



October 2, 2024

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Topic 4 Cybersecurity: Protecting our space assets

Protecting Galileo Ground Segment

In this presentation...

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- What is Galileo and its Ground Segment
- Why is it critical and how to protect it ?
- Different actors involved in the protection
- Strong Communications and Information Systems protection (CIS)
- Cybersecurity (CSM):
 - Cybersecurity procedures [restricted]
 - Continuous training
 - Cybersecurity Hardening
 - Continuous monitoring and maintenance
 - Cybersecurity Auditing (CIA)

Overview

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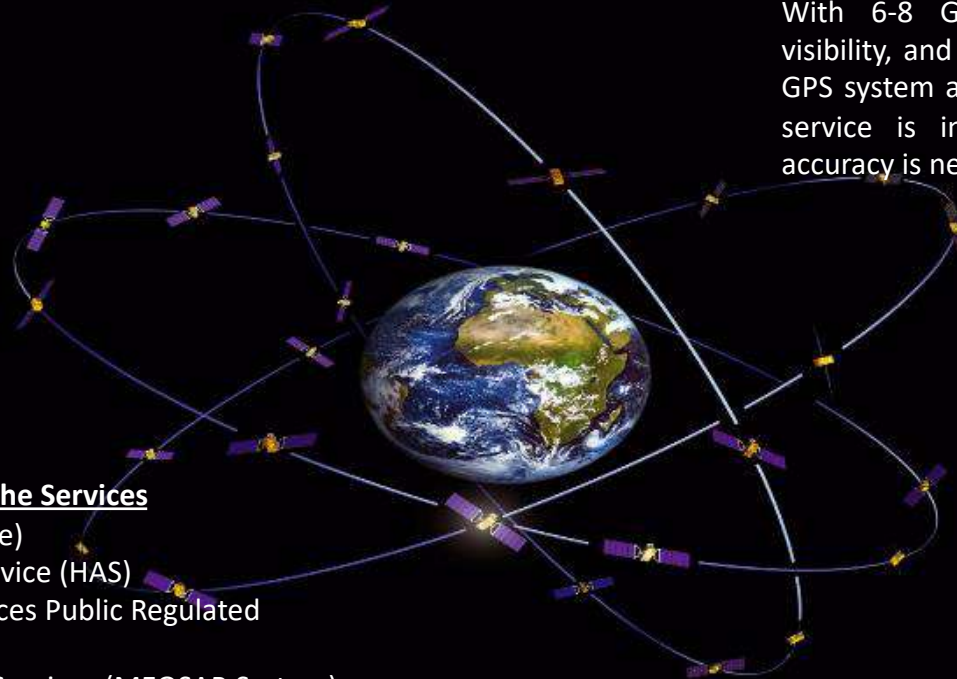
Galileo is the navigation European system per satellite

The Services

- Open Service (Free)
- High Accuracy Service (HAS)
- Commercial Services Public Regulated Services
- Search & Rescue Services (MEOSAR System)

Accuracy

With 6-8 Galileo satellites under visibility, and a combination with the GPS system and depending on which service is in use, the positioning accuracy is near a centimetre.



A constellation of 25 satellites are in usable condition, 2 satellites are “under commissioning” and 5 more are “not available” / orbital altitude : 23 222km (MEO)

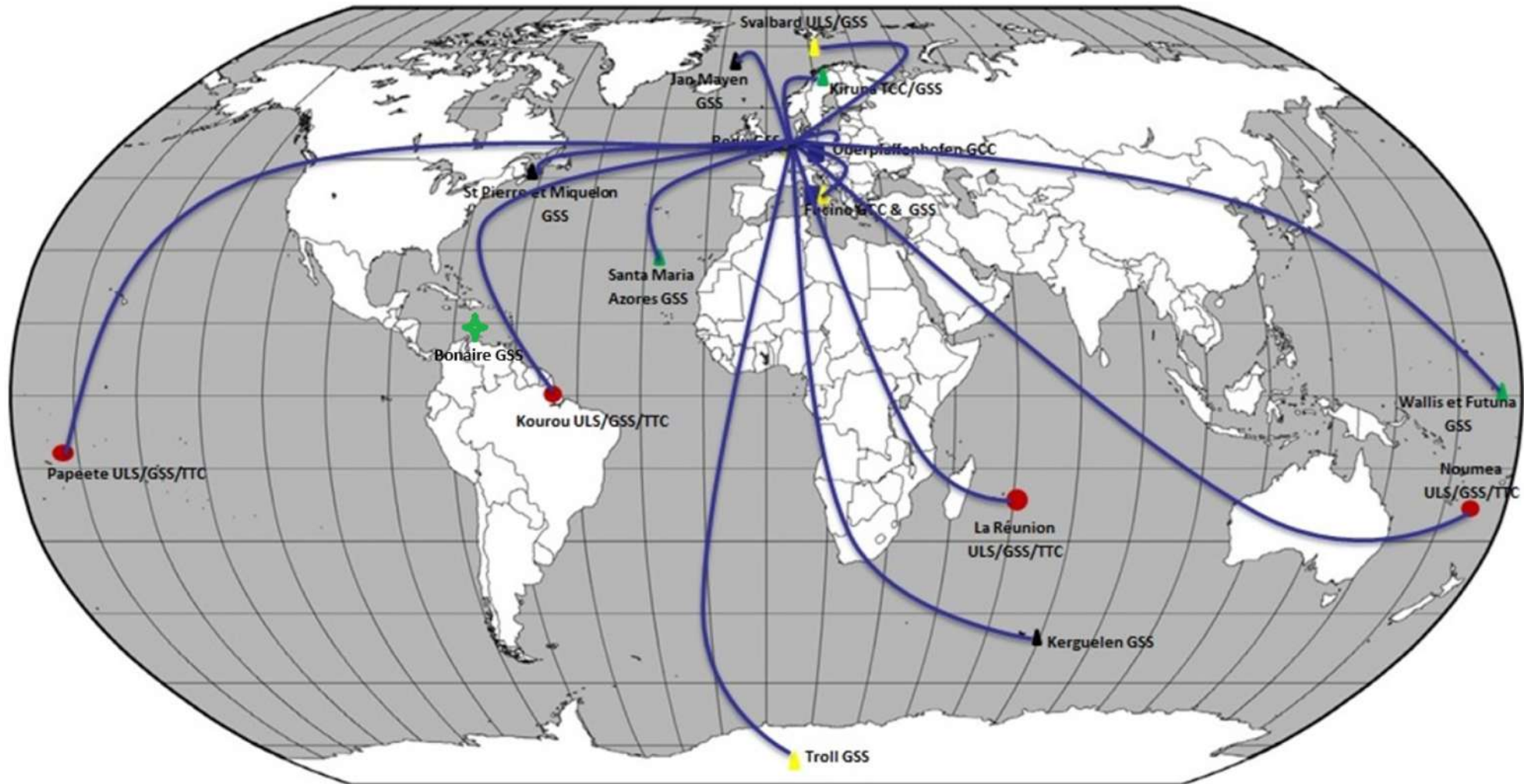
Why the EU needs Galileo system?

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- Independent high-precision positioning system so that European Union does not rely on systems controlled by foreign nations;
- Economic and strategic benefits of having European control over the continued availability of satellite navigation services;
- Facilitate the development of new products and services based on satellite signals;
- Generate related technological benefits for research, development and innovation.



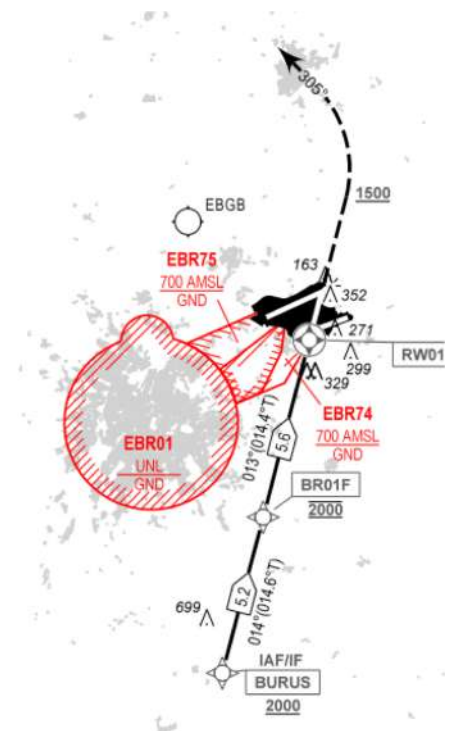
Ground Segment (only TTCF, GSS/ULS, GCC) Switch to Space 4



Importance of GNSS

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- Currently GNSS is used in many critical applications:
For example, Aviation or Autonomous Cars
- Different studies suggest that a GNSS disruption would cost 1 billion per day only to the USA
- But even more important than that are the lives at stake.



And how to protect it

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- Responsibility of any actors in the system from EUSPA and System Providers to Deployers and Operators and Final Users.
- Protection spans from Early Design to Operations
- This presentation focuses on Cybersecurity in Operations



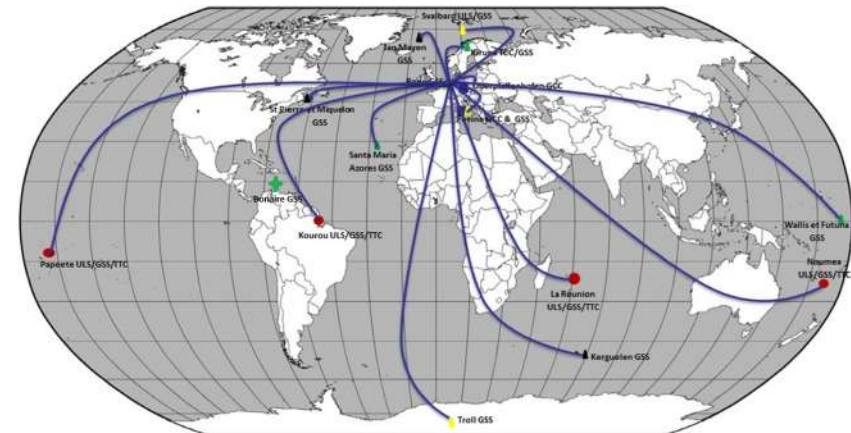
- EU Restricted, EU Confidential, EU Secret
- Controlled by European National Security Authorities NSA's
- There are many things I can't tell you in this presentation
- This is not security by Obscurity,
but just one more layer of protection



Human, the weakest link ? Training

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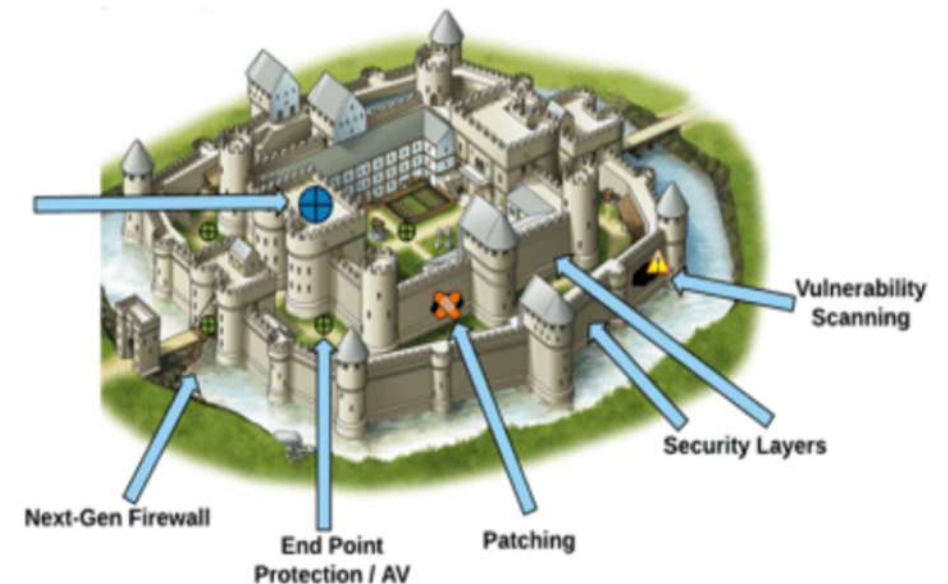
- Dedicated Training Management System (TMS)
- Cybersecurity Awareness Training
- On site Training



Cybersecurity Hardening

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- Hardening is applying a set of tools, techniques and best practices to enhance protection of a system
- Implemented by Cybersecurity teams of the System Provider
- Checked by the System Operator Teams



Monitoring and CIA

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- System is continuously monitored by different teams
- Checking Security Advisories and new published Vulnerabilities.
- Any change in the system is controlled and assessed
- Cybersecurity activities are Audited by independent CIA

Protecting Galileo Ground Segment

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