

# THE AVT PANEL

## Applied Vehicle Technology Newsletter

### **Dear AVT Community,**

Welcome back! Hopefully you were able to take some time to connect with family and friends over the summer and enjoy some relaxation time.

In a little over a month, AVT will conduct its 52<sup>nd</sup> PBM Week in the lovely seaside town of Båstad, Sweden. There is still time to register for the PBM and the associated symposium and specialists' meeting as the enrollment deadline has been extended to Friday 8<sup>th</sup> September. You will find more information about the upcoming PBM in the following pages of this newsletter as well as a list of the proposed TAPs.

Ezgi has officially transitioned back over to her duties in the CSO Operations & Coordination Front Office. She may periodically assist the AVT Executive Office, but you should now address any request for assistance directly to me, Isavela, and/or Edna. I know many of you will echo my sincere appreciation to Ezgi for her dedication and commitment to the AVT Panel this past year. She will be accompanying us to the AVT PBM next month to provide additional support so you will get a chance to thank you her in person and meet our amazing new AVT Assistants.

As this will likely be our last newsletter before the PBM, we bid those of you who will be joining us in Båstad safe travels.

Ses snart 🇸🇪 (see you soon in Swedish)!

Best regards,

Erin

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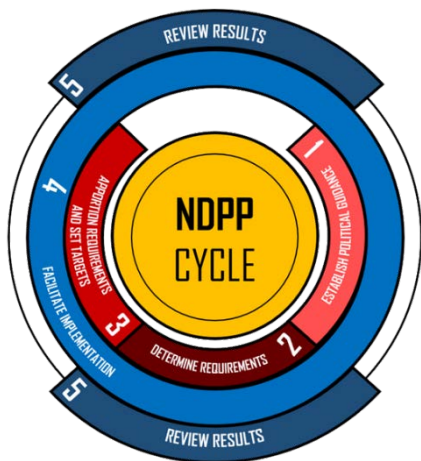
### Panel Chairs' Corner

Dr Tom Thorvaldsen & Mr Christoph Müller

We hope all of you have had a pleasant and relaxing summer holiday, and have had the opportunity to visit and spend time with family and friends. Moreover, that you have “recharged your batteries” and are ready for a new and exciting fall semester.

During the summer holiday period teams have been working, preparing for the Fall AVT Panel Business Meeting (PBM). The Internal AVT Evaluation Working group, led by the Strategic Committee (StC) Chairs Tony Washburn and Wim de Klerk, has had several meetings and have made some progress. In particular, the group has had a “deeper dive” into the AVT taxonomy to better define what topics/areas should be covered by AVT. That will make it easier to conclude on the relevant number of (Level 3 and 4) Technical Committees (TCs) within AVT, how to prioritise future activities, and, in general, how we organise our work. This process will hopefully make us even better prepared for future challenges, so that we, i.e. STO, continue being the leading S&T provider and adviser to NATO. The internal evaluation group will continue their discussions, and will provide a status update and suggestions for the way ahead during the Fall PBM in Båstad, Sweden.

During the summer period, the Chairs/Executive Office attended the kick-off brief for the involvement and contribution of the Panels and the Group to the Longer Term Aspects (LTAs) process. The LTAs process is part of the NATO Defence Planning Process (NDPP), which is a quite complex process that involves different units and entities in the different steps. The STO involvement and contribution to the LTAs part is organised and coordinated by the Allied Command Transformation (ACT), allowing the scientific community to influence future prioritization in S&T. The AVT community was briefed by the Panel Chair on 11th August 2023 on AVT involvement and contributions. Out of the 32 defined LTAs, 19 LTAs are considered to be the most relevant LTAs for AVT. The AVT community (on different levels) is already and will later be asked to provide comments and input as part of our internal LTAs process. The final feedback from AVT will be presented and discussed during the AVT PBM week, and then submitted to CSO mid-October. CSO will thereafter compile inputs from all Panels and the Group and submit the STO feedback to ACT.



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## Panel Chairs' Corner (continued)

We are also very pleased with the relatively large number of new TAPs that have been submitted for the Fall PBM. In total, 18 TAPs and two support project proposals were submitted. Out of the 18 AVT TAPs, seven are potential cross-Panel TAPs. All the AVT TAPs, including also the proposed cross-Panel TAPs from the other Panels and Group, will be evaluated by the TCs and StC during the Fall AVT PBM week.

In mid-September, the AVT Panel Chair and Executive Officer will attend the Science and Technology Board (STB) meeting in Helsinki, Finland. This will give us the opportunity to interact with the STB/Level 1 representatives from the Nations, as well as discuss future challenges and priorities for STO and NATO. We expect that STB will task the Panels and the Group. More information will be provided during the Fall AVT PBM.

We also take this opportunity to remind you all about the deadline for nominating candidates to the different AVT awards. **All nominations should be submitted to the Awards Committee Chairs at the latest 4 weeks prior to the AVT PBM, which means by Friday 8th September 2023.** Templates are available on Science Connect, or can be provided by the Executive Office. Please use this opportunity

At the time of writing, we are only a few weeks away from the AVT PBM in Båstad. **The deadline for enrolling and registering has been extended to Friday 8th September.** This time **over 550 people have registered**, including Symposium and Specialists' Meeting participants. We know that our Swedish host, coordinated by Dr Kristian Petterson, is well prepared and ready to welcome us all to the beautiful west coast of Sweden. In the next weeks, we assume that many of you are busy with preparations and making the final travel arrangements.

We are really looking forward to see you all in Båstad, Sweden, for the 52nd AVT PBM Week!

Best regards,

Tom and Christoph



# Updates from the Executive Office

## 52<sup>nd</sup> AVT Panel Business Meeting

AVT will conduct its 52<sup>nd</sup> Panel Business Meeting Week in Båstad, Sweden from 09-13 October 2023. Along with the meetings of the AVT Panel itself, seven AVT committees will meet as well as over 55 AVT technical and exploratory teams. In addition, the AVT-369 Research Symposium and the AVT-373 Research Specialists' Meeting will take place in conjunction with the PBM. Given the registration numbers, we are expecting in total over 550 people to join us in Båstad, Sweden. The host nation team has done everything they can to make it an exciting and valuable week for all participants. Shortly, we **will be sending final updates to all registered participants**, making sure that you are equipped with what you need to enjoy and get the most out of your mission.

### Last Call for Registration:

Deadline to register for all 52<sup>nd</sup> AVT PBM events is Friday 8th September.

## Registration Links

### 52<sup>nd</sup> AVT PBM

- Individuals attending a Panel, Committee and/or Technical Team meeting(s) ([link to registration](#))

### AVT-369 Research Symposium (RSY) on Digital Twin Technology Development and Application for Tri-Service Platforms and Systems

- 10 to 12 October 2023 ([link to registration](#)).
- Open to NATO Nations and STO EOPs (Australia, Japan and Sweden)

### AVT-373 Research Specialists' Meeting (RSM) on Emerging Technologies for Proactive Corrosion Maintenance

- 9 to 11 October 2023 ([link to registration](#)).
- Open to NATO Nations and STO EOPs (Australia, Japan and Sweden)

Please note there are still a limited number of AVT-blocked rooms at the NATO rate available at two of three Båstad-area hotels. You will find the **hotel booking website link** in the **General Information Package (GIP)** which will be made available to you on STO Events after validation of your registration by the AVT Executive Office.



# 52<sup>nd</sup> AVT Panel Business Meeting

## New AVT Technical Activity Proposals

For the upcoming 52<sup>nd</sup> PBM, we have currently received **18 new Technical Activity Proposals (TAPs)** and **two Support Project (SP) proposals**. We will shortly be distributing these new TAPs to your national representatives in the AVT Panel to review.

Please find the list of the new AVT TAP topics below:

Reference #	Activity Type	Technical Committee	Proposal Topic	Potential Cross-Panel
P-2023-01	RTG	PSF	Assessment of Experiments and Prediction Methods for Naval Ship Transient Maneuvers in Calm Water and Waves	
P-2023-02	RTG	PSF	QT enhanced design & optimization for military applications	IST-SCI-SAS
P-2023-04	RWS	PPS	Emerging propulsion technologies for NATO ground vehicle platform systems	
P-2023-05	RTG	MSM	Augmented Reality in land operations: Balancing risks and chances in technical and human systems challenges	HFM-NMSG
P-2023-06	RTG	PPS	Active flow control Applied to Air Inlets for High-speed Propulsion Systems	
P-2023-07	RTG	PPS	PFAS In Soil and Water: Mitigation, Remediation and Risk Management for NATO Members	HFM
P-2023-08	RTG	MSM	Enhanced Design Processes of Military Vehicles through Machine Learning Methods	IST-SAS
P-2023-09	RTG	PSF	Collaboration Opportunities for the Aggregated Design of Hypersonic Gliding Vehicles (HGV)	SET-SCI
P-2023-10	CDT	MSM	Flight Test Demonstration of Hybrid Electric Propulsion Technologies on Unmanned Aerial Vehicles	
P-2023-12	ET	PPS	Innovative Solutions for Micro-Propulsion Systems for Small Spacecraft	
P-2023-13	RWS	PSF	System Qualification and Certification by Analysis	
P-2023-14	RTG	MSM	Cooperative Demonstration of Technology: Autonomous Mobility Assessment for Military Ground Systems	
P-2023-15	RWS	MSM	Life cycle analysis of sustainable technology for military platforms	SAS
P-2023-16	ET	PPS	Engine Integration Improvements due to advanced Engine Concepts	
P-2023-17	ET	PSF	Three-dimensional aspects of unsteady flow interactions with rigid wings	
P-2023-18	RTG	MSM	End-2-End NG-NRMM Demonstration with Autonomous Assist Systems	
P-2023-19	RWS	MSM	Machine Learning and Artificial Intelligence for Military Vehicle Design	
P-2023-20	RTG	MSM	Uncrewed Ground Vehicle Survivability & Vulnerability Optimisation	AVT-IST

# Questionnaire on 'Anti-Tamper in Military Systems' from AVT-ET-231

As we have announced in July, AVT-ET-231 is conducting a survey in order to better understand the generic issues and problems that have been experienced by other areas of the STO and wider NATO communities with regard to the development, certification and deployment of security solutions, incorporating Anti-Tamper.

Your answers will be used as part of an ongoing review of the current approaches and issues with Anti-Tamper certification and also help with defining follow-on STO tasks.

Please note that providing personal information is optional and the questionnaire can be answered anonymously.

To access the survey, please follow this [link](#). Your participation will be highly appreciated. Thank you to those of you who have already provided your feedback.

The last day to submit your feedback is **Friday 15 September**.

Please contact AVT-ET-231 co-chairs if you have any questions:

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# Call for Papers for NATO AVT-SET-396 RSM on 'Technological Challenges for Hypersonic Flights'

This Research Specialists' Meeting is NATO Unclassified and is open to NATO nations, Australia, Sweden and Japan. It will be held in **October 2024 in Germany** in conjunction with the 54<sup>th</sup> AVT PBM.

The main objectives of the RSM are to: distribute information; understand issues of hypersonic flight vehicles; provide a realistic appraisal of hypersonic weapons feasibility and capabilities; and help to demystify the potential threat.

Some topics to be covered are: aerothermodynamics and effects; design, structures and materials for hypersonic vehicles; propulsion technologies; platform technologies; system architecture challenges; launch platforms; guidance and control, communication; onboard sensors and issues; and detecting and tracking hypersonic weapons.

**Deadline for receipt of abstracts is 15 November 2023**

You can also find this Call for Papers on our **STO Events website**:

<https://events.sto.nato.int/index.php/upcoming-events/event-list/event/26-cfp/514-avt-set-396-call-for-papers-on-technological-challenges-for-hypersonic-flights>



# STB Recently Approved AVT Activities and Changes/Extensions (1/2)

As we informed you in our last newsletter, all newly proposed Exploratory Teams (ETs) were already approved by the Panel. In August, the NATO Science and Technology Board (STB) also approved the technical activities (RTG, RWS, etc) including changes and extensions.

## New Technical Activity Proposals Approved

Activity Number	Activity Type	Title
AVT-IST-398	RTG	Development of a STANREC for Augmented Reality in Land Platforms

## Changes Approved

Activity Number	Title	Change
AVT-341	Mobility Assessment Methods and Tools for Autonomous Military Ground Systems	Add ROK to the approved countries list
AVT-345	Unified Tactical Missile Kinetic Performance Model	Change of lead nation to NLD - Tim Roos
AVT-362	Water sampling, monitoring and control/remediation for live-fire military ranges	Panel Mentor change from Marc Lauzon(CAN) to Christoph Mueller (DEU)
AVT-374	More Electric Gas Turbine Engines for Aircraft, Rotorcraft and UAVs	Change of activity type from RWS to RSM
AVT-385	Multi-Fidelity Surrogate Methods for Vehicle MDO	Change of Co-Chair from Dr. Phil Beran (USA) to Dr. Matteo Diez(ITA)
AVT-388	Operation of Unmanned Aerial Vehicles (UAVs) in Icing Environments	Add PfP to list of participating partner nations
AVT-391	Advanced Wind Tunnel Boundary Simulations III	Change co-chair from Joseph MORRISON (USA) to Simon PRINCE (GBR)



# STB Recently Approved AVT Activities and Changes/Extensions (2/2)

## Extensions Approved by STB

Activity Number	Title	New End Date
AVT-283	Advances in Wind Tunnel Boundary Corrections and Simulation	Dec-23
AVT-297	Development of a Framework for Validation of Computational Tools	Dec-23
AVT-309	Implication of Synthetic Fuels on Land Systems and on NATO Single Fuel Policy	Dec-23
AVT-311	Availability and Quality Issues with Raw Materials for Rocket Propulsion Systems and Potential Consequences for NATO	Dec-23
AVT-313	Incompressible Laminar-to-Turbulent Flow Transition Study	Dec-23
AVT-317	Trade-Space Exploration to Support the Early Stage Design of Effective and Affordable (Fleets) of Warships	Dec-23
AVT-320	Assessments of Numerical Simulation Methods for Turbulent Cavitating Flows	Dec-23
AVT-329	NexGen Rotorcraft Impact on Military Operations	Dec-23
AVT-332	In-Flight Demonstration of Icephobic Coating and Sea Ice Detection Sensor Technologies	Dec-24
AVT-345	Unified Tactical Missile Kinetic Performance Model	Dec-24
AVT-350	Innovative Control Effectors for Manoeuvring of Air Vehicles – Advanced Concepts	Dec-24
AVT-352	Measurement, Modeling and Prediction of Hypersonic Turbulence	Dec-24
AVT-359	Impact of Hypersonic Operational Threats on Military Operations and Technical High Level Requirements	Jun-24
AVT-377	Introduction to Quantum Computing in Fluid Dynamics	Dec-24



# Upcoming 2024 & 2025 AVT PBMs

Please find below more information regarding our 2024 & 2025 AVT Panel Business Meetings. We only have a firm location and date for the Spring 2024 PBM in Canada. During the Fall 2023 PBM, we should get updated information on the other PBMs which we will include in the next AVT Newsletter.

PBM	Dates	Location
53 <sup>rd</sup> AVT PBM Spring 2024	19-24 May 2024	Ottawa, Canada
54 <sup>th</sup> AVT PBM Fall 2024	TBD October 2024	TBD, Germany
55 <sup>th</sup> AVT PBM Spring 2025	TBD April or May 2025	TBD, USA
56 <sup>th</sup> AVT PBM Fall 2025	TBD Late September or October 2025	TBD, Latvia



### New Publications

STO Publications July to September 2023

<a href="#">STO-MP-AVT-372</a>	Military Value of Graphene Technologies
<a href="#">STO-TR-HFM-311</a>	PRE-RELEASE: Neuroenhancement in Military Personnel: Conceptual and Methodological Promises and Challenges
<a href="#">STO-TR-IST-168</a>	Adaptive Information Processing and Distribution to Support Command and Control
<a href="#">STO-TR-SAS-158</a>	PRE-RELEASE: Framework for Optimised Employment of NATO Federated Sensors in Joint Settings
<a href="#">STO-TR-HFM-283</a>	Reducing Musculo-Skeletal Injuries



### Contact Us!

For content suggestions, contributions,  
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