TRAINING PROGRAMME FRAMEWORK

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2025-03-24

Funded by the European Union

The project MariTech Talent Programme is funded by the European Union Horizon Europe Programme under Grant Agreement number: 101135888

Grant Agreement number	101135888
Project Name	MariTech Talent Programme
Project Acronym	MariTech Talent
Call and topic identifier	HORIZON-CL4-2023-HUMAN-01-54
Project duration	24 months 1 December 2023 - 30 November 2025
Coordinator	Cleantech Bulgaria

Document fiche	
Author/-s:	CUT
Reviewer/-s:	
Version:	0.2
Date of approval:	
Work Package:	WP3
Nature:	Report
Dissemination:	Public

ACKNOWLEDGEMENT

This document is a deliverable of MariTech Talent project. This project has received funding from the European Union's Horizon Europe Programme under grant agreement No 101135888.

1. INTRODUCTION

The project "MariTech Talent Programme" (MariTech Talent) is financed under the HORIZON Europe Programme, co-financed by the European Union. The consortium brings together 5 partners from 3 European countries, who will work together to achieve its main goal:

To develop a twin transition INTRApreneurship skills development programme, bringing maritime industry professionals and innovative enterprises with concrete digital solutions together in a two-way learning experience.

The MariTech Talent programme will apply a **challenge-based INTRApreneurship model** which will nurture learning by working on the most pressing needs identified by the ports and maritime companies themselves. Teams consisting of current workers and deep tech startups, scaleups and SMEs will work together to apply concrete solutions, undergoing the necessary training on the way.

On the one hand the programme will secure the **required skill set** for the maritime workforce related to the **green and digital transition**. They will acquire operational knowledge in key digital domains enablers of the twin transition in the maritime industry

On the other hand, it will provide valuable insights and feedback on the relevance and effectiveness of the applied digital solutions.

As a final result, maritime companies and ports will gain in-depth insights into the benefits digital solutions can bring to their operations, while at the same time their employees will become skilled and confident in their use.

In order to achieve these results, the MariTech Talent programme is developed on the basis of analysis and research among the stakeholders and is utilizing the partners network to deliver two ways dialogue among maritime companies and administration and innovative solution providers.

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2. APPROACH TO TRAINING PROGRAMME

The training has been developed based on EQF Level (European Qualifications Framework)- VET (in terms of Upskilling) and in particular the rationale for the choices made are explained below. The choice of EQF Levels 4 and 5 reflects a balance between foundational competency-building and advanced application (even the ones who might not have typically academic knowledge/background, the maritime sector workers are not novices in their field). In this sense Level 3 was excluded as it could be too low in terms of competency level. On the other hand, Level 6 could represent another extreme on the spectrum. In this sense the programme does not aim to be considered basic in its nature or overly complex to be interesting and/or feasible for the participants to follow. We aim for outcomes that are practical for professionals with different levels of experience, without these outcomes becoming needlessly ''academic'' or theory based.

In this sense our outcomes are grounded on Level 4 and Level 5:

Level 4 focuses on building factual and theoretical knowledge in broad contexts, suitable for participants who need to enhance their understanding of core maritime topics (e.g., regulations, sustainability). Level 4 outcomes (e.g., identifying and applying principles) ensure participants gain essential knowledge and basic autonomy in incorporating international regulations or tackling industry challenges. Additionally, this Level ensures they have a clear understanding of the principles underlying regulations, cybersecurity, and sustainability.

Level 5 emphasizes specialized, practical, and any theoretical knowledge that might exist in the program with an application-oriented approach, aligning with the needs of startups and SMEs that aim to innovate and implement digital solutions. Also, this Level allows all the participants (including maritime sector) to exercise greater independence, especially in scenarios requiring decision-making, innovation, and leadership (e.g., designing and implementing sustainability strategies). Level 5 builds on 4 on allowing the participants to critically assess what they have learned.

The training programme has been built following the cutting-edge frameworks of previously developed and successfully implemented project, specifically Climate KIC's ''*Climate Launchpad Workbook*[1]'' and ''*Visual toolbox for system innovation*[2]''. In an era of rapid environmental,

[1] Blazer, J., Herben, C., Nauta, F., & Westerhof, H. (2016). *Climate Launchpad Workbook*. EIT Climate-KIC. https://www.scribd.com/document/635537106/Untitled

[2] De Vicente Lopez, J., & Matti, C. (2016). *Visual toolbox for system innovation: A resource book for practitioners to map, analyse and facilitate sustainability transitions.* Transition Hub Series. EIT Climate-KIC. https://cristianmatti.com/2016/07/30/practice-based-knowledge-on-system-innovation-and-sustainability/

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technological, and economic change, the maritime sector and startups operating within it face complex sustainability challenges. Addressing these challenges requires more than conventional problem-solving approaches—it demands a systemic, structured, and adaptive methodology that fosters both innovation and learning. This methodology is particularly valuable because it not only **guides problem-solving** but also **enhances learning** through structured discussions, collaborative engagement, and systemic thinking. Additionally, the standalone problem-definition tool ensures that users tackle the **real** issues rather than just the symptoms.

One of the strengths of this approach is its **flexibility and visual nature**, which encourages multidisciplinary collaboration and supports decision-making in diverse, multicultural contexts. Given the maritime sector's need for **resilient and forward-thinking solutions**, this methodology empowers startups to **test and refine** their ideas.

By embracing the "learning by doing" philosophy, this toolbox enables maritime startups to **adapt, innovate, and thrive** in an industry where sustainability is no longer optional but essential for long-term success.

3. Training Programme Framework

Training programme objectives:

- To educate maritime participants how to identify **problems/challenges/barriers.**
- Support SMEs with **knowledge on how financing /project procurement** occurs within the Maritime Sector.
- Equip maritime workforce with **competencies in sustainable maritime technologies and digital transformation**.
- Enhance workforce adaptability to **emerging green regulations and standards**.
- Train participants in **systems-based problem-solving** to improve efficiency, sustainability, and innovation.
- Bridge the gap between **technological innovation** and **workforce readiness**.
- Allow for **networking opportunities** and connect to relevant events that enhance the educational experience.

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Target Audience:

- Maritime Professionals,
- Startups/SMEs

Training Methodology:

- Instructor-led training
- Online learning (self-paced).
- Interactive activities (group discussions, matchmaking and two-way learning exercises, case studies).
- Overall, we aim for a: 70% practical activities, 20% to be based on informal learning activities and 10% on formal learning activities.

Specifically, our training methodology is designed to maximize engagement and practical application, ensuring that participants gain hands-on experience in sustainability innovation. The program combines **instructor-led training** with **self-paced online learning**, allowing for both structured guidance and flexible, independent study. A key component is **interactive activities**, including **group discussions, matchmaking exercises, two-way learning activities, and case studies**, fostering collaboration and real-world problem-solving.

By following a **70-20-10 learning model**, with **70% dedicated to practical activities, 20% focused on informal learning, and 10% on formal instruction**, participants benefit from a **highly experiential approach** that enhances retention and skill development. This methodology promotes **critical thinking, creativity, and problem-solving skills**, while also ensuring that learners build strong professional networks through peer interactions. Additionally, the balance between structured guidance and flexible learning **accommodates diverse learning styles**, making the program more accessible and effective for participants from different backgrounds within the maritime sector and startup ecosystem.

To further enrich the learning experience, we **integrate networking opportunities and connect participants to key industry events**. As part of this approach, we have facilitated and combined our training with attendance at the **2025 GREEN4SEA Athens Forum in March 2025** (*https://events.safety4sea.com/2025-green4sea-athens-forum/*), a premier event focused on sustainable shipping practices. This strategic integration allows participants to gain **firsthand exposure to industry insights, emerging trends, and key stakeholders in maritime sustainability**, reinforcing their learning while expanding their professional networks.

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Course Modules and Content:

The training programme is designed to equip maritime professionals, startups, and SMEs with the necessary knowledge and tools to navigate the evolving landscape of sustainability, digital transformation, and regulatory compliance. The program consists of three structured phases, each addressing critical industry challenges and offering practical learning experiences to enhance professional capabilities.

Step 1: Understanding International and European Regulations

The first phase of the training focuses on the **regulatory frameworks governing the maritime industry at both the international and European levels**. Participants gain insights into the policies driving sustainability efforts and digital transformation in the sector. Key topics include the impact of **climate change on regulatory policies, international and EU legislative frameworks, the role of digitalization in maritime operations, and recent regulations concerning emissions and environmental compliance**.

This session provides a comprehensive overview of the regulatory landscape, helping industry professionals, startups, and SMEs align their operations with **global sustainability and compliance standards**. The training also emphasizes the importance of digitalization in ensuring operational efficiency and regulatory adherence, preparing participants for the future demands of the industry.

Step 2: Training for Startups and SMEs – Addressing Present Challenges

The second phase of the program is a **practical, hands-on training tailored for startups and SMEs**, with a focus on addressing real-world challenges in the maritime sector. Conducted in a **face-to-face format**, this training introduces participants to **methodologies and tools that enhance problem-solving, innovation, and professional development**.

The session is structured around two key components. First, an **intrapreneurship mindset training**, which helps maritime professionals and entrepreneurs **identify industry challenges, explore barriers to innovation, and develop solutions that drive sustainable progress**. Second, a **startup-focused training**, which provides an in-depth understanding of **financing opportunities, investment mechanisms, and project procurement processes within the maritime sector**. Additionally, **networking opportunities are embedded within this phase**, enabling participants to connect with industry stakeholders, potential investors, and peers to foster collaboration and business growth.

In this phase of the training, we utilize **visual thinking tools, specifically canvases, as an essential part of the learning process**. These tools are directly linked to **Design Thinking** as a pedagogical model, which has been widely recognized for its effectiveness in **facilitating problem-solving,**

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innovation, and user-centered thinking. Given the complexity of sustainability and climate-related challenges in the maritime industry, this approach allows participants to **break down complex problems, organize their thoughts, and develop structured, creative solutions**.

Design Thinking, as outlined by researchers such as Kim and Park (2021)[3], is particularly effective in addressing **real-world, complex challenges** like those encountered in maritime sustainability. It promotes **structured exploration, collaboration, and iterative problem-solving**, enabling participants to **visualize issues, map out stakeholder relationships, and identify innovative pathways**. Canvases serve as practical tools to support this process, offering a **clear framework for idea generation, strategic planning, and decision-making**.

By integrating these visual tools, participants can **better analyze challenges, communicate their ideas effectively, and refine their business strategies** in a structured manner. The canvases facilitate not only the **problem-solving process but also enhance the learning experience** by making abstract concepts tangible and actionable. This aligns with Goldschmidt's (2017)[4] perspective on **Design Thinking as both a mindset and a methodology**, helping participants develop **user-centered solutions while fostering creativity and critical thinking**.

Ultimately, the use of canvases in this training ensures that participants are not only **exposed to theoretical knowledge but are actively engaged in practical application**. This hands-on approach **empowers startups and SMEs to navigate maritime industry challenges more effectively, fostering innovation and strategic problem-solving** that can lead to impactful, sustainable solutions.

The third canvas (Figure 3) is used to assess and categorize key assumptions based on their impact and uncertainty. It helps in strategic planning by prioritizing assumptions that need validation or closer attention. Finally, the fourth canvas (Figure 4) is designed to guide participants in testing assumptions through structured experiments.

[3] Kim, Y. S., & Park, J. A. (2021). Design thinking in the framework of visual thinking and characterization of service design ideation methods using visual reasoning model. *The Design Journal, 24*(6), 931–953. https://doi.org/10.1080/14606925.2021.1977497

[4] Goldschmidt, G. (2017). Design thinking: A method or a gateway into design cognition? *She Ji: The Journal of Design, Economics, and Innovation, 3*(2), 107–112. https://doi.org/10.1016/j.sheji.2017.10.009

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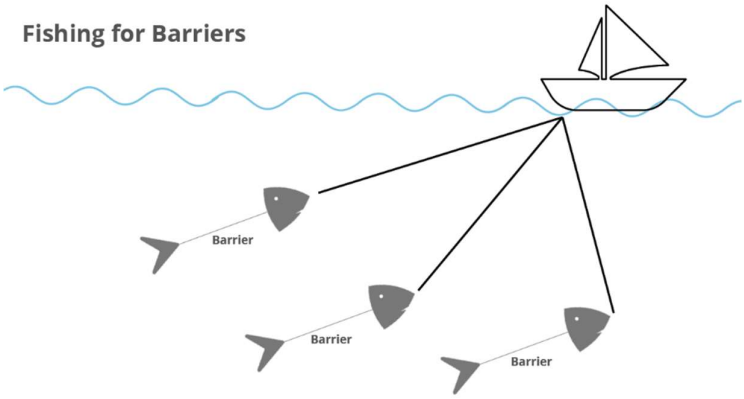

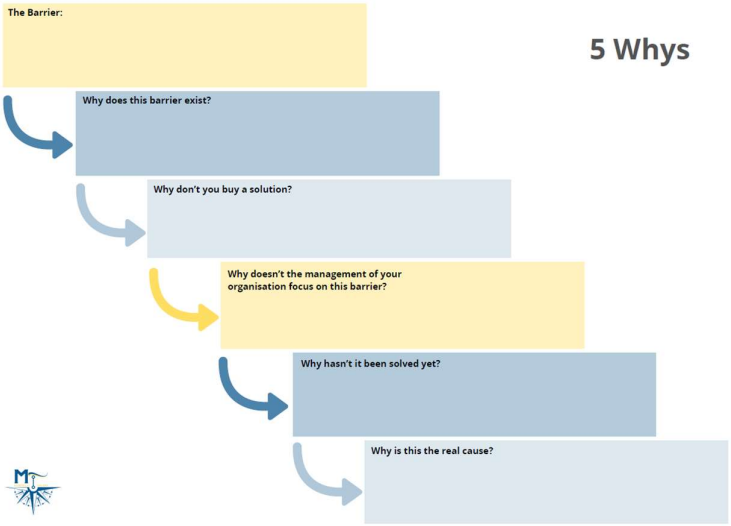

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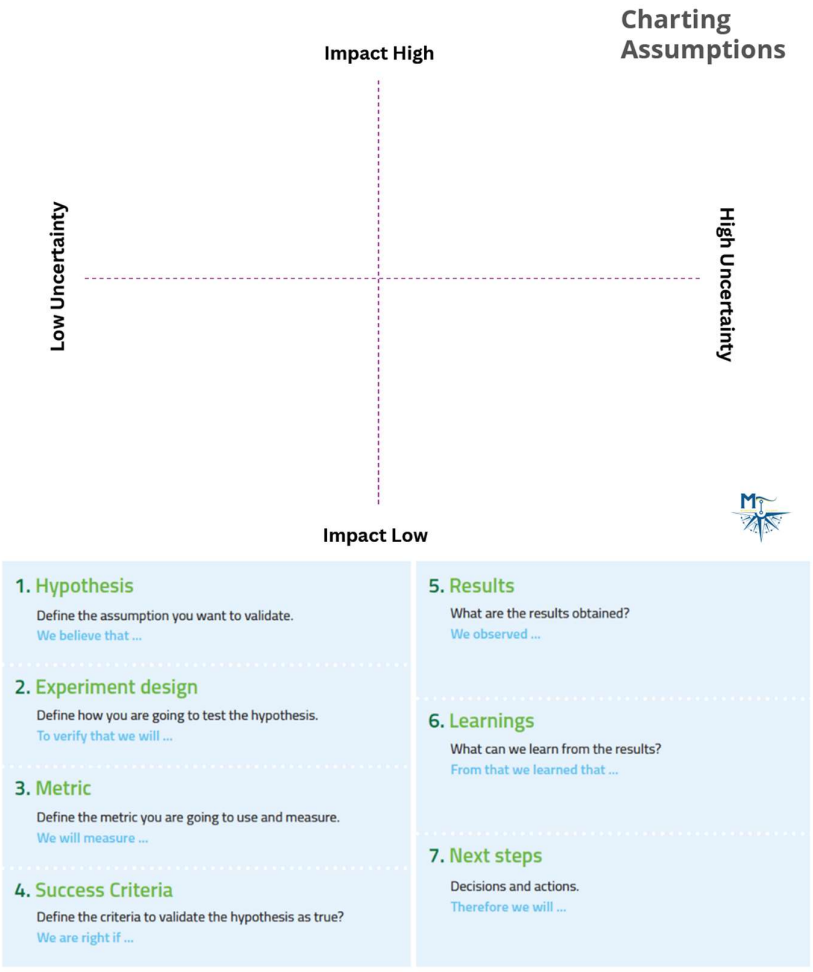

Figure 1: Fishing for Barriers; Figure 2: 5 Whys; Figure 3: Charting Assumptions; Figure 4: Testing Assumptions

Step 3: Advanced Training on Industry-Specific Themes

The final phase of the training is designed to **equip professionals with deeper knowledge on critical industry themes**, delivered through an online format. Each session features **expert insights and startup case studies**, offering a practical perspective on emerging challenges and solutions.

Three core topics are covered in this phase:

1. **Cybersecurity and Threats** – Addressing the increasing risks associated with digitalization in the maritime sector and providing strategies for enhancing cybersecurity resilience.

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2. Fuel and Green Technologies – Exploring innovative solutions for sustainable fuel alternatives and cleaner maritime operations.
3. Sustainability and Innovation – Covering essential topics such as ESG reporting, circular economy practices, and industry-wide sustainability initiatives.

To support continuous learning, additional training materials and resources will be made available through an online platform, ensuring that participants can further expand their knowledge and skills beyond the training sessions.

The Figure (Figure 5) below, showcases the different phases:

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Figure 5: Overall structure of the training programme

To ensure the **long-term sustainability and accessibility** of the training materials, all resources, including the canvases and learning content, will be uploaded to the **MariTech Node platform** (https://maritech-node.eu/). These materials will remain **open-source, freely available, and downloadable** both during and after the completion of the project. By providing continuous access, we aim to **support ongoing learning, collaboration, and innovation** within the maritime sector, enabling startups, SMEs, and professionals to apply these methodologies beyond the training sessions and drive sustainable transformation in the industry.

Participants who successfully complete the training will receive a **Certificate of Attendance** issued by the **Cyprus University of Technology**. This certification recognizes their engagement and active participation in the programme.

Learning Outcomes

The following section explains the learning outcomes of the three stages of the training programme and how these reflect Level 4 and Level 5 of EQF.

Step 1: Introduction Session

Focus: International and European Principles and Regulations.
EQF Level: 4–5

Learning Outcomes:

1. Gain a deeper understanding of the principles of international (IMO) and European regulations, particularly regarding circular economy practices in maritime operations.
2. Apply these regulations to improve compliance and align maritime practices with sustainability goals.
3. Evaluate the implications of international and EU regulations for operational efficiency and strategic planning in the maritime sector.

Step 2: Training for Startups/SMEs

Focus: Present Challenges, Methodologies for Upskilling Maritime Professionals, and Developing Business Competencies.
EQF Level: 5

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Learning Outcomes:

Intrapreneurship Mindset Training:

1. Identify and analyse operational challenges and barriers within the maritime sector, using systems-based problem-solving to drive efficiency and innovation.
2. Develop an intrapreneurial mindset by proposing actionable, scalable solutions that enhance sustainability and digital transformation in maritime operations.

Startup Training:

3. Evaluate financing options and project procurement processes within the maritime sector, supporting SMEs in securing funding for innovative solutions.
4. Apply financial and procurement knowledge to develop sustainable business strategies and facilitate the adoption of maritime technologies.

General Training for Upskilling:

5. Equip maritime professionals with competencies in sustainable maritime technologies and digital transformation, bridging the gap between technological innovation and workforce readiness.

Step 3: Train-the-Professionals on the Three Themes

Themes: Cybersecurity; Fuel and Technologies; Sustainability and Innovation.
EQF Level: 4–5

Learning Outcomes:

Cybersecurity and Threats:

1. Assess cybersecurity risks specific to maritime operations and implement security measures to protect digital and operational systems.

Fuel and Technologies:

2. Explore sustainable energy solutions and emerging maritime technologies, integrating them to improve operational efficiency and reduce environmental impact.

Sustainability and Innovation:

3. Develop strategies to align maritime operations with ESG reporting, circular economy principles, and green regulations.

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4. Apply systems-based problem-solving techniques to enhance sustainability and innovation within their organisations.

Industry Integration:

5. Translate insights from expert talks and startup presentations into actionable strategies, accelerating twin-transition adoption in maritime companies.

Implementation schedule

Overall, at the stage of piloting the programme (three stages as described above) we aim to involve at least 15 individuals, both stakeholders and SME/Startup representatives. At a later stage and as the programme is finalized (October 2025) we aim to involve a larger number of individuals, that is at least 35 individuals.

The first stage of the training program was an **Introduction Session** conducted online on **February 27, 2025**, from **17:00 to 19:00 EET**. This session provided participants with essential insights into the **International Maritime Organization (IMO) and European Union (EU) regulatory frameworks**, focusing on their role in shaping the maritime industry's transition towards sustainability. Additionally, the session emphasized the growing importance of **digitalization** in maritime operations, highlighting how technological advancements can enhance regulatory compliance, efficiency, and sustainability.

The session featured expert speakers who provided comprehensive overviews of key topics. The first presentation, delivered by **Professor Phoebe Koundouri (Athens University of Economics and Finance, Greece)** explored **climate change challenges** and the **policy frameworks** guiding the maritime industry's response at both the **international and EU levels**. This was followed by a session led by **Vera Alexandropoulou (AENAOS Thalassa, Greece)**, who provided an in-depth analysis of the **European and international regulatory frameworks** supporting a sustainable transition in the maritime sector.

A critical aspect of the discussion was the **digitalization of the maritime industry**, covered by **Dr. Alberto Sposito (Cyprus Marine and Maritime Institute)**. This session examined how **technological innovations** are transforming maritime operations, improving efficiency, and ensuring compliance with evolving regulatory requirements. The session concluded with a presentation by **Vassilis Mavrakis and Dimitris Anassis (Hill Dickinson LLP)**, who provided a detailed review of the **latest IMO and EU emission regulations**, discussing their impact on maritime businesses and strategies for compliance.

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This introductory training session established a **solid foundation** for the subsequent phases of the program by equipping participants with **critical regulatory knowledge and strategic insights**. It facilitated a deeper understanding of the industry's evolving policy landscape and highlighted the role of **digital transformation** in fostering a more sustainable and efficient maritime sector. The session also set the stage for **interactive and practical training activities** in the next phases of the programme, ensuring that participants are well-prepared to apply this knowledge in real-world scenarios.

The second phase of the **MariTech Talent program** was successfully conducted on **March 13, 2025**, at the **Athens University of Economics and Business**. This event brought together **maritime professionals, startups, and key industry stakeholders** to explore sector-specific challenges and opportunities in **digital and green transformation**. Participants engaged in **stakeholder presentations and an intrapreneurship workshop**, creating a collaborative space to **identify barriers, test assumptions, and develop innovative solutions** for a more sustainable and technologically advanced maritime industry.

Workshops were conducted by **Alexandros Charalambides (Cyprus University of Technology)** and **Stelios Procopiou (Chrysalis LEAP)**, focusing on **real-world challenges and practical applications**. These interactive sessions enabled participants to **analyze industry pain points, evaluate sector barriers, and collaborate on forward-thinking solutions**. The methodology used for these trainings are based on the frameworks discussed above, namely the framework and canvases resulting from Climate KIC.

Three **startups** also presented their innovative solutions, contributing to discussions on digitalization and sustainability:

- **MALLOC** – Cybersecurity and data protection solutions tailored for maritime operations.
- **AC Biode** – Advanced battery and waste solutions promoting sustainable energy use.
- **Sea the Change** – Sustainable maritime initiatives for environmental impact reduction.

Several **maritime sector representatives and industry stakeholders** participated, including:

- DP World
- EMBIO Diagnostics
- Eurogate
- Bulgarian Ports Infrastructure Company
- Marine Antipollution Enterprise
- Department of Ports Management & Shipping (National and Kapodistrian University of Athens)

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To further enhance the impact of the training, on **March 12, 2025**, the **MariTech Consortium** participated in the **14th GREEN4SEA Athens Forum** at the **Stavros Niarchos Foundation**. This event provided a valuable opportunity for **networking, knowledge exchange, and engagement with key maritime industry leaders**, reinforcing the training program's objectives and alignment with **global sustainability and digital transformation goals**.

The final stage of the **MariTech Talent programe** is set to take place on **April 10th, 17th, and 24th, 2025**, in the form of **a series of online webinars**. These sessions will focus on equipping **maritime professionals, startups, and SMEs** with critical knowledge and skills in **digitalization, green technologies, and sustainability**.

The webinars will follow an **interactive format**, featuring **expert talks, startup presentations, and participant engagement activities**. The three key topics to be addressed are:

- **Cybersecurity & Threats** – Strengthening digital resilience in maritime operations.
- **Fuels & Technology** – Exploring innovations in alternative fuels and energy efficiency.
- **Sustainability & Innovation** – Addressing ESG reporting, circular economy practices, and green maritime solutions.

These sessions will build upon insights gained from the earlier training phases, ensuring a **comprehensive learning experience** that blends **theoretical knowledge with practical applications**. Participants will have the opportunity to engage with **industry experts, discuss emerging trends, and explore innovative solutions tailored to the maritime sector's evolving needs**.

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