

## Project HAZARD on Seaport Safety and Security in the Baltic Sea Region 2016–2019

HAZARD was an international EU-funded project to mitigate the effects of emergencies in major seaports in the Baltic Sea Region. It brought together various safety & security authorities, logistics operators and established knowledge partners. As a result of their collaboration, better preparedness and coordination to reduce damages in emergencies and post-emergency situations were achieved in the region.

HAZARD was also an amazing 3-year journey with the most wonderful crew. The book is a tribute to the various Partners whose expertise, cooperativeness and synergy not only enabled reaching the goals but made it fun and interesting as well.

Although HAZARD is now officially over, its legacy lives on in the form of enhanced safety & security procedures, various publications, enhanced expertise, new networks, and future projects. This book will pass on the learning experiences, outcomes and memories of HAZARD to future Project Partners of port safety & security undertakings.



*A book about Project HAZARD on Seaport Safety and Security in the Baltic Sea Region 2016–2019*

# HAZARD is over!



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Project HAZARD on Seaport Safety and Security  
in the Baltic Sea Region  
2016–2019

*Edited by*

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**HAZARD Project under the ResQU2 Project Platform**



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Back cover photograph: Esko Keski-Oja





## HAZARD in a nutshell

- 3-year project (2016–2019) funded by the Interreg Baltic Sea Region Programme of the European Union
- Actual expenditure 3.9 million euros
- 14 Project Partners from six Baltic Sea Region countries (DE, EE, FI, LT, PL, SE)
- 13 Associated Organizations (EE, FI, FR, LU, PL, SE)
- 10 large-scale exercises, several smaller-scale exercises
- Over 2,000 people participated as actors or observers in the HAZARD exercises and events
- Over 30 publications

## To the Reader

Dear Partners, Friends and all those interested in seaport safety & security,

This book celebrates our unique collaboration in the seaport safety & security project HAZARD in 2016–2019. During these years, novel ideas were created, several existing challenges overcome, new partnerships formed and old ones consolidated.

As this book vividly demonstrates, we had extremely interesting and inspiring cooperation throughout the lifetime of HAZARD. This was possible thanks to the excellent synergy among our Partners, Associated Organizations, contributors and other stakeholders involved in the execution of the project and as beneficiaries of its many outcomes.

Now, HAZARD is over.

It is time to thank each and every one of you who have enabled and participated in our activities. Many of you are also introduced in the following pages. But it is clear that our gratitude reaches far beyond the coverage of this book.

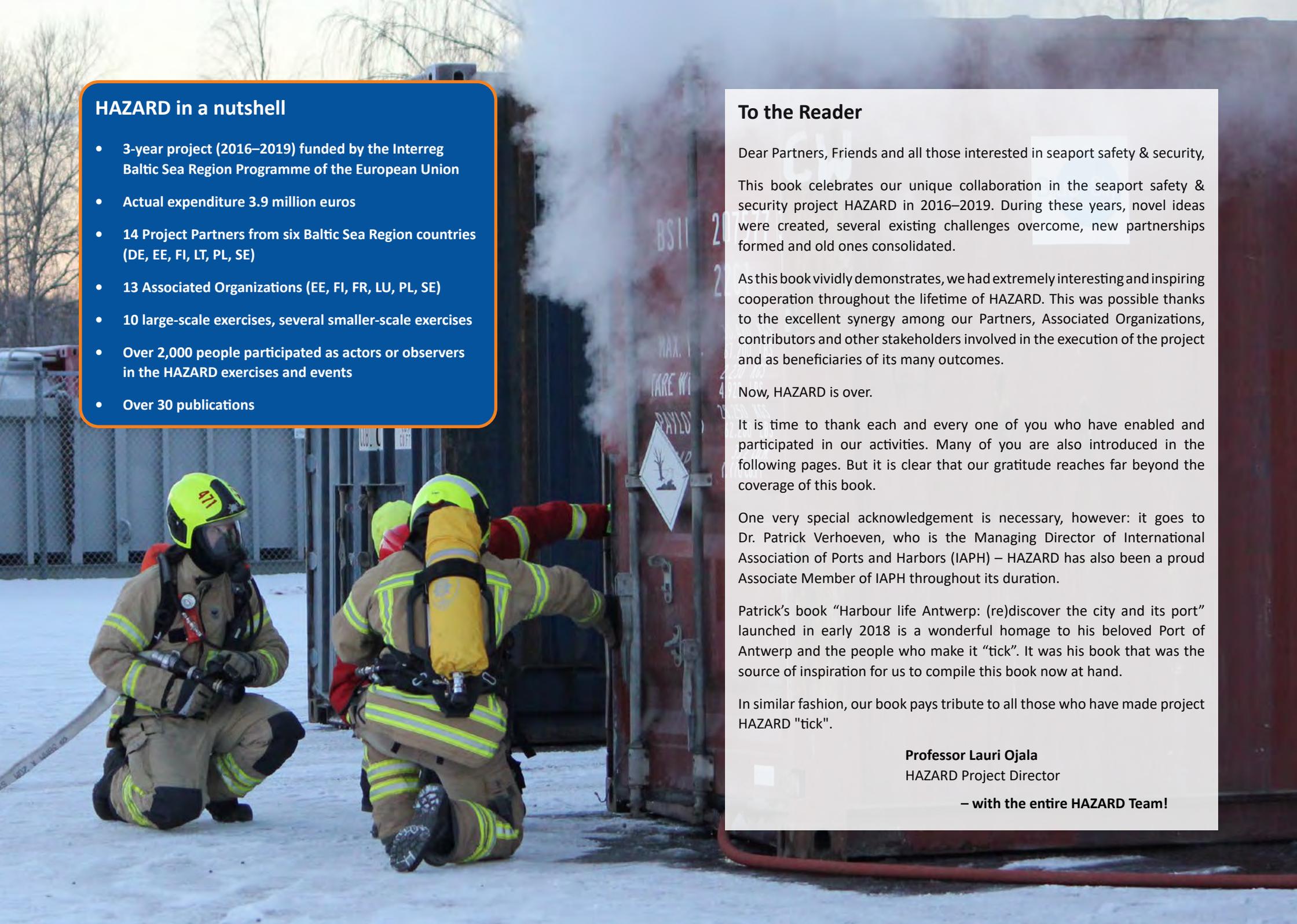
One very special acknowledgement is necessary, however: it goes to Dr. Patrick Verhoeven, who is the Managing Director of International Association of Ports and Harbors (IAPH) – HAZARD has also been a proud Associate Member of IAPH throughout its duration.

Patrick's book "Harbour life Antwerp: (re)discover the city and its port" launched in early 2018 is a wonderful homage to his beloved Port of Antwerp and the people who make it "tick". It was his book that was the source of inspiration for us to compile this book now at hand.

In similar fashion, our book pays tribute to all those who have made project HAZARD "tick".

**Professor Lauri Ojala**  
HAZARD Project Director

**– with the entire HAZARD Team!**





## Table of Contents

<b>Chapter 1: What was HAZARD?</b>	<b>8</b>
<b>Chapter 2: Exercises</b>	<b>33</b>
<b>Chapter 3: Risk management</b>	<b>160</b>
<b>Chapter 4: Publications</b>	<b>185</b>
<b>Chapter 5: The BSR now... and into the future</b>	<b>206</b>
<b><i>Photo credits</i></b>	<b>230</b>

## Project Partners

University of Turku	17
Southwest Finland Emergency Services	49
Hamburg Fire and Rescue Service	65
Fire and Rescue Service of Klaipėda County	75
Port of Naantali	89
Neste Corporation	113
Hamburger Hafen und Logistik AG	127
Klaipėda State Seaport Authority	137
Port of Turku	151
Hamburg University of Technology	163
Vilnius Gediminas Technical University	176
Viimsi Municipality	181
Polish Safety and Reliability Association	195
University of Borås	201

## Chapter 1: What was HAZARD?



Winning picture in the category "Your project in one picture" of the Interreg BSR Photo Competition. Photograph by Lauri Ojala

## Foreword

### **Bogdan Ołdakowski, Secretary General of BPO**

The mission of the Baltic Ports Organization (BPO) is to contribute to the economic, social and environmentally sustainable development of maritime transport and the port industry in the Baltic Sea Region (BSR), thereby strengthening its global competitiveness. The initial idea behind the foundation of BPO was to facilitate cooperation between the ports and improve the possibilities for shipping in the BSR.

Mr. Ołdakowski, Secretary General of BPO, comments on the project as follows: *“The HAZARD Project is a prime example of an effort to facilitate cooperation between the port authorities in the BSR, achieving several significant outcomes and providing valuable learning experiences for the 14 Project Partners and other stakeholders involved.”*

### **Markku Mylly, Executive Director of EMSA 2012–2018**

The European Maritime Safety Agency (EMSA) envisions a safe, clean and economically viable maritime sector in the European Union. The Baltic Sea can be viewed as the Union’s inland sea, and the business environment is said to dictate the business environment of the entire Union. EMSA’s mission is to *ensure a high, uniform, and effective level of maritime safety, maritime security, prevention of, and response to, pollution caused by ships as well as response to marine pollution caused by oil and gas installations.*

Mr. Mylly is one of the most knowledgeable experts on European maritime safety, and for him it has been a particular joy to participate in HAZARD events as a guest speaker and get to share his insights and take part in the discussions.

*“Due to the lack of harmonisation between the safety & security procedures among the BSR maritime actors, HAZARD was a much-needed project. The increasing cargo and passenger volumes, emergence of new risk types, and growing vessel sizes impose challenges on maritime operators in the region. The harmonisation of practices transnationally and cross-functionally for a more coherent BSR is of particular importance, as human error is still the largest maritime safety issue.”*



## Project background

**The Baltic Sea region (BSR), as an inland sea of the European Union, is of particular importance for the Union. Ensuring the security of supply of coastal Member States and the flow of traffic, in addition to utilising the highway of the sea for emission reductions, coupled with the “just-in-time” principle prevailing in the field of logistics, are all drivers keeping freight moving smoothly via the Baltic Sea. However, risk management in maritime trade has been lagging behind the surge in cargo and passenger volumes.**

The aim of HAZARD was summarised as mitigating the effects of emergencies in BSR ports. In the BSR, major ports alongside terminals and storage facilities are oftentimes located in the proximity of residential areas, thus potentially exposing a large number of people to the consequences of various accidents. Such accidents can be leakages of hazardous materials, fires on passenger ships in port, oil spills in port areas, as well as explosions of gases and chemicals.

Accidents like the Port of Tianjin explosions in 2015, which claimed almost 200 lives and injured 800, and the oil spill of MV Prestige on the Spanish coast in 2002, which released 420,000 barrels of heavy fuel oil and thus polluted thousands of kilometres of coastline, are prime examples of what safety and security neglect can lead to at its worst.

One of the objectives of the HAZARD Project was to implement more uniform safety and security standards and regulations among the BSR Member States during its lifetime in 2016–2019. What quickly became evident during the first period of HAZARD in the spring of 2016 was that, unlike in aviation, where standards and uniform practices are in place around the globe, such joint procedures were a far cry even among BSR maritime actors, not to mention globally. HAZARD introduced Partners from six countries to each other’s ways of handling safety and security concerns.

### Previous experience from EU BSR projects

The lead partner of HAZARD, the University of Turku (UTU), is no stranger to Interreg BSR projects revolving around logistics and transport in the BSR. UTU has acted as the lead partner in three projects facilitating transport in the BSR: DaGoB, which ran in 2005–2007, LogOn Baltic (2006–2007) and C.A.S.H. (2009–2012).

HAZARD can be viewed as a “sequel” to DaGoB, more than doubling the budget and extending the run time; but unlike movie sequels, HAZARD did not lower the bar regarding quality and production values. Some of the Project Partners of HAZARD, such as Hamburg University of Technology and Vilnius Gediminas Technical University in LogOn Baltic, have already been on board previous projects with UTU.



Safe and Reliable Transport Chains of Dangerous Goods in the Baltic Sea Region—DaGoB Project, 2005–2007



Developing Regions through Spatial Planning and Logistics & ICT Competence—LogOn Baltic Project, 2006–2007



Connecting Authorities for Safer Heavy Goods Traffic in the Baltic Sea Region—C.A.S.H. Project, 2009–2012



HAZARD kick-off meeting was held in Turku, Finland, in June 2016

## Interreg Baltic Sea Region Programme 2014–2020

The HAZARD Project would not have been possible without co-funding from the Interreg Baltic Sea Region (BSR) Programme 2014–2020. The aim of the programme is to support integrated territorial development and cooperation for a more innovative, accessible and sustainable BSR. Partners from countries around the Baltic Sea work together in transnational projects on common key challenges and opportunities.

### Four fields of priorities

The Interreg BSR Programme 2014–2020 comprises four fields of thematic priorities, each with their own sub-categories:

1. Capacity for innovation
2. Management of natural resources
3. Sustainable transport
4. EU Strategy support

HAZARD fell under Priority 3, Sustainable transport with a programme-specific objective stated as the “Interoperability of transport modes”: increasing the interoperability in transporting goods and persons in north-south and east-west connections based on increased capacity of transport actors.



## Interreg BSR Programme 2014–2020 in figures

### Programme fields

The total budget assigned to the programme for the purpose of coming up with solutions to common challenges was 282.4 million euros in 2014–2020. The number of cooperation projects was over 120, most of which were related to non-tech innovations, clear waters and research and innovation infrastructures. Interoperability, to which HAZARD also belongs, was the fourth most popular project field.

### Funding HAZARD

The share of Interreg BSR funding of the total HAZARD budget of 4.3 million euros was 3.4 million euros. The HAZARD Project was awarded EUSBSR Flagship status on 28 January 2015, raising it to the top echelons of the programme with the added benefit, among others, of increased exposure.

### Project partners

Over 1,500 partners from 13 countries took part in the Interreg BSR Programme 2014–2020. The most common partner types were local, regional and national authorities alongside educational and research organizations. These two categories also made up a large portion of the HAZARD Partners. Based on the country of the Partner, the most active countries in the Interreg BSR were Finland, Germany, Sweden and Poland in that order.

Interreg BSR is one of 15 transnational Interreg programmes. Partners from outside the European Union in the BSR are also welcome to join.



## University of Turku, Turku School of Economics

- The University of Turku was founded in 1920
- In 2019, the number of students totalled over 20,000 and academic staff over 3,400
- Turku School of Economics, founded in 1950, was merged into the University in 2010
- University motto: *Vapaa kansan lahja vapaalle tieteele* (From a free people to free science and learning)
- The Lead Partnership and Project Office of HAZARD was at the Turku School of Economics



Lauri Ojala



- Project Director of HAZARD
- Professor of Logistics at Turku School of Economics at the University of Turku
- Extensive experience in the field of logistics, e.g. in charge of five EU part-funded projects in the BSR, numerous lecturing duties, over 40 scientific articles, and initiator of the Logistics Performance Index, a worldwide indicator published by the World Bank since 2007

Lauri's career has spanned decades lecturing and supervising doctoral dissertations, advising international financial institutions like the World Bank, coming up with and co-creating a global index measuring the performance of logistics, and (co)authoring over 40 peer-reviewed articles, to name but a few fields he has been associated with. As Project Director Lauri has travelled extensively raising awareness of the project and spreading the HAZARD gospel.

#### **A trained eye for projects**

Since 2006, Lauri has headed five EU part-funded projects in the BSR with a total budget exceeding 16 million euros. During the course of his career he has developed a particular skill detecting and successfully delivering top-notch outcomes for partners, financiers and external stakeholders. Improving maritime and seaport safety & security is one of Lauri's main interests.

#### **Facilitating trade and transport**

One of the biggest achievements of Lauri's career has been the inception of the Logistics Performance Index (LPI), which has been adapted by the logistics community globally as a reliable, objective and efficient indicator for measuring the performance of logistics in a given country.

The logistics performance is evaluated according to six criteria: the efficiency of customs and border management clearance, the quality of trade- and transport-related infrastructure, the ease of arranging competitively priced international shipments, the competence and quality of logistics services, the ability to track and trace consignments, and the frequency with which shipments reach consignees within the scheduled or expected delivery time.

**“One of the most positive project experiences I have ever been a part of.”**

#### **Project Director's point of view**

With a 14-partner multinational ensemble, HAZARD was a highly ambitious endeavour right from the start. In the wake of HAZARD, Lauri views the project as an immense success which had concrete effects on the manner in which safety & security procedures are conducted in the port environment.

## Meet the Project Office!

The Project Office at Turku School of Economics was in charge of Work Package 1 – enabling HAZARD’s Work Packages 2–5 to function. Running daily errands, helping with Partner Reports and disseminating information were some of the tasks carried out by the Office.

### Jarmo Malmsten, Project Manager

Jarmo, Doctor of Philosophy in Geography, has been part of various projects since 2013. As Project Manager he has witnessed the phases of HAZARD from the preparation of applications to final reporting.

### Sari Tähtinen, Financial Manager

From start to finish, Sari has maintained strict control of the HAZARD budget. She has been involved in national, EU part-funded projects since 2003 and transnational EU projects since 2011.

### Mariikka Whiteman, Communications Manager (2016–2018)

Perhaps HAZARD’s most prolific photographer, Mariikka is always ready to capture the moment, whether in a fast-paced exercise or in a more sedate Partner Meeting. She has a keen wit and a way with words, as evidenced in her news articles on the HAZARD website.

### Communications Team (2019)

Mikko Harteela and Oskari Kajander took over the project’s communications strategy in January 2019. Turku School of Economics is the alma mater of both. This dynamic duo played a significant role in crafting the HAZARD book, and Minna-Liina Ojala continued their work in November 2019.



Jarmo Malmsten



Sari Tähtinen



Mariikka Whiteman



Mikko Harteela



Oskari Kajander



Minna-Liina Ojala

## European Union Strategy for the Baltic Sea Region – EUSBSR

In its early stages, the HAZARD Project received Flagship Project status from the European Union Strategy for the Baltic Sea Region, more commonly known as EUSBSR. Although Interreg BSR and EUSBSR are not part of the same entity, despite both focusing on the development of the Baltic Sea Region, HAZARD had its foot firmly in both.

### Macro-regional strategy in Europe

EUSBSR is the first of its kind as a macro-regional strategy in Europe. The strategy was approved by the European Council in 2009 following a communication from the European Commission. Its three objectives match its three key challenges: saving the sea, connecting the region and increasing prosperity.

### Function of the EUSBSR

The EUSBSR is an agreement between the Member States of the European Union and the European Commission to strengthen co-operation. The strategy was disseminated among the countries bordering the Baltic Sea in order to meet the common challenges and benefit from common opportunities facing the region. The EUSBSR is implemented in concrete joint projects and processes. Projects named Flagships of the EUSBSR demonstrate especially well the progress of the strategy.



### Tackling the key challenges in the Baltic Sea Region

To solve the three central issues laid down in the EUSBSR, it has been split into 13 Policy Areas (PA), each representing one key challenge. HAZARD was part of PA Secure, which belongs under the “Increase Prosperity” objective. PA Secure promotes a comprehensive and coherent approach to reduce trans-boundary vulnerabilities and to build common capacities for societal security in the BSR.

**“EUSBSR is based on effective and more coordinated use of existing funding sources, and the promotion of synergies and complementarities.”**





HAZARD task force posing on the EMSA premises in Lisbon, August 2017



HAZARD presented at the ITF Summit 2018 in Leipzig...



...and at the 9th Annual Forum of the EUSBSR in Tallinn, June 2018

# Project area



## Project Partners

### Analytic & Knowledge Partners

1. University of Turku, Lead Partner (FI)
2. Hamburg University of Technology (DE)
3. Vilnius Gediminas Technical University (LT)
4. University of Borås (SE)
5. Polish Safety and Reliability Association (PL)

### Rescue Services and other authorities

6. Southwest Finland Emergency Services (FI)
7. Hamburg Fire and Rescue Service (DE)
8. Fire and Rescue Service of Klaipėda County (LT)
9. Viimsi Municipality (EE)

### Seaports

10. Port of Turku (FI)
11. Klaipeda State Seaport Authority (LT)
12. Port of Naantali (FI)
13. Neste Corporation, Logistics (FI)
14. Hamburger Hafen und Logistik AG (DE)

### Associated Organizations

Swedish Civil Contingencies Agency (SE); Räddningstjänst Syd (SE); Ports of Stockholm (SE); Baltic Port Organisation (PL); Estonian Rescue Board (EE); Finnish Transport Safety Agency (FI); Finnish Port Association (FI); Regional Council of Southwest Finland (FI); Federation of the European Union Fire Officer Associations (LU); International Technical Committee for the Prevention and Extinction of Fire (FR); Alfons Håkans (FI); SeaHow by Meritaito Ltd. (FI); Euroacademy (EE)

## HAZARD Activities

The HAZARD Project consisted of five Work Packages (WP), of which four were composed of Groups of Activities (GoA). WP1 was led by the University of Turku and involved the project management and administration. WP1 was never a “true” Work Package as such, but rather a management hub for everyday project activities and communications with external stakeholders in the form of e.g. maintenance of the HAZARD website.

WP2 was titled Joint Exercises and Communication in Emergencies. Perhaps the most visible component of HAZARD, the large-scale exercises held in various Partner cities were the core of this WP. Under the guidance of Southwest Finland Emergency Services, WP2 was split into three groups of activities: Joint Exercises GoA, coordinated by Southwest Finland Emergency Services; Communication Practices in Emergencies, led by the University of Turku; and GoA 2.3 Short-term Staff Exchange, run by the Port of Turku.

The regulatory framework on safety & security was in the spotlight for a trio of universities: the University of Borås, Vilnius Gediminas Technical University, and the University of Turku were all associated with WP3. Exploring the regulation in place concerning the safety & security of seaports, identifying gaps in legislation, and assessing the compliance of HAZARD Partners with the current regulation were the key issues. Two GoAs, the Regulatory Framework on Seaport Safety & Security and Compliance with Safety & Security Regulation, were dedicated to identifying gaps in legislation and assessing the key regulative challenges.

What kinds of risks exist in a port environment? From which sources do the risks stem in such an environment? The daunting task of mapping all the possible risks was taken up by Hamburg University of Technology, Vilnius Gediminas Technical University, and the Polish Safety and Reliability Association. The participants in this WP4 had the unique opportunity to receive first-hand data from the field, which oftentimes is not self-evident in academia. The risk assessment WP4 also produced most of HAZARD’s more than 30 publications.

Alongside WP2, WP5 took a very pragmatic approach to mitigating the effects of emergencies in BSR ports. Spearheaded by Hamburger Hafen und Logistik AG (HHLA) and the Fire and Rescue Service of Klaipėda County, this WP delved into the world of rescue service equipment, seaport safety & security equipment, and IT systems. Both the testing and development of safety & security equipment for the port environment were of particular interest in this WP.

“The HAZARD Project mitigates the effects of emergencies in Baltic Sea Region ports”

### Work Package structure of the HAZARD project





The HAZARD Management Team, immortalised during the summer of 2018

## Chapter 2: Exercises

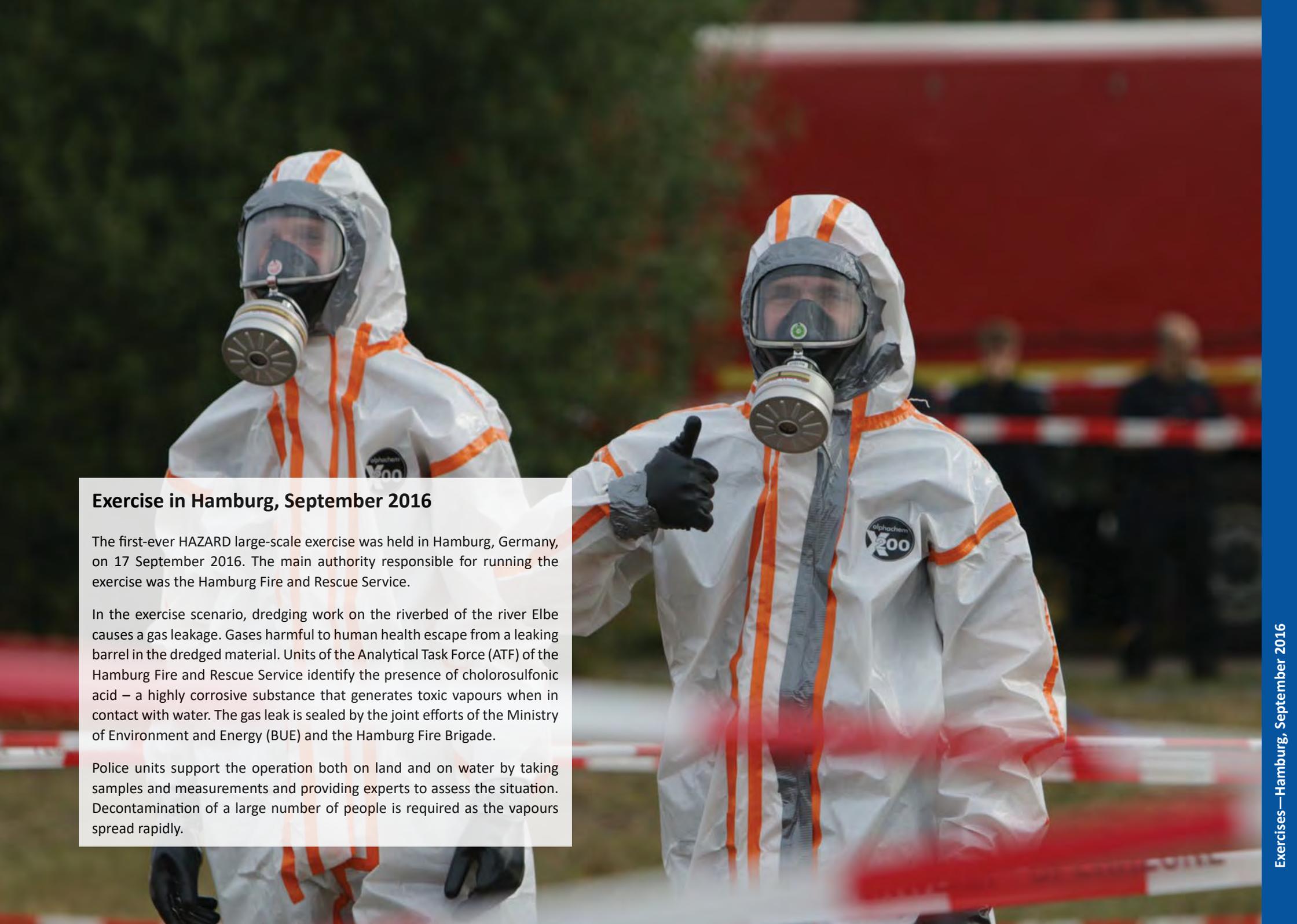


## Overview of large-scale exercises

All theory falls flat if it is not put into practice. Large-scale exercises were one of the most essential elements of the HAZARD Project. Establishing a routine for real accident situations through practising various types of scenarios or highlighting issues and gaining insights during an exercise hotwash are just two examples of the yields gained from practice. The hackneyed saying, “practice makes perfect”, still holds very true.

During HAZARD, 10 large-scale exercises were organized by Project Partners in three countries. Scenarios ranged from chemical spills and decontamination of affected people to vessel collisions. Some exercises also tested the endurance and stamina of authorities while exposed to prolonged stress. In addition to these 10 exercises, smaller, usually national-level drills were executed. The exercises yielded valuable learning experiences for both the organizing and observing Partners, for the participating authorities, and for the local community as well.





## Exercise in Hamburg, September 2016

The first-ever HAZARD large-scale exercise was held in Hamburg, Germany, on 17 September 2016. The main authority responsible for running the exercise was the Hamburg Fire and Rescue Service.

In the exercise scenario, dredging work on the riverbed of the river Elbe causes a gas leakage. Gases harmful to human health escape from a leaking barrel in the dredged material. Units of the Analytical Task Force (ATF) of the Hamburg Fire and Rescue Service identify the presence of chlorosulfonic acid – a highly corrosive substance that generates toxic vapours when in contact with water. The gas leak is sealed by the joint efforts of the Ministry of Environment and Energy (BUE) and the Hamburg Fire Brigade.

Police units support the operation both on land and on water by taking samples and measurements and providing experts to assess the situation. Decontamination of a large number of people is required as the vapours spread rapidly.





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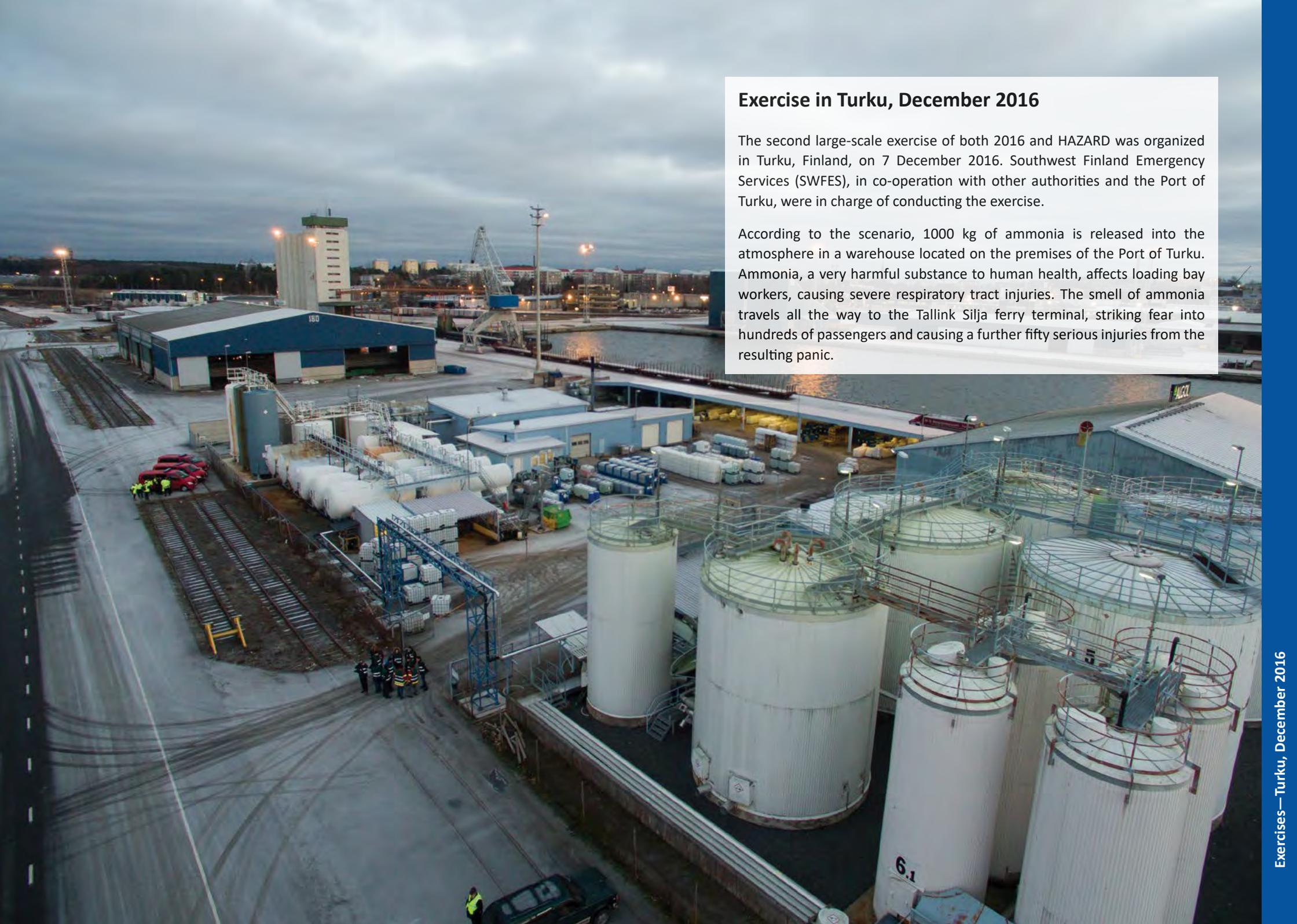
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## Exercise in Turku, December 2016

The second large-scale exercise of both 2016 and HAZARD was organized in Turku, Finland, on 7 December 2016. Southwest Finland Emergency Services (SWFES), in co-operation with other authorities and the Port of Turku, were in charge of conducting the exercise.

According to the scenario, 1000 kg of ammonia is released into the atmosphere in a warehouse located on the premises of the Port of Turku. Ammonia, a very harmful substance to human health, affects loading bay workers, causing severe respiratory tract injuries. The smell of ammonia travels all the way to the Tallink Silja ferry terminal, striking fear into hundreds of passengers and causing a further fifty serious injuries from the resulting panic.







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## Southwest Finland Emergency Services

- Founded in 1869, celebrated 150 years in 2019!
- In 2018, the staff totalled 564 employees with over 1,600 contractual firefighters
- 255 rescue vehicles (trucks, vans, boats, etc.) including one hydrocopter in 2018
- Basic tasks include rescuing and protecting people, property, animals and the environment, preventing accidents, promoting a culture of safety and providing emergency care services

### Operational area in 2018:

- 27 municipalities
- 417,000 residents spoke Finnish, 27,000 Swedish and 34,000 some other language
- Approximately 49,000 summer cottages in the area
- 22,000 islands in total, 176 islands and over 4,200 inhabitants without a road connection



“The HAZARD Project has had a positive impact on the infrastructure and safety & security of the whole Baltic Sea Region”

Torbjörn is an internationally renowned fire prevention expert representing Finland at the Federation of the European Union Fire Officer Associations (FEU). In his role as Development Manager at Southwest Finland Emergency Services, “Tobbe”, as he is known, does his best to ensure that the organization remains at the very core of European fire department co-operation.

#### **An active member of FEU**

The principal goal of FEU is to enhance fire safety and provide expertise, especially technical skills, training and fire engineering, for the development of fire brigades and fire safety in Europe. FEU has member associations in 23 EU countries and Norway.

#### **HAZARD for all**

Prior to participating in HAZARD, Torbjörn and SWFES had a keen interest in gaining better knowledge of the transnational project world and greater expertise on how to work in large-scale, multinational situations. It was stressed from the start that HAZARD would not only be a higher-echelon endeavour, but that all levels of SWFES would participate in their own way. For the firefighters this meant gaining hands-on experience of how to act in accident situations involving authorities from different countries. For the fire officers it meant becoming acquainted with different management cultures.

#### **Cross-disciplinary working group**

One of the project’s biggest sources of joy for Torbjörn, in addition to exercise planning, execution and observation, was the establishment of a risk assessment working group bringing together entirely different kinds of actors. The group was led by Hamburg University of Technology and included fire and rescue authorities alongside port authorities, logistics operators, universities, and others. This “brain trust” gathered three times, and always sparked an excellent discussion and exchange of ideas. This exchange of ideas played a central role in the inception of the HAZARD Toolbox.

**Torbjörn Lindström**

- Development Manager of the Development Unit of Southwest Finland Emergency Services
- Fire Protection Engineer by education
- Representing Finland at the Federation of the European Union Fire Officer Associations (FEU)





**Miikka Toivonen**

- Planning officer of the Development Unit at Southwest Finland Emergency Services
- Fire Protection Engineer by education
- Long history of service in the voluntary fire brigade

Miikka is an experienced firefighter with a background in voluntary and professional fire brigade operations and is currently working as an officer for the Southwest Finland Emergency Services. His primary responsibility is managing EU-funded projects.

#### **Increasingly congested Gulf of Finland**

Southwest Finland Emergency Services set off in attempt to gain new experiences and broaden their co-operation network of rescue departments in Europe. Another motivation for joining the project came up when Miikka was asked about threats to the BSR. Miikka mentions that growing traffic, especially in the Gulf of Finland, is substantially raising the risk of a disaster, which, in his opinion, is only a matter of time.

#### **Working for the WP2 leader**

As leader of WP2, SWFES were responsible for organizing large-scale HAZARD exercises and events together with the other Project Partners. This proved to be the biggest learning experience during HAZARD, which was the first EU-funded project that SWFES were involved in. The HAZARD experience provided valuable insights on how to deal with practicalities in a project of such a large scale.

**“Working in HAZARD was both interesting and fun!”**

#### **Co-operation in international projects**

Miikka praises the good co-operation which, in his opinion, generated possibly the most important output of the project – the HAZARD Toolbox. SWFES managed to network successfully with other European rescue departments, as well as with several seaport and academic Partners of the project. As a final word about HAZARD, Miikka mentions the remarkably beneficial co-operation between researchers, seaport authorities and rescue service organizations and how it enlightened the ways in which each of the actors operates.

*Participation in HAZARD provided a wealth of insight at both personal and organizational level, and the development of capabilities was palpable. The co-operation between research, port and rescue authorities broadened the horizons of all the actors and showed us how others are performing risk management in their operations. —Miikka*



## Maria Nykyri

“A smooth flow of information between seaports and rescue services is key to a safe seaport.”

HAZARD was the first EU-funded Interreg BSR project for Maria, who has good communications-related experience from diverse tasks in different organizations. She highlights the essential role of communication in mitigating the damage from real-life emergencies. This was observed both during the exercises and in the feedback following. Indeed, it is not a surprise that Maria names the internal exposure of emergency communication at Southwest Finland Emergency Services as one of the biggest accomplishments of the HAZARD Project.

### A twist of internationality

Before and during the HAZARD project, Maria used to oversee the yearly planning, implementation, monitoring and development of external communication at SWFES. On top of that her duties included communication training for personnel, dissemination of personnel and safety related communication, and both national and international development projects. HAZARD added a whole new layer of internationality to Maria’s responsibilities which led her to a new path at SWFES. Currently she works entirely with international and national projects, her duties including both communication and development

### More courage to communicate

Maria calls for uniform practices and standards of communication at Finnish fire departments – the message sent would be much stronger if it were unified. The accelerating pace of digitalization is one of the main challenges also for emergency communication. Creating both opportunities and threats, digitalization requires much higher levels of knowhow from a wider group of authorities than previously. In order to embrace new technologies and create new capabilities, fire departments and other rescue authorities should more boldly experiment with communication practices. This should be done even when a chance of failure exists, as nothing new will ensue from sticking to old formats.

*Many thanks to all the organizations involved in HAZARD. It was a pleasure meeting you, and I hope to continue our cooperation also in the future. —Maria*

- Communications Officer at Southwest Finland Emergency Services
- Bachelor’s degree in Communication Sciences
- Previously worked as an editor at local newspapers, as part of the communications team at the City of Turku, and as an English teacher abroad



## Finnish national KriSu exercises, February 2017–2018

The HAZARD Partners got the chance to witness a KriSu (Crisis and Large-Scale Emergencies Exercise) multi-authority exercise on two occasions in February 2017 and 2018. Organized by the Emergency Services College in Kuopio, with one element of the exercise taking place at the Aboa Mare Maritime Academy in Turku, this annual exercise tests the management preparedness and co-operation of authorities in a major accident or crisis situation.

One of the objectives was also to train decision-making when tired. The exercise lasted several days and provided participants with experience of working while exhausted and under stress. The participants faced multiple simultaneous accidents, including shipping and aviation accidents and hazardous material and oil spills.



## Exercise in Hamburg, May 2017

On 13 May 2017, Hamburg saw one of the largest exercises ever held on its soil. Some 550 people took part in the simulation of a collision between two vessels and simultaneous emission of a radioactive substance.

In the exercise scenario, material testing of pipelines is being conducted on shore. At the same time, an inland waterway vessel collides with a tanker. The tanker is stranded and begins to leak massive amounts of heavy fuel oil.





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## Hamburg Fire and Rescue Service

- Founded in 1872
- In 2018, the staff totalled almost 2,900 employees with over 2,600 voluntary firefighters
- Home of the Manipulator Brokk 120D bomb disposal robot along with 820 other rescue vehicles (trucks, vans, boats etc.)

### Operational area in 2018:

- Over 1.8 million residents
- 2 airports, 30 ports, 2 nuclear power plants and 59 chemical plants in the area



## Jürgen Krempin



- Head of International Co-operation at Hamburg Fire Service Academy
- University lecturer on Disaster Management at Hamburg University of Applied Sciences
- Degrees in Public Management and Training and Management

As the course director for over 40 EU Civil Protection courses, Jürgen is accustomed to the international atmosphere. By managing to combine both the academic and the pragmatic realm in his work, the HAZARD Project was a perfect fit for him.

**“A lot of administrative work has to be done before a project starts, but in the end, the results justify these efforts by far.”**

Before the project, Jürgen did not have much detailed experience facing and handling large maritime emergencies, especially in terms of risks stemming from chemical, biological, radiological, nuclear and explosive threats. Through the HAZARD project it was possible to create a diverse network of experts to consult in various fields of risk management. Some of them have become good friends.

### **Continuous improvement**

Jürgen identifies the continuous improvement in cross-border co-operation as one of the most notable yields of the project. He goes on to add that the collaboration between Seaport and Knowledge Partners has been excellent and the Partners treated each other as equals. Regarding safety & security in the BSR in the near future, Jürgen believes that the situation has changed for the better since the inception of the project as the Partners have grown to know each other and an atmosphere of trust has been established.

### **After HAZARD**

The Hamburg Fire and Rescue Service has joined two new projects, ResQU2 and CASCADE. ResQU2 disseminates the learning experiences and outcomes of HAZARD and three other projects. If these projects turn out to be as successful as HAZARD, further project activities lie on the horizon. There remains a hefty amount of work to do in deepening co-operation between various actors, but HAZARD has paved the way for other initiatives. Projects should not be the sole method of enhancing collaboration either, as a change in mindset is required.

*I would like to thank our Lead Partner for all the work they have done, and the Project Partners for their reliable teamwork. The Hamburg Fire and Rescue Service looks forward to new challenges and projects with these successful project partners. —Jürgen*

## Exercise in Klaipėda, September 2017

Large-scale HAZARD exercises landed on Lithuanian soil for the very first time in the autumn of 2017. On 28 September, over 150 people took part in the exercise, which simulated a chemical accident in a container terminal on the premises of the Port of Klaipėda.

The Fire and Rescue Service of Klaipėda County was in charge of the exercise. Other organizing parties included the Port of Klaipėda and a stevedoring company operating in the port, Klaipėdos Smelte. The exercise was a significant event in Klaipėda, receiving wide coverage by both local and national media.







## Fire and Rescue Service of Klaipėda County

- In 1807, a voluntary firefighting service was established in Klaipėda
- A professional firefighters' service was created in 1855 and the first fire station was built the same year
- In 2018, the staff totalled approximately 700 persons
- The Fire and Rescue Service of Klaipėda County is part of the Fire and Rescue Department under the Ministry of the Interior of Lithuania

### Operational area in 2018:

- Over 448,000 residents
- 13 municipalities
- The area covers one fifth of the country



“Co-operation makes us more secure,  
innovative and better prepared.”

This is how Marius, Chief of the Fire and Rescue Service of Klaipėda County since 2017, sums up his HAZARD experience. On a personal level, HAZARD enriched Marius with experience in interacting with different organizational cultures, provided leadership experience, and also a very good time in the cities of Turku and Hamburg.

#### Projects as drivers of development

Not only does the Fire and Rescue Service of Klaipėda County gain valuable new learning experiences with each project, but these experiences are also shared with stakeholders, and participation in the projects makes it possible to acquire the latest equipment to help fulfil the functions of a fire department. Marius mentions that the Fire and Rescue Service of Klaipėda County is currently on board the ResQU2, OIL SPILL, and EMERG\_TECH projects and has already submitted two further applications for future projects.

#### Straight to HAZARD

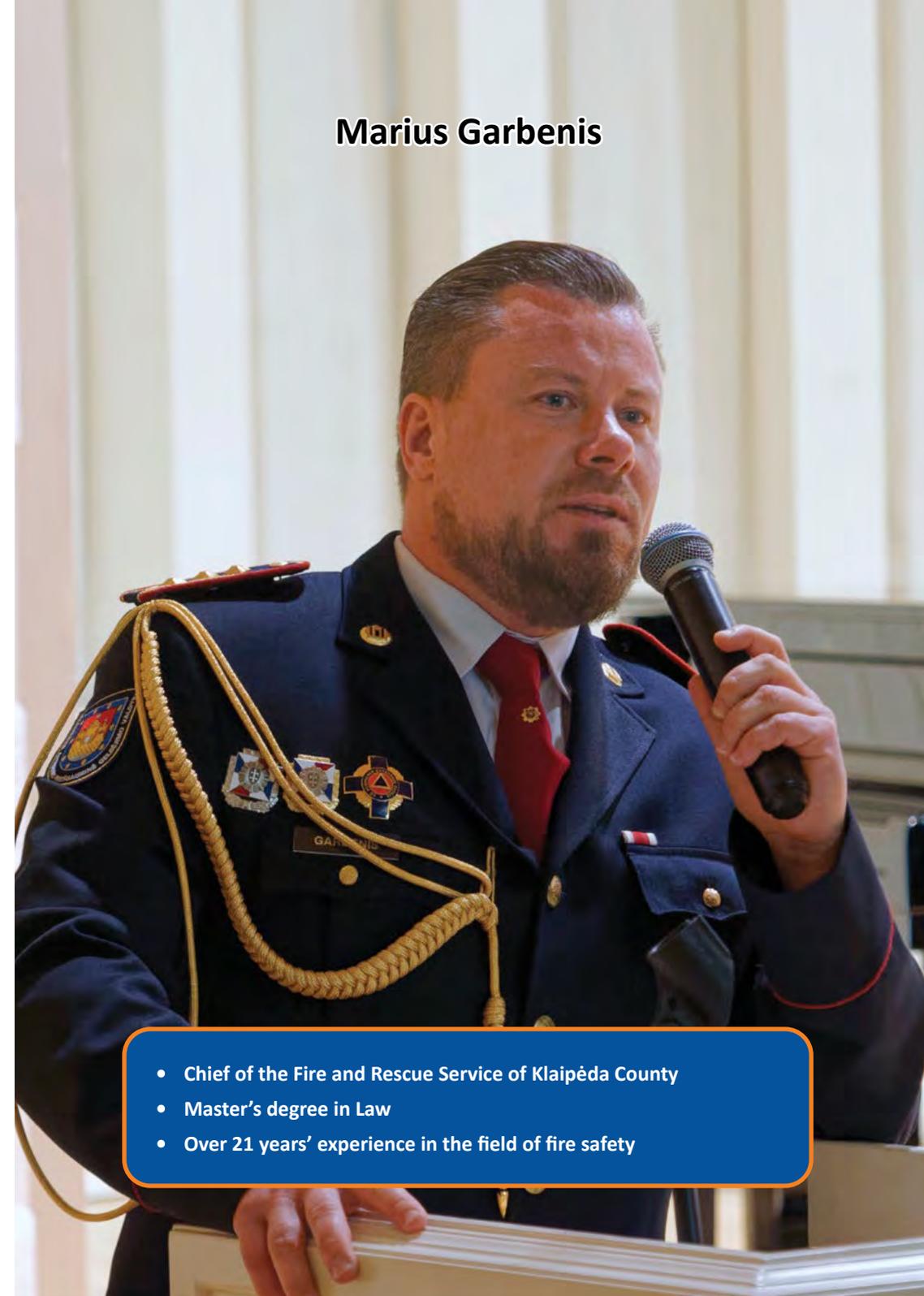
Marius jumped on the HAZARD train immediately after being appointed Chief of the Fire and Rescue Service of Klaipėda County. Part of his vision has always been to place stronger emphasis on the port security component and bring in the necessary resources. Prior to HAZARD, the modus operandi was to act locally and deal with security matters using common sense. During the project, however, the need for international aid in case of a particularly large accident became evident. The main goal of HAZARD was to enhance co-operation with foreign partners in such an incident.

*Thank you for your valuable cooperation and good time with you.  
You are wonderful and beloved friends of ours. —Marius*

#### Information technologies – enabling & exposing

From a global perspective, Marius expresses particular concern about the development of information technologies in seaports and, in particular, ensuring their security. One malicious act of remotely damaging information systems in stevedoring or other port infrastructure can have very dire consequences. Marius calls for further attention to the security of port information systems as we enter the new decade.

## Marius Garbenis



- Chief of the Fire and Rescue Service of Klaipėda County
- Master's degree in Law
- Over 21 years' experience in the field of fire safety



Vaidas Masiliauskas

- Head of the Forces Management Department, Fire and Rescue Service of Klaipėda County
- Master's degree in Chemical Engineering
- Over 23 years' experience with the fire and rescue service

“The experience gained during the HAZARD Project is invaluable – it seems like the door opened to the future.”

“My job experience includes working as a firefighter, Deputy and Chief Fire Officer, chief of a department, and chief of a firefighting crew.” Vaidas has seen it all during almost a quarter century of service. In combination with his academic degree, Vaidas is an accomplished specialist, understanding both theory and practice.

#### Organizational role in HAZARD

Key activities of the Fire and Rescue Service of Klaipėda County during the project were the improvement of firefighting skills and participation in large-scale exercises. Three large-scale exercises were organized in Klaipėda, each attracting 150–200 participants.

#### Project impacts

A major benefit of the project for the Fire and Rescue Service was the increased staff competence. Commanding officers took part in exercises organized by German and Finnish Partners and in seminars and workshops. Lower-level officers, in turn, improved their expertise through direct involvement in the exercises. Vaidas adds that large-scale exercises have proven to be an excellent opportunity for improvement of large-scale emergency response. The HAZARD project also made possible the acquirement of a state-of-the-art training container. The container is used not only to train firefighters, but also as an educational facility for the region's residents.

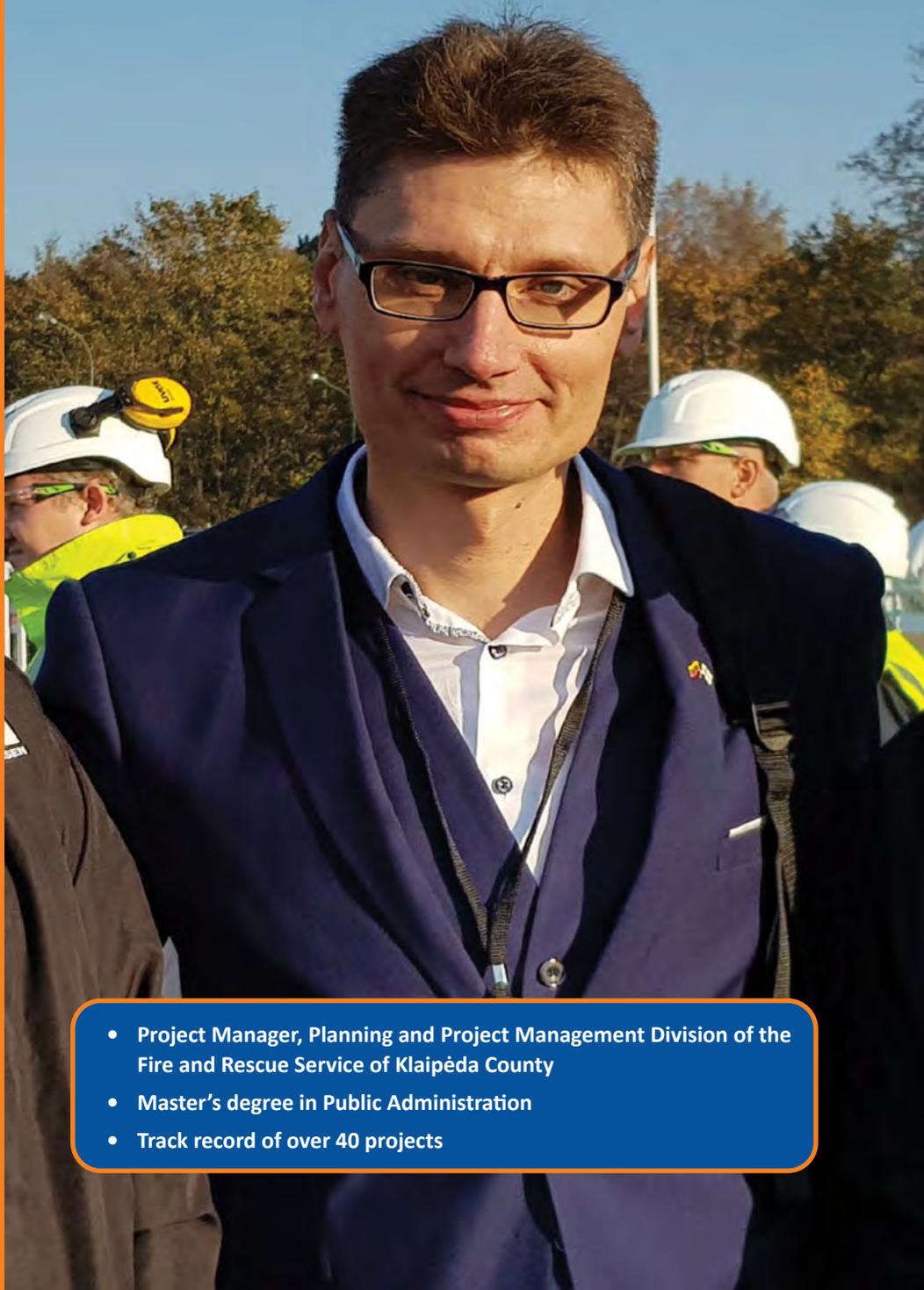
#### Learning experiences

A need to improve regulations and laws governing joint actions between firefighting services, port administration and companies operating in port was observed during the project. Due to current legislation, for instance, divers of the Fire and

Rescue Service of Klaipėda County cannot operate within Klaipėda port or in the Baltic Sea. On a personal level, Vaidas describes the experience gained during the project as invaluable and having opened doors for the future. The project also added to his passion for building a safer BSR.

*First and foremost, I would like to extend my thanks and appreciation to Prof. Lauri Ojala for his trust and the opportunities afforded. My warmest thanks also to all the participants and partners in the project, and to everyone who contributed to the success of the project. —Vaidas*

## Mindaugas Kruopys



- Project Manager, Planning and Project Management Division of the Fire and Rescue Service of Klaipėda County
- Master's degree in Public Administration
- Track record of over 40 projects

“The experience we have gained together, and the desire to improve, will help us be better prepared for all disasters”

Mindaugas has been involved in EU-funded projects since 2002. His extensive resumé includes the preparation and implementation of over 40 projects on topics ranging from road construction, reforestation and farming to the creation of social centres and various innovations. HAZARD was the second assignment given to Mindaugas by the Fire and Rescue Service of Klaipėda County. As the Project Manager, Mindaugas was responsible for public procurements, organizing events in Klaipėda, and reporting to the Fire and Rescue Service.

Through HAZARD, Mindaugas diversified his skill set to cover also Interreg BSR projects and accumulated a lot of information on the day-to-day work of firefighters and seaport authorities.

### Globetrotters from Lithuania

The Fire and Rescue Service of Klaipėda County was one of the most active HAZARD Partners in the field of staff exchange and event participation. Visitors from the Service were a familiar sight at HAZARD events throughout the project. More than 15 persons visited various events in the Partner countries.

### A think tank called HAZARD

Cross-border co-operation gave birth to several development concepts for the Fire and Rescue Service of Klaipėda County. A major insight was to use drones in search-and-rescue operations and for collecting samples of dangerous materials and delivering them for testing. The prompt and active participation of Mindaugas and his colleagues led to the creation of a project specifically for that purpose, financed by the Interreg Latvia-Lithuania programme. With new projects kicking off, the legacy of HAZARD is far from forgotten – the Fire and Rescue Service of Klaipėda County continues to collaborate with firefighters from Turku and Hamburg.

Mindaugas sends his best to all Partners and friends *especially Prof. Lauri Ojala, Jarmo Malmsten, Torbjörn Lindström, Miikka Toivonen, Maria Nykyri, Mariikka Whiteman and Jürgen Krempin. You are the best.* —Mindaugas



## Exercise in Naantali, October 2017

On 18 October 2017, “the HAZARD show” came ashore in Naantali, Finland, for the second time during the project’s lifetime. Southwest Finland Emergency Services were the main responsible Partner for the execution of the exercise, assisted by the Port of Naantali and multiple other authorities including the Helsinki City Rescue Department, Finnish Border Guard, Emergency Medical Service and Finnish Lifeboat Institution. Up to 300 participants were involved in this exercise on the Finnish coast.

The scenario of the exercise was the collision of a passenger vessel with an oil tanker and an ensuing oil spill, leading to closure of the ports of Naantali and Turku and injuries to several people on the passenger vessel.





## Port of Naantali



- Port activities began as a result of a wartime fuel depot being established in the area in 1944. With the port developing rapidly, a sugar plant and sawmill arrived on the port premises in 1953 and the oil industry followed suit in 1957
- The first tanker, the Norwegian vessel James Hawson, arrived at the Port of Naantali on 22 December 1946
- The ferry operator Finnlines opened new Star-class vessel routes to Naantali in the spring of 2018
- The annual number of vessel calls averages around 2,000, making the Port of Naantali one of the busiest in Finland



- Port Director, Chief Operating Officer and Commercial Director at the Port of Naantali since 2005
- Previously, worked in the steel and other branches of heavy industry and taught at Satakunta University of Applied Sciences
- Master's degree in Engineering, postgraduate studies both in Helsinki School of Economics and Tampere University of Technology

Yrjö has over three decades of working experience in the field of logistics. Based on his perspective from the port environment, heavy industry, logistics associations and academia, Yrjö considers that maritime trade in the BSR is headed in a riskier direction. Growing vessel sizes, cyberthreats gaining momentum, and an increasingly volatile geopolitical atmosphere are all signs that risk management is a top if not the most important priority for maritime actors operating in the region.

#### **Safety, security and environmental matters top the to-do list**

The Port Director's duties have changed considerably during the 14 years that Yrjö has occupied the position. When he first started, tasks revolved more around bringing in new traffic to the port, establishing new and maintaining existing customer relationships, and running the daily administration of the port. Now, safety & security and environmental matters are clearing their way to the top of the to-do list. New regulation is being introduced at an accelerating pace and port management must scan threats and possibilities proactively.

#### **A tight maritime family**

The spectrum of maritime actors in the BSR is relatively narrow. Actors know each other relatively well in theory, but projects like HAZARD add a "humane" component, adding faces to names and lowering boundaries to contact and interaction. Yrjö observed that irrespective of port size or location in the BSR, the ports are struggling with the same issues. He adds that in regard to safety & security, the port community is not prone to withholding information or knowledge.

**"HAZARD counterbalanced the 'business as usual' in a positive way."**

#### **HAZARD – a boost to mundane operations**

Yrjö describes the project experience as having energized the port. Breaking the cycle of "business-as-usual", people associated with the project got to interact with their colleagues from around the Baltic Sea coastline, take part in workshops and organize exercises, all acting as a counterbalance to mundane work tasks. Eagerness was a common denominator among personnel at the Port of Naantali.



Liisa Majuri

“The cynic in me grew silent as the project continued to surprise me!”

During her career, Liisa has been involved in virtually every phase of maritime transport, from dispatching overseas shipments at a transportation company and shipment of goods as a vessel officer to her current post as Traffic Manager at the Port of Naantali. Now, she has taken her first steps into the world of Interreg BSR projects.

**Exercises as the main driver**

For the Port of Naantali, gaining experience from conducting exercises, such as establishing an exercise routine, was the primary motivation for taking part in the HAZARD Project. A plethora of hazardous substance types flow through the port each year, making the Port of Naantali an ideal Partner for HAZARD. The first ever HAZARD exercise was held at the Port in April 2016. Again, the greatest learning experiences were exercise related. As Liisa puts it, “exercises must be rehearsed as well”.

**Compact port with the requirements of a large one**

The area of the Port of Naantali may not be huge, but cargo and passenger volumes certainly match those of larger ports. Finnlines recently launched a liner service with larger vessels, requiring rearrangements of the port infrastructure, and cargo volumes continue to rise as Finland is practically an island in terms of security of supply. This encouraging trend, coupled with the prominent emergence of digital innovations and automation of port functions, requires the Port of Naantali to be agile and well-informed in its decision making. Contacts established around the Baltic Sea will come in handy when exchanging ideas on best practices.

**Beyond expectations**

Liisa admits to taking a cautious approach to new ventures, but in the case of HAZARD she was positively surprised by the project experience as a whole. Now that HAZARD has concluded and she has had more time to delve into the vast publication archive, she considers the project’s publication track record to be quite impressive. She found the cybersecurity-related publications especially relevant, as she was drawing up a security plan at the time of the interview.

*Wishing all the best to the Project Partners! —Liisa*

- Traffic Manager, Port Security Office at the Port of Naantali
- Sea captain by education, has also worked as an officer on a vessel
- Before employment at Port of Naantali in 2002, associated with overseas shipments

Tarja's career path has been particularly interesting and diverse. She moved to Germany soon after the reunification, attracted by the culture, and worked for an IT company. In 1994, Tarja was recruited back to Finland straight from a trade fair. Before her current post at the Port of Naantali, she has worked in the field of marketing and administration in various branches.

#### Setting sail for a smoother flow of information

From a communication point of view, one of the key goals for the Port of Naantali was to develop communication and information services. In addition to communication between relevant authorities and port operators, one must not forget the need to reach the public at large in case of a crisis. Smooth and effective flow of information plays an important role in accident prevention and mitigation. Tarja notes that each stakeholder possesses their own strengths and expertise, which can be harnessed efficiently towards a common goal.

#### Advances in crisis communication

Merely the term "crisis communication" can unnerve people and stir up a host of thoughts. Therefore, the first and most important step is to update and keep updating the right contact information for crisis communication. This means anyone operating in the port area. An operating model should be developed for what, where and how to communicate in case of a disturbance. The exercises during HAZARD provided a good opportunity to test the functionality of the crisis communication chain.

**"The large-scale exercises were fundamental to the development of crisis communication."**

#### Never too many channels

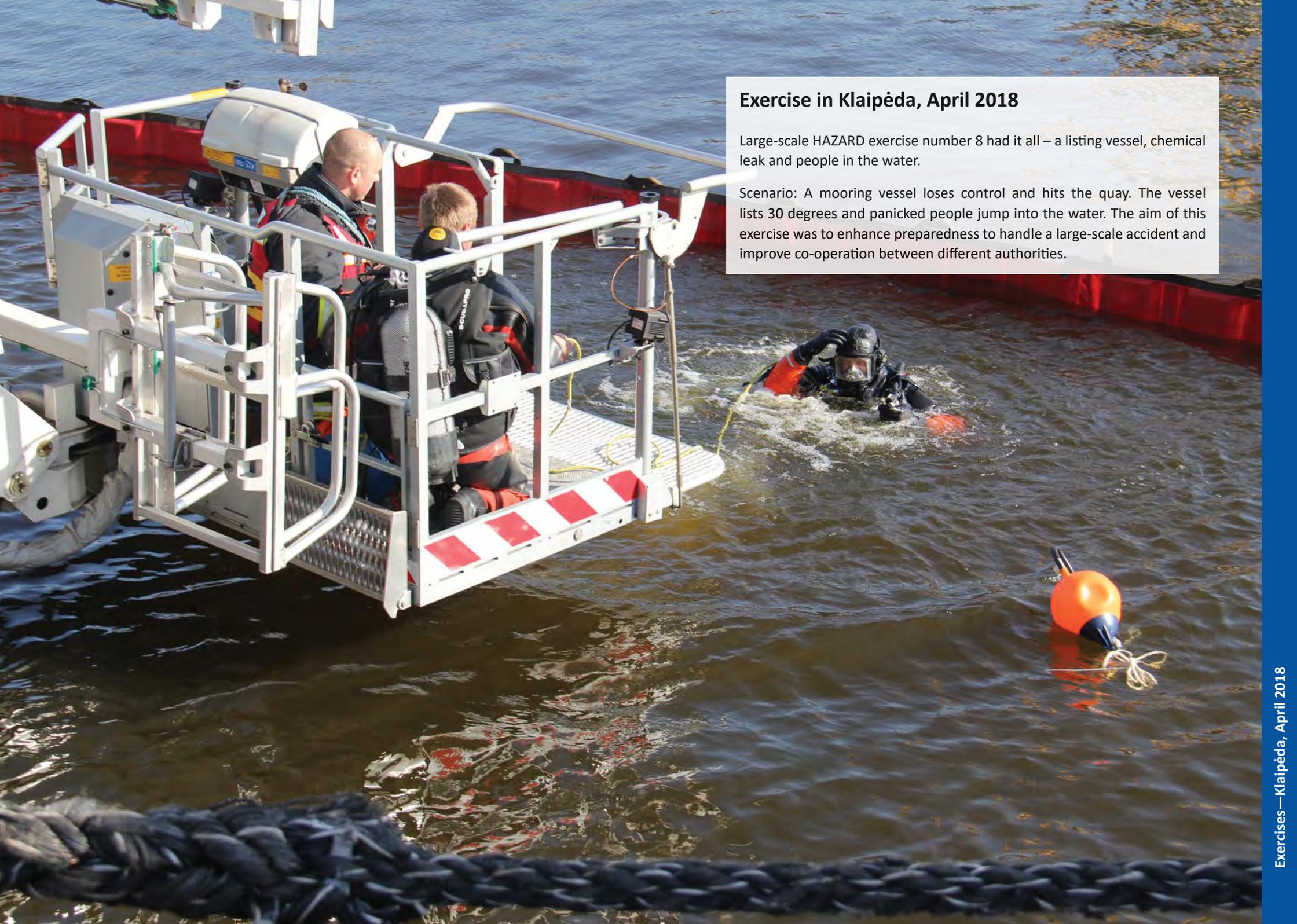
Tarja stresses the importance of multichannel communication in an emergency situation. Several communication channels are needed to reach the largest possible audience in shortest possible time. For instance, social media channels, websites and WhatsApp groups are useful tools, Facebook always reaches a good part of the public, and Twitter will quickly reach the media. A separate channel for crisis communication can be set up on websites. SMS group messages and group emails should be used in the direst situations.

*Warmest of thanks to the Project Partners and everyone else involved! It was both a joy and privilege getting to know you all. —Tarja*

## Tarja Siekkinen

- Communications Specialist at the Port of Naantali
- Master's degree in Life Sciences and Business
- Previously employed in the IT, medical, pharmaceutical and logistics branches





## Exercise in Klaipėda, April 2018

Large-scale HAZARD exercise number 8 had it all – a listing vessel, chemical leak and people in the water.

Scenario: A mooring vessel loses control and hits the quay. The vessel lists 30 degrees and panicked people jump into the water. The aim of this exercise was to enhance preparedness to handle a large-scale accident and improve co-operation between different authorities.





## Exercise in Naantali, May 2018

Neste Corporation was the centre of attention in a large-scale HAZARD exercise in Naantali, which took place at the Neste refinery on 16 May 2018.

Scenario: During the loading of highly flammable fuel into a tanker at the refinery loading bay, a breakdown in the system causes a fuel leak onto the dock and into the sea, creating a fire. Southwest Finland Emergency Services arrive on the scene to fight the fire.







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Enjoying the famous Naantali sun

## Neste Corporation

- Neste was founded in 1948 to secure the Finnish supply of oil
- Neste is the world's largest producer of renewable diesel
- Naantali refinery, which began operations in 1957, is Finland's first of its kind
- In 2018, Neste was ranked the second most sustainable company and number one energy company in the world by Corporate Knights



A portrait of Kimmo Vahanto, a middle-aged man with short brown hair, wearing a light blue polo shirt. He is smiling slightly and looking towards the camera. The background is a blurred outdoor scene with greenery and a blue sky.

Kimmo Vahanto

- Harbour Manager at Neste harbour in Naantali
- Over a decade of experience on board sea vessels, followed by administrative duties at dry bulk and oil ports
- Master's degree in Maritime Administration, sea captain

**HAZARD** was Kimmo's first EU-funded project experience. Kimmo, like the corporation itself, did not have a clear vision upon joining the project of what was to come. The initial idea was to start off with an exercise incorporating the special character of Neste.

#### **Project Partner from the corporate world**

The exercise kicking off the project was organized in April 2016. Neste was put in charge of planning the exercise, as this would take place on its "home turf" in Naantali. Neste remained an active Partner throughout the project, taking part in workshops and seminars. One of the developmental goals formulated along the way was improvement of communication, especially with competent authorities.

#### **More than expected**

Regarding the developmental goal of improving communication, Kimmo commented that the vast amount of information related to cargo, vessels, and ports poses a particular challenge for port operators. Disseminating this information between all the stakeholders and making it available to all is essential.

Through the project, Neste improved its co-operation, especially with rescue authorities, in terms of both operations and communication. Kimmo highlighted that deepening co-operation between competent authorities and corporate actors has considerable potential also for the future. In retrospect, Kimmo believes that Neste got a whole lot more out of HAZARD than was ever expected.

**"We got a whole lot more than we initially expected."**

#### **From HAZARD to OIL SPILL**

Neste will not be resting on its laurels after HAZARD; new challenges await in the realm of EU projects. Indeed, Neste has already joined a new Interreg BSR co-funded project, OIL SPILL, as a Partner.

*The Project Office was like a big brother, holding the whole package together. To all the Partners, I would like to say that the spirit was excellent throughout the project. We laughed a lot together as well! —Kimmo*

Prior to HAZARD, Heikki saw unreached potential in how commercial and public authorities could work together when facing catastrophes. Trying to improve this collaboration was the main goal that Neste set for the project.

#### Exercises were a gift

Neste was involved in arranging and participating in different exercises, which Heikki believes brought Neste its greatest organizational gains of the project: lessons learned from co-operating with other organizations. Most influential were local exercises, which included the presence of public authorities. A study visit to Fredericia in Denmark was, according to Heikki, very educational.

#### Collaboration in spite of differences

When asked about the co-operation between Project Partners in different fields of activity, Heikki mentions that although some of them naturally had different goals set for themselves, collaboration was smooth throughout the project. In particular, he highlights how the project deepened co-operation between Neste and the authorities.

Two issues Heikki underlines as threatening the safety of the BSR, both now and in the near future, are heavy and partly intersecting marine traffic, and changes in the business environment especially in the field of transporting and storing oil products. He also raises the issue of equipment neglect, which has a direct effect on safety.

**“HAZARD increased safety & security awareness and encouraged co-operation.”**

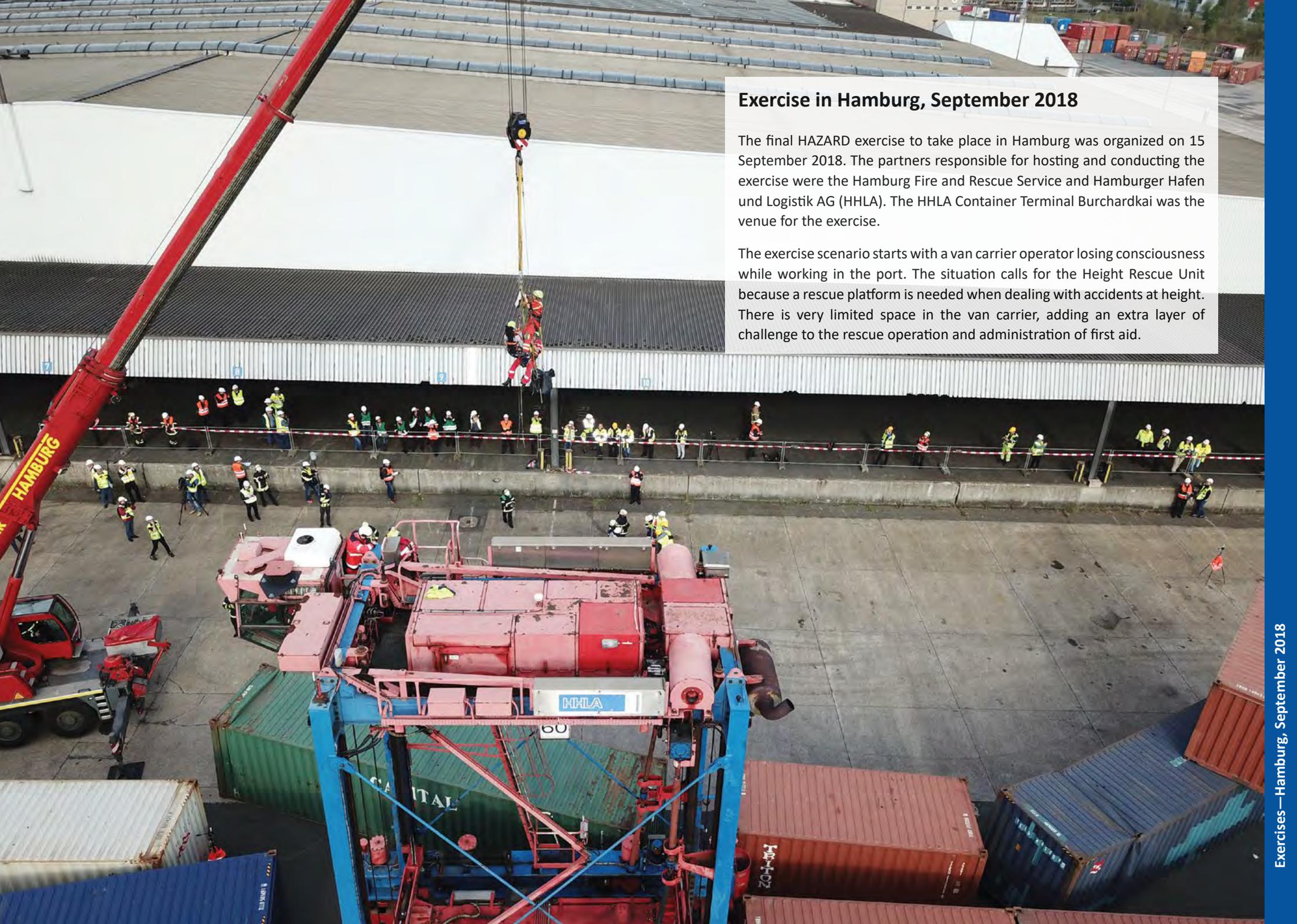
## Heikki Tegelberg

- Construction engineer by education
- Working for Neste since 2007, mainly in investment management, quality and safety development
- Currently the Harbour Manager of Neste port in Porvoo



#### Thoughts after the project

“As funny as it may sound, the project significantly increased the co-operation between our own ports.” In addition, according to Heikki, HAZARD brought the local rescue departments closer together. He summarizes HAZARD as a project that resulted in augmented safety knowledge and collaboration between operators in the industry.



## Exercise in Hamburg, September 2018

The final HAZARD exercise to take place in Hamburg was organized on 15 September 2018. The partners responsible for hosting and conducting the exercise were the Hamburg Fire and Rescue Service and Hamburger Hafen und Logistik AG (HHLA). The HHLA Container Terminal Burchardkai was the venue for the exercise.

The exercise scenario starts with a van carrier operator losing consciousness while working in the port. The situation calls for the Height Rescue Unit because a rescue platform is needed when dealing with accidents at height. There is very limited space in the van carrier, adding an extra layer of challenge to the rescue operation and administration of first aid.







# Hamburger Hafen und Logistik AG



- Founded in 1885 as Hamburger Freihafen-Lagerhaus-Gesellschaft to operate Hamburg's Speicherstad – at the time, the world's largest and technically most advanced logistics centre
- American Lancer, the first full container ship, visits the Port of Hamburg in 1968
- The container Terminal Altenwerder is opened in 2002. To this day, the facility has the highest degree of automation anywhere in the world.
- 5,900 employees in 2018

## Norbert Smietanka



- Safety and Environmental Engineer, Master of Business, Chemical Laboratory Assistant by education
- Head of Health, Safety and Environment for 15 years, Manager in Waste Management for 10 years
- Specialties include, for example, Disaster Management, Flood Protection and Fire Protection

**“It was one of the most important positive experiences of my working life.”  
This is how Norbert describes working in HAZARD.**

Representing Hamburger Hafen und Logistik AG (HHLA), Norbert brought to the table the viewpoint of a large logistics company. HHLA was a WP5 leader and was involved in planning exercises and arranging meetings. In addition, the German company performed testing and evaluations of emergency equipment.

### **Along with fellow specialists**

When asked what an organization like HHLA hoped to gain from HAZARD, Norbert replied that HHLA had aimed to increase networking, knowledge transfer and enhancing procedures and techniques in emergency cases in related fields. On a personal level he had sought to benefit especially from meeting specialists and participating in workshops.

### **Challenges of (inter)national regulation implementation**

Norbert mentions that when starting HAZARD, the implementation of national and international regulations in BSR ports was the key challenge. According to him, this continues to be the number one issue into the future as well. From the point of view of HHLA as a whole, the issues are somewhat similar; the biggest threats they face when operating in the BSR are linked to digitalization and globalization, such as cybercrime and changes in the workplace.

**“HAZARD was one of the most important  
and positive experiences of my working life”**

### **Better handling of crises**

Norbert Smietanka had nothing but praise for how well the co-operation had worked between all participants, and how HAZARD had taught him and others to work in an EU-funded project. Improved methods of risk assessment and better handling of crises and communication in and with other EU seaports also developed from participation in the project.

Finally, Norbert sends his best regards to the Partners and the Project Office, and a big thank you to everyone for the seamless co-operation during the project.

## Exercise in Klaipėda, October 2018

The penultimate large-scale HAZARD exercise was held in Klaipėda on 18 October 2018. In somewhat of a different setting than the previous exercises, where a series of events were triggered by accidents, this exercise kicks off with malicious intent.

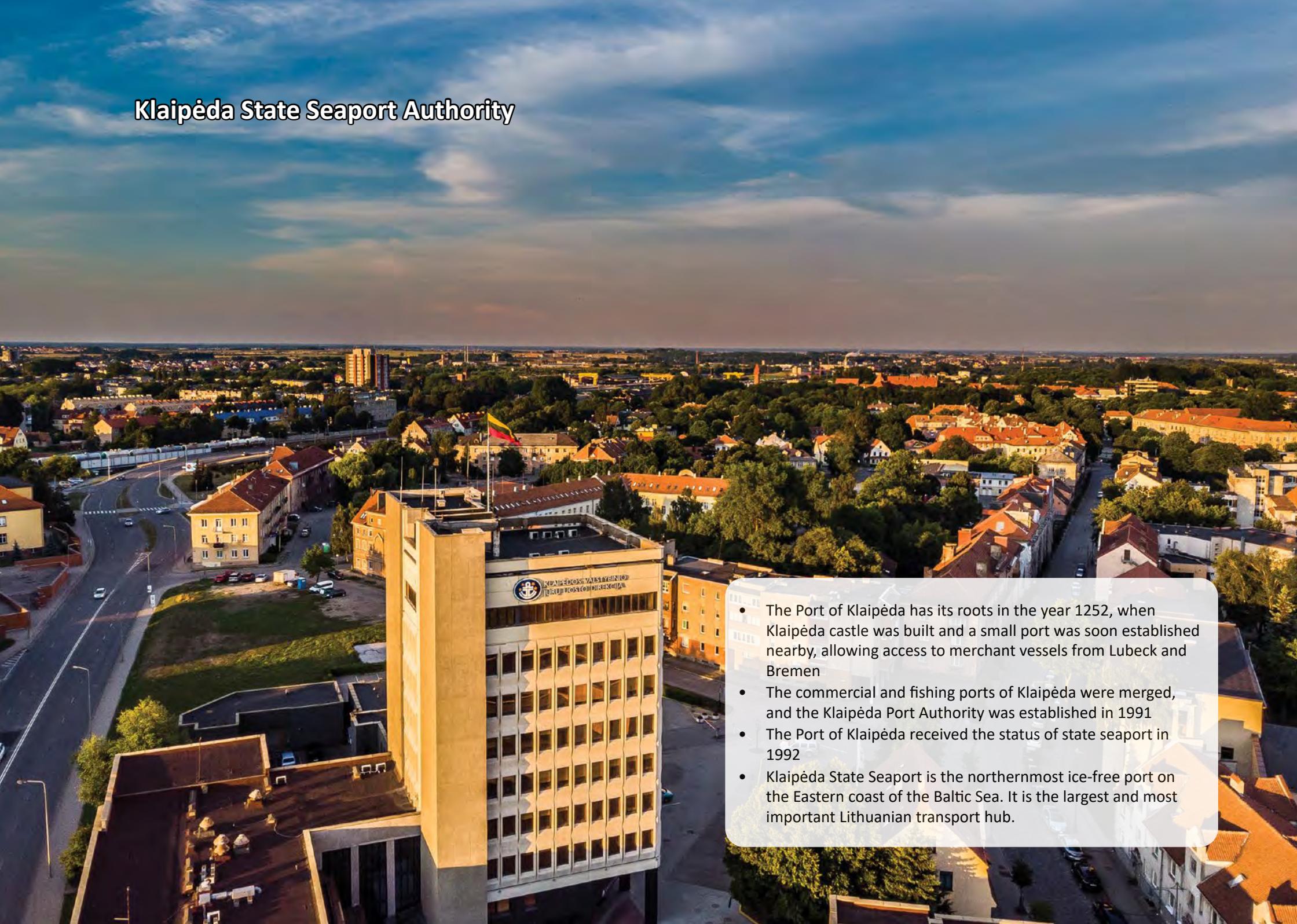
Scenario: A truck driver arrives at a small-scale liquefied natural gas terminal, starts to act aggressively, and threatens to blow up the terminal. Another driver attempts to stop him but fails and is severely injured in the process. The police, first-aid units, and the Fire and Rescue Service of Klaipėda County are soon alerted to the scene. As this appears to be terrorist threat in the port area, the Lithuanian Police Anti-terrorist Operations Unit is called in. The unit then proceeds to negotiate with the hostile individual.







# Klaipėda State Seaport Authority



- The Port of Klaipėda has its roots in the year 1252, when Klaipėda castle was built and a small port was soon established nearby, allowing access to merchant vessels from Lubeck and Bremen
- The commercial and fishing ports of Klaipėda were merged, and the Klaipėda Port Authority was established in 1991
- The Port of Klaipėda received the status of state seaport in 1992
- Klaipėda State Seaport is the northernmost ice-free port on the Eastern coast of the Baltic Sea. It is the largest and most important Lithuanian transport hub.



## Aleksandras Kaupas

- Master's degree in Building and Transport Engineering, specialising in Port Management
- Chief Dispatcher at the Port Control Department at the SE Klaipėda State Seaport Authority
- Several responsibilities in port safety and security

**“The Port of Klaipėda is developing fast, and I think our duty is to ensure safe port activity.”**

### **EU project veteran**

Aleksandras is an experienced EU project operator participating in BSR Innoship and CleanShip, both projects connected to environmental issues. He describes how he, in his own work, has been able to use his experiences from studying how other seaports manage their safety issues during the two projects. Aleksandras explains that with HAZARD, Klaipėda State Seaport Authority (KSSA) wanted to develop and implement an information system for controlling dangerous goods and polluting cargo. Referring to the successful development of the system, he adds, “I think we’ve done more than expected; the goal we set has been reached and our services were improved.”

### **Transnational co-operation and its opportunities**

When asked about opportunities in the BSR, Aleksandras outlines the potential and benefits he sees in transnational development projects like HAZARD. They operate as a joint platform for the rescue services of different countries to share information on managing incidents. Projects serve also as opportunities for establishing relations between institutions that they might someday work with during a multinational collaboration. Aleksandras continues by mentioning that providing mutual assistance in the face of a chemical incident still requires more attention. Further, KSSA has to monitor the future, implement new technologies, and consider changes in port activities.

**“We put as much effort as we could into the project, and we got back much more than I expected.”**

### **Final words**

Aleksandras brings up the personal learning experience he received from the Project Partners’ incident response procedures, exercise setup preparations and reporting practicalities. He praises the good relationships he was able to create with colleagues from many countries.

*All of us who participated in the project are grateful for the understanding, good mood, knowledge and experience, and for the great time spent together. It was a pleasure working with you. —Aleksandras*

## Renata Strazdauskienė

- Dangerous Cargo Inspector at SE Klaipėda State Seaport Authority
- Previous association with Klaipėda University as e.g. lecturer and scholar
- Master's degree in Marine Environmental Engineering

“The project has created a better understanding of the activities and communications between competent authorities during accidents in seaports in different countries.”

Renata has been heavily involved in maritime affairs throughout her career, on both sides of the fence between pragmatic and academic. While working at Klaipėda University she co-authored 13 scientific publications and a handbook titled “Ship environment protection”. Having previously headed the Air Pollution from Ships Research Laboratory, Renata is now putting her expertise into practice at the Port Control Department of KSSA, making handling dangerous cargo safer.

### A veteran of EU-funded projects

Renata has an impressive track record from the EU projects field – including eight maritime-related projects in coordinator and administrator positions. In a similar vein, the main motivator for KSSA to become a HAZARD Partner was the application of technology to better control dangerous cargo at the port. During HAZARD, an information system for managing this type of cargo was developed which delivers a rapid response to potential threats. Based on real-time data on cargo quantities, locations are displayed on a digital map with various indicators.

### Impact of HAZARD on Klaipėda State Seaport Authority

In addition to the information system for dangerous cargo control, HAZARD yields for KSSA were numerous. In the 10th European Sails 2018 competition for the best EU-funded projects between 2014–2020, where more than 170,000 votes were casted and over 40 Project Managers registered their entries, HAZARD Project won the category “Strengthening the Baltic Region”.

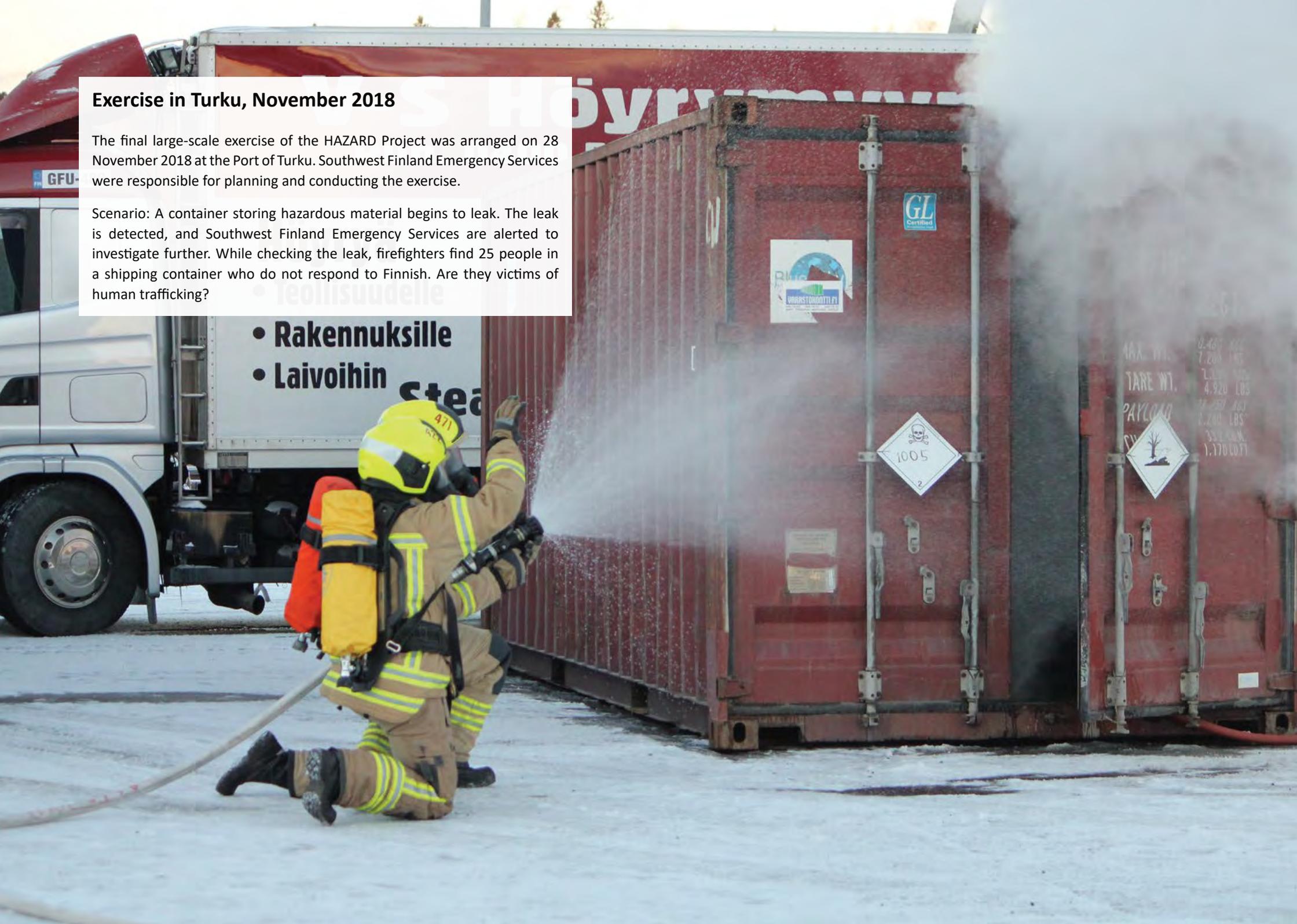
### A posteriori

The future vision of KSSA is to be the safest, most secure, and most environmentally friendly seaport in the BSR, with a highly developed inner seaport infrastructure. Renata would summarize her project experience as having enabled her to understand better the activities and communications between competent authorities during port accidents in different countries, and to make improvements to KSSA. Renata, being the seasoned project professional that she is, will not be leaving the EU project field anytime soon. She sends her warmest thanks to each and every one of the HAZARD Partners!

## Exercise in Turku, November 2018

The final large-scale exercise of the HAZARD Project was arranged on 28 November 2018 at the Port of Turku. Southwest Finland Emergency Services were responsible for planning and conducting the exercise.

Scenario: A container storing hazardous material begins to leak. The leak is detected, and Southwest Finland Emergency Services are alerted to investigate further. While checking the leak, firefighters find 25 people in a shipping container who do not respond to Finnish. Are they victims of human trafficking?









## Port of Turku



- The origins of the Port of Turku can be traced back 870 years: in 1154, Moroccan Arab geographer and cartographer Muhammad al-Idrisi drew the port on a map, naming it “Abuwa”
- The location of the port gradually shifted seawards along the river Aura to its current site, where it settled in 1955
- The 1960s and 1970s saw the port evolve into a ferry traffic hub: Tallink Silja has operated out of the port since 1961 and Viking Line since 1973
- Today, the Port of Turku is a modern European port that provides efficient services to cargo and passenger transports in the BSR
- In 2019, about 2.3 million tons of cargo and 3.3 million passengers passed through the port

## Christian Ramberg



- Managing Director at the Port of Turku 2000–2019
- Master's degree in Economics and Business Administration
- Affiliated with the Port of Turku since 2000

Christian has seen it all when it comes to logistics. During the 1980s he took his first steps managing flows of goods in the Finnish export industry. He has been employed by the distribution industry, several forwarding companies, and since 2000 by the Port of Turku where he worked as Managing Director until his retirement in 2019.

### TEN-T core port

The Port of Turku is one of the crucial links in the Scandinavian-Mediterranean transport corridor as a TEN-T network core port. The port has participated in multiple EU projects, such as the Connecting Europe Facility projects, focusing mostly on infrastructure.

### A Baltic forum for meeting

Christian describes the socio-occupational dimension of HAZARD as its greatest asset. The project brought together maritime experts from ports, rescue services and research institutions around the Baltic Sea. HAZARD provided unique opportunities to discuss issues both related to the project and off-topic, and to benchmark and exchange best practices in an international and cross-functional context.

**“Thanks to HAZARD, attitudes towards safety & security have improved. When the attitude is right, everything else follows.”**

### Fragmented modus operandi

Although the EU has made significant efforts to standardize and implement common practices at port facilities in the BSR, current practices still vary between actors within the same country. Coupled with just-in-time supply chains, this places enormous value on shared practices, as time is of the essence in maritime trade. Christian draws a comparison to the aviation industry, where practices are virtually analogous in airports around the world. With HAZARD the situation in the BSR has improved but there is still room for development.

*Discussion and study are both important; but exercising and implementing risk management in everyday work is what separates the master from the apprentice. —Christian*

After spending 15 years at sea, when Kari settled down with a family in 1996, he felt the time was ripe to look for a more stable job on land. His love for the sea led him to the post of Harbour Pilot at the Port of Turku, his hometown. From his next posts as Harbour Inspector and Deputy Harbour Master he advanced to his current combined position of Harbour Master and Port Security Officer.

“HAZARD was a thoroughly enlightening experience with a transnational twist.”

#### Operating behind the scenes

Kari describes his work as performed best when it goes unnoticed. “My job comprises a lot of mundane tasks, inquiries and preparations,” he says. The work is done in co-operation with shipping companies, other security officers, and the authorities. The aim is to deal with any threats before they arise.

#### On-board the Interreg BSR vessel

As with many other key figures in the project, HAZARD was the first introduction to Interreg projects. On a personal level, Kari established new friendships and gained insight and different perspectives on maritime and port safety & security regionally, nationally and internationally. Kari states that he would be up for another Interreg project should a suitable opportunity arise. He calls his HAZARD experience “enlightening”. Where the Port of Turku is concerned, Kari finds the biggest yields from the project to have been networking and new methods of working, inspired by the interchange of best practices.

#### Increasing passenger traffic

Passenger flows account for most of the traffic at the Port of Turku. Alongside rising cargo volumes and journey frequencies, passenger traffic is also showing signs of growth. Sometimes overlooked in the maritime discourse due to the dominance of cargo safety & security, the safety & security of passenger traffic, according to Kari, deserves special attention. One method he suggests for enhancing the situation is to further develop security check procedures and increase the number of security checks.

*Thanks for all the arrangements! —Kari*



Kari Riutta

- Harbour Master and Port Security Officer at the Port of Turku
- Sea captain by education
- Started as Harbour Pilot at the Port of Turku in 1996



A smaller-scale inland waterway port exercise as part of the Table Bay Retreat of the Management Team in Pöytälahti, Finland, August 2018

An aerial photograph of a wide river with a red containment boom stretched across it. Three boats are positioned near the boom: a small grey motorboat, a larger red and white tugboat, and another small grey motorboat. The riverbanks are lined with dense green trees, and a bridge is visible in the distance under a clear blue sky.

## Chapter 3: Risk management

A photograph of three men in a meeting room. One man stands in the center, leaning over a table where two other men are seated. They are looking at documents and a laptop. The room has a patterned carpet and a wooden table. In the background, another man is seated at a different table.

## Risk management facts

Risks in the port environment come in all shapes and sizes. Be it a hazardous chemical leak from a container after a forklift crash or a person falling into the icy sea basin, or a possible terrorist attack in a passenger terminal, the field of risk management in port environments in the 21st century is a very diverse one.

Undoubtedly one of the most severe risk groups, which is becoming increasingly probable and serious, is cyberthreats. After interviewing HAZARD Partners from 14 organizations, cyberthreats topped the list as the most prominent threats expected in the near future.

# Hamburg University of Technology

- Hamburg University of Technology (TUHH) was founded in 1978
- The first German university to introduce a Bachelor's degree, in 1994
- Around 7,800 students and 700 academic staff in 2018
- University motto: *Technik für die Menschen* (Technology for the People)

Wolfgang's career steps have led from academia to industry and back. He has gained proficiency from working in various organizations and duties, ranging from mechanical engineering and logistics consultancy to a professorship and heading a faculty and an institute. Wolfgang's versatile research area in logistics and supply chain management certainly suited the scope of HAZARD and played an important role in the project.

#### Unity in diversity

Wolfgang does not hold back when describing the collaboration he experienced in HAZARD: excellent, committed, friendly and fun are but a few of the expressions he uses. He especially values the cross-sectoral cooperation that enabled new discoveries to be made and better understanding to develop. Wolfgang considers that both he and his Institute benefited from HAZARD in multiple ways.

Besides the new network, the most valuable outcomes were the deep practical and operational insights into the structures and processes for ensuring safety & security in seaports. The project has helped bridge the gap between theory and practice and generate applicable solutions for risk assessment. One of these is the practitioner-oriented risk management toolbox for seaports developed at TUHH with strong input from Ayman Nagi. Wolfgang notes that the task was not easy, as the risk exposure and other situational factors differ from port to port.

**“The HAZARD project as a whole is greater than the sum of its parts!”**

#### Ready to continue

Safety & security in ports remains a topical issue and is subject to continuous change. Several ideas for further research and projects were created during HAZARD, and Wolfgang hopes that the established network of partners and friends endures. He is also eager to seek new funding possibilities for these purposes. Now, after HAZARD, Wolfgang already has three Interreg work package leaderships up his sleeve, and there is room for a couple more.

*If you have the possibility to participate in an Interreg project, do it! Each partner can gain additional knowledge and experience and build up a long-lasting network. If you look at the list of HAZARD publications, you will get a good impression of the power of an Interreg project. —Wolfgang*

Wolfgang Kersten



- Director of the Institute of Business Logistics and General Management
- Dean of the Faculty of Management Science and Technology at Hamburg University of Technology
- Doctoral degree in Business Administration



- Research associate in the field of Risk Management in Seaports at Hamburg University of Technology
- PhD candidate in co-operative risk management in seaports
- MSc in Production Management, MBA in Technology Management, BSc in Industrial Engineering

Since his appointment to the HAZARD Team of TUHH in April 2017, Ayman was one of the driving forces of the project.

### Post-graduate powerhouse of risk management

Ayman describes his project experience as truly amazing, adding that co-operation with Seaport Partners has brought him valuable insight. For Ayman, HAZARD brought new friendships and led to cultural discoveries on trips to seminars, workshops and exercises. Ayman has managed the impressive feat of combining his doctoral studies with the project. He has been instrumental in organizing workshops and conducting interviews and survey studies, all of which contributed to his doctoral dissertation as well.

**“Co-operation and knowledge transfer can make the impossible possible.”**

### What was in it for Hamburg University of Technology?

The main goal of TUHH was to analyse and improve the current state of risk management in BSR ports by developing clear processes, tools and guidelines. Studies by TUHH revealed a complete lack of standard processes for managing risk in BSR ports – a remarkable discovery. Another concrete result, an online toolbox for risk assessment, developed by TUHH, extends the impact of HAZARD beyond its runtime. The university also managed to network with a diverse group of stakeholders, laying the groundwork for future joint endeavours.

### Entering the 2020s

Ayman names cyber threats and LNG vessels as new predominant sources of risk. In his view, maritime safety & security has improved in recent decades but could be further improved through cross-border co-operation, development of efficient emergency plans, and new approaches to mitigate emerging risks in the ever-changing maritime environment of the BSR.

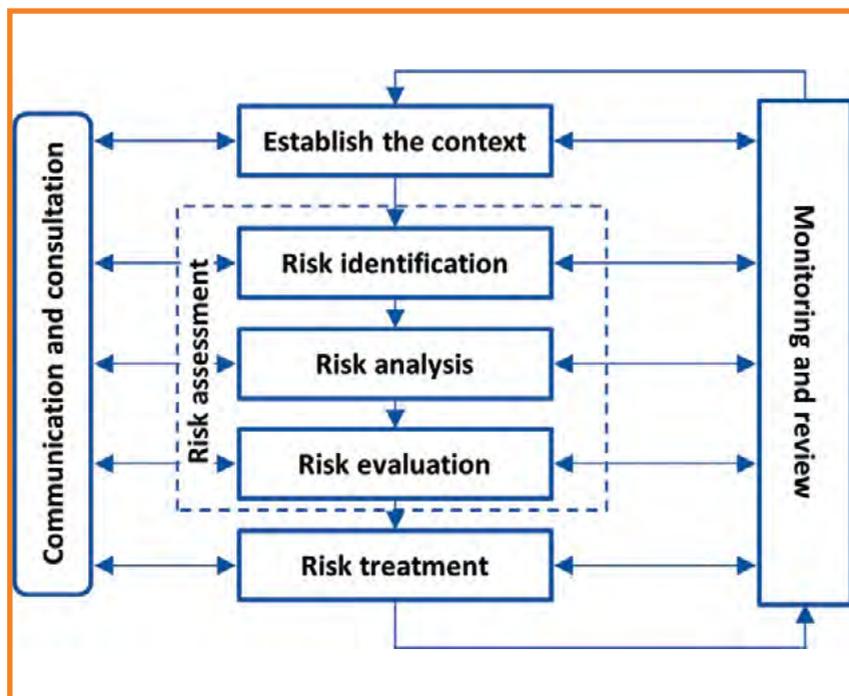
*I would like to thank the Project Partners for their outstanding co-operation and the achievements we have gained together. I would encourage readers to learn more about the BSR projects and other areas to increase their awareness of the important safety & security challenges we face. —Ayman*

## HAZARD Toolbox for managing risks in seaports

One of the most concrete and long-lasting achievements of WP4 was the HAZARD online toolbox for risk assessment, also applauded by Interreg BSR in its newsletter. The toolbox is based on the ISO 31000:2018 process for risk assessment.

Developed by Hamburg University of Technology and based on a comprehensive literature review and interview studies, the toolbox enables the selection of suitable risk assessment methods that can be applied in seaports. Different workshops were conducted among the Project Partners to evaluate the applicability of risk assessment methods and validate the toolbox. The dynamic toolbox permits users to suggest new methods or update the current content, which also facilitates a continuous improvement process that is necessary with emerging risks.

### Risk management process according to ISO 31000:2009

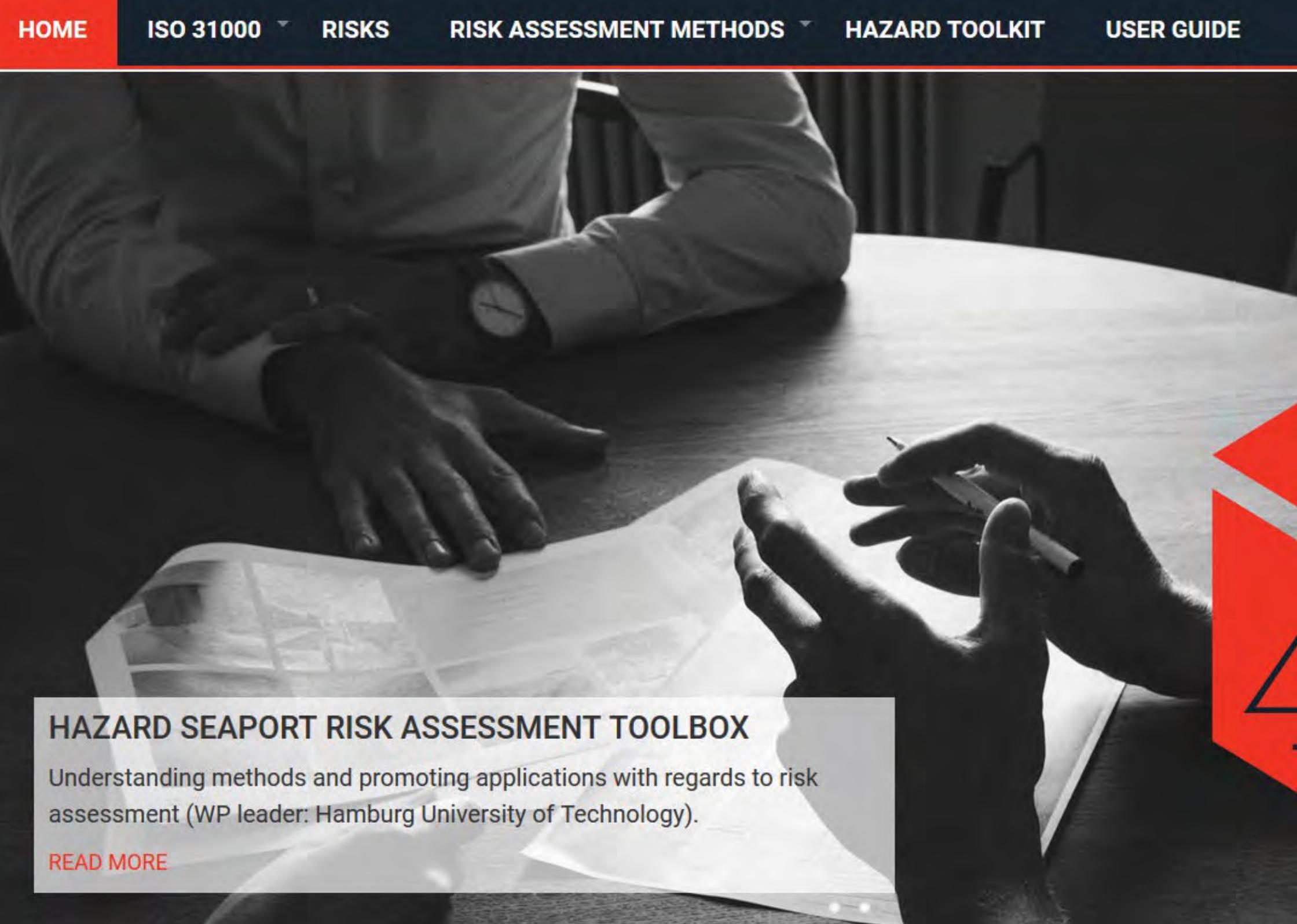


The methods for risk assessment are explained using practical examples that can help stakeholders make the risk assessment process more understandable. The HAZARD Toolbox is organized as a layered form to be filled in by the user. This is intended to narrow down the risk assessment methods based on the user's defined criteria, including the risk and method type as well as the required effort and complexity of the method.

The HAZARD Toolbox is available online and accessible for all potential users: <https://hazard.logu.tuhh.de/>

### Screenshot from the HAZARD Toolbox user interface

The screenshot shows the 'HAZARD TOOLKIT' user interface. At the top, the title 'HAZARD TOOLKIT' is displayed. Below the title, a paragraph explains that the toolkit is organized as a layered form to be filled out by the user to narrow down risk assessment methods based on their defined criteria. A progress indicator shows five steps in a horizontal line, with the first step (1) highlighted in red and the others (2, 3, 4, 5) in grey. Below the progress indicator, the text '0%' is shown. Underneath, there is a section titled 'Risk Groups' with several checkboxes: 'Environmental', 'Natural Disasters', 'Operational', 'Organisational', 'Safety', and 'Technical and Technological'. At the bottom of the interface, there are two red buttons: 'Next Page >' and 'Reset'.



## HAZARD SEAPORT RISK ASSESSMENT TOOLBOX

Understanding methods and promoting applications with regards to risk assessment (WP leader: Hamburg University of Technology).

[READ MORE](#)



Matching the Work Packages in Copenhagen, November 2017

A photograph of the Vilnius Gediminas Technical University building. The building is a modern, multi-story structure with a facade of dark, horizontal slats and large glass windows. The name 'VILNIAUS GEDIMINO TECHNIKOS UNIVERSITETAS' is prominently displayed in large, white, 3D letters on the left side of the building. A set of stairs with a metal railing leads up to the entrance. The sky is blue with some clouds.

## Vilnius Gediminas Technical University

VILNIAUS  
GEDIMINO  
TECHNIKOS  
UNIVERSITETAS

- Gediminas was the Grand Duke of Lithuania in the early 14th century
- The roots of Vilnius Gediminas Technical University (VGTU) can be traced back to 1956, when the Vilnius Evening Division of Kaunas Polytechnic Institute was established
- In 2018, VGTU had approximately 10,400 students and 960 members of academic staff
- Motto: *Sapere Aude (Dare to be wise)*



## Darius Bazaras

- Head of the Department of Logistics and Transport Management at Vilnius Gediminas Technical University (VGTU)
- PhD in Technical Sciences, Master's degree in Civil Engineering
- Has worked as an associate professor at VGTU since 2003

**“A rich and meaningful time, which has created new possibilities for research activities and expanded contacts and relationships between people.”**

This is how Darius sums up the HAZARD Project in one sentence. An EU project heavyweight, Darius took part in his first project already in 2006. Since then, he has amassed experience from a total of five EU-funded projects, including HAZARD, and is showing no signs of slowing down. In fact, Darius views project activities as a necessity for universities, which grant access to relevant research data and foster the link between academia and industry.

### **Unique co-operation**

Co-operation in HAZARD was, according to Darius, very effective and provided feasible conditions for inter-institutional collaboration and exchange of information with an international dimension. This co-operation was a unique combination of different nationalities and capabilities, ranging from Knowledge Partners to Seaport and Rescue Partners, as diverse actors sat around the same table and benefitted from each other's knowhow. Best practice sharing among all the Project Partner countries was one of the best yields of the project for Darius and VGTU.

One particularly significant project experience, according to Darius, was Finnish divers partaking in training at Klaipėda Seaport. Both parties shared their expertise and learnt from each other.

### **Changes**

Over the three years of HAZARD's runtime, highly significant changes took place in the BSR. At the beginning of the project in spring 2016, the most essential challenges were the environmental impact and human safety of port operations, which will remain relevant issues into the 2020s. The BSR is an especially vulnerable area environment-wise, and growing cargo volumes, impact of some states' policies, and increasing competition among actors do not facilitate matters. Insights from the HAZARD Project could help in managing emerging risks in the future as well, says Darius.

*I hope that this publication will help you feel the relevance and importance of HAZARD and its activities. I would like to sincerely thank the Project Office, which managed to release the Partners' full potential in a mutually beneficial way. Hopefully, the contacts that have been established between Partners will be used decisively both in the development of new projects and in day-to-day operations. —Darius*



The cake was not a lie in Klaipėda

# Viimsi Municipality

- The first mentions of Viimsi date back to 1241, when it appeared as “Vianra” in a Danish evaluation book
- The territorial municipality of Viimsi was formed on 11 May 1919
- In Soviet times, large parts of Viimsi were a “border zone” or restricted area and highly militarized with e.g. a rocket base and radar station
- On 20 December 1990, Viimsi regained its right as a municipality. This date is now celebrated as the municipality’s official “birthday”.
- Over 20,000 residents were inhabiting Viimsi in 2018
- There are eight seaports and 15 islands in the area



## Anna-Helena Purre



- Project Manager of HAZARD at Viimsi Municipality
- Soon-to-be Doctor of Philosophy in Ecology
- Currently associated with the LIFE Peat Restore Project, mitigating climate change

At the time of writing, Anna-Helena was finalizing her PhD studies at Tallinn University. Her expertise is ecological restoration and wetland ecosystems, a field in which she has contributed to several scientific publications. During HAZARD, her main responsibilities were all activities concerning the project participation of Viimsi Municipality. Since the launch of HAZARD she has also joined another EU-funded project. Anna-Helena identifies the most prominent threats to maritime trade in the BSR as barriers in cross-sectoral and cross-border operations. She also mentions the implication of legal requirements for risk management and its international differences.

**“HAZARD in one sentence: Deep co-operation to enlighten risk management in seaports.”**

### **Municipality of several seaports**

When applying for a Partner position, from an organizational perspective Anna-Helena mentions learning about risk management in seaports as being one of the motivational factors for joining HAZARD. This is because Viimsi is known for its several seaports. Co-operation with seaports of other Baltic Sea countries is essential; therefore, learning about their risk management was also a target for the project. From a personal perspective, in addition to being interested in the subject of HAZARD, Anna-Helena expected to learn how EU projects function.

### **Amassing valuable EU experience**

Anna-Helena sees as one of the most essential takeaways from HAZARD an increased knowhow among seaport safety specialists in Viimsi. This was attained by attending large-scale exercises and the exchange of knowledge. Publications on the responsibilities and rights of the community in case of a large-scale accident were very beneficial. On a personal level, Anna-Helena found the gain in experience and expertise in managing EU projects and practical information on risk management to be the most notable payoffs.

### **An exceptional role**

Anna-Helena describes the role of Viimsi as exceptional, as they were the only municipality partner in the project. “We wanted the environmental and planning specialists of the municipality to gain experience in regard to seaport safety and security issues,” she continues.

*I thank all the partners for the wonderful and fruitful time! —Anna-Helena*

Chapter 4: Publications



## Introduction to HAZARD publications

The HAZARD Project has produced over 30 scientific publications during its lifetime. These publications vary in content from conducting risk analyses of collisions and modelling the probability of an accident during a ship-to-ship transfer to studies on cybersecurity in ports and research on cargo thefts.

Id est, a massive library of HAZARD publications delving diversely into issues related to port safety and security, is one of the most impressive and lasting outcomes of the project. The HAZARD Project has also provided Master's thesis opportunities to students.

Alongside scientific publications, inspiring pragmatic Master's theses, and providing Knowledge Partners with first-hand data directly from the field, the project's contribution to the academic field in safety & security questions regarding ports is undeniable.

The publication archive also makes possible the better preservation of HAZARD's legacy – publications are easily accessible to anyone, be it port personnel planning cybersecurity investments or drawing up a contingency plan, mathematicians modelling risks, city council members engaged in urban planning, or students writing their Master's thesis, there is bound to be something interesting and new for all stakeholders.



## HAZARD publications

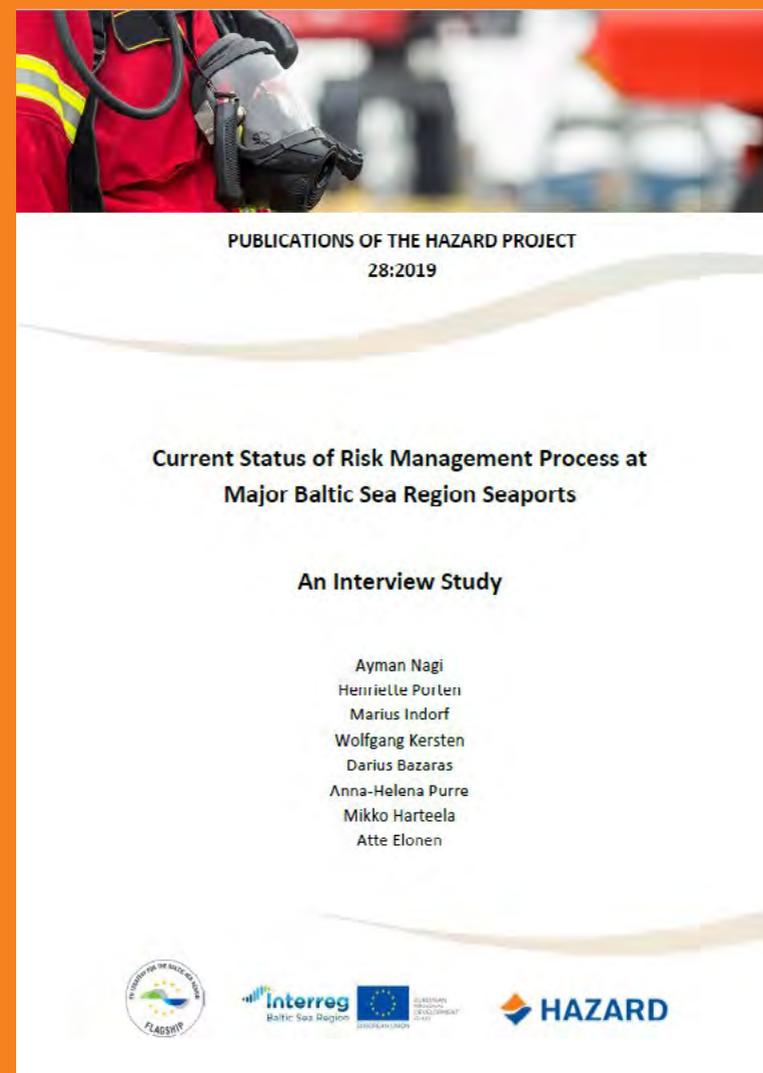
The HAZARD publication series comprises over 30 scientific publications.

- 1/2016: *Seaport safety and security issues in the Baltic Sea Region* by Lauri Ojala, Mariikka Whiteman and Jarmo Malmsten from University of Turku
- 2/2016: *Simpler safety and security planning for ports* by Kirsti Tarnanen-Sariola from Finnish Port Association and Ilkka Laitinen and Jussi Kurikka-Oja from Sitowise, former Sito Oy
- 3/2017: *Cybersecurity in ports* by Jenna Ahokas and Tuomas Kiiski from University of Turku
- 4/2017: *Development of cause-effect dependence model of undesirable events using Bayes network* by Barbara Tchórzewska-Cieślak, Katarzyna Pietrucha-Urbanik and Dawid Szpak from Rzeszow University of Technology
- 5/2017: *Procedure based functional safety and information security management of industrial automation and control systems on example of the oil port installations* by Marcin Śliwiński and Emilian Piesik from Gdańsk University of Technology
- 6/2017: *Towards a process based management system for oilport infrastructure in context of insurance* by Dariusz Gołębiewski from PZU Group and Kazimierz T. Kosmowski from Gdańsk University of Technology
- 7/2017: *Cognitive engineering and functional safety technology for reducing risks in hazardous plants* by Kazimierz T. Kosmowski from Gdańsk University of Technology
- 8/2017: *Navigational decision support system during approach manoeuvre in emergency STS transfer operation* by Anna Witkowska and Roman Śmierzchalski from Gdańsk University of Technology and Przemysław Wilczyński from Gdynia Maritime University
- 9/2017: *Modelling hazard related interactions between processes realized in and around the Baltic Sea Region ports* by Jacek Malinowski from Polish Academy of Sciences
- 10/2017: *Review of methods for identifying threats including the critical infrastructure systems within the Baltic Sea* by Barbara Tchórzewska-Cieślak, Katarzyna Pietrucha-Urbanik and Dawid Szpak from Rzeszow University of Technology
- 11/2017: *Nonhomogenous Poisson process application to modelling accidents number at Baltic Sea waters and ports* by Franciszek Grabski from Gdynia Maritime University
- 12/2017: *Analysis of the crude oil transfer process and its safety* by Agnieszka Blokus-Roszkowska and Bożena Kwiatkowska-Sarnecka from Gdynia Maritime University and Paweł Wolny from Naftoport Ltd
- 13/2017: *Modelling spread limitations of oil spills at sea* by Sambor Guze, Krzysztof Kołowrocki and Jolanta Mazurek from Gdynia Maritime University
- 14/2017: *Õiguslik analüüs Muuga risked* by Kristo Kallas from law firm Sirel & Partners
- 15/2017: *Communication and Regulatory Challenges in Baltic Sea Region ports* by Ira Ahokas and Kimmo Laakso from University of Turku
- 16/2017: *Bibliometric Analysis of Risk Management in Seaports* by Ayman Nagi, Marius Indorf and Wolfgang Kersten from Hamburg University of Technology
- 17/2017: *Voluntary oil spill response in the Baltic Sea Region* by Ukri-Pekka Puruskainen
- 18/2018: *Theft of Goods in Ports: A review of TAPA EMEA IIS statistics* by Daniel Ekwall and from University of Borås and Björn Lantz from Chalmers University of Technology
- 19/2018: *Ülevaade Muuga sadama Lääneosa käsitlevatest riskianalüüsides* by Anna-Helena Purre from Viimsi Municipality
- 20/2018: *Overview of risk assessments in the western part of Muuga harbour* by Anna-Helena Purre from Viimsi Municipality
- 21/2018: *The risk management process and the supply chain security* by Ulf Paulsson from University of Lund, retired

## HAZARD publications

- 22/2018: *Supply chain risk management: An idea generator for managing disruption risks in supply chains* by Ulf Paulsson from University of Lund, retired
- 23/2018: *The flow-based society and its vulnerability* by Ulf Paulsson from University of Lund, retired
- 24/2018: *Risk Assessment methods in Seaports: A Literature Review* by Nelly Moreno Parra, Ayman Nagi and Wolfgang Kersten from Hamburg University of Technology
- 25/2018: *International regulations for seaports in the Baltic Sea Region* by Håkan Torstensson and Daniel Ekwall from University of Borås
- 26/2019: *The Finnish maritime sector and cybersecurity* by Jenna Ahokas from University of Turku
- 27/2019: *Laivanselvityspalveluiden nykytilanne ja näkymät Suomessa* by Mikko Koivumäki from University of Turku
- 28/2019: *Current Status of Risk Management Process at Major Baltic Sea Region Seaports: An Interview Study* by Ayman Nagi, Henriette Porten, Marius Indorf and Wolfgang Kersten from Hamburg University of Technology, Darius Bazaras from Vilnius Gediminas Technical University, Anna-Helena Purre from Viimsi Municipality and Mikko Harteela and Atte Elonen from University of Turku
- 29/2019: *Transport Damage Analysis of Dangerous Goods: State-of-the-art Report for Baltic Ports* by Håkan Torstensson and Daniel Ekwall from University of Borås
- 30/2019: *HAZARD Seaport Risk Assessment Toolbox* by Ayman Nagi, Abir Bouraffa and Wolfgang Kersten from TUHH
- 31/2019: *Transport damage analysis of dangerous goods—stakeholder update for Baltic ports* by Håkan Torstensson and Daniel Ekwall from University of Borås

- 32/2019: *Transport and Logistics in the Baltic Sea Region by 2030: A Foresight Study* by Eeli Friman, Lauri Ojala and Harri Lorentz from University of Turku
- 33/2019: *Merenkulku kansantaloudessa—Tarkasteluvuodet 2014–2015* by Visa Kuntze, Lauri Ojala and Heikki Kauppi from University of Turku





[blogit.utu.fi/hazard](http://blogit.utu.fi/hazard)

**HAZARD**



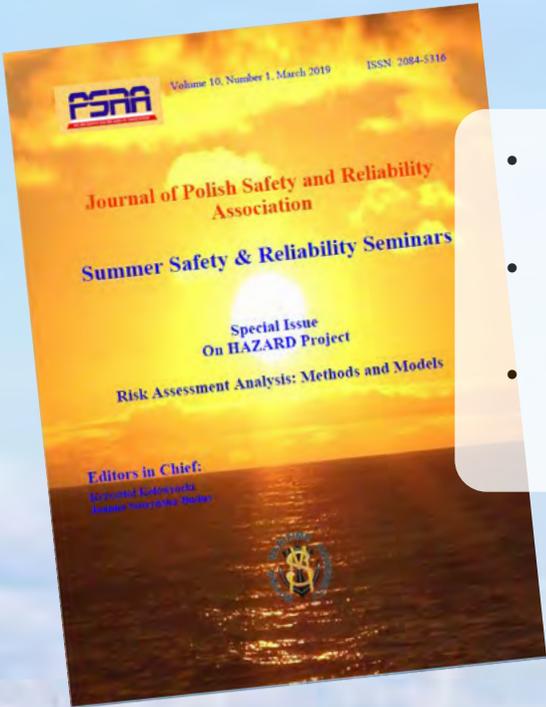
MITIGATING THE EFFECTS  
OF EMERGENCIES IN  
BALTIC SEA REGION PORTS  
2016 - 2019

**Interreg**  
Baltic Sea Region



Participants of the Communication seminar in Riga, March 2013

# Polish Safety and Reliability Association



- The Polish Safety and Reliability Association (PSRA) was founded in 1997
- PSRA became a member of the European Safety and Reliability Association in 1999
- PSRA publishes its own journal, fittingly titled *Journal of Polish Safety and Reliability Association*



Krzysztof Kołowrocki



- Professor and the Head of the Mathematics Department of Gdynia Maritime University
- President of the Polish Safety and Reliability Association (PSRA)
- PhD and Master's degree in Applied Mathematics, PhD (Habilitation) and Professorship in Technical Sciences

Prior to the HAZARD Project, Krzysztof and Joanna had participated in two EU-funded projects focusing on safety and reliability of complex systems and processes. HAZARD was a particularly positive experience for the duo, possibly sparking off a follow-up project.

### A mathematician's perspective

PSRA perfectly balanced the Project Partner assortment of HAZARD by providing a counterweight to several Partners from the field and the maritime industry. Access to unique, primary data from the field, a relatively rare treat in the highly theoretical realm of advanced mathematics, was perhaps HAZARD's greatest contribution to PSRA alongside the possibility to collaborate with Seaport and Rescue Partners.

### A HAZARD spin-off

Krzysztof, Joanna and their colleagues from the PSRA were by far the most frequent publishers of the project, and the research aspirations of PSRA have not in any way cooled down. The duo hints that the idea of picking up where HAZARD left off has been considered, to the extent that a provisional title has been given to the project: "Safety and Security of Baltic Sea Area Critical Infrastructure Networks, an Integrated Management System". In the proposed project, environmental impacts of human activities and further repercussions would be investigated and analysed, while critical infrastructure networks would be identified in the BSR.

### Putting learning experiences into practice

The results and learning experiences of HAZARD accomplished by PSRA were displayed in the final workshop in Gdynia on 15 February 2019 and published in the special issue of the Journal of Polish Safety and Reliability Association for effective dissemination. As a concrete manifestation of the project, PSRA has announced the development of an ambitious general tool titled "The Integrated Critical Infrastructure Safety and Security Management System" to help stakeholders further mitigate risks in their operations.

*Dear readers, please consider joining us in the proposed future research for safety & security in the BSR. Project Office and Project Partners, thanks a lot for the wonderful co-operation so far, and hopefully we will meet in the near future. —Krzysztof & Joanna*

- PhD (Habilitation) in Technical Sciences
- Professor at the Mathematics Department of Gdynia Maritime University
- Vice-President of the Polish Safety and Reliability Association



PSRA dining in Gdynia after a successful HAZARD workshop in February 2019

## University of Borås

- The University of Borås was founded in 1977, the Technical School of Weaving was founded back in 1866
- In 2018 there were approximately 11,000 students and 750 members of academic staff
- Home of the world-renowned Swedish School of Textiles
- Launched a police education programme in spring 2019
- University mission: *Vetenskap för profession* (Science for Professions)





- Professor of Textile Management at the University of Borås
- PhD in Logistics and Supply Chain Management from Chalmers University of Technology
- Previously worked in global security at DB Schenker

Daniel, a supply chain security professional, made new international contacts in the field of port activities and risk management during the HAZARD Project. As he puts it:

**“Each Partner participated with a team spirit towards the common goal of the project.”**

### **Leader of Work Package 3**

The University of Borås was the Leader of WP3, with a focus on safety and security regulation of ports in the Baltic Sea. WP3 produced several HAZARD publications, including examination of patterns of reported cargo thefts at maritime transport facilities, an overview of international rules and regulations related to port activities, and analysis of the damage incurred to dangerous goods at port facilities.

### **Cybersecurity gaining momentum**

Although the HAZARD Project did not directly address criminal activities, it did generate new findings linked to crime-related issues in supply chains. When asked about the maritime safety & security situation in the BSR, Daniel sees opportunities and obstacles as having remained the same in recent decades. From the point of view of WP3, rules and regulations for port operations have been driven by policymakers who simultaneously seek to reduce port-related risks and improve competitiveness.

Daniel points out that cybersecurity will be one of the most critical issues facing business in the BSR as we move into the 2020s. He believes that the impact of the HAZARD Project has raised awareness of the crucial role of cybersecurity in ports.

### **HAZARD did not disappoint**

“The University of Borås has always had the goal to contribute to society through research, education and development projects,” Daniel states. “I had high hopes for the HAZARD Project from the start, and in the end, it delivered even more than I had initially hoped.

*Always a pleasure to work with the University of Turku and the Project Office. I would like to have the opportunity to work with all the Partners of HAZARD again. —Daniel*

**Chapter 5:  
The Baltic Sea Region now  
...and into the future**



## Final Conference in Tallinn, Estonia

The HAZARD Project's Final Conference was held in Tallinn, Estonia, on 14–15 March 2019. The event drew a large audience beyond the HAZARD group, including many representatives of seaport authorities who came to listen to the results of the North European Port Authorities' Website Content and Usability Evaluation.

### Renowned speaker line-up

The many speakers alongside the HAZARD Project Partners included a diverse collection of specialists, all with the common denominator of maritime and port safety & security. Among those who shared their insights on stage were Mr. Bogdan Ołdakowski, Secretary General of BPO, Mr. Markku Mylly, former Executive Director of EMSA, Mr. Christopher Ross, Deputy Head of the European Commission Directorate-General for Mobility and Transport, Mr. Peter Johansson, Rescue Director at Eastern-Uusimaa Emergency Services Department, and Ms. Tiia Lohela, Special Advisor to the European Centre of Excellence for Countering Hybrid Threats.

### Noteworthy results

The results of two Master's theses from the University of Turku, assigned by the HAZARD Project, were presented at the conference. One was a prospective outlook on transport and logistics in the BSR by the year 2030; the other evaluated the safety & security content and usability of the websites of different seaport authorities. The audience also witnessed the unveiling of the HAZARD Toolbox, developed by the Technical University of Hamburg. By attracting over 60 high-profile guests, the conference ensured the continued dissemination of outcomes, results and learning experiences of the project.





Final Conference in Tallinn, March 2019

## Transport and Logistics in the Baltic Sea Region by 2030

Eeli Friman, an Operations & Supply Chain Management major student from the University of Turku, wrote his Master's thesis assigned by the HAZARD Project as a follow-up to previous research by Ojala et al. (2013) and the graduate thesis by Leino (2014). The aim of the study was to map the outlook for transport and logistics in the BSR by the year 2030.

### The Delphi method in action

The data was gathered using the Delphi method by surveying a multinational expert panel of 96 participants from the BSR. The survey included 52 questions, subdivided into 10 themes. Several factors anticipated to affect the region's competitiveness by 2030 were identified, of which the most important ones were the growing importance of environmental aspects in conducting business, significant technological advances, increasing taxation and regulation, increasing prevalence of cyberthreats, and a shortage of skilled blue-collar labour. Differences with the findings of the preceding Delphi study were minor, the greatest change being the tightening of border controls between EU countries and countries outside the European Union.

### Policy recommendations

In response to the findings, the following policy recommendations have been made for decision makers: logistics aspects should be researched more thoroughly when making decisions; equipment and infrastructure should be prepared for tightening environmental regulation; the logistics sector should brace for tax and regulatory changes affecting profitability; technological changes must be planned for to enable the effective adoption of relevant innovations; the approaching lack of skilled workforce should be prepared for by investing in relevant education; cybersecurity needs to be increased across all parts of the supply chain; and possible alternative trade relations should be considered in order to prepare for the anticipated tightening of border crossings between Russia and other BSR countries.

Score (higher signifying more positive outlooks)  
1.00 2.00 3.00 4.00 5.00



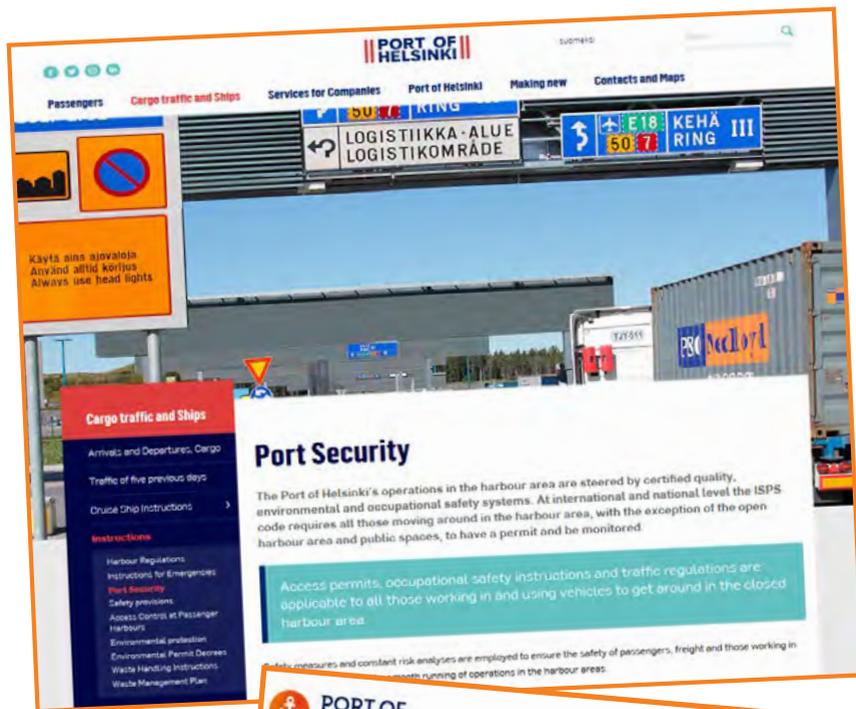
### Weighted results of the Delphi study by theme in descending order

The following recommendations are derived from the survey results and will be presented to policymakers:

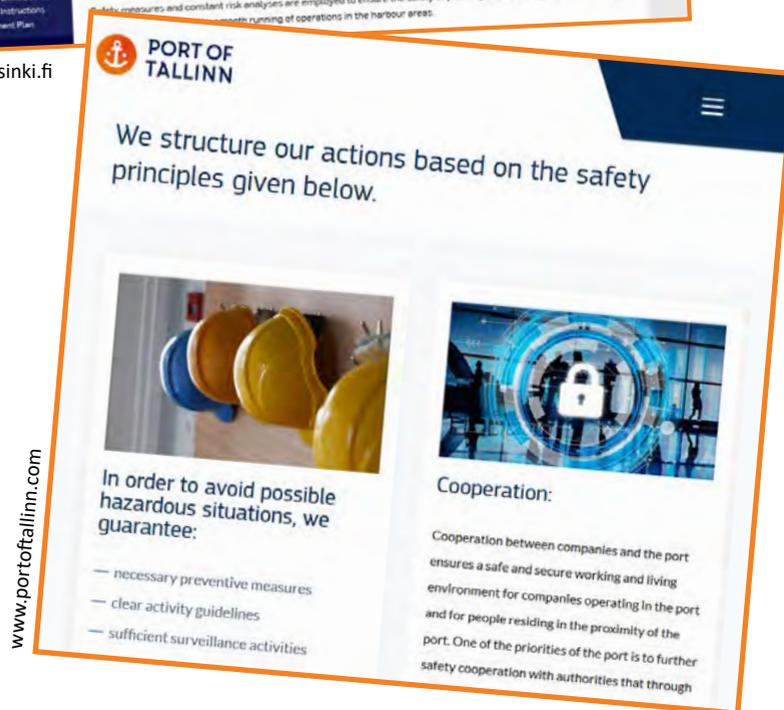
- Recognition of the increased importance of transport and logistics for competitiveness
- Focus on the environmental aspects and preparation for upcoming changes
- Preparation for upcoming tax and regulatory changes, upcoming technological changes, possible lack of a skilled workforce and increasing prevalence of cyberthreats
- Acknowledgment of deteriorating trade relations between Russia and other BSR countries excluding Belarus



On the fairway during the Naantali exercise in October 2017



www.portofhelsinki.fi



www.portoftallinn.com

Screenshots from the websites of Port of Helsinki and Port of Tallinn

## North European Port Authorities' Website Content and Usability Evaluation

Sari Kokkila, an Operations & Supply Chain Management major student from the University of Turku, was assigned by HAZARD to investigate the safety & security content and ease of use of BSR port websites.

### 97 port authorities

In total, 116 ports managed by 97 port authorities were studied in the work. These included 54 Ten-T Core ports north of Le Havre and 41 Ten-T Comprehensive ports in the BSR. The sample also included 21 ports outside the European Union in Norway and Russia. Of all the websites visited, 88 had English content and were selected for the evaluation.

### Evaluation criteria

The evaluation criteria were divided into two main categories, Content and Usability, sorted under seven sub-categories. The evaluation comprised 280 dimensions of content, usability and website quality. The overall score was calculated as the average of scores in each relevant subcategory on a scale of 0–100.

### Enlarged edition in 2020

As a continuation to the North European Port Authorities' website evaluation done under HAZARD, the research team of Turku School of Economics has made a similar assessment of the remaining EU seaports. The team comprises Joonas Tamminen, Oskari Kajander, Jarmo Malmsten and Professor Lauri Ojala.

This EU-wide evaluation has been completed under the ResQU2 Project Platform and the results will be published in the public domain in early 2020.

Rank	Port (City)	Country	Overall Score (0-100)
1	Helsinki	FI	79.1
2	Dover/Folkestone	UK	77.1
3	Rauma	FI	76.6
4	Pori	FI	75.6
5	Tallinn	EE	74.4
6	Felixstowe	UK	73.3
7	Oxelösund	SE	72.9
8	HaminaKotka	FI	72.6
9	Oulu	FI	71.8
10	Glasgow	UK	70.6
11	Kokkola	FI	69.1
12	Raaha	FI	69.0
13	Milford Haven	UK	67.3
14	Bristol	UK	67.0
15	Cardiff & Newport	UK	66.6
16	Liverpool	UK	66.0
17	Turku	FI	65.6
18	Gdansk	PL	65.1
19	Fredericia	DK	64.6
20	Southampton	UK	63.9

The top 20 ports based on Kokkila's study on website content and usability



Announcement of the #1 seaport authority in the Website Content and Usability Evaluation at the Final Conference. The award was received by Ms. Eeva Hietanen, Communications Manager, Port of Helsinki.





# Life after HAZARD

Two projects are already in motion continuing the legacy of HAZARD.

## ResQU2 Project Platform

### Increasing Emergency Preparedness

Large-scale rescue operations are often joint efforts of several countries. For authorities to be able to co-operate in these rescue operations, they must have the ability to work together. This is why joint guidelines, procedures, and frequent joint exercising are needed, and why the ResQU2 Platform Project aims to raise awareness of existing procedures and to encourage their implementation.

ResQU2 stands for “Enhancing the durability of learning experiences gained in the ChemSAR, HAZARD, DiveSmart Baltic and Mirg-Ex projects on guidelines, operational plans and procedures and exercises related to incidents at sea and in ports”. ResQU2 will ensure that the learning experiences gained from the aforementioned four projects and existing guidelines are communicated, discussed and demonstrated to the national rescue authorities around the Baltic and North Sea areas.



**Duration:** October 2018–September 2020

**Budget:** 1 m€ of ERDF and national public funding

**Lead Partner:** University of Turku, Centre for Maritime Studies

**Partners:** Swedish Coast Guard (SE), Estonian Police and Border Guard Board (EE), Finnish Border Guard (FI), Hamburg Fire and Rescue Service (DE), Fire and Rescue Department of Lithuania (LT), Southwest Finland Emergency Services (FI), Safety Region Zeeland (NL), Polish Naval Academy (PL), Latvian Maritime Academy (LV)

## OIL SPILL Project

### Enhancing Oil Spill Response Capability in the Baltic Sea Region 2019–2021

Unlike in the open sea and international waters, combatting oil spills in shallow waters and coastal areas is often complicated. The division of tasks and responsibilities between competent authorities and other stakeholders, such as NGOs, may be unclear. The focus of the OIL SPILL project is to strengthen the oil spill response capability in the BSR by enhancing co-operation structures, procedures and skills between and within the relevant stakeholders.

Coastal oil spill response is an arduous, long-term operation. Voluntary oil spill response capability is therefore critical in achieving optimal results and minimizing environmental harm. Essential in optimizing volunteer contribution is to establish a co-operation model for both authorities and volunteers.

The Project Director for the OIL SPILL project is Professor Lauri Ojala and Jarmo Malmsten is the Project Manager.



**Duration:** January 2019–June 2021

**Budget:** 2.4 m€ of ERDF and national public funding

**Lead Partner:** University of Turku, Turku School of Economics

**Partners:** Ministry of Environment of Estonia (EE), Southwest Finland Emergency Services (FI), Danish Civil Protection League (DK), Finnish Red Cross (FI), Tallinn University of Technology (EE), Fire and Rescue Department of Lithuania (LT), Östra Götaland Fire and Rescue Service (SE), Lithuanian Red Cross Society (LT), Klaipėda University (LT), Neste Corporation (FI), Finnish Environment Institute (FI), Latvian Maritime Academy (LV)



Your local SAR task force reporting for duty!



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**Danuta Niemiec:** 195 (background)

**Esko Keski-Oja:** 1–2, 13–14, 55, 93, 183, 184–185

**Finnish Border Guard:** 213–214

**Hamburg Hafen und Logistik AG:** 33–34, 119–120, 122 (top), 125 (middle), 127–128

**Hamburg Fire and Rescue Service:** 37–38, 39 (middle, bottom), 40 (bottom), 41–42, 65–66

**Hamburg University of Technology:** 163–164, 170

**Hanna Oksanen:** 17–18,

**Ida-Nella Korhonen:** 22 (lower left)

**International Organization for Standardization:** 169

**Jarmo Malmsten:** 131–134, 135 (bottom)

**Klaipėda Fire and Rescue Board:** 78

**Klaipėda State Seaport Authority:** 72 (bottom)

**Lauri Ojala:** 7–8, 22 (middle), 24, 25 (bottom), 26, 31–32, 61 (top), 63–64, 69–71, 72 (top), 121, 122 (bottom), 125 (top, bottom), 126, 139, 141, 157–158, 179–180, 199–200, 225–226

**Maria Nykyri:** 53, 57, 67, 73–74, 81, 129

**Mariikka Whiteman:** 3–5, 22 (top), 52, 58, 83–88, 103–110, 143–150, 156, 187–188, 229–230

**Marius Indorf:** 39–40 (top)

**Mikko Grönman:** 43–48

**Mindaugas Kruopys:** 75–76, 79, 97–102, 135 (top), 136, 161–162, 173–174, 193–194

**Neste:** 113–114

**Oliver Liidemann:** 181–182

**Pasi Leino:** 21 (right)

**Polish Safety and Reliability Association:** 195 (journal cover), 196

**Port of Turku:** 151–153

**Päivi Söderholm:** 25 (top), 59–60, 61 (middle, bottom), 62, 227

**Reima Kokko/Valolink:** 10, 91, 115, 166, 167, 183, 203, 205–210, 217–222

**Suss Wilén/University of Borås:** 201–202

**Southwest Finland Emergency Services:** 22 (right), 49–50, 159–160

**Suomen ilmakuva:** 89–90

**Vilnius Gediminas Technical University:** 175–178

**Wolfgang Kersten:** 19, 123

**Yuliia Mykhailova:** 21 (left)



The Project Office would like to thank each and every one of the Project Partners, Associated Organizations and other stakeholders for sharing this wonderful three-year journey, filled with hard work but also with laughter and an incontestable sense of achievement. Thank you for standing with us and for making HAZARD the success it has been.

