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)

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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**
  - Synergetic 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**
  - Coalition ISR interoperability
  - Integration of unmanned ISR sensors and systems into comprehensive hard/soft fusion
  - Data to decisions
  - Anomaly determination and pattern-of-life analysis
  - Data sets from multi-level ISR experiments involving heterogeneous sources (sensors, platforms, and human generated data, information, and knowledge)
  - Simulations
TECHNICAL PROGRAMME COMMITTEE

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SYMPOSIUM INFORMATION

ABSTRACTS
The Programme Committee invites scientists and experts from NATO Alliance member nations to submit abstracts of papers to be considered. The abstract should describe (in a minimum of one to a maximum of two pages, 200 to 500 words), the scope of the contribution, the relevance to the Symposium, aim, results and conclusions of the work.
Your abstract should fully represent your contribution. Inclusion of 1 to 2 figures and/or photographs to support the abstract is encouraged.
The abstract must also contain a declaration from the author(s) that there are no restrictions regarding presentation neither during the Symposium nor of the publication of the paper (as described in the abstract) in the Meeting Proceedings.
Please use the Abstract Submission Form (Attachment 1) so that we can have complete details of authors’ names, mailing addresses, telephone, fax and e-mail address.
The Author should indicate the classification level of the paper that will be presented.

IMPORTANT
Abstracts must only be up to NATO UNCLASSIFIED

The abstracts should be submitted by e-mail to the Symposium Co-Chairmen, with a courtesy copy to the SET Panel Assistant, no later than 30 January 2015. This date is important and must be met to ensure consideration.

SPECIAL NOTICE: FOR U.S. AUTHORS and NON U.S. CITIZENS AFFILIATED WITH U.S. ORGANIZATIONS:
(Please read carefully and comply with the administrative details in Attachment 2. For your information, U.S. abstracts should be submitted to the U.S. NATO STO National Coordinator NO LATER THAN 12 January 2015.)

Abstracts of papers offered for this Symposium are now invited and should be submitted in the following format:

TITLE OF PAPER
Name of Author/Co-Author(s)
Company/Affiliation
Complete address

A. LENGTH - 200 to 500 words
B. CONTENT - Scope of the Contribution
- Relevance to the Meeting
- Your abstract should fully represent your contribution.
C. IDENTIFICATION - Information on Attachment 1 must be provided with all abstracts.
D. SUBMITTAL - By all authors
E. CLASSIFICATION - Up to NATO UNCLASSIFIED

Abstracts might be distributed in a read ahead package on the first day at the event.
SECURITY LEVEL AND CLEARANCE FOR PRESENTATION
This Symposium is Unclassified. It is the responsibility of each contributor to fulfil the publication release requirements of his/her organization/company and country and to obtain clearance of abstracts and papers as needed.
An official clearance is mandatory in the United States and there may also be a requirement in other countries to obtain clearance for unclassified as well as classified papers. For further information, authors should contact the appropriate Programme Committee Member listed in this document or their National RTO Coordinator.

PUBLICATION
All authors will be asked to provide a final version of their paper, in electronic format together with a publication release Form by 13 APRIL 2015. The Meeting Proceedings will only be published in electronic form after the event. Papers may be written either in English or French but must be presented in English.
An electronic version of unclassified papers can be e-mailed to the SET Panel Assistant and Symposium Co-Chairmen.

ATTENDANCE
This Symposium, sponsored by the Sensors and Electronics Panel (SET), the Information Systems Technology Panel (IST) takes place in Norfolk, Virginia, United States, 04-05 May 2015.
The audience will include members of the SET and IST Panels and invited experts from NATO nations.
Attendance at STO symposia is based upon the permission of STO National Coordinators.

ADDITIONAL INFORMATION
Authors will be notified by the CSO of the opening of on-line enrolment and receive a General Information Package about the Symposium site and the host country once enrolment has been validated.
Any questions on the technical aspects of the scientific programme or the contents of papers should be addressed to the Technical Programme Committee.
Questions on the administrative aspects of this Symposium or requests for further information on STO activities should be addressed to the SET or IST Panels’ Executives or Assistants.
Authors of selected papers are financially responsible for their own hotel and travel arrangements based on suggestions provided in the General Information Package (GIP).
Thank you for your contributions which are most appreciated by all the NATO community.
PRO-MEMORIA OF THE GENERAL SCHEDULE OF EVENTS

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<td>30 January 2015</td>
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<td>10 February 2015</td>
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<td>As soon as instruction to authors received</td>
<td>✓ SUBMIT AUTHOR'S INFORMATION FORM (Attachment 1) and Short Biography to SET/IST Panel Assistant,</td>
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<td>16 March 2015</td>
<td>✓ US Authors to submit electronic version of paper in word and PDF</td>
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<td>13 April 2015</td>
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THE MEETING ANNOUNCEMENT WILL BE DISTRIBUTED ON ENROLLEMENT TOGETHER WITH THE GENERAL INFORMATION PACKAGE
AUTHOR INFORMATION FORM
FOR
AUTHOR SUBMITTING AN ABSTRACT FOR THE
JOINT IST-SET 126 SYMPOSIUM
on
“Information Fusion (Hard and Soft)
For
Intelligence, Surveillance & Reconnaissance (ISR)”
Joint Symposium IST-106 and SET-189

INSTRUCTIONS

1. All authors are required to send a copy of this completed form to the Co Chairs and SET/IST Panel Assistant by AS SOON AS POSSIBLE

2. All non-United States authors are required to attach a copy of this form to their unclassified abstract before it is mailed.
   a. Probable Title of Paper (and estimated final level of clearance):
   b. Paper most appropriate for Topic:
   c. Full name of Author to be listed first on Programme, including courtesy title (specify nationality):
   d. Names of Co-Authors, including courtesy titles (specify nationality):
   e. French authors are requested to submit the title of their paper in French and in English
   f. Address for return correspondence:

   Telephone Number:
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   Date:                      Signature:

   DUE NOT LATER THAN 17 Feb 2015
SPECIAL NOTICE FOR U.S. AUTHORS AND NON U.S. CITIZENS AFFILIATED WITH U.S. ORGANIZATIONS

Abstracts of Papers from the U.S. must be sent ONLY to the following P.O.C.:

NATO CSO US National Coordinator OASD(R&E)/International Technology Programs - 4800
Mark Center Drive Alexandria VA 22350-3600

E-mail: osd.pentagon.ousd-atl.mbx.usnatcor@mail.mil
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PLEASE NOTE THE FOLLOWING:

1. All U.S. Authors must submit one electronic copy to this P.O.C. by 12 January 2015.
   The P.O.C. will forward all U.S. abstracts to the programme committee.

2. All U.S. Authors must include the following statement in a covering letter to the P.O.C.:
   - The work described in this abstract is cleared for presentation to NATO audiences;
   - If work is sponsored by a government agency, identify the organization and attest that the organization is aware of the submission;
   - The abstract is technically correct;
   - The abstract is up to and including NATO UNCLASSIFIED
   - The abstract does not violate any proprietary rights.

In addition to their abstract, all U.S. Authors must provide the P.O.C. with:

   (a) A certification (can be signed by the author) that there are no proprietary or copyright limitations;
   (b) Internal documentation from their local public affairs or foreign disclosure office (or equivalent) that clearly shows:
       - Title of the paper or presentation
       - Level of clearance (i.e. Approved for public release)
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   - (c) Full details of authors

Note that only complete packages (abstracts + items listed above) will be accepted by the US P.o.C. After review and approval, the US P.O.C. will forward all U.S. abstracts to the SET Panel Office, who will send them to the Programme Committee. U.S. authors are encouraged to address questions and concerns to the P.O.C. as early as possible. Delays in meeting P.O.C. deadlines will impact the timely submission of your abstract.