

Workshop “Sea technologies: Skills and competences from surface to deep sea”

18th May 2018
Main Auditorium, ISEP
Porto, Portugal

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Objectives

- Disseminate information about the ProtoAtlantic project namely on its timeline, opportunities, and goals.
- Attract from the audience; participants, supporters, stakeholders, investors, etc.
- Build community to actively support market pull and technology push dynamics in the marine sector environment.
- Networking with potential entrepreneurs/start-ups/scientific community as marine idea/technology/product providers but also any others such as investors, policy makers, business support actors as well as marine/maritime enterprises representing the demand or market side for such potential ideas/technologies/products.
- Identification and attracting of entrepreneurs/start-ups willing to participate in our PROTOATLANTIC acceleration program.

Achievements

- ProtoAtlantic project was presented to potential stakeholders, participants, investors, supporters, etc.
- The event had 34 attendees, the majority were researchers on marine robotics.
- We had more registrations on the event from entrepreneurs than the ones that effectively showed up, this was due to the extension of the deadline for project submission to the National funds devoted to industry that collided with the event date.
- Contact info was acquired from attendees wishing to stay updated with the project and potentially become involved
- Representatives from INESC TEC shared information about their respective facilities' testbed facilities, prototyping capabilities, and support services. As well as their ongoing research related to marine robotics.

Executive Summary

The Workshop "Sea technologies: Skills and competences from surface to deep sea" was held at the Porto School of Engineering (ISEP) on May 18th, 2018. The workshop was organized under the EU-funded Interreg *ProtoAtlantic* project and the Compete 2020 *SIDENAV* project and aimed to present the projects objectives and latest achievements. Consequently we aimed for community development amongst stakeholders, and to give aspiring entrepreneurs, postgrads, and researchers a platform for developing their ideas and networking with experts and innovators in the marine field.

The workshop programme comprised 3 oral presentations followed by the final considerations. The first presentation entitled "ProtoAtlantic and TEC4SEA skills" was done by Carlos Almeida, Senior Researcher at the Centre for Robotics and Autonomous Systems (CRAS-INESC TEC). He made an overview of the ProtoAtlantic project referring to the objectives, the mentorship program, testbed facility opportunities, prototyping possibilities, overall bootcamp program, thus elucidating the attendees about the project and how they could take part in it. Also, he related the TEC4SEA skills with the ProtoAtlantic project. TEC4SEA is a platform/infrastructure to support research, development, and test of marine robotics, telecommunications, and sensing technologies for monitoring and operating in the ocean. Thus, the ProtoAtlantic project will allow INESC TEC to add prototyping to their set of capabilities and services enhancing the idea that TEC4SEA can help researchers and industry to develop technology for operation in maritime environments.

The following presentation "Photonics Technologies for Ocean Exploration" was made by Pedro Jorge, Senior researcher at the Centre of Applied Photonics (CAP-INESC TEC). In the context of Ocean exploration and exploitation, there is a high demand for a diversity of sensor technology capable of operating in marine like environments, providing critical information in multiple dimensions: understanding the evolution of water quality, evaluating the impact on biodiversity or assessing the integrity of operating vessels and infrastructures. Although there are some established technologies, most require a costly deployment logistics, and offer a very sparse sampling both spatially and in time. Photonics technologies have, in this context, associated advantages that make them promising tools for widespread monitoring in hazardous scenarios. Such is the case of optical fiber based sensing, with ability to operate remotely and in real time, offering multiplexing ability and immunity to corrosion and electromagnetic interference. In this talk, an overview of photonic technologies for monitoring physical, chemical and biological parameters, in marine like environments was addressed. Particular focus is given on the activity of INESC TEC on this area, with activity in fiber optic sensors, intelligent spectroscopy and optofluidics.

The last presentation - "Underwater Perception Technologies"- was made by Eduardo Silva, coordinator of the Centre for Robotics and Autonomous Systems. His presentation focoused on INESC TEC driving objectives for Marine Robotics. He listed INESC TEC's consolidated features such as autonomous bathymetry, coastal environmental monitoring, acoustic noise measurement and windturbine inspection, this was followed by a summarized description of the ongoing projects related to Underwater/Sea. The iVAMOS! project was thoroughly described giving emphasis on the EVA autonomous underwater vehicle and the associated software. The UNEXMIN project also deserved an exhaustive description including the latest achievements. INESC TEC's competences in sensing were advertised in the last slides of the presentation, these include:

- computer vision,
- 3D Multiple image view Reconstruction,
- Structured light 3D sensing,
- Hyperspectral camera,
- Imaging and Profiling sonar processing,
- Sidescan image processing,
- 3D sonar : CODA octopus echoscope,
- Underwater positioning and navigation.

The workshop ended with a look back at the topics discussed and some final considerations by Eduardo Silva.

Despite the low attendance rate regarding entrepreneurs and start-ups, the event was a success since it allowed disseminating the project among researchers that participate in several projects with industrial partners, and the information will pass on through them. In addition, the event allowed networking among researchers from a diversity of expertise and interests.

A list of attendees, presentations, photos, speaker bios and the day's agenda accompany this document as appendices.

APPENDIX A – AGENDA



SIDENAV

“Sea technologies: Skills and competences from surface to deep sea”

Auditorium E, ISEP, Porto
18th May 2018

Thematic Workshop Schedule

14:00 – 15:00	Reception & Icebreaker
15:00 – 15:30	<i>ProtoAtlantic and TEC4SEA skills</i> Carlos Almeida
15:30 – 16:00	<i>Photonics Technologies for Ocean Exploration</i> Pedro Jorge
16:00 – 16:30	Coffee Break
16:30 – 17:00	<i>Underwater Perception Technologies</i> Eduardo Silva
17:00 – 17:30	Final Remarks



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APPENDIX B – SPEAKER BIOS

Carlos Almeida has a Master Degree in Electrical and Computer Engineering - Autonomous Systems from the Porto Polytechnic Institute and is a PhD student at Faculty of Engineering of University of Porto. He is a Senior Researcher at INESC TEC and invited Professor at the School of Engineering (ISEP) of the Porto Polytechnic Institute (IPP). His main research area are Autonomous Systems, Embedded Systems and Robot design. He has participated in several national and European projects, namely ICARUS and SUNNY PF7 projects and VAMOS and UNEXMIN H2020 projects.

Pedro Alberto da Silva Jorge graduated in Applied Physics (Optics and Lasers) at the Univ. of Minho (1996), MSc in Optoelectronics and Lasers at the Physics Department of Univ. of Porto (2000); in 2006 concluded his PhD program at Porto Univ. in collaboration with the Department of Physics and Optical Sciences at the Univ. of Charlotte, North Carolina, USA, with work in luminescence based optical fibre systems for biochemical sensing applications. Since 1997 Pedro Jorge has been involved in several research and technology transfer projects related to optical fibre sensing technology, developing new sensing configurations and interrogation techniques for optical sensors. Pedro Jorge is a Senior researcher at INESC TEC where he leads the Biochemical Sensors team exploring the potential of optical fibre and integrated optics technologies in environmental and medical applications coordinating several projects. He has more than 200 publications in the fields of sensors in national and international conferences and peer reviewed journals, is author of 3 book chapters and also holds one patent. He is a member of SPIE and SPOF.

Eduardo Silva is the Coordinator of the Centre for Robotics and Autonomous Systems (CRAS) at INESC TEC and Professor at the School of Engineering (ISEP) of the Porto Polytechnic Institute (IPP). He has a PhD in Electrical and Computer Engineering from the University of Porto. His main research areas are marine robotics, control architectures, perception and navigation for autonomous robots. He has participated in more than 14 research projects. He has more than 60 publications in the area of the Field Robotics.

APPENDIX C – ATTENDEE/INTERESTED LIST



SIDENAV

Workshop

"Sea technologies: Skills and competences from surface to deep sea"

18th May 2018

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APPENDIX D – PHOTOS



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