



# MariCybERA Team #4 Sanja Bauk



MariCybERA ERA Chair  
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## Sanja Bauk



Sanja Bauk is a Professor and the new ERA Chair Holder of Maritime Cybersecurity (MariCybERA) at the Estonian Maritime Academy, Tallinn University of Technology. During the past five years she was an Associate Professor at Durban University of Technology in South Africa, where she was an active researcher and lectured a group of subjects in Maritime Electronic Navigation, Logistics, and Research Methodology. She started her academic career back in 1998 at Maritime Faculty Kotor in Montenegro, where she, besides carrying out research work, lectured Operations Research and several modules in Maritime Information Systems for more than twenty years. Her interests are diverse and multy-layered. Currently, her research focus is on maritime digital transformation, including cybersecurity.

Tell us about your background and experience in maritime and cybersecurity



My background in maritime research is a quite rich. I started with purely technical topics and during the time diverted my research interests towards informatics and human computer interaction. Regarding maritime cybersecurity, I am interested in vulnerable points within electronic navigation devices and backend information communication systems. Besides, I would like to explore a maritime hacker's persona and to become capable to sketch one. However, I assume that the sources in this domain are scarce.

During the past five years, I was an Associate Professor at Maritime Studies Department at Durban University of Technology (South Africa), where I lectured ECDIS and RADAR/ARPA courses at simulation level, as well as Logistics III, Research Methodology, and Research Project modules at under and post-graduate levels. During this engagement, I have published two books: "Maritime Issues in Digital Age" and "Electronic Chart Display and Information System in Brief". The first one is a research monography, while the second one is a students' textbook.

Previously, I worked successively as a Lecturing Assistant, Assistant Professor and Associate Professor with Maritime Faculty Kotor at University of Montenegro (Montenegro) for more than twenty years. However, on several occasions, I

was a guest lecturer and researcher at Karl-Franzens University Graz (Austria), Lund University (Sweden), RWTH University Aachen (Germany), City, University of London (England), etc. At Maritime Faculty Kotor, I lectured Operations Research and a group of subjects related to Electronic Navigation and IT applications in maritime. Since I had rich experience in Operations Research, I published a book "Quantitative Methods for Management". I have published numerous journal and conference articles. These dealt with variety of topics in ship route optimization; wireless sensors' networks optimization in seaport environment; ship's hull structural stability; digital transformation in maritime, etc.

Currently, I plan to focus on maritime cybersecurity, preferably through exploring "sensitive" spots in maritime navigation and global maritime supply chains, along with an attempt to model a maritime hacker's persona.

What motivated you to specialize in maritime specifically



It was rather a result of the circumstances, than my choice. A country, in which I was born, Yugoslavia, disassociated at the beginning of 90s, and then it was a war there. This had negative implications on the beginning of my career and consequently on its further development. I wrote about the choice of my career path in the book "Life Stories of Women in Academia" (which is available on Amazon). In fact, an "invisible hand" brought me to maritime, but I found many interesting things about mechanical and electronic navigational devices, ship's route simulation and optimization, various IT applications in maritime, and so on. By enrolling Maritime Studies, unexpectedly, the "ocean of unknown" opened up to me. Moreover, this "ocean of unknown" stretches still out in front of me.

How do you see your leading role in the "Horizon 2020 ER/ or MariCybERA project?



Due to my understanding, a leader is the first among the equals. Therefore, it is my pleasure and honour to be a

representative of professionals, who can work independently, but who at the same time can function as a team. In the environment, which includes accountability and freedom of team members, along with their readiness to be team players, I can see myself as a good consultative leader. Of course, a sound team around you, composed of specialists devoted to their work, is extremely important. I would be happy, if I (finally) reached the stage in my professional life, at which a successful team stands with me. As a small digression, let me quote a Zulu (South African) proverb: "A human being is a human being because of other human beings". In fact, we have to respect each other, share correctly our work and its outcomes with the team to which we belong.

How do you plan to contribute to the development and growth of the Maritime Cybersecurity Centre at TalTech?



I plan to work hard and honestly. As a consultative leader, I will undoubtedly need support of the team. I will continue to work as a researcher and publish papers in recognized journals and present the results of my research work at well-established international conferences in maritime. Besides, I plan to enhance all ongoing activities within the Center and to try to popularize research and science through the contemporary media channels.

Thanks to my experience in different academic environments during the past three decades, I know how important is to have adequate institutional support, human potential, premises, and financial resources for ensuring viability of research endeavours. Therefore, in an attempt to achieve success, I need, and count on MariCybERA team, Maritime Academy, TalTech, and wider community support.

What aspects of the MariCybERA project attracted you to it?



I was looking to this project dominantly from maritime perspective, since it is closer to me. Maritime sector is lagging behind in terms of digitalization in comparison to other spheres of human activities. The same applies for

maritime cybersecurity. I recall, when I was a beginner in academia, one of the professors gave me a valuable advice: "Search for the truth in the dark." Therefore, carrying out research in maritime cybersecurity is like searching for the truth in a still unenlightened space and I consider it as a challenge.

What do you see as the biggest challenges and opportunities of maritime cybersecurity today?



For me as a researcher, scarcity of knowledge in the field is the biggest challenge. The ultimate goal is to unroot cybercriminal in maritime and in general. However, since this idealistic striving will not stop hackers, we have to focus of cybersecurity hygiene, law, technical solutions in IT domain, human factor, education in cybersecurity, and all other means and measures, which can mitigate cyber threats and attacks. Involving a larger number of professionals, who share the same "dream" of eradicating cyber threats and attacks, is something we should work on together, as a team.

Are there any specific research projects or initiatives you pursue within the Maritime Cybersecurity Centre?



Firstly, I would like to edit a research monography on maritime cybersecurity, which will contain achievements of respected MariCybERA team members so far in this still underexplored research niche. It should be an "identity card" of the team and the opportunity for the public to become familiar with the team's achievements. It might be useful reading for the professionals, but additionally it can serve for educational purposes. Regarding the popularization of research and science, this monography can also serve well. Of course, this is an initial idea and in parallel and later on, we should go beyond this. The other ideas or initiatives, which might come from MariCybERA team members, are more than welcome, as well.

How do you intend to engage and involve students in the f

cybersecurity?

A good way should be to introduce the students with some serious cybersecurity attacks in maritime and awake their understanding of the problem and its complexity. This can motivate them to explore deeper maritime cybersecurity issues and become specialist in this new discipline. My colleagues might have some ideas about cybersecurity hackathons, e.g., and we can go further in this direction. An international summer school might be a good idea, as well. Alternatively, collaborative online international learning projects with peers in maritime cybersecurity can engage students deeper into the field. Flip classrooms are also one option, where students can prepare at home essays about maritime cybersecurity and present them later to the classmates. In such way, students can become co-creators of maritime cybersecurity curriculum.

How do you plan to leverage your international experience from South Africa and Montenegro, to benefit the Maritime Centre and its goals?

Having a good network is of crucial importance in research and development. I expect assistance of some of my colleagues from Montenegro in applying for research and development project grants in the field of maritime safety, security, and cybersecurity in particular. When it comes to colleagues from South Africa, I supervise currently two PhD and two master students there, and they can involve different cybersecurity aspects into their studies, so it might be a contribution towards developing and sharing new knowledge internationally.

They say Estonia is famous for digitalization, do you see the best place to develop research in the field of mariti

If I am right, Estonia is the sixth in the world regarding digital development index. On the other side, it is a maritime country. It has a fleet under its own flag, including ships engaged in international merchant and passenger

shipping. At the Baltic Sea, Estonia is outdid only by Denmark and Sweden. Since two crucial elements for dealing with maritime cybersecurity are in place: Estonian high digital index and maritime affairs, it is up to the MariCyberERA team to use them properly.

What are your thoughts on the importance of public-private addressing cybersecurity challenges in the maritime indus



The regulations in cybersecurity, including its maritime dimension, are of crucial importance for stakeholders' readiness to invest more in it. Intensifying efforts on establishing more comprehensive cybersecurity law in maritime should encourage private sector to take more actively part into tackling cybersecurity threats. Additionally, building the trust among stakeholders is very important, and public sector should play a key role in this regard by creating safe and secure environment for all involved parties across maritime cluster.

What are your strategies for attracting external funding support research activities within the Maritime Cybersecu



Higher reputation of a research centre, higher opportunities to attract external funds. Patents' proposals, high publishing score, laboratory work, organizing workshops, seminars, hackathons, attracting (inter)national students, in particular PhD and postdoc ones, etc. – recommend a research centre for grants. In other words, the quality and quantity of research activities and their impact should play the key role in receiving a financial support. As far as I know, the Maritime Cybersecurity Centre organizes research seminars at which industry partners take part, so this is also an opportunity to attract external funds. Following calls for international projects in the field of maritime cybersecurity and similar topics, and applying for funds, is also an option for enriching funds.

What are your thoughts on promoting diversity and inclusion in the field of maritime cybersecurity, and how do you plan to address these aspects in your role as the head of the department?



Maritime cybersecurity does not necessarily require seagoing time (experience) and therefore it provides numerous research and working opportunities for variety of persons with adequate technical, digital and social skills, who are interested in this discipline. As a person with international working experience, I have developed a high level of diversity understanding and expanded my awareness about inclusivity. High level of social and emotional intelligence, along with compassion, play important roles in uplifting awareness about diversity and inclusion needs in today's society. I am ready to advocate and practice diversity and inclusion in my working environment, whenever the circumstances require it.

And last, how do you see the role of the Maritime Cybersecurity Centre in contributing to the overall cybersecurity landscape both nationally and internationally?



The role of the Maritime Cybersecurity Centre should be to contribute to the corpora of objective knowledge in the domain of maritime cybersecurity and beyond. The maritime cluster is vast, and maritime cybersecurity extends across all spheres of digital infrastructure, encompassing designers, managers, and users. As such, the Centre should make a substantial contribution to the essential facets of the maritime business and industry, which in today's world are inherently blending physical and digital realms.

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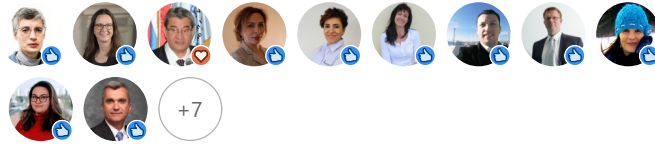
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Welcoming Our New Team Member! 🎉 Our journey continues with the invaluable contributions of our exceptional TEAM! Join us in extending a warm and enthusiastic welcome to the latest addition to our team, [Sanja Bauk](#)! 🔍 Get to Know Sanja Bauk, for the past five years she held the role of Associate Professor at Durban University of Technology in South Africa, where her passionate research and engaging lectures in Maritime Electronic Navigation, Logistics, and Research Methodology left a lasting impact. Read more from the article: [#NewTeamMember](#) [#AcademicExcellence](#) [#MaritimeCybersecurity](#) [#TalTech](#) [TalTech Estonian Maritime Academy](#)



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