

# The PRS

Secure EU satellite navigation  
for government use



Secure, robust and always available

## What is the PRS?

The Galileo Public Regulated Service or 'PRS' is an encrypted navigation service designed to be more resistant to jamming, involuntary interference and spoofing. It is similar to other Galileo services, but with some important differences:

- ★ Ensures continuity of service to authorised users when access to other navigation services is denied.
- ★ In cases of malicious interference, the PRS increases the likelihood of continuous availability of the Signal-in-Space.
- ★ Provides an authenticated position - velocity - timing service



## Who is it for?

The PRS is primarily intended for use by EU Member State government agencies, including emergency services, police, critical infrastructure and networks. Access to the PRS will be controlled through an encryption key system approved by Member States'

PRS will be accessible to clearly identified categories of users authorised by the EU and participating States.

Users who have not been granted access to the secure features of the PRS signal will not be able to access any information from this signal. Member States can also revoke user access when necessary.

The PRS can provide support for a range of European public safety and emergency services, as well as law enforcement, internal security and customs authorities:\*

- |                               |                          |
|-------------------------------|--------------------------|
| ★ Police                      | ★ Defense                |
| ★ Search and rescue           | ★ Coastguard             |
| ★ Humanitarian aid            | ★ Border control         |
| ★ Fire brigades               | ★ Customs                |
| ★ Health services (ambulance) | ★ Civil protection units |

\* pending final approval of the PRS Access Rules by the European Union.



## PRS can help users facing two principle threats

**Spoofing** – the transmission of counterfeit GNSS-like signals that force the receiver to compute erroneous positions. The user believes himself to be in another location.

Spoofing requires advanced knowledge of GNSS signals. It could become a serious threat in the coming years as more GNSS applications requiring secure positioning emerge.

A spoofing signal could also be generated by government authorities in case of a security threat. By using the PRS, emergency forces and police will retain the ability to serve the public using GNSS even in such cases.

**Jamming** – the intentional transmission of a burst of radio frequency noise, blocking navigation services by masking the GNSS signal.

A relatively small and inexpensive jammer can disrupt a conventional GNSS signal in a limited area. More powerful jammers could disrupt signals in close proximity of critical infrastructures. PRS will help to reduce this risk and make it easier to identify potential jammers.



# Key elements of the PRS

The PRS end-to-end system design ensures the protection and availability of the signal and its associated data flows:

- ★ **Galileo Security Facility** including Galileo Security Monitoring Centre and all Point of Contact Platforms
- ★ **Ground segment** includes the Galileo Control Centre: Galileo Mission System (GMS), Galileo Control System (GCS), Galileo Sensor Stations (GSS) and Up-Link Station (ULS).
- ★ **Space Segment:** Galileo satellites broadcast the PRS signal uplinked from the ground segment
- ★ **User segment** includes individual end users with PRS receivers and a support and management framework in each Member State.



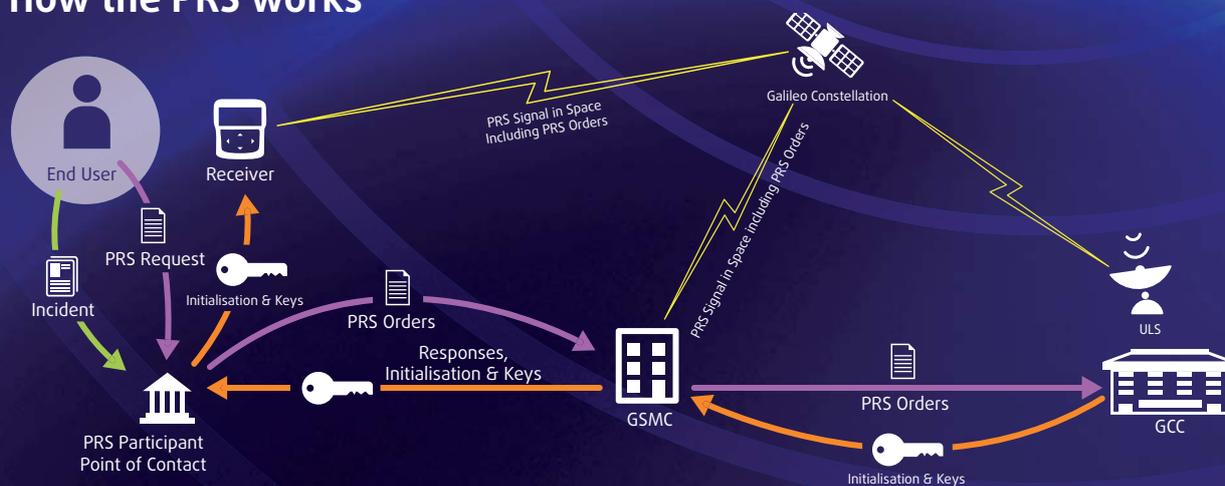
## PRS = Protection

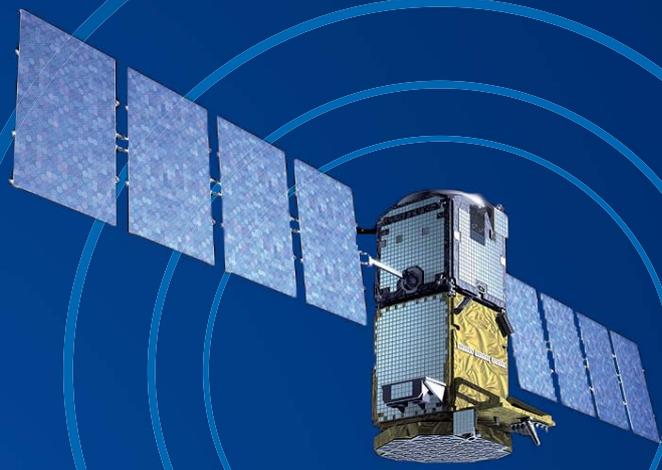
The PRS will enable two very clear and critical capabilities. First, thanks to the robustness of the signal, users will be protected on a daily basis against jamming and spoofing.

This means the PRS will make it more costly and more difficult to attack the Galileo signal – jammers will require more power, they will be more expensive and easier to locate when in use. At the same time, robust encryption mechanisms within the PRS signal will enable positive protection against spoofing.

In addition, under exceptional circumstances, the existence of a protected signal for critical applications would allow for the denial of the open signal to hostile users, without disruption of those critical applications.

## How the PRS works





## Galileo

Galileo is Europe's initiative for a state-of-the-art global satellite navigation system, which will provide a highly accurate, guaranteed global positioning service under civilian control. While providing autonomous navigation and positioning services, the system will be interoperable with GPS and GLONASS, the two other global satellite navigation systems. The fully deployed system will consist of 30 satellites and the associated ground infrastructure.

[www.gsa.europa.eu](http://www.gsa.europa.eu)  
[www.ec.europa.eu/galileo](http://www.ec.europa.eu/galileo)



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**PRS**  
Public Regulated Service