ABOUT THE JNC
The Military Division of the Institute of Navigation will host the 2020 Joint Navigation Conference (JNC 2020) for the Department of Defense and Department of Homeland Security. The theme of this year’s conference will be:
Enhancing Dominance and Resilience for Warfighting and Homeland Security PNT

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 affordable PNT systems, logistics and integration. From an operational perspective, the conference will focus on advances in battlefield applications of GPS; critical strengths and weaknesses of field navigation devices; warfighter PNT requirements and solutions; and navigation warfare.

FOUO U.S. only conference attendance (June 1-3) will be screened by the Joint Navigation Warfare Center and will be restricted to U.S. only. The classified session will have U.S. only Secret Clearance access (June 4). The exhibit hall (June 2-4) will be open to all conference participants, exhibiting organizations, their employees and related organizations. All materials displayed in the exhibit hall shall be publically releasable (Distribution A).

TECHNICAL PROGRAM COMMITTEE
Military Division Chair: John Langer, The Aerospace Corporation
Military Division Vice Chair: Jan Anszperger, Draper
Program Chair: Joseph Schnecker, NIWC Pacific
Program Vice-Chair: John Dei Collano, Army CCDC C5ISR
Tutorials Chair: Paul Olson, Army CCDC C5ISR
Plenary Chair: Dr. Thomas Powell, The Aerospace Corporation

Track Chairs:
• Jan Anszperger, Draper
• Dr. David Chapman, AFRL Space Vehicles Directorate
• Dr. Greg Reynolds, Army CCDC AvMC
• David Wolfe, USCG C3CEN

Other Members:
• Eddy Emile, SMC/Production Corps
• Elliott Kaplan, The MITRE Corporation
• Neeraj Pujara, AFRL Sensors Directorate
• Fay Spellerberg, Joint Navigation Warfare Center (JNWC)
• Ben Wash, Joint Navigation Warfare Center (JNWC)

JOURNAL PUBLICATION
JNC presenters are encouraged to write publically releasable (Distribution A) technical papers based on their JNC presentations to submit for possible publication in the ION’s archival journal, Journal of Navigation (indexed by Thomson Reuters). Papers may be submitted for publication online at http://mc.manuscriptcentral.com/ navigation.

EXHIBITS
Over 50 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 Ken Esthus at kesthus@ion.org.

CALL FOR ABSTRACTS
Abstracts Due: February 3, 2020
All abstracts must be written for public release with intent to present in a FOUO U.S. 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 FOUO U.S. ONLY sessions (June 1-3) and a citizen of the USA, with SECRET CLEARANCE, to submit an abstract for the classified sessions (June 4).


• If you have not used AMP before, click “Create My Account.”
• Once signed in, click on JNC and complete the form.
• Abstracts should include a presentation summary; describe objectives, anticipated or actual results, conclusions, any key innovative steps and the significance of your work and limited to one page.
• Authors will be notified of acceptance in March and sent an electronic author’s kit with presentation and publication guidelines.

Abstracts submitted for classified sessions should be written for public release and submitted according to the submission guidelines described above.

PRESENTATION REQUIREMENTS
Sessions will consist of presentations. Unless otherwise noted, all presentations must be publically releasable (Distribution A) or FOUO U.S. only. (Distribution C). An electronic copy of your final presentation (typically a PowerPoint file) with a signed release form must be received by the ION National Office by June 12 to be included in the FOUO proceedings. Presenters will receive a speaker’s kit with presentation guidelines and additional meeting information. 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 4). Speakers presenting as part of the classified session must provide their classified presentation in advance to the Joint Navigation Warfare Center (JNWC) no later than May 1. All presenters must pay conference registration fees.

CONFERENCE PROCEEDINGS
Submitted presentations, approved for public release (Distribution A) and/or FOUO (Distribution C) distribution, will be released to U.S. citizens who were approved to attend the conference by the JNWC in an electronic FOUO proceedings 4-6 weeks following the conference.

CONFERENCE ATTENDANCE INFORMATION
The JNC’s DTS conference ID is N20150610734
The conference will be hosted in a FOUO U.S. ONLY environment June 1-4 at the Northern Kentucky Convention Center, Covington, Kentucky and a U.S. only classified environment on June 4 at the Air Force Institute of Technology, Dayton, Ohio. Advance visit requests and approvals are required for all attendees. June 1-3 participation will be restricted to U.S. government and U.S. government contractors. June 4 classified session participation will be 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 1, $930; after May 1, $1130. Full Conference Registration includes all technical sessions, exhibit hall access, conference refreshments and electronic proceedings.
• Single-Day Registration for registrants staying in one of the official conference hotels is $330. Single-day registration includes sessions only, no events or proceedings.
• Accommodations are available at four official conference hotels, at the prevailing government rate until May 1 or until the hotel block fills, whichever occurs first. Reserve a hotel room at www.ion.org/jnc.
• Additional information and updates regarding the conference may be found online: www.ion.org/jnc.
FOUO SESSION TOPICS

Application/Impact of PNT Technologies in the Homeland Critical Infrastructure

This session will focus on the use of PNT technologies in the critical infrastructure with emphasis on the potential use of PNT for vulnerability assessment and situational awareness. Topics may include but are not limited to examples of PNT sensors to detect ingress, real-time or historical mapping of critical infrastructure, and advanced analytics to support threat assessment.

Armor

This session is focused on armor development and integration. Topics may include innovative approaches for improving PNT performance in armor, technologies and techniques for improving GNSS signal reception, and challenges and advancements in armor-friendly sensors and technologies.

Autonomous Systems and PNT

Autonomous systems are increasingly reliant on PNT. Topics in this session include autonomous systems, leveraging of AI and machine learning for autonomy and PNT, challenges of using autonomous systems in military environments, use of GPS and non-GPS technology for autonomous systems. This session provides an opportunity for contractors to present their innovative approaches to future PNT needs, where the systems will need to adapt to the survivability and maintain the system functions and signals that are a focal point in the area. Safety, reliability, and Optimal are vital in the determinism of the requirements for the systems or the military autonomous systems.

GPS Modernization

New military capabilities and performance, including integrity and accuracy improvement, will be explored through a topic that addresses the current state of GPS modernization, ranging from timing for communications to clock synchronization for power transmission in the grid. The growing use of PNT along with potential threats and vulnerabilities to PNT systems, including cyber, grid, communications, navigation, and emergent infrastructure for homeland and space communications and positioning, will be discussed.

Integrative and Interoperable Joint (I&I)

A review of the latest developments, materials processing, manufacturing technologies, component integration and applications of GNSS demonstrate improving performance and the potential to improve interoperability in various applications. Topics in this session will include electronic signal level, and electronics miniaturization, new interface standards and algorithms that will allow accuracy improvements in supporting various applications, including consumer electronics, automotive, and aerospace systems. Alleviating the cost that measures and model such advancements, leading to the precise entry in military navigation systems such as cold atom physics.

Integrity and Assurance

Positioning, Navigation and Timing (PNT) systems play a critical role in virtually all military systems. The military's mission is to ensure the mission is completed successfully and reducing the risks to our warfighters. Our designers must include the capability to assess sensor inputs, detect anomalies/warning conditions, and mitigate propagating errors. Examples include but are not limited to ESM, AGL, and ALCM. This session is focused on trustworthiness from the sensor in the system and the assurance of the system's capability to ensure mission success.

Large GNSS receivers: Enabling high performance, high accuracy, and high reliability GNSS receivers.

Recent developments have expanded the combination of military GPS signals with general and civilian GPS signals. The complementarity of benefits of multi-GNSS includes improved accuracy, increased availability, and improved performance in the case of outages or jamming. Military applications require consideration for signal assurance and security. Efforts towards receiver development, energy efficiency, miniaturization, and SoC applications for large GNSS receivers are expected.

Micro-GNSS Receivers: Enabling high performance, high accuracy, and high reliability GNSS receivers.

Recent developments have expanded the combination of military GPS signals with general and civilian GPS signals. The complementarity of benefits of multi-GNSS includes improved accuracy, increased availability, and improved performance in the case of outages or jamming. Military applications require consideration for signal assurance and security. Efforts towards receiver development, energy efficiency, miniaturization, and SoC applications for large GNSS receivers are expected.

This session will focus on the use of software defined radios (SDR) for military PNT applications. Topics may include SDR architectures, SDR design considerations, operations concepts, and applications. SDRs provide advantages over traditional hardware-oriented architectures, including reconfigurability, programmability, and flexibility.

Operational System Demonstrations

Demonstration platforms to support PNT for the warfighter, with particular focus on open architecture approaches to software and sensor integration. These demonstrations may include real-time component demonstration, video of demonstration, and demonstration of collaboration. Demonstrations may include, but are not limited to, human-in-the-loop demonstrations, future approaches to deal with the limitations of current solutions, such as simplified keying solutions, user-friendly interfaces, and demonstrations of novel security and privacy techniques for the fusion of PNT sensor information, iterative prototyping in a cooperative manner with industry conducting demonstration test and government laboratories, and more forward to conduct operational tests to ensure all requirements have been satisfied. Using modern manufacturing can be a very significant step in comparison to current DoD acquisition.

PANEL DISCUSSIONS (FOUO U.S. ONLY)

PANEL: Warfighter Requirement and Solutions (Secret-U.S. Only)

This panel will feature representatives from weapons systems conducting some of the initial operational experience that informs the community on how to better formulate military PNT systems. Warfighters who have had operational in "theater" experience in the past year are being solicited from all sources; Electronic Warfare specialists are of particular interest. All those who can contribute to the panel please contact Kevin Leggs, E-mail: kevin.m.leggs.mil@us.army.mil. Hotel accommodations and conference registration provided at no cost to panel participants.

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PANEL: Combatant Command Joint Urgent Operational Need (UOD)

Warfighter Requirement and Solutions (Secret-U.S. Only)

This panel will present highlights of a current JUON to include requirements/funding, mission organization, and demonstrating the presentation for additional topics at the SECRET-U.S. ONLY level to discuss topics and information that cannot be shared in the FOUO forum.

PANEL: Warfighter Requirement and Solutions (Secret-U.S. Only)

This panel will present highlights of a current JUON to include requirements/funding, mission organization, and demonstrating the presentation for additional topics at the SECRET-U.S. ONLY level to discuss topics and information that cannot be shared in the FOUO forum.