



DATEX II in strategic/wider perspective: Location requirements linked to Galileo

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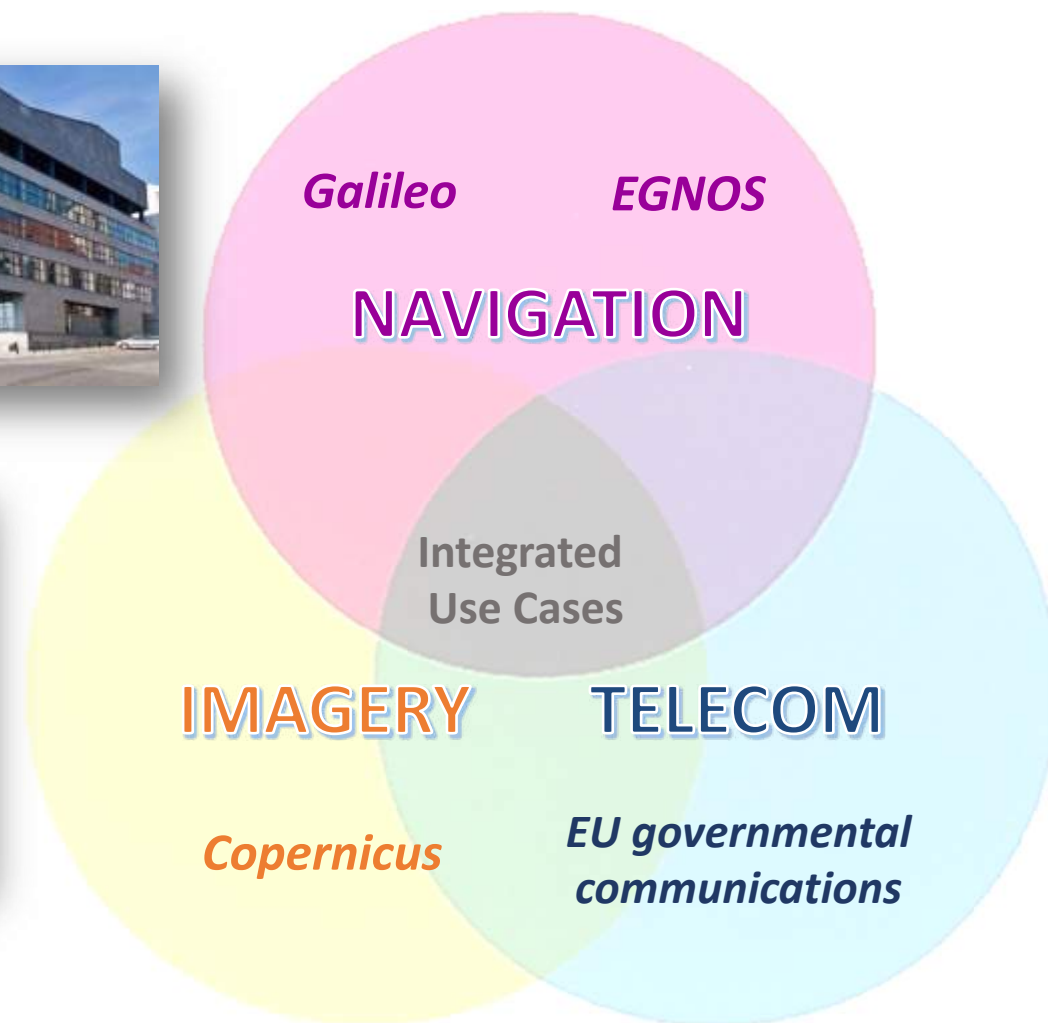
EU Space Programme Agency (EUSPA)

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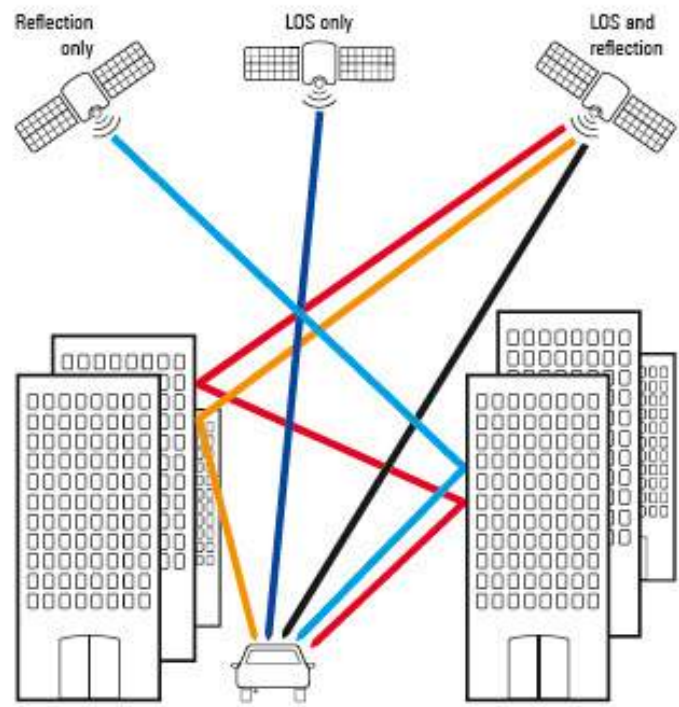
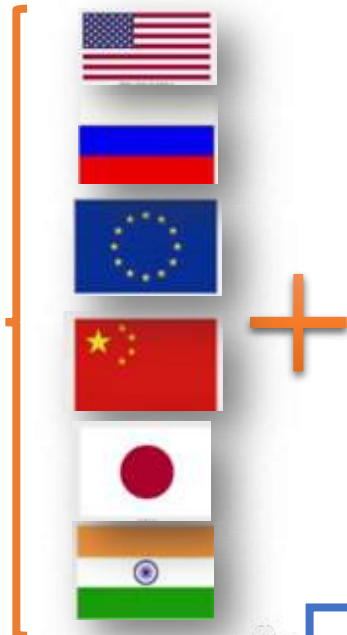
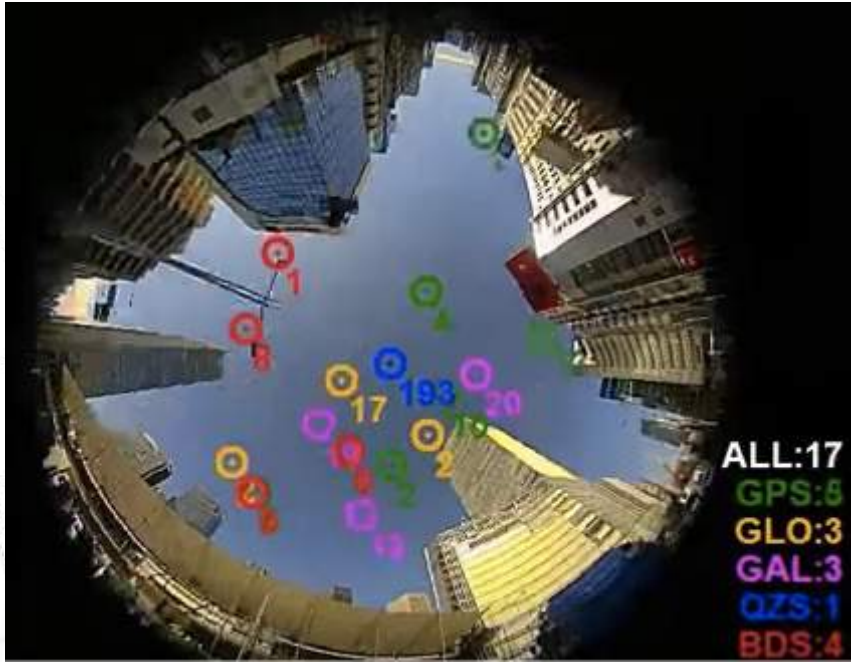


Strategic objectives

- State-of-the-art, reliable, secure and performant services
- European and global reference for know-how in space technologies and applications
- New commercial markets and business models



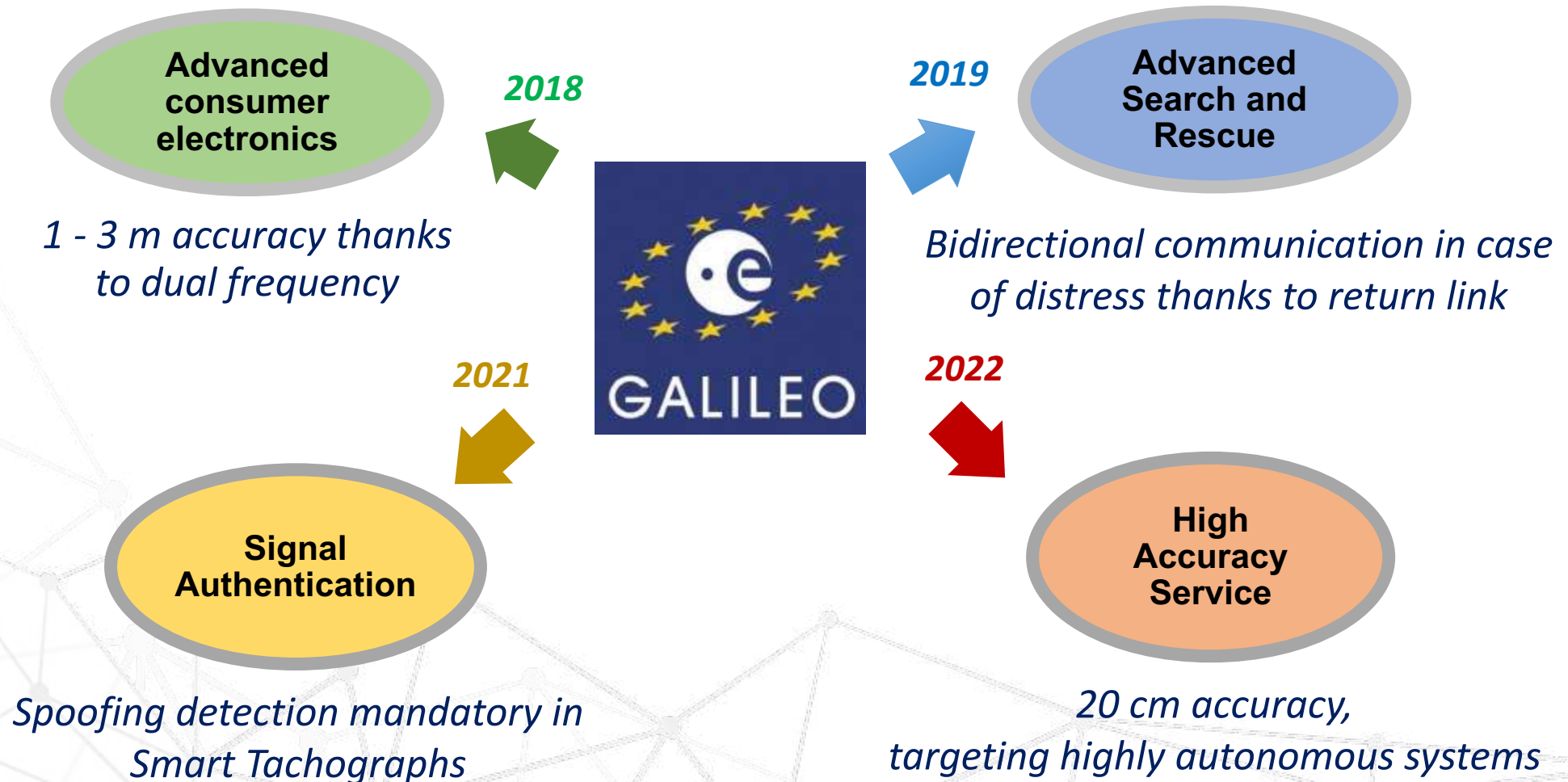
Galileo services improves positioning performance WORLDWIDE for FREE



Multiple GNSS: more satellites visible in harsh environment (urban canyons, tree canopy,...)

Multiple frequencies remove ionospheric errors and mitigate multipath reflections

Galileo differentiators with respect to other GNSS



Cooperative ITS and Autonomous Driving

- **15 Mill. cars** enabling Galileo worldwide (9 Mill. cars in Europe)
- **55+ car brands** commercializing “Galileo cars” (150+ models)
- Galileo is tested in vast majority of **Autonomous Vehicles** prototypes

- Vehicles, infrastructure, and pedestrian are **location-aware and will synchronize** the output data from diverse sensors via V2V and V2I communication protocols
- **Galileo** is crucial for **sensor synchronization** and to get **decimetre-level** absolute location in combination with inertial navigation, odometry, machine learning and artificial intelligence
- **Copernicus** information can be transmitted to vehicles from road side units or ITS stations in relation to the monitoring of landslides or natural hazards affecting road infrastructure.



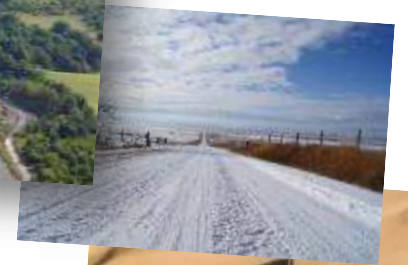
Galileo Positioning Engine for Highly Autonomous Navigation (Level 3/4)



GRUPE RENAULT



ESCAPE's positioning software advanced algorithms in **BMW new models**



FUTURE



Galileo provides trustability in the location data exchange



Contribution to Multi-constellation

Dual frequency L1/E1 – L5/E5

High Accuracy Service

OSNMA: Navigation Message Authentication

ACCURACY

TRUSTABILITY



OSNMA is under live testing phase and the receiver specifications are already available for GNSS manufacturers to implement*

UNECE Regulation 155 approved in June 2020 in relation to Cyber Security and Cyber Security Management entering into force Jan. 2021:

- Threats related to GNSS spoofing
- **GNSS authentication is required as mitigation**

Table B1

Mitigation to the threats which are related to "Vehicle communication channels"

Table A1 reference	Threats to "Vehicle communication channels"	Ref	Mitigation
4.1	Spoofing of messages (e.g. 802.11p V2X during platooning, GNSS messages, etc.) by impersonation	M10	The vehicle shall verify the authenticity and integrity of messages it receives



*<https://etendering.ted.europa.eu/document/document-file-download.html?docFileId=82509>

Location in the DATEX II data model



Data model based on DATEX II to include:

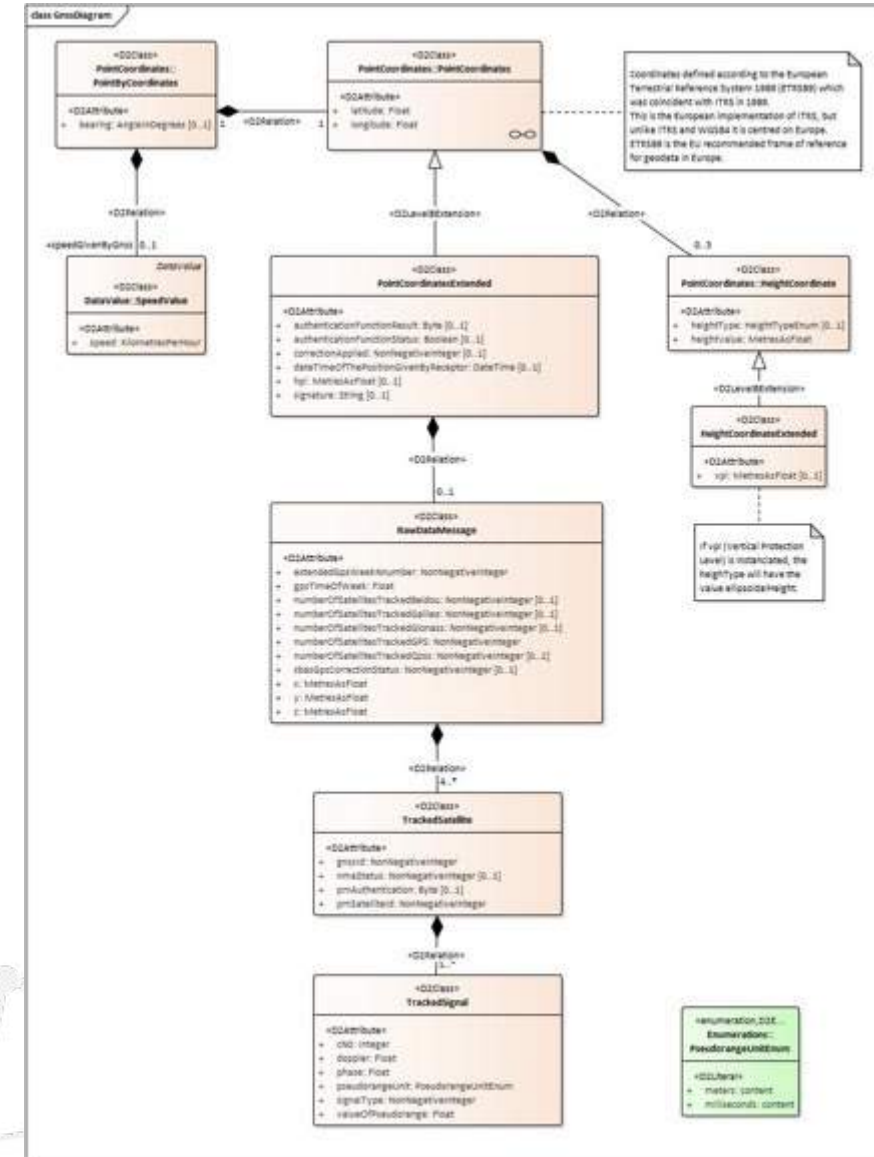
- Multi GNSS, incl. EGNOS and Galileo
- Galileo Open Service Authentication

DATEX II location impacting EU Regulations:

- European Electronic Toll Service (EETS)
- Smart tachograph & Cabotage rules
- Cooperative ITS
- Dangerous Goods & eFTI
- eCall emergency location*
- 112 caller location*

Direct impact

Indirect impact



Green Lanes EC's initiative during the COVID-19 pandemic



Galileo Green Lane solution developed by EUSPA:

- Help EC and Member States to monitor its implementation
- Real-time support to freight transport community: truck drivers, fleet dispatchers
- New more ambitious solution under development:
 - ***New road, rail and maritime border crossings*** from EU and neighbor countries
 - ***New national logistics hubs*** (including airports), resting/service areas, parkings,...
 - ***Connection to anonymized traffic information*** datasets from public/private entities



FUTURE

- **More reliable data** enabled by the Galileo-based Smart Tachograph to check cross-border monitoring intended for cabotage operations
- **Management of priority goods** by Electronic freight transport information (eFTI) will provide fully interoperable exchange of information within EU borders.

Galileo Green Lane might be a **suitable testbed platform** to eFTI implementation in 2024



European Mobility Data Space for vehicle-generated location

Data generated by Galileo satellite navigation concerns connected cars, as well as other freight traffic and inland transport modes.

Car makers/automotive suppliers are in full control of data

By enabling **fair access and use of vehicle-generated location**, together with other EU Space data:

- **Open access to location data** through interoperable interfaces/platforms
- **Fair competition** in the provision of new mobility services, with particular attention to new business models
- **Anticipate safety, cyber security or privacy constraints**



FUTURE

Promote a public/private framework enabling a **European Mobility Data Space for vehicle-generated location** and other EU Space data



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