

Dear readers,

At the beginning of May, our Maritime Innovation Insights (MI) event series took place – for the first time in our new research building in Harburg’s inland harbour. The response was very pleasing and one of the highlights was the opportunity to see our laboratories on site. You can now also see our radio and bridge laboratory on our homepage – read more on page 2.

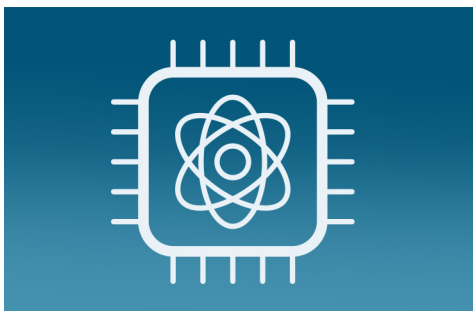
You can also find out how things are progressing in terms of quantum computing following the founding of the Fraunhofer IQHH Virtual Application Centre, what we have found out about the measurability of systems with artificial intelligence and how ports can save electricity. I wish you a stimulating read!

Best regards
Yours, **Prof. Carlos Jahn**
Head of Fraunhofer CML



“Quantum leap” for Hamburg’s economy

Many industries relevant to Germany and the EU, such as infection research, additive manufacturing, catalyst development and production, as well as maritime logistics and shipping, are confronted with complex issues on which operational business is heavily based.



The improvement of the production process through data-based predictions, the simulation of the behaviour of certain materials, the simultaneous investigation of several factors and the automated solution of routing and scheduling problems in maritime logistics are operational problems that, above a certain size, cannot be optimally solved in the foreseeable future even by the currently best and fastest computers.

Quantum systems promise considerably more computing speed and performance here. For the quantum leap, there are still several necessary technical steps on the user side, such as

formalising the problems, preparing the data, setting up different environments and, last but not least, implementing solution methods that really exploit the advantages of this new technology and make its potential measurable.

In order to jointly develop resources and capacities in the field of the new quantum technology, the Fraunhofer Institutes ITMP, IAP, IAPT and the Fraunhofer CML are working together.

For this purpose, the four partners have founded the [„Fraunhofer Industrial Application Center Quantum Computing Hamburg“ \(Fraunhofer IQHH\)](#) in the form of a virtual organisation.

This creates a unique application-oriented competence and knowledge offer for Hamburg’s economy, which encompasses the development and optimisation of products, materials and processes through quantum computing. Specifically, we offer to quantify the potential of quantum computing for the corresponding application in a well-founded manner and to provide qualified support to companies in making decisions regarding investments in the field of quantum computing.

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Seatrade Europe in Hamburg

From 6 to 8 September 2023, the CML will take part in the European congress fair for the cruise industry and present its product [SCEDAS®](#). The planning tool for optimised staff deployment was originally developed for container shipping and has now been extended for use in cruise and port operations.

Naval workshop in Dobbin-Linstow

For the 25th time, the German Society for Defence Technology (DWT) is organising its workshop. The CML will also take part with a stand from 25 to 29 September to present security-relevant technology solutions for voice recognition and localisation (marFM) and more.

VerifAI study: How systems can be tested with artificial intelligence

On board of ships, processes are increasingly being automated by using artificial intelligence (AI). Among other things, this involves recognising critical situations at an early stage and reacting accordingly.

Until now, there was no procedure for testing nautical ship equipment with AI. In a joint study that has now been published, the Federal Maritime and Hydrographic Agency (BSH) and the Fraunhofer Center for Maritime Logistics and Services (CML) have analysed systems that are already available on the market with an AI approach.

Based on this market analysis, the authors of the study “[VerifAI](#)” ([Verification of Artificial Intelligence](#)) have developed a testing and safety concept. This concept shows how the BSH can reliably test AI systems for their information and safety-related function in the future.

The key question here is whether a system works and not how it works. In addition to the testing concept, a coordinated safety concept has been drawn up for manufacturers. This allows systems to be prepared for testing in a targeted manner.



Finally, important recommendations for action are derived. These are directed in particular at the standardisation of information exchange, the formalisation of the defined application areas (application domains) and the establishment of a data processing infrastructure. This enables the comparability as well as scaling of examinations.

The study is particularly interesting for regulating as well as auditing authorities and institutions as well as specialised service providers that could be commissioned by authorities and institutions for parts of the audit processes, e.g. in the procurement of synthetic data. [Here](#) you can download the study (German).

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The seaport of Brake is already saving electricity through dashPORT

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dashPORT: Saving electricity and costs in ports through intelligent energy management

After the successful completion of the dashPORT project (short for Port Energy Management Dashboard), many ports are interested in the results and a possible transfer and use. No wonder, because dashPORT makes an important contribution to both the sustainability of ports and the reduction of energy costs – both highly topical issues.

The aim of [dashPORT](#) was to use artificial intelligence (AI) and the Internet of Things (IoT) to identify energy consumption and energy processes in the port of Brake / Lower Saxony. From this, sensible measures for saving energy could be derived and expensive load peaks avoided.

Load peaks refer to a brief sharp increase in energy consumption. They are an important component in the calculation of energy costs, because they are the basis for calculating the

grid utilisation fees of industrial consumers: Grid operators must permanently maintain production capacities for the power – even if it is only called up for a short time – in order to stabilise the grid. However, even small shifts or changes in port operations can have the effect of reducing peak loads.

Real-time data also makes it possible to detect disruptions and irregular consumption. In this way, conclusions can be drawn about the efficiency and condition of individual electricity consumers. [dashPORT](#) also makes energy forecasts and generates recommendations for action that help to actively control electricity consumption.

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MIU on the spot

Maritime Innovation Update, MIU for short, is our popular lecture series every Friday at 12 noon. Our experts present their projects for about a quarter of an hour – online, but live.

In order to also be able to present our laboratories in our new research building, we have now launched a new format with “MIU on the spot”.

Information, [registration](#) and [recordings](#) can be found on our homepage.



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