

# Rail Panel Discussions Results Summary

## User Consultation Platform, Plenary

4<sup>th</sup> December 2018

# Agenda

- Highlights of Main Trends in the Market
- Recommended Refinements of User Requirements
- Research and Innovation Priorities
- Recommendations for enhancing EGNSS Services



# Highlights of Main Trends in the Market

- Strong focus on the use of GNSS in the ERTMS (European Rail Train Management System). Requirements are very highly demanding because it is a safety-critical application;
- Future Automatic Train Operation;
- But GNSS-based location unit can be used in a more wide variety of not safety applications, that will benefit from the train position knowledge (passenger information, structural monitoring, ...).

# Recommended Refinements of User Requirements

We have started from non safety relevant requirements (to complete the discussion from last UCP mainly devoted to safety ones)

- Example 1



Application	Accuracy (2Sigma)	Availability	Integrity	SIL	TTA*	Category
Passenger information	HNSE < 100 m	95%	N/A	N/A	N/A	Non-safety & Non-liability relevant

Add the case of mass transit where accuracy requirement is higher (<5m)

# Recommended Refinements of User Requirements

We have focused also on non safety relevant requirements (to complete the discussion from last UCP mainly devoted to safety ones)

- Example 2

GNSS can be used to calibrate odometer

Application	Accuracy (2Sigma)	Availability	Integrity	SIL	TTA*	Category
Odometer Calibration	HNSE < 1 m	High	Very High	2-4	TTA < 10s	Safety relevant



Application	Accuracy (2Sigma)	Availability	Integrity	SIL	TTA*	Category
Odometer Calibration	HNSE < 1 m	High	Very High	2-4	TTA < 10s	Safety relevant



# Research and Innovation Priorities

We know (from recent project like STARS) that:

- local threats degrade GNSS performance and, specially, integrity in railway environments and
- standalone solution as well as EGNOS cannot answer railway requirements.





# Research and Innovation Priorities

So, we need to:

- Speed up the work on safety relevant solutions for train positioning ready for the future evolutions of ERTMS
  - ✓ work on safety mechanisms (railway RAIM or ARAIM?) to ensure integrity in the railway environment;
  - ✓ define Railway MOPS;
  - ✓ analyse possibility of cross acceptance of the EGNOS related aviation safety assumptions;
- Continue to support the certification process & safety assessment;
- Expand the panel of applications in the R&D projects (Trackside worker protection, ATO).



# Recommendations for enhancing EGNSS Services

- Continue the work with the users on definition of the service to be provided by EGNOS including the service provisioning aspects;
- Investigate possibilities of alternative transmission of the EGNOS information for future use in rail, based on the conclusions of the STARS project.



# Thank you !