



IEEE Aerospace Electronic Systems VP Technical Operations

Roberto Sabatini

AESS Board of Governors Meeting – Fall 2025

10-11 October 2025

Krakow, Poland

1. Report and Discussion on Key TecOps Objectives:
 - ❖ **Objective 1** – TechOps Progress and Ongoing Activities
 - ❖ **Objective 2** – TP Operational Standardization and Funded Activities
 - ❖ **Objective 3** – Technology Foresight and Strategic Engagement Developments
2. Report on current TechOps action items: AI 1271, AI 1270, AI 1245, AI 1244, AI 1242, AI 1235, AI 1234, and AI 1231.
3. Briefly report on TP activities (full presentations in Supporting Documents)

TecOps Committee: <https://ieee-aess.org/tech-ops/technical-operations-committee>

- Initial RFP developed by the Cybersecurity Panel and shared with TechOps and other BoG members (draft provided in Spring 2025 BoG minutes)
- Feedback was generally positive, but the TechOps required a more collegial approach with the involvement of additional panels, especially the Glue Tech and Avionics Systems Panel
- The Cybersecurity Panel collaborated very effectively with the Glue Tech and the Avionics Systems Panel and finalized a draft, submitted to the President in July 2025 (deadline was August 2025).
- The proposal was further refined in collaboration with other BoG members, and the challenge was formally published (deadline for proposals: Sept 10, 2025): <https://ieee-aess.org/post/announcement/call-proposals-ieee-aess-challenge-problem-ii-advancing-cybersecurity-physical>
- Nine proposals were received and one was selected: ***“Federated AI for Resilient Avionics and Drone Operations”*** by Intelligent Fusion Technology.

A big “thank you” to the team for the excellent collaboration and timely delivery!

- The **Integrated Sensing and Communications** (ISAC) Technical Working Group was formally established in 2025: <https://ieee-aess.org/technical-committee/integrated-sensing-and-communications-technical-working-group>. This TWG is led by Kumar Mishra, University of Maryland, USA.
- A proposal to establish a new Technical Working Group (TWG) on **Low-Altitude Wireless Networks** (LAWN) was developed during 2025. The complete proposal is provided in the BoG Supporting Documents. Proposal Chair: Weijie Yuan, Southern University of Science and Technology, China.
- A request was received to activate a new Technical Panel on Aerospace Metrology (Lorenzo Lo Monte and Pasquale Da Ponte). Given the importance of this field and the opportunities for growth, it might be worthwhile to pursue this initiative.
- However, the best approach would be to start establishing a TWG, which will serve as a foundational structure to engage relevant stakeholders and organize efforts. This will also help us evaluate the feasibility and long-term sustainability of creating a dedicated Technical Panel.

The LAWN TWG proposal is technically sound. Approval is sought from the BoG to proceed.

- Although the Technical Panels have diverse focus areas and collectively encompass a vast and varied domain, ongoing TechOps initiatives aim to standardize their operations as much as possible in accordance with relevant IEEE/AESS policies and procedures (goal included in SCRC Review Draft)
- Procedures for TP member selection and retention are currently being defined across all TPs. Further discussion is required.
- These efforts also seek to leverage lessons learned from recent activities. To facilitate this transition, a guide document titled '**AESS Technical Panel Policies, Procedures, and Best Practices**' is being developed
- Plenary TechOps meetings are to be held at least once a year, and a TechOps Summit will be held once a year (during the Fall BoG). TP Chairs are invited to attend the Summit in person, and AESS financially supports their attendance (reimbursed via Concur). All other TP members are invited to join the online meeting.
- **First TechOps Summit is scheduled on Saturday, October 11, immediately after the Fall 2025 BoG Meeting.**

Technical Panels proposals for funded activities in 2025:

- Avionics Systems Panel (ASP) – Student Challenge: “Avionics for Autonomy and Autonomy for Sustainability” (USD 8,000).  Special Initiatives
- Cyber Security Panel (CSP) – Workshop: “Leveraging Post Quantum Cryptography on Embedded Devices” (2,500 USD).  Special Initiatives
- Glue Technologies for Space Systems (GTSSP) – Inter-Panel Summer School: “Frontier Technologies for Space 2.0 Communications” (USD 4,000).  Special Initiatives
- Radar Systems Panel (RSP) – Summer School on Synthetic Aperture Imaging for Radar, Sonar, and Optics as the pre-conference satellite workshop to ICASSP 2025 (1-3 April 2025) “Crossroads of Machine Learning and Signal Processing” (3,000 USD).  Special Initiatives
- RSP – Rental of 20 power strips at the Radar Boot Camp (RBC) at the 2025 IEEE International Radar Conference in Atlanta, GA, USA (1,200 USD).  Normal Operations

The RSP initially expressed an interest in submitting an out-of-round proposal for a special initiative to support the Startup Corner at the RadarConf'25 in Krakow (Poland) from 4-9 October 2025. However, this was no longer pursued by the RSP. Although the BoG approved further proposals in Q3 and Q4 2025, none were submitted by the TPs. However, the ASP requested an extension of the current funding to 2026. Approval is sought from the BoG to proceed.

- Out of the four proposals submitted by the Technical Panels, three were funded

Requested Funds:

ASP	CSP	GTSSP	RSP*	
8,000	2,500	4,000	3,000	1,200

Special Initiatives

Normal Operations

Votes Recorded:

	ASP	CSP	GAP	GTSSP	NSP	RSP*	
V.M. 1	Y (8k)	Y (2.5k)	No Proposal Submitted	Y (4k)	No Proposal Submitted	Y (3k)	Y (1.2k)
V.M. 2	N/A	N/A		N/A		N/A	N/A
V.M. 3	Y (8k)	Y (2.5k)		Y (4k)		N	Y (4k)
V.M. 4	Y (8k)	Y (2.5k)		Y (4k)		Y (3k)	Y (1.2k)
V.M. 5	Y (8k)	Y (2.5k)		Y (4k)		N/A	N/A
V.M. 6	Y (8k)	Y (2.5k)		Y (4k)		Y (3k)	N (1.2k)

* Not sufficient time to execute.

NOTE (AESS Admin Team): Any expenses paid by the volunteer must be reimbursed via Concur. If any contracting is needed, the Panel Chairs will need to facilitate directly with the IEEE Contracting team via Parley Pro and their payment process. Under our current SOW, we are unable to support panel activity or financial reimbursements on their behalf.

Delphi Survey for IEEE AESS Technical Panels*

- **Objective:** Collect expert insights from IEEE AESS TPs to guide TechOps strategy, focusing on Digital Transformation (CPS), Trusted Autonomy, and Sustainable Development Goals (supertopic evolutions).
- **Methodology:** Three-round Delphi process → 1. Open-ended responses; 2. Rating/prioritization; 3. Consensus building.
- **Key Focus Areas:** Challenges and opportunities, impactful technologies, future trends, collaboration strategies, and workforce development.
- **Expected Outcomes:** Identify industry challenges, opportunities, and recommendations to inform strategic frameworks and roadmaps.
- **Survey Details:** Participants → IEEE AESS TP members (industry, government, and academia); Format → Online; Output → Actionable insights for AESS strategy.

The survey has been available for a few months, and 20 responses have been recorded so far for Stage 1. The survey ideally requires a baseline of 50 responses before proceeding to the next stage. TechOps is eliciting responses from qualified experts, targeting completion of Stage 1 before the end of 2025.

*A detailed description of the Delphi survey is provided in the [Supporting Documents](#).

AESS Participation at IEEE Sustainable Technology Summit

- Several coordination meetings held throughout 2025 with the Summit Executive Committee, including the IEEE VP for Technical Activities (Fred Shindler) and the Technical Program Chairs
- AESS was a **Gold Sponsor** with a negotiated cost of only \$4,500 (versus the originally requested \$12,000).



Contribute to a new IEEE event

AESS Meeting
11 March 2025
<https://techsummit.ieee.org/cleantech-2025/>



What is it?

 **2-3 October 2025**
Glasgow Scotland

 **IEEE Technology Summit**

- A new collaborative annual series
- Technical focus varies year to year
- TA sponsored, engaging IEEE and beyond
- TechSummit 2025 - CleanTech Solutions

 **Event characteristics**

- Produced event
- Not a scholarly event, no CfP
- Invite best of the best content for across IEEE and beyond

 **Preliminary team**

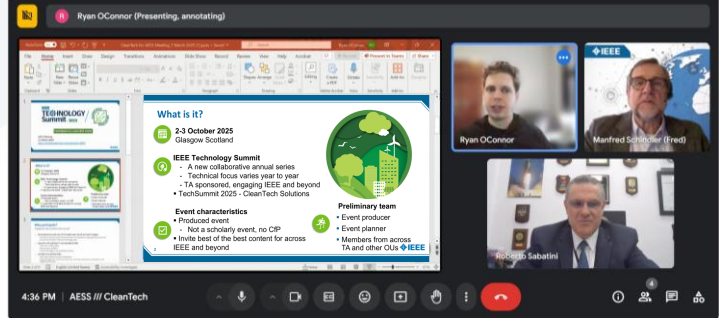
- Event producer
- Event planner
- Members from across TA and other OUs 



Why participate?

Engagement for Societies and Councils

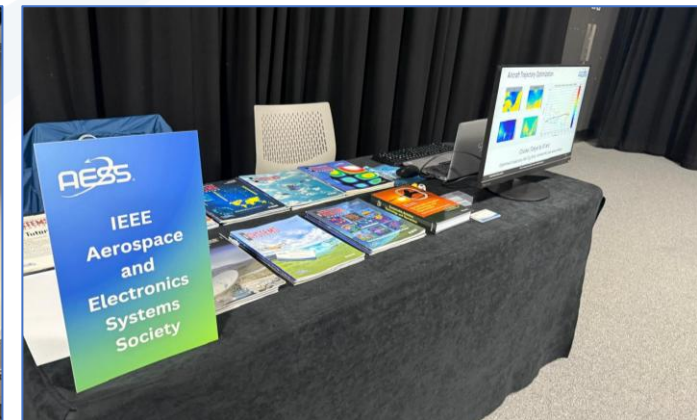
- Comprehensive overview of the latest new trends and technologies
 - Contribute and share your technical society's contributions as they pertain to clean tech
 - Increase your impact in this key technology space
- Network with partners in and outside of IEEE
 - Other OU's (TAB & MGA)
 - Government and NGOs
 - Clean Technology and Sustainability industry
- Develop new partnerships
 - IEEE wide and beyond; diverse attendance
 - Inform/broaden the reach of your S/C, your technical communities, publications, and flagship conferences



4:36 PM | AESS // CleanTech

AESS Participation at IEEE Sustainable Technology Summit

- AESS VP TecOps delivered a keynote entitled *“Intelligent and Autonomous Systems for Sustainable Aviation and Commercial Spaceflight.”*
- Panel discussion co-chaired by the VP TechOps and the Chair of the AeroConf (R. Sabatini and K. Cook): *“Flight Reimagined: Pioneering Intelligence and Autonomy for a Sustainable Sky.”*
- **AESS dedicated table** with several “Systems” magazines, POCs/links, student project displays (Sustainable Aviation Technology and Advanced Air Mobility), live demo on a large PC screen on Multi-Objective Trajectory Optimization, etc.



AESS Participation at IEEE Sustainable Technology Summit



Lovely Scottish weather, and the venue had just a vague resemblance to Sydney's Opera House...

AI 1231 - Roberto Sabatini to send Sabrina the final proposals and timeline for the Technical Panel Challenge Proposals by August 1.

Action Closed. The CSP developed the first draft of the RFP for the Cybersecurity Challenge in collaboration with the ASP and GTSSP. The draft was shared with Sabrina in July 2025. The proposal was further refined in collaboration with other BoG members and formally issued. Nine proposals were received and one was selected: “Federated AI for Resilient Avionics and Drone Operations by Intelligent Fusion Technology.”

AI 1234 - Roberto Sabatini to solicit the Technical Panels for the membership data on the type of affiliation (Industry, Academia, Government, Other, Unknown).

Action Closed. The Technical Panel Chairs have been formally asked to provide the relevant data to the AESS Admin Team. This action was closed during the TechOps semi-annual plenary meeting, held on July 8, 2025.

AI 1235 - Roberto Sabatini to work with the panels to update the Technical Panel charters to define term limits and participation requirements to remain on the panels.

Action In Progress. The Technical Panel Chairs have provided information regarding the current procedures for participation and membership term limits. A standardized procedure has been recommended for selecting TP members. The procedure for retention is currently being defined.

AI 1242 - Roberto Sabatini to partner with Julia Briggs to update the Delphi survey to be distributed to all AESS members by December 2025.

Action In Progress. 21 answers recorded so far (13 in Spring 2025). Direct emails have been sent to AESS TP members. Further emails to be sent before the end of 2025.

Link: [Delphi Survey for IEEE AESS Technical Operations Experts](#)

AI 1244 - Roberto Sabatini to submit the Conference Activity Funding Request form for the IEEE Sustainable Technology Summit sponsorship by July 2025.

AI 1245 - Roberto Sabatini to request AESS promotional items to distribute at the IEEE Sustainable Technology Summit by September 1, 2025.

Actions Closed. The IEEE Technology Summit (CleanTech) was attended by Roberto Sabatini and Kendra Cook (AeroConf Chair).

AI 1271 - Roberto Sabatini to solicit additional Technical Panel proposals to be considered and funded before 31 December 2025.

AI 1270 - Roberto Sabatini to encourage technical panel chairs to establish committees to develop standards by 31 December 2025.

Actions Closed. These two actions were closed during the TechOps semi-annual plenary meeting, held on July 8, 2025.

Reports from the Technical Panels

(Summary Reports Only*)

*The full-length reports from the Technical Panel Chairs are provided in the Supporting Documents.



Avionics Systems

Technical Operations Panel Report

Giancarmine Fasano
Chair, Avionics Systems Panel

AESS Board of Governors Meeting – Fall 2025
10-11 October 2025
Krakow, USA

1. Research and Innovation:

1. Advanced CNS/ATM systems and AI-based decision support systems
2. Integration of UAS in airspace, development of new aviation ecosystems (AAM), Air and Space Traffic Management
3. New Student Challenge idea developed in the framework of AESS TP Funding Initiative – to be finalized in 2026
4. Collaboration with Glue Tech and Cyber-Security Panel for AESS Challenge

2. Conferences and Publications:

1. Significant contribution given to the IEEE/AIAA Digital Avionics Systems Conference 2025
 - ASP members roles: DASC Organizing Committee, Student Competition Chair, Track Chair, Session Chair, Tutorial Instructor, Reviewer



2. Conferences and Publications (cont.):

2. Contributed to IEEE/AIAA ICNS 2025, IEEE/AIAA/PHM AeroConf 2025, ICCST 2025
 - ASP Members roles: Organizing Committee, Student Awards Chair, Session Chair
3. Actively engaged in editorial activities for IEEE AESS publications
 - ASP Members roles: TAES Senior Editor and Associate Editor, AESM Associate Editor
4. Work in progress on new IEEE Series book

Table of Contents

- Chapter 1: Global Perspective in Avionics and Astrionics Systems Research
- Chapter 2: CNS/ATM for future ATM
- Chapter 3: Advances in PNT
- Chapter 4: Communications and Data Networks
- Chapter 5: UTM and AAM
- Chapter 6: Surveillance Sensors and Systems
- Chapter 7: Space Avionics
- Chapter 8: Cybersecurity
- Chapter 9: Interactive HMI
- Chapter 10: Certification Challenges
- Chapter 11: Education and Training Evolutions
- Chapter 12: Future of Avionics



The International Carnahan Conference on Security Technology



3. Education Activities:

1. Delivered public AESS tutorial on “Advances in Digital Avionics for Sustainable Aviation and Spaceflight Operations”
2. Continued to deliver virtual and live Distinguished Lectures on digital avionics and space systems
3. Planned Avionics Systems Winter School

4. Industry Engagement and Standards:

1. Engaged in the development of new methodologies and standards for AI/ML certification in avionics systems
2. On-going Interactions with JARUS Automation WG On-going interactions with ICAO and other international WGs on environmental sustainability
3. Planned Standards Committee exploiting proper expertise in the panel

5. Awards and Nominations:

1. Recruitment of new members following AESS guidelines
2. Planned Support for AESS awards





Cyber Security Panel Technical Operations Panel Report

Victor Murray, CISSP

Chair, Cyber Security Panel

AESS Board of Governors Meeting – Fall 2025

10-11 October 2025

Krakow, Poland

- AWARDED - Request for challenge problems: AI in Cyber Security
 - In collaboration with Avionics Systems and Glue Technologies for Space Systems
 - Awarded Proposal: Federated AI for Resilient Avionics and Drone Operations by Intelligent Fusion Technology
 - 9 proposals received.
- AESS Workshop at ICCST on Post-Quantum Cryptography
- Hosting Technical Presentations
- Risk Assessment Magazine Article

Federated AI for Resilient Avionics and Drone Operations

Abstract

The rapid integration of digital avionics and autonomous drone operations into modern aerospace systems has significantly expanded the cyber-attack surface, exposing critical functions such as GPS navigation, Automatic Dependent Surveillance – Broadcast (ADS-B) communications, and control links to spoofing, jamming, injection, and adversarial manipulation. Current anomaly detection models deployed in aircraft and drones operate in isolation and cannot adapt quickly to novel or distributed threats. To address this gap, we propose Drone Resilience Integrated Flight Test (DRIFT) for Federated AI for Resilient and Reliable Operating Avionics Drones (FAIR-ROAD) Operations as the IEEE AESS cybersecurity challenge problem. The objective is to develop a simulation-based testbed where multiple aircraft and drones collaboratively train anomaly detection models using federated learning (FL). By sharing model updates rather than raw data, participants can collectively learn from diverse cyber observations while preserving privacy and operational constraints. The central challenge is to ensure that the federated global model remains resilient against poisoning attacks, constrained bandwidth and compute resources, and dynamic mission conditions. The testbed will include attack scenarios (e.g., GPS spoofing, ADS-B injection, model poisoning) and provide well-defined performance metrics (detection accuracy, robustness, latency, and mission continuity) to evaluate competing solutions. The deliverables include a software environment, documented evaluation framework, and baseline AI models, to enable the research community further to enhance AI/ML-based defenses for aerospace systems. By fostering multiple solution approaches, it will drive progress toward scalable, distributed, and resilient cyber defense in aviation and drone operations.

Conference Contributions

- Digital Avionics Systems Conference (DASC)
 - Best Paper Award: Model-Based Avionics Cybersecurity Framework for Identification of Risk and Evaluation
 - Panel Discussion on AI/ML in Cybersecurity
 - Paper and Presentation Submission on Zero Trust Architecture for Avionics
 - Paper and Presentation on Contemporary Directions in Cybersecurity Avionics Risk Analysis
- Integrated Communications, Navigation, and Surveillance (ICNS)
 - Paper and Presentation
- International Carnahan Conference on Security Technology (ICCST)
 - Post Quantum Cryptography Workshop
 - Panel Discussion on AI/ML in Cybersecurity
 - Identifying Keynote Speakers



Gyro and Accelerometer Panel Technical Operations Panel Report

Jason Bingham

Chair, IEEE/AESS Gyro and Accelerometer Panel

AESS Board of Governors Meeting – Fall 2025

October 2025

Krakow, Poland

The Gyro and Accelerometer Panel (GAP) is composed of representatives of industry, government laboratories, educational institutions and professional societies, and who are active in the domain of inertial sensors and systems. Its main objectives are:

- Create and maintain terminology, specification format, and test procedure standards for components and systems designed to detect or measure inertial motion.
- Promote understanding of inertial components and systems.
- Establish accepted ways to describe inertial technologies and products.
- Create a common language that can be used by the inertial industry.

The GAP currently has two working groups:

1. IEEE Std 836 Working Group

- **Purpose:** Revision of IEEE Std 836 to align with current industry technologies and practices.

2. IEEE Std 1431 Working Group

- **Purpose:** Revision of IEEE Std 1431 to align with current industry technologies and practices.

The GAP held bimonthly meetings to address the following standards:

- **IEEE Std 836** *Recommended Practice for Precision Centrifuge Testing of Linear Accelerometers*
- **IEEE Std 1431** *IEEE Standard for Specifying and Testing Coriolis Vibratory Gyros*

The GAP also received questions regarding IEEE Std 952 Annex C. Discussions with the author of the questions led to a draft of a corrigenda for IEEE Std 952, created with the help of the original Annex C author. The GAP will consider publishing the corrigenda after the revisions for the current in-work standards are complete and will determine if the corrigenda also applies to IEEE Std 647.



Glue Technologies for Space Systems

Summary of 2025 panel activities

Claudio Sacchi

*Chair, Glue Technologies for Space Systems
Technical Panel*

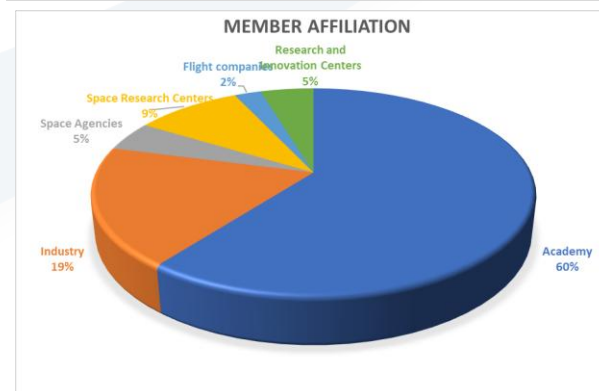
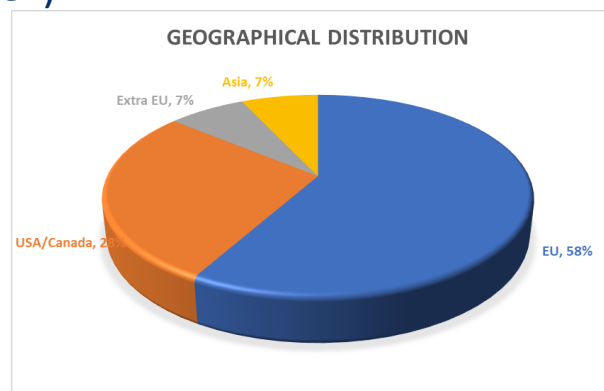
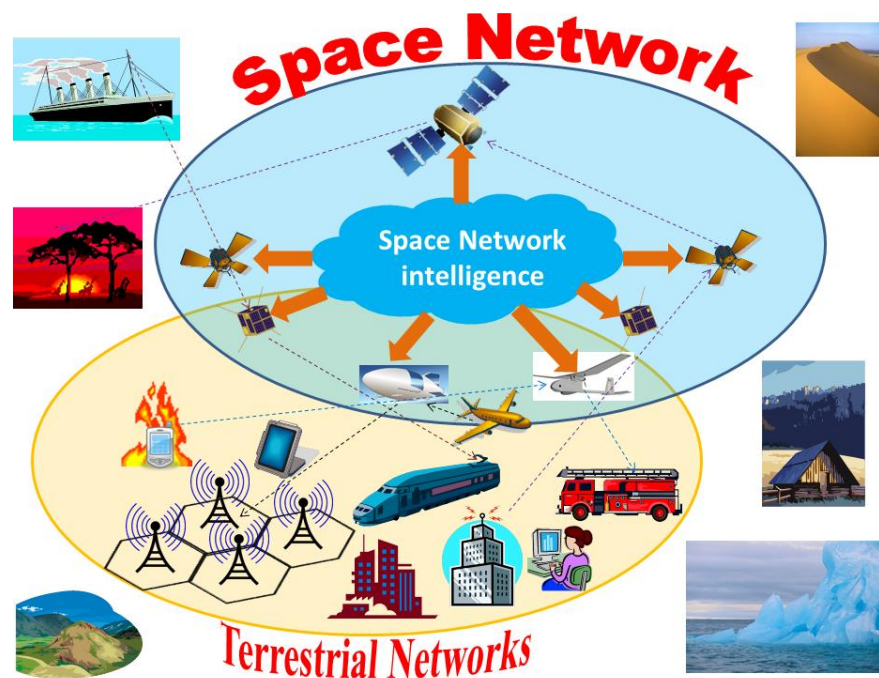
AESS Board of Governors Meeting – Fall 2025

10-11 October 2025

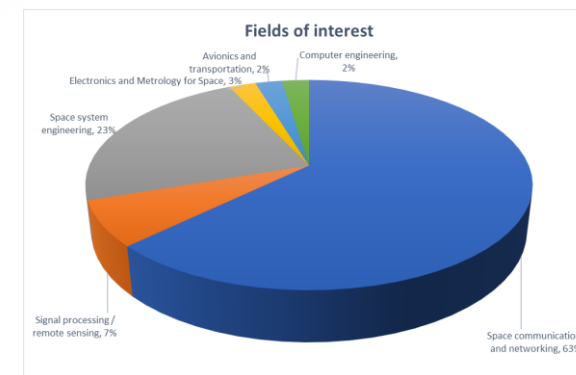
Krakow, Poland

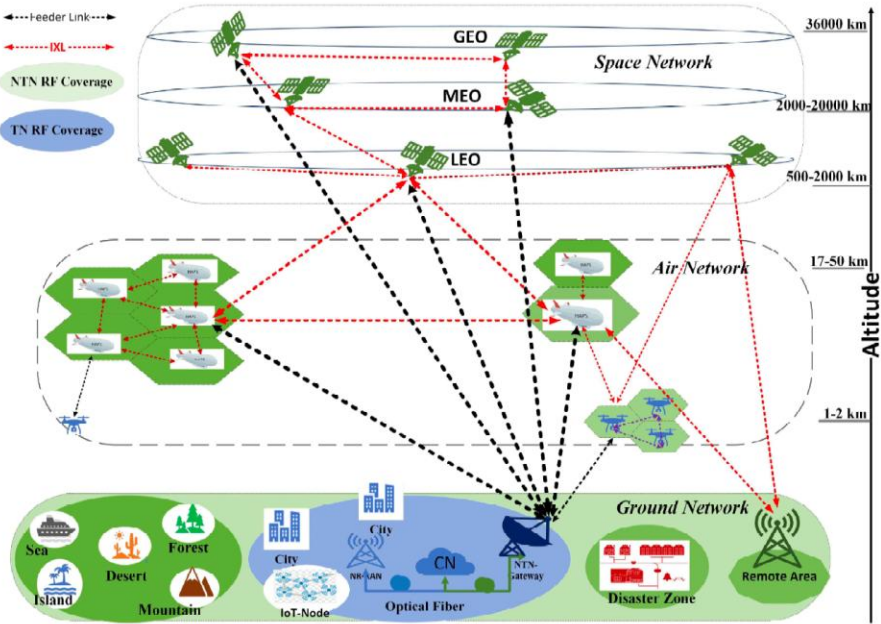
The Glue-Tech panel in a nutshell

- The mission of the “Glue-Tech” panel, funded in 2019, is to strengthen the cooperation of Academy, Industry, Research Institutions and Space agencies in innovating the vision of Space technology.
- Space technology is regarded as the “glue” that seamlessly interconnects the ICT World in an integrated ecosystem, built around the concrete user needs. Nowadays, the “Glue-Tech” panel vision is one of the constitutive pillars of 6G.
- In the figures below, the “vision” is pictorially described. The key role in realizing the vision is played by the extensive software-defined implementation of Space network layers and by the adaptive and intelligent network management (AKA: “Space network intelligence”):

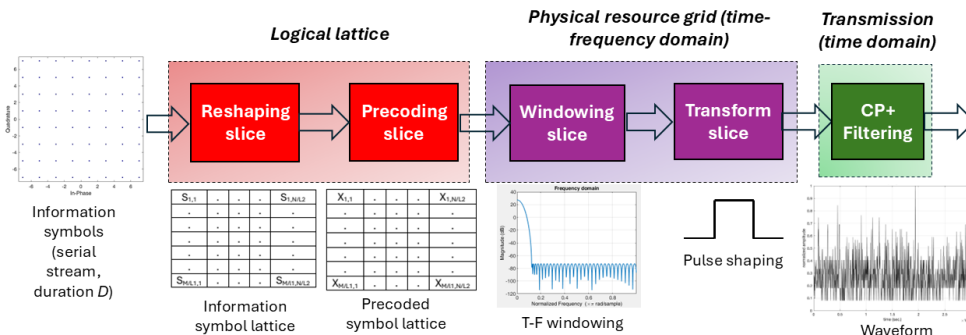


PANEL MEMBERSHIP STATUS:
43 members distributed as in the pie diagrams:





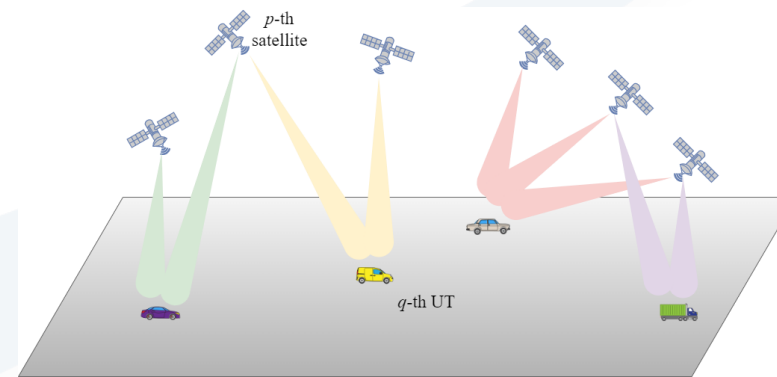
Design of new Non-Terrestrial Network architectures based on 6G (and beyond) concepts.



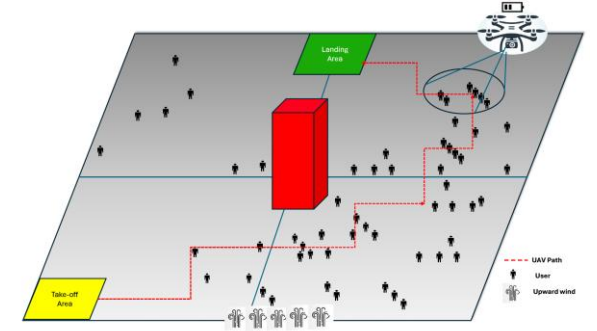
SDR-based waveform design



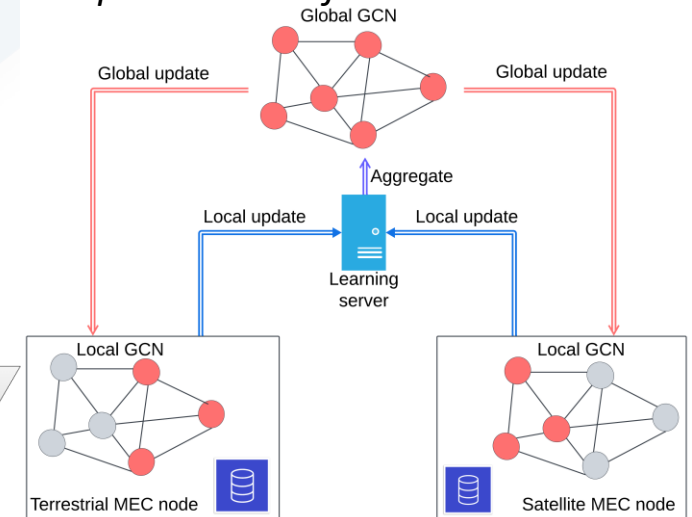
Poc demonstration at CNR premises of Rivalta, Turin



Cell-free satellite-based Massive MIMO architectures



AI-based cloud-RAN monitoring and optimization of aerial networks





Special session 4.03: “Next Generation Space Systems – AESS Glue” at IEEE Aerospace Conference 2025 (Big Sky, MT, March 2025)

Special track “CONNECT” organized at IEEE MetroAeroSpace 2025 Workshop (Naples, Italy, June 2025)



5th Edition of the Summer School: “Frontier Technologies for Space 2.0 Communications” (in presence and online)



Navigation Systems Panel Report

Zak Kassas
Chair, Navigation Systems Panel

Submitted to:
Roberto Sabatini
VP, Technical Operations
October 2025

The Panel shall address navigation systems for aircraft, spacecraft, ground and marine vehicles and pedestrians as well as history of navigation systems and navigation education.

Objectives

The objectives of this Panel are:

1. Work with the Institute of Navigation (ION) and the PLANS Executive Committee to select and support volunteers for PLANS (e.g., track chairs, session chairs, etc.).
2. Maintain a repository of past conference Budgets, Final Reports, Best Practices and lessons learned.
3. Promote the submission of navigation manuscripts to the IEEE Transactions on Aerospace and Electronic Systems and the AEES Magazine.
4. Facilitate NSP nominations/endorsements for Senior Member and Fellow Grade.
5. Develop, as needed, new conferences related to the NSP's areas of interest.

Panel Meetings

- Virtual meetings in April 2025, June 2025, August 2025
- In-person meeting in September 2025 at ION GNSS+ Conference, Baltimore, MD and April 2025 at IEEE/ION PLANS, Salt Lake City, Utah

Distinguished Lectures (DL)

- Panel Chair Zak Kassas is scheduled to deliver in December 2025 a virtual AESS DL
- Panel Chair Zak Kassas delivered several in-person DLs on topics related to the panel's scope (navigation systems): Cornell University, University of Rome Tor Vergata, University of Padova, and AESS Tunisia Chapter (virtual)

Membership

Membership in the Panel remained the same. The Panel is considering the solicitation of additional members to promote diversity among professional affiliation (specifically industry and government) and geographic diversity (specifically Asia, South America, Africa).

Inter-Panel Activities

Panel Chair Zak Kassas delivered a lecture at the Fifth Glue Technologies for Space Systems Technical Panel Ph.D. Summer School, September 2025, Italian Space Agency, Rome, Italy, titled “A Look at the Stars: LEO PNT with Non-cooperative Satellites”

Conference Activities

- The NSP was heavily engaged with the organization of IEEE/ION PLANS 2025
 - Two of the four Track Chairs are NSP Members: Zak Kassas and Thomas Pany
 - Three of the four Tutorials were delivered by NSP members
 - The NSP worked with NSP-nominated PLANS Program Chair on several new initiatives
 - To maintain AESS' influence on future PLANS, the NSP Chair, Zak Kassas, recommended to ION that IEEE/ION PLANS 2027 be Chaired by NSP Vice Chair, Fabio Dosis. This was approved by the ION Council.
- The NSP took concrete steps towards the organization of a new AESS-sponsored conference: "IEEE Navigation Conference" to take place during IEEE/ION PLANS "off-years," with the goal to launch the conference in 2026. However, unforeseen scheduling conflicts arose
 - Original Plan: March 2026 co-located with Munich Satellite Navigation Summit
 - Munich Satellite Navigation Summit (2.5 days) became The Munich Space Summit (5 days). Co-location infeasible.
 - Alternative Plan #1: May 2026
 - NAVITEC, an annual conference organized by ESA in mid-December, got rescheduled to May 2026
 - Alternative Plan #2: July 2026
 - Concerns about decreased attendance due to summer vacation season and being too close to other conferences: VTC (June 2026), ICL-GNSS (June 2026), IV (June 2026), ION GNSS+ (September 2026)
 - Alternative Plan #3: October/November 2026
 - ICL-GNSS, an annual conference organized in June, merged with IPIN, rescheduled to October 2026
- New Plan: Launch in April 2028. Make announcements early before other conferences announce dates. Organizing in April becomes consistent with IEEE/ION PLANS being in April of the odd years