

CALL FOR PAPERS
IST-178 Inter-Panel / Inter-Group Workshop

on

BIG DATA CHALLENGES: SITUATION AWARENESS and DECISION SUPPORT

to be held in

Budapest, Hungary
15th – 16th October 2019



DEADLINE FOR RECEIPT OF ABSTRACTS:

12 AUGUST 2019

(US Authors please check Annex A)

This Workshop is unclassified and open to NATO nations and Partnership for Peace nations

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You can also find this Call for Papers at: <https://events.sto.nato.int>

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 scientific methods.

In NATO, S&T is addressed using a collaborative business model in which 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 S&T investments of NATO nations and partner nations as a strategic enabler bringing common advantages through knowledge and technology. The defence and security posture of NATO is enhanced by conducting and promoting S&T activities that augment and leverage the capabilities and programmes of the NATO alliance and its partner nations, all 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.

TECHNICAL PROGRAMME COMMITTEE

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THEME

There are many Research Task Groups (RTGs) and Exploratory Teams (ETs) under different NATO Panels and the NATO Modelling and Simulation Group (NMSG) all working on different aspects of defence, military and intelligence challenges, e.g. big data exploration, decision support, mission planning, human factors, medicine, modelling and simulation and visual analytics etc. The IST-178 Workshop invites members of the different RTGs and ETs together in a workshop that will enable them to explore and benefit from each other's work, and to develop collaborations to complement and enhance their respective efforts, as well as facilitating the sharing of data, tasks and tools.

WORKSHOP OBJECTIVES:

The main objective of this two day Inter-Panel / Inter-Group Workshop is to provide the means for the RTG/ET members to discuss views, challenges, and work on the use of big data to support the military with obtaining situation awareness and informed decision making.

The aim of the Workshop is to establish a raised awareness of common and different problems, available and foreseen technologies, capabilities and efforts, and also to support the development of collaborations. This may lead to outcomes such as: joint Inter-Panel / Inter-Group collaborations; sharing of data, tools and tasks; and the generation of new research ideas for RTGs and /or ET Technical Activity Proposals (TAPs).

WORKSHOP TOPICS:

The theme of this meeting is how the availability of big data may assist the military in understanding the situations they will encounter, and how this may support them in making better decisions. The challenges for development and opportunities for the exploitation of Big Data are likely to vary from domain to domain. This workshop intends to host the discussion for a broad spectrum of potential (military) domains, such as:

Applied vehicle technology	Medicine
Artificial intelligence	Mission planning
Challenges in Big Data exploration / exploitation	Modelling and simulation
Cyber defence and security	Sensors and electronic technology
Evaluation frameworks, measures and metrics	Situation awareness and Decision Support
Genomics	System analysis and studies
Human Factors	System concepts and integration
Human cognition and perception	Visual Analytics and visualization
Information warfare	War gaming
Knowledge engineering	Others

WORKSHOP FORMAT AND ORGANIZATION

The workshop will commence with selected presentations to inspire and provide directions for the workshop discussion. We plan an interactive workshop, consisting of several working groups, each with a different theme, topic, and/or domain. The working groups will be arenas for in-depth discussions. Each participant in the workshop will be assigned to a working group, with the aim to have participants from the various communities in each group. These working groups will be formed on the first day. Each working group is to produce a summary report of their discussion, and to present it to the other groups at the end of the workshop.

Attendance will be limited to 50 people.

WHY ATTEND THE WORKSHOP?

This workshop will bring together RTG / ET members from different S&T Panels and the NMSG to present, discuss, and share their work, problems and challenges in relation to the exploration, exploitation and utilization of massive, complex and dynamic Big Data. The interdisciplinary approach will enable us to leverage each other's work in our respective tasks and mission domains.

SUBMISSION INSTRUCTIONS

Authors are invited to submit abstracts for a paper presentation, a poster, and/or a demonstration for this workshop, addressing issues of Big Data for military purposes in general, or in any of the domains suggested in the Table above. However, this list of domains is not exclusive; contributions in other domains are welcome too. Papers should address unclassified material only.

Authors will be notified if their papers have been accepted. Authors of selected papers /posters / demonstrations will be provided with information in the instructions for Authors document, which contains detailed instructions for the preparations of the paper.

ABSTRACTS

Abstracts for contribution should provide:

- the nature of the contribution (paper presentation / poster / demonstration);
- a title;
- an explicit statement of the content and its relevance to the workshop;
- the full name of the principle author and co-authors with the respective e-mail addresses and RTG / ET information.

The content part of the abstract should not exceed 200 words.

Authors are permitted to submit multiple abstracts for papers/posters/demonstrations.

In order to get an overview of the background and interest of the applicants, and the expertise on the various domains they will bring, we kindly ask each author to fill in the questionnaire in Annex B.

Please send an electronic copy of the abstract together with the completed Questionnaire (Annex B) to the IST Panel Assistant (aysegul.apaydin@cs0.nato.int) with courtesy copies to the Technical Programme Committee Co-Chairs (margaret.varga@zoo.ox.ac.uk) and karel.vandenbosch@tno.nl, to reach them by **12 AUGUST 2019**.

Authors will be notified no later than **30 AUGUST 2019**.

PAPERS and PRESENTATIONS

Approximately 10 papers will be selected for presentation; each author will be allocated twenty minutes for their presentation and a further ten minutes for discussion. Papers must be written and presented in English and all presentations will be published.

Authors of these papers will be required to send their full paper, of 5 pages minimum, to CSO in pdf together with the source document (MS Word etc.) by email no later than 20th September 2019, covering the:

- Introduction/relevance to the workshop
- Rationale
- Description
- Conclusions

POSTERS and DEMONSTRATIONS

Approximately 8 posters and 4 demonstrations will also be selected.

IMPORTANT

It is the responsibility of the author to ensure that the paper/poster/demonstration has received the necessary clearances before submission. Please allow sufficient time for the clearance to be issued before the deadline. The classification for the workshop has been declared UNCLASSIFIED.

EXCEPTION: Authors from the United States must comply with US procedures. (see the Instructions in **Annex A**)

Authors submitting papers/posters/demonstrations and other attendees must ensure their own financial support for participation in the WORKSHOP.

IMPORTANT DATES

- 12 AUG 2019** Submission of abstracts
- 30 AUG 2019** Notification to Authors
- 30 AUG 2019** Authors to receive Instructions to Authors information from CSO
- 20 SEP 2019** Submission of paper, presentation and Publication Release and Clearance Certificate (Form 13e) to CSO by email
- 01 OCT 2019** Submission of presentation slides in power point or pdf to CSO by email

GENERAL INFORMATION

The Hungarian authorities have graciously offered to hold this Inter-Panel / Inter-Group Workshop in their country. The audience will include the STO, IST and other Panel members, experts from NATO nations, as well as potential participants from Partner for Peace (PfP) nations. The meeting will be at UNCLASSIFIED level.

Authors will be notified by the IST Panel Office of the opening of on-line enrolment on the CSO Events website (<https://events.sto.nato.int>). You can attend and participate in the Workshop even if you do not present a paper. Whether you present a paper/poster/demonstration or not, it is mandatory for all individuals to enrol online on <https://events.sto.nato.int> The enrolment process will be open beginning July.

PUBLICATION OF WORKSHOP PROCEEDINGS

Complete instructions will be sent by the IST Panel Assistant to the authors of the selected papers. The Guidelines for Authors will detail all requirements and deadlines for the preparation of the final manuscripts and presentations.

All authors will need to provide CSO with a final version of their full paper by **20 SEP 2019**, together with the presentation / video, Publication Release and Clearance Certificate (Form 13e).

A week before the Workshop, CSO will pre-release the papers and presentations on the CSO website. These papers will be available under a login and password which will be provided by the IST Panel Office.

The final publication (Workshop Proceedings) will be at a URL address which will be given later, together with a login and password. This will represent the official reference of the Workshop Proceedings including the presentations, papers, posters, demonstration, videos, an Executive Summary, and the TER (Technical Evaluation Report). Please take note that CSO reserves the right to print in the Proceedings any paper or material presented at the meeting.

Any questions on the technical aspects of the scientific programme or the contents of papers should be addressed to the Programme Committee Co-Chairs and members.

Questions on the administrative aspects of this Workshop or requests for further information on STO activities should be addressed to the IST Panel Office:-

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SECURITY LEVEL AND CLEARANCE FOR PRESENTATIONS AND PAPERS

This WORKSHOP is UNCLASSIFIED and is open to NATO and Partnership for Peace nations. It is the responsibility of each contributor to fulfil the publication release and clearance requirements of his / her organization / company and country 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 STO Co-ordinator. To assist with this process, the IST Panel Assistant will send further detailed instructions to the authors of the abstracts selected.

Authors of abstracts selected for presentation / poster / demonstration will not be financially supported by this organisation. You are responsible to arrange your own accommodation and travel reservations. You may use the suggestions given in the General Information Package, provided by the CSO. Expenses for travel and per diem costs are the responsibility of each author's organisation and nation.

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APO AE 09777

**SPECIAL NOTICE TO U.S. AUTHORS
AND
NON-U.S. CITIZENS AFFILIATED WITH U.S. ORGANISATIONS**

Ref.: WORKSHOP IST-178, Hungary, 15 – 16 October 2019

**ABSTRACTS OF PAPERS FROM THE U.S. MUST BE SENT ONLY TO THE FOLLOWING
P.O.C.:**

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- 1. ALL U.S. AUTHORS MUST SUBMIT ONE ELECTRONIC COPY TO THIS P.O.C. BY
19 AUGUST 2019**

**THE P.O.C. WILL FORWARD ALL US ABSTRACTS AS REQUIRED BY THE TECHNICAL
PROGRAM COMMITTEE.**

IN ADDITION TO THEIR ABSTRACT, ALL U.S. AUTHORS MUST PROVIDE:

- 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)
 - NAME, TITLE AND ORGANIZATION OF THE APPROVAL AUTHORITY
 -
- C) FULL DETAILS OF AUTHORS

NOTE THAT ONLY COMPLETE PACKAGES (ABSTRACTS + ITEMS LISTED ABOVE) WILL BE ACCEPTED BY THE U.S. POC. AFTER REVIEW AND APPROVAL, THE U.S. POC WILL FORWARD ALL U.S. ABSTRACTS TO THE IST PANEL OFFICE, WHO WILL SEND THEM TO THE PROGRAMME COMMITTEE. U.S. AUTHORS ARE ENCOURAGED TO ADDRESS QUESTIONS AND CONCERNS TO THE POC AS EARLY AS POSSIBLE. DELAYS IN MEETING DEADLINES WILL IMPACT THE TIMELY SUBMISSION OF YOUR ABSTRACT.

QUESTIONNAIRE

For consideration of an abstract submitted for the Information Systems Technology Panel

IST-178 Inter-Panel / Inter-Group Workshop

Big Data Challenges: Situation Awareness and Decision Support

Budapest, Hungary, 15 – 16 October 2019

Please attach a copy of this Questionnaire to each copy of Abstract

On each Abstract, authors should be listed in the order they will appear on the programme. Unless specified otherwise, the first listed author will be presumed to be the **LEAD AUTHOR** having the major responsibility regarding the content of the paper).

(Please use the Word version of this document attached to this pdf file)

PART I

TITLE OF ABSTRACT / DEMONSTRATION:

STO Panel or NMSG / RTG / ET:

What is the nature of the work?

- Basic research
- Applied research
- Concept studies & analysis
- Experimentation
- System development
- System trials
- Simulation or modelling
- Applications / requirements

WORKSHOP Topic Areas: (please click 1 or several boxes as appropriate)

- Applied vehicle technology
- Artificial Intelligence
- Cyber defence and security
- Challenges in Big Data exploration/exploitation
- Decision Support
- Evaluation frameworks, measures and metrics
- Genomics
- Human Factors
- Human cognition and perception
- Medicine
- Information warfare
- Mission planning
- Modelling and simulation
- Sensors and electronic technology
- Situation awareness
- System analysis and studies
- Systems concepts and integration
- Visual Analytics
- Visualization
- Other

Topics of interest for discussion:

1)

2)

3)