



SCIENCE AND TECHNOLOGY ORGANIZATION
NATO MODELLING AND SIMULATION GROUP



MSG-184 RSY

12 October 2021

PROGRAMME

For the 2021 NATO MODELLING & SIMULATION GROUP (NMSG)
SYMPOSIUM

Towards Training and Decision Support for Complex Multi-Domain Operations

DAY 1
21 October 2021

09:00 **KN1** **Keynote speech – Mr Auke VENEMA, Strategic Advisor NLD MoD, NLD STB Member**

Session 1: M&S in support of Complex Multi-Domain Operations

Chair – Mr Wim HUISKAMP, TNO (NLD)

09:30 **1** **Modelling & Simulation and Data Science to support commander's white picture**
COL (ret) Dr. Jan HODICKY, NATO HQ SACT JFD MSTT (NATO ACT)

10:00 **2** **Getting Battle Labs ready for Multi Domain Operations: Main results and developments within the NLD MoD**

MSc Lesley JACOBS, TNO Defence, Safety & Security (NLD)

LTCDR Pascal ORDELMANS, Maritime Battle Lab (RNLN) (NLD)

LTC Peter van ONZENOORT, CABL (RNLAf) (NLD)

MAJ Peter GEURTS, IAMD Battle Lab (GBADC) (NLD) LTC Desmond LIBERG, Simulation Battle Lab (JIVC-KIXS) (NLD)

10:30 **Coffee Break**

Session 2: Training Innovations

Chair – Mr Niels KRARUP-HANSEN, MoD DALO (DNK)

11:00 **3** **Withdrawn**

11:00 **4** **Innovative automated analysis tools for After Action Review (AAR) using AI and modelling & simulation**

Ms Anne-Gwenn BOSSER, MASA Group SA (FRA)

Ms Ariane BITOUN, MASA Group SA (FRA)

Mr François LEGRAS, MASA Group SA (FRA)

Mr Hans TEN BERGEN, MASA Group SA (FRA)

11:30 5 **Live Air Training in a Synthetic Environment**
Mr Michael JEBAUTZKE, Collins Aerospace (DEU)

12:00 **BREAK - 2 Posters introduced by a 5 minute pitch and with time allocated for discussion during the break.**

14:00 KN2 **The Virtual Command Post**
Experiencing today's technology in order to innovate tomorrow's decision making
COL Mietta GROENEVELD, Director NATO Command and Control Centre of Excellence (NATO C2COE)

Session 3: Decision Support Innovations

Chair – COL Miro ČOLIĆ, Croatian Defense Academy (HRV)

14:30 6 **5th Gen Mission Planning: Integrated Systems and Algorithms**
Ir. Antoine J.C. DE REUS, Netherlands Aerospace Center NLR (NLD)
MSc. Jeanine I.D. VLASBLOM, Netherlands Aerospace Center NLR (NLD)
Ir. Roy R.D. ARENTS, Netherlands Aerospace Center NLR (NLD)

15:00 7 **Deep Self-optimizing Artificial Intelligence for Tactical Analysis, Training and Optimization**
Dr. Matthias SOMMER, Eidgenössisches Departement für Verteidigung, Bevölkerungsschutz und Sport VBS, armasuisse Wissenschaft + Technologie (CHE)
Dr. Oleg SZEHR, Dalle Molle Institute for Artificial Intelligence (IDSIA) - SUPSI/USI (CHE)

15:30 **Coffee Break**

16:00 8 **Geospatial Analysis for Machine Learning in Tactical Decision Support**
Mr Maarten SCHADD, TNO Defence, Safety and Security (NLD)
Mr Nico DE REUS, TNO Defence, Safety and Security (NLD)
Mr Philip KERBUSCH, TNO Defence, Safety and Security (NLD)
MAJ Ab DE VOS, JIVC/KIXS/Sie SIM (NLD)

Session 4: Novel Approaches

Chair – Mr Simon SKINNER, THALES UK (GBR)

16:30 9 **Opportunities for Military M&S to Capitalise on Gaming Technologies and Competences**
Mr Andrew FAWKES, Vedette Consulting (GBR)
Mr Matthew HEMSLEY, Vedette Consulting (GBR)
Mr Douglas HENRY, Dstl (GBR)
Mr Brian WARDMAN, Dstl (GBR)

10 **Withdrawn**

17:00 11 **Virtual Cockpit – Making Natural Interaction Possible in a Low-Cost VR Simulator**
MSc. Jeanine I.D. VLASBLOM, Netherlands Aerospace Center NLR (NLD)
Ir. Antoine J.C. DE REUS, Netherlands Aerospace Center NLR (NLD)
Ir. Roy R.D. ARENTS, Netherlands Aerospace Center NLR (NLD)
Ir. Ronald F.W.G. VAN GIMST, Netherlands Aerospace Center NLR (NLD)

17:30 **NATO C2COE demo**

18:00 **End of Day 1**

09:00 YSA **NMSG Young Scientist Award Presentation**
MSc Paolo DE HEER, TNO Defence Research (NLD)

Session 5: Decision Support Applications

Chair – Prof Andrzej NAJGEBAUER, Military University of Technology (POL)

09:30 12 **Modelling and Simulation in NATO Federated Mission Networking**
Dr J. Mark PULLEN, George Mason University (USA)
Mr James KRAFT, National Defence Headquarters (CAN)
Mr Ole Martin MEVASSVIK, FFI (NOR)
Mr Christian WAGNER, Federal Office of Bundeswehr Equipment, Information Technology and In-Service Support (DEU)

10:00 13 **Simulation-Based Decision Support for the Logistic System of the German Armed Forces**
Mr René KLEINT, ESG Elektroniksystem- und Logistik-GmbH (DEU)
Ms Andrea GECK, ESG Elektroniksystem- und Logistik-GmbH (DEU)

10:30 **Coffee Break**

11:00 14 **From the game map to the battlefield – using DeepMind’s advanced AlphaStar techniques to support military decision-makers**
LTC Thomas DOLL, Army Concepts and Capabilities Development Centre (DEU)
LTC Jan-Wilhelm BRENDECKE, Army Concepts and Capabilities Development Centre (DEU)
Mr Matthias BEHM, AIRBUS Defence and Space GmbH (DEU)
Mr Daniel KALLFASS, AIRBUS Defence and Space GmbH (DEU)

11:30 15 **Decision Support within Complex Subterranean Operations**
COL (GS) Mag. Dr. Peter HOFER, Theresian Military Academy (AUT)
Mr Julian EDER, IL - Ingenieurbüro Laabmayr & Partner ZT GmbH (AUT)
DI Dr. Clemens STRAUSS, Institute for Military Geography (AUT)

12:00 **Panel session**
M&S Opportunities and Challenges in the context of Complex Multi-Domain Operations
Panel members (TBC)

12:30 **BREAK - 3 Posters introduced by a 5 minute pitch and with time allocated for discussion during the break.**

Session 6: Towards Capabilities

Chair – Mr Bharat PATEL, DSTL (GBR)

14:00 16 **Towards a NATO Reference Architecture for Joint Mission Training Through Distributed Simulation**
Mr Tom VAN DEN BERG, TNO (NLD)
Mr Wim HUISKAMP, TNO (NLD)
Mr Henk JANSSEN, TNO (NLD)
Mr Nico DE REUS, TNO (NLD)

14:30 17 **Towards a Modelling & Simulation capability for training autonomous vehicles in complex maritime operations**
Dr Arnau CARRERA VINAS (NATO STO CMRE)
Dr Thomas MANSFILED (NATO STO CMRE)
Dr Pilar CAAMANO SOBRINO (NATO STO CMRE)
Dr Alberto TREMORI (NATO STO CMRE)

- 15:00 18 **How much is too much? Levels of A.I. Explainability within Decision Support Systems' User Interfaces for improved decision-making performance**
MSc Ghanshaam SEWNATH, Royal Netherlands Aerospace Centre NLR (NLD)
Mr Jur CRIJNEN, Royal Netherlands Aerospace Centre NLR (NLD)
- 15:30 TER **SUMMARY REMARKS by Symposium Technical Evaluator**
Prof Dr Axel LEHMANN
- 15:45 **End of Day 2**

*POSTERS

DAY 1 (21 October 2021) Break Posters

- 1 **Withdrawn**
- 2 **Minds for Mobile Agents**
Prof Andrew HEATHCOTE, School of Psychology, The University of Newcastle (AUS)
Mz. Charlotte TANIS, Department of Psychology, University of Amsterdam (NLD)
Mr. Jonne ZOMERDIJK, Department of Psychology, University of Amsterdam (NLD)
Dr Tessa BLANKEN, Department of Psychology, University of Amsterdam (NLD)
Assoc Prof Dora MATZKE, Department of Psychology, University of Amsterdam (NLD)
Prof Denny BORSBOOM, Department of Psychology, University of Amsterdam (NLD)
- 3 **Learning analytics in military training simulation**
MSc Linsey ROIJENDIJK, TNO Soesterberg (NLD)
Dr. Heleen PENNING, TNO Soesterberg (NLD)
Dr. Esther OPRINS, TNO Soesterberg (NLD)
Dr. Karel VAN DEN BOSCH, TNO Soesterberg (NLD)
Dr. ir. Jikke REINTEN, TNO Soesterberg (NLD)
Ir. Peter LANGESLAG, TNO Den Haag – Waalsdorperweg (NLD)
Drs. ing. Armand VINCENTIE, Defensie Materieel Organisatie (NLD)

DAY 2 (22 October 2021) Break Posters

- 4 **Autonomy Studio Tool: a virtual studio for multi-domain complex operations simulation**
Mr Jérôme HABONNEAU, THALES DMS France SAS (FRA)
Mr Bruno QUELLEC, THALES DMS France SAS (FRA)
Mr Matthieu BAUCHE, THALES DMS France SAS (FRA)
Mr Ludovic MARCHAL, THALES DMS France SAS (FRA)
Mr Florian DIGNE, THALES DMS France SAS (FRA)
- 5 **A Conceptual Model To Increase Political-Military Fusion Exercise Events Through Synchronous Distributed Wargaming**
MAJ Stephen NELSON (NATO ACT)
COL (ret) Dr Wayne STILWELL, Stilwell Technology and Robotics, LLC (USA)
- 6 **A scalable architecture for rapid terrain analysis**
Ir. Frido KUIJPER, TNO Defence, Safety and Security (NLD)
Dr Ruben SMELIK, TNO Defence, Safety and Security (NLD)