

# The European Commission's science and knowledge service

## Joint Research Centre



# JRC Contribution to EU GNSS Programmes

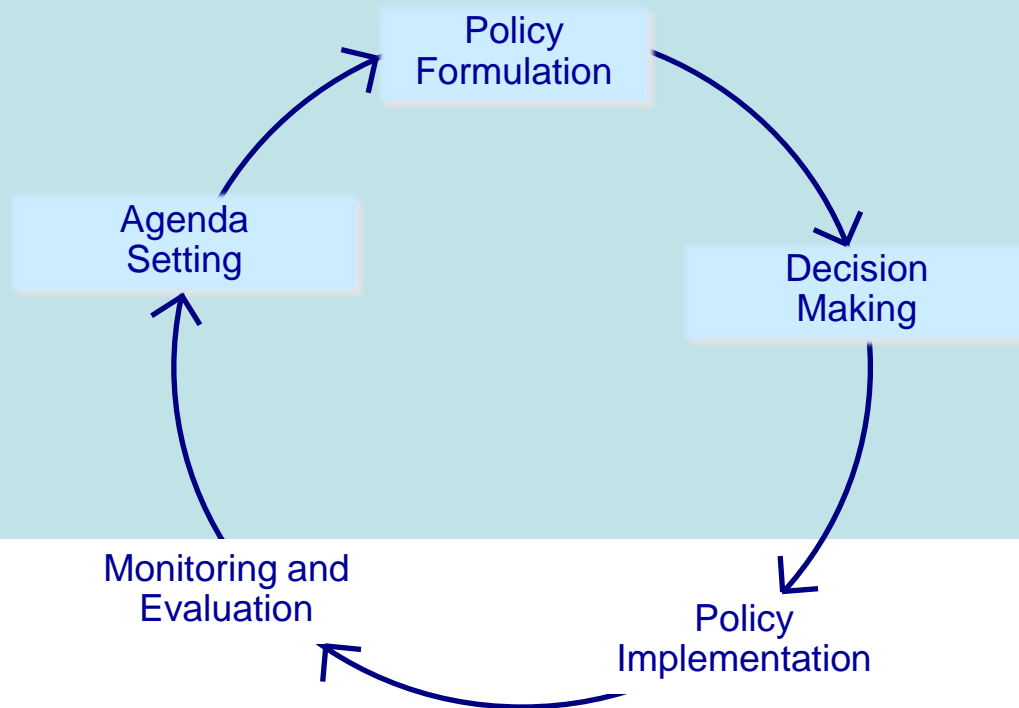
**Matteo Paonni**

12<sup>th</sup> Meeting of the International Committee on Global Navigation Satellite Systems  
Kyoto, Japan

Plenary Session, 3<sup>rd</sup> December 2017

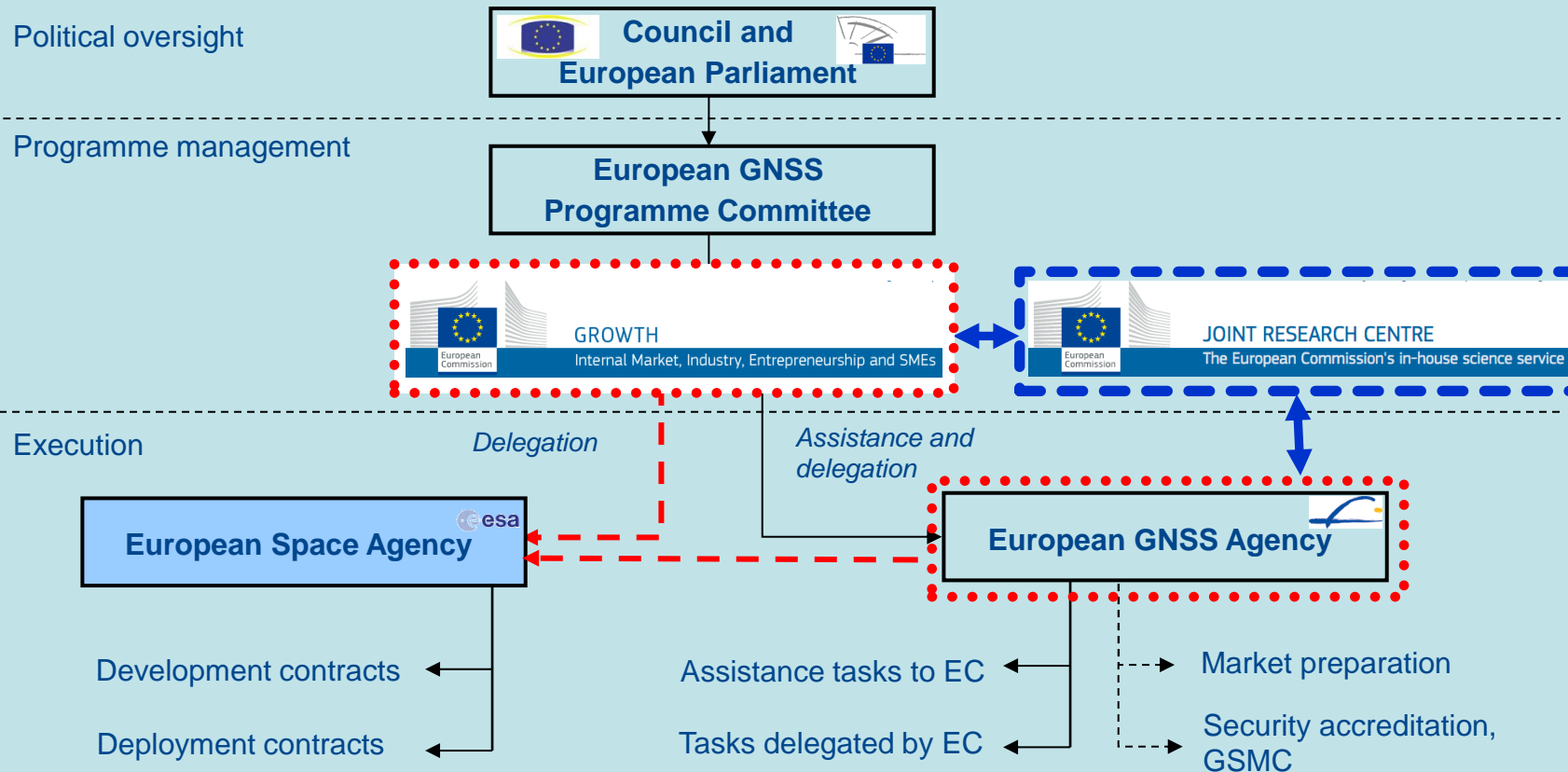
# JRC Mission

- The Joint Research Centre is the European Commission's **in-house science and knowledge service**
- JRC mission is to support **EU policies** with **independent** evidence throughout the whole **policy cycle**
- **Independent**, policy **neutral**, **transversal** service



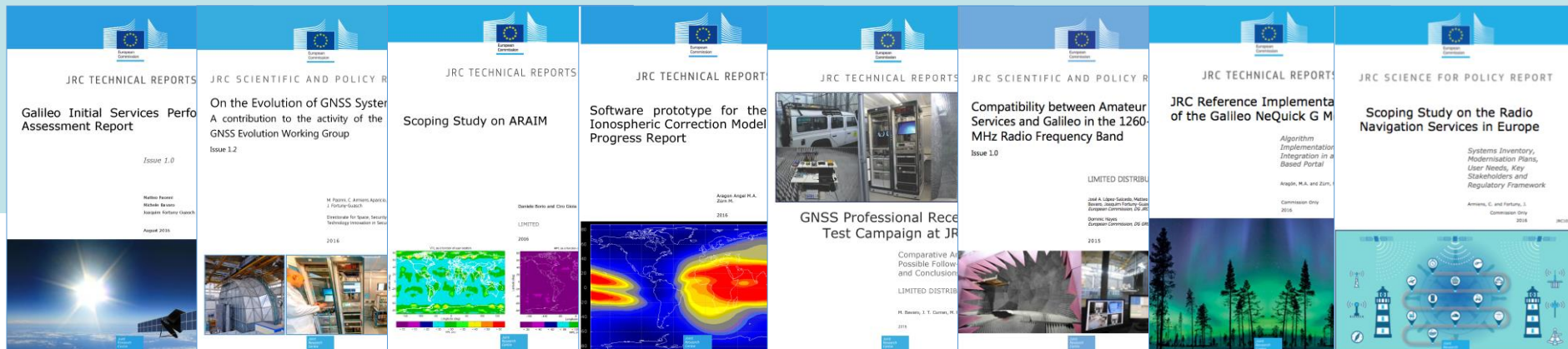
# JRC within the GALILEO Governance

*The GNSS Regulation entrusts the European Commission with the role of Programme Manager*



# Wide Range of Activities with focus on GNSS

- Threat analysis (interference, jamming, spoofing) for Galileo and other GNSS receiver protection
- User Segment Performance, Testing and Validation
- Compatibility and Interoperability within Galileo and other GNSS providers
- Compatibility with other systems (e.g. compatibility analysis between GNSS and telecom services)
- Galileo Services Definition, Performance and Monitoring
- GNSS Signal-In-Space Design and Performance
- Space Weather



# State-of-the-art GNSS Testing Facilities



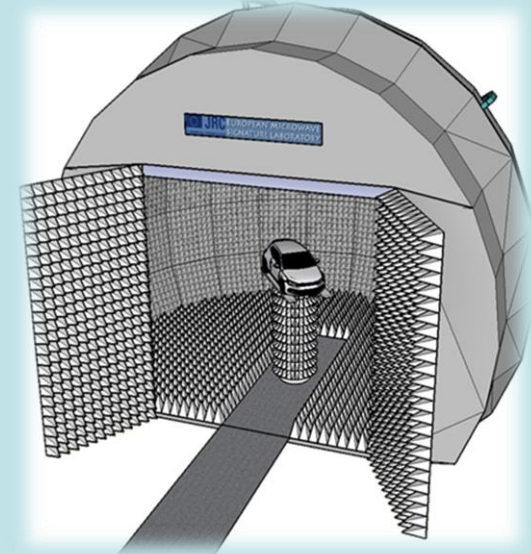
**Tests of GNSS receivers and antennas**



**Tracking Station**



Galileo E1/E6/E5a/E5b 16-bit Quad-Band Record & Playback  
JOINT RESEARCH CENTRE  
Institute for the Protection and Security of the Citizen



**Anechoic Dome**



**Shielded Room**



**GNSS Simulators**



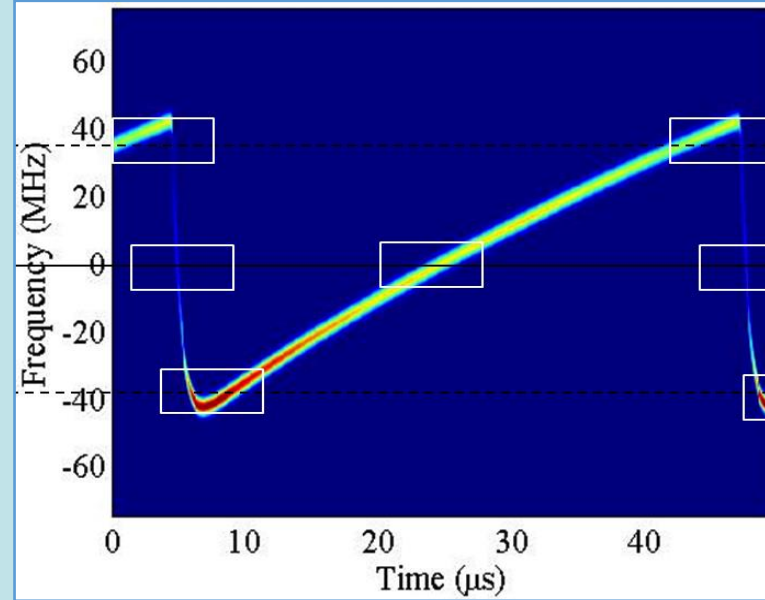
**Galileo user segment Test and validation**

# Scientific and Technological Support to EU GNSS R&D

- European Commission and GSA are promoting many **R&D projects with subject on GNSS** under H2020 and Galileo Fundamental Elements
- JRC provides support to the **entire lifecycle** of the activities
  - ✓ **Define** the scope, **evaluate** and **monitor**
  - ✓ Facilitate access to **experimental facilities**
  - ✓ **Validate** experimental results
- Access to **JRC testing facilities** provided also to many EU national research activities and programmes



# Characterize and Mitigate Threats to GNSS

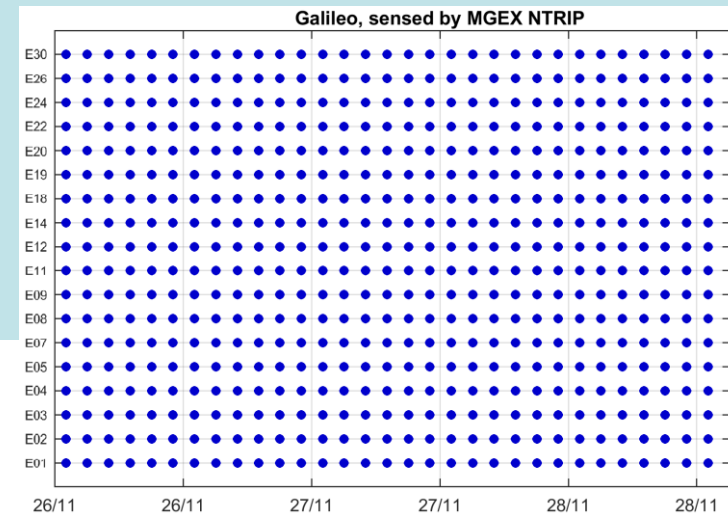
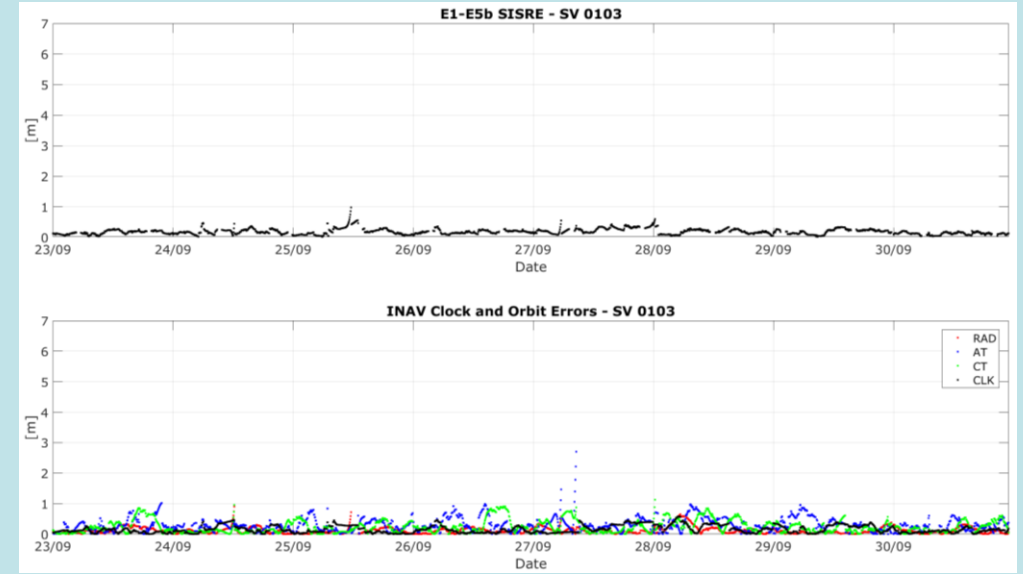
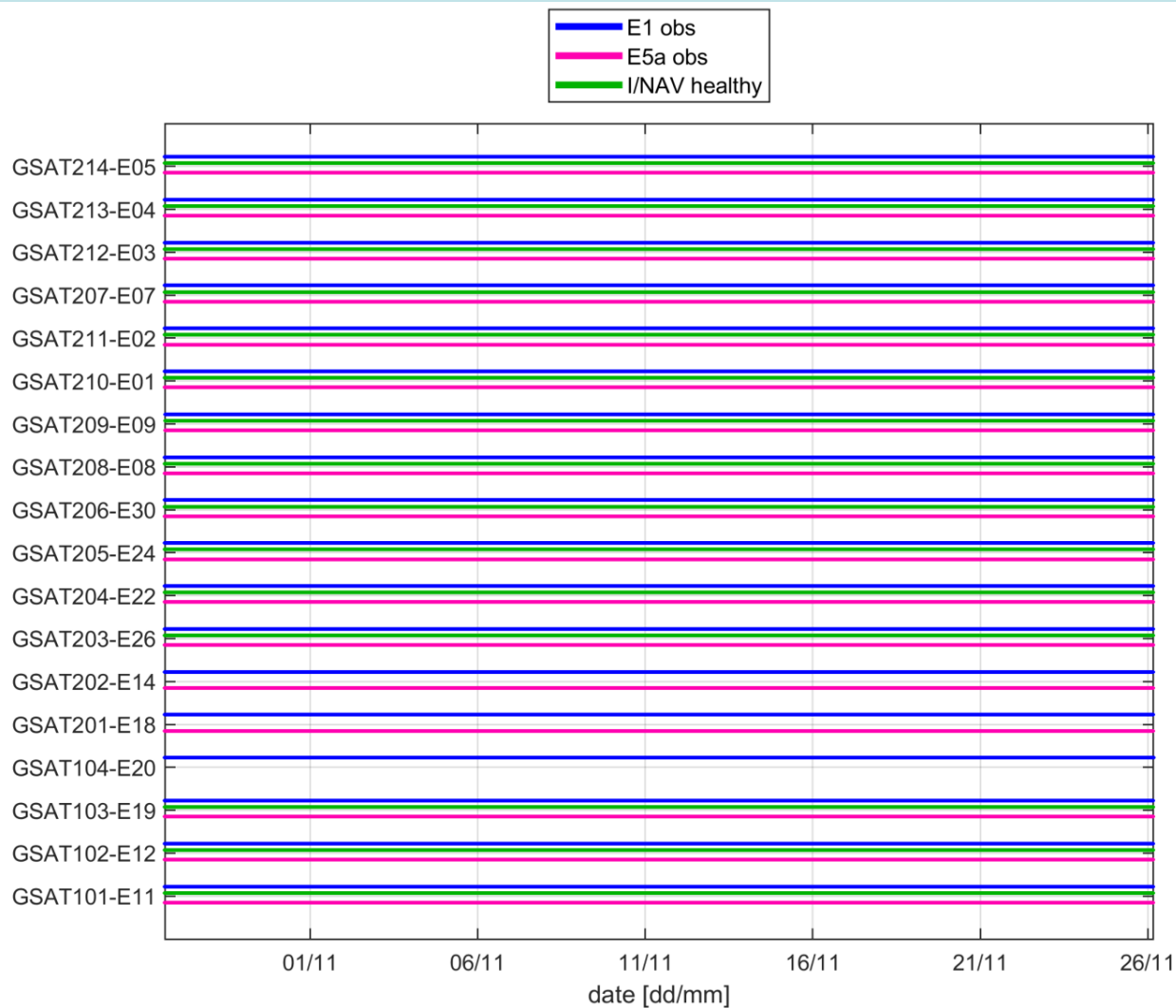


Characterization of automotive GNSS jammers at JRC Ispra



# GNSS Monitoring Service using IGS-MGEX network

*Internal service in support to EC GNSS Programme Directorate*



# EGNSS use in eCall ensures better emergency services

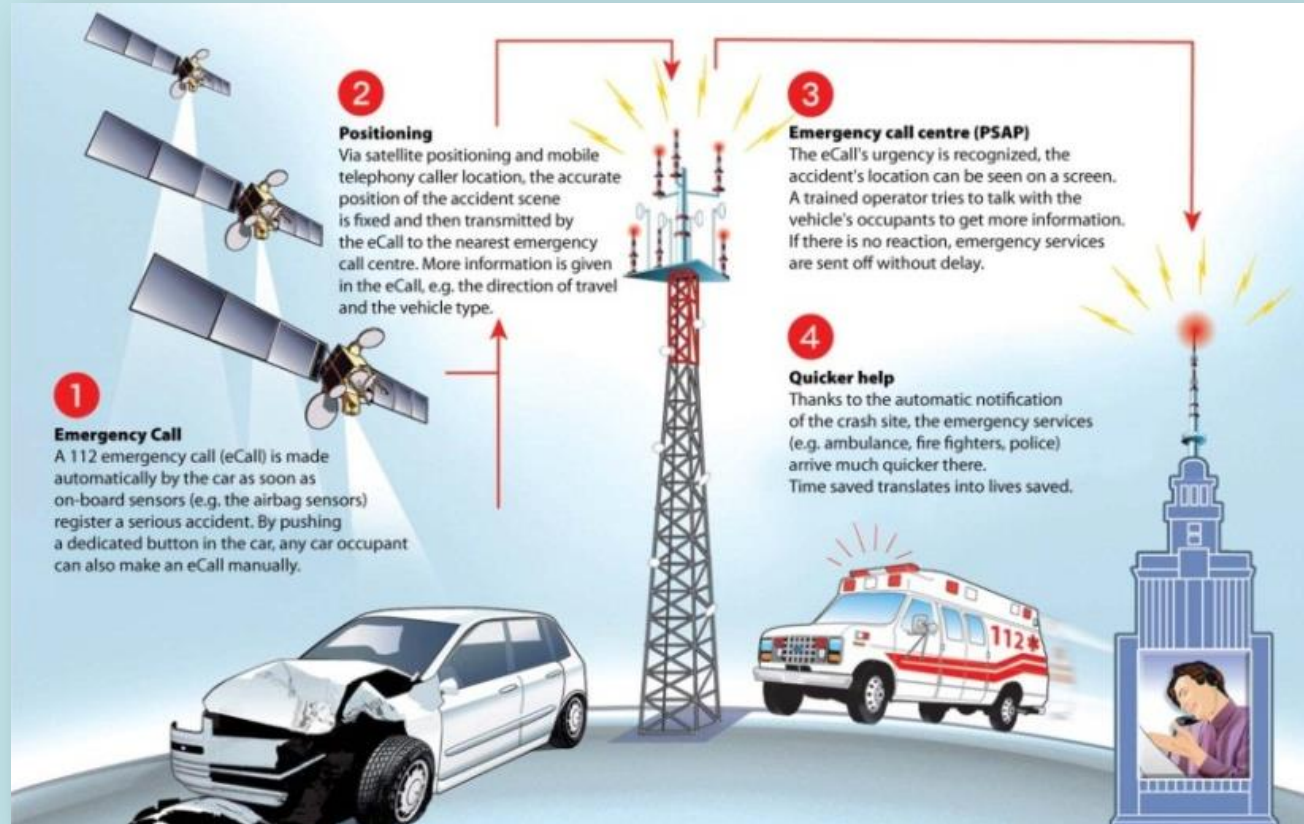
The system enables cars to respond to a crash by contacting the emergency services and wirelessly send airbag and impact sensor information, along with satellite positioning co-ordinates



## Good position to save lives

✓ **Entry into force**  
**31 March 2018**

✓ **By 2020,**  
**EGNOS/GALILEO**  
**enabled in 40 million**  
**cars and vans sold in**  
**Europe**



eCall sends an automatic emergency call to 112 in case of an accident to accelerate emergency assistance to drivers

# Galileo and EGNOS test campaign for eCall devices

- Tests in accordance with European Commission Delegated Regulation (EU) 2017/79
- Tests currently being performed at the **JRC's facilities in Ispra, Italy**
- eCall device manufacturers invited to participate and assess their **devices' capability** to support the reception and processing of EGNSS signals
- Rx manufacturers invited to promote such campaign among their customers



# ESA/JRC International Summer School on GNSS

ESA/JRC International Summerschool on GNSS 2017

04 - 15 September 2017

Longyearbyen, Svalbard - Spitsbergen, Norway

## Knowledge

GNSS SYSTEMS

LAB WORK

## PNT

INTERNATIONAL

RENOWNED

SCIENTISTS

RESEARCH

- Since 2013 summer school with subject on GNSS
- Organized jointly with ESA
- JRC lectures:
  - ✓ GNSS Threats and Countermeasures
  - ✓ Lab on GNSS signal processing
  - ✓ Practical workshop on GNSS receivers

[www.esa-jrc-summer-school.org](http://www.esa-jrc-summer-school.org)

Organized by:



In cooperation with:



# Concluding Remarks

- European Commission's Joint Research Centre growing **impact** on EU GNSS Programmes
- One of the best European **GNSS testing facilities**
- Substantial support to EU GNSS Programmes on **wide range** of areas
- Main focus on **User Segment Testing and Validation**
- **Scientific** and **Technological** Support to EU GNSS R&D



# Thanks

Any questions?

[matteo.paonni@ec.europa.eu](mailto:matteo.paonni@ec.europa.eu)