SMi Group Proudly Presents...

MILITARY ROBOTICS AND AUTONOMOUS SYSTEMS

25TH-26TH APRIL 2018

Copthorne Tara Hotel, London, United Kingdom

Enhancing Land Capability with Autonomous Unmanned Technology

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CONFERENCE CHAIRMAN:
- Brigadier (Retd) Ian Cameron-Mowat, Former Head of Force Protection, Defence Equipment and Support, British Army
- Lieutenant Colonel Richard Craig, SO1 Coherence (Robotics Autonomous Systems), Director Capability, British Army
- Major Lloyd Davies, Requirements Manager, Special Projects Search and Countermeasures (SPSCM), DE&S, UK MoD

HOST NATION MILITARY SPEAKERS:
- Lieutenant Colonel Leon Allarac, Robot Systems Knowledge Leader, Technological Division, Israeli Defence Forces
- Major Alan Stephens, Maneuver Robotics and Autonomous Systems Branch Chief, Mounted Requirements Division, Maneuver Centre of Excellence, US Army
- Major Jeffrey B. Persons, Robotics and Autonomy Programme Manager, Science and Technology Division, USMC Warfighting Laboratory
- Major Tapio Saarelainen, Research Staff Officer (OF-3), Research and Development Department, Army Research Centre, Finnish Defence Forces
- Mr. Andre Petersen, Autonomy Research Manager, Land Systems Division, FFI
- Mr. Peter Stockel, Innovation Autonomy Challenge Lead, DSTL, UK MoD
- Dr. Robert W. Sadowski, Robotics Senior Research Scientist, RDECOM TARDEC, US Army
- Dr. Stuart Young, Chief of Information, Sciences Division, US Army Research Laboratory
- Mr. Richard Spencer, Principal Engineer for Land Equipment Operating Centre, DE&S, UK MoD

INTERNATIONAL EXPERTS:
- Colonel Jerome Lemon, Digitisation & Artificial Intelligence Master Plan Leader, French DGA
- Colonel Jerome Lemon, Robot Systems Knowledge Leader, Technological Division, Israeli Defence Forces
- Major Alan Stephens, Maneuver Robotics and Autonomous Systems Branch Chief, Mounted Requirements Division, Maneuver Centre of Excellence, US Army
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- Mr. Richard Spencer, Principal Engineer for Land Equipment Operating Centre, DE&S, UK MoD

BENEFITS OF ATTENDING:
- Hear the latest updates on the UK Ministry of Defence’s Military Robotics and Autonomous Systems Enhancement Programmes
- Attend exclusive military briefings from the United Kingdom, Israel, the United States, Finland, Norway, and France
- Benefit from a comprehensive approach to emerging autonomous and robotic technologies with additional presentations from academia, defence research, and procurement agencies
- Discuss and debate the key role of unmanned technology in supporting land operations through enhanced survivability, situational awareness, lethality, sustainability, and maneuverability

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8.30 Registration & Coffee

8.50 Chairman’s Opening Remarks
Brigadier (Retd.) Ian Cameron-Mowat, Former Head of Force Protection, Defence Equipment and Support, British Army

9.00 Robotic Autonomous System Technology Exploitation in the British Army
- Enhancing RAS capabilities to maximise situational awareness, force protection, fire power, sustainability, and manoeuvrability
- “Focused analysis, capability integration and experimentation”: designing and developing RAS technology to adapt the British Army to the developing security
- Current prospects of development in autonomous robotic systems
- Foreseeable challenges in implementing autonomous robotic systems into manned operations

Lieutenant Colonel Richard Craig, S01 Coherence (Robotics Autonomous Systems), Director Capability, British Army

11.00 Enhancing Counter-IED Capability in the British Army through the Integration of Remote Robotic Systems
- Developing requirement sets for robotic systems working across the breadth of C-IED tasks in all possible future operating environments against a constantly developing threat
- Integrating RCVs within a highly congested, contested and hostile Electro Magnetic Environment
- Future aspirations for RAS

Major Lloyd Davies, Requirements Manager, Special Projects Search and Countermeasures (SPS_CM), DE&S, UK MoD

11.30 Modernising Autonomous Ground Vehicle Manoeuvre Forces Operations
- Update on the Robotic Wingman Joint Capability-Technology Demonstration
- How autonomous robot operations enhance dismounted soldiers operability
- Enhancing mounted manoeuvre effectiveness with RAS’s, UGVs, and ground forces cooperation

Major Alan Stephens, Maneuver Robotics and Autonomous Systems Branch Chief, Mounted Requirements Division, Maneuver Centre of Excellence, US Army

12.00 RAS: A Safety, Legal and Moral Perspective
- How do we ensure the RAS in use for the Land Environment are safe?
- What is the legal position for their use, including our duty of care?
- What is the moral position; more subjective than the Safety or Legal position?

Mr. Richard Spencer, Principal Engineer for Land Equipment Operating Centre, DE&S, UK MoD

12.30 Networking Lunch

13.00 The Opportunity and Challenge of Robotics and Autonomous Systems for Defence
- The role of experimentation in realising the value of RAS technologies
- Balancing ambition and pragmatism in the design, integration and assurance of RAS systems
- Driving collaboration across customer and industry organisations to deliver capability

Mr. Bill Biggs, Autonomy – Campaign Leader, QinetiQ
Mr. Keith Mallon, Autonomy – Campaign, QinetiQ

2.00 Enhancing Manoeuverability through RAS Integration and Optimised Manned-Unmanned Teaming
- The US Army’s Combat Vehicle Modernization Strategy and Robotics and Autonomous Systems Strategy
- Integrating a robotic wingman within the manoeuvre force and integrating robotic capability within tank formation
- Overcoming the challenges of manned-unmanned teaming (MUM-T) in ground manoeuvre forces
- Prospects of development and further technological advancement in the field of RAS

Dr. Robert W Sadowski, Robotics Senior Research Scientist, RDECOM TARDEC, US Army

2.30 Norwegian Research on Autonomous Off-Road Vehicles and Robotic Systems
- Autonomous decision-making in RAS
- Perception of the surroundings
- Route planning in terrain
- Positioning and navigation in GPS-denied environments
- Health monitoring and performance estimation
- Collaboration between RAS

Mr. Andre Pettersen, Autonomy Research Manager, Land Systems Division, FFI

3.00 Afternoon Tea

3.30 PANEL DISCUSSION
RAS’s Ability to Revolutionise the Effectiveness of Contemporary Operations
- Utilising RAS to enhance lethality, survivability, situational awareness, sustainability, and manoeuvrability
- Achieving strategic supremacy through information superiority
- Challenges of unmanned-manned cooperation

Brigadier (Retd.) Ian Cameron-Mowat, Former Head of Force Protection, Defence Equipment and Support, British Army

Lieutenant Colonel Richard Craig, S01 Coherence (Robotics Autonomous Systems), Director Capability, British Army

Lieutenant Colonel Leon Alfarac, Robotic System Knowledge Leader, Technological Division, Israeli Defence Forces

Major Alan Stephens, Maneuver Robotics and Autonomous Systems Branch Chief, Mounted Requirements Division, Maneuver Centre of Excellence, US Army

Major Tapio Saarelainen, Research Staff Officer (OF-3), Research and Development Department, Army Research Centre, Finnish Defence Forces

Colonel Jerome Lemaire, Digitization & Artificial Intelligence Master Plan Leader, French DGA

4.00 Standardisation of Open Architectures for UGVs
- Study Motivation, Aims and Objectives
- The Study Approach / Methodology
- Initial Findings and Recommendations

Professor Elias Stipidis, Director, Vetrronics Research Centre
Dr. George Valsamakis, Research Fellow, Vetrronics Research Centre

4.30 Shared Decision Making in Human-Robot Teams
- The future of robotics lies in developing safe and trustworthy methodologies for humans and robots to collaborate
- Our research studies ways in which robots can collect data from their environment, analyse and use that information to make decisions in partnership with humans
- Whether operating in the office, classroom, home, hospital or disaster scenario, having the ability for humans and robots to support each other in mixed-initiative interactions will allow us to take advantage of the unique capabilities of each species

Dr. Elizabeth Stinar, Reader in Computer Science, Head of Centre for Robotics Research, Director of Data Science Programme, King’s College London

5.00 Chairman’s Closing Remarks and Close of Day One
Brigadier (Retd.) Ian Cameron-Mowat, Former Head of Force Protection, Defence Equipment and Support, British Army

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9.00 Increase the Human Capabilities Using Artificial Intelligence and Robotics — Application to Land Systems
- Artificial intelligence: potential use and challenges
- Robotics: state of the art and autonomy level
- Projects and master plan for land systems

Colonel Jerome Lemalre, Digitisation & Artificial Intelligence Master Plan Leader, French DGA

9.30 Coalition Assured Autonomous Resupply (CAAR) — the Innovation Autonomy Challenge
- Stimulating innovation through R&D
- Advancing autonomous systems concept development for tactical resupply through collaboration
- AUTONOMY FOR LAND OPERATIONS

Mr. Peter Stockel, Innovation Autonomy Challenge Lead, DSTL

10.00 Presentation by Endeavor Robotics

10.30 Morning Coffee

11.00 Enhancing Dismounted Troops Effectiveness with Maximised Robotic Support
- Improving operation tempo, human/machine execution of complex missions, and remote manipulation
- Challenges to integrating autonomous transport vehicles into manned operations
- Utilising UGVs for resupply, transport and other logistical roles
- Future prospects of developing unmanned technologies to support infantry operations

Dr. Stuart Young, Chief of Information, Sciences Division, US Army Research Laboratory

11.30 Robotics and Autonomy as Manoeuvre Warfare Enablers
- Using the decision cycle as a framework for exploitation of robotic and autonomous capabilities
- Thinking small: increasing capacity, facilitating decentralized execution, and achieving asymmetric advantage
- An overview of the evolving philosophy of manned-unmanned teaming (MUMT) within USMC missions

Major Jeffrey B. Persons, Robotics and Autonomy Programme Manager, Science and Technology Division, USMC Warfighting Laboratory

12.00 Enhancing Dismounted Soldier Operations with Robotics and Autonomous Systems
- Supporting tight and dismounted infantry formations with unmanned technology
- Optimising unmanned sensor and weapon platform
- Enhancing Autonomous resupply capabilities

Major Bryan D. Keating, Deputy Director of IIT and Director of the Advanced Robotics Department, Italian Institute of Technology

12.30 Networking Lunch

2.00 Achieving Comprehensive Autonomy through Maximised Artificial Intelligence
- The current position of the Finnish Defence Research Agency on AI development and Robotic Autonomous Systems
- The challenge to RAS integration into manned operations and platforms
- Supporting logistics and survivability: Enhancing AI capabilities to maximise self-learning technology

Major Tapio Saarelainen, Research Staff Officer (OF-3), Research and Development Department, Army Research Centre, Finish Defence Forces

2.30 Current Developments in Russian Unmanned Military Ground Systems
- Russia has been steadily developing a variety of unmanned ground vehicles (UGVs) for its military
- The Russian state is taking a more active role in overseeing UGV development, testing, evaluation and acquisition
- Russia is using its UGVs as test beds for new and emerging technologies, with potential repercussions for the NATO forces and their allies

Mr. Samuel Bendett, Researcher, Russia Studies Programme, Center For Naval Analyses

3.00 Afternoon Tea

3.30 DEFENCE RESEARCH PANEL

Creating Future UGVs Through Cutting Edge Research and Testing
- Utilising AI to increase autonomy in robotic systems
- Achieving full interoperability among autonomous systems and between manned and unmanned technologies
- Challenges of manned-unmanned cooperation

Brigadier (Retd.) Ian Cameron-Mowat, Former Head of Force Protection, Defence Equipment and Support, British Army

Dr. Robert W Sadowski, Robotics Senior Research Scientist, TARDEC, TACOM US Army

Mr. Andre Pettersen, Autonomy Research Manager, Land Systems Division, FFI

Dr. Stuart Young, Chief of Information Sciences Division, US Army Research Laboratory

Mr. Peter Stockel, Innovation Autonomy Challenge Lead, DSTL

4.00 Robots for Loco-Manipulation in Complex, Unstructured, Hazardous Environments
- Legged robots (Quadruped and Humanoids)
- Complex terrain locomotion
- Teleoperated/semi-autonomous/autonomous manipulation
- Hazardous Environment Applications

Professor Darwin Caldwell, Deputy Director of IT and Director of the Advanced Robotics Department, Italian Institute of Technology

4.30 Human-Robot Interactions and the Highlighted Synergies for Defence
- Strengths and weaknesses of robots
- Human-robot collaboration
- Examples as exoskeletons, collaborative robots, prosthesis

Professor Bram Vanderborght, Professor Robotics & Multibody Mechanics Research Group, Vrije Universiteit Brussel

5.00 Exploiting Simulation and Gaming in Robotic and Autonomous Systems Development
- Training and Testing AI in Games and Simulations
- Challenges and opportunities of exploiting non-defence AI developments
- Towards the Optimum Human and Machine Blend

Mr. Andy Fawkes, Consultant and Director, Think Company Ltd

5.30 Chairman’s Closing Remarks and Close of Day Two

Brigadier (Retd.) Ian Cameron-Mowat, Former Head of Force Protection, Defence Equipment and Support, British Army

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Endeavor Robotics are the largest independent supplier of battle-tested UGVs to customers worldwide, wholly dedicated to serving customers in the defence, public safety, and energy and industrial markets. Formerly known as the Defence & Security unit at iRobot, Endeavor Robotics is better positioned than ever to provide innovation to our customers. Some of our highlights are: 6,000+ robots delivered to more than 40 countries, 27 years of experience in robotics, largest Robot supplier to the United States Department of Defence, more than 3 million hours of robot operations, and we deliver and manage multiple programmes—of Record. Endeavor Robotics is an experienced, customer-focus, and innovative actor in the Defence sector. Come visit us at our stand at the coming Military Robotics and Autonomous Systems conference in London in April.

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MILITARY ROBOTICS AND AUTONOMOUS SYSTEMS

Conference: Wednesday 25th to Thursday 26th April 2018, Copthorne Tara Hotel, London, UK

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