

# EAAW

ENGINE AS A WEAPON  
International Symposium **VIII**



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## FINAL PROGRAMME



## Evolving intelligent platforms for the future battlespace

Tuesday 2 and Wednesday 3 July 2019  
America Square Conference Centre, London, UK

# mecss

2019

MARINE ELECTRICAL AND CONTROL SYSTEMS SAFETY CONFERENCE



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## TUESDAY 2 JULY 2019

0830 Registration and coffee

### JOINT OPENING PLENARY SESSION | Ludgate Suite

**CHAIR:** Cdr Ian Hassall RN, Ministry of Defence, UK and EAAW VIII Chairman

0915 Welcome and introduction

**Kevin Daffey**, MTU Friedrichshafen GmbH, Germany & MECSS 2019 Chairman

0930 Keynote address

**Cdr Stephen Markle USN (Ret)**, Program Manager and Director of the Electric Ships Office, US Navy Program Executive Office Ships, USA

1000 Keynote address

**Prof Christopher Hodge OBE FREng**, Chief Electrical Engineer, Defence & Security, BMT, UK

1030 Discussion

1045 Coffee

### JOINT SESSION: AUTONOMY | Ludgate Suite

**CHAIR:** Glen Sturtevant, US Department of Navy

1115 Socio-technical considerations relating to the maritime autonomous infrastructure

**B Twomey**, University of York, UK

1145 The test and evaluation of Intelligent Autonomous Systems (IAS)

**H Figueiredo, D Cook, W Biggs**, QinetiQ Ltd, UK

1215 Assessing the trustworthiness of manned and unmanned ships

**T R Searle**, Frazer-Nash Consultancy, UK

1245 Discussion

1300 Lunch

### JOINT SESSION: CYBER SECURITY | Ludgate Suite

**CHAIR:** Andrew Edmondson, BAE Systems Submarines

1415 Maritime cyber fact or fiction?

**M A Scott**, QinetiQ, UK (presentation only)

1500 Anatomy of a cyber attack – attack and defence in the maritime sector

**Dr R Oates**, Rolls-Royce plc, UK (presentation only)

1545 Discussion

1600 Tea

### JOINT SESSION: PANEL DEBATE | Ludgate Suite

**CHAIR:** Bernard Twomey, University of York

1630 Trustworthy AI systems – Is this achievable in the maritime sector?

**Panellists include:** Professor John A McDermid OBE FREng, Director, Assuring Autonomy International Programme, University of York, UK; **Dr Robert Oates**, Head of Product Cyber Security (Civil Aerospace), Rolls-Royce plc, UK; **Dr Martin Guthrie**, Doctor, Wageningen University, The Netherlands; **Andrew Higgs**, Dispute Resolution, Insurance & Legal Risk Management Consultant, Arbitrator and Mediator, Setfords Solicitors, UK

1745 Close of sessions followed by Reception at Trinity House Concluding at 1930 hours

## WEDNESDAY 3 JULY 2019

0815 Registration and coffee

### Morning Parallel Sessions

#### EAAW VIII: ENERGY | Ludgate Suite

**CHAIR:** Keith Howard, Babcock International Group

0900 Performance optimisation of a flywheel energy storage system using the PNDC Power Hardware in the Loop Platform  
**Dr K I Jennett, Dr F Coffele, A S H Downie, A Avras**, Power Networks Demonstration Centre, University of Strathclyde, UK; **A Tate**, Dstl, UK; **S Lewinton**, Ministry of Defence, UK

0930 Assessing battery energy storage for integration with hybrid propulsion and high energy weapons

**L Farrier, Prof R Bucknall**, University College London, UK

1000 Energy as a weapon – architecture reloaded

**N Smith**, GE Power Conversion, UK

1030 Discussion

1045 Coffee

#### EAAW VIII: ARTIFICIAL INTELLIGENCE | Ludgate Suite

**CHAIR:** Andrew Tate, Dstl

1115 Putting artificial intelligence to work: The operator decision aid

**G H Sturtevant**, US Department of Navy, USA; **J M Voth**, **A M Lowe**, **N L Casasanto**, Herren Associates, Inc., USA; **H A Kline**, Delta Resources, Inc., USA

1145 Integrating autonomy – maintain, launch, execute and recover

**E Parkin, J Chilcott**, L3 Technologies, UK

1215 Securing interoperable and integrated command and control of unmanned systems – validating the UK MAPLE architecture

**Dr P Smith**, Dstl, UK; **W Biggs**, QinetiQ Ltd, UK

1245 Discussion

1300 Lunch

### Afternoon Parallel Sessions

#### EAAW VIII: DESIGN/VISUALISATION | Ludgate Suite

**CHAIR:** Shaun White, Holland America Group

1345 Refining the power station design of the all-electric warship

**W Edge, R Partridge**, Rolls-Royce Defence - Naval, UK; **Dr E Maxeiner**, Rolls-Royce Defense, USA

1415 Virtual integration: Managing complex warship design through model based engineering

**W J Tudor**, BAE Systems Maritime – Submarines, UK; **N Harrison**, BAE Systems Maritime – Naval Ships, UK

1445 Weapon system virtualization and continuous capability delivery for US Navy combat systems

**Capt A M Biehn USN, J R Clarke**, US Department of Navy, USA; **Cdr J J Juster USN (Ret)**, Naval Research Lab, USA; **T E Voth**, Herren Associates, Inc., USA

1515 Discussion

1530 Tea

## Delegates are welcome to attend papers in either parallel session

0815 Registration and coffee

### Morning Parallel Sessions

#### MECSS 2019: GREEN SHIP AGENDA | Walbrook Suite

**CHAIR:** Andrew Michael, *QinetiQ*

**0900** Alternative fuels and power systems to reduce environmental impact of support vessels  
**Cdr (E) dr ir R D Geertsma RNLN, Netherlands Defence Academy/Delft University of Technology, The Netherlands; ir M Krijgsman, MARIN, The Netherlands**

**0930** Modelling fleet performance over complex operating scenarios  
**I Davison, Atkins, UK**

**1000** Facing safety challenges towards smart ships and ports  
**Prof J Prousalidis, National Technical University of Athens, Greece; D Spathis, V Paspiliotopoulos, V Georgiou, Protasis SA, Greece; T Kourmpelis, Lloyd's Register, Greece; Dr F Kanellos, Technical University of Crete, Greece**

**1030** Discussion

**1045** Coffee

#### MECSS 2019: MODELLING | Walbrook Suite

**CHAIR:** Paul Eaton, *GE Power Conversion*

**1115** It is right in front of you? Missing the obvious in information displays: Implications for design development practice  
**Dr M J Cook, BAE Systems (Maritime), UK**

**1145** Integrated use of 3D modelling tools and virtual reality to facilitate design  
**D Leahy, C Vance, MBDA UK Limited, UK**

**1215** A systematic approach to certification of complex control systems  
**C R Hawthorn, Frazer-Nash Consultancy, UK**

**1245** Discussion

**1300** Lunch

### Afternoon Parallel Sessions

#### MECSS 2019: POWER SYSTEMS INTEGRATION | Walbrook Suite

**CHAIR:** Jamie McCarthy, *Rolls-Royce Marine Electrical Systems*

**1345** The adaptable energy platform  
**Eur Ing A J Blokland, I P Barendregt, C J C M Posthumus, Defence Materiel Organisation, The Netherlands**

**1415** Power and responsibility – Integrating a new technology battery into an existing power network  
**R G Blakey, Ministry of Defence, UK**

**1445** Voltage safety: High or low?  
**Dr R W Meggs, O J Simmonds, BMT Defence & Security, UK**

**1515** Discussion

**1530** Tea

## Networking Reception

The Evening Reception will take place in the Courtroom of Trinity House overlooking the historic Tower of London on the evening of **Tuesday 2 July 2019** and offers a special opportunity for all participants to visit this magnificent building. The safety of shipping and the well-being of seafarers have been the prime concerns of Trinity House since being incorporated by Henry VIII on 20 May 1514. The building houses a remarkable collection of maritime artefacts that bear testament to the prominent role played by Trinity House in the nation's maritime history.



## Complimentary IMarEST Membership

All non-member participants will be made IMarEST Affiliate Members for one calendar year, giving instant access to Institute services; full details can be found at [www.imarest.org](http://www.imarest.org)

## Photography

The highlights of EAAW VIII/MECSS 2019 will be captured in a photo gallery; these will be displayed on the EAAW and MECSS websites following the event.

Visit [www.eaaw.org.uk](http://www.eaaw.org.uk) or [www.mecss.org.uk](http://www.mecss.org.uk) for full details

## JOINT CLOSING PLENARY SESSION | Ludgate Suite

**CHAIR:** Cdr Ian Hassall RN, *Ministry of Defence, UK and EAAW VIII Chairman*

**1550** Type 45 – Power to command  
**Capt J E Voyce RN, R K Wixey, Ministry of Defence, UK**

**1620** T23 Frigate Power Generation and Machinery Controls Update (PGMU) – Let the trials commence  
**T D Peacock, Babcock International Group/Naval Design Partnering, UK**

**1650** Discussion

**1700** Closing Summary  
**Capt Matt Bolton RN, Ministry of Defence, UK and Kevin Daffey, MTU Friedrichshafen GmbH, Germany & MECSS 2019 Chairman**

**1715** Close of sessions



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