



## October/November 2020

As reported in the previous news due to Covid-19 there will be bi-monthly news until further notice. Any news up-date will be implemented as and when necessary during October and November 2020.

The Corona Virus has created untold problems and challenges for many organisations and C4FF related businesses are no different and all have been adversely impacted.

Some of the EU and Eureka projects are progressing in general but some EU funded projects are being either re-scheduled or extended. This situation if continued may impact other projects and activities. We hope these surreal times come to a satisfactory end and that we can continue to work on all projects as planned soon.

## Message from Bulgaria

To: ACTs plus partner – teams from Solent University, CF4FF, University of Rijeka, Bahcesehir University, Sea Teach and Spinaker

Dear Katie, Emma, Reza, Himadri, Djani, Anna, Erol, Silja, Mike and Tomaz,

After several times of rescheduling due to Covid-19, on the 29<sup>th</sup> October 2020 the annual prizes “Varna”, awarded by the Municipality of Varna to the most successful projects and prominent achievements in the area of science and higher education, accomplished by universities on the territory of Varna has been announced. The collective prize in the area of humanitarian sciences has been awarded to the NVNA ACTs plus team.

The status of the prize dictates that only personnel working in Universities on the territory of Varna can be awarded. However, we have officially announced and we shall consider this prize to the International team that worked and completed the ACTs and ACTs plus projects. For this reason, we will keep the medal and the certificate, together with a photo of our joint team (I will choose one, taken in Varna in October 2017) in an appropriate place in NVNA. Also, the name of the project coordinator Solent University is clearly displayed on the diploma.

The prize goes with an amount of 1000 euros. Since we didn't come to a clear solution how to spend the money, we accept good suggestions from you if you have any. Please keep in mind that celebration parties are not accepted as eligible costs 😊

On behalf of the NVNA team: Dimitar, Ivo, Nikolai, Jordan, Milen, Daniela and Grafiela I would like to thank you all for the joint work, the excellent cooperation and your friendship – all these has led us to complete a very successful project. And the results of our joint work have been noticed and highly appreciated by the Municipality of our city. We all remain with pride and honor after six years of work (and entertainment 😊)



Thank you from all NVNA team.

ACTs project has been selected by the Croatian National Agency for Mobility and EU Programs, Department of Vocational Education and Training as the best example of good practice of the Republic of Croatia on digital skills (European Digital Skills Awards 2016).



**Mentor Project Multiplier Event**

# #Mentor4WBL@EU 3rd online Multiplier Event

Tuesday 3rd November, 2020

13.00 p.m. - 16.00 p.m.

Athens time, EET



## Latest Events

The GreenShip Partner meeting and multiplier event plan to take place on 9-10<sup>th</sup> September 2020 in Finland could not go ahead due to COVID-19 related restrictions.

**All Funded projects visits have been rescheduled and will now take place virtually until further notice.**

## Maritime Transport 2020

In support of GreenShip C4FF and UPC presented a paper entitled: Digital Twin of an Internal Combustion Engine. The information about the conference is given below. Those wishing a copy of any of the paper please contact through MariFuture.

8th INTERNATIONAL CONFERENCE ON MARITIME TRANSPORT  
MARITIME TRANSPORT '20  
FINAL PROGRAMME



***Organised by: University Polytechnic of Catalunya (UPC)***

**INTERNATIONAL SCIENTIFIC  
COMMITTEE**

Adam Weintrit  
Ana Bocanegra  
Andrés Rafael Ortega  
Anna Mujal i Colilles

Antoni Isalgué

Boris Svilicic

Francisco Piniella  
Inma Ortigosa

Itsaso Ibáñez  
Jesús Ezequiel Martínez  
Jordi Olivella

Jordi Torralbo

Manel Grifoll

Olja Cokorilo  
Joaquim Blesa

Rosa Mari Darbra Roman

Rosana Salama Benazar  
Ryszard Wawruch  
Sanja Bauk

Seyma Bayazit  
Xavier Martínez

Gdynia Maritime University, Poland  
Universidad de Cádiz, Spain  
Universidad de Cantabria, Spain  
Universitat Politècnica de Catalunya,  
Spain  
Universitat Politècnica de Catalunya,  
Spain  
Faculty of Maritime Studies University  
of Rijeka  
Universidad de Cádiz, Spain  
Universitat Politècnica de Catalunya,  
Spain  
Universidad del País Vasco, Spain  
Tecnocampus, Spain  
Universitat Politècnica de Catalunya,  
Spain  
Universitat Politècnica de Catalunya,  
Spain  
Universitat Politècnica de Catalunya,  
Spain  
University of Belgrade, Serbia  
Universitat Politècnica de Catalunya,  
Spain  
Universitat Politècnica de Catalunya,  
Spain  
Tecnocampus, Spain  
Gdynia Maritime University, Poland  
Durban University of Technology, South  
Africa  
Istanbul Technical University, Turkey  
Universitat Politècnica de Catalunya,  
Spain

**TIME SCHEDULE**

**Thursday, 17th of September**

**10.00h Opening Address**

**10.15 h - 11.30 h**

**Session 1: Ports - Ships and ports safety and security**



**Chairperson:** Rosana Salama Benazar

1. Helena Ukić Boljat, *Overview of status and priorities for sustainable management of European Seaport*, University of Split, Faculty of Maritime Studies, Croatia.
2. Arnaud Serry, *Spanish container ports integration in the maritime network*, Université Le Havre Normandie, France.
3. Dong Huang, *Traffic analysis of Yangtze River Delta multi-port system (China) using Hierarchical Clustering*, Universitat Politècnica de Catalunya, Spain.
4. Mauro Catalani, *Stochastic regression models on the safety perception on board cruise ships*, University of Studies of Naples "Parthenope", Italy.
5. Elisenda Ventura Jarrod, *The role of the Malacca Strait in the One Belt, One Road Initiative*, Universitat Politècnica de Catalunya, Spain.

**11.30 – 12.00 h BREAK**

**12.00 h- 13.00 h**

**Session 2: Autonomous Vessels**

**Chairperson:** Andrés Rafael Ortega

6. Peter Sandell, *Risk management, marine insurance and charterparties - Formulating the research needs for autonomous vessels in Maritime Universities*, Satakunta University of Applied Science, Finland.
7. Nexhat Kapidani, *Advantages and disadvantages of some air autonomous vehicles deployed in maritime surveillance*, COMPASS2020 project, Administration for Maritime Safety and Port Management, Montenegro.
8. Ivan Porres, *A survey of machine learning approaches for surface maritime navigation*, Åbo Akademi University, Finland.
9. Ninna Roos, *STCW-Convention and future of joint curriculums for autonomous and remotely operated vessels in Maritime Education and Training (MET)*, Satakunta University of Applied Science, Finland.

**14.30 h - 15.45 h**

**Session 3: Ships and navigation**

**Chairperson:** Sanja Bauk

10. Anna Muijal-Colilles, *AIS data analysis: decoding messages and typical errors*, Universitat Politècnica de Catalunya, Spain.
11. Jordi Moncunill, *Compass adjustment by GPS and two leading edges*, Universitat Politècnica de Catalunya, Spain.
12. Seyma Bayazit, *Cruise port identity mapping by using multi criteria evaluation with geographic information systems*, Bandirma Onyedil Eylül University, Turkey.
13. Juan Ignacio Alcaide, *Modelling the relationship between performance and ship-handling simulator*, Universidad de Cádiz, Spain





14. Toni Lull, *Manoeuvre analysis and simulation to prevent seabed scour due to ship propellers*, Universitat Politècnica de Catalunya, Spain.

**15.45 – 16.00 h BREAK**

**16.00 h – 17.30 h**

**Session 4: Marine Engineering**

**Chairperson:** Jordi Torralbo

15. Rodrigo Pérez, *How the industry 4.0 could affect the shipbuilding world*, SENER, Spain.

16. Inma Ortigosa, *Adapting the existing Coastal Patí a Vela Fleet for scientific purposes*, Universitat Politècnica de Catalunya, Spain.

17. Reza Ziarati, *Digital Twin of an Internal Combustion Engine*, C4FF, United Kingdom.

18. Nelson Díaz, *Open loop exhaust gas cleaning system, a deep analysis of effects produced by its residual waters*, Universitat Politècnica de Catalunya, Spain.

19. Elias Altarriba, *Analysis of ship voyage data based on Chow-Liu-tree augmented Naïve Bayes-method to support biofouling management*, South-Eastern Finland University of applied science – Xamk, Finland.

**17.30 h END OF SESSIONS**

**Friday, 18th of September**

**09.00 h – 10.30**

**Session 5: Maritime Business and Logistics**

**Chairperson:** Seyma Bayazit

20. Ricardo Henríquez, *A defi-based model for maritime trade finance*, Universitat Politècnica de Catalunya, Spain.

21. Sanja Bauk, *Tracking radioactive materials in sea transportation via RFID technology*, Durban University of Technology, Durban.

22. Andrés Ortega, *Implementation of a RFID system on ships for passenger and crew location*, Universidad de Cantabria, Spain.

23. Àfrica Uyà, *New International Guidelines for Vessel Traffic Services. Revision of IMO Resolution A.857(20)*, Universitat Politècnica de Catalunya, Spain.

24. Sergio Velásquez, *Digital Twin and the Ports 4.0, Beyond the concept of Smart Ports*, Universitat Politècnica de Catalunya & IDP Ingeniería, Spain

25. Zoran Radmilović, *The Danube waterway transport as “extended leg” of maritime transport across ship locks-case study: ship lock iron gate 1*. Engineering Academy of Serbia, Serbia.

**10.30 h – 11.00 h BREAK**

**11.00 h - 12.15 h**

**Session 6: Human Element**

**Chairperson:** Marcel·la Castells



26. Rosa de la Campa, *Fatigue due to onboard work conditions in merchant vessels*, Universidad de A Coruña, Spain.

27. Alfredo Torné, *Evolution of maritime accidents in spanish fishing*, Universitat Politècnica de Catalunya, Spain.

28. Christian Esteva, *Skills Beyond the Seas project*, Sea Teach SL, Spain

29. Gustavo Carro, *A new approach to make indoor air quality in the accommodation of ships understandable and actionable for seafaring staff*, Antwerp Maritime Academy, Belgium.

30. Rosa de la Campa, *Heat stress on board: risk and prevention*, Universidad de A Coruña, Spain.

#### 12.15 h – 12.30 h BREAK

#### Other events

#### Air Quality latest Joint Proposed Project with Coventry University

1. Investigation into the Global State of Air Quality Monitoring and Measurement, Informing the Centre for Factories of the Future for the Design and Manufacture of a Mobile Air Quality Monitoring Unit. It would be good to form a new team to continue with this project. Samuel and his team did an excellent job last year. His participation in the Blue Sky Seminar was also commendable. We would like to nominate him for a C4FF prize to be presented at the next Midland Engineering Dinner event. Participants of the IMechE Design prize would all receive a complimentary dinner ticket, paid for by C4FF) to the next Midland Engineering Dinner as was the case last year.
2. Investigation into the Low Cost Air Quality Monitoring and Measurement Systems, Informing the Centre for Factories of the Future of Their Accuracy and Precision in Comparison with the Standard Systems Used by the UK Government.

There are two other projects:

3. The project is expected to tackle the climate change actions at the core. Cleaner air necessitates the use of ever increasing greener energy for all key related sectors and industries such energy transformation, transport, agriculture and food as well as manufacturing and built environment (Ziarati, 2010b)<sup>[1]</sup>. Education also plays a major part and hence involving local universities and schools in an important consideration in this proposal.

The project primarily concerns the measuring and monitoring pollutants indoors such as offices, schools and at homes as well as in inside the cars, trucks and buses but the intention is also to use dual air quality sensors for measuring pollutant levels in several pilot outdoor sites such as outside schools with a view to measure and monitor the air

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<sup>[1]</sup> [http://www.marifuture.org/Publications/Articles/RZ\\_Air\\_Quality\\_2020\\_Article.pdf](http://www.marifuture.org/Publications/Articles/RZ_Air_Quality_2020_Article.pdf)



quality and find ways to mitigate the adverse impact of poor air quality on our health, both inside and outside. Through stem activities the project will be promoted at primary and secondary schools through the existing networks ([www.inspire-group.org](http://www.inspire-group.org)).

The sensors that will be used will be as accurate and precise as DEFRA ones but a lot cheaper. These sensors are developed by a group of highly competent organisations and individuals and tested in cities such as Oxford. One would be installed next to a DEFRA air quality monitoring station in Coventry for comparison and calibration purposes and two or more in indoor pilot sites. In parallel a set of sensors developed as part of an STEM activity by 16+ students will be installed alongside the more accurate sensor and DEFRA's for comparison purposes and for providing an R&D support to the STEM project for its further development.

While measurements are taking place, the system installed will be configured to a cloud environment and using Artificial Intelligence (AI) and by applying predictive techniques, trends and patterns will be studied. C4FF has established that there is correlation among several key pollutants. The proposed system will be able to capture any data available to populate the air quality grid over a city or an area and predict pollution levels indoor and outdoor and provide feedback on actions that could reduce the level of one or more pollutants.

#### 4. Design and Development of Novel Twin Wind Turbines

The Dual rotor wind turbine will have two rotors, one at the front and one at the rear of the wind turbine. It is expected to offer a higher efficiency and therefore a way forward in renewable energy transformation. In a recent C4FF study states that dual rotor wind turbines are superior to single rotor wind turbines and these scientific researchs prove that dual rotor wind turbines can generate 50% more energy (in kWh) in a year. The difference is a remarkable. Since dual rotor wind turbines are fairly new subject there are not any commercial dual rotor wind turbine in the market. The subject is still at the academic level. Bringing the subject of dual rotor wind turbines from academic level to industry level is a challenge and it promises a great deal to offer. This project proposes design of a dual rotor wind turbine, made and tested at Coventry University with C4FF support. In the literature there are several different dual rotor wind turbine configurations. In this project we propose to design and make a mobile 30 kW counter rotating wind turbine. The application for such a device is substantial and can be installed to provide electricity in rural areas worldwide.

#### **Air Quality Conference 2020**

This conference took place on Friday, 3 July 2020, initially planned to take place at Coventry University took place virtually on Zoom.





**Coventry Warwickshire - Air Quality People's Chamber  
(CW-AQPC)**

**AIR QUALITY  
CONFERENCE**

**Friday 3rd July 2020  
10.30 - 15.15**

**ZOOM Online Conference hosted &  
sponsored by C4FF, Berkeley House,  
Kenilworth CV8 1EB**

**C4FF** Centre for Factories of the Future (C4FF)  
Developing the Future

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## [Air Quality Conference 2020](#) - **THE AIR THAT WE BREATHE IN - HOW IT AFFECTS US**

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

**Target Audience** - Local resident associations, local universities, local councils, local MPs, Mayors, national and Government representatives, local environmental groups, air quality specialists

**Purpose** - To gain a wider understanding of the effects of Poor 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 Poor Air Quality
- To share good practice
- To understand the likely impacts of 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 on next steps towards cleaner Local Air



## **Programme**

**10:15 - Joining the meeting**

**10:30-10:40 Introduction and the Expected Outcome**

Professor Dr Reza Ziarati, Chair of CWAQPC

**10:40-11:50 The National and Local Perspective**

Government Message

Rt Hon Matt Western MP

Rt Hon. North West Coventry MP

Rt Hon Zahra Sultana MP

Cllr Mattie Heaven – Prospective MP for Coventry

Ann Lucas – Coventry Mayor's point of view of air quality

Neale Murphy – Warwick Mayor's point of view of air quality

Susan Rasmussen – Leamington Mayor - Clean Air for Leamington

**11:50-12:50 Councils Efforts in improving Air Quality – Chaired by Susan**

11:50-12:10 Air Quality Plan and Current Activities in Coventry - John Seddon, Head of Transport and Innovation, Coventry City Council and Neil Chaplin – Air Quality

12:40-12:55 Air Quality and Health – Dr Habib Kashi

12:55-13:10 Air Quality – WDC Environment Portfolio; Cllr Alan Rhead, WDC Director for Climate Change

**13:10-13:50 Novel Initiatives**

Active Travel – Cycling Ambassador, Adam Tranter

Climate Actions, Tony McNully

Coventry Green New Deal – Ken Grainger and David Ridley

Importance of vegetation - Trees and Plants, Ian McDermott

**13:50-14:05 The Chemistry of Air Pollution – Cllr Jim Foster**

**14:05-14:20 Air Quality Measurement – Reports on selected locations and sample assessment;**  
Professor Dr Reza Ziarati

**14:20-15:00 Panel Discussions – Chaired by Peter Maddock**

**15:00-15:15 Conclusions and Recommendations for Future Work – Alan Marshal**

**15:15-16:00 Evaluation by the Air Quality group member only**

**The summary of keynote presentations are given below:**



**Professor Dr Reza Ziarati** opened proceedings thanking everyone for attending and the importance of young people.

He then gave an explanation of where we are and what is needed. The following are the summary of the points he presented:

- **The choice is stark! Carrying on with what we are doing and destroying the world or taking drastic actions and leaving a better world for our next generations**
- Human lungs breathe about 13,000 litres of air a day on a normal pace. Therefore, air quality is a very important factor for human body as Oxygen in the air is mixed with blood in the lungs. Contaminated and harmful air has a direct effect in damaging the respiratory systems and eventually, the whole body.
- **The results show the in-depth details of the adverse effects caused by Ozone (O3) and PM2.5 in 2010. The UK contributes to 5.8% of the number of premature deaths associated with Ozone in the EU while for PM2.5 the UK contributes to 7.9% of premature deaths in the EU (RCP\* 2016). If similar percentages are true for NO<sub>x</sub> and PM10, the air quality responsible for some 30% of all premature death in the UK.**
- No systematic mapping of pollution hotspot areas and non-existence or inaccurate means of measuring harmful pollutants
- Need to set up of local independent office in each region of the UK including Coventry and Warwickshire, with facilities and a technician to carry out measurements and producing reports in collaborations with the local councils to ensure reliability of data and readings and the adequacy of the measuring devices with a view to put an end to the misrepresentation of actual readings from existing stations and sensor locations.
- **It is essential to calibrate at least one of the low cost diffusion tubes used in many cities and towns such as Coventry and Leamington with the readings from the Government air quality monitoring stations such as those in Binley or Allesley. This will lead to more reliable data from the diffusion tubes.**
- **There is correlation between poor air quality and increasing admission to the hospitals for respiratory illnesses.**
- **The actual measurements from sensors around some cities including Coventry shows that the data published for NO<sub>2</sub> are not valid due to the application of factors such as 'bias' and 'annulising' and then reducing these figures further by arguing that since these sensors/tubes are further from road then the level pollution must have been less. Studies by C4FF has shown that when sensors/tubes are closer to the roads the levels of pollution are higher and not less and that use of bias and annulisation is invalid and that only against calibration of sensors/tubes against more accurate devices any amendment to actual data should be permitted.**
- During the lockdown the level of most pollutants dropped by some 50%. **What was concerning therefore was that the measurements, taken from the Government monitoring stations during the lockdown, of NO<sub>x</sub>, PM10 and PM2.5, exceeded the Government own targets for all three pollutants several times in three occasion by some 30 to 40% for each of the aforementioned pollutants.**

Emails supporting the importance of the seminar were read out from:

- No 10 Downing Street



- Rebecca Pow, Parliamentary Under Secretary of State to the Dept for Environment, Food and rural Affairs
- Rt Hon Jeremy Wright MP

**Matt Western MP:**

- Lockdown has shown the benefits of reducing carbon emissions.
- **He is concerned about the impact of polluted air on children**
- **Explained that road traffic contributes 1/3 of all emissions.**
- **Explained how Morocco and New York were monitoring emissions.**
- **As a result of investment electric bike usage in Germany has gone up 20%.**

**Taiwo Owatemi MP for North Coventry:**

TBS

**Lord Mayor of Coventry, Cllr Ann Lucas OBE:**

The Lord Mayor spoke of the work already taking place in the city and her belief that Coventry could help to lead the way in improving air quality, stating that:

- **We have known for many years that action must be taken to improve the quality of the air we breathe, for our sake and for the sake of the planet and the generations to come.**
- If anything, that knowledge has been reinforced in recent months as we have seen our lives changed by COVID-19.
- We have been forced to adapt, to leave the car at home and to find other ways – and we have found that change is possible.
- In Coventry we are proud of the work we have done to make our city a cleaner, healthier place.
- **We have made the city centre greener, we are planting more trees and encouraging people to walk and bike to work and school.**
- **The city's two universities and major companies based in the city such as National Grid, Jaguar Land Rover and the London Electric Vehicle Company and of the pioneering work taking place in the fields of electric vehicles and very light rail.**
- **The work that has taken place to narrow roads, limit vehicle speed and improve public transport had helped in improving air quality.**
- Coventry is also about to take its place in the spotlight as the UK City of Culture – a platform that will help us to inspire and challenge others.
- **As a Council, we are trying to change our ways as well. We have reduced our office space and we have introduced pool cars – including electric ones – and bikes.**
- There has been a lot of good work already, but there is much more that needs to be done, and I am delighted that this conference is helping to get us all talking about an issue that affects each and every one of us."

**Cllr Mattie Heaven - Prospective MP for Coventry:**

- The spread of Covid-19 in the Philippines has been much lower, she thinks because they do much more walking and cycling.
- The lockdown had a positive impact on the school gates without children
- **She would like to set up a walk to school projects.**
- **She has learned that the pollution is three times higher at drop off and collection times, as parents keep their car engines running while waiting for their children, this could be reduced by a walk to school project.**



- Therefore, could we close roads near schools to encourage walking to school?
- Encourage parents to be educated and aware of the danger to their children
- **Basically, we need to educate everyone on this issue.**

**Cllr Neale Murphy - Warwick Mayor:**

- **Warwick is one of the most polluted towns in the UK.**
- **Can't get figures the right figures**
- Would like to encourage our children to embarrass their parents about the damage cars are doing to them.
- There are not enough bus routes, which means that people use their cars.

**Cllr Susan Rasmussen - Leamington Spa Mayor**

- **Leamington Town Council was responsible for the Neighbourhood Plan. 3 years consultation showed that overwhelmingly that people wanted active travel public transport prioritised. Air quality was a primary concern.**
- In Warwick District the main source of carbon emissions is traffic. **WDC want to achieve a net zero carbon economy by 2030 so changing transport systems is of paramount importance to them.**
- **Government policy is now to focus on active modes and public transport in built up areas, away from car dependence. The blocker is Warwickshire County Council who have been called "institutionally motorist"**
- **The Mayor at present cycles to engagements and will shortly be using a sponsored electric bike.**

**Cllr Richard Dickson - Kenilworth Mayor:**

- High pollution areas are Warwick Road and New Street,
- Level of car ownership is higher in Kenilworth than the national average.
- Kenilworth has a big problem with through traffic.
- **They are looking to put a 20mph speed limit on Warwick Road.**
- Local Plan has air quality included in it, with protections to reduce polluting traffic.
- **New Kenilworth station has resulted in many more people using it thereby reducing traffic into Coventry.**
- **The Council is encouraging bike riding and bike ownership is increasing.**

The full conference report can be found at [www.cwairquality.com](http://www.cwairquality.com). Professor Ziarati paper presented at the conference can also be found in Development Papers section of August/September 2020, [www.marifuture.org](http://www.marifuture.org).

The following are the links to Air Quality Conference 2020 videos

Air Quality Conference 2020 – Part 1: <https://youtu.be/0Bxv3pFXQhU>

Air Quality Conference 2020 – Part 2: <https://youtu.be/ohp3CVx-Gg4>

Air Quality Conference 2020 – Chamber meeting: <https://youtu.be/MFcbNfvlGa0>

**New Projects**





Several new project proposals were prepared and submitted on time. Due to confidentiality of these projects no mention of some of these will be made until C4FF is informed of the results. Two of the proposals are EU related and several countries have agreed to participate in these projects. It is important to note that UK can still participate in EU funded projects until the end of the year.

C4FF with support from Surrey University, Bytronics and Coventry University is preparing an R&D project proposal for the Government's consideration.

### **Coventry University students-CWAQPC-C4FF Air Quality Project**

The project concerns an investigation into Global state of air quality monitoring and measurement informing the design and manufacture of an Air Quality Measurement Station. There are two groups of students. C4FF and CW-AQPC are seen as the clients. The project is student project and is expected to come up with a specification for design of the measuring station. Both groups recently made a presentation to their academic Supervisor, Professor Paul green and Professor Ziarati. So far both groups have made a good progress.

### **The UK Government's Response to C4FF Concerns regarding EUREKA and EU Funded Education and Research Programmes**

A letter has been sent to Mr James Duddridge, MP, Parliamentary Undersecretary of State, BIES, asking him to review the two recently awarded EURKA projects and help C4FF to receive the grants expected. In previous letter to Professor Ziarati, the Minister had assured that Government will be supporting EUREKA approved projects and more funds are being allocated to this novel programme. In an earlier letter he reassured Professor Reza Ziarati that the UK will continue to participate in EU annual budgets including 2020. This means that the Government will continue to make contributions and get receipts from EU budget programmes under the normal rules. All EU projects and programmes, including Erasmus+, will be financed as foreseen under the current Multiannual Financial Framework (2014-2020). This provides certainty to all beneficiaries of EU programmes, including UK beneficiaries. They will continue to benefit from EU programmes until their closure.

### **The Government's Response to C4FF on Matters Raised by the Centre about Pollution**

In response to C4FF's efforts in helping to improve the air quality, the Department for Environment Food and Rural Affairs, Rebecca Pow, MP. Under Secretary of State, has written to Professor Ziarati explaining about the Government 'Road to Zero' strategy which is an approach to reduce emissions of road vehicles. It is reassuring to read, that this Department has identified mechanisms, such as, a Multi-Day Air Quality Forecast Service and Daily Air Quality Index, to advise the public of strategies to support any potential health concerns potentially related to air quality.

As the result of the Minister's letter to Professor Ziarati several contacts were made with Coventry City Council. The discussions are ongoing. A report on the progress of getting data from the two stations which measure PMs will be expected in April.



## **Government Recent Efforts – Climate Assembly UK: the Path to Net Zero**

In a letter to Professor Ziarati, the Prime Minister, with regards to the advisory and academic panels working towards zero emissions, states that it is testament to your hard work that so many talented individuals and organisations from across the UK are involved.

As the UK's first citizens' assembly on climate change prepares to meet for the first time at the end of January, the two panels of stakeholders and researchers helping to ensure the balance and accuracy of the assembly have been announced.

## **IMechE and C4FF Sponsored and IET, IMarEST Supported 'Towards Zero Ship Emissions' Lecture and Visit to Warwick University Battery Facilities**

The event was organised as the UK's GreenShip Project's Multiplier Event; it took place on Thursday 27th February 2020, 14:30-17.30Hrs at Warwick University, Organised by Centre for Factories of the future (C4FF) and led by Professor Dr Reza Ziarati, C4FF's Chair. Next lecture was planned for June in UPC in Barcelona. Due to Covid-19 the lecture has been cancelled and will be rescheduled in October 2020. The nature and topic of the lecture will be as it was for the lecture on 27<sup>th</sup> February 2020 as shown below.

**Summary of Lecture: Towards Zero Emissions is outlined in the event poster below:**



Erasmus+

**Project number: 2019-1-ES01-KA202-065523**

**Date of first lecture: Thursday 27th February 2020; Time: 14:30.00-17:30**

**Date of second lecture: Thursday 15<sup>th</sup> October 2020**

**Venue of first lecture: Warwick University Venue of second Lecture UPC, Barcelona**

**Organiser: Centre for Factories of the future (C4FF)**



**Contact information: Professor Dr Reza Ziarati, [reza.ziarati@c4ff.co.uk](mailto:reza.ziarati@c4ff.co.uk)**



### **Towards Zero Emissions**

#### **Keynote Lecture – Future of Transportation - Focussing on Shipping**

**Professor Dr Reza Ziarati BSc (Eng), PhD (Eng), Cert Ed, CMechE, CElecE, CMarEng, CEng, FIMechE, FIET, FIMarEST; Centre for Factories of the Future (C4FF), UK**

#### **Supporting Presentations – 40 Minutes**

**Professor German De Melo – Application of Quantum Physics in ICE – UPC, Spain**



**Associate Professor Kayvan Pazouki – Clean Shipping, Newcastle University, UK**

**K6 – A New Universal Engine Concept**

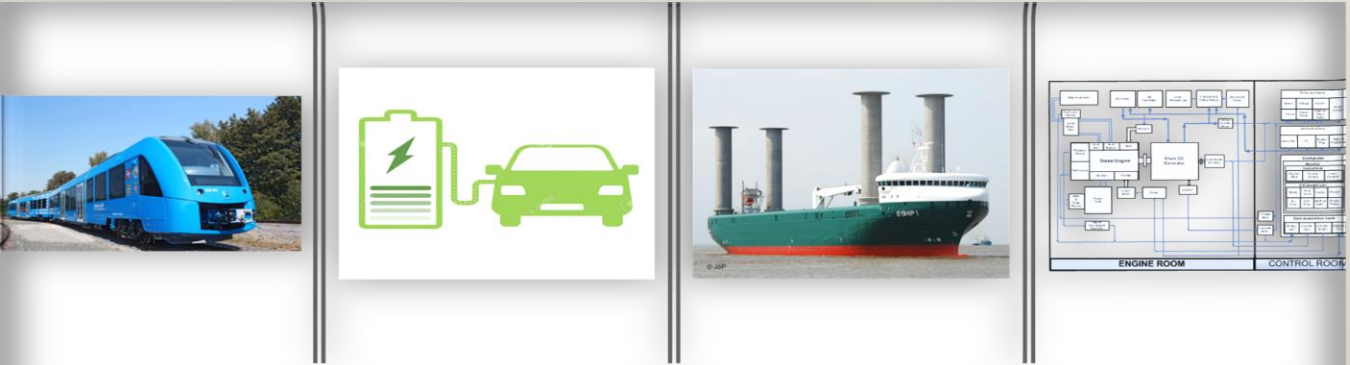
**Captain Heikki Koivisto – Latest Developing in Efficient Shipping, SAMK, FI**

**Panel Discussions – Job Specification and Training Programme for Seafarers – 25 Minutes**

**Going Electric – Is This a Wise Solution?**

There are pressures on manufacturers of engines in all sectors; marine, automotive and rail/traction to seek solutions to reduce exhaust emissions and reduce fuel consumptions. This visit and lecture will report on the work of Centre for Factories of the Future's (C4FF) and several leading national and international research centres in shipping, automotive and rail/traction and focuses on findings of several recent and ongoing projects in engine design and constructions as well as new types of engines viz., hybrid, gas and electric. The intention is to learn about innovations in all three sectors which may be transportable from one sector into another. Use of new fuels and electrification as well as gasification of propulsion systems have led to remarkable breakthroughs. Special references are made to a new type of engine concept. Some of the ideas which were thought crazy not so long ago, such as application of quantum theory in emissions control and energy usage, are included. The workshop is expected to lead to the verification of job specification and course design for those responsible for energy efficiency and emissions reduction in all three sectors.

The event was supported by Institution of Engineering and Technology and Institution of Marine, Science and Technology.



The revolutions in transport systems and digital twinning as well as hybrid propulsion are the key topics of the lecture which includes a visit to Warwick University battery's facility.

**Government Recent Efforts – Climate Assembly UK: the Path to Net Zero**



As the UK's first citizens' assembly on climate change prepares to meet for the first time at the end of January, the two panels of stakeholders and researchers helping to ensure the balance and accuracy of the assembly have been announced.

Climate Assembly UK was commissioned by six cross-party House of Commons Select Committees in summer 2019 in response to the Government's commitment to meet net zero carbon emissions by 2050.

Climate Assembly UK will meet for the first time at the end of January and will have three further weekend meetings before the end of March. The 110 assembly members will consider how net zero can be achieved by 2050 and make recommendations on what the Government, businesses, the public and wider UK society should do to reduce carbon emissions.

At each weekend Members will consider a range of climate-focused topics including transport, energy use in the home, agriculture and consumer choices.

An extensive team of climate specialists, business leaders, constitutional and economic experts and civil society organisations are involved in ensuring Climate Assembly UK is balanced, accurate and comprehensive.

Three groups of experts are considering the Assembly in detail:

- The Expert Leads ensure that Climate Assembly UK upholds the key principles of balance, accuracy and comprehensiveness, and that the assembly focuses on key questions about how to achieve net zero emissions by 2050;
- The Advisory Panel is made up of key stakeholders with an interest or expertise in the areas of climate change that Climate Assembly UK will examine. The Panel offers feedback to the Expert Leads on key aspects of the assembly's design, such as who is invited to speak, the topics of discussion, and the balance of information provided;
- The Academic Panel is made up of researchers working on areas of climate change to be covered by the assembly. The Panel will use its expert knowledge to review written briefings for Assembly members and to support the Expert Leads in their role.

Over the past four months the Expert Leads, Advisory Panel and Academic Panel have been working with the assembly team to develop and consider detailed plans for the design of the assembly and the speakers that will address assembly members. Further consideration will take place in the coming months, and final plans for the assembly will be published in advance of each weekend.

### Expert Leads

The four Expert Leads work closely with Involve and Parliament on the design of the assembly and play a key role at the assembly weekends. They are supported by both the Advisory Panel and the Academic Panel. The Expert Leads were announced on 2 November 2019.

They are all specialists in different approaches to tackling climate change. The Expert Leads are:

- Chris Stark, Chief Executive of the Committee of Climate Change;



- Jim Watson, Professor of Energy Policy, University College London and Research Director, UCL Institute of Sustainable Resources;
- Lorraine Whitmarsh, Professor of Environmental Psychology, University of Cardiff, and Director of the UK Centre for Climate Change and Social Transformations;
- Rebecca Willis, Professor in Practice, Lancaster University, specialising in energy and climate governance.

### Advisory Panel

The Expert Leads draw on the knowledge and experience of a panel of key stakeholders to ensure that the assembly's content on climate change is balanced, accurate and comprehensive. The 19 members on the Advisory Panel offer feedback on key aspects of the assembly's design including who is invited to give evidence and what they are asked to cover, the questions on which assembly members are asked to give their views, and the written briefings created for assembly members.

The Advisory Panel members are:

- Fernanda Balata, New Economics Foundation
- Tanisha Beebee, Confederation of British Industry (CBI)
- Patrick Begg, National Trust
- Allen Creedy, Federation of Small Businesses (FSB)
- Audrey Gallacher, Energy UK
- Professor Michael Grubb, University College London (UCL) Institute for Sustainable Resources
- Eamonn Ives, Centre for Policy Studies
- Ann Jones, National Federation of Women's Institutes
- Ceris Jones, National Farmers Union (NFU)
- Chaitanya Kumar, Green Alliance
- Kirsten Leggatt, 2050 Climate Group
- Matthew Lesh, Adam Smith Institute
- Nick Molho, Aldersgate Group
- Luke Murphy, Institute for Public Policy Research (IPPR)
- Tim Page, Trades Union Congress (TUC)
- Doug Parr, Greenpeace
- Dr Alan Renwick, Constitution Unit, University College London (UCL)





- Dhara Vyas, Citizens' Advice
- Rebecca Williams, RenewableUK

### Academic Panel

The Expert Leads also have the support of a panel of academics whose research is focused on areas of climate change that the assembly will consider. The 13 members of the Academic Panel comment on the written briefings created for assembly members. The Expert Leads have also drawn on the expertise of individual members of the Panel to inform their work on the assembly design.

The Academic Panel members are:

- Professor Jillian Anable, Professor of Transport and Energy, University of Leeds.
- Professor John Barrett, Professor of Energy and Climate Policy, University of Leeds.
- Professor John Barry, Professor of Green Political Economy, Queen's University Belfast.
- Professor Jason Chilvers, Professor of Environment and Society, University of East Anglia.
- Professor Nick Eyre, Professor of Energy and Climate Policy, University of Oxford.
- Dr Clair Gough, Senior Research Fellow with the Tyndall Centre for Climate Change Research, University of Manchester.
- Dr Rosie Green, Assistant Professor in Nutrition and Sustainability, London School of Hygiene & Tropical Medicine.
- Dr Jo House, Reader in Environmental Science and Policy, University of Bristol.
- Professor Tahseen Jafry, Professor of Climate and Social Justice and Director, The Centre for Climate Justice, Glasgow Caledonian University.
- Professor Carly McLachlan, Professor of Climate and Energy Policy, University of Manchester.
- Professor Dale Southerton, Professor in Sociology of Consumption and Organisation, University of Bristol.
- Professor Benjamin Sovacool, Professor of Energy Policy at the Science Policy Research Unit (SPRU) at the University of Sussex.

Climate Assembly UK will meet for its first weekend on Friday 24 January.

### Notes to Editors:

- For media bids and enquiries please contact Gary Calder, Senior Media and Communications Officer, House of Commons, +44 (0)20 7219 7556 | +44 (0)7917488622, [calderg@parliament.uk](mailto:calderg@parliament.uk).



- [Climate Assembly UK](#) will meet across four weekends to hear balanced evidence on climate change and make recommendations about how the UK should reach its target of net zero carbon emissions by 2050.
- The Expert Leads were suggested by Involve, Sortition Foundation and mySociety in their response to Parliament's tender for contract in Spring 2019, and were approved by the Climate Assembly UK team at the House of Commons.
- The members of the Advisory Panel were chosen by the Expert Leads and Parliament to represent a broad range of views across different sectors.
- The Academic Panel were chosen by the Expert Leads and Parliament to cover key areas of research relevant to the assembly.
- The Expert Leads will not receive payment for their involvement in Climate Assembly UK, however their usual place of employment have been offered payment to compensate for the experts' time away from their normal role.
- The Advisory Panel will not be receiving payment for their involvement.
- The Academic Panel will not be receiving payment for their involvement.
- The Energy and Climate Intelligence Unit is supporting the communication outreach around Climate Assembly UK weekends and results.
- Climate Assembly UK was commissioned by six cross-party House of Commons Select Committees: Business, Energy and Industrial Strategy; Environmental Audit; Housing, Communities and Local Government; Science and Technology; Transport; and Treasury.
- Former Prime Minister Theresa May [announced](#) the Government's commitment for net zero by 2050 on 12 June 2019, following a recommendation by independent advisors the Committee on Climate Change. The 2019 Conservative party manifesto reaffirmed the Government's commitment to this target.
- The [announcement](#) by the six Select Committees holding a citizens assembly on climate change is in direct response to Government policy on net zero and was announced on 20 June 2019.
- The policy for net zero carbon emissions by 2050 [became law](#) on 27 June 2019, making the UK the first major economy in the world to legislate for net zero.

### **Year of Efficient Ship**

MariFuture has continued with the publication of a Development Paper on efficient ship each month throughout 2019 in support of the 'Year of Efficient Ship' due to the importance of the subject in order to make our members and partners aware of the impact of toxic pollutants from shipping; and the means available to us to reduce the level and amounts of the emissions from ships to a minimum level. In parallel, we will publish the results of our air quality research carried out to investigate the air quality in several cities, towns, and ports focusing mainly in the UK.



## Recent EU Funded Projects

**PROMETHEUS** - This proposal was accepted in mid- August 2019 and concerns the mental well being of ship crew. The project was expected to start in October 2019. The first meeting of the partners was on the 18-19 November 2019 in Athens and was attended by Katie Parker (Research Officer) and Professor Ziarati. In January 2020, C4FF Research Officer and Professor Ziarati have continued to carry out desk research to initiate the content of the project. We have also put together the quarterly report ready for submission early February 2020. Our next meeting with the partners is on the 6<sup>th</sup> -8<sup>th</sup> April in Finland. The photo below shows the partners meeting from November based in Athens.

The meeting in Finland was cancelled due to Corona Virus. The project is progressing well and C4FF is produced their 2<sup>nd</sup> quarterly report (1 February – 30 April) and their 3<sup>rd</sup> report (1 May-31<sup>st</sup> July) on time. The 4<sup>th</sup> quarterly report (1 August-31<sup>st</sup> October) is due shortly.

The partner meeting in the UK took place virtually on 25<sup>th</sup> June 2020. Since the UK meeting there has been several virtual meetings on TEAMS. The last meeting took place on 14<sup>th</sup> September and another meeting has been planned for 14<sup>th</sup> October. More details will be published in the next few days and reported in the next up-date of this news.



C4FF has produced the first draft of the two proposed chapters of the Prometheus course and prepared a Learning and Assessment strategy for the Course. Several quizzes were prepared for the partners' considerations.

**GreenShip** - This is a continuation of MariEMS initiative. The presentation at IMO at the HTW6 on 29th April 2019 by Capt. Zak (Solent University) and Professor Ziarati (C4FF, General Coordinator of MariFuture) describing how the MariEMS e-learning training courses can be accessed and used online, created a great deal of interest from several countries. This led to a review of a recently submitted proposal viz., GreenShip, to EU's Erasmus+ programme with a view to incorporate several countries as associated members.

This project started in October 2019 when the details were published in MariFuture. The kick-off meeting took place in Barcelona on 9-11 December 2019. Please see the photos of the meeting in action below:



The first partner meeting for Greenship was in the UK on the 27<sup>th</sup> and 28<sup>th</sup> February 2020. This second Greenship Partner Meeting combined a Multiplier Event with IMechE lectures and visit to the Battery production at Warwick Manufacturing Group and a keynote lecture at Warwick University. The lectures and battery production visit went well. Please see some of the photos of the event below:



Figure 1 and 2 (above) is at Warwick University Lecture Theatre with Professor Ziarati and Captain Heikki.





Figure 3 and 4 is of the Lecture Theatre at Warwick University showing Professor German presenting.



Figure 5 and 6 (above) is of the partner meetings based at Berkeley House.

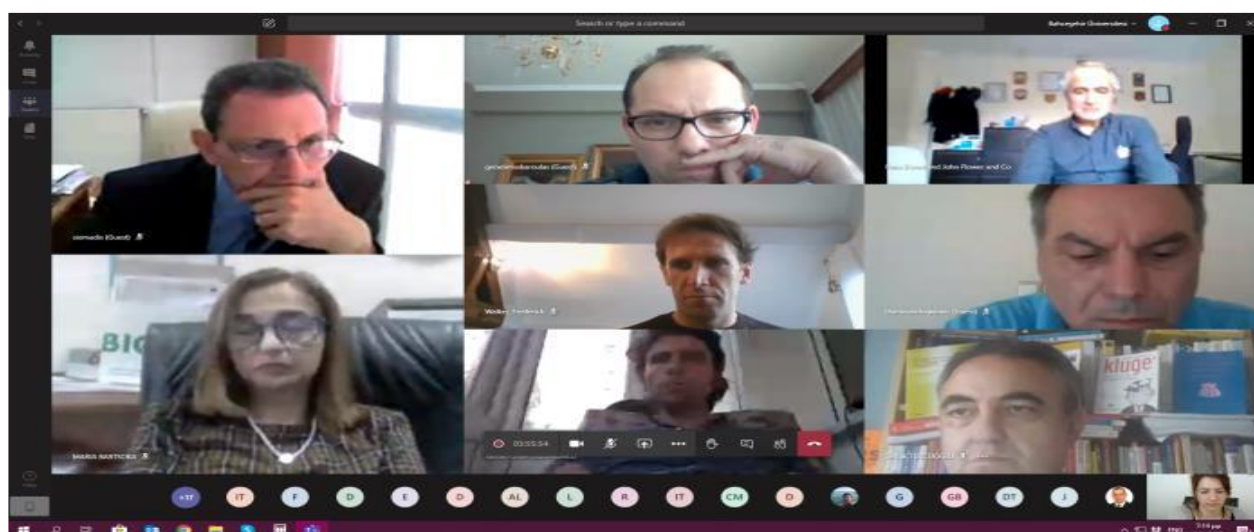


The GreenShip project is progressing as planned but next partner meeting in Barcelona was cancelled due to the Corona Virus. A meeting was arranged on 25<sup>th</sup> June 2020 to report on the initial work carried out regarding IO 5 followed by IO 6. The last meeting took place on 6 October 2020 on Skype to discuss progress and review plans for future activities.

The Satakunta University of Applied Sciences (SAMK) has organised an online event on Towards Zero Emissions on Thursday 29 October 2020 at 10.00–13.00. For more information click [here](#)

## Mentor Project

The last partner meeting took place in Lausanne, Switzerland on 25-26 September 2019. The next meeting was due in June 2020. The partner meeting in June 2020 took place on Tuesday, 9<sup>th</sup> June 2020 followed by the multiplier event. The press release concerning this even was published earlier in this News bulletin. The event was very successful.



## A snapshot of the virtual Mentor Multiplier Event.

Since the virtual multiplier event there has been several virtual partner meetings as well as several meetings with specific partners involved in IO 5. The IO 5 is now concluded and work on IO 6 is continuing.

The #Mentor4WBL@EU Project was designed after the European Council prompted the EU Member States to increase "substantially the number of apprenticeships and traineeships to ensure that they represent real opportunities for young people, in cooperation with social partners and where possible integrated into education programmes". In addition, according to the newly adopted "European Framework for Quality and Effective Apprenticeships" (October 2017), European Commission identifies 14 key criteria that Member States and stakeholders should use to develop quality and effective apprenticeships. Among the specific criteria, is made a concrete reference on the necessity to exist a specific procedure for teachers, trainers and in company mentors to "update their skills and competences in order to train apprentices according to the latest teaching and training methods and labour market needs". In-company WBL mentors are in the core of quality WBL. However, in most European countries, they lack standardized support and



guidance which will set the expectations and boundaries clarifying and ensuring their successful contribution in the learning process. Based on the above and the identification of the WBL needs and gaps by NetWBL, there is a significant need for the development of standards and qualifications that would identify certain knowledge, skills and competences. They should also provide adequate assessment that will lead to valid certification and August 2019 marifuture.org News ensure quality in-company WBL mentorship in enterprises providing apprenticeships and internships. More information about the project will be available on the project website when it is published. The project meeting of Mentor took place in Kenilworth, 10-11th April 2019. The first workshop of the project was held on 10th April 2019 at Warwick University. C4FF coordinated the meetings during the two-day event and take a lead in the workshop.

The last few months the focus of the project has been on revising IO 1 and IO 2 and conclude IO 3 and IO 4. Partners have met via Skype on several times to discuss the Intellectual Outputs.

### **UniBus**

UniBus cloud platform has been launched at partner countries. C4FF has presented the UniBus platform to Warwickshire College Group, Coventry University and in series of workshops and conferences. Project final conference has been organised by the coordinator – Bahcesehir University on 28<sup>th</sup> of August 2020 in Istanbul Turkey.

#### **Key Links:**

Project website: <http://eunibus.com/>

UniBus platform: <https://portal.eunibus.com>

Mobile app: Download the android app from the link below.

<https://play.google.com/store/apps/details?id=com.appgodo.myapps.android5d78dd482a133>

or find the app by typing "unibus project" in google play store.

Here are sample videos, C4FF has created for the piloting. Please feel free to use to learn more about the platform.

#### **UniBus - How to create a student account**

<https://youtu.be/qmNv-op8YUk>

#### **UniBus - How to create a Company Manager account**

[https://youtu.be/yZFj3n\\_kgE0](https://youtu.be/yZFj3n_kgE0)

#### **UniBus - How to create an Institution Teacher account**

<https://youtu.be/t4T8L6RkMcE>

#### **UniBus - How to create a challenge in UniBus Platform**

<https://youtu.be/LeOxDayjuko>

## UniBus - How to submit idea on UniBus Platform

<https://youtu.be/RiEfC2tmTok>

This cloud platform is based on S-o-Architecture and will support the services proposed in UniBus Concept. The architecture provides horizontal services (knowledge search engine, data persistence, etc) and vertical services (collaboration project management: service to support definition of project challenges by companies, to help selection of challenges by HEIs, to support the search of finance etc). The behaviour and architecture of the cloud platform is modelled on the Service-Oriented Modelling Framework (SOMF), and the result of this activity will be included as part of the design documentation led by C4FF.

## PoliUniBus

This project concerns the policy making at the highest levels in bringing the two worlds of academia and industry together. The meeting was held on 4th – 6th March 2020 at ACTUATE Office in Istanbul. The aims of the project and the outputs were clarified. There were also discussions about the plan moving forward on the first few outputs.



**DayTiME Project** C4FF have been involved in the meetings for the Daytime Project which concerns innovative mechanisms to support the distribution of health services. Although the meetings were held in Istanbul, C4FF sat in on these discussions via Skype in order to offer some assistance.

Partner had an International online consortium meeting on August 26, 2020. A paper has been prepared for the 30th European Safety and Reliability Conference / The 15th Probabilistic Safety Assessment and Management Conference (ESREL 2020 PSAM 15). Venice, Italy, 1-6 November 2020.

The next **DayTiME** Review meeting will be held in Istanbul, Turkey on January 14, 2021.

For more information visit project website at: <http://daytimeproject.com/>



**OPTIMUM** C4FF continue its support to the project. The partners are preparing for next ITEA report meeting which will be in February 2020. The project aims to support innovative concepts for engineering, commissioning, control and supervision of smart manufacturing and material handling. It will be in line with European, National and international initiatives towards digital manufacturing, closely related to on-going activities in working groups around the German initiative Industry 4.0. Taking the results from ongoing architectural, component and ontology discussions, OPTIMUM's major goals are: improvement of the aspects of distributed control, adaptation of (I)IoT technologies to real industrial needs, enhancement of control and applications by context and location awareness as well as application design and common-model based 3D engineering and supervision.

For more information visit project website at: <https://www.optimum-itea3.eu/>

### **ACTS Plus**

The project assessment concluded in July 2019. The project received a grade of 8.1 which is considered a high grade. C4FF took a lead in preparing the final report. The project has commenced its post funding period in April 2019. The new simulator facilities the Solent University which was reported to be one of the best in the world and the ACTS Plus Advanced eCOLREGS ([www.advanced.ecolregs.com](http://www.advanced.ecolregs.com)) will be implemented at the university when the new simulator system centre is fully operational.

### **New Papers for major International conferences**

Two new papers were prepared and submitted to the International Maritime Lecturers Association Conference in Georgia which took place in October 2019. One concerns Maritime English reporting on the work carried out in MariLANG project and the second is on the outcomes of the ACTS Plus project. As reported earlier Capt. Zakirul (Solent University) and Professor Ziarati (C4FF, General Coordinator of MariFuture) jointly presented the MariEMS Project and Courses for 'ship energy management trainees and trainers' to the participant at the IMO HTW6 meeting. The presentation was organised and authorised by the UK Maritime Coastguard Agency (MCA). Both Capt. Zakirul and Professor Reza attended the HTW6 as a member of UK delegation. The project partners would wish to thank MCA and IMO for this opportunity. The following are several photos from the event. Other MariFuture projects and new proposals were discussed during the visit to IMO with interested parties. A third paper is being prepared on RZ Multiple-choice which relates to the confidence assessment which removes the guessing dilemma in answering these types of questions in tests and examinations. The technique has played a major role in re-introduction of multiple-choice questions in e-learning applications.

A paper was submitted to IAMU 2020 conference and another to a Conference in Spain. More on these papers in the April 2020 News.

### **Cyber Security**



marifuture

October/November 2020

[marifuture.org](http://marifuture.org)

## News

New projects are being developed and a meeting with leading IT specialists have been arranged at C4FF. There will be an announcement on the formation of a Cyber Security team in the near future.

Dr Martin Ziarati