

Programme

Monday 03 May 2010

- 08:30 REGISTRATION
- 09:00 OPENING INTRODUCTIONS
- 09:15 KN1 Complex Systems Science for Public Safety and Military Operations
Y. BAR-YAM, New England Complex Systems Institute (NECSI) Boston, MA, USA
- 10:15 COFFEE BREAK

Session 1 - USING PHYSICS AND MATHEMATICAL ANALOGIES TO ANALYZE COMPLEX SYSTEM BEHAVIOUR

Chair - PROGRAMME COMMITTEE

- 10:45 1 Analogies Between Fluid Dynamic Flows and Societal Complex Systems - Can We Predict the Onset of Chaos?
J. EVANS, Canadian Defence Liaison Staff (London), GBR
- 11:15 2 The Use of a Multi-Agent System for Chemical, Biological and Radiological Event Reconstruction During Incident Response
J. LLOYD, Dstl, Porton Down and M. BULL, R. MILLS, D.RANNER, RiskAware, Bristol, GBR
- 11:45 3 Critical Behaviour in Asymmetric Warfare
K. SPRAGUE and P. DOBIAS, Defence R&D Canada, Centre for Operational Research and Analysis, Ottawa, CAN
- 12:15 4 Persistence of Trends in Significant Events in Afghanistan: Use of Detrended Fluctuation Analysis for Combat Data
J.A. WANLISS, Presbyterian College, Clinton, SC, USA and P. DOBIAS, Defence R&D Canada-Ottawa, CAN
- 12:45 LUNCH

Session 2 - COMPLEX SYSTEM DESIGN

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- 13:45 5 Complex Systems Design: Emergence Engineering and the Complexity Profile
G. FUSINA, Defence R&D Canada - Ottawa, CAN
- 14:15 6 North Surveillance by Teams of Autonomous Robots
G. LABONTE, Royal Military College of Canada, Kingston, CAN
- 14:45 7 Mine Countermeasures Operations Conducted by Autonomous Vehicles
B. NGUYEN, Defence R&D Canada, Centre for Operational Research and Analysis, Ottawa, CAN
- 15:15 COFFEE BREAK

DISCUSSION TO DEVELOP A "TERMS OF REFERENCE (TOR)" DOCUMENT FOR PROPOSED NEW NMSG ACTIVITIES

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- 15:45 The discussion will center upon forming an on-going NMSG (or other NATO) activity relating to M&S of Complex Systems as applied to public security and military operations
- 17:15 END OF FIRST DAY

Tuesday 04 May 2010

- 08:30 OPENING INTRODUCTIONS
- 08:45 KN2 Complexity Science Applicability and Impact in Operational Research
D.F. REDING, Defence R&D Canada, Toronto, CAN

Session 3 - NETWORK ANALYSIS AND AGENT-BASED APPROACHES TO COMPLEX SYSTEMS DESIGN

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- 09:45 8 Dynamic Network Analyzer (DNA)
D. CALITOIU, Carleton University, M. LEM and Z. JACOBSON, Health Canada, CAN
- 10:15 COFFEE BREAK
- 10:45 9 Employing Complex Adaptive Systems to Offset the Use of Offensive Capabilities in or from Space
A. ILANGOVAN, Swansea University, Wales, GBR
- 11:15 10 Modélisation de la vulnérabilité cybernétique d'une infrastructure critique (Modeling the Cybernetic Vulnerability of a Critical Infrastructure)
B. ROBERT and F. PETIT, Ecole Polytechnique de Montréal, Montreal, CAN
- 11:45 11 PAPER CANCELLED

INVITED PRESENTATION

- 11:45 12 Developing Measures of Performance to Evaluate Military Utility Using a Multi-Sensor ISR Simulation
S. BOURDON, Defence R&D Canada, Centre for Operational Research and Analysis, Ottawa, R. JASSEMI-ZARGANI, Defence R&D Canada - Ottawa, CAN and V.FONG, NATO NC3A, The Hague, NLD
- 12:15 LUNCH
- 13:15 KN3 Emergent Engineering for the Management of Complex Public Safety and Security Operations
M. ULLIERU, The University of New Brunswick, New Brunswick, CAN
- 14:15 11B NBC Detection Training Simulation
M. CERNAT, Military Equipment and Technology Research Agency (MoD), Bucharest, ROU
- 14:45 COFFEE BREAK

DISCUSSION

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- 15:15 Continuation of previous day's Discussion
- 17:00 END OF SECOND DAY

Wednesday 05 May 2010

- 08:30 OPENING INTRODUCTIONS

INVITED PRESENTATIONS

- 08:45** **13** **Optimal Aircraft Loading via Multiobjective Evolutionary Optimization**
S. WESOLKOWSKI, Defence R&D Canada, Centre for Operational Research and Analysis, Ottawa, CAN
- 09:15** **14** **Simulation of the Dynamic Systems Applied on Detection Devices Testing (presented by M. CERNAT)**
V. SOMOGHI, E.V. DINESCU and M. MIHALCEA, NBC Defense and Ecology Scientific Research Centre, Bucharest, ROU
- 09:45** **15** **The Evolution of Capability Engineering: Origin, Application and it's Place within Complex Systems**
W. ROBBINS, Defence R&D Canada – Ottawa, CAN
- 10:15** **COFFEE BREAK**

Session 4 - CAPABILITY ENGINEERING/ARCHITECTURE FRAMEWORKS

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- 10:45** **16** **Application of Command and Control Architecture Frameworks for Security and Emergency Management Planning**
M. DIXSON and L. GENIK, Defence R&D Canada-Ottawa, CAN
- 11:15** **17** **Executable Systems of Systems Architecture Models**
M. LUDWIG, N. FARCET, THALES Land & Joint Systems, Colombes and R. DUMOND, DGA, Bagneux, FRA
- 11:45** **18** **IMAGE - Interactive Simulation To Increase Complex System Understanding**
F. BERNIER, M. LIZOTTE, Defence R&D Canada – Valcartier, Québec, D. LARENDEAU, F-M. DeRAINVILLE, Laval University, Quebec City and F. RIOUX, LTI Software & Engineering, Quebec City, CAN
- 12:15** **LUNCH**
- 13:15** **19** **Semantic Interoperability IST-075: First Findings**
A.-C. BOURY-BRISSET, Defence R&D Canada – Valcartier, Québec, CAN, B. MARTINEZ REIF, ISDEFE, Madrid, ESP, V. HOJTAHED, Swedish Defence Research Agency (FOI), Stockholm, SWE, M. WUNDER, FGAN/FKIE, Wachtberg-Werthoven, DEU and A. ISENER, Defence R&D Center Atlantic, Dartmouth, CAN
- 13:45** **20** **From Architecture to Operational Communications Planning: Network Simulation for Executable Architectures**
J.A. HAMILTON, Auburn University, Alabama, USA
- 14:15** **COFFEE BREAK**

FINAL DISCUSSION AND WRAP-UP

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- 14:45** **Wrap Up of Previous Discussions**
- 17:00** **CONCLUSION OF WORKSHOP**