



Kick-off Summer School 2025 Maritime Informatics & Robotics

18 - 27 June 2025

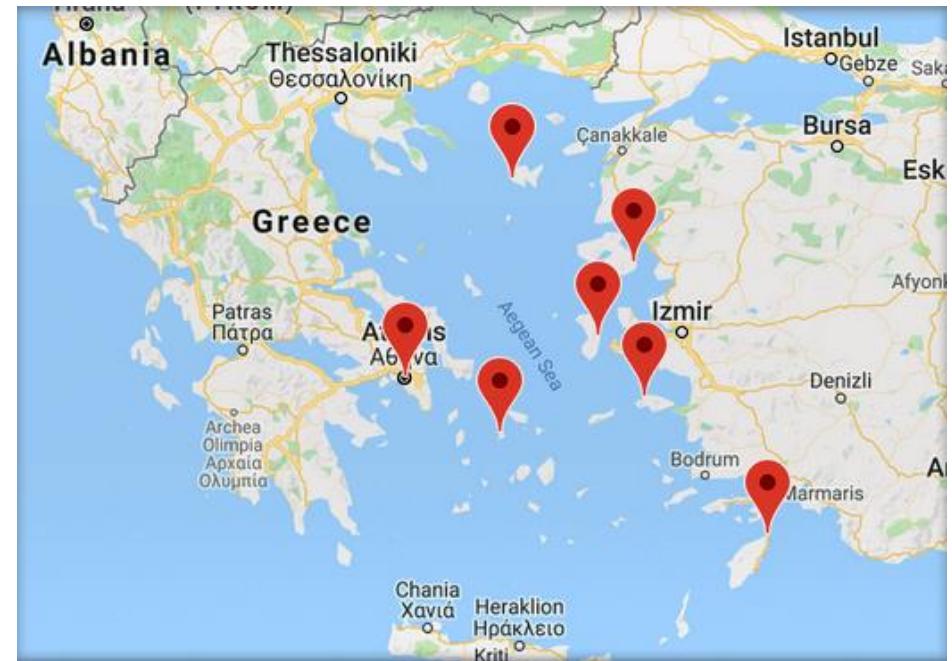




UNIVERSITY OF THE
AEGEAN

The University of
the Aegean

SCHOOL OF ENGINEERING
DEPARTMENT OF PRODUCT
AND SYSTEMS DESIGN ENGINEERING





[DESIGN]
MATTERS!

Our mission

- The Intelligent Transportation Systems Lab (Smart MOVE) is a pioneering research lab, located at the [University of the Aegean](#) in Syros (established by law [6560/ 21.12.2022](#)), performing multidisciplinary & interdisciplinary research dealing with both the theoretical and practical aspects of smart mobility and intelligent transportation systems.
- The overall mission is to advance the way we, and our things, get to places, through innovative technologies, harnessing the power of informatics and robotics.

Objectives

- The lab was founded with two main objectives:
 1. to develop tools that improve transportation systems of all kinds, and
 2. to train the next generation of professionals in this direction.



What do we do

Autonomous Systems

- Robotics/ Robots in the loop
- Sensors and IoT
- Shared Autonomy
- Big Data & Fusion
- Decision Support Systems

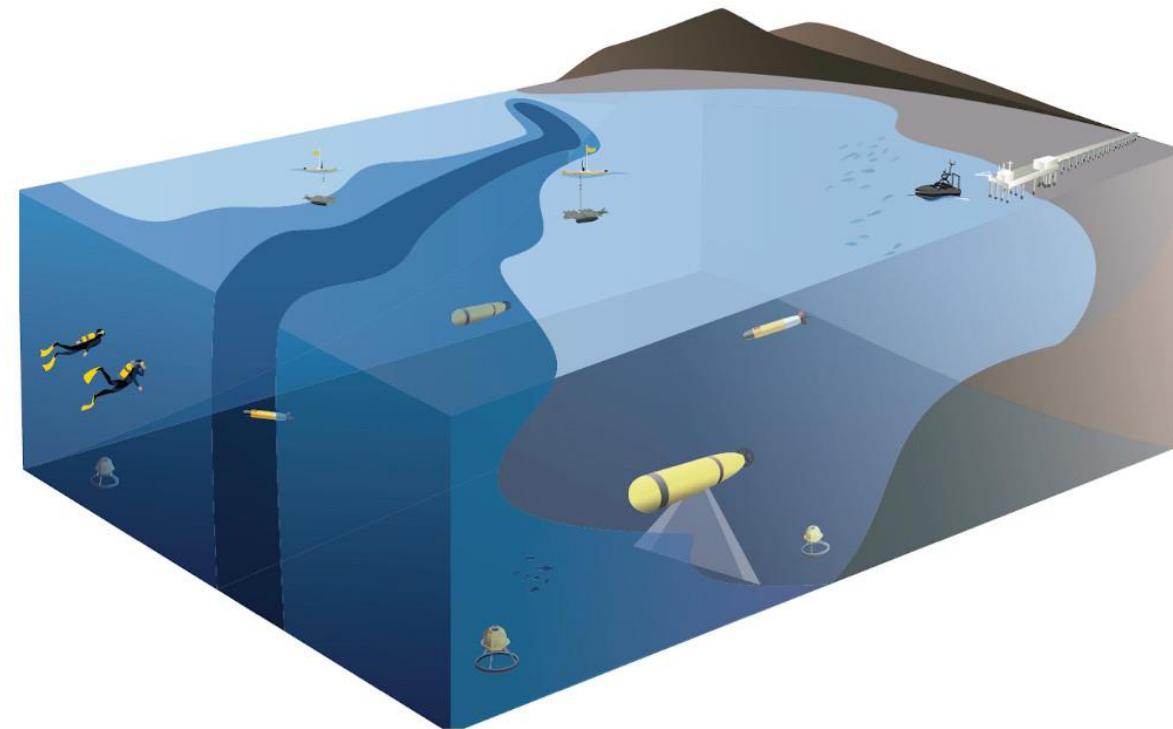
Autonomous navigation and anti collision systems

Cooperative perception and sensor fusion

Situational Awareness

Application Areas

- Sea
- Air
- Land



Sensor Fusion & Situational awareness





What is EIT?

- EIT Digital is a European initiative that aims to foster innovation and entrepreneurship in the digital technology sector. It is part of the European Institute of Innovation and Technology (EIT) and focuses on strengthening Europe's digital economy by supporting startups, scale-ups, and established companies in various areas such as digital infrastructure, cybersecurity, data analytics, and artificial intelligence.
- EIT Digital provides a range of services, including:
 1. **Education and Training:** Offering programs to develop digital skills and knowledge.
 2. **Innovation and Entrepreneurship Support:** Helping startups and businesses to grow and scale through funding, mentoring, and networking opportunities.
 3. **Research and Development:** Collaborating with universities and research institutions to drive technological advancements.
- Overall, EIT Digital aims to contribute to Europe's competitiveness and economic growth by promoting digital innovation.

EIT Summer Schools



- EIT Summer Schools are educational programs organized by EIT Digital that focus on various aspects of digital technology and innovation. These summer schools typically bring together students, professionals, and entrepreneurs from different backgrounds to enhance their skills and knowledge in areas such as:
 - 1. Entrepreneurship:** Learning how to develop and launch startup ideas.
 - 2. Digital Technologies:** Gaining insights into cutting-edge technologies like AI, data science, and cybersecurity.
 - 3. Innovation Management:** Understanding how to manage and drive innovation within organizations.
- Participants often engage in hands-on projects, workshops, and networking opportunities, providing them with practical experience and connections in the tech ecosystem. The summer schools are usually held in various European locations and are designed to foster collaboration and creativity among participants.



Why Syros?

ΝΗΙΟΛΟΓΙΩΝ ΤΩΝ ΠΛΟΙΩΝ ΤΗΣ

Ημερομηνία	Αξέσιος άριθμός	Πλοίων		Άριθμός Καταργήσιας	Πάχεις βασιλικού από	Χαρτοκάρτες	Ιδιοκτήτης				
		Είδος	Όνομα				Τύπος	Έπικρατεία	Επίγραμμα	Επίγραμμα	
					Καταργήσιας	Πρώτης αρχής βασιλικού από	Μέγιστης πλάτους	Μέγιστης συνολικής σύμβασης	Διάρκεια		
Ιουνίου 6	1	<i>Πλιάρος</i>	<i>Aegaeus</i>	2	1	28 ⁹⁵ / ₁₀₀		240	<i>Swallows</i>	<i>Μαρούσιανον Ναυλιός</i>	<i>Udoa</i>
		<i>D. S. Σιαγκλίνερ Λίνα</i>							<i>Πλιάρος Λίνα</i>	<i>Βιβλ. Ναυλαρίνης</i>	
		<i>H. G. S. B.</i>									
Ιουνίου 19	2	<i>Πελορίνα</i>	<i>Εισαγγελέα</i>	3	1	36.8 ⁹⁵ / ₁₀₀	366	-	<i>Γριάρος</i>	<i>Σιβαρός</i>	<i>Ναυλιός Λίπες</i>
		<i>D. S. Σιαγκλίνερ Λίνα</i>							<i>Πλιάρος Λίνα</i>		

Where we are

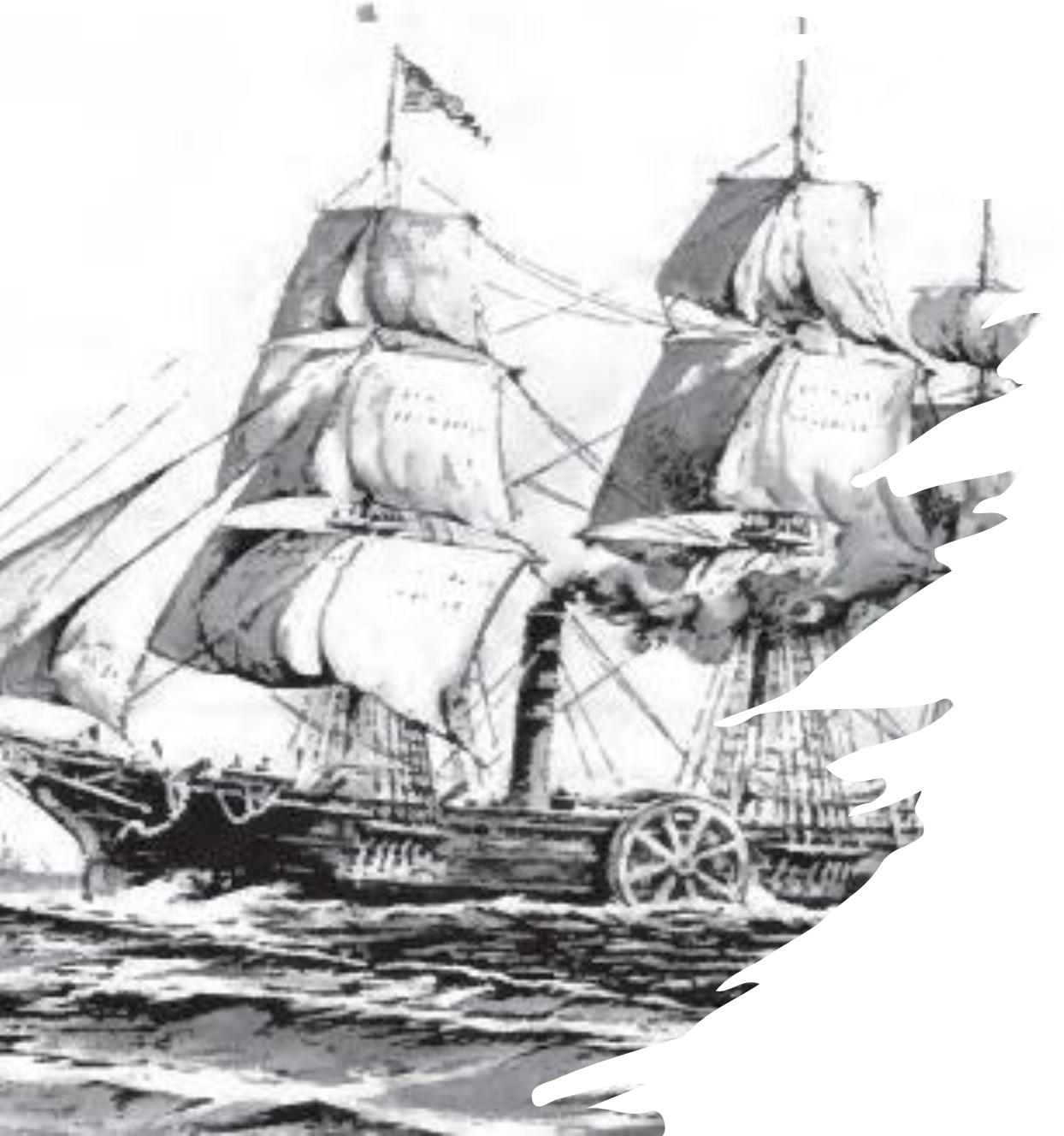
- The Electric Car
- it could reach 64 km per hour and the batteries would last for a distance of 64 km in straight line, 32 km in sloping terrain. It needed 7 hours of charging
- The first vehicle was constructed in October 1973.





Why now???

- The main transport mode for global trade is ocean shipping: around 90% of traded goods are carried over the waves.
- sea going ships are already obsolete TODAY



shipping changes slowly...very slowly

- Commercial shipping changes slowly, with only three major “waves of change” since Vasco Da Gama sailed to India in 1497-8, opening global ocean navigation and trade.
- The most recent, “bulk shipping”, started in the 1950s. Since then the commercial shipping business model has relied on economies of scale to reduce unit freight costs.



Shipping: Wave of innovations

Firstly, ships built with wooden hulls and masts were small (only 2-300 tons);
secondly reliance on sail and wind made voyages slow, unreliable and very risky;
thirdly there were no communications between regions, so trade was difficult to organize.

small companies/ big ships

1815–1950 Wave 2: Imperial trade - steam engines & steel hulls

1497–1815 Wave 1: From local to global trade

1950-? Wave 3: Free trade - diesel engines & welded steel hulls

the small, labour intensive, liners and tramps became increasingly uneconomic as cargo volume and handling costs escalated after 1950.

Κωνσταντίνος Βολανάκης





Todays technology is already obsolete

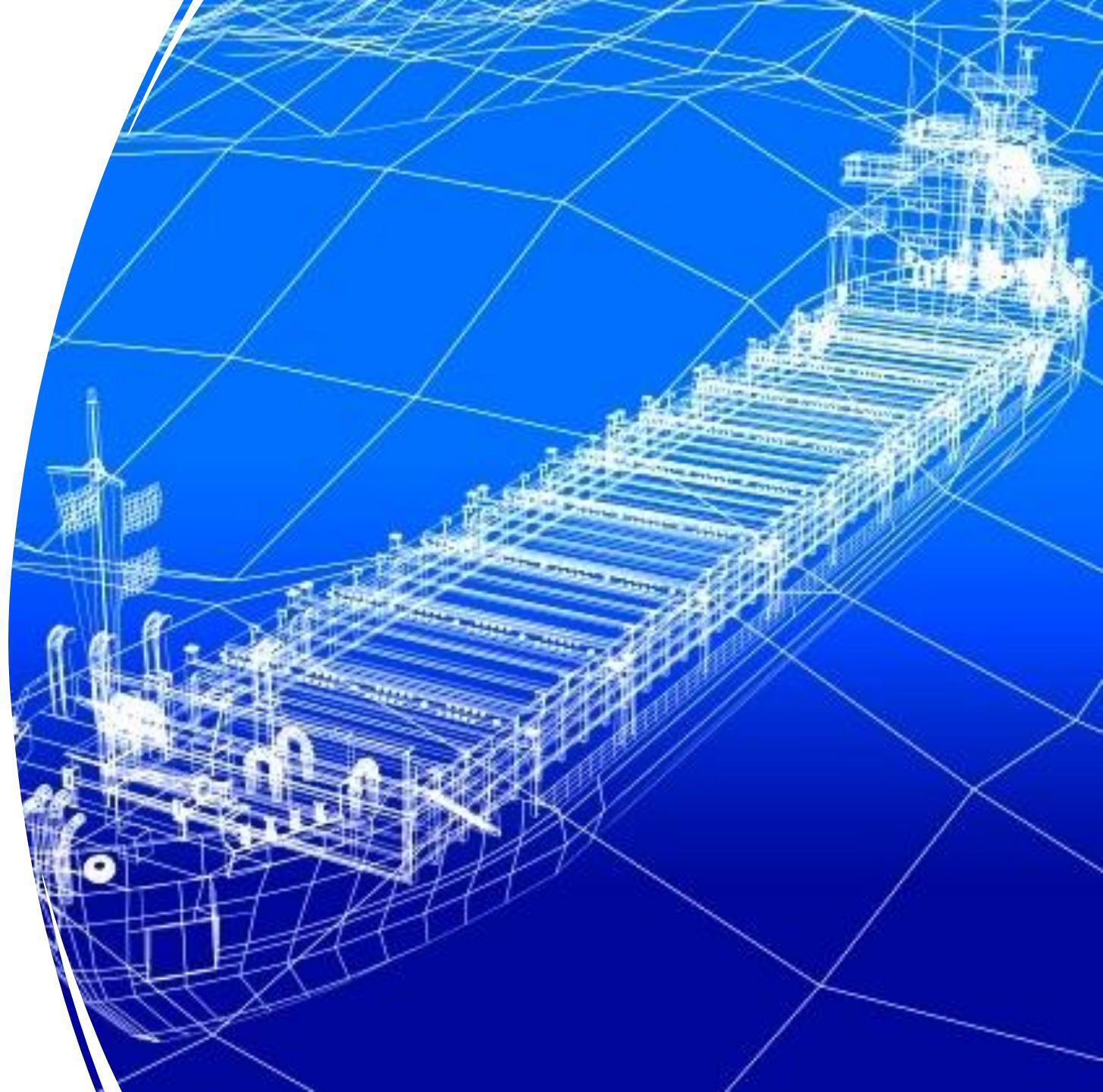
- The problem faced by investors is that after fifty years of building progressively bigger ships and fine tuning their design and engineering, the industry is running out of ways to cut costs
 - Carbon footprint and emission reduction
 - Safer shipping
 - More efficient operations

*One could be forgiven for assuming that the maritime industry would be one of the most advanced users of information and communications technology. Navigation, ‘logistics, efficiency – these are all crucial to the sector, and very much the domain of ICT....But step aboard the average ocean-going vessel and you’re likely to see computing equipment that many landlubbers would consider decidedly behind the curve.*¹⁰

¹⁰ “Maritime ICT: a new wave of technology” Dan Bradbury, Engineering & Technology Magazine 17 June 2013

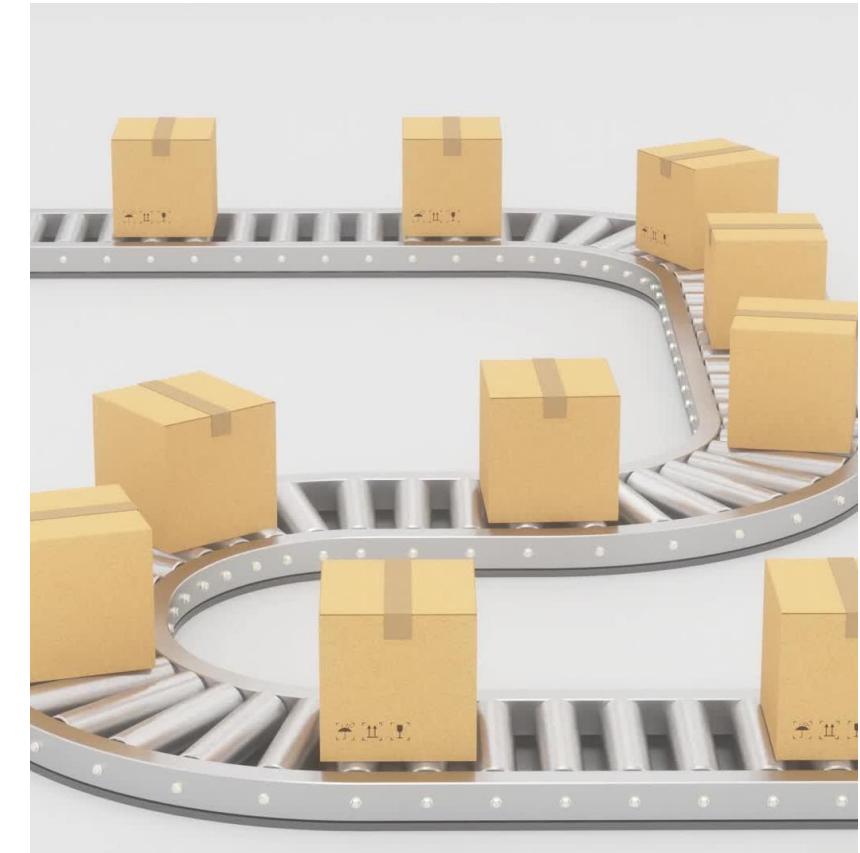
Ship design is changing

- The 2023 IMO GHG strategy sends an unequivocal signal to investors that **ships being ordered today, and many already built, have to be capable of running on zero emission fuels**
- In terms of a reduction pathway the strategy sets expectations on the sector, and indeed on the development of future policy measures, to strive for
 - 30% GHG reductions by 2030,
 - 80% GHG reductions by 2040
 - and an overall level of ambition of reaching net-zero emissions as close to 2050 as possible.



Smart–Shipping

- **The focus of smart shipping is not (only) on the design of the ships, it is in the way we use them.**
 - The rapidly maturing ICT systems will make it possible to manage a cargo transport performed by a fleet of ships with the ruthless efficiency which BMW manages the production of motor cars.
 - The revolution at the heart of this system is the fact that after 5000 years in which the ship has been a "stand-alone" business unit, suddenly satellite communications, telemetrics and cheap data storage are making it possible to treat a fleet of ships as a single business unit, managing the fleet and optimizing cargo transport as a single business unit.
- absolutely new phenomenon of data and AI and autonomous technologies
- enormous data that is accelerating exponentially
- We need to understand the impact AI and new technologies will have on shipping while also invent a greener, safer and more efficient way on sea going transport



The Smart-Shipping Toolbox

Telematics (IOT)

Satellite
Communications
Technology

Big Data & the
Cloud

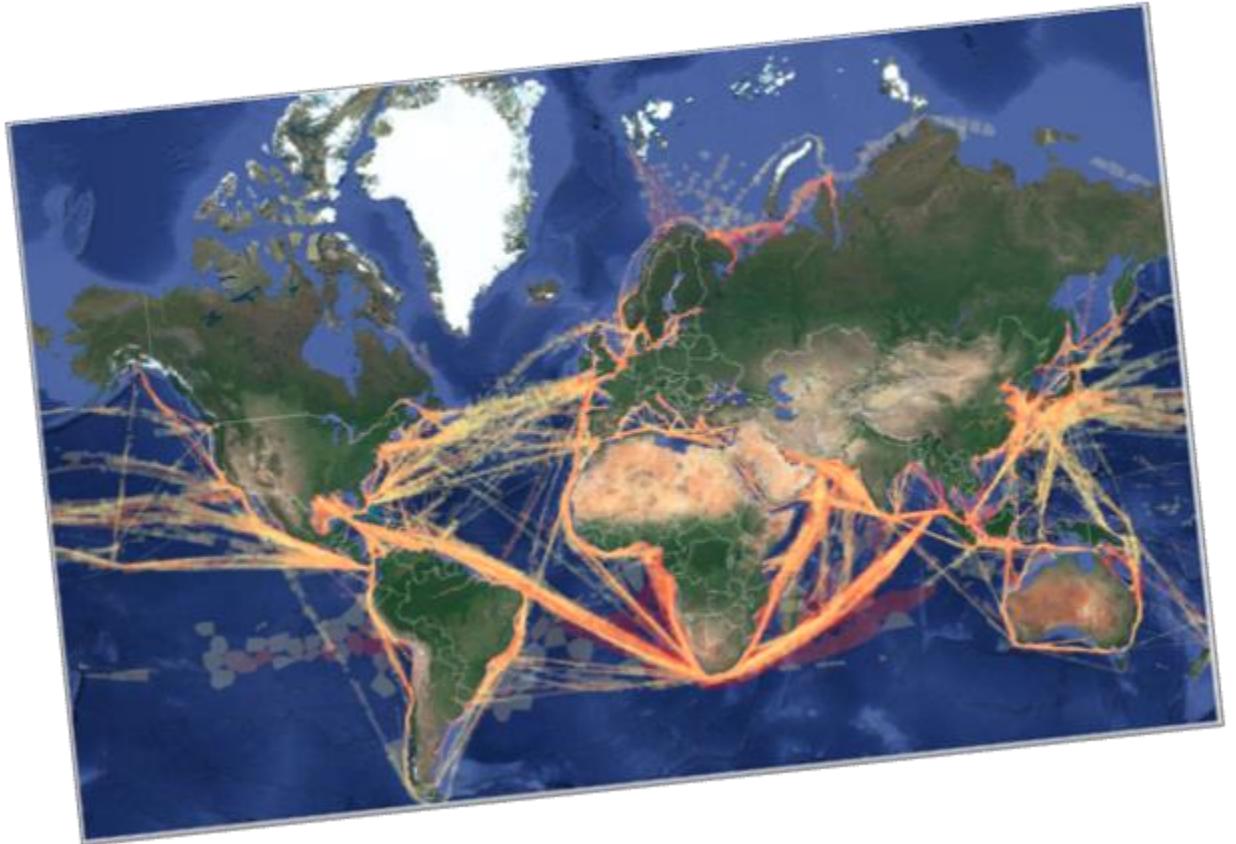
Automation &
robots

Smart phone
style apps

Martin Stopford—”Maritime Strategy - The Fourth Wave”

The way we use ships is changing

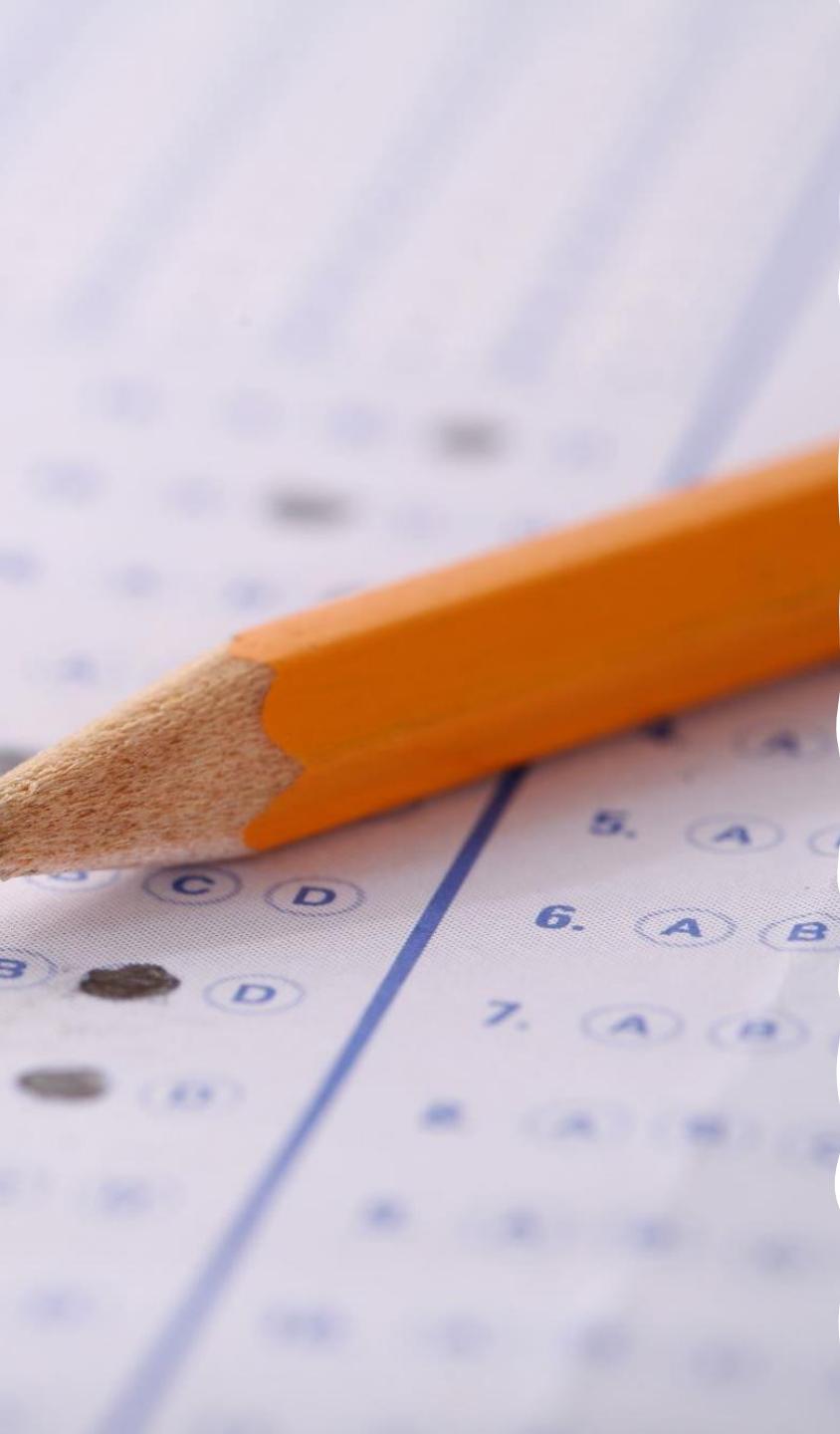
- An absolutely new phenomenon of data and AI and autonomous technologies
- enormous data that is accelerating exponentially is having a radical transformation on the way ships work, but also society at large.
- Ships design is not the only thing that is changing but also the way we use them.
 - No longer stand-alone business unit
 - Optimised sailing (just in time sailing)?
 - No longer need to have crew on board?



Maritime Informatics & Robotics Summer School

The aim of a summer school is to provide students with educational experiences

- The goal of the school is to provide an introduction and comprehensive overview of Maritime Informatics and Marine Technology, with a special focus on their application to Robotics.
- There will be a strong emphasis on the **practical application** of the learned concepts during the “on the water” testing experiments and sea trials.
- During the school, the students will work on developing a complex technical project, the development of either an underwater glider, ROV or an autonomous surface vessel, which they will then test in real world conditions.
- All lab exercises and tutorials will take place using real world data collected from the onboard sensory systems. It is expected that after completion of the course, students will gain knowledge on maritime informatics, sensors, data management, and robotics.



Maritime Informatics & Robotics Summer School

- Practical teaching providing for an authentic learning experiences and teach valuable lessons
 - hands-on experiments
 - Cookbook teaching
 - Critical thinking and generating hypotheses to designing the experiment and analyzing the collected data

Maritime Informatics

Maritime informatics is the application of information technology and data management in maritime operations. It focuses on improving efficiency, safety, and decision-making in areas such as shipping, port management, and logistics through data integration, real-time tracking, and predictive analytics.

Maritime Informatics

Key aspects of maritime informatics include:

1. **Data Collection and Management:** Utilizing sensors, GPS, Automatic Identification Systems (AIS), and other technologies to gather real-time data from ships, ports, and related infrastructure.
2. **Data Analytics:** Applying advanced analytics, machine learning, and artificial intelligence (AI) to derive insights from maritime data, enabling better decision-making.
3. **Optimization of Maritime Operations:** Streamlining logistics, route planning, fuel consumption, and cargo handling by analyzing and interpreting large sets of data.
4. **Collaboration and Communication:** Facilitating seamless communication between various stakeholders, such as port authorities, shipping companies, and logistics providers, through integrated information systems.
5. **Sustainability and Environmental Impact:** Using data to reduce fuel consumption, emissions, and overall environmental impact in line with global regulations and standards.
6. **Safety and Risk Management:** Enhancing safety at sea by predicting risks, managing incidents, and ensuring compliance with international maritime regulations.

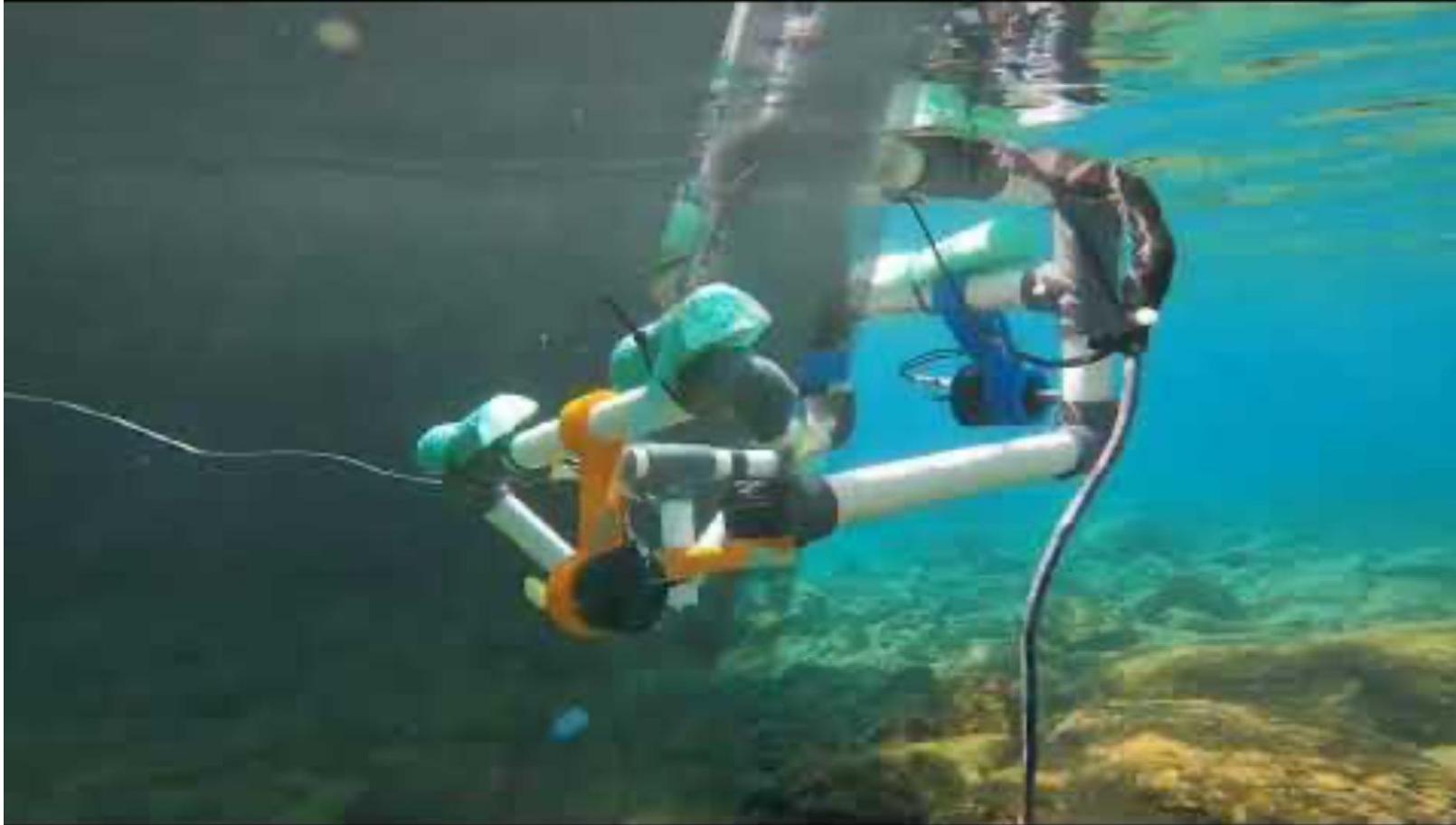
In essence, maritime informatics aims to improve the maritime sector's overall performance by using data to enhance operational efficiency, reduce costs, and foster sustainability.

Marine or Maritime Robotics

- **Marine Robotics:** Centers on robotics for scientific research and environmental monitoring, including ocean exploration, marine biology, and ecosystem health. It is oriented toward understanding and protecting marine environments.
 - Autonomous Underwater Vehicles (AUVs)
 - Autonomous Surface Vehicles (ASVs)
 - **Remotely Operated Vehicles (ROVs)?**
- **Maritime Robotics:** Focuses on robotics used in industrial and operational contexts, such as port automation, cargo handling, and offshore activities. It aims to enhance efficiency and safety in maritime operations.
 - Port Automation Systems

Maritime Informatics & Robotics

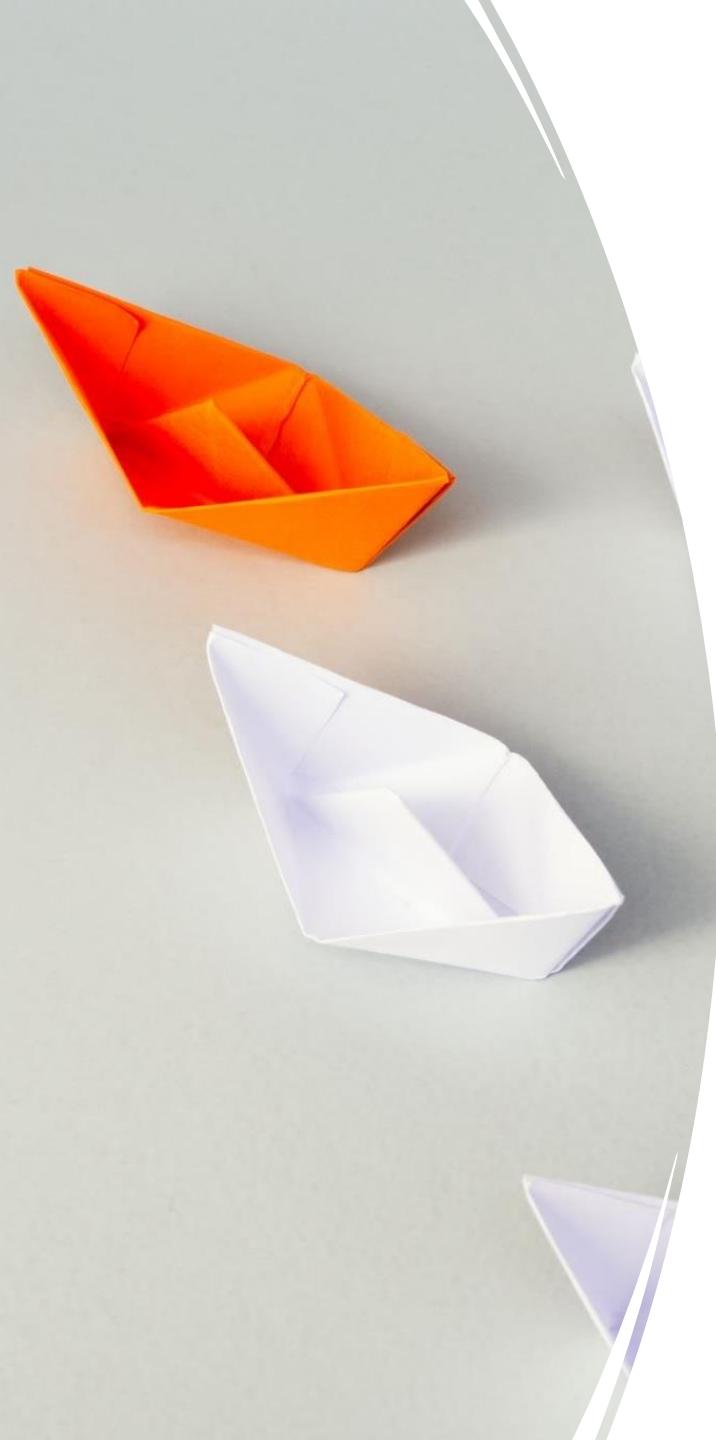
Summer School 2023



Maritime Informatics & Robotics Summer School 2024







The Aegean Ro-boat Race

- An international university level competition, challenging teams to design and develop innovative autonomous robotics systems that can perform at sea in real world conditions. The main aim of this competition is to foster innovation, while strengthening ties between academic institutions and industry. Relationship building is the key.
- The purpose is to foster innovation, while strengthening ties between academic institutions, industry, and stakeholders.
- Its aim is to help the maritime sector, identify and deal with the challenges emerging from the introduction of autonomous and AI-driven technologies, while testing and improving the maturity of the solutions themselves in the field with stakeholder involvement.
- Topics to be judged include autonomous behavior, robotics, sensor fusion, boat design and overall innovation.

Vision

- more than simply a boat race.
 - It's is a testing ground for innovation
1. Train the next generation of maritime professionals
 2. Connect industry to academia
 3. An ideal place for technology-driven companies to achieve their next breakthrough







Location

- The races will take place in Syros, Greece
- At the centre of the Aegean in the Mediterranean Sea
- It was created as a testing ground for experimenting with new technologies on the water by the University of the Aegean, Smart Move Laboratory

General Rules

- Design and build your own boat.
- The boats must be completely autonomous.
- Boats must be under 2.5 meters length.
- Penalty for collisions (for each collision -1 pt)



Story Maps

<https://storymaps.arcgis.com/stories/b2cb243d9ac44343a420863a9cabef78>
<https://storymaps.com/stories/477035203fdd4b798799c02793ec3ec1>



Interdisciplinary Teamwork & Stepping Out of Your Comfort Zone

Combine diverse expertise to solve complex, real-world problems

-  Learn to communicate across disciplines and perspectives
-  Challenge your assumptions and traditional ways of thinking
-  Step outside your comfort zone and grow through uncertainty
-  Expand your toolkit with new methods, tools, and mindsets



Team work

- Lab00: Team Building, Introduction, Assembly, Hardware Overview
- Lab01 : Ardupilot software installation (Rover firmware), mission planner, configuration, setup, logging
- Lab02: RC Setup, Parameter Tuning & Mode Configuration
- Lab03: Software In The Loop (SITL) & Auto Modes
- Lab04: Companion Computer (Rpi 5) – Autopilot Integration
- Lab05: Python+ Collision Avoidance (Alex Troupiotis)
- Lab06: Visual Navigation for Autonomous Vehicles





IEEE SYMPOSIUM ON MARITIME INFORMATICS & ROBOTICS



Laboratório de Sistemas e Tecnologia Subaquática
Underwater Systems and Technology Laboratory



KEYNOTE SPEAKERS



DR ANGELOS AMDITIS

*Research and Development Director and Director of the I-SENSE Group, Institute of Communication & Computer Systems (ICCS)
Chairman, ERTICO-ITS Europe*

KEYNOTE SPEECH: AUTOMATED FREIGHT VESSEL OPERATIONS

Dr. Angelos J. Amditis is Research and Development Director in the Institute of Communication and Computer Systems and member of its Board of Directors. He is the founder and the Director of the I-SENSE Research Group. Since June 2018 he is the ERTICO-ITS Europe Chairman while he has been a member of ERTICO Supervisory Board since 2012. He is a member of the Executive Board of ETP-ALICE (Co-chairing the WG3 "ALICE Systems & Technologies for Interconnected Logistics") and member of the Supervisory Board of ILME. He is the Chairman of the Steering Committee of the Hellenic Port Community System (HPCS). He is a former Chairman and Deputy Chairman of the Athens Urban Transport Organisation (OASA) and former member of the Board of Directors of the Athens Water Supply and Sewerage Company (EYDAP S.A.). He is the Vice President and one of the founding members of ITS Hellas. He is participating to many EC Groups and Platforms. His current research interests in the field of ITS include Automated Transport Systems, Cooperative Systems, Electromobility, Smart Mobility both for people and cargo, maritime, logistics and supply chain applications, ICT for environmental and security applications, including cyber security and circular economy, etc. He has been the scientific responsible of more than 200 research projects in the last 30 years.



PARASKEVI NOMIKOU

Professor, Department of Geology and Geoenvironment, National and Kapodistrian University of Athens

KEYNOTE SPEECH: INNOVATIVE ROBOTIC TECHNOLOGIES FOR THE EXPLORATION OF EXTREME MARINE ENVIRONMENTS

Paraskevi (Evi) Nomikou is a Professor at the Department of Geology and Geoenvironment of National and Kapodistrian University of Athens (Greece). She is a marine geologist studying the morphology of underwater volcanoes and she has an extensive experience in marine volcanic and seafloor extruding processes. She has participated in more than 80 oceanographic cruises on submarine volcanism, mud volcanoes, landslides and slope stability and the exploration of seafloor mineral deposits. She is the Principal Investigator of SANTORIY (SANTORini seafloor's observatory), which monitors Kolumbo submarine volcano and provides solutions to understanding and mitigating impacts of explosive volcanic eruptions. Recently, she has played a leading role in the evaluation of the potential hazards associated with the tectono-magmatic activity NE of Santorini volcano. Prof. Nomikou inspires her students to explore the seafloor using innovative marine technologies and is a role model for women considering a career in oceanography.

The poster features a photograph of a coastal town with colorful buildings built on a hillside overlooking the sea. Overlaid text includes:

- maritime View osium.eu
- SYMPORIUM ON
- MARITIME INFORMATICS & ROBOTICS**
- 26 & 27 JUNE 2025
- ERMOUPOLIS, SYROS, GREECE
- APOLLON THEATRE
- SYMPORIUM PROGRAMME

SYMPORIUM ON MARITIME INFORMATICS & ROBOTICS



SYMPORIUM PROGRAMME

26 JUNE 2025

APOLLON THEATER

09:00-09:30 Registrations

09:30-10:00 Welcome Addresses

KEYNOTE SPEECH 1

Innovative Robotic Technologies for the Exploration of Extreme Marine Environments

Paraskevi Nomikou

Professor, Department of Geology and Geoenvironment, National and Kapodistrian University of Athens

10:20-11:10 Maritime Robotics, Sensors and Applications (e.g. ports, robotic cranes)

Chair: Fausto Ferreira, University of Zagreb

10:20-10:35 Closing the Data Loop: Real-World AUVs Adaptive Sampling for Improved Ocean Model Predictions

Lucrezia Bernacchi¹, Ana Filipa Duarte², Renato Mendes^{1,3,4}, Leonardo Azevedo², Joao Borges de Sousa^{1,3}

¹Laboratório de Sistemas e Tecnologia Subaquática (LSTS), Faculdade de Engenharia da Universidade do Porto, Portugal

²Centro de Recursos Naturais e Ambiente (CERENA), Instituto Superior Técnico, Universidade de Lisboa, Portugal

³Laboratório Associado de Energia, Transportes e Aeronáutica (LAETA), Porto, Portugal

⁴+ATLANTIC CoLAB, Lisboa, Portugal

10:35-10:50 CORLEGS based Advanced Navigation System for Unmanned Surface Vessels

Elias Xidias, Dimitris Zissis, Giannis Spiliopoulos

Department of Product & Systems, Design Engineering, University of the Aegean, Ermoupoli, Greece

10:50-11:00 Automated Container Vessel Docking: From Anchorage to Dock

Angelos Amditis¹, Anastasia Roukouni¹, Evangelia Latsa¹, Ioannis Kanellopoulos¹, Alexandros Koimtzoglou², Konstantinos Louzis²

¹ISENSE Group ICCS Athens, Greece

²Laboratory for Maritime Transport NTUA Athens, Greece

APOLLON THEATRE
ERMOUPOLIS, SYROS, GREECE
26 & 27 JUNE 2025



11:00-11:10 Detection, Classification and Identification of Objects in Underwater Harsh Environments Using Machine Learning

Fausto Ferreira^{1,2}, Đula Nad^{1,2}, Bartul Kajmak¹, Lovre Rančev¹, Lucija Renić¹, Viliš Skorić¹, Niko Škurla¹, Gabriele Ferri³, Alessandro Faggiani³

¹University of Zagreb Faculty of Electrical Engineering and Computing, Laboratory for Underwater Systems and Technologies, Zagreb, Croatia

²CoE MARBLE - Centre of Excellence in Maritime Robotics and Technologies for Sustainable Blue Economy, Zagreb, Croatia

³NATO Science & Technology Organization Centre for Maritime Research and Experimentation, La Spezia, Italy

Coffee Break

11:25-11:45 KEYNOTE SPEECH 2
Automated Freight Vessel Operations

Dr Angelos Amditis

Research and Development Director and Director of the I-SENSE Group, Institute of Communication & Computer Systems (ICCS)
Chairman, ERTICO-ITS Europe

11:45-13:10 Applications for Marine Systems, Including Autonomous Vehicles
Chair: Renato Mendes, University of Porto

11:45-12:00 3D LiDAR and 1D Radar Distance Determination for Safe Navigation of Automated Vessels in Lock Basins

Mirjam Bogner, Fynn Pieper, Matthias Steidel, Janusz A. Piotrowski

Institute of Systems Engineering for Future Mobility, German Aerospace Center (DLR), Oldenburg, Germany

12:00-12:15 A Whole-body UVMS Motion Planning Approach for Underwater Propeller Cleaning

Raksi Kopo, Spyridon G. Tarantos, Fotis Panetsos, Kostas J. Kyriakopoulos

Center for AI & Robotics (CAIR), New York University, Abu Dhabi, United Arab Emirates

12:15-12:30 Efficient Autonomous Marine Vessel Navigation with Safe Deep Reinforcement Learning

Piyabhum Chaysri¹, Theodoros Tranos¹, George Papadopoulos², George A. Vouros², Konstantinos Blekas¹

¹University of Ioannina, Ioannina, Greece

²University of Piraeus, Piraeus, Greece

SYMPORIUM ON MARITIME INFORMATICS & ROBOTICS



APOLLON THEATRE
ERMOUPOLIS, SYROS, GREECE
26 & 27 JUNE 2025



12:30-12:45	Enhancing Ship Emission Monitoring: An Autonomous Approach to Emission Mapping Using ArduPilot Theodoros Karachalios ¹ , Panagiotis N. Moschos ¹ , Anastasios Fanariotis ² , Theofanis Orphanoudakis ² , Helen-Catherine Leligou ² ¹ Hellenic Open University, Patra, Greece ² University of West Attica, Hellenic Open University, Athens, Greece	View	14:25-14:40	FLP-XR: Future Location Prediction on Extreme Scale Maritime Data in Real-time George S. Theodoropoulos , Andreas Patakis, Andreas Tritsaris, Yannis Theodoridis <i>Department of Informatics University of Piraeus, Piraeus, Greece</i>
12:45 -13:00	Using Monitoring of Maritime Traffic Scenarios in the Validation of Maritime Systems Anna Austel ¹ , Lukas Panneke ² , Janusz Piotrowski ¹ , Nina Wetzig ¹ , Matthias Steidel ¹ , Bernd Westphal ¹ ¹ Institute of Systems Engineering for Future Mobility, German Aerospace Center (DLR), Oldenburg, Germany ² Department of Computing Science Carl von Ossietzky Universität Oldenburg, Germany		14:40-14:55	ROSAR: An Adversarial Re-Training Framework for Robust Side-Scan Sonar Object Detection Martin Aubard ¹ , László Antal ² , Ana Madureira ³ , Luis F. Teixeira ⁴ , Erika Ábrahám ² ¹ OceanScan, Marine Systems & Technology, Matosinhos, Portugal ² Computer Science Department, RWTH Aachen University, Germany ³ INESC INOV-Lab and ISR, ISEP / PPORTO Porto, Portugal ⁴ INESC TEC, Faculdade de Engenharia, Universidade do Porto, Porto, Portugal
13:00-13:10	An Educational Perspective on the Aquabots Development Platform for Autonomous Navigation Jantsje M. Mol ¹ , Peter H. Verheijen ² , Jan A. Smallegange ³ , Jan. C. Scholtens ⁴ ¹ Centre of Expertise HRTech Rotterdam University of Applied Sciences Rotterdam, The Netherlands ² Rotterdam Mainport Institute Rotterdam University of Applied Sciences Rotterdam, The Netherlands ³ Innovation and Educational Development STC Group Rotterdam, The Netherlands ⁴ RDM Workshops Rotterdam University of Applied Sciences Rotterdam, The Netherlands		14:55-15:10	Using LLMs for Analyzing AIS Data Gaspard Merten, Gilles Dejaegere , Mahmoud Sakr <i>Data Science and Engineering Lab, Université libre de Bruxelles, Brussels, Belgium</i>
13:10-13:55	Lunch Break		15:10-15:20	Break
13:55-16:10	Data Analytics and Machine Learning in Marine Contexts Chair: Yannis Theodoridis, University of Piraeus		15:20-15:30	Combining AIS data and Spot-Market Fixture Data to Estimate Freight Supply Stasinos Konstantopoulos ^{1,2} , Andreas Kouvaras ³ ¹ NCSR 'Demokritos', Ag. Paraskevi, Greece ² Siglyx, Marousi, Greece ³ University of Piraeus, Greece
13:55-14:10	A Data-Driven Approach to Port Efficiency and Vessel Scheduling in North America George Apostolakis ¹ , Andreas Kouvaras ² , Alexander Artikis ^{1,2} ¹ NCSR Demokritos, Greece ² University of Piraeus, Greece		15:30-15:40	Federated Learning and Trajectory Compression for Enhanced AIS Coverage Thomas Gräupl ¹ , Andreas Reisenbauer ¹ , Marcel Hecko ¹ , Anil Rasouli ¹ , Anita Graser ² , Melitta Dragaschnig ² , Axel Weissenfeld ¹ , Gilles Dejaegere ¹ , Mahmoud Sakr ³ ¹ Frequentis AG, Vienna, Austria ² AIT Austrian Institute of Technology, Vienna, Austria ³ Université libre de Bruxelles, Brussels, Belgium
14:10-14:25	Comparative Study of Ship Motion Prediction Models: Data-Driven Physics-Based vs Pure Machine Learning Michail Mathioudakis , Petros Iatropoulos, Theodoros Stouraitis, Christos Papandreu, Antonis Nikitakis, Stavros Paschalakis, Konstantinos Kyriakopoulos DeepSea Technologies Athens, Greece		15:40-15:50	LitterEye - Automatic Underwater Trash Detection Using YOLOv5 Afonso Sá ¹ , Renato Mendes ^{1,2,3} , João Pereira ⁴ , Leonardo Azevedo ⁵ , João Borges de Sousa ^{1,2} ¹ Laboratório de Sistemas e Tecnologia Subaquática (LSTS), Faculdade de Engenharia da Universidade do Porto, Portugal ² Laboratório Associado de Energia, Transportes e Aeronáutica (LAETA), Porto, Portugal ³ +ATLANTIC CoLAB, Lisbon, Portugal ⁴ Instituto de Ciência e Inovação em Engenharia Mecânica e Engenharia Industrial (INEGI), Porto, Portugal ⁵ Centro de Recursos Naturais e Ambiente (CERENA), Instituto Superior Técnico, Universidade de Lisboa, Lisboa, Portugal

SYMPORIUM ON MARITIME INFORMATICS & ROBOTICS



APOLLON THEATRE
ERMOUPOLIS, SYROS, GREECE
26 & 27 JUNE 2025



15:50-16:00	Nautilus in Motion: A Demo on Vessel Location Forecasting over Live Maritime AIS Streams View Andreas Tritsarolis ¹ , Nikos Pelekis ² , Konstantina Bereta ³ , Yannis Theodoridis ¹ ¹ Dept. of Informatics, University of Piraeus, Greece ² Dept. of Statistics & Insurance Science, University of Piraeus, Greece ³ Kpler, Athens, Greece	17:20-17:30	A Generalizable Entity-Component-System Architecture for Underwater ROV Control Eoghan McIvor, George Sklivanitis, Dimitris A. Pados Center for Connected Autonomy and AI, Florida Atlantic University Boca Raton, FL, USA
16:00-16:10	Non-Linear Marine Spatial Zoning Through Particle Filtering Leonidas Ioannou ¹ , Neofytos Dimitriou ¹ , Ioannis Kyriakides ² ¹ Maritime Digitalisation Centre, Cyprus Marine and Maritime Institute, Larnaca, Cyprus ² Marine Technology Division, Cyprus Marine and Maritime Institute Larnaca, Cyprus	17:30-17:40	Medium-Range Radio for Small Sailing Drones Using Integrated UHF Antennas Malte Klas, Moritz Dafelmair Sailing Team Darmstadt e.V., Darmstadt, Germany
16:10-16:25	Coffee Break	17:40-17:50	SMaRCsim: Maritime Robotics Simulation Modules Mart Kartasev, David Dörner, Özer Özkahraman, Petter Ögren, Ivan Stenius, John Folkesson KTH Royal Institute of Technology, Stockholm, Sweden
16:25-18:10	Joint Session Chair: Elias Xidas, University of the Aegean	17:50-18:00	Design of a Marine Environment Buoy Monitoring Platform Based on LoRa Rui Zheng ¹ , Linxi Dong ¹ , Baoqian Wang ¹ , Ioannis Kyriakides ² , Herodotos Herodotou ³ , Michalis Michaelides ³ ¹ Engineering Research Center of Smart Microsensors and Microsystems College of Electronics and Information, Hangzhou Dianzi University Hangzhou, China ² Cyprus Marine & Maritime Institute CMMI House, Larnaca, Cyprus ³ Dept. of Electrical Engineering, Computer Engineering and Informatics Cyprus University of Technology Limassol, Cyprus
16:25-16:40	Analysis of 3D LiDAR and 1D FMCW Radar Effectiveness for Distance Estimation in Inland Ports for Remote-Controlled Ship Navigation Fynn Pieper, Mirjam Bogner, Janusz A. Piotrowski, Matthias Steidel Institute of Systems Engineering for Future Mobility German Aerospace Center (DLR) Oldenburg, Germany	18:00-18:10	Development of a Low-Cost Environmental Monitoring Buoy: A Case Study from the SeaTechHub Project Barbara Arbanas Ferreira ¹ , Martin Oreč ² , Juraj Obradović ² , Nikola Mišković ^{1,2} ¹ CoE MARBLE - Centre of Excellence in Maritime Robotics and Technologies for Sustainable Blue Economy ² University of Zagreb Faculty of Electrical Engineering and Computing
16:40-16:55	Head-Worn Augmented Reality for Real-Time Navigation Assistance and Event Forecasting in Maritime Operations Georgios Lamprinakis ¹ , Ioannis Safranoglou ¹ , Georgios Grigoropoulos ² , Aikaterini Mania ¹ ¹ School of Electrical and Computer Engineering, Technical University of Crete, Chania, Greece ² Senior R&D Manager, Kpler Athens, Greece	19:30	Welcome Drink & Symposium Dinner at Hermes Hotel
16:55-17:10	Innovative Short-Sea Shipping Logistics Angelos Amditis ¹ , Evangelia Latsa ¹ , Ioannis Kanellopoulos ¹ , Nikolaos Ventikos ² , Konstantinos Louzis ² ¹ ISENSE Group ICCS Athens, Greece ² Laboratory for Maritime Transport, NTUA, Athens, Greece		
17:10-17:20	The need for Digital Twins and Monitoring Systems in Port Infrastructure and Operations Aggelos Aggelakakis, Georgios Ntanis, Georgios Papacharalampous, Maria Boile Department of Maritime Studies University of Piraeus, Piraeus, Greece		

SYMPORIUM ON MARITIME INFORMATICS & ROBOTICS



PARALLEL EVENTS

27 JUNE 2025

GREEK NATIONAL SATELLITE SPACE PROJECT - AIS USER FORUM
CHAMBER OF CYCLADES



Open Cosmos invites you to join the **Greek National Satellite Space Project: AIS User Forum**, where we'll discuss AIS data from Greece's new satellite constellation with the maritime community.

The project (**Small-Satellites - Measure ID 16855**), led by the Ministry of Digital Governance with ESA, is part of 'Greece 2.0' and EU's NextGenerationEU.

This is a chance for maritime stakeholders to share needs and insights on satellite AIS for tracking, safety, and efficiency. Your input will help shape better AIS services.

10:00-10:15	Opening Remarks
10:15-10:45	Open Cosmos Presentation
10:45-11:15	Libre Space Foundation Presentation
11:15-11:45	Short Break
11:45-13:00	Round Table Discussion
13:00-13:15	Closing Remarks

RO-BOAT RACE

SYROS NAUTICAL CLUB



The Aegean Ro-Boat Race is an innovative international competition that challenges university teams to design and develop an Unmanned Surface Vessel (USV) capable of operating in real-world coastal conditions. Held in Syros, Greece, the race serves not only as a competition but as a platform for fostering collaboration between academic institutions and the maritime industry.

This year, the Aegean Ro-Boat Race will be held as part of the IEEE Symposium on Maritime Informatics and Robotics, further highlighting its role as a key event in promoting maritime innovation and autonomous technologies.

15:00	Competing Teams Presentation
18:00	Ro-boat Race

Thank you for your
attention!

TO AN
AWESOME
WEEK
AHEAD!

