



ANNUAL REPORT 2018

Kotka Maritime Research Centre

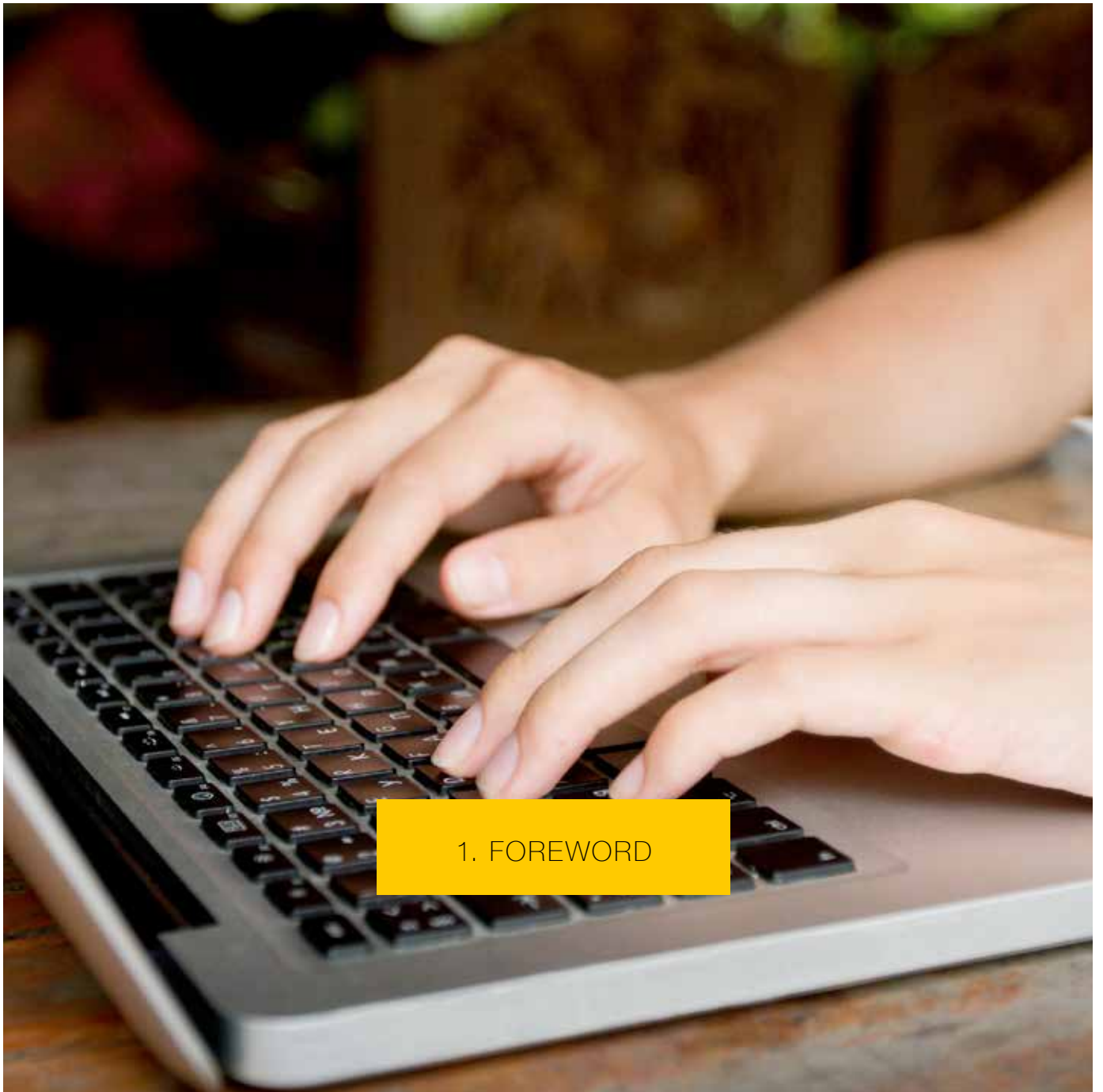






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1. FOREWORD

Research in Kotka Maritime Research Centre (Merikotka) is targeted to serve society. Research collaboration with industry and decision-makers is a key element to success. Besides this, we produce experts who have a multidisciplinary background and could be seen transversal in their competence.

Over the years, 12 doctors have graduated from Merikotka research groups. They are well positioned to different sectors of society as decision makers, industry and business experts, or in high-level academic positions. Some of them are still working in Merikotka and act as keystones of further development of research cooperation.

It is important to make note of this change in personnel. During 2018, several new doctoral students and post-docs entered in to the research groups. This change is reflected in the facts and figures of Merikotka as a slight decrease of indicator values. For us, the key question currently is to engage all these new experts to the aims and actions of Merikotka cooperation. However, we are well prepared. During the new Merikotka strategy process and annual planning all these needs were already considered.

One of the major actions was the establishment position of joint Research Director. To guarantee the best available person to coordinate the Merikotka research cooperation, an international call was organised in early summer 2018. The nomination

was done late September, and Research Director D.Sc (Tech.) Maria Hänninen started her job in early October. This brings a major change for Merikotka, new expert resources to increase engagement and a better possibility to strengthen interdisciplinary research between the research groups.

New steps towards wider international cooperation have been taken also on the project level. The ongoing project COMPLETE focuses on one of the major threats to the world's oceans and biodiversity, invasive species. COMPLETE is an EUSBSR flagship project, which aims to improve introduced species control in the Baltic Sea region.



Anna Kiiski
Executive Director

A large white and blue icebreaker ship named 'FENNICA' is shown from an aerial perspective, sailing through a field of sea ice. The ship has a prominent red crane on its deck and several white radar domes on its upper structure. The ice consists of numerous small, broken floes. The sky is a clear, pale blue.

2. KOTKA MARITIME RESEARCH CENTRE IN BRIEF

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Merikotka is an international research centre. We do multi- and interdisciplinary applied research in order to improve maritime safety, prevent accidents, and protect the marine environment.

Merikotka has an extensive global partner network. In addition to universities and research centers, we also work with other types of organisations.

Merikotka was founded in 2005 at the initiative of the City of Kotka. Because seafaring is important to the city, there was an urge to know more about the risks related to maritime transport and how to control them. For this purpose, a research centre was created to make use of the knowledge held by various universities and to produce high-quality research on maritime transportation, maritime safety, and the marine environment.

Cutting-edge research by four universities

Good societal decision making needs to be based on scientifically verified information. Merikotka's expertise is built upon research done at University of Helsinki, Aalto University, University of Turku and South-Eastern Finland University of Applied Sciences. Kotka Maritime Research Association acts as an umbrella organisation which coordinates, manages and supports the universities' joint research projects. At the moment, our multidisciplinary researcher network consists over 30 experts.

Beyond academia, the research centre works closely with a great number of experts in the related fields. Our partners are organisations such as the Finnish Environmental Institute, Natural Resources Institute, Finnish Transport Safety Agency, Finnish Transport Agency and Metsähallitus, a development company Cursor Ltd, the Etelä-Kymenlaakso Vocational College, Maritime Museum Vellamo and Kotka Maretarium.



3. RESEARCH

MULTI- AND INTERDISCIPLINARY RESEARCH FOR SUSTAINABLE MARITIME TRANSPORT

Merikotka conducts multi- and interdisciplinary research to

- 1) understand and develop the functioning and dynamics of ship operations and technology, maritime traffic, logistics, and maritime policy making;
- 2) assess environmental and safety risks related to maritime traffic, acknowledging the joint effects with other, cumulative stress factors;
- 3) estimate the positive and negative impacts of maritime traffic on regional wellbeing, safety, and environment;
- 4) develop new intelligent tools for navigation, maritime spatial planning, and management purposes; and to
- 5) produce information for education and decision making to support the sustainable development of maritime traffic.

Each Merikotka research group has their own focus area and fields of science, which are then combined in joint research activities in order to provide answers to these topics. Based on the results, Merikotka aims to support shipping companies, port organisations, maritime / regional planners and other stakeholders in developing their activities in a sustainable way, where the sustainability is reached by acknowledging the economy, safety, and the environmental aspects together.



MARITIME RISKS AND SAFETY

Aalto University

Aalto University as part of Merikotka offers a diverse research agenda which focuses on the analysis of the safety of maritime traffic, ships, and structures. Particularly, it investigates the responses and strengths of ships in complex physical environments where ice and wave-induced loads are present. The research is done by conducting extensive full-scale trials onboard ice-going ships, by utilising the Aalto ice tank, and by developing theoretical models and ultimate strength of structures.

Aalto also investigates the system level issues at the scales of shipping systems/fleets, individual ships, and ship sub-systems. The focus is on passenger and ice-going ships and, as a new opening, on autonomous ships. The core value of research is to guarantee safety, to enable sustainability by advanced solutions, and to focus on first principles of applied mechanics, statistical methods, and systems engineering. The research on safety focuses on developing concepts, methods, tests, and frameworks for creating safe technological and socio-technological systems, and for managing associated risks. These advances in risk analysis and safety science are applied to specific problems in maritime engineering. This serves society by increasing our understanding of how maritime safety is created and maintained and how safety risks can be managed effectively.

On all the previously mentioned topics, Aalto focuses on conducting high-quality research and educating the future leaders responsible for ensuring the safety of maritime traffic operations. Our projects are both nationally and internationally funded.

They are focused on ensuring the safety of maritime traffic, ships, people on board, and the entire maritime ecosystem, with analyses developed by a multidisciplinary research group and with the support of national and international maritime safety key partners.

Our research has three main spearheads:

- 1) Ship technical safety, focusing on safety in ship design.
- 2) Ship operational safety, focusing on safety in ship operations (e.g. ship safety performance).
- 3) The safety of maritime traffic, focusing on the management of safety among all the maritime safety stakeholders.

The key personnel are professors Pentti Kujala, Spyridon Cheirdaris, Post Docs Osiris Valdez Banda, Ketki Kulkarni, Miguel Angel Calle Gonzales, and doctoral students Mikko Kotilainen, Roman Repin, Lu Liangliang, Fi Lang.

MARITIME INDUSTRIES AND LOGISTICS

University of Turku

The research in the University of Turku, Centre for Maritime Studies offers diverse research agenda in the fields of maritime industries and logistics. It combines business studies and economics together with environmental and social sciences. The centre specializes in the field of traffic and ports in the Baltic Sea area, as well as logistics chains and infrastructure in marine industry sector. It coordinates the interdisciplinary environmental research supporting marine spatial planning and integrated coastal zone management.

The research has three main spearheads:

- 1) Shipping and maritime logistics, including: Maritime transport and infrastructure; Port networks and port operations; Maritime safety studies; Pilotage operations; National security of supply,
- 2) Maritime cluster, including: Development of marine industries; Cluster dynamics and economic impacts; Corporate social responsibility in shipping operations together with studies focusing on Blue Growth,
- 3) Marine environment and spatial planning, including: Efficiency and impacts of environmental regulations in shipping; Environmental status of ports; Marine spatial planning; Shipping and offshore activities in the Arctic; Performance and impact of the European ports system; Integrated knowledge base and management system for ports.

The key personnel are professor Tommi Inkinen, senior researchers Reima Helminen and Tapio Karvonen, training manager Talvikki Välimaa, and education manager Sari Nyroos.

MARINE ENVIRONMENT

University of Helsinki

The Fisheries and Environmental Management Group focuses on the interaction between ecosystems and human society.



Tommi Inkinen



Sakari Kuikka

The research interests are:

- 1) Decision and risk analysis of renewable resources and biodiversity
- 2) Identification and quantification of risks in the use of natural resources and in the various maritime activities
- 3) Integrating different sources of data and knowledge: Bayesian analysis
- 4) Cross-disciplinary modelling of exploitation processes of natural resources in the face of risks and uncertainty of the information.

All previous applications focused either on the fisheries science or on oil spill risk analysis. Smartsea and Wise projects focus on more generic risks. It is people who cause the main risks for the aquatic ecosystems. Therefore, we need human sciences to solve the problem. The group's research projects combine biology, limnology, fisheries management, geography and sociology. Mathematical science produces risk models that have foundation in these sciences.

Bayesian analysis forms the backbone of our environmental modelling approach. It provides an effective tool to learn from various information sources. These sources include data, models and their theoretical background, and expert knowledge. For example, the group has estimated the effectiveness of an oil combating fleet to collect oil from an oil spill.

In the oil spill impact analysis, it is important to develop a methodology, which allows learning from previous accidents. It is important to know that the level of uncertainties is high in impact predictions. By creating Bayesian models that can learn from previous accidents, it is possible to have less uncertainties about future accidents.

The key personnel are professor Sakari Kuikka, Post Docs Annukka Lehtikoinen and Inari Helle, and doctoral students Emilia Luoma and Tuuli Parviainen.



MARITIME LOGISTICS AND SEAFARING

South-Eastern Finland University of Applied Sciences Xamk

Xamk's applied research focuses on logistics and seafaring. In seafaring, the focus is on maritime safety and managing environmental risks related to maritime operations. The main research topics include pollution prevention and spill response management, as well as maritime emergency response and distress operations.

In logistics, the focus is on green transportation, innovative business concepts, and ways to connect hubs and clusters.

Digitalisation and environmental issues are cross-cutting themes, both in logistics and seafaring.

Research projects are need-based and carried out in close cooperation with end-users, providing practical, ready-to-use research results. Logistics and seafaring RDI activities are conducted by working closely with authorities, companies, and public sector organisations.

The key personnel are research director Ville Henttu, research manager Justina Halonen (maritime safety and oil spill response), research manager Olli-Pekka Brunila (logistics), and RDI personnel Elias Altarriba, Emmi Rantavuo, Antti Lanki, Mikko Pitkääho, Krista Surakka, Joel Kauppinen, Tommy Ulmanen, Tomi Oravasaari and Vappu Kunnaala-Hyrkki.





4. NEW POSITION – RESEARCH DIRECTOR



In 2018, Kotka Maritime Research Association took a step towards strengthening the Centre's interdisciplinary research by establishing a Research Director position. Research Director identifies research priorities based on each research groups' own focus areas as well as regular stakeholder collaboration. Using this information, Research Director then plans Centre's interdisciplinary research and produces relevant research project applications. The Research Director also actively promotes the research carried out in the Centre and writes and coordinates joint publications.

In October 2018, Maria Hänninen started in the Research Director role. Maria knows Merikotka well, as she is one of the alumni of Merikotka. Between 2007 and 2015, she was a research scientist and a doctoral candidate in Aalto's maritime safety and risks research group. During that time, she was also involved in Merikotka's multidisciplinary projects such as SAFGOF, CAFE and MIMIC. Maria was the first one of Aalto's research group to defend her doctoral thesis – her topic was probabilistic patterns in maritime safety performance. Maria has a background in automation and systems engineering, and for her master's degree she studied machine learning and data-based modeling. After her doctorate, Maria worked as a data analyst in the aviation sector, where she continued building decision supportive tools and models. She also applied them into practice and linked business aspects to the analyses.

Maria believes that a well-functioning cooperation is the key element in successful interdisciplinary research. Such collaboration, where the actors must step outside of their own expertise, as well as their discipline and its familiar ways of working, does not just happen on its own, but needs common goals, good communication, and motivation to solve the problem together. For this reason, Maria also wants to focus on the people behind the science as well as the ones using the results, and to help overcome any obstacles regarding working together.





5. TOP PROJECT: COMPLETE



COMPLETE

Completing management options in the Baltic Sea region to reduce risk of invasive species introduction by shipping

Miina Karjalainen, Kotka Maritime Research Association



Shipping is the most important vector of introduction of harmful aquatic organisms and pathogens in marine environment worldwide. Such organisms can have significant socioeconomic and ecological impacts when they spread to new sea areas, as they can affect human health and livelihoods such as aquaculture and fisheries, or alter the structure of marine food webs.

COMPLETE addresses two major sources of harmful organisms introduction by shipping: ballast water and ship hulls. The project tackles several gaps in current knowledge and management. COMPLETE works towards minimising the introduction of harmful aquatic organisms and pathogens by developing a consistent and adaptive management system for the Baltic Sea region.

Aim to minimise the introduction of harmful aquatic organisms and pathogens

The project is tackling several gaps in current knowledge and proposing both operational frameworks and user-friendly tools for the management of these two vectors. The COMPLETE project aims at developing a roadmap for a regionally harmonised biofouling management strategy by involving all relevant stakeholders in all phases of this process.

Cooperation between all Baltic Sea region countries

COMPLETE partners from Estonia, Finland, Germany, Latvia, Lithuania, Poland and Sweden are working together with 23 associated organisations from all the Baltic Sea states. These organisations include research organisations, maritime and environmental ministries, their agencies, relevant private companies (e.g. shipping companies, shipowners, port authorities), and NGOs.

Funded by the Interreg Baltic Sea Region Programme 2014–2020.

More information: www.balticcomplete.com





Empirical measurements onboard

Elias Altarriba, South-Eastern Finland University of Applied Sciences

Biofouling of immersed hull increases hydrodynamic resistance of the ship. This issue has been observed already in the ancient times and, depending on the rate of biofouling, the drag can increase from a few percent to tens of percents. Heavy biofouling is a serious problem especially in warm sea areas, but biofouling prevention paintings also need to be used in the Baltic Sea region, and often immersed surfaces are cleared periodically. The surface treatment methods can include epoxy-based hard coatings, anti-fouling or foul-release paints, or copper-based underwater paints.

Since the use of toxic paints causes contamination to water, their extensive use is to be avoided nowadays. Cleaning of immersed hulls is often done periodically and, depending of the ship, her line and operating area, the hulls are cleaned during summer time by scuba divers when the ship is in port during normal operations. Cleaning strategies vary. The entire underwater hull can be cleaned, or focus can be given to most biofouled areas. However, cleaning can also be carried out intermittently (for example once a month) or as a continuous process. The cleaning strategy selection is always case-dependent, and differences can be found when comparing issues, such as shipping companies and -lines or contamination rate of individual vessels.

In the COMPLETE project, South-Eastern Finland University of Applied Science's range of responsibilities contains implementation of empirical measurement sessions in ships under normal operation. During those sessions, consistence of

main engine exhaust gases (CO, CO₂, SO₂, O₂ and NO_x) and operating values of the ship (trim, draught, propeller rotating speeds and pitches, shaft powers, engine fuel consumption, and ship's running speed) are recorded. The first session was performed in May 2018, and the following long-term sessions on two ships were carried out from late July to early September 2018. During the data analysis, the main aim is to clarify the amount of increased resistance and its effects caused by biofouling of the ship.

In the future, the processing and analysing of big data will be an increasingly important issue in marine transportation and technology. Intelligent engine and control systems offer an increasing amount of data that can be used for analysing and optimising many maritime activities. For example, in the COMPLETE project, the focus of the data analysis is to clarify the effect of biofouling to ship's speed, emissions and fuel consumption. However, the same data sets include a lot of information about effects of weather conditions, shallow water areas, trim, DWT and other factors. By using property tools and methods, the potential to gain new information to support decision-making is high.



6. THE OTHER RESEARCH PROJECTS

CEARCTIC

The Lloyd's Register Foundation research centre of excellence for arctic shipping and operations

*Pentti Kujala, Mihkel Kõrgesaar, Mikko Suominen, Mikko Kotilainen and Roman Repin, Aalto University
Sakari Kuikka and Tuuli Parviainen, University of Helsinki*

Aalto University has been chairing the new centre to cover all the important topics crucial for the risk-based design of ships, as well as shipping and other arctic operations during the years 2013-2018. 16 doctoral students have been working on the project, and before the end of the project, 6 doctoral students will submit their thesis, similarly 9 master's theses and 9 bachelor's theses have been conducted. These will be the future experts of arctic shipping safety. 26 journal papers have been approved so far, and 22 were submitted during 2018. 40 conference papers and presentations were conducted, three of which were key notes presentations. 9 public events have been hosted with the total audience of about 500 people. CEARCTIC has enabled our research in the arctic matters, and we aim to combine our individual and future joint findings under the centre's umbrella, also for dissemination, and continue to exchange students and staff to maintain capacity building activities. Therefore, each member will promote the centre in his future applications for funding as a kind of global leveraging effect.

Funded by Lloyd's Register Foundation.

More information: www.cearctic.aalto.fi/en/

This topic will be continued on a new project funded by the LRF concerning recommended practice of scenario-based risk management for polar waters. The LRF awarded 800,000 euros in funding for the project for the term 2019–2021. This project develops guidance notes on scenario-based risk management for polar shipping. It builds on previous Foundation-funded research in arctic operations to significantly update recommended practice. It enables the IMO, government agencies, class societies and industry to establish and maintain the highest standards of excellence for shipping operations in the polar areas.

DIGIPORT

Port digitalisation and an open data model for ports

Janne Saarikoski, Kotka Maritime Research Association

The DigiPort project aims to generate new research data on port digitalisation and endow ports with an operational model based on open data. Using open data, ports can participate in the digitalisation trend in a concrete manner, without the need for massive investments. Digitalisation progresses in small steps by opening up data which, although already public, is not yet in the form of open data from a technical perspective.

Funded by European Regional Development Fund, the Port of HaminaKotka, and the Port of Turku.

More information: www.merikotka.fi/digiport

LÄHTÖAIKA

Quality and availability of departure time data

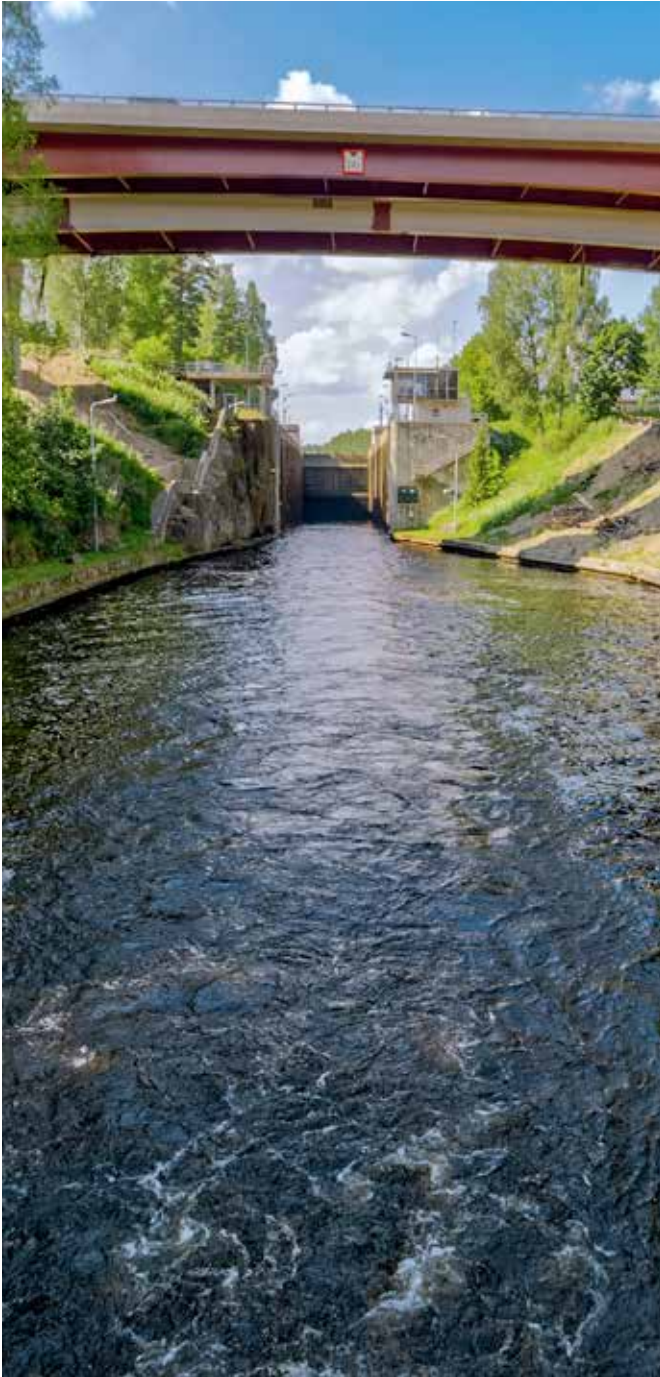
Janne Saarikoski, Kotka Maritime Research Association

Points of improvement have been identified in quality and availability of the schedule data of ships departing from ports. Problems with the up-to-dateness or transmission of data may complicate planning of towing, pilotage and icebreaking activities, thus causing disturbances and extra expenses for the entire transport chain. The impact of such consequences may reach as far as the port of destination of the ship in question.

Lähtöaika project investigates the factors behind generation and transmission of such schedule data and assesses its quality and availability from the perspective of cooperation between the various actors involved in port traffic. Data is collected from interviews with port actors and other experts. We also aim to bring different parties together to reflect on the development of data transmission in the context of new tools afforded to them by digitalization.

Funded by European Regional Development Fund and Merenkulun säätiö.

More information: www.merikotka.fi/lahtoaika



INFUTURE

Future potential of Inland Waterways

Tarja Javanainen, Kotka Maritime Research Association

Most international freight traffic happens on roads, such as the busy route between Finland and St. Petersburg. Road transport presents its own set of challenges, including pollution, accidents, and road network congestion. Inland waterway traffic, however, could constitute a cost-effective and environmentally friendly option that also attracts the interest of transport companies.

The “Future potential of Inland Waterways” (INFUTURE) project takes a wide-ranging approach to finding solutions for sustainable and cost-effective inland waterway traffic. We examine the legislation on freight traffic as well as the Finnish and Russian custom policies and identify the most efficient ways of handling cargo. In addition, we are creating an IT-system that helps customers find the most suitable service for their cargo transport needs quickly.

Funded by the South-Eastern Finland – Russia CBC 2014–2020 programme.

More information: www.merikotka.fi/infuture

BALTIMARI

Review and future of risk management in the Baltic Sea

Ketki Kulkarni, Aalto University

The BALTIMARI project sets out to review the current state of the art in risk analysis and decision support, focusing on the Baltic Sea area. We target the areas of a) Maritime transportation systems (MTS) and b) Offshore energy production systems (OEPS). In collaboration with various stakeholders we aim to identify priorities for future research in risk management.

We review several research projects in the Baltic Sea area which have developed analysis methods for decision support in accident prevention, response, and risk mitigation. The key factors that will be studied are: 1) utility: cost-effectiveness and technology readiness level; 2) quality of the underlying evidence; 3) firmness of the method’s scientific basis; 4) existing knowledge gaps, and 5) intended end users.

The assessment investigates whether the results of research are being used in practice. We aim to understand factors affecting the successful uptake of research results. We will compile a document of best practices based on interactions with relevant stakeholders. Selected projects with varying uptake and of different budgets in different organisations will be analysed through interviews. Evaluation of uptake will involve understanding the end users' thoughts on research. This will help identify pathways for improving the transfer of research to industry and policy environments.

Knowledge gaps related to risks in the MTS and OEPS, e.g. related to human behavior aspects, autonomous vessels, and environmental pollution will be identified, along with gaps in analysis and decision support tools.

Funded by BONUS, the Baltic Sea Research and Development Programme (2015–2017).

More information: www.merikotka.fi/baltimari

STORMWINDS

Strategic and operational risk management for winter-time maritime transportation systems

Floris Goerlandt, Osiris Valdez Banda, Otto Puolakka, Lu Liangliang, Pentti Kujala, Aalto University

The STORMWINDS project, which concluded in March 2018, has contributed to advancing science, while also developing practice-oriented tools for enhancing maritime safety and accident response during winter in the Northern Baltic Sea.

At first, the project's theme focused on improving winter navigation safety. A new approach was developed to identify and implement Key Performance Indicators (KPIs) in safety management systems, based on modern systems-theoretic accident theories. The approach was tested with Vessel Traffic Services Finland with promising results. A comprehensive winter navigation database was developed, integrating ship traffic data from the Automatic Identification System (AIS) with sea ice data and other datasets. Using this, an analysis of navigational accidents was performed, providing insights in the conditions under which these typically occur. The database has also enabled a technology development, matching ship operability in ice with SAR images, which can contribute to improved ice services. Finally, a novel multi-objective

routing tool for ships navigating in sea ice environments, has been developed.

Several tools have also been developed for supporting decisions related to oil spill response in ice-infested waters. SeaTrack Web, the tool for spill drift analysis supported by HELCOM, has been improved to better account for oil slick movement in ice conditions. A new online tool has been developed to assess the oil spill size and duration in tanker grounding accidents. This has been coupled to SmartResponse Web, an integrated decision support tool which links the oil spill estimation tool with SeaTrack Web, displaying map layers that provide information about ecosystem values and human uses of the marine space. Finally, a comprehensive risk model has been developed to assess the effectiveness of mechanical oil recovery in sea ice environments.

Funded by BONUS, the Baltic Sea Research and Development Programme (2015–2017).

More information: www.stormwinds.aalto.fi

BONUS GOHERR

Integrated governance of Baltic herring and salmon stocks involving stakeholders

Päivi Haapasaari, Sakari Kuikka, University of Helsinki

BONUS GOHERR was completed in June 2018. It used natural and social scientific methodologies and data as well as interdisciplinary modelling to analyse the dioxin problem of Baltic salmon and herring fisheries. High dioxin concentration in fish causes a risk for human health, but it also has socio-economic and cultural consequences to the fisheries sector and the whole fish chain up to consumers, due to the selling restrictions that aim to protect humans from the adverse effects of toxic chemicals.

The objective of BONUS GOHERR was to identify holistic management and governance approaches for the dioxin problem, to widen the scope of management beyond food safety to also involve other objectives, such as fostering livelihoods, traditions and viability of coastal communities, as well as food security. The project found a shared interest among stakeholders to increase the use of Baltic herring for food instead of industrial purposes, and identified ways to do that. The benefit-risk analysis conducted in the project showed that the benefits of Baltic herring and salmon to human

health outweigh dioxin risks in age groups over 45 years and in young males, whereas only young women at fertile age should restrict the intake of these fishes.

The project suggests governance to frame the dioxin problem not only as a natural scientific problem involving health and environmental aspects, but also as a social, cultural and economic problem. The results indicate that collaboration between the public health, environmental and fisheries sectors, and involving the stakeholders of fisheries in governing the dioxin problem would result in a wider variety of instruments or actions to manage the dioxin problem. The study highlights the importance of analysing the values that stakeholders associate with fish and fisheries and incorporating these values in governance to ensure that governing and managing fisheries is in line with stakeholders' values. This would also ensure that issues such as dioxins would be raised as a topic to discuss in fisheries governance.

Funded by BONUS, the Baltic Sea Research and Development Programme (2015–2017).

More information: <https://goherr.com/>

CoMET

Internationally competitive maritime education for modern seagoing and high-quality port services

Tomi Oravasaari, South-Eastern Finland University of Applied Sciences – Xamk

The primary aim of the project is to create a joint-simulator training framework for maritime training. The maritime simulators of various schools are technologically connected, so that students can be trained in the same simulated world. Other maritime traffic in the simulated world has previously been mostly computer generated, but now other ships are controlled by students from other schools and from different countries. When students need to navigate their way among other human-controlled ships, the simulated environment will better represent the real environment. This also enables to train human interaction in a simulated environment better than before, e.g. students learn how to communicate in a multicultural environment.

To fully benefit from the possibilities of joint-simulation, new simulator exercises are created. Two studies are conducted to

help in focusing on the training objectives and training methods. The study of labor market needs focuses on expert interviews and aims to answer the question of what skills should be trained. The study on best simulator practices aims to find out what are the best ways to conduct simulator training. Additional training on maritime safety management is also arranged for maritime teachers.

Joint-simulated exercises are especially useful for deck officer students, but the project also includes development of training for engine room and cargo handling students. For cargo handling students, new training frameworks are created to better utilise the simulator training and on-the-job learning. Similarly, new courses are also created for engineering students. Cargo handling and engine room expertise is also included to the study of labor market needs.

Funded by The Central Baltic 2014–2020 Programme.

30MILES

Development of services for lively water tourism in the Eastern Gulf of Finland

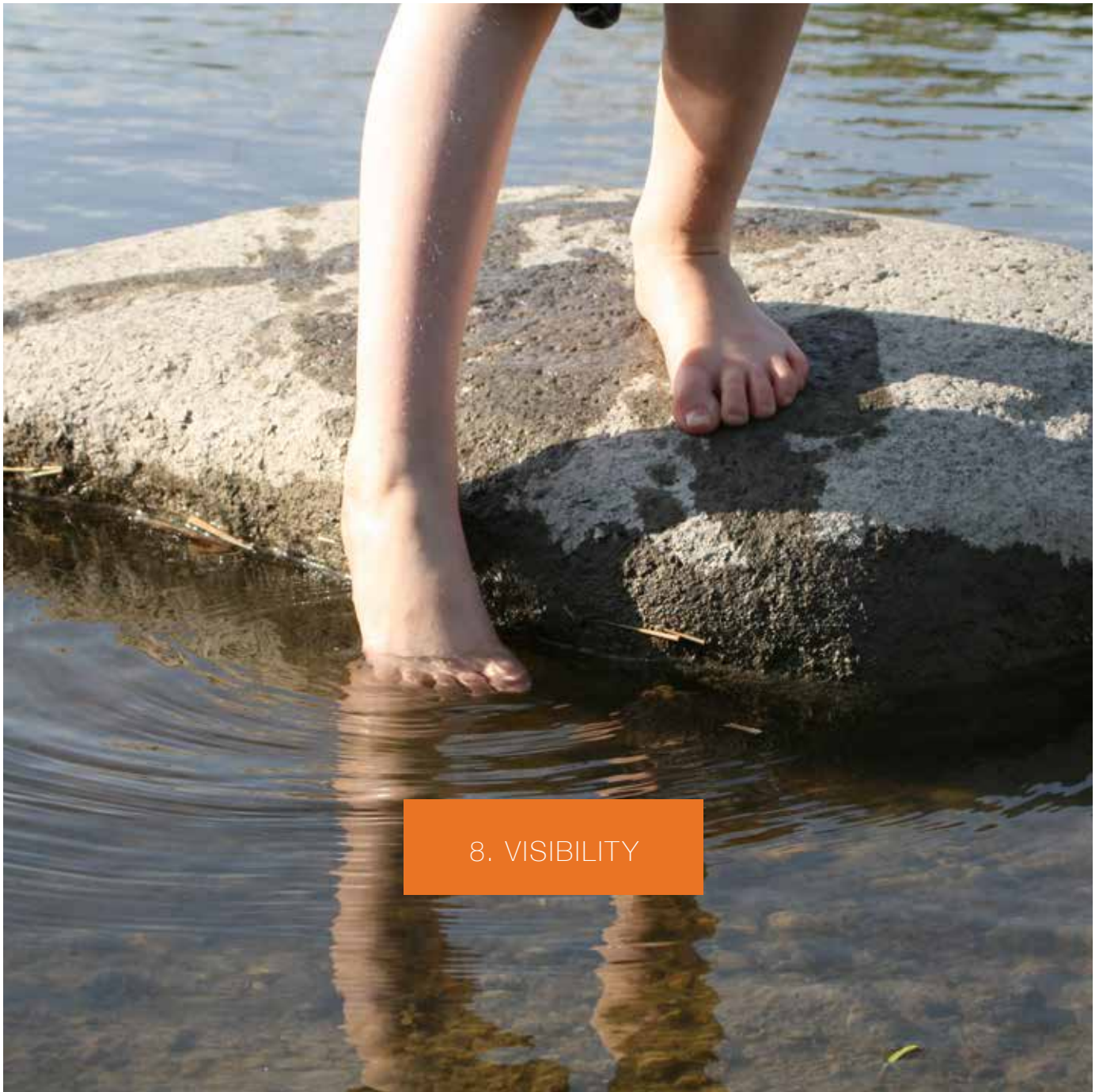
Tarja Javanainen, Kotka Maritime Research Association

The project 30MILES aims at improving the overall service level and safety in small ports and the waterfront. The Eastern Gulf of Finland has lacked a network of small ports with a good service level. As better small ports increase the attractiveness of the region, the project aims to organise small ports into a cooperating network in the distance of every 30 miles. The project establishes a ring of ports around the Eastern Gulf of Finland to focus on joint development of sustainable and safe port services and marketing activities. Joint efforts are made to improve the services offered in small ports and to help them receive better visibility from the potential visitors. Effective marketing is implemented to inform the visitors and to create sustainability for the local businesses. As a result, the service level increases in 12 small ports in the Eastern Gulf of Finland. The information about the services of the ports and accessibility is clearly presented. The improvements attract new businesses and investors, which in turn attract more visitors to the area.

Funded by Interreg Central Baltic 2014–2020 Programme.

More information: www.merikotka.fi/30MILES





8. VISIBILITY

As we produce scientific evidence to improve maritime safety and sustainable maritime transport, we are committed to advancing evidence-based decision making in private and public sectors alike. In addition to our research projects, this is done through outreach and visibility.

It is important to us that as many people as possible benefit of our work. Thus, we organised several discussion forums in the private sector. Last year, the two main themes were development of simulator trainings and the digitalisation.

Proud of its origin, Merikotka also engages regionally. We belong to local business networks, such as FinnHub and Kymenlaakso Chamber of Commerce. Also, we are acting in the Information Centre Vellamo, a research and learning centre at the Maritime Centre Vellamo.

The Baltic Sea Village is one of our main outreach events. The village provides practical advice on how to promote the wellbeing of the Baltic Sea. The family-friendly event takes place in July during the Kotka Maritime Festival. In 2018, we raised awareness of alien species and eutrophication.

FACTS AND FIGURES

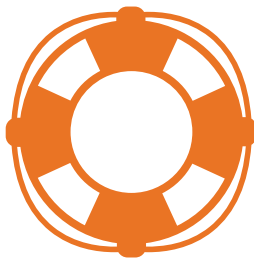
VISION



Merikotka is **a pioneer** and **a respected research centre** in the field of multidisciplinary maritime research

RESEARCH THEMES

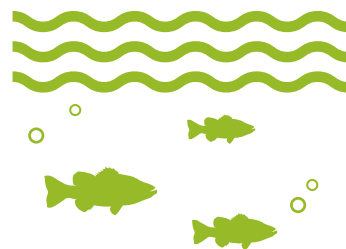
Maritime safety



Maritime industries & logistics



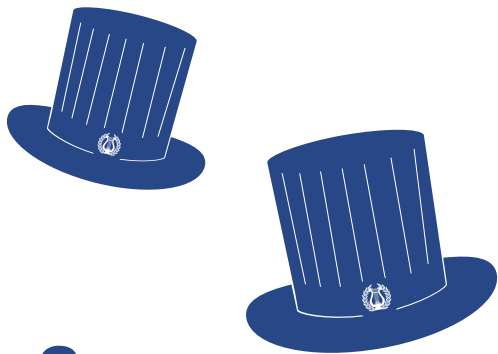
Marine environment



MISSION

Research for **sustainable maritime transport**





2
DOCTORAL
DISSERTATIONS

SCIENTIFIC ARTICLES
27



FUNDING **3,1 M€**

THE VALUES



1. WORKING TOGETHER

Learning and solving through interdisciplinary collaboration



2. INNOVATIVENESS

Creating novel and competitive solutions through excellent science



3. HONESTY

Building trust by understanding and communicating the limitations of our research

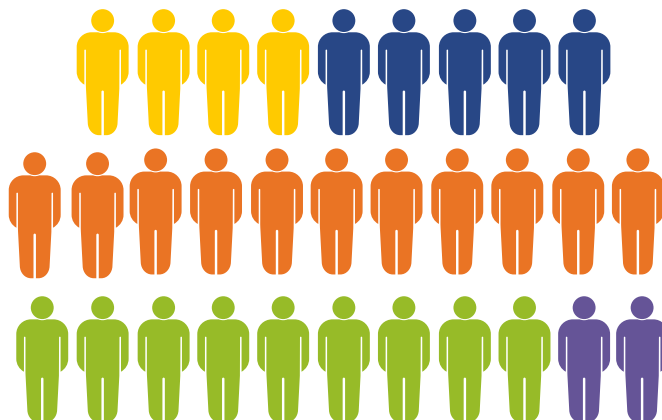


4. RESPONSIBLY SERVING SOCIETY

Supporting society by proactive value creation and preservation

EMPLOYEES

31





www.merikotka.fi