

ABOUT THE JNC

The Military Division of the Institute of Navigation will host the 2025 Joint Navigation Conference (JNC 2025) for the Department of Defense and Department of Homeland Security. The theme of this year's conference will be:

Robust, Resilient, Assured PNT for Warfighters and Homeland Security

JNC is the largest U.S. military Positioning, Navigation, and Timing (PNT) conference of the year with joint service and government participation. The event will focus on technical advances in PNT with emphasis on joint development, testing, and support of resilient PNT systems, logistics and integration. From an operational perspective, the conference will focus on advances in military applications of GPS; critical strengths and weaknesses of field navigation devices; warfighter PNT requirements and solutions; and navigation warfare.

SESSION ACCESS/CLEARANCE REQUIREMENTS

Entry validation for JNC 2025 will be screened by the Air Force Research Laboratory (AFRL).

- Technical sessions held at the Northern Kentucky Convention Center on June 2-4 are CUI US-Only.
- The exhibit hall, June 3-4 at the Northern Kentucky Convention Center, will be open to all conference participants, exhibitors, their employees and related organizations. All materials displayed in the exhibit hall shall be Publicly Releasable After Review.
- The classified session, held June 5 at the Air Force Institute of Technology (AFIT), will be presented at the US-Only Secret level.

TECHNICAL PROGRAM COMMITTEE

Military Division Chair: Dr. Keith McDonald, The MITRE Corporation

Military Division Vice Chair: Dr. J.P. Laine, Draper

Immediate Past Chair: Dr. Thomas Powell, The Aerospace Corporation

Program Chair: Dr. Madeleine Naudeau, AFRL

Program Vice-Chair: Dr. Jacob Campbell, AFRL Sensors Directorate

Tutorials Chairs: Paul Olson, Army DEVCOM C5ISR and Dr. Greg Reynolds, Army DEVCOM AvMC

Track Chairs:

- John Del Colliano, Army DEVCOM C5ISR
- Misty Finical, OSD A&S
- Brian Louie, SSC/SYD1
- Aaron Nascimento, NAVWARSYSCOM
- Greg Panas, Army DEVCOM AC
- Dr. Thomas Powell, The Aerospace Corporation

Other Members:

- Jan Ansperger, Draper
- Amanda Humphrey, JNWC
- John Langer, The Aerospace Corporation
- Dr. Steven Lewis, The Aerospace Corporation
- Chad Pinkelman, NIWC Pacific
- Dr. Joseph J. Rushanan, The MITRE Corporation
- David Wolfe, USGC C5ISC

JOURNAL PUBLICATION

JNC presenters are encouraged to write Publicly Releasable After Review technical papers based on their JNC presentations to submit for possible publication in the ION's indexed archival journal, *NAVIGATION*. Papers may be submitted online at mc.manuscriptcentral.com/navigation.

CONFERENCE PROCEEDINGS

Submitted presentations that are approved for public release (Distribution A) and/or CUI distribution will be released to U.S. citizens who were approved to attend the conference by the AFRL in an electronic CUI proceedings 2-4 weeks following the conference.

EXHIBITS

More than 70 companies exhibit annually at JNC, showcasing their products and services. This forum also provides valuable networking opportunities. For more information, visit the Exhibitor Resource Center at ion.org/jnc or email Megan Andrews at mandrews@ion.org.

ABSTRACT SUBMISSION REQUIREMENTS

All abstracts must be written for public release with intent to present in a Controlled Unclassified Information (CUI) US-Only environment. Abstracts not approved for public release will not be accepted. Note that you must be a citizen of the USA to submit an abstract for CUI US-Only sessions (June 2-4).

To submit an abstract, sign into the ION Abstract Management Portal (AMP) at ion.org/abstracts. If you have not used AMP before, click "Create My Account." Once signed in, click on "JNC," and complete the form by February 3, 2025.

Acceptance to the JNC conference is competitive; the following are REQUIRED:

1. An abstract describing objectives, anticipated or actual results, conclusions, key innovative steps, and the significance of your work. Abstracts not meeting the 300-word minimum will not be forwarded to the program committee for review.
2. Abstract must be public release. Start the approval of your abstract early as this can often take several weeks. Abstracts are due by February 3, 2025. **Late abstracts will not be accepted.**
3. Optional: Presenters will be given an option to include a CUI abstract, in addition to the required public release abstract, for review by program committee/conference organizers that have been pre-cleared by the security office. To this end, the author may include technical information that is protected under DoD tech-protect guidelines and CUI restrictions. Note that the submission of a CUI abstract, without a sufficiently descriptive public release abstract, will NOT be considered. All CUI materials will be deleted once the program is finalized.

PRESENTATION REQUIREMENTS

1. Sessions will consist of presentations. Unless otherwise noted, all presentations must be approved as CUI US-Only. An electronic copy of your final presentation (typically a PDF) with a signed release form must be received by the ION National Office by June 9 to be included in the CUI US-Only proceedings.
2. You must be a citizen of the USA to present at the conference and also provide verification of SECRET CLEARANCE to present in the classified session (June 5); you must also meet all established security validation requirements.
3. All presenters must pay conference registration fees.
4. Presenters must attend JNC in person (no virtual presentations) and attend the mandatory Speakers' Breakfast the morning of their presentation.
5. Failure to meet any of these requirements may result in the cancellation of your presentation from the program. Presenters are encouraged to review the online materials in the JNC speaker resource center.

CONFERENCE ATTENDANCE INFORMATION

The JNC's DTS conference ID is N20150610734

The conference will be hosted in a CUI US-Only environment June 2-4 at the Northern Kentucky Convention Center in Covington, KY (restricted to U.S. government and U.S. government contractors) and a US-Only SECRET on June 5 at AFIT (restricted to U.S. government and U.S. government contractors with SECRET CLEARANCE).

- **Full-Conference Registration** rates for ION member registrants staying in an official conference hotel, received/paid by May 2, \$1,100; after May 2, \$1,300. Full Conference Registration includes all technical sessions, exhibit hall access, conference refreshments, and electronic proceedings.
- **Single-Day Registration** for early registrants staying in one of the official conference hotels is \$600. Single-day registration rates include sessions only, no proceedings.
- **Accommodations** are available at several area hotels, at the prevailing government rate until May 2 or until the hotel block fills, whichever occurs first. Reserve a hotel room at www.ion.org/jnc.

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June 2-5, 2025
Greater Cincinnati Area
Abstracts Due: February 3, 2025



JNC 2025

JOINT NAVIGATION CONFERENCE

A DOD DTS Conference
(ID: N20150610734)

June 2-5, 2025

Northern Kentucky Convention Center
Greater Cincinnati Area

ion.org/jnc



Robust, Resilient, Assured
PNT for Warfighters and
Homeland Security

CALL FOR ABSTRACTS

ABSTRACTS DUE FEBRUARY 3, 2025

The largest U.S. Military Positioning, Navigation, and Timing
Conference with Joint Service and Government Participation

SESSION TOPICS: CUI US-ONLY

AI/Machine Learning (ML) for PNT

Using AI/ML techniques to support PNT solutions within devices and systems to improve capabilities for situational understanding, battle-field management and decision making, PNT system performance, integrity monitoring, and other NAVWAR activities. Improvements to operations from big data methodologies and PNT data fusion between entities.
Topic Leads: Dr. Sonya McMullen, DOD CIO and Donna Branchevsky, The Aerospace Corporation

Anti-Jam and Anti-Spoofing Technologies

Signal processing, integrity, sensor fusion, and other techniques to mitigate jamming and spoofing of GNSS receiver-based and other RF-based PNT sources. Abstracts also might include novel antenna designs.
Topic Leads: Capt Ashlee Huver, USAF; Beth Otting, RTX/Collins Aerospace; Dr. Brady O'Hanlon, The MITRE Corporation; Naresh Jarmale, Mayflower Communications and Lisa Perdue, Safran Federal Systems

Application/Impact of PNT Technologies in the Homeland Critical Infrastructure

The use of PNT technologies in the critical infrastructure with emphasis on discussing usage, vulnerabilities, and providing mitigating solutions to safeguards against threats to the critical infrastructure. The growing use of PNT along with potential threats and vulnerabilities to the critical infrastructure such as the electrical grid, communication, transportation, finance, and emerging infrastructure for domestic employment of UAV systems.
Topic Leads: CAPT Margaret Kennedy, NAVCEN, USCG

Applications of Time Transfer and Dissemination

Warfighter systems are reliant upon Precise Time and Frequency (PT&F) synchronization/ syntonization for communicating, networking, positioning, etc. These needs are currently supported by GPS or alternative time-keeping systems that consist of high-precision clocks synchronized by time dissemination. This session invites presentations on the use of time transfer/dissemination: time transfer, timescales, timekeeping, synchronization techniques, ranging measurements, and other applications of interest to DoD applications.
Topic Leads: Dr. Kim Frey, AFRL and Dr. Jenna Chan, ARL

Complementary PNT

Navigation technologies and techniques that replace, or supplement, traditional GPS/INS to overcome degraded or denied GPS-based PNT, regardless of cause. Includes but is not limited to vision-aided navigation for ground and air applications, terrestrial, and other non-GPS RF signals, quantum sensor technologies, and navigation using natural sources and phenomena.
Topic Leads: LCDR Adam Hoburg, USCG CSJSC; Lt Col Nick Estep, DIU, USAF; Robert McDermott, USCG CSJSC; Chris McDowell, Draper; Ann Witt, Honeywell; Rebecca Russell, Draper; Paul Heim, WR Systems; Matt Peretic, The MITRE Corporation; and Brent Abbott, Safran Federal Systems

Cooperative Navigation Techniques

This topic explores navigation techniques and required system performance envelopes that enable coherent task execution among networked platforms/instruments. The ability to exchange information among partners in a network can provide synergistic improvements in terms of rapid system initialization, navigation accuracy and resiliency. This includes efforts for supplying accurate up-to-date information to navigation processors; sharing of data for both absolute and relative navigation solutions within a defined group; and determining situational awareness for the warfighter and providing pertinent navigation-related information for missions such as search and rescue, targeting, joint operations and other applications requiring complex coordination. May also include the sharing of geo-registered imagery to support collaborative position/orientation updating, collaborative path planning to optimize joint navigation accuracy, and the use of network connected devices for navigation such as smartphones, navigation apps and GPS-based personal navigation systems with on-line maps.
Topic Leads: Jorge Otero, NAWCAD and Dr. Matthew Lashley, GTRI

GPS in Military Applications/NAVWAR

Integration of GPS into new and existing military systems; precision weapon delivery and military applications in land, sea, air, and space using GPS; and development of new military GPS and auxiliary sensor hardware.
Topic Leads: MAJ Erik Anderson, DEVCOM CSISR and Heidi Graziano, The Aerospace Corporation

Inertial Navigation Technologies

Promising developments in inertial navigation technology offer significant performance improvements and/or lower Size, Weight, Power and Cost (SWAP-C), expanding the military application space. Advancements leading to extremely precise/low SWaP-C inertial navigation devices such as the latest developments in cold atom physics, materials processing, device and electronics minimization, manufacturing technologies, new interface standards, component integration and algorithms.
Topic Leads: Dr. Kari Moran, NIWC Pacific; Nicole Pomeroy, Draper; Paul White, DEVCOM AvMC; and Virginia Overstreet, Zeus Research and Technology

Integrity and Assurance

PNT systems play a critical role in virtually all military systems. Integrity/assurance is becoming a principal requirement in all systems to ensure the mission is completed successfully and reduce the risks to our warfighters. Their design must include the capability to assess sensor inputs, detect anomalous/threat conditions, and mitigate properly to retain resilience. This session will cover the requirements for PNT integrity/assurance in various military systems, system functional allocation, algorithm development, design approaches, and review performance results from demonstrations.
Topic Leads: Lyn Grajeda, NIWC Pacific and Dr. Patricia Larkoski, The MITRE Corporation

NEW! Magnetic Anomaly-Based Navigation (MagNav)

Research, development, implementation, and testing of magnetic anomaly-based navigation (MagNav). This includes efforts to overcome key challenges associated with MagNav including: effective use of existing magnetic anomaly reference data and efficient generation of new reference data; advanced calibration techniques to improve accuracy in all domains (air, maritime, and ground); improved approaches for generation and integration of relative and absolute navigation solutions; and novel magnetic scalar and vector sensors. Presentations spanning from theoretical to applied with test results are encouraged given the significant investments currently being made in this technology.
Topic Leads: John Edwards, USCG CSJSC; Mitch Hezel, Draper; Dr. Aaron Nielsen, AFIT; Dr. Aaron Canciani, Leidos; and Ian Fletcher, Draper

Military PNT Equipment – Program of Record (PoR)

The latest information on PoR Application Specific Integrated Circuit (ASIC) and Software Defined Receiver (SDR) based Military PNT User Equipment, including standalone receivers and integrated receiver/antenna electronics. Topics will include status of Military PNT user equipment development, test, integration, qualification, and fielding efforts from both contractor and government representatives.
Topic Leads: Lt Col Christopher Grover, USAF and Dr. Anne Le, The Aerospace Corporation

Military PNT Equipment – Prototyping

The latest information on prototype Application Specific Integrated Circuit (ASIC) and Software Defined Receiver (SDR) based Military PNT User Equipment, including standalone receivers and integrated receiver/antenna electronics. Topics may include receiver architectures, design considerations, operations concepts, maintenance and upgrades, specific hardware and software instantiations, and updates from on-going developmental activities.
Topic Leads: Dr. Jessica Belzer, AFRL/RVWN and Dr. Thomas Blenk, JPEO AA, Army

Modeling and Simulation

Investigates multiple levels of modeling PNT systems, from sub-system modeling to weapons platform effectiveness modeling. This includes: GNSS, INS, complementary sensor, and filter models capable of assessing advanced algorithms/integrated systems, platforms, environments and battlefield operations; presentation of hardware-in-the-loop simulation capabilities that use software-defined receiver technology or other active/passive techniques for laboratory evaluation; and interfacing of PNT and mission/campaign modeling, force-on-force, and simulation capabilities for effectiveness modeling for the assessment of the benefits/impacts to warfighters and their commander.
Topic Leads: LtCol Stephen Jimenez, OUSD(R&E); Maj Chris Cerullo, SWAC, USAF; Desirae Cuevas, AFRL; Dr. Dane Wilburne, The MITRE Corporation; Charles Frey, Lockheed Martin; and Michael Orr, SWAC USAF

Multi-GNSS Receivers for Military Applications

Recent technology developments have explored the combination of military GPS signals with foreign GNSS and commercial GPS signals. The complementary benefits of multi-GNSS include improved accuracy, integrity, availability, frequency diversity, and continued operations in GPS degraded environments. Military applications require considerations for signal assurance and security. Efforts entail concept development, analyses, modeling and simulation, and/or demonstrations. The future of military multi-GNSS receivers includes those, which track and use military signals from multiple GNSSs as well as those which combine both military and civil signals from multiple GNSSs. This explores the use and integration of additional terrestrial or space-based cooperative signals for timing, ranging, or augmentation with military multi-GNSS receivers.
Topic Leads: Kim Lopez, AFLCMC/WNX and Dr. Wilbur Myrick, OUSR R&E

Navigating in Challenged Environments (e.g., Urban, Indoor and Sub Surface-Navigation)

Certain environments (e.g., GPS denied conditions, high multipath locations, underground/cavernous environments, poor terrain (mountainous/canyons), or urban/indoor environments, etc.), require creative solutions. Often these solution add Size, Weight, And Power and Cost (SWAP-C) to systems, which is of particular concern to disadvantaged users (e.g., UAVs, UUVs, UGVs, Autonomous UGVs (i.e., robots), missiles, dismounted soldiers, etc.). This session investigates navigating in challenged environments, with particular emphasis on low SWAP-C.
Topic Leads: CDR Joseph Haynsworth, USCG CSJSC and Warren Munn, NAVSEA

Novel Clock Technologies and Timing Applications

Many atomic clock products have been designed to strike a balance between performance and cost. Development efforts to employ current and novel atomic clock architectures based on optical transitions, laser cooling, and ion trapping, for example, are underway. These efforts seek to produce rugged high-precision clocks for handheld, infrastructure, aerospace, and space-based applications. This session addresses timing device and system approaches, including advanced clocks and timing applications for military systems.
Topic Leads: Dr. Jay Hanssen, USNO and Dr. Susannah Dickerson, Draper

NEW! Operational Military SatNav Services: Fielding, Operational Status and Modernization

The fielding, operational status and modernization of SatNav services that are either U.S. government Programs of Record or currently operational commercial offerings employed by the military. The top-level attributes and status of technologies that have transitioned to a Program of Record or other Operational Source/Service are included under this topic; technical details are better suited for Space-Based PNT Services sessions. Topics include: satellite navigation sources (GPS and new military capabilities), control segment and monitoring capabilities, PNT situational awareness from USG space assets, and other new USG satnav services.
Topic Leads: Deb Babbitt, The Aerospace Corporation and Nina Faustino, The MITRE Corporation

Operational Systems: Live Demonstrations

Live demonstration of platforms to support PNT for the warfighter, with particular focus on open architecture solutions which allow incorporation of alternate or revolutionary technologies. Demonstrations may include real time component demonstration, video of demonstration, and demonstration of SWiL/HWiL. Demonstrations may include, but are not limited to: human-in-the-loop, PNT sensors and algorithms; or novel approaches to deal with known limitations of current solutions, such as simplified keying solutions, user friendly interfaces, context aware energy conservation, etc. Encouraging demonstrations of technologies at varying stages of technology readiness levels (TRLs 4-6). Demonstrations are 40 minutes in length, with traditional presentations being limited to no more than 10 minutes, and interactive demonstration being utilized for the rest of the time.
Topic Leads: LT Elizabeth Page, SSC/SYD1, USSF and Daniel Weinman, DEVCOM CSISR

NEW! Platform Integration

Reports the latest information on PNT platform integration efforts and explores approaches that address challenges associated with platform integration. Topics include: Platform integration in all domains (air, sea, ground, and space) with particular interest in approaches that address the challenges of competing platform PNT requirements (e.g. rapidly changing requirements to address evolving threats vs. slower changing, costly to implement safety critical airspace and/or vehicle control requirements). Additional topics include planned and on-going platform integration efforts, techniques for platform integrations including MOSA and other open architecture approaches, and lessons learned from testing/fielding activities – from both contractor and government representatives.
Topic Leads: LCDR Tricia Nguyen, PMW/A 170, USN and Lt Col Orlando Martinez, SSC/SYD1, USSF

PNT for Autonomous Systems

Autonomous systems like UAS, robots, and some marine vessels are especially reliant on PNT. Topics include autonomous systems, leveraging of AI and machine learning for full system autonomy and PNT, challenges of using autonomous systems in military environments, and the development of PNT solutions for high volume and attributable platforms. These systems will be operating either independently or in collaborative groups performing tasks, where the PNT systems will need to adapt to the surroundings and make use of the sensors and signals that are functional in the area. Safety, resiliency and OPTEMPO are vital in the definition of the requirements for the PNT system for military autonomous systems.
Topic Leads: Topic Leads: Dr. Camila Francolin, Draper and Dr. Scott Martin, Auburn University

PNT Open Systems Architecture

Threats to PNT systems are evolving at increasingly faster rates, driving the need for PNT systems to be adaptable to stay ahead of this evolving threat. Open System Architectures (OSA) for PNT can be structured to provide frameworks for affordable adaptable PNT systems. Adaptable PNT systems provide the ability to insert capability, countering threats and providing resilient solutions. This session covers research, development, procurement, integration and sustainment of OSA PNT concepts and systems (software, hardware, backplanes, interfaces, etc.), including applications of VICTORY, PNTA, FACE, OMS, SOSA and more.
Topic Leads: CAPT Daniel Follett, PMW/A 170, Navy and Dr. John Janeski, The Aerospace Corporation; Tim Kramer, The MITRE Corporation; Dr. Connor Brashar, Sandia National Labs; and Natasha Norris, IS4S

PNT Situational Awareness

PNT Situational Awareness (PNT-SA) refers to the detection, characterization, attribution, and geolocation of intentional, unintentional and naturally occurring threats to PNT. PNT-SA can detect threats to allow for engagement of measures that afford increased robustness and resiliency, to recognize the presence of threats, and to inform decisions as well as tactics, techniques, and procedures (TTPs) among multiple other use cases. The goal of this session is to bring together government, industry, and academia to discuss the state-of-the-art capability and plans to exploit a variety of sensor and data sources (from publicly available cellular data and multi-INT), new algorithms, and visualization schemes for PNT-SA in support of a variety of government and safety-of-life applications.
Topic Leads: Meghan Bentz, DEVCOM CSISR; Dr. Sharon Marroquin, The MITRE Corporation; Mark Carroll, AFRL RYWN; Phong Bach, Collins; Dr. Franz Hamilton, JHU/APL; and Scott Fuchs, The Aerospace Corporation

Precision Guided Munitions PNT Technologies

Precision Guided Munitions experience self-induced and/or naturally occurring harsh environments, requiring the use of advanced techniques for maintaining accuracy and ensuring survivability of the electronics during use. Presentations might address innovative design concepts, challenging performance and environmental requirements, laboratory and flight test results, compensation methods, alignment/initialization techniques, and size constraints/miniaturation as well as other issues. Some situations include high dynamic (i.e., hyper velocity) environments, extreme temperatures, spinning systems, high-shock, countering plasma effects, radiation hardening, and others.
Topic Leads: Ekta Patel, DEVCOM AC and Aaron Bartlett, AFLCMC/EB

NEW! Protection and Security of PNT Mission and Systems

Explores the challenges faced by our military and homeland security systems. Both space and ground based PNT systems face unique challenges from spectrum, cybersecurity, and supply chain vulnerabilities. Topics include: various technologies used for spectrum protection and supply chain vulnerabilities, distinctive cybersecurity and mission security challenges faced by our integrated system of systems, and technologies utilized to secure and protect those systems and missions.
Topic Lead: Lt Col Matthew Brady, SSC/SYD

NEW! Signals of Opportunity (SoOp)

The use of Signals of Opportunity (SoOp) (i.e., non-traditional PNT signals) as a source of positioning, navigation, or timing. Topics include: unique and novel applications, experimentation, use in operational environments, and integration challenges and solutions (i.e., multi-band antenna solutions in small form factor applications).
Topic Leads: Dr. William Travis, IS4S and Dr. Sean Krzyzewski, USSF, AFRL

Space Applications for Cislunar and Beyond

Applications of PNT systems on space platforms for cislunar or beyond GEO (XGEO) activities, including the use of navigation services and sensors to aid primary objectives of guidance, navigation and control (GNC) or bus and payload timing functions. This encompasses, but is not limited to: orbit determination; attitude determination; trusted autonomous systems; and application objectives such as space exploration, mapping, lunar resource identification and extraction, situational or domain awareness, and advances in cislunar user equipment. This session also includes the advancements of enabling technologies applied to cislunar PNT service volume architecture, reference frame, time transfer, time keeping, service monitoring, sustainment, and resiliency.
Topic Lead: MSgt Ben Johns, USAF, AMC

Space-Based PNT Services: Concept Through Prototype Testing

Space-based PNT services at various stages of development prior to becoming an operational service (such as GPS or GNSS). Of particular interest are system to subsystem level technologies and experimentation designed to achieve superiority in a contested EW environment. This could be achieved through reconfigurable/reprogrammable items, additive architecture designs, to the usage of space-based signals in new and novel ways.
Topic Leads: Kate Coens, SSC; Brittany Wells AFRL RYWN; Dr. David Goldstein, The Aerospace Corporation; and Dr. Olukayode (Kami) Okusaga, JHU-APL

PANEL DISCUSSIONS: CUI US-ONLY

PANEL: Alternative and Assured Commercial PNT Services
With the proliferation of low and medium Earth orbit (LEO/MEO) satellite services, the advent of alternative and assured commercial PNT services are also starting to proliferate. This panel will explore the alternatives to traditional GNSS and include discussions on applications, technical means, performance, service offerings, anticipated start of services, and shaping of services to yield military unique capabilities.
Moderator: Bill Joo, NWIC Pacific

NEW! PANEL: PNT and Communications Convergence
As the Joint Force becomes increasingly connected, driven by the demands of modern battle management, collaborative autonomy, intelligence, surveillance and reconnaissance and distributed electronic warfare, PNT and communications services are on path toward convergence. This panel will provide insights into the opportunities, challenges and potential presented by the convergence of communications and PNT services.
Moderator: Dr. Jeff Hebert, AFRL

PANEL: Field Testing of PNT Technologies
This panel will focus on testing PNT technologies across all phases of the life-cycle. Topics include: test planning, scenarios, methods (laboratory, chamber, field) execution, and reporting, test event coordination, and policy to include NAVWAR compliance. The discussion will center on the current state of US DoD PNT field testing, including CJCSM 3212.03 coordination, best practices and lessons learned for range and test site selection and coordination, multi-organizational collaboration and opportunities of international partnerships. Required testing requirements based on technology type, such as receivers versus sensors, will be highlighted. Additional topics include the FY24 NDAA Section 1686 testing requirement, NAVWAR Compliance, and reporting.
Moderator: Dr. Jimmie Davis, The MITRE Corporation

NEW! PANEL: Future Direction of Warfighting & Homeland Security
Part I: Representatives from the Services and Homeland "Future" groups will describe identified trends and visions of the future. Topics of discussion will include: future warfighting, ideal weapons platform characteristics, new directions in homeland infrastructure and security, commercial trends, and the evolution of the information age.
Part II: Weapons platform designers and systems engineers from large and small businesses will discuss the PNT sub-system derived requirements based on the vision presented in Future Direction of Warfighting & Homeland Security Panel Part I. In particular, the panel will discuss any PNT sub-system shortfalls they anticipate in designing the weapons platforms of the future as described in Part I.
Moderator, Parts I and II: Dr. Madeleine Naudeau, AFRL

PANEL: National Critical Infrastructure Threat
This panel will focus on PNT threats to the national critical infrastructure. Discussion topics may include threats to the electrical grid, communication, transportation, finance, and domestic DoD support infrastructure as well as emerging infrastructure for domestic employment of UAV systems that create a challenge for safeguarding national assets and maintaining homeland security.
Moderator: Karen Van Dyke, DOT

PANEL: Rapid Agile Development and PNT Technology Transition
Representatives from the services and industry will describe their approach to respond to urgent requirements from the field and to transition emerging technologies. Panelists will contrast the established process with rapid agile development techniques that are being implemented to accelerate transitions. Topics of discussion will include: innovative means of rapidly transitioning technology to the field; application of a PNT Open Systems Architecture (OSA) to promote the ability to plug and play new sensors/software applications; transition through government/industry partnerships; and how to best position promising technology for transition.
Moderator: Dr. Adam Schofield, DEVCOM/Army Research Laboratory

NEW! PANEL: Signals of Opportunity
Explores the military's use of signals of opportunity, primarily from space-based sources. This extends from shared-use of systems by international partners to commercial systems, to the non-cooperative use of various space-based signals. Panelists will represent a spectrum of views, including DoD policy, military services, and commercial providers. Key issues to explore include availability, resilience, and, above all, trust.
Moderator: Amy-Marie Dykstra, NSWC Dahlgren

PANEL: Warfighters (hosted in SECRET environment Thursday at AFIT)
An interactive discussion between the audience and a panel of warfighters who have had recent operational experience that informs the community on how to better formulate military PNT systems.
Moderator: Amanda Humphrey, JNWC and Sean Memmen, Booz Allen Hamilton

SECRET PROGRAM: US-ONLY

The classified session, held June 5 at the Air Force Institute of Technology (AFIT), will be presented at the US-Only Secret level. The JNC's 2025 SECRET PROGRAM will be curated by invitation from the JNC Military Division.
Topic Lead: Amanda Humphrey, JNWC