August - September 2025

Recent Published Papers

C4FF team has been at the forefront of maritime research, recently publishing three significant papers that address the industry's most pressing safety and security challenges. From establishing new frameworks for continuous improvement to pioneering virtual reality training and strengthening cyber defences, this body of work underscores our commitment to creating a safer and more resilient maritime sector.

The first paper, "A Framework for Continuous Improvement of Safety at Sea," addresses a critical gap between simply complying with regulations and being truly "fit for purpose" to handle real-world challenges at sea. Analysis of over 200 accidents, alongside extensive data from ISM audits and Port State Control (PSC) inspections, reveals recurring root causes of incidents, including inadequate risk assessment, poor leadership, and failures in ship maintenance and operations.

To bridge this gap, the paper proposes a new framework for continuous improvement, introducing practical models like the

"Fitness Triangle," which aligns jobs, people, and procedures to ensure operational readiness. The research calls for a shift towards a culture of continuous learning, where lessons from accidents and audits are used to build more effective safety systems.

This paper will be presented at the IAMU 25 Conference held at AMET University in Chennai, India, from 17 to 18 October 2025

The second paper, "Safety at Sea – Training Seafarers on Effective Implementation of the ISM Code," focuses on one of the most persistent dangers in the industry: accidents in confined spaces. Despite regulations, these incidents continue to cause fatalities, highlighting the limitations of conventional training methods.

As part of the EU-funded OPTIMISM project, this research introduces the VR Emergency @ Sea initiative, which uses immersive Virtual Reality (VR) to train seafarers. The program simulates realistic, high-risk scenarios based on actual incidents, such as gas leaks and fires, allowing trainees to practice critical safety procedures in a safe, controlled environment. This experiential approach helps turn procedural knowledge into ingrained, life-saving habits, bridging the gap between theory and practice under pressure.

The third paper, "Strengthening Cyber Resilience at Sea," reveals that the maritime sector significantly lags behind other industries in cybersecurity readiness. From the CyberSEA project, this research proposes a comprehensive cybersecurity framework and specialized training program to address key vulnerabilities and strengthen the industry’s digital defences.

The second and the third paper will be presented at the IMLA30 Conference held at Split, Croatia, on 24th of September 2025.

On-going Projects

OPTIMISM (September 1, 2023 – August 31, 2026): Efforts are underway to prepare reports and abstracts for upcoming conferences. Despite a paper being published at IMLA30. The core content of 6-chapter training course has been developed, and it is in the process of iterative reviews to ensure the effectiveness of both content and the self-assessment.

CyberSea (September 1, 2023 – August 31, 2026): Despite a paper being published at IMLA30 The first periodic report has been submitted. The team is now focused on implementing various challenges that will form the foundation of the course platform for users.

Barford Project (Upcoming): We are delighted to share that our proposal to expand air quality monitoring has been accepted. The project will bring in new sensors, calibrated and validated by our research team, and deployed in key areas of concern such as Barford and sites near quarries. The data collected will help us engage local communities and provide strong evidence for cleaner, healthier environments. This marks an exciting step forward in using innovation to support environmental action.

Fellowship Certification (FHEA)

We would like to congratulate Professor Dr. Lakhvir Singh for achieving the status of Fellow (FHEA). Picture below shows his Certificate.

AdvanceHE

This is to certify that

Dr Lakhvir Singh

has achieved the status of Fellow (FHEA)

In recognition of attainment against the Professional Standards Framework for teaching and learning support in higher education.

Fellowship reference
PR315477

Date of Fellowship
11/09/2025

Alison Johns
Chief Executive
Advance HE

Professor Mark E. Smith
Chair of the Board
Advance HE

Invitation to the VR Emergency @ Sea Project's final presentation

Dear Delegate,

It is my pleasure to invite you to attend the VR Emergency @ Sea Project's final presentation event and to witness the demonstration of the project's training solutions on 29th September 2025. I very much look forward to welcoming you and thank you in advance for being part of this important day for the Warsash Maritime Academy Research Centre (WMRC) and Solent University.

About the Project: VR Emergency @ Sea

The VR Emergency @ Sea project is a collaborative effort between the Centre for Factories of the Future (C4FF) and Solent University, bringing together expertise in maritime safety, immersive technologies, and training solutions. The project developed a Virtual Reality (VR) training application to enhance the safety and preparedness of maritime professionals operating in confined spaces. This innovative project provides a comprehensive solution for immersive safety training in maritime environments and other high-risk industries.

Our VR training application aims to revolutionise safety training within the maritime sector. By leveraging immersive technologies, the project equips maritime professionals with essential skills and knowledge to handle a variety of emergency scenarios, including fire incidents, gas leaks, and other critical situations.

About the Event

This demonstration event showcases the achievements of the VR Emergency @ Sea project. The event will be conducted in two sessions – Presentations and Demonstration:

1. Presentation Session – Project team members will present different aspects of concept development, technical development, and the key learning outcomes.

2. Demonstration Session – A live demonstration of how the VR Emergency @ Sea test-bed facility can be used to train the future maritime workforce.

Programme Schedule

15:30 – Refreshments on arrival & Networking

Location: Palmerston Auditorium, The Spark Building – East Park Terrace Campus, SO14 0YN

16:00 – Welcome Address

- Kunal Anand, Director, Warsash Maritime School

16:10 – Introductory Presentation – WMS

- Capt. Zakirul Bhuiyan – Associate Professor & Director, WMRC, PI – VR Emergency @ Sea Project

Presentation Session

16:15 – Overview – VR Emergency @ Sea Project

- Prof. Dr. Lakhvir Singh, Managing Director, Centre for Factories of the Future, PI – VR Emergency @ Sea Project

16:40 – Validation Stage – VR Emergency @ Sea Project

- Capt. Zakirul Bhuiyan – Associate Professor & Director, WMRC, PI – VR Emergency @ Sea Project
- Capt. Dmytro Makarchuk – Senior Lecturer (Maritime Simulation), Co-I IGNITE Project

17:00 – Project Demonstration Session – VR Emergency @ Sea Project

- Nicholas Wariua, VR Developer, Centre for Factories of the Future, Co-I – VR Emergency @ Sea Project

17:20 – Q&A Session

17:30 – Closing Remarks

- Capt. Zakirul Bhuiyan – Associate Professor & Director, WMS, PI – VR Emergency @ Sea Project

17:45 – Event Concludes

Dress Code

Business Attire

IMarEST at the Heart of Maritime Policy and Research

IMarEST/IMO Activities Update

Captain John Dickinson, IMarEST's representative at the International Maritime Organization (IMO), has provided a detailed report following the 75th session of the Technical Cooperation Committee (TC 75), held from 2–6 June 2025. Key developments included:

- **A new Capacity Development Strategy**, setting the future direction of IMO's technical cooperation efforts.
- **E-learning initiatives** aimed at improving access to maritime education globally.
- **Continued advancement of the Women in Maritime programme**, supporting the 2024–2029 WIMAs Global Strategy.
- Enhanced discussions around **diversity, equity, and inclusion** in the maritime workforce.
- Positive trends in **female participation across fellowships and onboard training**.
- Addressing critical issues such as **fraudulent ship registrations** and **underwater radiated noise**.

- Strengthened **regional cooperation** with a focus on digitalisation and the implementation of IMO's GHG strategy in developing countries.

Looking ahead, the **110th session of the IMO Maritime Safety Committee (MSC 110)** will be held from 18–27 June 2025. This session promises to tackle significant issues related to safety, decarbonisation, automation, and crew welfare.

IMarEST will be well represented through Captain John Dickinson and members of the MASS Special Interest Group, including Mr. Gordon Meadow, Mr. Juan Palbar Misas, and Mr. Ross Macfarlane.

We are also proud to co-sponsor the following important papers:

- **MSC 110/INF.10** – Large-scale research into the practical challenges of implementing rest and work hour regulations.
- **MSC 110/18/21** – A focused analysis on seafarers' work and rest hours.
- **MSC 110/13/3** – A proposal for reviewing the 1978 STCW Convention, especially regarding training and certification for remote operations.

These contributions reinforce IMarEST's commitment to the human element in maritime operations and its proactive stance on regulating the future of autonomous and hybrid vessel operations.

Research and Academic Contributions

*To promote these initiatives and disseminate findings, multiple research papers have been presented and published at major international conferences such as **IMHFS** and **IAMU.***

Alongside policy engagement, IMarEST continues to shape the global maritime research landscape through robust academic output. Below are several **recently published papers**, showcasing the breadth and impact of our collaborative research:

- **The Impact of Quarrying Activities on Air Quality and Public Health: A Case Study in Warwickshire**
  This study investigates PM10 and PM2.5 exposure near a proposed quarry site, identifying significant health risks—especially to school children—due to elevated pollution levels. It challenges outdated assessment models and calls for real-time, ground-level data in planning processes.
- **Pareto Analysis of ISM Code Deficiencies**
  Based on over 150,000 inspection outcomes and accident reports, this paper applies Pareto analysis to identify systemic weaknesses in ISM Code compliance and highlights key targets for improved maritime safety management.
- **Repository and Knowledge Base on Infectious Diseases for Seafarers (DESSEV Project)**
  The DESSEV Erasmus+ project developed a Decision Support System for maritime epidemic response, a comprehensive disease database, and an open-access learning repository to guide crews during outbreaks—particularly relevant in post-pandemic contexts.

- **Safety at Sea and Maritime Environment Protection with Special Reference to Training Needs for Emerging New Fuels**
  Exploring how the ISM Code and STCW Convention must evolve to accommodate risks associated with new fuels and decarbonisation, this paper also supports the development of new e-learning modules to enhance safety culture in smaller shipping companies.

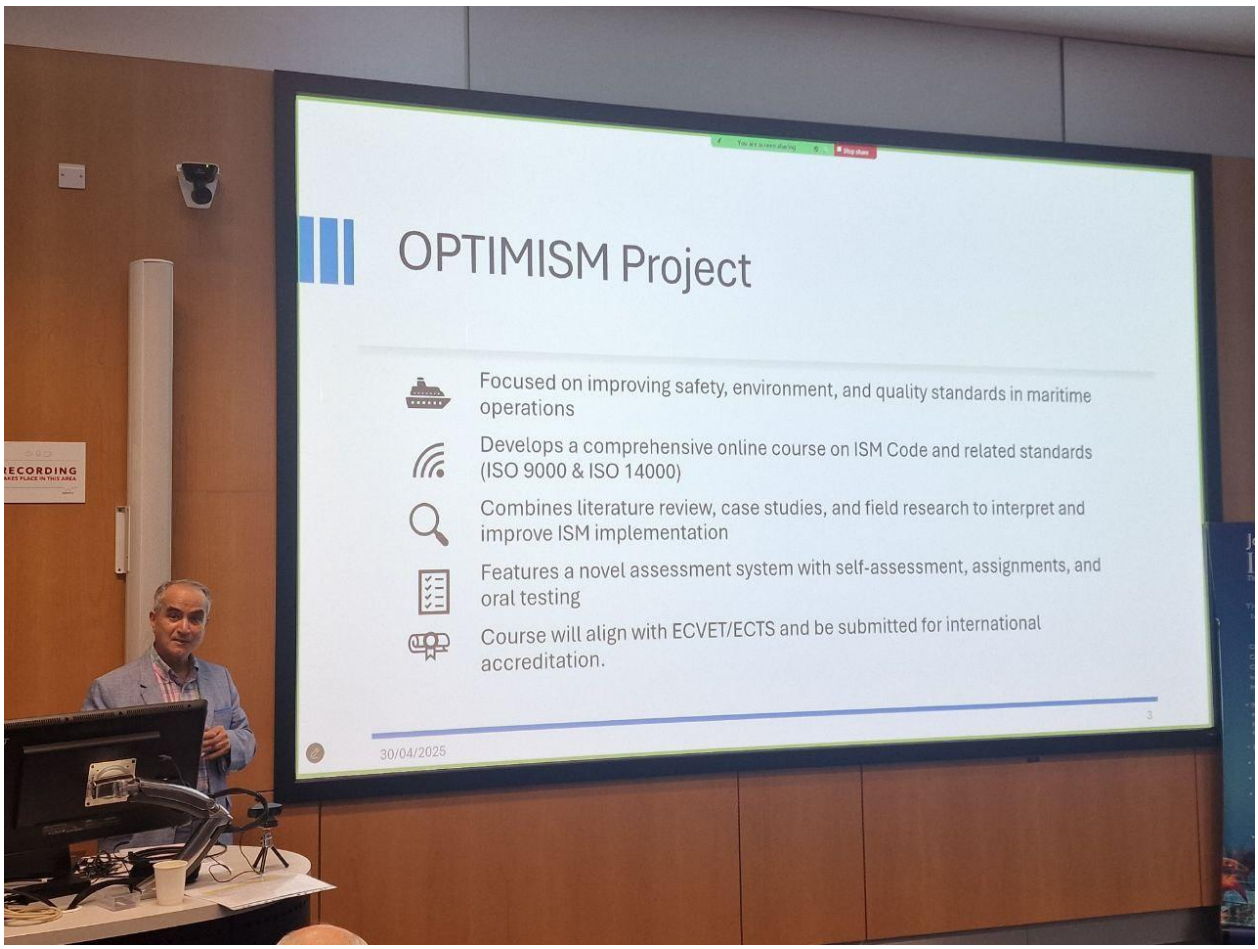
*C4FF has launched a new programme, **Safety at Sea**, to introduce and support a series of innovative maritime safety projects. One of the flagship projects under this initiative is **OPTIMISM**, funded by the European Union. The OPTIMISM project aims to develop a comprehensive training programme for the effective implementation of the **International Safety Management (ISM) Code**.*

*In parallel, several supporting projects—**CyberSEA**, **SUDEMAR**, and **DESSEV**—are currently underway to complement the goals of OPTIMISM. Notably, the **DESSEV** project, which focuses on developing a system to safeguard the wellbeing of seafarers during pandemics, commenced prior to the launch of the Safety at Sea programme, yet remains aligned with its objectives.*

*New papers are currently being drafted for upcoming conferences including **IAMU 2025**, **IMLA 2025**, **WMU 2025**, and **TRANSNAV 2025**.*

*In parallel with these research activities, a series of lectures have been prepared and delivered at **Warwick University**, sponsored by the **IMarEST Midlands Branch**, with support from **IMechE Midlands** and **IET Midlands**.*

A recent lecture hosted by the IMarEST Midland Branch at **WMU, Warwick University** highlighted the advancements in OPTIMISM Project and critical role of virtual reality in advancing maritime safety. Presented by Professor Dr. Reza Ziarati, the session focused on the effective implementation of the International Safety Management (ISM) Code and introduced innovative training methods designed to prevent accidents in confined spaces on board ships.



The Persistent Challenge of Maritime Safety

Professor Ziarati, Chair of the IMarEST Midland Branch, underscored the ongoing dangers associated with confined spaces at sea. The lecture referenced extensive data from accident reports, audits, and port state control inspections, which collectively show tens of thousands of non-conformities and safety deficiencies across the global fleet annually.

A key takeaway was that a significant number of incidents stem from inadequate training and a lack of safety awareness. Traditional training methods often do not adequately prepare seafarers for the high-stakes reality of an emergency.

Immersive Training with "VR Emergency @ Sea"

The centrepiece of the presentation was **VR Emergency @ Sea**, a project that uses immersive virtual reality to simulate hazardous onboard scenarios. This innovative solution, funded by Innovate UK and developed in partnership with Solent University and C4FF, offers a safe yet highly realistic environment for seafarers to develop critical safety skills.

Figure below shows Professor Reza Ziarati thanking Amir Sed and Nicholas Wariua for their contributions to the project.

The benefits of this VR training include:

- **Reduced Accident Likelihood:** By providing hands-on practice in a controlled setting.
- **Enhanced Preparedness:** Equipping crew to respond effectively in high-pressure situations.
- **A New Standard in Safety:** Moving beyond theory to practical, applied learning.
- **Navigation Conference ENC2025**
- The event held in Poland from 21 to 23 May, brought together 300 scientists and navigation experts worldwide. They represented 31 countries from all over Europe, but also from as far afield as Australia, China, Egypt, South Korea, USA and UAE. Among the participants were the heads of navigation institutes: UK, Austria, the Netherlands and Belgium, Germany, Scandinavia, Switzerland, Italy as well as the heads of EUGIN and IAIN. Janusz Uriasz from the Maritime University of Szczecin presented the OPTIMISM project, leading discussions and meetings. A permanent poster displaying the project's key information was also presented during the conference.

Fan Boat Competition sponsored by C4FF and IMarEST Midlands Branch, has been taken place in July 2025 in Allesley Primary School in Coventry. Figure below shows the winners

The picture below from SUDEMAR – Sustainable Development in European MARitime sector; Transnational project meeting in Alingsås, Sweden on 3rd and 4th of July 2025.

Professor Reza presenting Safety of Sea projects to ITU and shipping companies in Turkey in July 2025.

Other Ongoing Projects:

- **SUDEMAR (March 1, 2024 – February 28, 2026):** The course structure is being finalized, and the design phase of the mobile application, a primary objective of the project, has commenced.

Completed Projects:

- **DESSEV:** This maritime-focused initiative aimed to develop a decision support system for maritime personnel to identify potential epidemics or disease outbreaks at sea, where access to medical advice may be limited. Following the final project report, DESSEV was selected as a Best Practice Project by the Polish National Agency.

New Proposals and Partnerships:

C4FF has submitted several new proposals to further our commitment to maritime innovation through Erasmus+. These proposals involve collaborations with esteemed partners across Europe, aiming to enhance maritime safety, sustainability, and technological advancement. Details of these proposals will be shared upon approval.

ITEA Projects and New Proposals:

Building on the success of the original **CSAMGuard** project—funded by Innovate UK and achieving an impressive **97% accuracy** in detecting Child Sexual Abuse Material (CSAM)—C4FF has taken a significant step forward by submitting **CSAMGuard+** to the ITEA program.

CSAMGuard+ is an AI-powered initiative designed to enhance online child safety by tackling the increasing spread of CSAM across digital platforms, including social media, messaging apps, and cloud storage. Traditional detection methods struggle to keep up with the evolving tactics of offenders, especially within encrypted or private environments. To address this, CSAMGuard+ integrates cutting-edge AI techniques such as **content and metadata analysis, sentiment analysis, and biometric image recognition** to detect and prevent CSAM in real time. The project also prioritizes privacy compliance and aligns with global child protection regulations, ensuring a **safer digital space for children** while upholding user privacy rights.

We are delighted to announce that CSAMGuard+ has been labelled by ITEA and currently we are in communication with national agencies to get the project funded.

Alongside CSAMGuard+, C4FF has submitted several other innovative proposals to ITEA, each addressing critical technological and societal challenges:

- **MENTORAI**: Designed to capture and preserve the expertise of retiring employees, MENTORAI leverages **large language models (LLMs)** to create AI-driven, context-aware coaching tools. This ensures that new employees receive **personalized mentorship** comparable to that of seasoned colleagues, promoting **continuous learning and innovation** while mitigating knowledge loss in the workforce.
- **MUST**: This project establishes a **comprehensive testbed** for evaluating urban mobility safety strategies in a simulated **smart city** environment. MUST focuses on **driver interactions with warning systems, pedestrian safety, and vehicle coordination**, using AI-driven risk assessments to reduce accidents caused by **drowsy or distracted driving, vehicle conflicts, and e-scooter or cyclist hazards**. The project consists of three key components:

1. A **Concept City** that generates urban traffic data.
2. A **living laboratory** for testing Vehicle Safety Systems (VSS) and Cellular Vehicle-to-Everything (C-V2X) communication technologies.
3. A **demonstrator** showcasing urban mobility safety solutions for all road users.

- **SecBCM**: With cyberattacks on **Operational Technologies (OT)** becoming more frequent and sophisticated, SecBCM aims to develop **resilient and secure OT systems** that ensure uninterrupted operations of critical infrastructure. The project's core objective is **preventing cyberattacks before execution** by developing proactive detection tools and methods that enhance system security and reliability, even in extraordinary situations.

These ITEA proposals underscore C4FF's commitment to **technological innovation, cybersecurity, and digital safety**, reinforcing its position as a leader in AI-driven solutions for critical societal challenges. It is worth mentioning aside from CSAMGuard+, projects MentorAI and MUST were are also labelled waiting to be funded by the national agencies.

Prof. Reza Ziarati's Presentation at IMO: "Making Seas Safer"

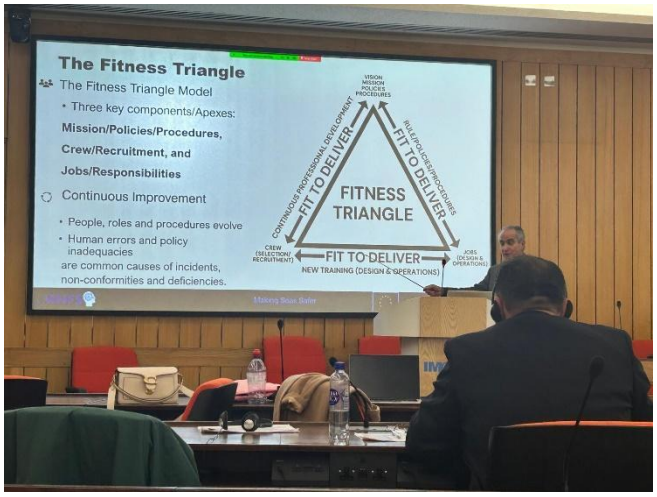
At the International Maritime Human Factors Symposium (IMHFS) 28th-29th November 2024, Professor Reza Ziarati delivered a compelling presentation titled "Making Seas Safer", focusing on advancing maritime safety through human factors and innovation. His talk emphasised balancing compliance with procedures and ensuring operational fitness for purpose. Key elements included the need for continuous monitoring of personnel skills, seaworthiness, and the real-world relevance of procedures.

Ziarati highlighted the duality of risks – known risks requiring structured assessment and planning, and unknown risks needing adaptability, continuous learning, and error correction. He connected such challenges to the ISM Code and STCW, stressing the importance of education and training in addressing both foreseeable and unforeseen risks.

One particular element that stood out was the Fitness Triangle model, which integrates mission/policies, crew recruitment, and job responsibilities to ensure readiness and continuous improvement. He also discussed C4FF ISM Code Control System Model advocating for safety as a dynamic, evidence-based process that evolves alongside maritime operations.

Overall, Professor Ziarati's insights offered a practical framework for enhancing maritime safety by addressing human factors, fostering continuous learning, and adapting to an ever-changing operational environment.


IMHFS
International Maritime Human Factors Symposium
Co-funded by the European Union
C4FF
Developing the Future
Making Seas Safer
Professor Dr. Reza Ziarati BSc (Eng), PhD (Eng), Cert Ed, CMechEng, CElecEng CMarEng, CEng, FIMechE, FIET, FIMarEST
Centre for Factories of the Future
Copyright applies
IMO


The Fitness Triangle
The Fitness Triangle Model
• Three key components/Apexes:
Mission/Policies/Procedures,
Crew/Recruitment, and
Jobs/Responsibilities
Continuous Improvement
• People, roles and procedures evolve
• Human errors and policy inadequacies
are common causes of incidents, non-conformities and deficiencies.
FITNESS TRIANGLE
FIT TO DELIVER
FIT TO DELIVER
FIT TO DELIVER
NEW TRAINING (DESIGN & OPERATIONS)

Cybersecurity Lecture

Dr. Lakhvir Singh, Managing Director of the Centre for Factories of the Future (C4FF) and Lecturer in Cyber Security at Warwickshire College University Centre, delivered a lecture on "Cyber Security and Aspects Affecting the Maritime Industry" on October 30, 2024. This event, organized by the Institute of Marine Engineering, Science & Technology (IMarEST), took place at the Jephson Suite, Kenilworth Holiday Inn, and was also available in a hybrid format.

The lecture covered several critical aspects of cybersecurity in the maritime sector, including: vulnerabilities affecting operational technologies (OT) in shipping; risks associated with cybersecurity in the maritime industry, for example GPS jamming; insider threats; and the latest regulatory responses by the International Maritime Organization (IMO)

Dr. Lakhvir Singh discussed real-world case studies, such as the Maersk ransomware attack, to illustrate the practical implications of cyber threats in the maritime industry. Alongside this, he also delved a bit into the various types of cyber-attacks such as trojan horse viruses and/or other malware and their potential effect on the maritime business. Additionally, the lecture explored briefly the prospective of emerging technologies like artificial intelligence (AI) and blockchain in strengthening maritime cybersecurity.

This event was particularly valuable for maritime professionals seeking to enhance their understanding of cyber defence strategies in an increasingly digital maritime landscape. Attendees gained insights into how cyber awareness and advanced technologies were shaping a safer future for the maritime industry, especially in an era which is becoming ever more digitalised for the shipping industries compared to the past.

Dr. Singh's expertise in this area was well-established, as he had been involved in various cybersecurity projects, including leading a major research project awarded by the UK Government to combat Child Sexual Abuse Material (CSAM) links on the clear web. His work at C4FF also involved developing innovative artificial intelligence techniques, particularly using neural networks, which could have applications in maritime cybersecurity.

IMarEST Midland's Branch.

Chairman : Dr. R Ziarati BSc C Eng FIMarEST Secretary : W.B.Harris BSc C Eng MIMarEST Treasurer : P Burrows I Eng MIMarEST

Lecture Meeting

Date: 30th October 2024 Time: 19:00 Hrs.
Venue: Room 004, IMC, Warwick University Postcode: Coventry, CV4 7HP

” Cyber Security and Aspects Affecting the Maritime Industry"

By

Dr. Lakhvir Singh

Managing Director, Centre for Factories of the Future (C4FF), UK

Lecturer in Cyber Security, Warwickshire College University Centre (WCUC)

This lecture explores the evolving landscape of cyber risks in the maritime industry, from **operational technology (OT) vulnerabilities** to the increasing wave of **cyber-attacks** targeting shipping companies and port facilities. It includes in-depth analysis of high-profile case studies, such as the **Maersk ransomware attack**, while examining key cyber threats like **malware**, **GPS jamming**, and **insider threats**. The session will highlight the latest **IMO regulations**, the role of **IoT in smart ports**, and the growing importance of crew cyber awareness training. Attendees will gain valuable insights into best practices for risk management, incident response, and explore emerging trends in maritime cybersecurity, such as the integration of AI and blockchain for enhancing security across global supply chains.

Dr. Singh is a renowned researcher in cybersecurity and maritime technology, with over 15+ years of industrial experience and a proven track record in leading UK Government and EU-funded research and innovation projects. As the MD of C4FF, and a lecturer in Cyber Security at WCUC, Dr. Singh combines his technical expertise with academic rigor to drive advancements in both industries. Dr. Singh holds a PhD in applying graph technologies to knowledge management, providing him with a unique edge in tackling complex cybersecurity challenges. He is also a certified instructor in CCNA, CCNP, CCNA Security, and Ethical Hacking, and teaches these modules at WCUC, empowering the next generation of cybersecurity professionals. In the maritime sector, Dr. Singh is leading C4FF team in CyberSEA, an EU-funded initiative aimed at enhancing cybersecurity at sea through digital training, with partners from Spain, Greece, Germany, Romania, Sweden, Slovenia and Finland. His leadership extends to numerous high-profile projects, including: ENTA, CSAMGuard, VR Emergency @Sea, OPTIMISM, DESSEV. Dr. Singh recently concluded a study on the ISM Code for the IMO, analysing over 150 maritime accidents to identify root causes and improve safety protocols.

Join Dr. Singh at the IMarEST Midland's Branch lecture for an in-depth exploration of cybersecurity challenges and solutions shaping the future of the maritime industry.

REGISTRATION REQUEST NOTICE

If you're considering attending the Lecture. Please contact Mr.P Burrows by eMail :- imarestmidlands@icloud.com giving your name & any one accompanying you. This is essential to assess viability and make arrangements

SUDAMAR Project Update

SUDAMAR (SUstainable Development of the European MARitime sector) is the Cooperation partnerships in vocational education and training (KA220-VET) project. Project aims to raise maritime sustainability awareness, create a user-friendly mobile app, e-learning course and repository, empower professionals, engage communities, and collaborate internationally. We seek to align the industry with SDGs and foster cross-border cooperation, ultimately contributing to a sustainable maritime sector.

The project will produce 3 core work packages:

- WP2 - Data repository on best practices in implementing of SDGs

- WP3 - e-Learning course

- WP4 - Mobile application

The above will be supplemented with training related to the subject of the project carried out in Spain. In addition, management activities, partnership meetings and dissemination of the project results (including promotional activities before they are created) will be implemented.

The main result is the opportunity to implement the SDGs in the maritime sector. First of all, it should be done through education in this area. The repository and the e-learning course fulfil this role perfectly. The mobile application is also intended to play an advisory role.

There are several partners from Germany, Sweden, Poland, Turkiye, Slovenia, Spain and Greece.

A recent international project partner meeting held in Slovenia hosted by SPINAKER.

DESSEV workshop – a few words about where we are with the project, model testing phase.

Following just after Dr. Lakhvir's lecture, there was a presentation on the DESSEV project, which covered the project's aim to design and develop a decision support system for maritime management personnel to provide guidance in case of epidemic outbreaks. The DESSEV project, an Erasmus+ Cooperation partnership in vocational education and training, focuses on creating an online data repository with useful resources on health in epidemic situations for marine staff, as well as developing an application with a decision support system to help captains and officers identify and respond to epidemic situations.

The presentation talked about the current phase the project is at – the model testing phase. It's a promising aspect so far in which the mobile application is now being consumer-tested to develop the application further and work out the 'kinks' or any disadvantages the project's mobile app has. This testing phase is crucial for refining the application, which includes a knowledge base in the form of "IF … THEN …" rules that can be easily implemented into the decision support system.

OPTIMISM Interim Report Approved

It is heartening to report that the OPTIMISM interim report to the Swedish National Agency was approved without any changes to it. This milestone marks acknowledgment that expected progress in achieving the project's objectives to enhance maritime operations and safety standards has been made.

In support of the EU funded OPTIMISM project several shipping companies were selected in addition to those interviewed when producing the Interim report. The selection was made to ensure the piloting of the proposed training course for the ISM Code implementation is made early in the process. The photo below shows one of the recent visits made in August 2024 to shipping companies (Besiktas Shipping Company) made by Professor Reza, who has been supporting the OPTIMISM project through the MarEdu Partnership and MariFuture platform.

From left to right, Capt. Olay Kazak (DPA/HSEQ Manager), Mr Yavuz Kalkavan (Managing Director), Mr Ali Sayakci (Evadne Yachts), Professor Reza (C4FF Chair and MarEdu Coordinator) and Mr Adil Kamil Ozkan (Fleet Manager)

The photo below shows Professor Reza congratulating Mr Ali Sayakci on concluding the design and production of his Rock 4 Super yacht.

Professor Reza was the co-initiator of many projects such as GMDSS[1] and EBDIG[1] and when the head of department at SIHE (now Solent University) his department ran the only Yacht Design course and one of the three Yacht and Boatyard Management courses in the world. He is of the view that ISM Code should incorporate the fishing vessels and smaller vessels below 500 GTs. He is of the view that the national rules which governs the safety of the fishing vessels should be linked to international rules and regulations. Many collisions between fishing vessels and ISM class vessels could have been avoided if national rules could become standardised and incorporated into ISM Codes.

Human Element Advisory Group 26

The MCA UK's HEAG26 was held on Friday 14th June, from 09:30 to 14:30 at the National Oceanography Centre, Southampton followed by an optional tour of the centre.

The theme of the event was the Regulatory Compass: Leadership and Safety Learning.

The event was an opportunity for experts across the maritime industry to come together and explore the harmonising of Kind Leadership and Safety Learning through Human Element insights. This included an exciting line up of presentations and panel discussions which considered integrating 'Kind Leadership into Regulatory Frameworks', as well as 'Learning from Incident and Case Studies'.

C4FF participated at the event and informal discussions took place to complement OPTIMISM training course with findings from this event.

Successful OPTIMISM Multiplier Event at UPC, Spain

On April 18, 2024, the Universidad Politécnica de Cataluña (UPC) in Spain hosted a highly successful OPTIMISM Multiplier Event. The workshop, conducted in collaboration with notable entities such as the Faculty of Nautical Studies at UPC, ANAVE, Balearia, IMO, DNV, and the Spanish Ministry of Transportation and Urban Agenda, attracted significant attention both in-person and via live streaming. The event featured comprehensive discussions on the International Safety Management (ISM) Code, its implementation, and efficiency from various maritime stakeholders. The workshop concluded with an engaging Q&A session and a networking buffet.

[1] GMDSS - https://marifuture.org/Publications/Articles/Innovation_in_GMDSS_Training.pdf; https://marifuture.org/Publications/Articles/2010_12_01_en_nautilus_telegraph.pdf; https://marifuture.org/Publications/Articles/European_GMDSS_e_learning_Platform.pdf
EBDIG - https://marifuture.org/Publications/Papers/european_boat_design_innovation.pdf; https://marifuture.org/Publications/Articles/EBDIG%E2%80%93WFSV.pdf

The OPTIMISM Multiplier event, UPC, Barcelona, Spain – 18th April 2024

Global Innovation Summit 2024 in Istanbul

Dr. Lakhvir Singh, representing the C4FF team, made a notable presentation at the Global Innovation Summit 2024 in Istanbul on June 14, 2024. The event provided an enriching platform for industry leaders and innovators to discuss advancements in AI, Digital Twin technology, and cybersecurity. Dr. Singh highlighted the importance of pitching sessions, networking opportunities, and knowledge sessions that focused on sustainable manufacturing and data security, which were particularly valuable for C4FF's ongoing projects.


Photos from Global Innovation Summit 2024 in Istanbul on June 14, 2024

MT'24 Conference in Barcelona

The 10th International Conference on Maritime Transport (MT'24) held in Barcelona from June 5-7, 2024, featured a significant presentation on the DESSEV Erasmus+ project. The presentation, titled "Repository and Knowledge Base on Infectious Diseases for Seafarers," detailed the development of a Decision Support System (DSS) to address epidemic threats on sea-going vessels. This project, funded by the European Union Erasmus+, aims to enhance the management of infectious diseases on ships through a comprehensive repository of medical knowledge and WHO guidelines.

IAMUC 24 Conference

A paper titled "Pareto Analysis of ISM Code Deficiencies" was presented for the 24th annual conference of the International Association of Maritime Universities (IAMUC), scheduled to be held at the Massachusetts Maritime Academy from October 7-12, 2024. The paper, authored by German de Melo Rodriguez and colleagues, will explore the root causes of non-conformities, deficiencies, and accidents at sea, employing Pareto analysis to highlight key areas for improvement in maritime safety.

Supporting the Next Generation

As part of its commitment to fostering young talent, C4FF provides internship opportunities to young people supporting their professional growth. The photo below shows certificate presentation to Amelia Walacsyk for her work and contribution to the maritime industry's future workforce development.

Professor John Flower on the left and Professor Ziarati on the right presenting the C4FF Internship Certificate to Amelia Walacsyk

Stay tuned for more updates as the maritime community continues to innovate and enhance global maritime safety and operations.

IMO ISM Code Study Concluded[2]

C4FF was commissioned by IMO to carry out a Study of the Effectiveness and effective implementation of the ISM Code.

The background was the MSC 107 (June 2023), following a proposal by Norway (MSC 107/17/5) on a comprehensive review of the ISM Code and related guidelines, noted information provided orally by the Secretariat, in particular, that the conclusions and results of the Study could support any regulatory exercise in this context, with a view to responding to the need to ensure safe, secure, environmentally sound, efficient and sustainable shipping (MSC 107/20, paragraph 17.19).

The adoption of a new strategic direction on "Address the human element" within the Revised Strategic Plan for the Organization for the six-year periods 2018 to 2023 (resolution A.1149(32)) in December 2021 and the Strategic Plan for the Organization for the six-year periods 2024 to 2029 (resolution A.1173(33)) in December 2023, highlights the importance of the responsibilities and authorities of those involved in the management and operation of ships. In this context, the Secretariat took the initiative to commission a Study on the effectiveness and effective implementation of the International Safety Management (ISM) Code (referred hereafter as "the Study"). This document provides information on the ongoing study undertaken by the Secretariat, before the submission of the corresponding final report to MSC 109.

The Study focused on the assessment of the effectiveness and effective implementation of the ISM Code and its related instruments and associated provisions, with a view to obtaining objective evidence and drawing conclusions about the current relevance of, and difficulties, gaps, flaws or failures relating to, the implementation of the aforementioned instruments within their respective scopes of application, i.e. Governments, ships and ships' crews and shipping companies, in the context of management and operation of ships.

The areas assessed in the Study include:

- the current structure of the ISM Code and its related instruments;
- the application of a risk-based approach, as part of the assessment to be conducted by companies, as provided in the ISM Code, including the usefulness and effectiveness of this assessment and the establishment of corresponding safeguards;
- human side of management for both companies and seafarers, including:
- the linkage between companies and responsibilities emanating from the operation of ships, including the management of seafarers; and
- the way authority and responsibility are allocated, interpreted, and discharged by all parties within their respective scope, i.e. companies, Administrations, masters and

[2] MARITIME SAFETY COMMITTEE, 108th session, Agenda item 16, MSC 108/INF.4, 12 March 2024
HUMAN ELEMENT, TRAINING AND WATCHKEEPING - Study on the effectiveness and effective implementation of the International Safety Management (ISM) Code.

seafarers, starting with the provision of the necessary resources to run ships effectively and efficiently, from the safety, environmental and operational points of view, taking into account that one of the first actions of management taken by companies is the proposal of their ships' minimum safe manning to the corresponding flag State Administration;

- linkage between companies and associated responsibilities emanating from the operation of ships, including the management of seafarers;
- contributing factors to, or root causes of, very serious marine casualties, and their linkage with the implementation of ISM-related provisions; and
- verification and certification practices.

C4FF submitted its reports to IMO on 27th January 2024.

OPTIMISM IMarEST Lecture and workshop

IMarEST Midland's Branch.

Chairman : Dr. R Ziarati BSc C Eng FIMarEST

Secretary : W.B.Harris BSc C Eng MIMarEST

Treasurer : P Burrows I Eng MIMarEST.

Lecture Meeting

Date : 20th March

Time : 1900 hrs

Venue : Room 004, IMC, Warwick University

"SAFETY AND MARITIME ENVIRONMENT PROTECTION WITH SPECIAL REFERENCES TO HUMAN FACTORS - LEARNING FROM AUDITS, INSPECTIONS AND ACCIDENTS."

To Be Given By Prof.

Dr Reza Ziarati.BSc (Eng), PhD (Eng), Cert Ed, FIMechE, FIET, FIMarEST

C.Eng, FIMechE, FIET, FIMarEST, ElecE, CMarEng,

This Lecture covers how 'The International Safety Management (ISM) Code' is delivered through a quality assurance (QA) manual which is continuously improved through seeking feedback as well as through internal audits and regular reviews. The QA is verified through a quality control system namely, external audits and may also be checked by port state control (PSC) inspections. In this paper a model for effective implementation of the ISM Code based on actual results from stakeholders is proposed. The paper presents actual non-conformities reported by PSCs and Classification Societies as well as the role the STCW plays in making the crews and ships safe with special emphasis on crew related and company related errors and how these can be minimised.

Chair of C4FF, Coordinator of MarEdu; Director of MariFuture, Vice-Chancellor of BAU UK, Senior Partner of Berkeley House. The UK and Turkish Professorships, Emeritus Professor and visiting/industrial Professor. Held several international and national posts.

Awarded national diplomas and prizes; co-developer of many EU funded 'Best in Europe' projects. Chair of CE-AQPC, Past Immediate Chair - IMechE Midland and currently Chair of IMarEST Midlands.

Developer of several novel online platforms and e-learning courses. His recent works on ideal port, ideal ship, GreenShip and IMO funded ISM Code have broken new grounds in creating new ideas for future of shipping.

REGISTRATION REQUEST NOTICE

If you're considering attending the the Lecture.

Please contact Mr.P Burrows by eMail :- imarestmidlands@icloud.com

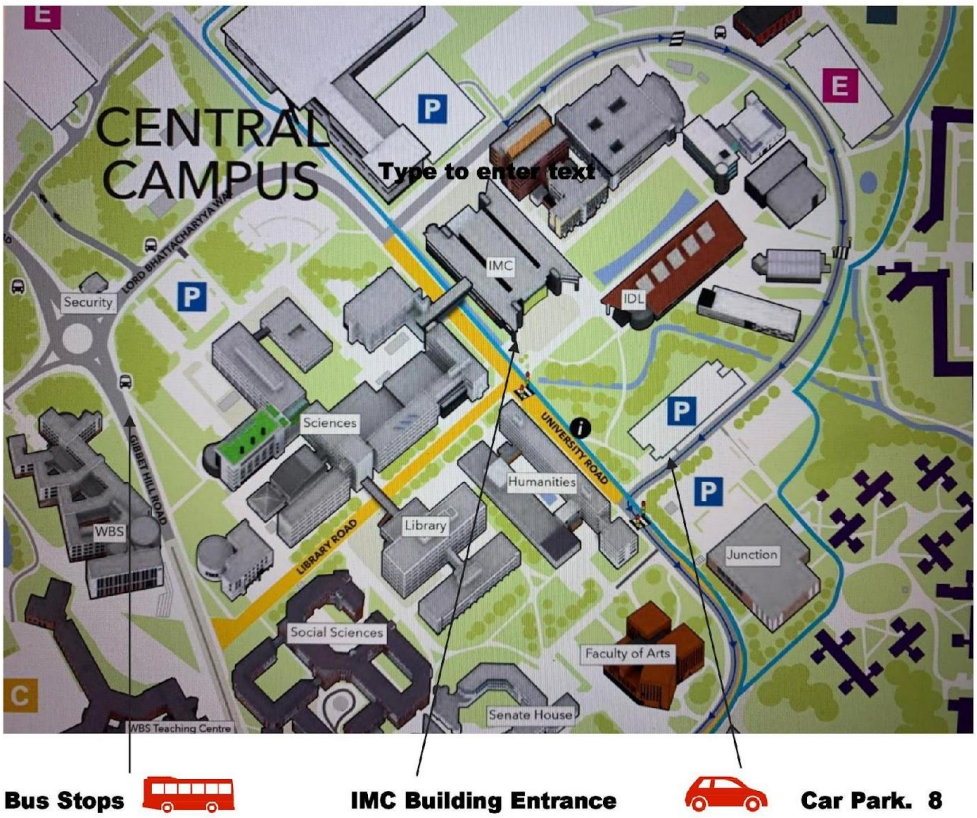
giving your name & any one accompanying you

This is helpful to assess viability and make arrangements

Finding IMarEST Lecture Venue at Warwick University.

The Postcode to get to the area is CV4 7AL
What 3 Words App :- “opens.fuzzy.itself”.
For **Bus Services** to the venue see link on the Internet - 'warwick.ac.uk>services>estates>transport'

When planning your journey you may use a service like Google and Apple Maps to navigate to the location. The University campus is on the South West side of Coventry. As you get closer to the area if you are joining the A45 or A46, there are signs marked University of Warwick to help you find us. Then as you reach the campus areas, there are signs for Central campus, follow the one way system for Parking. We suggest Car parks 8 off the Academic Loop, which is a short walk to the IMC Building. Please note you need to pay for parking either with a smart phone using the QR code or by computer with in 24 hours. There are backlit Map Box signs around the campus to assist people in finding locations. If you are exiting from Car park 8 follow the section of closed off University road and the IMC building (International Manufacturing Centre) is to the right, up ahead. Teas and Coffee are available on arrival. Due to security needs please be punctual..



Other IMarEST Lectures and events

An interesting lecture was given by Conor McCarron form HR Wallingford. The title the Lecture was 75 Years of Working Sustainably with Water. Professor Ziarati, the Chair of the Midland Branch thanked Dr McCarron for his thought provoking and interesting lecture.

SIG Particulate Matter workshop

CSAM project

In the ever-evolving landscape of online safety, combating the proliferation of Child Sexual Abuse Material (CSAM) remains a paramount concern. At CSAMGuard, we are committed to developing innovative solutions to address this pressing issue. In our latest update, we are thrilled to unveil significant advancements that further bolster our efforts to create a safer online environment for all.

Web App for Central CSAM Intelligence System (CCIS): One of the key highlights of our latest update is the development of a user-friendly web application for our Central CSAM Intelligence System (CCIS). This intuitive platform serves as the nerve centre for CSAM detection and reporting, empowering users with comprehensive tools to combat online exploitation.

CSAMGuard API Integration: In addition to the CCIS web app, we are excited to announce the integration of the CSAMGuard API. This API allows external organizations to seamlessly integrate CSAM detection capabilities into their existing systems, fostering collaboration and amplifying our collective impact in the fight against CSAM.

Machine Learning Model Integration: Central to our efforts is the integration of a state-of-the-art machine learning model with the CCIS web app. This integration enhances our CSAM detection capabilities, enabling real-time scanning and reporting functionalities to swiftly identify and disrupt potential CSAM links.

Incorporation into Deliverables: All these groundbreaking achievements have been meticulously documented and incorporated into our latest deliverables. Through Deliverables D3.1 and D3.2, we provide comprehensive insights into the implementation of the CCIS, CSAMGuard API, and the integration of the machine learning model, underscoring our commitment to transparency and accountability.

Milestone Achievements: Furthermore, we are thrilled to announce the successful achievement of Milestones 3 and 4, marking significant progress in our project timeline. These milestones signify the culmination of extensive efforts and the realization of key objectives in our mission to combat online child exploitation.

Looking Ahead: As we move forward, our focus remains steadfast on advancing our capabilities and broadening our impact. We are actively engaging with stakeholders, including the Internet Watch Foundation (IWF), to further refine and expand our solutions. Additionally, we are exploring avenues for future collaboration and funding opportunities to propel our initiatives to new heights.

Conclusion: In conclusion, the latest update from CSAMGuard represents a significant leap forward in our ongoing efforts to enhance online safety and combat CSAM. With the unveiling of our CCIS web app, integration of the CSAMGuard API, and advancements in machine learning model integration, we are poised to make a tangible difference in the fight against online child exploitation. Together, let us continue to work towards a safer digital future for all.

For more information, visit project website at https://csamguard.com/

DESSEV meeting in Spain

The next meeting of DESSEV project is scheduled in Spain on 17-18 April 2024.

WEDNESDAY, 17th April 2024

10:00 Welcome – Germán De Melo
10:15 MUS – WP3/ WP4: Current state of work on– Izabela Bodus-Olkowska
10:45 SPINAKER – WP3: Knowledge base prediction algorithms and rules– Tomaž Gregorič
11:15 MUS – WP3: website application – Izabela Bodus-Olkowska
11:30 UM MSC – WP3: Focus groups feedback, medical experts – Natasza Blek
12:00 SAMK – WP3: Focus groups feedback, marine experts – Janne Lahtinen
12:30 IDEC – WP3: Peer review: conclusions, suggestions fo further activities – Aris Chronopoulos
13:00 Lunch break
14:30 SPINAKER – WP4: Implementation of the code of decision support system – Tomaž Gregorič
15:00 UM MSC – WP4: system testing suggestions – medical experts – Natasza Blek
15:30 SAMK – WP4: system testing suggestions – marine expert – Janne Lahtinen
16:00 Discussion panel
17:00 End of the Day 1
20:00 Social event

THURSDAY, 18th April 2024
10:00 MUS – Dissemination events/ Translations – Iza Bodus-Olkowska
11:00 IDEC – Quality report for final report – Aris Chronopoulos
11:30 UPC – Dissemination report – what is needed to final report – Germán De Melo
12:00 Coffee break
12:30 MUS – Financial report of the project – Izabela Bodus-Olkowska
13:30 MUS – Summary of the meeting – Izabela Bodus-Olkowska
14:00 End of the meeting

OPTIMISM meeting and Multiplier event in Spain

The second face-to-face meeting of OPTIMISM and the first Multiplier event will take place 18-19 April 2024 in Spain.

Online Programme for Training on International Management of ISM (OPTIMISM)

Project number: 2023-1-SE01-KA220-HED-000161161
Venue: Facultat de Nàutica de Barcelona, Spain
Date: 18-19.04.2024
Time:1000-1700 (*CET Time)
Day 1 – 18.04.2024
0930 – 1330: Project Workshop
Day 2 – 19.04.2024 - Partner meeting
1000-1010: Welcome to the meeting – UPC
1010-1100: Discussion on the activity completed for WP2 – Review of Current Practices - All
1200-1230: Discussion on the activities of the WP2 – Data Analysis - All
1200-1300: Lunch Break
1300-1430: Continue discussion on Data Analysis and Course Design – All
1430-1500: Discussion on the interim report - All
1500-1530: Administration and Finance – C4FF
1530-1630: Project Dissemination - All
1630-1700: Conclusion and AOB

Co-funded by the Erasmus+ Programme of the European Union

UNIVERSITAT POLITÈCNICA DE CATALUNYA BARCELONATECH
Facultat de Nàutica de Barcelona

Online Programme for Training on International Management of International Safety Management Code-ISM
OPTIMISM

PROJECT 2023-1-SE01-KA220-HED-000161161

18th APRIL 2024
FACULTAT DE NÀUTICA DE BARCELONA - PLA DE PALAU, 18, 08003 BARCELONA
FROM 09:30 h. TO 13:30h.

09:30-10:00h: Registration

10:00h: Welcome and project introduction by Germán de Melo and Vanessa Makar/Reza Ziarati Coordinators of the project.

10:20h: Official welcome by Agustín Martín Mallofré - Dean of Barcelona School of Nautical Studies, IMO Ambassador

10:30h: Keynote Speech 1: Introduction of the OPTIMISM project by Prof. Dr. Reza Ziarati and progress so far by Mr. Amir Iazempour– C4FF Chair and C4FF Sweden Director.

11:00: Keynote Speech 2: General vision of the application of the ISM Code from the IMO by Olivier Lebrun - Office the Diector Maritime Safety Division.

11:30: Keynote Speech 3: Efficiency of the implementation of the ISM Code on the Spanish Merchant fleet. By Dirección General Marina Mercante española.

12:00: Keynote Speech 4: The ISM Code by the Spanish Owners Association, ANAVE

12:30 Keynote Speech 5: The view of the Clasification Society DNV of the efficiency of ISM Code.

13:00 Discussion Podium: Keynote Speakers 1, 2, 3, 4 and 5.

13:30: Networking the OPTIMISM project and coffee and finger food

C4FF Developing the Future · Crescat · Politechnika Morska Szczecin · idec

Sample of C4FF University Student Final Year projects

C4FF sponsors several climate change action projects at several universities and schools.

A refreshing approach to the development of the Midland

In a dinner event organised by West Midlands Mayor it was refreshing to hear the ex-Prime Minister to consider education and training of young people to be a major priority. The recent developments in West Midlands and the plan for its future is also refreshing. Andy Street was more than convinced that he has done his best for the region and his plans would create a great number of jobs in the West Midlands and beyond. In short, education and job creation are his key objectives; both of these were endorsed by the Thresa May. It is sad that she has decided to stay down at the next election. Her support for European research and innovation in the past paved the way for C4FF to continue supporting many companies to remain profitable and do bigger and better things.

New projects

Several projects have been awarded to C4FF. Two new projects by the EU and one major project by the InnovateUK. More on these exciting developments in the next June-July 2024 news.

Cyber Security project

The overarching vision of the CYPRESS project is to enhance the inclusivity, security, safety, sustainability, and cyber resilience of cities, societies, communities, and critical national infrastructures. The CYPRESS project's objectives encompass the investigation of innovative knowledge related to energy-efficient security solutions, products, services, capabilities, and standards that can rapidly enhance cyber resilience for end-to-end CPS communications. The project also focuses on adopting a "defend as one" approach, implementing security-by-design blueprints, zero-knowledge proofs, artificial intelligence, machine learning, game theory, formal verification tools, and logic to improve secure group communication for sensor data security, privacy, and intelligence. These efforts are expected to bolster confidence in the adoption of CPS in strategic IT infrastructure and expedite the commercialization of related products. Open standardization of security solutions will foster interoperability among different vendors.

Several other EU funded projects have also been either approved or are on the reserved list. More about this project in the next edition of the MariFuture News.

OPTIMISM

C4FF's safety at sea project has been approved by the EU. This project will run from C4FF's Sweden's newly established Centre. The project is a continuation of the C4FF's IMO ISM Code Study and was developed to provide an international standard for the safe at sea and for marine pollution prevention. The ISM Code was developed by considering some of the good elements of the ISO 9000 Quality Systems. The problem is that any form of procedural quality system be it ISO 9000 or the ISM do not necessarily improve safety. If you produce a bad product or service, then procedural quality systems are not going to improve your product or service overnight. They do however, over a period of time, and if all people in the organisation are involved in production of the product or service and given the opportunity to offer feedback, improve. The ISM Code does not articulate well when it comes in offering what need to be improved. It is a simple and a generic Code. For this reason a novel online course on ISM Code requirements and all relevant safety, environmental and quality standards is being proposed. There are a number of activities such as literature review of the ISM Code requirements and its latest amendments as well as other relevant standards related to safety and environmental protection in the shipping industry. The project involves several case studies and research methodology for data collection which include interviews, surveys, and document analysis for improving the content of the ISM Code and interpret its requirements and its correct implementation. The main output of this project is a complete competence-based online training course on the ISM Code and its implementation. There will be a novel

assessment system covering self-assessment, assignments and an oral test. The course will be ECVET and ECTS compliant and will be submitted for accreditation and certification to a professional and internationally known professional body.

This project started on 1 September 2023. The first meeting of the project partner took place in Sweden on 12-13 October 2023.

IMarEST Lectures

Professor Ziarati has been invited to give a lecture supported by IMarEST on 20th March 2024 at 19:00hrs at WMG, Warwick University. The topic of the Lecture is on safety at sea and marine environment protection.

An interesting and informative lecture was given by Richard Bailey organised by IMarEST Midlands Branch on Marine Accidents and Incidents – A UK Success Story. The lecture was helpful in the ongoing IMO ISM Code Study led by C4FF. The Commodore William Harris and Mr Paul Burrows both members of the IMarEST Midlands Branch who helped organising the Lecture and also providing feedback on ISM Code Study.

Professor Ziarati, on the left, thanking Richard Bailey for his excellent lecture at WMG, Warwick University on Marine Accidents and Incidents – A UK Success Story

UK Fluid Network Seminar

The Special Interest Group on Particulate Matter Filtration Flows in Automotive and Marine Applications will meet for a Seminar on Particulate Matter: Lifecycle and Mitigation on 11 March 2024 at Leicester university. Professor Ziarati has been scheduled to give a presentation at this Seminar on Impact of Decarbonisation and Use of Alternative Fuels with Special References to Shipping Industry. The programme for the Seminar is as follows.

UK Fluids Network
Special Interest Group on
Particulate Matter Filtration Flows in Automotive and Marine Applications

University of Leicester | The University of Nottingham | UK Fluids Network

Particulate Matter: lifecycle and mitigation

University of Leicester, March 11th, 2024

Belvoir City Lounge, Charles Wilson building, University Road LE1 7RH

MEETING PROGRAMME

9.45 – 10.00	Arrival and refreshments
10.00 – 10.30	**Tim Watling (Johnson Matthey)** *"Simulating Catalytic Reaction and Soot Oxidation in Coated Particulate Filters: A Simplified Modelling Framework Including Diffusion Effects"*
10.30 – 11.00	**Callum Samuels (Coventry University)** *"Wall Permeability Estimation in Automotive Particulate Filters"*
11.00 – 11.15	Break/discussions
11.15 – 11.45	**Duncan Lockerby (University of Warwick)** *"Simulating the aerodynamics of soot particles"*
11.45 – 12.15	**Jose Martin Herreros (University of Birmingham)** *"Emissions and 3D printing - Challenges and Opportunities"*
12.15 – 13.15	Lunch break and discussions
13.15 – 13.45	**Sean Beevers (Imperial College London)** *"The air quality health and economic costs and benefits of a zero carbon UK? A study of road traffic and building heating"*
13.45 – 14.15	**David Graham (Uniper Technologies)** *"PM2.5 emissions from Energy from Waste plants"*
14:15 - 14:30	Break/discussions
14.30 – 15.00	**David Green (Imperial College London)** *"Quantifying Tyre Wear in the Urban Aerosol Mixture"*
15.00 – 15.30	**Adrian Gaylard (Jaguar Land Rover)** *"Simulating the interaction of particles and droplets with road vehicles"*
15.30 – 16.00	**Reza Ziarati (C4FF)** *"Impact of Decarbonization and Use of Alternative Fuels with Specific References to Shipping Industry"*
16.00	Closing remarks and networking

Further information and contacts

Meeting Registration link | SIG website | UK Fluids website

Dr Svetlana Aleksandrova
University of Leicester
sa1020@leicester.ac.uk

Dr Humberto Medina
University of Nottingham
Humberto.Medina@nottingham.ac.uk

Midland Engineering Dinner

The dinner was held at the Burlington Hotel in the centre of Birmingham on Friday 17th November 2023. The photos show the speech by Professor Reza at the event and presentation

of the C4FF-IMechE join Certificate for Climate Change Action for Air Quality School Competition to the Winner of the competition Goerge Campbell-Fergusen. The prize included the certificate, invitation to the Winner and a representative from the School to the Dinner, £250 to the Winner and £250 to the School, King's School (Worcester). Congratulations to George Campbell-Ferguson and King's School.

Professor Reza Ziarati presenting the Joint C4FF, IMechE and CE-AQPC's Climate Change Action for Air Quality Certificate to George Campbell-Ferguson at IMechE Engineering Dinner

The photos below show the Certificate presented to the winner of the school competition in honour of Mr John Bulter for his services to the IMechE; and a photo of those who attended the event and a memorable photograph with the students and staff working on C4FF projects at Coventry University. In the middle, next to Professor Ziarati, is Associate Professor Patricia Ashman, Associate Head of School, Coventry University

Special Awar for Climate Change Action for Air Quality School Assingment


IMechE Engineering Dinner Event 2023 and a photo with student working on joint C4FF-CU projects. In the middle are Associate Professor Patricia Ashman, Professor Reza Ziarati and Dr Maria Tareen.

IMO Work@Sea Conference

Professor Ziarati, Chair of C4FF, is currently the leading the Effective Implementation of the ISM Code Study on IMO's behalf. He attended the Preliminary Programme for the Joint IMO/ILO Conference pm work at sea on Friday, 13 November 2023. He made a short presentation at the event seeking more help for shipping companies in developing effective safety management system and for marine environment protection.

Professor Ziarati posed an important question at the Joint IMO/ILO Conference on 13th November 2023 on smaller companies challenge in developing manual procedures and the support they need in keeping their crew and ship safe and marine environment protected.

International Maritime Human Factors Symposium

The IMHFS took place on 30th November and 1st December at Strathclyde University, Glasgow. The event was also supported by the MCA UK and several well-know maritime organisations. Professor Ziarati was invited to make a speech when he presented number of challenges facing the shipping industry regarding safety and marine environment protection.

Professor Ziarati making presentation at IMHFS 2023 at Glasgow University on Safety at Sea

Midland Air quality People's Chamber

The meeting took place in Kenilworth both in person and virtually.

Central England Air Quality People's Chamber (CW-AQPC) Telephone: +44 (0) 1926 802000 Websites: www.cwairquality.com E-mail: reza.ziarati@c4ff.co.uk **Address:** Berkeley House, 6-8, The Square, Kenilworth, Warwickshire CV8 1EB, United Kingdom

Central England Air Quality People's Chamber

Chair: Professor Dr Reza Ziarati

Agenda
Location: The Almanack, Kenilworth
Time: 10-11:30am
Meeting format: Hybrid meeting

Date: 06/12/23

Items for discussion/consideration:

1. Recent Developments
2. Student residence plans – Westwood Business Park
3. Coventry Incinerator - active discussion - MRF - Pollution from the Bar Rd incinerator/s

https://www.coventrytelegraph.net/news/coventry-news/protesters-tell-coventry-city-council-28183656

1. Pollution at Stoke Primary
2. Barford Quarry report
3. C4FF-IMechE climate change/Air Quality Schools Competition
4. University Student Projects
5. Next Conference – 2024
6. Clean Air Day – Town Council/Clean Air Warwickshire – closing High Street (Susan) – How can CE-AQPC support
7. Wood Burners – explore
8. C4 Climate Change Programme -explore and add information/disseminate – The Great Climate Fight
9. AOB

Several decisions were made at the meeting. Members are requested to refer to the minutes of the meeting. It was noted that Professor Ziarati' report to the Council has had the desired effect and the development of multi-storey student accommodation, on the Westwood Heath side, at Westwood Business Park has been suspended. This a great relief for the residents of Westwood Heath.

The investigation initiated by C4FF regarding the proposed Barford quarry development has led to comprehensive report by Professor Amin El-Habaibeh, NTU. Arrangement are being made to present C4FF's findings and Professor Amin's report to the WCC in January 2024.

New Initiative with IMarEST and IMechE Midland

Last year IMechE sponsored an internship at C4FF to develop an air quality sensor. The sensor was successfully tested and calibrated against the Government's own air quality monitors in located in the centre of Coventry. The sensor has been used in several monitoring projects.

The IMarEST Midland has agreed to fund a school STEM activity in collaboration with Imagineering to be carried out under the auspices of the Chair of the Branch, Professor Ziarati. More on this in the next news.

New Developments

The UK government is considering and reviewing policies. Professor Reza was invited to a meeting and had brief discussion with deputy chair of conservative party.

A lecture on LNG was given by Captain Allen Campion sponsored by Midland IMarEST at WMG Warwick University. Photo below shows Professor Ziarati, Chair of Midland IMarEST Branch, thanking Capt. Campion for his excellent lecture. The lecture will be available on IMarEST TV shortly. The next lecture is planned for 31st January 2024. Professor Ziarati particularly wishes to invite all members to this lecture on Marine Accidents and Incidents – A UK Success Study, to be presented by Richard Bailley. The Lecture will take place at 18:30 at Warwick University WMG room 004 IMC (International Manufacturing Centre).

C4FF Climate Change/Air Quality Projects at Coventry University

C4FF supports numerous students' projects at Coventry University. A photo below shows the university chancellor dinner organised to promote industry university collaboration.

Central England Air Quality People's Chamber

The conference 2024 will take place again at Coventry University. The chamber is expected to meet early December to discuss central and local government policies on climate change with specific reference to air quality and net zero emissions.

Current funded projects

DESSEV Project

Planning for the next pandemic

The project partners are planning the third project meeting. The first meeting of the project took place in Warsaw, Poland on 14-16 November 2022. The meeting was successful and outline the plan for the project implementation and discussions on the role of each partner and the consortium as a team.

Second partner meeting was held in Ljubljana, Slovenia 29-30 June 2023. Third partner meeting will be held in Piraeus, Greece 16-17 November 2023

The project is devoted to issues related to the outbreak of an epidemic on the sea-going vessel. In practice, the vessel becomes a moving isolator with a great potential to "release" the disease over a larger area. The COVID-19 outbreak has demonstrated that in many places there are no mechanisms for dealing with disease emergencies. Although many agreements and contracts anticipated "force majeure" risks, no one was aware of the fact that this could be global. COVID19 has shown that very often existing procedures are not adapted to the reality around us. Very often, new ones need to be developed quickly. Sometimes there is even no legal basis to implement and apply such procedures. Different solutions related to the coronavirus threat have been adopted in each country. Some actions turn out to be right, some don't. Unfortunately, in many cases the social factor is also important (opposition to vaccination, lockdowns, etc.). Sometimes, however, we find ourselves in a situation where we cannot wait for new procedures to be developed. COVID-19 has had a negative impact on almost all areas of the economy. It can be said that it is the greatest global threat since the Second World War. The aim of the project is to build an expert system regarding the risk of epidemic threats on a sea-going vessel (not only COVID-10). More about the project will be presented in January 2023.

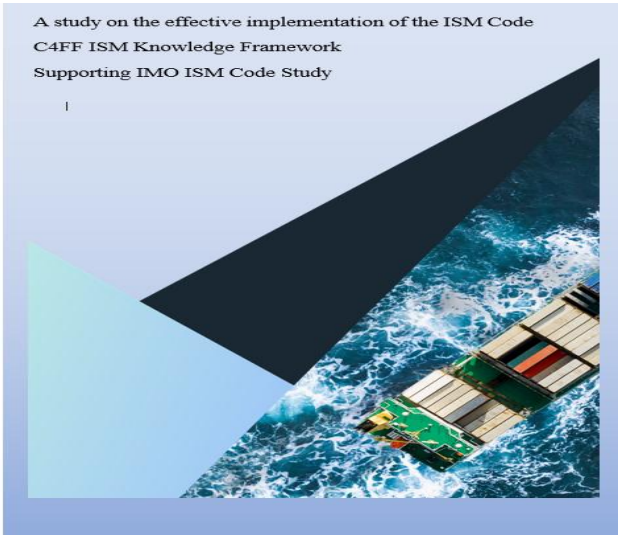
CyberSea

Main objective of CyberSEA is to improve cybersecurity in the maritime industry by increasing awareness and training for cadets and seafarers. By creating educational materials and piloting remote labs, the project will equip seafarers with the knowledge and skills needed to protect ships and their cargo from cyberattacks. CyberSEA will foster a network of experts, promote cyber resiliency and advocate for the adoption of the CyberSEA approach as a standard for maritime education.

The next international partner meeting will be held in Romania on 16th and 17th of January 2025 hosted by RNA, Constanța, Romania.

IMO ISM Code Project

This project concerns the effectiveness and effective implementation of the ISM Code. C4FF has produced an ISM Code Knowledge Framework to gather all the necessary data for the intended three Miles stone reports. The project has led to the development of several stakeholder questionnaires and several case studies as well as the analysis of some 130 accident reports.



Soft Skills Virtual Reality

The Virtual Reality project has been concluded and the final report was submitted to the UK NA. This was a very interesting project and the outcome is expected to be used in several new projects/proposals. The applications of VR in the marine simulation sector are expected to have major impact on ship navigation and propulsion training programmes. The cost advantage in medium to long term will help VR to replace or supplement many ship simulator systems. Project Website: https://lifeskillsvr.com/

C4FF has been informed that the project has been awarded 83 which is a top grade and full funding has now been approved. This is excellent news. Congratulations to all C4FF and all the partners.

C4FF has been granted two major contracts one by the UK Government and one by UN/IMO.

More information about the progress of theses exciting projects in December 2023 News.

C4FF will be starting a new ITEA project and may decide to take part in another EUREKA project. Again more information about these two projects in the next News.

The UK Government embraces ITEA within the EUREKA programme

The C4FF chair, Professor Ziarati, wrote to the senior Ministers and the Government officials about the importance of embracing ITEA a programme at forefront of technological developments particularly now that the UK is no longer is participating in many of the EU research and innovation programmes. This is good news. ITEA programme are well assessed and are near market precisely what the UK needs. Some £6 million has been assigned to phase 1 which is expected to fund some 10 projects each of £600k value. C4FF has recently been involved with several successful ITEA projects and currently is part of a prestigious project called ENTA. The OPTIMUM project, C4FF first involvement with ITEA received outstanding award in all three Category. The Centre intends to support several consortia and play a major role in making ITEA a success in the UK.

A new climate change STEM competition for Schools

The success of the Climate Change Action for Air Quality school competitions in the last two year, Professor Ziarati has with support from IMechE will be producing another very interesting competition. Any school can take part in the competition.

Competition event
The Competition will open in April 2024 00:00 . The deadline is 31 August 2024 00:00
Status: Not active

Description

WIN £250 PLUS £250 FOR YOUR SCHOOL

Enter our climate change competition and you could win £250 to spend as you wish PLUS a further £250 for your school. Winning entrants (plus one parent / guardian) will also be invited to the prestigious Institution of Mechanical Engineers - Midland Region Annual Dinner to be held at the Burlington Hotel in Birmingham in November where they will receive their certificate of achievement.

Closing date for entries is 31st August 2023

Competition rules

1. The competition is open to all students in full time school / academy education aged between 14 and 18 as of 30th September 2023.
2. The written article must be original work undertaken by the student.
3. The author shall not retain any copywrite on the article submitted and the article, or parts thereof, may be re-printed in the Institution of Mechanical Engineers (IMechE) publications.
4. The article will be between 10 and 12 pages in length, using Calibri 12 font, and including any pictures, graphs, etc. but excluding the title page and the bibliography.
5. The content of the pictures, graphs, etc must not be more than 40% of the complete article.
6. Students are encouraged to undertake research to establish facts and information and make reference to this. All, such references must be fully identified within the bibliography.

7. Closing date for receipt of all entries by email will be 31st August 2023 without exception.
8. All articles will be judged by a panel comprising members of the Institution of Mechanical Engineers – Midland Region and C4FF.The judges' decision is final.
9. Winners will be notified by 31st September 2023 and winners names and pictures will be displayed on the IMechE Midland Region website.
10. No correspondence will be entered into.
11. All entries must include the name, date of birth, personal photograph and school / academy name.
12. Two winners will each receive a personal payment of £250 plus a payment made to the winners' school / academy. Each, will also receive a personal invitation for themselves plus one parent / guardian to the IMechE Midland Region Dinner to be held at the Bulington Hotel in Birmingham on Friday 17th November 2023.Invitations are non-transferable.

Professor Dr Reza Ziarati – Chair, Centre for Factories of the Future (C4FF) – is trying to write another article on climate change. He has compiled a series of notes in preparation for the article but now needs your help to bring all this together, undertake some deeper research and compile a suitable article for publication.

Your article must include all the key points identified by Professor Ziarati and much more additional information you may be able to find by research. Please include relevant pictures, graphs, diagrams and other such data which will make the article become very useful to the reader.

The target readership for this article will be both the specialist engineer / scientist / environmentalist as well as the general public who will have an interest in this subject – very relevant in today's world. Therefore, your article will need to contain some good technical detail but also be very readable for everyone.

Professor Reza's notes

Energy cannot be produced or destroyed but can be transformed from one form into another. Higher temperatures have negative effects, and the higher CO2 emissions the higher is the atmosphere's temperature. **We need to bring CO2 emissions to Zero if the global atmospheric temperature is to remain unchanged**.

CO2 emissions are directly proportional to world population (P), CO2 per unit energy (C), Services per person (S) and Energy per service (E), namely:

CO2 = P x S x E x C

If P goes up S will go up too but although E may drop and this may lead to a lower C, the anticipated increases in population and current upward trend for greater need for Services would mean huge increases in CO2. So far CO2 levels have not been falling and we need a miracle to reduce CO2 level to maintain a safe global temperature.

There are no easy solutions. Wind, Solar and Hydrogen have huge problem of transmission and storage but the cost of transformation of free wind and solar energy to clean and usable energy is falling. **One solution could be Nuclear and use of small, safer and highly efficient units spread over the globe rather a few numbers of huge power plants**. In any case, nuclear energy has its problems of cost, safety and long-term storage. Another partial solution is carbon capture and its storage which poses serious engineering challenges of affordable cost, suitable locations and long-term stability.

One method suggested by me was conversion of wind energy to potential mechanical energy (Reza's Coil) and its storage. This one potential area which can have a huge potential as it removes the storage problem of wind energy.

On electrical energy all the batteries on earth can store about 30 minutes of the world's energy needs. There is a great deal about cars. Toyota which is the world's largest automakers, recently reiterated an opinion it has offered before. That opinion is straightforward: **The world is not yet ready to support a fully electric auto fleet.** Just 2% of the world's cars are electric at this point. **There are 289.5 million cars just on U.S. roads as of 2021. About 98 percent of them are gas-powered.** Toyota selling 81% of its cars in the US warns that the grid and infrastructure simply are not there to support the electrification of the private car fleet. A 2017 U.S. government study found that we would need about **8,500 strategically-placed charge stations to support a fleet of just 7 million electric cars**. That's about six times the current number of electric cars but no one is talking about supporting just 7 million cars. **We should be talking about powering about 300 million within the next 20 years, if all manufacturers follow GM and stop making ICE cars. £300 million cars are still a drop in ocean and who is here in 20 years' time.**

Transport is a major polluter. Electrifying the auto fleet will require a massive overhaul of the power grid and an enormous increase in power generation. Hence the reason for success of Hybrid. Read my award prize winning and national diploma award paper to know why the time for hybrid vehicles is with us:

http://www.c4ff.co.uk/history/papers/Emerging_transportation_system.pdf and compare what I and others are now saying https://www.marifuture.org/Publications/Papers/imeche-transport-hierarchy-report.pdf. The latter paper is very pro rail and does not see any reasonable solution to existing aviation fuel.

With regard to UK Government actions:

- The impact of global energy supply disruptions has led to a surge in household bills and slowed economic growth across the globe. To this end, the UK government has intervened to mitigate these effects by covering around half of the typical energy bill.

- It plans to expand the use of renewables, revive nuclear power and build new industries such as carbon capture, which is expected to create jobs across the country, provide new opportunities for British businesses at home and abroad, and endure the UK intention of reaching net zero by 2050.

- The emphasis is on accessing cheap, abundant and reliable energy as the foundation for a thriving economy hence the new focus on Energy Security but trying to accelerate the move to cleaner, cheaper, and home-grown energy through strategies such as the Green Finance Strategy.

- The government has already announced a series of measures aimed at bolstering its efforts to boost the UK's energy supply, cut carbon and drive bills down. Among the key initiatives are a commitment to carbon capture usage and storage (CCUS) and a £160 million fund to support port infrastructure projects to kickstart investment in the UK's emerging floating offshore wind industry, while the first tranche of green hydrogen production projects is set to receive backing under the £240 million Net Zero Hydrogen Fund.

- This together with the fifth round of the UK's Contracts for Difference scheme, aimed at incentivising investment in renewable electricity, will be backed by a budget of £205 million and the new competition to select the best small modular reactor technologies will, it is said, help the UK towards the set Net Zero targets in 2030 and 2050.

- In parallel the government is speeding up the planning process to attract investment, reforming it to enable the building of more energy infrastructure, including solar power and offshore wind projects, more quickly.

- Other measures include more support for energy efficiency by reducing reliance on fossil fuels to heat buildings with a £30 million Heat Pump Investment Accelerator as well as boosting the UK's electric vehicle charging points and infrastructure with an investment of over £380 million.

- The most potent tool is the UK Export Finance provided with an extra £10 billion capacity to boost exports, including from the UK's world-leading clean growth sectors.

The big question is, "are all these efforts going to reduce carbon emissions by 68% from 1990 levels by the end of the decade as pledged in the Paris Agreement?"

Maybe your article will help to answer some of these questions or maybe your article will bring up even more unanswered questions which need to be addressed. When your article is complete, please send a copy by email to:

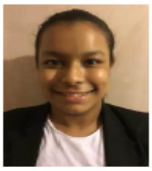
reza.ziarati@c4ff.co.uk and john.butler276@btinternet.com.

Please check carefully the competition rules and ensure that your article complies. All entries will be acknowledged so if you have not received confirmation of receipt within 7 days of submission, please contact us further. We look forward to hearing from you.

The information about the last year winners is given below:

Air Quality / Climate Change School Competition

To coincide with the 2021 United Nations Climate Change Conference (COP26) held in Glasgow in November last year and the launch of the 175th anniversary year for the Institution of Mechanical Engineers (IMechE), The Midland Region of the IMechE, together with the Centre for Factories of the Future (C4FF), organised an air quality / climate change competition for secondary schools.



Anisa Tasnim Begum

Pupils were asked to study a highly technical, abridged 16 page report on air pollution and to answer a series of questions. They were then required to compose a 500 word essay on " how you / your family can make changes to your lifestyle and/or other actions which will result in the reduction of greenhouse gas emissions.

Miriam Clements

Two winning entries were chosen – Anisa Tasnim Begum (14) from King Edward VI Five Ways School in Birmingham and Miriam Clements (16) from Rugby High School. Both pupils win £250 plus a framed certificate and their schools also receive £250 to be spent on STEM activities.

Professor Dr Reza Ziarati – Chair, Centre for Factories of the Future and author of the technical paper used in the competition said, "We were impressed by the quality of these two entries. It was clear that both girls fully understood the problems we are facing today with climate change and air quality and they had given very good essays on ideas for tackling the problems. Clearly they had researched into the problem."

The full report: Pollution in the Air – A Local and Global Concern can be found at:
https://www.marifuture.org/Reports/Development-Papers/ADP_09_2020_MARIFUTURE.pdf
https://www.marifuture.org/Reports/Development-Papers/ADP_10_2020_MARIFUTURE.pd

John Butler. Education Officer – Institution of Mechanical Engineers, Midland Region.

The Climate Change Action for Air Quality Conference

The conference this year takes place on 2nd June 2023 and is hosted by Coventry University.

Climate Change Action for Air Quality conference 2023

Central England Air Quality People's Chamber (CE-AQPC) - www.cwairquality.com

The emphasis of the conference this year is on the government and the local councils **Net Zero plans**. Almost all councils have now drafted their Net Zero Plan and this is the first time we have a Minister responsible for Net Zero.

The CE-AQPC (www.cwairquality.com) has been involved with interacting with the Government ministers, local MPs, many councillors, academics, engineering and medical profession to identify areas that the local communities and resident associations, businesses and individuals can engage in to ensure that the air quality improves and the global warming is no longer a threat to mankind.

The activities involved a range of climate change initiatives including STEM and college university student projects and school competitions as well as lectures and workshops supported by engineering institutions. Some of the projects and papers produced were classified as outstanding by major national and international bodies such as the UN, EU and so forth. The winners of the national climate change school competition 2022 were two young ladies who were presented with a certificate and two cash prizes at the IMechE Dinner function

organised to celebrate the Institution's 175th Birthday. Some of the activities can be viewed at the CE-AQPC website or for instance at https://www.marifuture.org/Publications/News/October-November2022News.pdf)

With regard to the Government actions, the recent efforts primarily focused on the impact of global energy supply disruptions. Such disruptions have led to a surge in household bills and slowed economic growth across the globe. The Government has already announced a series of measures aimed at bolstering its efforts to boost the UK's energy supply, cut carbon and drive bills down.

Among the key initiatives are a commitment to carbon capture usage and storage (CCUS) and a £160 million fund to support port infrastructure projects to kickstart investment in the UK's emerging floating offshore wind industry, while the first tranche of green hydrogen production projects is set to receive backing under the £240 million Net Zero Hydrogen Fund.

This together with the fifth round of the UK's Contracts for Difference scheme, aimed at incentivising investment in renewable electricity, will be backed by a budget of £205 million and the new competition to select the best small modular reactor technologies will, it is said, to help the UK towards the set Net Zero targets in 2030 and 2050. In parallel the government is speeding up the planning process to attract investment, reforming it to enable the building of more energy infrastructure, including solar power and offshore wind projects, more quickly.

Other measures include more support for energy efficiency by reducing reliance on fossil fuels to heat buildings with a £30 million Heat Pump Investment Accelerator as well as boosting the UK's electric vehicle charging points and infrastructure with an investment of over £380 million and. The most potent tool is the UK Export Finance provided with an extra £10 billion capacity to boost exports, including from the UK's world-leading clean growth sectors. **The question is are all these efforts going to reduce carbon emissions by 68% from 1990 levels by the end of the decade as pledged in Paris Agreement?**

Climate Change and Air Quality affects us all, so if you have something to say or wish to hear the views of the Government, local politicians and specialists on recent actions regarding Net Zero and the reactions from the local communities and many organisations and individuals from a range of background please register for the conference by writing to Lena at lena_kendall@yahoo.co.uk. Attendance to the conference is free and refreshment and lunch is provided.

The latest draft programme is as follows:

Climate Change Action for Air Quality 2024 Conference Standing Agenda

Date: 2024 TBD – **Venue**: Coventry University

Conference Title – **Net Zero Plans**

Main Aim - To bring all the key stakeholders in the region, and from wider afield, to discuss climate change and how to manage the impact of poor air quality on local residents

Target Audience - Local resident associations, local universities, local councils, local MPs/MEPs, national and government representatives, local environmental groups, air quality specialists

Purpose

- To gain a wider understanding of the local and national **Net Zero Plans** and their impact on air quality
- To understand what we currently measure and consider its adequacy
- To communicate the above understanding to the widest possible audience
- To share the evidence based on the health and social impacts of climate change actions and poor air quality
- To share good practice
- To understand the likely impacts of Net Zero Plans and poor air quality on cities such as Coventry and towns like Leamington Spa (to be aware that air quality does not differentiate administrative boundaries)
- To consider possible ways to mitigate against poor air quality
- To agree next steps towards cleaner local air

Provisional Programme

09:15 - 09:30 Arrival and Coffee/Tea

09:30 - 09:40 Introduction and the Expected Outcome
Professor Dr Reza Ziarati, Chair, C4FF
09:40 – 09:55 SolarButterfly

Session 1 Local and National Net Zero Plans
Chair Professor Reza Ziarati

09:55 - 10:05 Welcome Address
Councillor Coventry Lord Mayor

10:05 - 10:35 The National and Local Perspectives – Responses to the UK Net Zero Plans
10:05 – 10:20 Government Message
10:20 – 10:35 Anita Dolton introducing
Keynote speech Mr Mark Pawsey – Member of Parliament for Rugby

10:35 – 10:55 Morning Keynote Speech: Air Pollution Developments
Chair: Dr Lakhvir Singh
Professor Roy, Harrison, OBE FRS
Queen Elizabeth II Birmingham Centenary Professor of Environmental Health, Birmingham University

10:55 - 11:05 Q/A

Session 2 Effective, Efficient and Green Transport
Chair: Associate Professor Patricia Ashman, Coventry University

11:05-11:20 **The Health Impact of Poor Air Quality**
Professor Abdul Rashid Gatrad

11:20 – 11:35 Transient Emission of NOx
Dr Mark Peckham, Director, Cambustion

11:35 - 11:50 **Tea/Coffee Break**

11:50 – 12:05 **Net Zero Plan**
Cllr Andrew Day – WDC Leader

12:05 – 12:15 Q/A

Session 3 Climate Change Student Projects

Coventry University

12:15 - 12:25 **Coventry University student projects/SIG Particulate Matters projects** Student Project Groups

12:25 – 12:40 **Making Coventry's Solar Future**
Tony McNally, Solar Panel Project

12:40 – 12:55 Review and address of the public responses to the '30 questions' - Q &A

Session 4 **Technical Section - Emissions & Air Quality Measurement**
Chair Dr Svetlana Alexandrova – Leicester University

12:55 – 13:10 **Keynote Speech:** Mr Matt Western – Member of Parliament for Warwick & Leamington and Shadow Minister for Higher Education

13:10 – 13:25 **IMarEST Lecture Air Quality during Commuting**
Professor Amin Al-Habaibeh PGCHE, BSc, MSc, PhD, CEng, MIET, FHEA
Professor of Intelligent Engineering Systems; Nottingham Trent University

13:25 – 13:40 **Towards Personal Environmental Monitoring**
Professor James Covington, Warwick University

13:40 - 13:50 Q/A

13:50 - 14:30 Working Lunch

Session 5 **Importance of Preserving Nature**
Chair Ann Wilson

14:30 - 14:45 **Afternoon Keynote Speech: Importance of Saving Trees – Study of the diversity of microorganisms in trees**
Professor Hendrik Schaefer, School of Life Sciences, University of Warwick

14:45 – 15:00 **Clean Air Warwickshire - The role of a community organisation in improving air quality**
Chair Clean Air Warwickshire

15:00 – 15:10 Q/A

Session 6 **Engineering Institutions**
Chair John Butler

15:10- 15:25 **Work by Engineering Institutions & Business - Hydrogen Train, Climate Action new School Competition & several other STEM activities including IMechE funded Air Quality Sensor and IET**

and IMarEST STEM Projects John Butler (IMechE), Kevin Blacktop (IMechE), Howard Warrener (IMechE) and Derrick Willer (IET), Paul Burrows (IMarEST)

15:25 - 15:40 Coffee/Tea Break

15:40 – 16:00 **STEM Initiatives**
Nicola Davidson, C4FF and Eiraya Education

16:00 - 16:15 **Regional/local issues**
Planning matters, Barford, new homes, Progress House, Nuneaton/Bedworth, HS2
Cllr Keith Kondacor

16:15 – 16:30 Practical actions to tackle air pollution
Cllr Mattie Heaven – Wainbody Councillor and Shadow Cabinet Member for City Services, Coventry Council

16:30 – 16:40 Q/A

16:40 **Final Remarks and Actions for the Future**
Professor Reza Ziarati

16:50 **End of Conference**

Appointment of new the Chair of the IMechE Region

Professor Dr Reza Ziarati was duly elected as the regional Chair of Marine Engineering, Science and Technology for 2023 and handed over the Chair of Region for the Institution of Mechanical Engineering to Kevin Blacktop.

Passing the badge of IMechE Midland Region office to the new Chair

The photo above shows the medallion of IMechE Midland Region being passed from Professor Reza Ziarati, the current Chair to the new Chair Kevin Blacktop at the IMechE 175th Anniversary.

C4FF New Article's Impact

A recently published article **https://www.marifuture.org/Publications/Articles/Tackle_Harassment_Head_On.pdf in** Marine Professional has had a major impact in the maritime industry. Several countries have declared their interest in pursuing the recommendation in the Article of IMO to take bullying and harassment in the maritime sector more seriously. The US Government at the HTW 9/7/1 has proposed a Comprehensive Review of the 1978 STWC Convention and Code. They have proposed mandatory training provisions to address the prevention, awareness, bystander intervention, reporting and response to bullying and harassment including sexual assault and sexual harassment.

C4FF discussion with the UK Administration (MCA) has indicated the C4FF article and the subsequent US paper is worthy of further consideration. MCA has informed C4FF that they will review both documents and will inform C4FF of their decision. Finland and Spain as well as Poland may also join to support C4FF's and US paper in any future HTW discussions.

Technology Challenges Seminar

A seminar was organised by the UK Fluids Network SIG on the means to address urban air quality. Professor Reza Ziarati, C4FF Chair, gave the speech on 'Pollution from transport system: a strategy for sustainable transport systems', summarising the finding of IMechE COP26 findings and recent discussion which took place at the recent Air Quality People's Chamber. A copy of his slides and notes are available to interested parties and can be requested from C4FF (info@c4ff.co.uk).

UK Fluids Network
Special Interest Group on
Particulate Matter Filtration Flows in Automotive and Marine Applications

University of Leicester · The University of Nottingham · University of Chester · UK Fluids Network

Technology challenges for addressing urban air quality

University of Nottingham, December 7th, 2022
Energy Technologies Building, Room B27, Jubilee Campus, NG7 2TU

AGENDA

09.45 – 10.00	Arrival and welcome
10.00 – 10.30	**Reza Ziarati (Centre for Factories of the Future)** *Pollution from transport systems: A strategy for sustainable transport systems*
10.30 – 11.00	**Matteo Icardi (University of Nottingham)** *Particulate flows in porous media: multiscale analysis and numerical simulations*
11.00 – 11.15	Break/discussions
11.15 – 11.45	**Andrew McMullan (University of Leicester)** *Towards Combining Virtual Reality with Large Eddy Simulations of Urban Environment Flows*
11.45 – 12.15	**Jose Martin Herreros (University of Birmingham)** *Characterisation of emissions from multiple sources*
12.15 – 12.45	**Tim Watling (Johnson Matthey)** *A compressible flow model for symmetric and asymmetric particulate filter backpressure*
12.45 – 13.30	Lunch break and discussions
13.30 – 14.00	**Richard Taylor (Nottingham City Council)** *The Environment Act 1995 Part 3 - Local Air Quality Management. A practitioner's experience*
14.00 – 14.30	**Mark Peckham (Cambustion)** *Identifying individual high-emitting vehicles*
14.30 – 15.00	**Mark Dewey (Lubrizol)** *Fuel and lubricant technology for lifetime low emissions*
15.00	Closing remarks and networking

Further information and contacts

Registration link
Information for travelling to Jubilee campus
Parking information for visitors
Parking zones on the Jubilee Campus map

Dr Svetlana Aleksandrova
University of Leicester
sa1020@leicester.ac.uk

Dr Humberto Medina
University of Nottingham
Humberto.Medina@nottingham.ac.uk

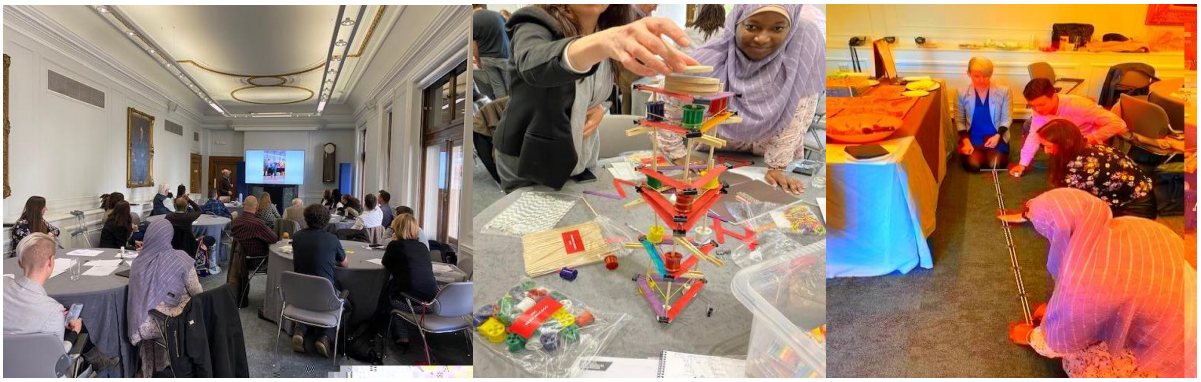
Dr Andy Williams
University of Chester
andrew.williams@chester.ac.uk

The next seminar is planned for March 2024. The detail will be published soon. In a related event please note that The **CMT–Clean Mobility & Thermofluids research institute** is pleased to announce that the **THIESEL 2024** Conference on Thermo-and Fluid Dynamics Processes of **Clean Propulsion Powerplants** will be celebrated in Valencia (Spain) on **10th - 13th September 2024**. **Abstracts** are welcome and should be submitted until **31st January 2024** via the authors' area of the Conference website: https://www.cmt.upv.es/Thiesel2024

IMechE STEM Workshop

There was a meeting of STEM Ambassadors in London organised by the Institution of Mechanical Engineering (IMechE). The meeting helped to work with the STEM toolkit developed and promoted by the IMechE. Kits are available free of charge to any organisation wishing to use it to promote STEM at schools. There are also STEM Ambassadors willing to help to run workshop at schools.

The meeting has led to several initiatives with local schools in the Midland.



STEM Ambassador Training Event at IMechE HQ, London, 13th October 2022

A further meeting took place to inspire the local community to promote the low carbon network. The meeting/workshop was sponsored by the RSA and the local net zero community in Warwickshire. Professor Ziarati made a presentation at the event to describe the work of C4FF with regard to the climate change projects (www.cwairquality.com) and STEM Inspire group activities (www.inspire-group.org).

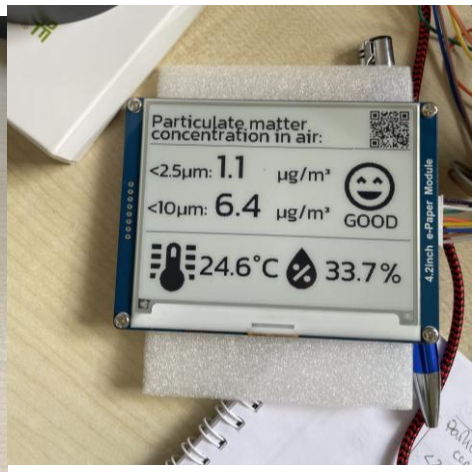
A visit has been organised near Stratford to view the work of the Heart of England Community Energy Solar Farms with the students at Warwick University and Coventry University.

A visit has also been scheduled to Warsaw to attend the first partner meeting of a new project devoted to exploring solutions to issues relating to the potential outbreak of an epidemic on a sea-going vessel. The visit is planned to take place 13-15th November 2022.

Winners of C4FF-IMechE School Climate Change for Air Quality Competition have been invited to attend the IMechE national Engineering Dinner in November in Birmingham (https://events.imeche.org/ViewEvent?e=7528). The students' parents and teachers have also been invited.

C4FF helped to finalise the final report for the EU funded GreenShip Project and prepared the Project Results. These reports will be submitted to the Spanish NA. They also assisted to finalise the EU funded PROMETHEAS final report for the Polish NA. C4FF is currently preparing the final report for EU funded PoliUniBus Project.

The next meeting of Air Quality People's Chamber is scheduled for 4th November 2022. At this meeting the C4FF Air Quality Sensor, jointly developed with IMechE, will be presented.



The C4FF Chair attended the annual chancellor's dinner event organised Coventry University (CU). The CU has formed many successful partnerships and C4FF works very closely with CU particularly on students' projects. The Chancellor, Margaret Casely Heyford summarised some of the university's major achievements.

The Chancellor, Margaret Casely Heyford speaking at the Chancellor's Dinner, 15th October 2022, Coventry University

Outstanding success

Our **OPTIMUM** project is selected for this year´s **Exceptional ITEA Award of Excellence for outstanding results in all three categories'** viz., Innovation, Business impact and Standardisation.

Congratulations to Anja Fischer and all at Demagcranes researchers as well as to all partners. This is a cause for big celebrations.

New Eureka Project

ENTA - The new Cyber Space project will deliver an encrypted traffic analysis service platform for cyber security. The platform will support a number of basic building blocks necessary for any Machine Learning (ML) and Deep Learning (DL) based traffic analysis. C4FF is pleased to be involved in this interesting and innovative project and disseminate and exploit the project outcomes in its network in UK and across Europe. C4FF has been involved in several EUREKA projects and currently support two ITEA3 projects. The new research project now is called ENTA which will commence shortly. C4FF will use the findings of this project to support its local Cyber Space project to ensure small companies in its locality would also benefit from this outcome of ENTA research work. ETNA has already been approved and Cyber Space is also expected to be approved by the UK Government soon. In support of its efforts in countering cyber espionage and attacks, the Centre for Factories of the Future (C4FF) has developed a full degree programme and various modules have already been tested at associated universities including C4FF's own university, namely, University Centre Garden City (UCGC). Furthermore, C4FF has started a new project named Cyber Space to help, mainly, very small businesses to cope with the complexity of computer systems and networks, and become cyber security safe. C4FF is an RTD capacity based in Coventry and Kenilworth (UK). C4FF is the instigator of the Factories of the Future projects in the UK and supported similar developments in the EU. Since the company was founded in 1996, C4FF has gained extensive experience in participating and coordinating EU and UK funded R&TD projects in areas such as: Artificial Intelligence Systems, Cyber Security, Sales Forecasting, Market Intelligence Knowledge Extraction, Innovation Management, Factory Automation and Enterprise Resource Planning. C4FF has several ICT, manufacturing facilities and laboratories worldwide. These laboratories are equipped with the most up-to-date facilities. We also have access to several laboratories in several partner institutions. C4FF has an established reputation for developing novel manufacturing systems and software for factory management, including for lean practices. We also have many years of experience in ICT and Manufacturing research and development, as well as cyber security. Cyber Security is of particular interest to C4FF Maritime Division supporting the shipping industry against cyber-attacks.

A decision is being made to deliver the ENTA project through new C4FF centre in Sweden.

Partners: Solana Networks (Canada); BEIA GmbH (Austria); Dalhousie University (Canada); Metodos y Tecnologia (Spain); Ruag AG (Switzerland); Centre for Factories of the Future Ltd (United Kingdom)

Greenship - The final partner meeting and the final Conference of GreenShip project took place in Barcelona, 30th June and 1st July 2022 respectively. The programme for the Conference is as follows:

Co-funded by the Erasmus+ Programme of the European Union

UNIVERSITAT POLITÈCNICA DE CATALUNYA BARCELONATECH
Facultat de Nàutica de Barcelona

TOWARDS ZERO SHIP EMISSION-GREENSHIP PROJECT
2019-1-ES01-KA202-065523
FINAL CONFERENCE AGENDA

30th JUNE 2022
FACULTAT DE NÀUTICA DE BARCELONA - PLA DE PALAU, 18, 08003 BARCELONA

FROM 10:00 h. TO 12:30h.

10:30h: Welcome and project introduction by Germán de Melo and Reza Ziarati Coordinators of the project.

10:40h: Official welcome by Agustín Martín Mallofré - Dean of Barcelona School of Nautical Studies, IMO Ambassador.

10:50h: Keynote Speech 1: Introduction and results of the GREENSHIP project by Prof. Dr. Reza Ziarati – President C4FF and coordinator of the project.

11:20: Keynote Speech 2: Emissions from the ships in the Barcelona Harbour by Joaquim Cortés - Responsible of atmospheric medium - Environmental sustainability.

11:50: Keynote Speech 3: Measures to be adopted to reduce emissions into the atmosphere from ships by Benito Nuñez Quintanilla, Director General de la Marina Mercante -

12:00 Discussion Podium: Keynote Speakers 1, 2, 3.

12:30: Networking the GREENSHIP project and coffee and finger food

C4FF Developing the Future · samk Satakunta University of Applied Sciences · SPINAKER.si Nautično izobraževanje · idec · CETENA S.p.A.

Conference was attended by a number of national and international participants. Here are some photos:

The above photos show the introduction of the Speakers by Professor German de Malo Rodrigues and the keynote speech by Professor Dr Reza Ziarati, Chair, C4FF. The following is the UPC's Maritime Faculty's plaque presented to Professor Ziarati.

The key message from Professor Ziarati was that the shipping industry is responding well to the challenges of climate change. The international legislation and creation of Emission Control Area have encouraged many shipping companies to seriously reduce their fuel consumption and take measures to reduce ship emissions. There are now examples of ships propel by electric, LNG, Methanol, Hydrogen, Fletther rotors and novel sails. It has been reported that a Greek Company, Avin, has placed an order in China for ship which is expected to run on Ammonia and Maersk has placed an order for ship to run on E Methanol. However, all efforts so far have not led to the reduction of CO2 from shipping. To this end, the GreenShip project is an important project which must continue considering that the industry and the profession have failed to reduce the GHGs emissions from ships and that the projections for 2050 are not promising as the regulating UN body for the shipping industry, IMO, has predicted not a fall but a rise of 5 to 30% in C02e emissions into the atmosphere by 2050.

Greenship Report from Topmasts[3]

By Laureano Carbonell Relat - Overseas Corresponding Member for Spain

Towards Zero Emission Greenship Project On 30 June 2022, the Barcelona Facultat de Nàutica (School of Nautical Studies), which is affiliated the Technical University of Catalonia (UPC, BarcelonaTech), held the Final Conference of the Towards Zero Emission Greenship Project, co-funded by Erasmus+ Programme of the European Union, aiming to ultimately eliminate harmful emission of gasses to the atmosphere by ships, and reduce or eliminate its effects on climate change. The session began with a welcome given by the co-ordinators of the project, the professor nautical studies, Dr Germán de Melo Rodríguez, and Dr Reza Ziarati, emeritus and visiting professor in several centres and countries, founder and president of the Centre for Factories of the Future. Then Dr Agustín Martín Mallofré, Dean and professor of the School of Nautical Studies and IMO (International Maritime Organization) Ambassador, gave the official welcome to the delegates. The first speech, Introduction and Results of the Greenship Project, was given by Dr Reza Ziarati, widely illustrated with the projection of many images and schemas, and finished with a list of his most important recommendations. The second was Joaquín Cortés Campa, responsible for the Atmospheric Environment of the Port of Barcelona. He spoke about Emissions from the Ships in the Barcelona Harbour and explained the plan to improve air quality in the port, initiated in 2016, and constantly updated, together with the projection of numerous illustrations, data, and schemas. The third and last speech was given by Benito Núñez Quintanilla, Director General of the Merchant Navy, under the title Measures to be Adopted to Reduce Emissions into the Atmosphere from Ships who detailed and explained the measures currently in force to reduce emissions from shipping. Then was a general discussion between the 60 delegates, about the issues raised by the three speakers. Topmasts no. 43 36 The session, in English, ran from 10:00 to 12:30, with refreshments and an opportunity for further discussion between delegates. Laureano Carbonell Relat Overseas Corresponding Member for Spain

GreenShip Success

As reported in the previously, C4FF's University Centre (Garden City) supported the development of two new courses in Technological Innovations and Research Methods. The courses were submitted to the Institution of Marine Engineering, Science and Technology (IMarEST). Both courses were received recognition as IMarEST CPD courses. C4FF also submitted the GreenShip Course documents for evaluation and we are pleased to announce that the Course received recognition from IMarEST. In parallel, a course in improving mental health at sea and eradicating bullying is being developed with several partner organisations in the EU.

[3] **Topmasts August 2022 No. 43 The Quarterly Newsletter of The Society for Nautical Research**

INSTITUTE OF MARINE
Engineering, Science & Technology

CPD Recognition Certificate

Greenship

Provided by *– Centre for Factories of the Future Ltd and Greenship Project Partners*

The above course has been awarded official recognition as contributing to the Continuing Professional Development requirements of the Institute's members for a period of three years from 28th April 2022 to 28th April 2025.

President

Secretary

Dated 8th June 2022

The Institute of Marine Engineering, Science and Technology
Founded 1889, Incorporated by Royal Charter 1933

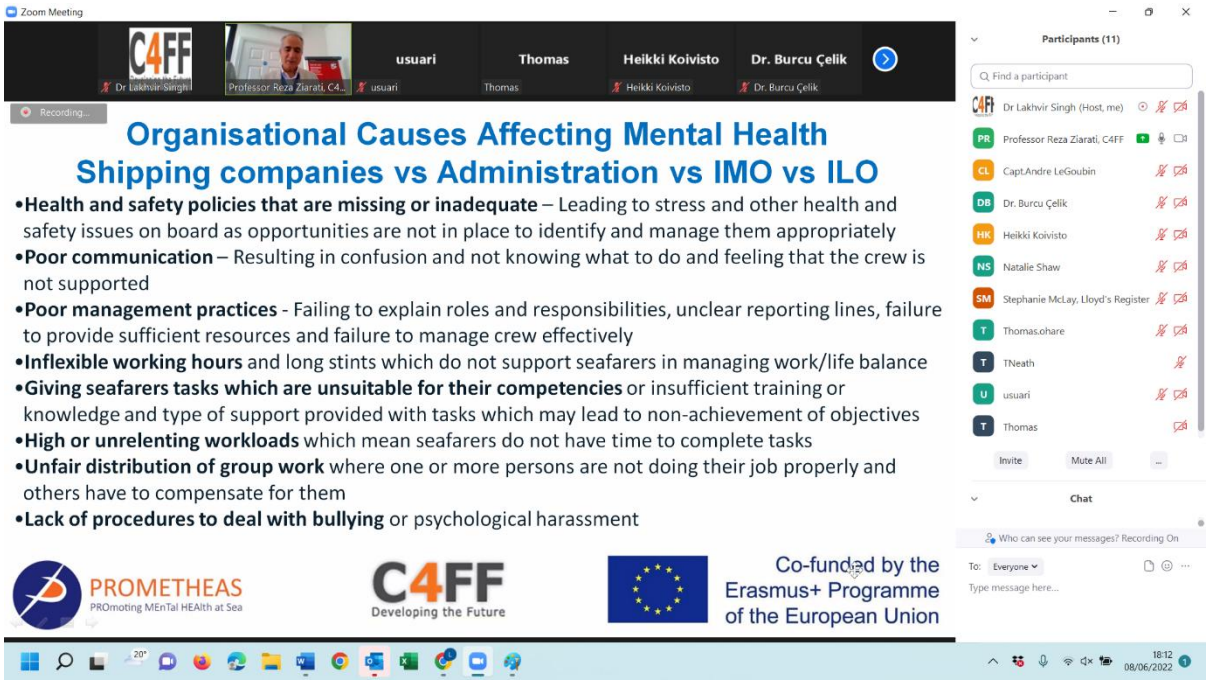
GreenShip Certificate

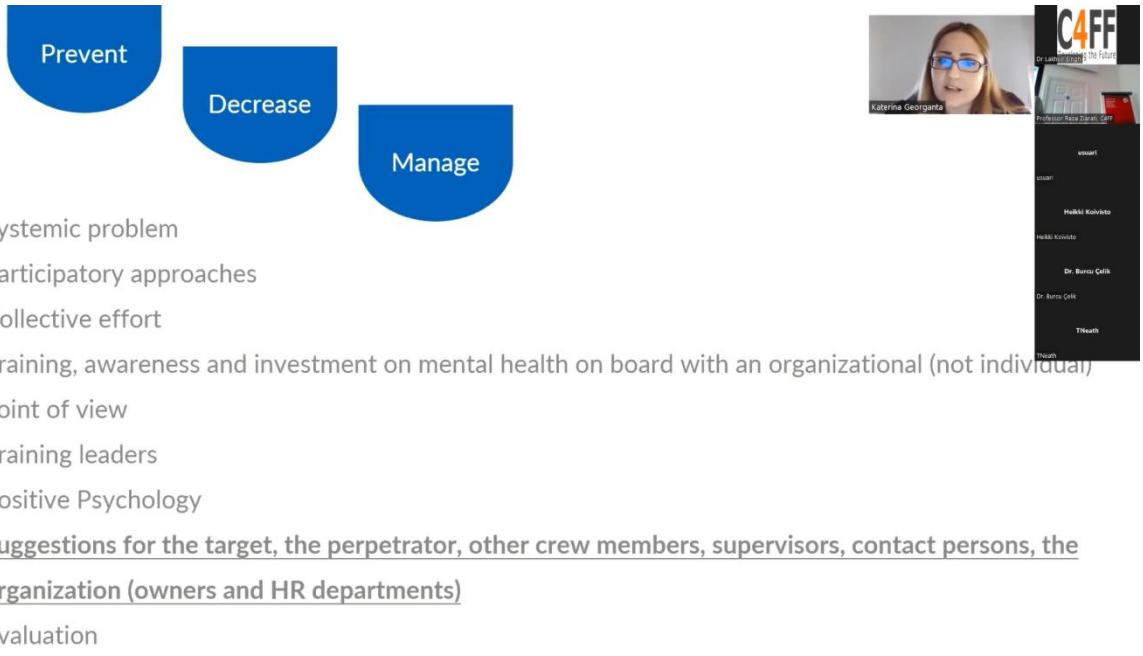
PROMETHEAS Project

The last face-to-face meeting of PROMETHEAS project took place in Szczecin in Poland on 16-17 June 2022. The main objective of the meeting was to review the progress being made with

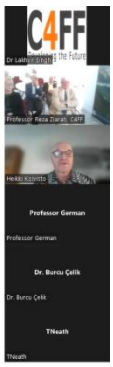
regard to course content and its digital platform and application. A further meeting took place on 25th July to monitor progress and plan future meetings in September 2022.

As reported in the earlier MariFuture News there have been several multiplier events, three taking place in the UK. The first multiplier event in the UK was organised jointly by UK Special Interest Group for seafarers mental wellbeing at sea with support from IMarEST. There were some 75 major organisation which took place in the event from 25 countries. The second multiplier event was to seek the accreditors from a major engineering institution with Royal Charter and recognised internationally (IMarEST) to review the course content and its platform and see if it would be possible to seek recognition for it. The third and final event in the UK was to gain the support of major maritime organisations such as Lloyd's Register, Chamber of Shipping, BIMCO who run similar programmes so that to help future collaborations in the post funding phase of the project.


Zoom Meeting
Dr Lakhvir Singh
Professor Reza Ziarati, C4...
usuari
Thomas
Heikki Koivisto
Dr. Burcu Çelik
Recording...
Organisational Causes Affecting Mental Health
Shipping companies vs Administration vs IMO vs ILO
•Health and safety policies that are missing or inadequate – Leading to stress and other health and safety issues on board as opportunities are not in place to identify and manage them appropriately
•Poor communication – Resulting in confusion and not knowing what to do and feeling that the crew is not supported
•Poor management practices - Failing to explain roles and responsibilities, unclear reporting lines, failure to provide sufficient resources and failure to manage crew effectively
•Inflexible working hours and long stints which do not support seafarers in managing work/life balance
•Giving seafarers tasks which are unsuitable for their competencies or insufficient training or knowledge and type of support provided with tasks which may lead to non-achievement of objectives
•High or unrelenting workloads which mean seafarers do not have time to complete tasks
•Unfair distribution of group work where one or more persons are not doing their job properly and others have to compensate for them
•Lack of procedures to deal with bullying or psychological harassment
PROMETHEAS
PROmoting MEnTal HEAlth at Sea
C4FF
Developing the Future
Co-funded by the Erasmus+ Programme of the European Union
Participants (11)
Find a participant
Dr Lakhvir Singh (Host, me)
Professor Reza Ziarati, C4FF
Capt.Andre LeGoubin
Dr. Burcu Çelik
Heikki Koivisto
Natalie Shaw
Stephanie McLay, Lloyd's Register
Thomas.ohare
TNeath
usuari
Thomas
Invite
Mute All
Chat
Who can see your messages? Recording On
To: Everyone
Type message here...
18:12
08/06/2022

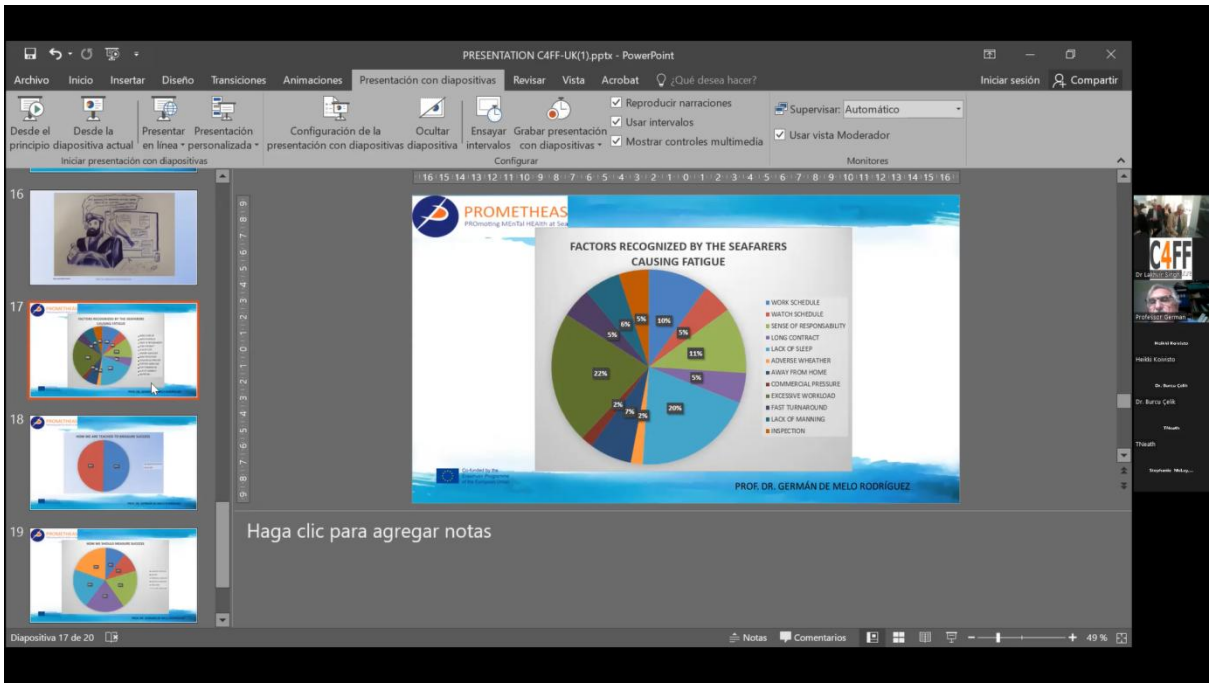

Prevent
Decrease
Manage
→Systemic problem
→Participatory approaches
→Collective effort
→Training, awareness and investment on mental health on board with an organizational (not individual) point of view
→Training leaders
→Positive Psychology
→Suggestions for the target, the perpetrator, other crew members, supervisors, contact persons, the organization (owners and HR departments)
→Evaluation
Katerina Georganta
C4FF
Professor Reza Ziarati, C4FF
usuari
Heikki Koivisto
Dr. Burcu Çelik
TNeath

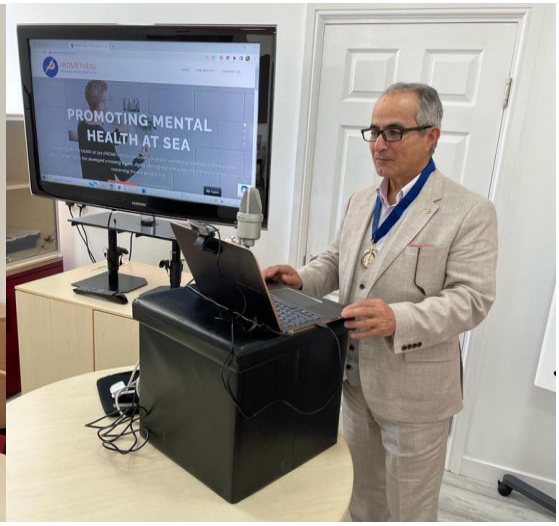
Minna Kahala interviewed



Ms Minna Kahala, senior lecturer, MSc (Health), Psychiatric nurse interviewed three experts by experiences

Co-funded by the Erasmus+ Programme of the European Union
PROMETHEAS
PROmoting MEnTal HEAlth at Sea





Photos of UK second and third Multiplier events.

Life Skills VR Project

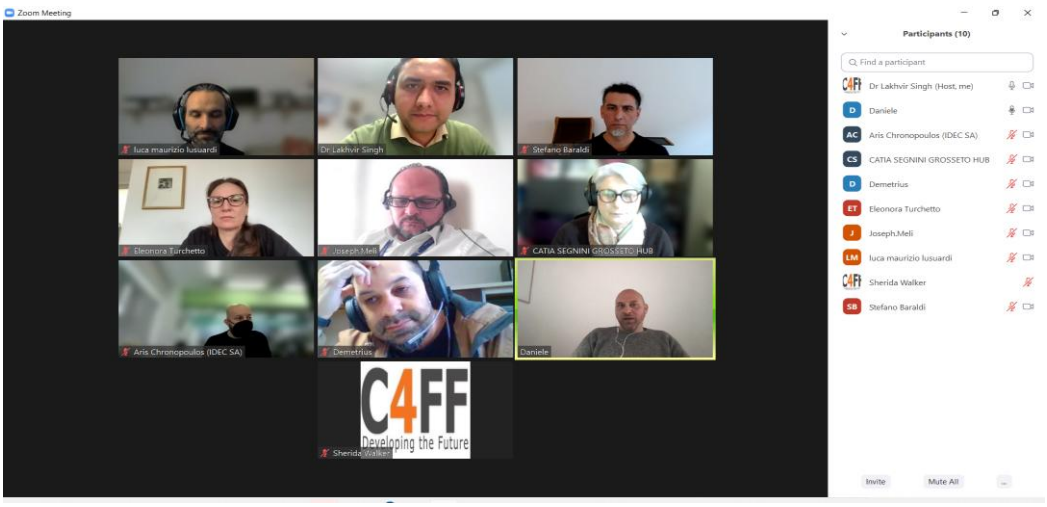
VR Innovation Project - Life Skills for Employment in COVID-19 Era Through VR Innovation Project - Another revolutionary idea from C4FF

Although this project proposal is about Life skills development helping young and old find worthwhile jobs, VR offers a range of solutions in several other areas.

Our proposed project aims to solve the problem of giving youth the necessary skills and knowledge of what their skills and abilities are and in which occupation they can excel in and have a bright future. By approaching the issue at the earliest stage, the aim is to prepare the young and to reduce stress and future dissatisfaction and provide a glance of future opportunities. The users will be able to recognise missing skills and thus focus on the important aspects by themselves and therefore will be able to eliminate skills mismatching and develop key skills. Also, by knowing their strong points, the Generation C will be able to develop themselves to higher levels in seeking and retaining good and well-paid jobs.

The VR proposed solution will have many more applications providing 3D visualisation of technical or non-technical information for learning new situations, acquiring new skills or simply helping us to navigate a new location or perform our jobs better. It can be used as a ship or boat simulator or navigation system. The proposed system can also capture information for analysis later and so forth. The combination of smart phones and VR technology can revolutionise the way we live and learn. What about using the VR devices for detecting dangers on our path for those with visual impairment or having access to information at meetings?

The project could support some of the work initiated by C4FF to help design new AI software to develop new VR applications. With C4FF's track record of developing novel AI solutions there is an expectation that a number of disruptive products and services will be introduced in the application of computer technology in our daily jobs and lives.



Life Skills VR Project Partner Meeting

The next face-to-face partner meeting will be held in Portugal in March 2023. For more information, please visit the project website: https://lifeskillsvr.com/

PoliUniBus

The project has been finalised and final report has been submitted to UKNA for approval. All the partners worked really well and had regular monthly online meetings to discuss project progress. The final face-to-face partner meeting was held in UK on 25th - 26th of August 2022.

The aim of the meeting was to evaluate the entire project implementation and present all deliverables. All partners attended ; the Meeting took place in the Kenilworth, UK.

For more information, please visit the project website: https://www.poliunibus.org/

PoliUniBus Final Partner Meeting, Kenilworth, UK