Joint Navigation Conference

The Largest U.S. Military Navigation Conference with Joint Services & Government Participation

“Military Navigation Technology: The Foundation for Military Ops”

JNC 2012 Government Liaisons

Chair:
Paul Olson,
U.S. Army
CERDEC

Vice-Chair:
Bill Bollwerk,
U.S. Naval
Observatory

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Track: A
Jalal Mapar,
U.S. Department
of Homeland
Security

Program Chair
Track: B
Ron Beard,
U.S. Naval
Research
Laboratory

Program Chair
Track: C
Greg Kohls,
ASC Combat
Electronics
Division

Program Chair
Track: D
John Del
Colliano,
U.S. Army
CERDEC

Tutorial Chair
Jan Anszperger,
C.S. Draper
Laboratory

Jim Doherty,
Institute for
Defense
Analyses

Eddy Emile,
GPS Directorate

Greg Graham,
U.S. Army
AMRDEC

Dr. Mikel Miller,
AFRL Munitions
Directorate

June 12-15, 2012 • Tutorials: June 12
Crowne Plaza Hotel & USAF Academy Colorado Springs, Colorado

www.jointnavigation.org
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<th>Time</th>
<th>Event</th>
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<td>Tuesday, June 12</td>
<td>8:30 a.m. – 10:00 a.m.</td>
<td>Tutorial — GPS 101 – Foothills</td>
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<td>10:30 a.m. – 12:00 p.m.</td>
<td>Tutorial — Navigation and Man – Pikes Peak 1/2</td>
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<td>Lunch — 12:00 p.m. – 1:00 p.m.</td>
<td>(Lunch is on your own)</td>
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<tr>
<td>Wednesday, June 13</td>
<td>8:30 a.m. – 10:00 a.m.</td>
<td>Plenary Session I - Summit Ballroom (4th floor)</td>
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<td>1:35 p.m. – 3:00 p.m.</td>
<td>A1: Alternate Navigation Technologies: RF Aided (non-GPS) - Pikes Peak 3/4</td>
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<td>3:30 p.m. – 5:20 p.m.</td>
<td>A2: Alternate Navigation Technologies: Natural &amp; Vision Aided - Foothills</td>
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<tr>
<td>Wednesday, June 13</td>
<td>8:30 a.m. – 10:00 a.m.</td>
<td>A3: Precision Azimuth Sensing I - Pikes Peak 1/2</td>
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<td>A4: Precision Azimuth Sensing II - Pikes Peak 1/2</td>
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<td>3:35 p.m. – 5:20 p.m.</td>
<td>A5: Navigating in Challenged Environments (Urban, Indoor &amp; Sub Surface Navigation) - Foothills</td>
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<tr>
<td>Thursday, June 14</td>
<td>8:30 a.m. – 10:00 a.m.</td>
<td>Exhibitor Meet &amp; Greet Social — 6:00 p.m. – 8:00 p.m.</td>
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<tr>
<td>Friday, June 15</td>
<td>8:30 a.m. – 5:40 p.m.</td>
<td>Classified Plenary Session, Falcon Club, NSAFA</td>
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<td>Classified Session A9: Adversary Developments in NAVWAR</td>
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<td>Classified Session A10: NAVWAR Testing / Warfighter Crosstalk Panel</td>
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<td>Classified Session A11: Flexibility in NAVWAR</td>
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<td></td>
<td>Closing Remarks – Buses Load at 5:40 p.m.</td>
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</tbody>
</table>

**Conference Events**

**Wednesday, June 13**
- Spouses’ Coffee Hour, Hotel’s Fireplace Lobby
  9:00 a.m. - 10:00 a.m.
  Refreshments will be provided in an informal setting with hotel concierge.

  **Informal Lunch with Exhibitors:**
  - Exhibit Hall, Colorado Grand Ballroom
  12:00 p.m. - 1:00 p.m.
  This event is included in the price of a FULL registration.

  **Exhibitor Meet & Greet Social**
  - Exhibit Hall, Colorado Grand Ballroom
  6:00 p.m. - 8:00 p.m.
  Join exhibitors as they host an evening of information and cuisine. A cash bar will be offered. This event is included with any type of registration. Spouses and traveling companions 21 years of age and older are welcome to attend.

**Thursday, June 14**
- Informal Lunch with Exhibitors
  - Exhibit Hall, Colorado Grand Ballroom
  12:00 p.m. - 1:00 p.m.
  This event is included in the price of a FULL registration. Guest tickets may be purchased for $60 each.

  **Conference Dress**
  - Military: Battle Dress Uniform (BDU)
  - Civilian: Business Casual

  **Conference Proceedings**
  Official conference proceedings are scheduled for distribution in August to all eligible conference participants.
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<tr>
<th>Time</th>
<th>Track A: Navigating in Challenged Environments Track Chair: Jalal Mapar</th>
<th>Track B: Requirements &amp; Applications Track Chair: Ron Beard</th>
<th>Track C: GPS &amp; GPS Receiver Technology Track Chair: Greg Kohls</th>
<th>Track D: Simulation &amp; Demonstrations Track Chair: John Del Colliano</th>
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<tr>
<td>10:30 a.m. – 12:00 p.m.</td>
<td>A1: Alternate Navigation Technologies: RF Aided (non-GPS) - Pikes Peak 3/4</td>
<td>B1: Warfighter Requirements &amp; Solutions - Foothills</td>
<td>C1: Advanced Security Technologies/SAASM - Pikes Peak 1/2</td>
<td>D1: Modeling &amp; Simulation I - Centennial</td>
</tr>
<tr>
<td>1:30 p.m. – 3:00 p.m.</td>
<td>B3: Atomic Clocks &amp; Timing Applications I - Centennial</td>
<td>B2: Applications: Aviation &amp; Marine - Pikes Peak 3/4</td>
<td>C2: GPS Modernization &amp; Constellation Performance - Pikes Peak 1/2</td>
<td>D2: Modeling &amp; Simulation II - Centennial</td>
</tr>
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</table>

Note that the photographing of sessions/presentations and/or the audio or video recording of sessions/presentations is prohibited. As a courtesy to others, please silence all mobile devices. No electronic devices will be permitted in the classified sessions.
FOUO US ONLY SESSIONS
(Tuesday – Thursday, June 12-14)
All US ONLY FOUO sessions and exhibits (June 12-14) will be held in a US ONLY FOR OFFICIAL USE ONLY (FOUO) environment at the Crowne Plaza Colorado Springs. To attend you must provide the following:
1. Proof of U.S. citizenship.
2. Visit Request/including a Need-to-Know Statement (Need-to-Know not required if using JPAS)
3. Photo ID
4. JNC Conference Badge and Paid Registration

VISIT REQUEST AND NEED-TO-KNOW STATEMENTS
All Visit Requests must be received by May 9 and be approved by the JNWC Security Office.

Prospective U.S. attendees must submit their Visit Authorization Requests through JPAS to JPAS SMO: OD3QFJ6ZB6. JPAS visit request POC field must be filled with “JNC 2012” instead of a POC name. For your convenience, if JPAS is not an option, Visit Request Form can be found at www.jointnavigation.org.

Visit Request Contact:
Gloria N. Dumone, Personnel Security Specialist
JNWC/JFCC SPACE/USSTRATCOM
1351 Wyoming Blvd SE, Bldg 20201
Kirtland AFB, NM 87117
P: 505-853-6360; F: 505-853-6677; M: 505-206-7595
gloria.dumone.ctr@kirtland.af.mil

CLASSIFIED SESSION
(Friday, June 15)
The CLASSIFIED SESSION will be held in a classified 4-eyes environment (open to citizens of Australia, Canada, U.K. and U.S.A.). Citizens of Australia, Canada and U.K. should submit their visit requests through normal embassy process. Information required for embassy Clearances is as follows:
Classification: Secret
Visit Type: One Time
Request Type: Facility Invitation
Request Category: Government
Anticipated Level of Classified Information to be Involved: Secret
Visit Dates: 15 June 2012
Purpose of Visit: Attend the 2012 Joint Navigation Conference, Colorado Springs, CO
Facility Information: USAF Academy
Way to Contact: E-mail
Name: Joint Navigation Warfare Center/USSTRATCOM
Program/Agreement: Navigation Warfare MOU
Knowledgeable US POC:
Name: Gloria Dumone
Phone: 505-853-6360/Fax: 505-853-6677
Email: gloria.dumone.ctr@kirtland.af.mil
Organization: Joint Navigation Warfare Center/USSTRATCOM

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The Joint Navigation Warfare Center

Mobile Web: Lockheed Martin
Onsite Program: Systron Donner
Media: GPS World

InsideGNSS
Exhibit Hall & Exhibit Hours

Wednesday, June 13
10:00 a.m. – 4:00 p.m.
(lunch: 12:00 p.m. – 1:00 p.m.)
6:00 p.m. – 8:00 p.m.
(Exhibitor Hosted Reception)

Thursday, June 14
10:00 a.m. – 5:00 p.m.
(lunch: 12:00 p.m. - 1:00 p.m.)

Coffee and conference refreshments will be served in the exhibit hall.
This course presents the fundamentals of the GPS system, and it is intended for people with a technical background who do not have a significant GPS experience. Topics covered include time-of-arrival positioning, overall system design of GPS, signal structure, error characterization, dilution of precision (DOP), differential GPS, and GPS modernization.

Wide-Area Imaging, Georegistration and Calibration

Given an aerial image, we would like to map each pixel in the image to an absolute position on the Earth in WGS84 coordinates. This tutorial provides the attendees with the basics necessary to generate an absolute camera calibration and projection. A simple camera model and projection are provided. A method of absolute calibration using ground reference points is described. The results are analyzed along with a discussion of error sources and some accuracy rules of thumb. The techniques are illustrated with imagery from persistent surveillance platform. The tutorial does not require knowledge of image processing. Some familiarity with navigation concepts will be helpful, but is not required.

Precise Time & Frequency Applications

This tutorial will introduce precise time and frequency (PT&F) applications and includes an overview of the fundamentals of PT&F signals their generation and measurement. An introduction to time scales, those in use, and their origin will be described to provide an understanding of how traceability of PT&F is needed throughout its generation, dissemination and use. The distinction between global time scales and those generated and used within systems will be described to provide an understanding of their basic differences and strengths. The distinctions and commonalities between telecommunications and navigation positioning will be discussed. How GPS supports time dissemination and time transfer interfaces with many and varied systems will be covered and examples of different system applications will be discussed. The session will conclude with a projection of future directions of PT&F and its application.

Navigation and Man

This entertaining and informative short course discusses the historical development of navigation systems. It spans modern civilization from the earliest celestial navigation techniques to the latest global satellite navigation system events. The life and times of principal contributors to the development of navigation theory and hardware are discussed. The presentation addresses the impact of navigation in today’s civil and military environment and projects them to future applications.
Alternative Navigation

This tutorial develops the concept of navigation using non-traditional methods. Topics include techniques used to calculate the navigation solution based on general classes of available measurements: Examples of various techniques from both man-made and biological systems will be presented and discussed. These will include pseudolite navigation techniques, vision-based navigation, signals-of-opportunity navigation, and a general discussion of biological navigation systems. This tutorial will be presented at the introductory level and will be conceptual in nature.

Fundamental Reference Systems

Navigation is the process of determining a position (or direction) and its motion with respect to a specific reference system. The navigational accuracy depends directly on the accuracy with which that reference system can be specified. Two components are required to realize a reference system for practical applications. These are (1) the reference frame and (2) the conventionally accepted models and standards used in the process. The frame is specified by an adopted set of coordinates and motions of the elements (site coordinates and motions, for example) used in its definition. The models and standards also include the software used in the navigational solutions. The tutorial reviews the fundamental elements of reference systems and demonstrates the practical aspects of the procedures used to transform from the terrestrial to celestial reference systems.

Lunch is on Your Own: 12:00 p.m.-1:00 p.m.

1:40  1. Alternate Position Navigation and Time (APNT) for Aviation: P. Ahn, Federal Aviation Administration; S. Lo, and P. Enge, Stanford University


2:40  4. Preliminary Test Results of Mobile Positioning with ATSC DTV Signals (8VSB and M/H): C. Yang, Sigtem Technology, Inc.; T. Nguyen, AFRL Sensors Directorate

Alternate

1. Ranging/Timing Using the NDGPS Signal: Initial Results: P.E. Swaszek, University of Rhode Island; R.J. Hartnett, U.S. Coast Guard Academy; G.W. Johnson, Alien Science & Technology

B1: Warfighter Requirements & Solutions

Foothills

1:40  1. GPS Capability to the Joint Warfighter: Benefits of Key GPS Features: R. Bloser, K. Kenkel, S. Fuchs, SAIC; J. Brown, SMC/GPU

2:00  2. Modeling the GPSEM AoA with GIANT: J. Wollam, G. Green, LinQuest Corporation; J.P. Lortie, Jr., Independent Consultant


2:40  4. MIRODS Performance Metrics for Bi-Static and Multistatic SAR Applications: T. Nguyen, B. Pierce, Raytheon Space and Airborne Systems; E. Byrne, J. Warriner, Symmetricom; T.Q. Nguyen, Air Force Research Laboratory; P. Howe, MBO Partners

Alternate

1. GPS OCX Simplified Interfaces: Enabling the Affordable Development of Future Warfighter Capabilities: W.A. Al-Masyabi, C. Corwin, S. Law, Raytheon Company

C1: Advanced Security Technologies/SAASM

Pikes Peak 1/2

1:40  1. Trade Study of Future Military GPS Material Solutions: D. Moulin, V. Benvenuto, MITRE; M. Campbell, Aerospace; R. Landrau, J. Rushanan, MITRE; T. Sharpe, Aerospace; K. Skey, MITRE

2:00  2. Location Signatures: Proving Location to Second Parties without Requiring Trust: L. Scott, LS Consulting

2:20  3. SAASM and Mission Constellations: D.W. Boethin and K. Goussak, GPS Directorate

2:40  4. SAASM Receiver Security Approvals and Authorizations: W. Sanders, USAF, GPS Directorate; S. Callaghan, The Aerospace Corporation

Alternate

**A2: Alternate Navigation Technologies: Natural & Vision Aided**

*Foothills*


4:00  2. Vision Aided Navigation with the CRISP Data Set: C. Visker, B. Mohr, Y. Ma, W. Hawkinson, Honeywell Aerospace; D. Venable, M. Weems, AFRL Sensors Directorate


**Alternate**


**B2: Applications: Aviation & Marine**

*Pikes Peak 3/4*


4:00  2. Performance Assessment of the Recent NDGPS Recap: G.W. Johnson, Alion Science & Technology; P.F. Swaszek, University of Rhode Island; R.J. Hartnett, US Coast Guard Academy

4:20  3. NGA Maritime Safety Office Overview Brief: T. Hallock; National Geospatial Intelligence Agency


5:00  5. Submarine GPS Collaboration Success and Way Forward: A.L. Scoca, R. Daniels, J. Kallenberger, F. Vogel, Lockheed Martin

**Alternate**


**C2: GPS Modernization & Constellation Performance**

*Pikes Peak 1/2*

3:40  1. 2nd Space Operations Squadron (2SOPS) Command Update: J. Grant, 2nd Space Operations Squadron Command

4:00  2. Enabling GPS Information Sharing with Improved OCX Security: M. Worden, Raytheon


5:00  5. Ionosphere Scintillation Data Capturing and Analysis Based on USRP, A Flexible RF Front End: R. Wolfarth, S. Peng, Y. Morton, Miami University; T. Nguyen, AFRL Sensors Directorate

**Alternates**

1. GPS OCX Program Overview and Update: Raymond L. Kolibaba, Raytheon

2. L-Band verses C-Band in GPS Performance: I. Weiss and R. Monzingo, The Aerospace Corporation

**D2: Modeling & Simulation II**

*Centennial*


5:00  5. AFRL Minerva: An Open Source Hardware and Software Architecture for Navigation Algorithm RDT&E: D. Venable, and J. Campbell, AFRL Sensors Directorate
Informal Lunch with Exhibitors: 12:00 p.m. - 1:00 p.m., Exhibit Hall
(Overflow Seating in the Garden Atrium)
A4: Precision Azimuth Sensing II


2:00 2. Precision Azimuth Determination in a Field Modular Targeting System: J. Warren, S. Goldblatt, J. Pritchett, R. DiNello-Fass, S. Conard, J. Connelly, C. Lange, G. Murphy, C. Kuehne, Johns Hopkins University APL


B4: Atomic Clocks & Timing Applications II


2:00 2. It's About Time! Wide Area Precise Time Delivery: C. Stout, A. Helwig, G. Offermans, C. Schue, UrsaNav, Inc.


Alternate

1. Time Transfer using Time Reversal (T3R) for GPS-Free Synchronization: E-G. Paek, R.L. Beard, and J.D. White, Naval Research Laboratory

C4: Military GPS Receivers & Military GPS Receiver Technology

1:40 1. Military GPS User Equipment (MGUE) Program Overview: J. Anderson and J. Wilson, SMC/GP


Alternates

1. Initial Performance Analysis of the SAASM Based Receiver in the NGA Monitor Station Network: S. Furgason, J. Little, C. Peterson, ARL/University of Texas; K. Kangas, B. Wong, NGA

2. A USRP2-Based Low Cost and Flexible GNSS Signal Recording and Playback System: E. Vinande, AFRL/RVY; Y. Morton, M. Stratis, R. Wolforth, R. Di, Miami University

D4: Operational Demonstrations I

1:40 1. Soldier Warfighter Perspective: Fort Carson, U.S. Army

Alternates


A5: Navigating in Challenged Environments
(Urban, Indoor & Sub-Surface Navigation)

3:40 1. Wavelet Based Human Motion Classification and its Application for Personal Navigation in GPS Denied Environments: Y. Ma and T. Ryno, Honeywell Aerospace

4:00 2. Doppler Aided Inertial Navigation (DAIN) - Enabling Consumer-Grade Meter-Level Accuracy Indoor Positioning: M.B. Mathews, and P.F. MacDoran, Locotronix Corporation


Alternate


B5: Applications: Micro Navigation & Land


4:00 2. Sub-meter Dynamic Precision Train Location System Using Low-Cost Sensor Components: K.M. Betts, S. Sloat, D.L. Reed, J.D. Wetherbee, D.P. Stranghoener, T.J. Mitchell, A.W. Byrne, SAIC

4:20 3. Nuclear Magnetic Resonance Gyroscope: M.S. Larsen, M. Bulatowicz, Northrop Grumman


Alternate


C5: Space & Satellite Applications

3:40 1. GPS at GEO: A First Look at GPS from SBIRS GEO1: L. Barker, Lockheed Martin Space Systems Company; C. Frey, Lockheed Martin Integrated Systems and Global Solutions


4:40 4. EPOCHA Moves Into Full Production at NGA: Test and Evaluation Results: C. Minter, S. Rubbelke, National Geospatial-Intelligence Agency; E. Swift, Naval Surface Warfare Center - Dahlgren Division; J. Lundberg, M. Merrigan, J. Drotar, NSWCDD

5:00 5. Latest Realization of the WGS 84 Reference Frame: R. Wong, C. Rollins, National Geospatial Intelligence Agency

Alternate

D5: Operational Demonstrations II (3:35 p.m. - 5:40 p.m.)  Pikes Peak 3/4


4:20  2. Rockwell Collins DIGAR: J. Weger, Rockwell Collins

5:00  3. Commercial Mobile Devices and Server Based Navigation and Tracking System: M. May, PSU/ARL Navigation R&D Center

Alternates


Exhibitor Meet & Greet Social: 6:00 p.m.- 8:00 p.m., Exhibit Hall

Wednesday, June 13
3:35 p.m. – 5:40 p.m.

Thursday, June 14
8:30 a.m. – 10:00 a.m.

PLENARY SESSION II
Summit Ballroom
(4th floor)

Rear Admiral Jonathan W. White,
Commander, Naval Meteorology and Oceanography Command

Maj. Gen. (ret) Robert Rosenberg,
Chairman of the GPS IRT

Break: 10:00 a.m. - 10:25 a.m., Exhibit Hall
A6: Autonomous Navigation


Alternate


B6: Applications: Munitions

10:35 1. GPS Requirements for Precision Guided Munitions: T. Sharpe, The Aerospace Corporation; S. Mahmood, AFMC Air Armament Center; R. Fullerton, PM Combat Ammunitions Systems


Alternate


C6: Navigation Warfare: GPS in Military Applications I


10:55 2. GPS Situational Awareness Increment I Demonstration: E. Hogan, AMRDEC; J. Rhea, Navigation Technology Associates


Alternate

1. Modeling and Simulation of Ionospheric Scintillation Effect on GPS User Equipment (UE): J. Cardoza, AFRL/RVMN; T. Beach, Creare, Inc.; C. Carrano, Boston College; T. Pedersen, AFRL/RVWX; D. Jacobs, D. Howell, AFRL/RVMN; D. Dresher, Northrop Grumman

D6: Operational Demonstrations III

10:35 1. SAIC’s Precision Micro Navigation Technology Using EDGE Sensor Fusion: K. Betts, SAIC


Alternate


Informal Lunch with Exhibitors: 12:00 p.m. - 1:00 p.m., Exhibit Hall
(Overflow Seating in the Garden Atrium)
**A7: MEMS Inertial Measurement Units**


**B7: Collaborative Navigation Techniques**


**C7: Navigation Warfare: GPS in Military Applications II**

1:20  1. Live Experimental Testing of a Multi-Emitter Localization System for the 800-2400 MHz Frequency Range: B. Ledvina, J. Diamond, *Coherent Navigation, Inc.*; J. Bhatti, T. Humphreys, *The University of Texas at Austin*


Alternate


**D7: Operational Demonstrations IV**

1:20  1. TruTrak Evolution Type II GPS Receiver: D. Boyer, *L-3 Interstate Electronics Corporation*

2:00  2. Warfighter Mission Planning (GPS, Comm, & OPIR) at the Unit Level: C. Bowman, *LinQuest*

Alternate


A8: Robust Navigation Systems/Solutions

Foothills


B8: Battlefield Smart Phone Applications

Centennial


4:00 2. Challenges of Integrating Military GPS into SmartPhone Applications: G. Gerten, B. Gerten, J. Hebert, *PreTalen Ltd.*


Alternate


C8: Testing

Pikes Peak 1/2


4:40 4. CIGTF 120 inch Centrifuge Characterization: J. Bingham, J.L. Diaz, D.M. DeVargas Jr., 746 Test Squadron

5:00 5. Results of Advanced Military SAASM Testing in the SAT-CAVE: J. Killian, E. Thompson, C. Broughton, A. Perez, D. Devargas, K. Johnson, 746 Test Squadron

Alternates


2. NAWC-AD Testing of Installed Cabin GPS Repeater Systems: P. Cook, *NAVAIR*

D8: Operational Demonstrations V (3:35 p.m. - 5:40 p.m.)

Pikes Peak 3/4

3:40 1. TRX Systems GPS-Denied Tracking and Location System: C. Politi, *TRX*


5:00 3. Non-magnetic North Determination Using a Low-power MEMS System: M. Horton, *Moog Crossbow*

Alternates


CLASSIFIED DAY AGENDA: USAFA Falcon Club

Buses Depart Crowne Plaza Hotel 7:15 a.m.

Security Validation/Entry Control 7:45 a.m. – 8:25 a.m.

Opening Remarks: Mr. West Kasper, JNWC 8:30 a.m. – 8:45 a.m.

Security: Ms. Gloria Dumone, JNWC

SESSION A9: Adversary Developments in NAVWAR 8:45 a.m. – 9:35 a.m.
1. NAVWAR Threat Update & Full Spectrum Operations: D. Brooks, Joint Navigation Warfare Center

SESSION A10: NAVWAR Testing 9:35 a.m. – 11:45 p.m.
1. PANACEA: G. Gerten and B. Gerten, PreTalen Ltd.

BREAK: 10:00 a.m. – 10:30 a.m.

3. BFEA Test Results on an L3/IEC MUE Receiver: J. Carrier, USAF GPS Directorate; R. Townsend, L-3 Communications/Interstate Electronics Corporation

4. Performance Qualification of GPS Anti-Jam Technology (GAJT) as a Receiver Independent Sub-System: A. Manz, NovAtel Inc., Canada; A. Thommesen, QinetiQ Ltd.

LUNCH: 11:45 a.m. - 1:15 p.m.

Panel Discussion 1:15 p.m. – 3:15 p.m.

Warfighter Cross-Talk: “Crosstalk” is an interactive discussion with war fighters who have had recent operational experience that informs the navigation development community on how to better formulate military navigation systems. Panel members will make an opening statement on how current navigation systems are meeting the needs of their missions, followed by questions from the audience. Confirmed panel members as of May 28:

Maj Donald Brooks, USA, JNWC
Maj Joshua Brown, USAF, SMC/GP (GPS Directorate)
CWO5 William Dagenhart, USMC
Mr. Richard Forlastro, Customs & Border Patrol (CBP), Office of Intelligence & Investigative Liaison
Maj Matthew Garrison, USAF, F-16 Program Office
Capt Jeffrey Wright, USMC, 3d BDE PLT Commander, 2d ANGLICO

BREAK: 3:15 p.m. – 3:45 p.m.
Session A11: Flexibility in NAVWAR 3:45 p.m. – 5:25 p.m.

1. Effects-Based Electronic Support: J.R. Davis, Northrop Grumman Corporation; J.P. Lortie, Jr., Independent Consultant
3. P(Y) Versus M-Code Performance Analysis: G. Green, J. Wollam, LinQuest; E. Foster, SMC/GPUI

Alternate


Closing Remarks 5:25 p.m. – 5:35 p.m.

MAJ Don Brooks, Joint Navigation Warfare Center
Paul Olson, JNC Technical Program Chair

Buses Load 5:40 p.m.

Conference management highly recommends taking advantage of the bus transportation provided to and from the classified session at the U.S. Air Force Academy. If you must drive, please use the gate specified below. Parking is available.

Driving Directions from the Crowne Plaza to the U.S. Air Force Academy Falcon Club:

If you have a CAC Card or DOD-Issued ID (South Gate Entrance)

- Head west on S. Circle Dr.
- Slight right to merge onto I-25 N toward Denver
- Take the exit toward CO-83 N
- Turn left onto N. Academy Blvd.
- Continue onto S. Gate Blvd.
- Continue onto Stadium Blvd.
- Turn left onto Academy Dr.
- The Falcon Club will be on the right

If you do not have a CAC Card or DOD-Issued ID (North Gate Entrance)

- Head west on S. Circle Dr.
- Slight right to merge onto I-25 N toward Denver
- Take exit 156B toward Air Force Academy
- Merge onto N Gate Blvd.
- Turn left onto Stadium Blvd.
- Turn right onto Academy Dr.
- The Falcon Club will be on the right
Be Sure to Attend the 52nd Meeting of the Civil GPS Service Interface Committee at the ION GNSS 2012 Conference

Nashville Convention Center • Nashville, Tennessee
September 17 & 18, 2012

Coordinated by the U.S. Department of Transportation Research and Innovative Technology Administration and the U.S. Coast Guard, the CGSIC meeting features a thorough update on the GPS program, augmentation systems, international activities, and other special topics.

For an updated agenda please visit http://www.navcen.uscg.gov/cgsic/meetings/default.htm
It Knows Where You’re Headed

Our SDN500 is a tightly coupled INS/GPS solution featuring low noise and <1.0 deg/hr. in-run gyro bias. Contained in a tight, 26-cubic-inch, 1.8-pound package, the SDN500 is robust and able to maintain tactical-grade performance during GPS outages.

SYSTRON DONNER
INERTIAL

The Leader in Quartz MEMS Technology
for more information visit
Systron Donner at Booth #15