**CN420 GPS Modernization and Relation to other GNSS**
**September 20, 2010, 6:45 pm-9:30 pm, CEU: 2.5**
**GNSS Solutions® Tutorials prior to ION GNSS 2010, September 20-21, 2010**
**Oregon Convention Center, Portland, Oregon, USA**

**Instructor:** Thomas Stansell, Stansell Consulting

**Prerequisite:** Some knowledge of mathematics and computer science will be useful. The information in CN405/406 Fundamentals of GNSS with emphasis on GPS I & II or CN425/426 GNSS Signals, Systems & Performance with emphasis on Galileo would be useful, but not required.

**Intended Audience:** Engineers, scientists, and managers interested in GNSS using GPS, Galileo, Glonass and/or other satellite navigation system seeking information on new GNSS signal formats and systems. The course provides information on Modernized GPS signals, Galileo, and the Quasi-Zenith Satellite System (QZSS). The course is a systems level course and not too detailed for the beginner to GNSS.

**Notes Provided:** Slides presented will be professionally spiral bound, with clear plastic cover, including color to add clarity where needed.

**Reference List:** A reference list will be provided as part of the note package for completeness and to allow the interested attendee to obtain additional information.

**Course Overview:** This course provides information on many aspects of GPS modernization and how these efforts relate to other GNSS systems; the course covers topics on GPS modernization, including signals and satellite capabilities, interoperability with Galileo signal formats and services, QZSS, Glonass, Compass and other GNSS concepts.

**Course Content:** The main topics to be covered by this course are:

- Motivations for modernization
- GPS Modernization:
  - L2C, L5, M-code, and L1C signals
  - Galileo interoperability
  - Performance trade-offs and applications
  - Improved GPS III functionality
    - Program status and schedule
    - New capabilities
- Relationship to other GNSS
  - Quasi-Zenith Satellite System (QZSS)
  - Galileo
  - Glonass
  - Chinese Compass and Beidou-2
  - Indian Regional Satellite System
- GNSS Compatibility and Interoperability

- Interoperability improvement opportunities
- Performance Improvement opportunities.

**Course Outcomes:** At the completion of this course, the attendee should have the ability to understand the various modernization efforts ongoing to GNSS and assess their applicability to various applications. For additional details on the performance of new GNSS signals CN433/CN434 Receiver Signal Processing for Future GNSS Signals are recommended.