merging.

Efficiency leap image recognition – Focus on containers

Damaged and dirty containers are an everyday occurrence at cargo handling terminals. The sooner information is available about the condition of containers in use, the faster they can be rescheduled and delays minimized.
Containers regularly need to be repaired or cleaned before their next deployment. The importance of optimizing container availability was clearly demonstrated most recently during the COVID-19 pandemic, when a shortage of empty containers had far-reaching effects on global supply chains worldwide and for many companies.

With our COOKIE project, we offer a timely solution: At the HHLA - Gateway Hamburg booth (Hall B4, Booth 230), we will present how the condition of containers is checked using cameras, scanners and AI-supported image recognition.

The software for image-based damage detection of empty containers also digitizes and optimizes tank container washing systems. The goal of the project is to significantly increase efficiency in container handling at the Port of Hamburg.

Leading trade fair for smart mobility

The ITS World Congress is regarded as the leading trade fair on the topics of smart mobility and digitization of transport. The latest developments for freight and passenger transport are equally in focus.

We look forward to a particularly lively and exciting exchange with trade visitors and other exhibitors.

Our partners at the Fraunhofer booth B7.330

Fraunhofer IML
The application-oriented research project Intelligent IoT-based Port Artefacts Communication, Administration & Maintenance (I²PANEMA) aims to digitalize workflows in inland and seaports by using new IT strategies such as IoT. Through the application of IoT-based demonstrators, the transferability of various IoT concepts can be tested.

Fraunhofer LBF
Before automated vehicles can be on the road, their safety must be ensured. This requires numerous tests in simulation, because not all situations can be tried out in real traffic.
In the SET Level project, Fraunhofer LBF is working with partners from industry and science on efficient simulation technology.

ITS Notes

• **Lectures**
11.10. „What's next – Autonomous Ships in European Waters" (Session)
12.10. „The RAPID project in the Port of Hamburg"
13.10. „Potentials for Improvement of the Port Fee Incentive Program Environmental Ship Index" and „RoboVaaS – Future Port Service by Scalable Robotic Vessels"
• **Demonstrations**
13.10. Project RoboVaaS in the homePORT
• **Hamburger Zentralbibliothek**
The CML presents the Project „RoboVaaS – Robotic Vessels as a Service" (exhibition from 30.9.-14.10)

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Pandemic Mitigation

The ITS World Congress at the Hamburg exhibition center will be held in the new 2G format. Only those vaccinated against COVID-19 and those who have recovered are admitted to the event.

We are very pleased that these general conditions allow relatively safe opportunities for contact and discussion, and that the protective measures still in place enable an intensive exchange.

Imprint