

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

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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

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 or 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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