

# GNSS TECHNOLOGY ADVANCES IN A MULTI-CONSTELLATION FRAMEWORK

**25-26 SEPTEMBER, 2014** ROME  
SOGEI - VIA MARIO CARUGGI, 99

## DAY 1: GNSS TECHNOLOGIES AND APPLICATIONS

- 08:30 - 09:15 Registration
- 09:30 - 09:45 Welcome address by Sogei Chairman and CEO, Cristiano Cannarsa

### SESSION 1: A SCIENTIFIC OVERVIEW OF MULTI-CONSTELLATION NAVIGATION AND INTEGRITY

- 09:45 - 11:00 Multi-GNSS Navigation: Pratap Misra (Tufts University)
- 11:15 - 12:30 Integrity Concepts and Advances: Per Enge (Stanford University)

- 12:30 - 13:45 *Lunch*

### SESSION 2: ADVANCED APPLICATIONS AND SERVICES

- 14:00 - 15:00 High-Integrity GNSS Augmentation Systems for Train Control Systems: Francesco Rispoli (Ansaldo-STG); Alessandro Neri (Roma Tre University)
- 15:00 - 16:00 High-Accuracy Services Within the Galileo CS, Feasibility, Drivers and Expected Performance: Juan Ramon Martin Piedelobo (GMV)
- 16:20 - 17:20 Anti-Spoofing and Authentication Techniques: Oscar Pozzobon (Qascom)
- 17:20 - 17:30 Closing remarks

## DAY 2: GALILEO SERVICES WITHIN THE HORIZON 2020 FRAMEWORK

### SESSION 3: GNSS SERVICES, INSTITUTIONAL ORGANISATION AND PROGRAMMES

- 09:00 - 10:00 Key-note on Galileo Status and Institutional Organisation: Carlo des Dorides, Executive Director of the European GNSS Agency (GSA)
- 10:00 - 10:45 Galileo Services Engineering: Marco Lisi, Special Advisor to the European Commission
- 11:00 - 11:45 High-Integrity Application Programmes: Mario Caporale, Italian Space Agency (ASI)
- 12:00 - 12:45 Providing Satellite VAS Services: The Legal Perspective. The Existing Regime and Its Shortcomings with regards to Liability, Data Policy and Data Integrity: Alessandro del Ninno, Professor of ICT Law at the LUISS Guido Carli University of Rome
- 12:30 - 13:45 *Lunch*
- 13:45 - 14:30 Sogei R&D for GNSS Institutional Application Development: Roberto Capua, Head of GNSS R&D at Sogei
- 14:45 - 15:30 GNSS Receiver Clock. An Overlooked Resource for the Detection of Faulty and False Signals: Pratap Misra
- 15:30 - 16:15 GNSS is Green: Per Enge

### SESSION 4: ROUND TABLE AND CLOSING REMARKS

- 16:30 - 17:15 Round table
- 17:15 - 17:30 Closing remarks

Moderators: Roberto Capua; Ennio Ionni

# GNSS TECHNOLOGY ADVANCES IN A MULTI-CONSTELLATION FRAMEWORK

## WORKSHOP SPEECHES OVERVIEW

### **Multi-GNSS Navigation (P. Misra)**

Prof Misra explores the basic issues and interoperability challenges of multi-constellation navigation.

### **Integrity Concepts and Advances (P. Enge)**

Prof Enge introduces basic integrity concepts and the relevant theoretical and technical evolutions.

### **High-Integrity GNSS Augmentation Systems for Train Control Systems (F. Rispoli; A. Neri)**

Messrs Rispoli and Neri describe requirements and technical issues peculiar to the development of high-integrity augmentation systems for train control applications.

### **High-Accuracy Services Within the Galileo CS, Feasibility, Drivers and Expected Performance (J. Piedelobo)**

Mr Piedelobo describes multi-constellation PPP and its integration into the development of Galileo Commercial Services.

### **Anti-Spoofing and Authentication Techniques (O. Pozzobon)**

Mr Pozzobon introduces basic anti-spoofing and authentication techniques and advances within the framework of future available constellations.

### **Key-note on Galileo Status and Institutional Organisation (C. des Dorides)**

The Executive Director of GSA details the current status of the Galileo Programme and its relevant institutional organisation.

### **Galileo Services Engineering (M. Lisi)**

Mr Lisi provides an engineering point of view of the Galileo Services design and infrastructure developments.

### **High-Integrity Application Programmes (M. Caporale)**

Mr Caporale explores the development of the Galileo and EGNOS services and the role played by the Italian Space Agency in the relevant international institutions.

### **Providing Satellite VAS Services: The Legal Perspective. The Existing Regime and Its Shortcomings with regards to Liability, Data Policy and Data Integrity (A. del Ninno)**

Prof del Ninno describes the legal liabilities associated with the delivery of satellite based VAS services.

### **Sogei R&D for GNSS Institutional Application Development (R. Capua)**

Mr Capua provides an overview of Sogei R&D on institutional application shared within the Galileo framework.

### **GNSS Receiver Clock. An Overlooked Resource for the Detection of Faulty and False Signals (P. Misra)**

Prof Misra describes an innovative technique for GNSS fault detection based on the analysis of clock behaviour errors.

### **GNSS is Green (P. Enge)**

Prof Enge provides a new prospective on the role of GNSS services in securing a more sustainable future.