



Legal basis and requirements baseline in place

- Budget available
- Fast Track towards Galileo 2nd Generation
- R&D activity in parallel to maintain security of supply and study emerging concepts for GNSS (LEO-PNT)

From R&D....



2013-2019 EGEP & H2020 Technologies and System Studies

2025-2026 First G2G Satellites & G2G IOV





2020 System, Satellite and **Ground Procurements**

2028 **G2G** Initial Operational Capability



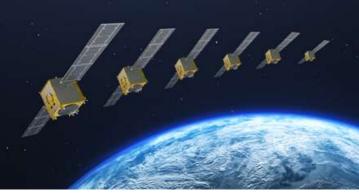
...to launch and exploitation !

2031 +**G2G Full Operational** Capability



EU SPACE Galileo Second Generation Procurements





G2G B1 – ADS-DE Satellite Preliminary Design Review passed First HW available





G2G Satellite Clocks 2 Operational, 2 Evolutions & 5 Experimental clocks ongoing



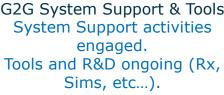
G2G B1 – TAS-IT Satellite Preliminary Design Review passed First HW available





G2G Ground Segment & System Test Beds 7 G2G In Orbit Validation Ground Segment & System Test Beds procurements ongoing. G2G IOC GSEG reaching PDR.









EU SPACE G2G Satellites: Designed for future generations

- New signal generation capabilities: increased number of signal components and configurability.
- Improved EIRP.
- Inter Satellite Links.
- On Board Authentication.
- Minimised in-orbit maintenance activities.
- Increased data rate in the Ground to Space communication.
- Improved Time Reference (number of atomic clocks and their relevant monitoring functions).
- Orbit Raising Capability Dual Launch.
- 15 years lifetime.





G2G System Flexibility and Added Value Services focused

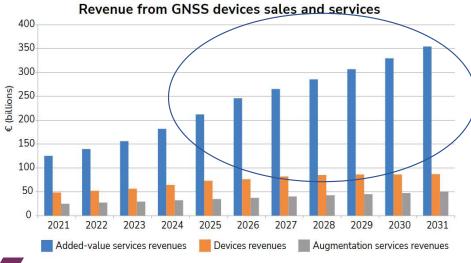


□ G2G design at all levels is embedded with internal flexibility to ensure new service implementation without constellation re-deployment (from 15 years to 1 year Time To Market).

□ G2 development and satellite validation approach is compatible with progressive improvement and deployment of services already working with one line-of-sight:

□ E.g. Fast Acquisition, OS Signal Authentication, OS TTFF, HAS, EWS, ARAIM, etc...

□ This is the fastest growing market sector.

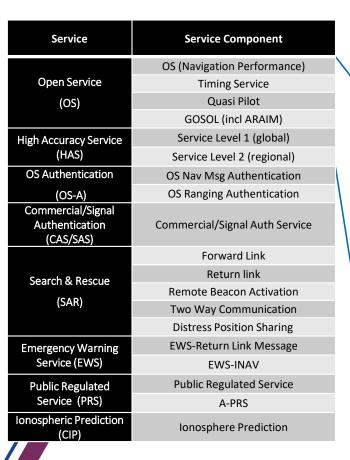


Min Availability vs number of G2G satellites Rural Environment (El Mask = 5 deg) 120 100 Availability [%] 80 60 40 20 0 10 8 12 2 6 Number of G2G satellites

Courtesy EUSPA EO & GNSS Market Report: https://www.euspa.europa.eu/sites/default/files/uploads/euspa_market_report_2022.pdf

EU SPACE

EU SPACE Galileo Service Enhancements & New Services incremental build up (I)



Satellite Constellation 626 OS Navigation 0V40C OS Navigation 0100 (mbddes 50M) OSTOC (mbddes 50M) 05100 (mbddes 50M) OSTOC (mbddes 50M) 05100 (mbd Confinally) GGTO, UTC Improved GGTO, UTC (Accuracy, Availability) Timing Service Monitoring 0 OS Quasi-Pilot 0 GoSol/ARAIM Support 0 GoSol/Support to EGNOS V3 Dual cosstellation augmentation High Accuracy Service MASPhase 1			G1	FOC G2 1 st L	aunch G2	IOV G2 IOC
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Image: EU SPACEGalileo Service Enhancements &
New Services incremental build up (II)



Service	Service Component			
	OS (Navigation Performance)			
Open Service	Timing Service			
(OS)	Quasi Pilot			
	GOSOL (incl ARAIM)			
High Accuracy Service	Service Level 1 (global)			
(HAS)	Service Level 2 (regional)			
OS Authentication	OS Nav Msg Authentication			
(OS-A)	OS Ranging Authentication			
Commercial/Signal Authentication (CAS/SAS)	Commercial/Signal Auth Service			
	Forward Link			
Search & Rescue	Return link			
	Remote Beacon Activation			
(SAR)	Two Way Communication			
	Distress Position Sharing			
Emergency Warning	EWS-Return Link Message			
Service (EWS)	EWS-INAV			
Public Regulated	Public Regulated Service			
Service (PRS)	A-PRS			
lonospheric Prediction (CIP)	Ionosphere Prediction			

		G1	FOC G	2 1 st Launch	G2 IOV	G2 IOC
OS Authentication						
Service	OSNMA initial service				Signal Authe	ntication
CAS/SAS						
		E6 authentication				i
Emergency		1				
Warning	1		G1 EWS		G2 EWS	
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SAR (BCS/RBA)						
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EU SPACE Galileo System Development Summary

- Galileo performances are outstanding.
- ✓ L11 successful (satellites in service).
- ✓ Galileo INAV qualification performed.
- High Accuracy Service capabilities under qualification.
- ✓ G2G In Orbit Validation activities ongoing (Satellite, GSEG, Test Beds, Tools):
 - They will ensure Galileo Legacy services enhancement and early G2 Capabilities and Services.
- G2G Initial and Final Operational Capability activities developing as planned, for the sake of final G2G Service Provision.



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