

Maritime and Inland Waterways Panel Discussions Results Summary

EGNSS User Consultation Platform Plenary

4th December 2018

Agenda

- Highlights of Main Trends in the Market
- Recommended Refinements of User Requirements
- User Requirements for New/Emerging Applications
- Research and Innovation Priorities
- Discussion on Enhanced EGNSS Services
- Feedback on Back-up PNT Solutions



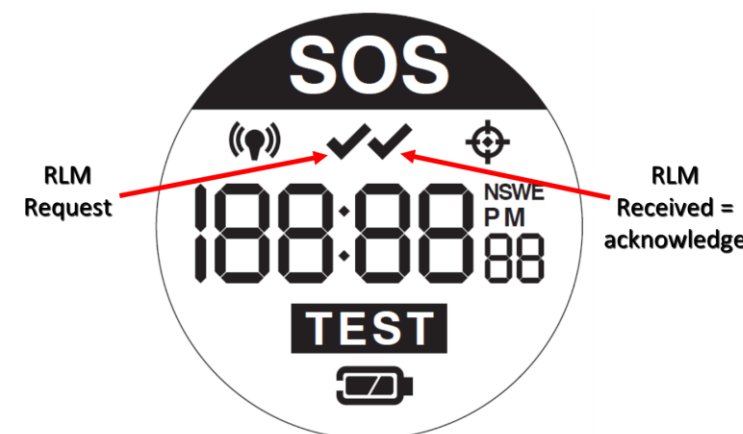
Highlights of Main Trends in the Market

- Autonomous vessels (manned and unmanned)
- Resilient PNT
- Sensor fusion
- SAR beacons with return link capabilities
- Cybersecurity / Authentication
- Drones to support surveillance

Recommended Refinements of User Requirements

- SAR
 - AIS enabled beacons
 - Final rescue stage requires accuracy down to 1 m
 - Remote activation of beacon
- Inland Waterways
 - Bridge collision warning requirements
 - Horizontal accuracy of 20 cm
 - Vertical accuracy of 10 cm
 - Heading of 0.3 degrees

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Source: Mobit / SINSIN



Recommended Refinements of User Requirements

- Navigation in Ports
 - Horizontal accuracy of 5 cm at the last stage of berthing
 - Berthing impact speed needs to be below 0.2 knots
- Vessel to vessel operations
 - Multifrequency / Multi-constellations
 - Integrity
 - High Accuracy
 - Authentication of the augmentation system
 - Standardised communications

Recommended Refinements of User Requirements

- Port container terminal operations
 - Straddle carrier requirements
 - Horizontal accuracy for navigation of 1 m (but 20 cm accuracy is required when entering in a specific row to handle containers)
- Container handling requirements
 - Centimetre accuracy is needed for the container operations e.g. lifting the containers
 - Vertical accuracy of 2 m to identify the level that the container is located in the stack

Recommended Refinements of User Requirements

- Market challenges
 - Increase efficiency: Fuel costs and crewing costs are the main drivers (70-80% of total costs on merchant ships). Fuel costs also very relevant for IWW. More efficient navigation is important.
 - Cybersecurity is a major threat in maritime
- Research priorities
 - Short term:
 - Enhance confidence that GNSS system is robust = addressing jamming and spoofing (e.g. Galileo authentication)
 - Fuel consumption optimisation
 - Special topics with focus on SMEs
 - Long term:
 - Unmanned vessels and how do they integrate into mixed traffic

Research and Innovation Priorities

- Main barriers
 - Regulation can be a barrier for innovation and the use of new technologies but also an enabler, in case regulations require a certain performance/technology
- Most relevant EGNSS services
 - Galileo OS-NMA – greater security and accuracy in the service could be a differentiator
 - Return link services and their evolution are very relevant for SAR
- Synergies with other technologies
 - Copernicus for forensics, surveillance and mapping
 - Sensor/data fusion is important e.g. lidars

Discussion on Enhanced EGNSS Services

ARAIM

- RAIM is already implemented in maritime receivers
- With respect to ARAIM, no feedback was received

High Accuracy Service (20 cm)

- Bridge collision warning requirements for IWW
- Automatic docking and auto-mooring
- Container terminal operations

Feedback on Back-up PNT Solutions

- There is a high dependency on GNSS in maritime
- With respect to back-ups for positioning, IALA already published a recommendation on the requirements for these systems R-129
- Back-up for timing and synchronisation needs to be further analysed. There is a proposal to request IALA to consider the potential review of this recommendation

Thank you !