FutureNAV In Orbit Demonstrator - a first step towards a European LEO-PNT component

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Context (1/1): PNT market trends for Global Mobility

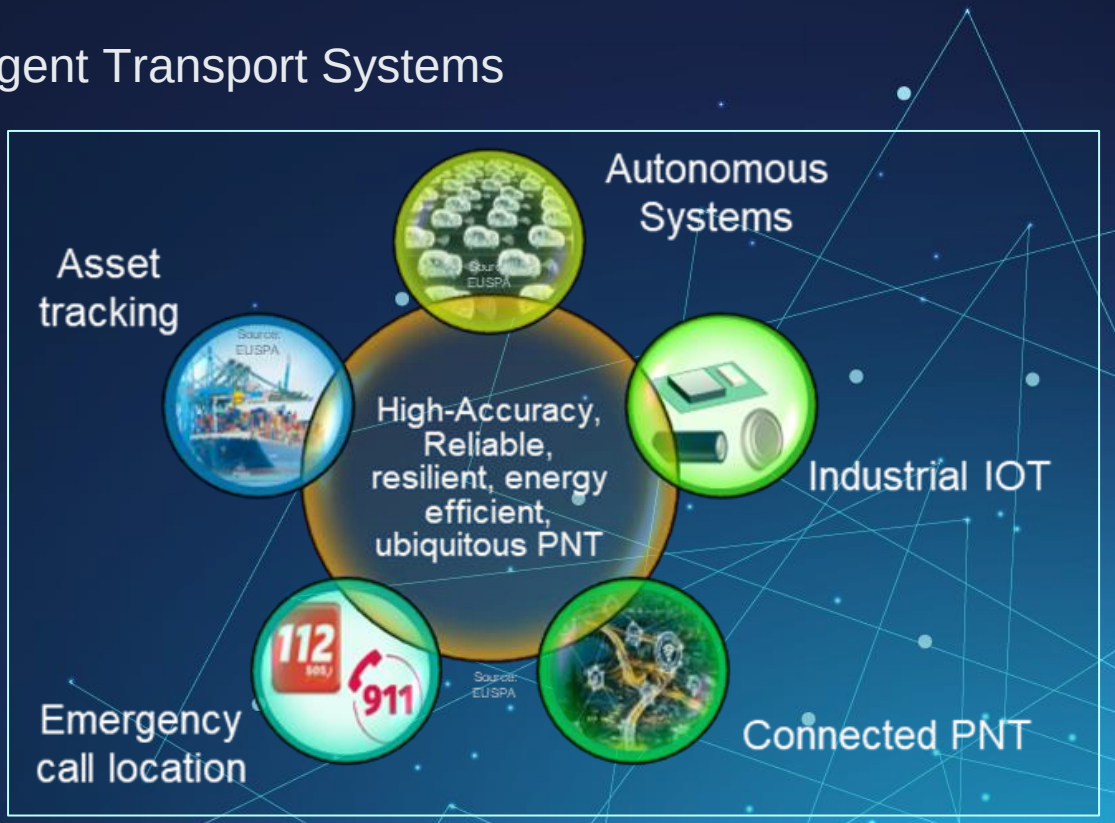
The Success of GNSS: largest spin-off of space technologies

- Present / used in most domains of global economy and society
- 6.5 billion receivers, 150 billion euros / year (Euroconsult/EUSPA), 10% annual market growth in next decade

Satellite Navigation has become an essential component

- Global Mobility, Smart cities, Autonomous Vehicles and Intelligent Transport Systems
- large public and private investments in Asia, US and Europe

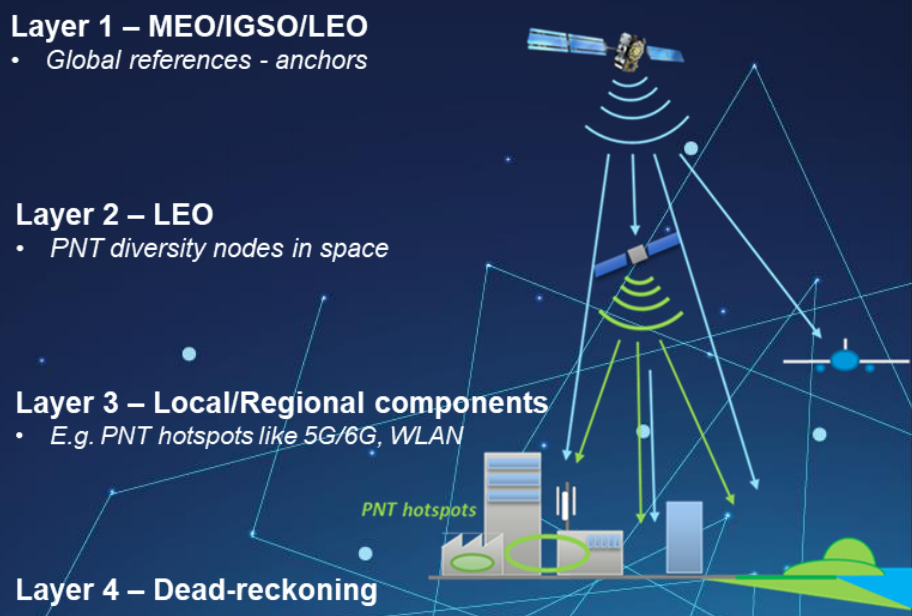
GNSS huge success inspires more demanding needs



Context (2/2): Evolution towards Multi-layer PNT

Answering user needs (*e.g.* Autonomous Vehicles, Industry 4.0, …)

Multi-layer PNT architecture!



PNT-2030+: Ubiquitous, reliable (integrity), resilient, dm-level
Provided by a **System-of-Systems PNT** and advanced **Key Enablers**

LEO PNT fully complementary & boosting MEO GNSS backbone

LEO-PNT : opportunities and enablers

Augmentation of GNSS:

- ✓ Faster convergence of high-accuracy positioning
- ✓ Enhanced PNT services in challenging environment (*e.g.* urban canyon, under canopy, indoor, …)
- ✓ Increased resilience
- ✓ Additional PNT data channel

Specific features:

- ✓ Connected PNT and 2-way PNT links
- ✓ Lower user terminal energy consumption
- ✓ Solutions combined with satcom standards
- ✓ Monitoring of MEO signals

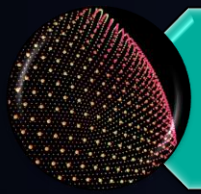
Technologically enabled by:

- **Lower free space losses**
- **GNSS-enabled ODTS**
- **Measurement diversity**
- **Frequency diversity**

LEO-PNT In Orbit Demonstrator

Accelerate LEO PNT from concepts to demonstration

Prepare the future of SatNav



Constellation with more than 10 satellites by 2027

End-to-end demonstration

Pursue systems interoperability based on open standards

Possible Areas of Coordination at ICG

The following aspects may be subject of coordination among current and future LEO-PNT systems:

- **Spectrum aspects** (frequency coordination, protection of spectrum, usage of new bands for radionavigation)
- **Space debris mitigation**
- **Compatibility / interoperability** among LEO-PNT systems and with GNSS/SBAS
- **Adoption of standards**

Thank you for your attention