METIS  Second Training & Seminar

Maritime EU GNSS activities

FDC
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AGENDA

- International and European Legislation
  - IMO resolutions
  - EU Directives and Communications
- EU Maritime projects
  - MARUSE
  - MARNIS
  - GARMIS WP 4200 (Maritime Standardisation)
- European Maritime Radio Navigation Forum

The METIS project is managed by the European GNSS Supervisory Authority through Euro-MED GNSS I project
International and European Legislation

- United Nations - IMO - (International Maritime Organisation)
  - Adopted into SOLAS (Convention on Safety Of Life At Sea)
    - LRIT (Long Range Identification and Tracking) - Satellite
    - AIS (Automatic Identification Systems) - VHF
  - LRIT and AIS both require GNSS information.
- WWRNS (World Wide Radio-Navigation System)
  - GNSS Intrinsic component

- United Nations - FAO - (Fisheries and Agriculture Organisation)
  - VMS (Vessel Monitoring System) - Requires GNSS
International and European Legislation

- EU Initiatives
  - EC 75/2002 Related to marine equipment type approval procedures (Amendment to the MED Directive)
  - European LRIT Data Centre.
  - DG Fisheries & Maritime Affairs - Requires VMS fitted to 11500 fishing vessels.
MARUSE  http://www.maruse.org

- 6th FP RTD Maritime Applications Project funded by GJU (GSA)
- Studies and technical development activities (demonstrations)
  - Maritime Galileo pseudolites
  - Galileo/GNSS receiver prototype capable of tracking GSTB-V2 signal and Galileo Pseudolites
  - Maritime User Terminal
  - Maritime Local Element
  - Integrated Navigation Test Bed
  - Use of communication links (VHF, IALA, AIS, WLAN, GPRS/UMTS)
MARUSE

- High End requirements - vessels at extreme limits

  - Marginal due to depth, length or breadth
MARUSE

- Problems to be resolved
  - Multipath and Availability in Ports
  - Continuity due to long critical operations
  - Improved integrity (HPL)
MARESE

Increased safety for critical operations:

- Galileo is independent from GPS/EGNOS
- Integrating Galileo and GPS/EGNOS gives enhanced fault protection
- Use of Galileo pseudolites
MARUSE – Pseudolite demonstration testbed
EU Project MARUSE - Demonstrations

- Demonstration 1 (Trondheim) – Maritime Local Element (Kongsberg)
  - This will demonstrate the navigation equipment to be used in the subsequent demonstrations and will demonstrate improved accuracy, availability and integrity provided by Galileo and EGNOS.
EU Project MARUSE - Demonstrations

GPS
Glonass
Egnos
Galileo
Radio (UHF)
EU Project MARUSE - Demonstrations

- Demonstration 2 – Inland waterways (Via Donau)
  - This will demonstrate vehicle guidance on lock approach. Identifying the accuracy and availability differentiators provided by Galileo and EGNOS.
  - Held in the 3rd quarter of 2007 at the Djerdap lock (on the boarder of Serbia and Romania).
EU Project MARUSE - Demonstrations
EU Project MARUSE - Demonstrations

- Demonstration 3 – Oban (Scotland)
  - This will demonstrate E-navigation concepts using pseudolites
• Demonstration 4 – Livorno (Italy)
  – This has demonstrated intermodal applications using available GNSS, AIS, EGNOS and software simulations to raise awareness
• Integrated Research Project Funded by EC 6th FP
• The development of a safety structure in European waters through the use of Vessel Traffic Management (VTM) in the littoral seas.
  – VTM is dependent on GNSS
• Includes continuous monitoring of high risk vessels along the European coasts using AIS and Long Range (LR) AIS (LRIT),
  – AIS and LRIT are dependent on GNSS
• Intervention of the coastal states to protect their coasts, the provision of safe havens, the provision of Emergency Towing Vessels (ETVs), the provision of sufficient salvage capabilities and the integration of VTM and Search and Rescue functions into a safety preventive and remedial network along the European coasts.
• The development of practical solutions as to how VTM can contribute to monitoring of vessels and tracking of cargoes from consignor to consignee (down to pallet and package size) within its jurisdictional boundaries;

• The definition of functional requirements for a pan-European solution for the use of AIS coastal networks and the supporting information exchange network such as SafeSeaNet for other authorities and agencies requiring regulatory information for vessels destined to European ports.
Efficiency falls under two broad headings:

- Efficiency of traffic flows in confined waters, the responsibility is within the scope of VTSs in ports and sometimes in coastal VTSs within the territorial seas,
- Efficiency of sea traffic as an important mode of the total transport chain and the provision of information to the total transport chain.
- Efficiency of traffic flows in ports and territorial waters will be improved by developing appropriate software for advance planning of port and terminal activities.

Many aspects of MARNIS require GNSS either directly for navigation purposes or for Position information integral to AIS or LRIT.

MARNIS Therefore has a work package on Galileo
GARMIS

- Project funded by GJU - GSA (6th FP)

Provide standardisation support & liaison with:

- IMO
- IEC
- IALA
- RTCM
- NMEA
- EMRF
GARMIS

- IMO
  - Draft Galileo receiver performance standards approved by IMO
  - Draft receiver performance standards for combined GPS&Galileo and
    Differential Galileo are ready and submitted to MSC82 to be placed on
    the work plan for NAV53.
- IEC & NMEA
  - New Galileo receiver test standards are to be developed, started.
  - Include development of Galileo interface sentences as part of the IEC
    61162 series of standards and NMEA standards.
- IALA
  - IALA Navguide & recommendation being reviewed to include Galileo
  - Represented at the e-NAV committee
- RTCM
  - Galileo messages have been developed for RTCM v2.3 and v3.0
    standards.
The EMRF is a forum to represent the views of maritime interests in Europe, to provide expert input to European Policy on safety of navigation and related matters.

- The European Maritime Radionavigation Forum (EMRF) gathers together different bodies including maritime administrations to ship-owners’.

- Its focus is on the co-ordination of European maritime interests in the field of radionavigation systems for development within Europe.

- One of its main aims is to promote the maritime requirements for the safety assessment and certification of future satellite systems, their augmentation systems and back-up, and to develop material to achieve recognition and operational approval of those systems as part of the IMO World-Wide Radionavigation System.
Thank You!

http://www.aui.ma/GNSS/metis/