CALL FOR PAPERS

for the IST/SET-126 Symposium on

“Information Fusion (Hard and Soft)
For
Intelligence, Surveillance & Reconnaissance (ISR)”
Joint Symposium IST-106 and SET-189

to be held in
Norfolk Virginia, United States
04-05 May 2015

This Symposium is UNCLASSIFIED open to PfP Nations

DEADLINE FOR RECEIPT OF ABSTRACTS:

30 January 2015
(For U.S. authors, abstracts are due to the U.S. National Coordinator by 12 January 2015)

FOR RECEIVING DETAILED INFORMATION PLEASE CONTACT
SET/IST PANEL OFFICE

CLICK HERE TO CONTACT US
The NATO Science and Technology Organization

Science & Technology (S&T) in the NATO context is defined as the selective and rigorous generation and application of state-of-the-art, validated knowledge for defence and security purposes. S&T activities embrace scientific research, technology development, transition, application and field-testing, experimentation and a range of related scientific activities that include systems engineering, operational research and analysis, synthesis, integration and validation of knowledge derived through the scientific method.

In NATO, S&T is addressed using different business models, namely a collaborative business model where NATO provides a forum where NATO Nations and partner Nations elect to use their national resources to define, conduct and promote cooperative research and information exchange, and secondly an in-house delivery business model where S&T activities are conducted in a NATO dedicated executive body, having its own personnel, capabilities and infrastructure.

The mission of the NATO Science & Technology Organization (STO) is to help position the Nations’ and NATO’s S&T investments as a strategic enabler of the knowledge and technology advantage for the defence and security posture of NATO Nations and partner Nations, by conducting and promoting S&T activities that augment and leverage the capabilities and programmes of the Alliance, of the NATO Nations and the partner Nations, in support of NAT O’s objectives, and contributing to NATO’s ability to enable and influence security and defence related capability development and threat mitigation in NATO Nations and partner Nations, in accordance with NATO policies.

The total spectrum of this collaborative effort is addressed by six Technical Panels who manage a wide range of scientific research activities, a Group specialising in modelling and simulation, plus a Committee dedicated to supporting the information management needs of the organization:

- **AVT** Applied Vehicle Technology Panel
- **HFM** Human Factors and Medicine Panel
- **IST** Information Systems Technology Panel
- **NMSG** NATO Modelling and Simulation Group
- **SAS** System Analysis and Studies Panel
- **SCI** Systems Concepts and Integration Panel
- **SET** Sensors and Electronics Technology Panel

These Panels and Groups are the power-house of the collaborative model and are made up of national representatives as well as recognised world-class scientists, engineers and information specialists. In addition to providing critical technical oversight, they also provide a communication link to military users and other NATO bodies.
The scientific and technological work is carried out by Technical Teams, created under one or more of these eight bodies, for specific research activities which have a defined duration. These research activities can take a variety of forms, including Task Groups, Workshops, Symposia, Specialists’ Meetings, Lecture Series and Technical Courses.

**The Information Systems Technology (IST) Panel**

The mission of the Information Systems Technology (IST) Panel is to implement, on behalf of the S&T Board, the STO Mission with respect to Information Systems Technology. The advancement and exchange of techniques and technologies to provide timely, affordable, dependable, secure and relevant information to war fighters, planners and strategists, as well as enabling technologies for modelling, simulation, and training are the focus of this Panel.

The Information Systems Technology Panel (IST) covers the fields of:

(a) Information Warfare and Assurance,
(b) Architecture and Intelligent Information Systems,
(c) Communications and Networks.

**The Sensors and Electronics Technology (SET) Panel**

The Sensors & Electronics Technology (SET) Panel is eager to advance technology in electronics and passive/active sensors (as they pertain to reconnaissance, surveillance, target acquisition, electronic warfare, communications, navigation) and to enhance sensor capabilities through multi-sensor integration/fusion in order to improve the operating capability and to contribute to fulfil strategic military results.

As NATO war-fighters and peace-keepers continue to shift more and more towards asymmetrical warfare, SET technology have to focus on the military mission of saving lives, improving quality of life and extending our combat effectiveness.

Research in the Sensors and Electronics Technology Panel concerns the phenomenology related to target signature, propagation and battle-space environment, electro-optics (or electro-optical, EO), radio frequency (RF), acoustic and magnetic sensors, antenna, signal and image processing, components, sensor hardening and electromagnetic compatibility.
Background

Knowledge is power. Today, that power comes from the ability to efficiently and accurately sift through vast amounts of data coming in from sources both human and device-based, to fuse that information into Actionable Intelligence information and exploit the results. Having the right information at the right time supports effective decision-making and planning resulting in military information superiority. The overwhelming amount of data and information available through both soft (human) sources and hard (device-based) is too enormous for hands-on analysis by intelligence experts. The challenge in a world where the volume of data and information from heterogeneous sources continues to grow exponentially is to find weak signals and interconnections in a veritable haystack of background noise.

Primary Objectives of the Symposium

The symposium will provide an interdisciplinary forum for research scientists, military experts, and system engineers to present the state of the art of research and technology in all different aspects of military data and information fusion (Hard and Soft) for ISR. The conference program will include lectures by invited speakers from research and practice as well as a selection of submitted papers.

The following list gives the main topics of interest for the symposium but it is not exclusive.

Symposium Topics

- **Data representation**
  - Representation strategies for data and information derived from hard sources, soft sources and the fusion of both
  - Controlled languages
  - Standardizing definitions of ambiguous terminology; reconciliation of terminology discrepancies and granularity issues (temporal & spatial)

- **Multi-Level fusion**
  - Synergic exploitation of fusion processes at different levels
  - Challenges for seamless fusion of hard and soft data
  - Common methodologies, algorithms and tools in both hard and soft fusion
  - Combining results from multi-modal sensing data fusion and distributed sensor networks and data with high level intelligence information
  - Holistic solutions

- **Uncertainty in fusion processes**
  - Uncertainty in data, information, and knowledge
- Representing uncertainty
- Uncertainty resulting from fusion processes

- Applications
  - Integration of unmanned ISR sensors and systems into comprehensive hard/soft fusion
  - Data sets from multi-level ISR experiments involving heterogeneous sources (sensors, platforms, and human generated data, information, and knowledge)
  - Simulations