



# EGNSS applications and services for road and freight transport regulated applications

ICG Experts Meeting

Vienna, 14-18 December 2015



**Telespazio**

A Finmeccanica/Thales Company

# Index

- EGNOS services for road/freight transport
- Galileo for road/freight transport
- Examples of applications
- Experimentations in Europe and outside Europe
- Conclusions/way forward

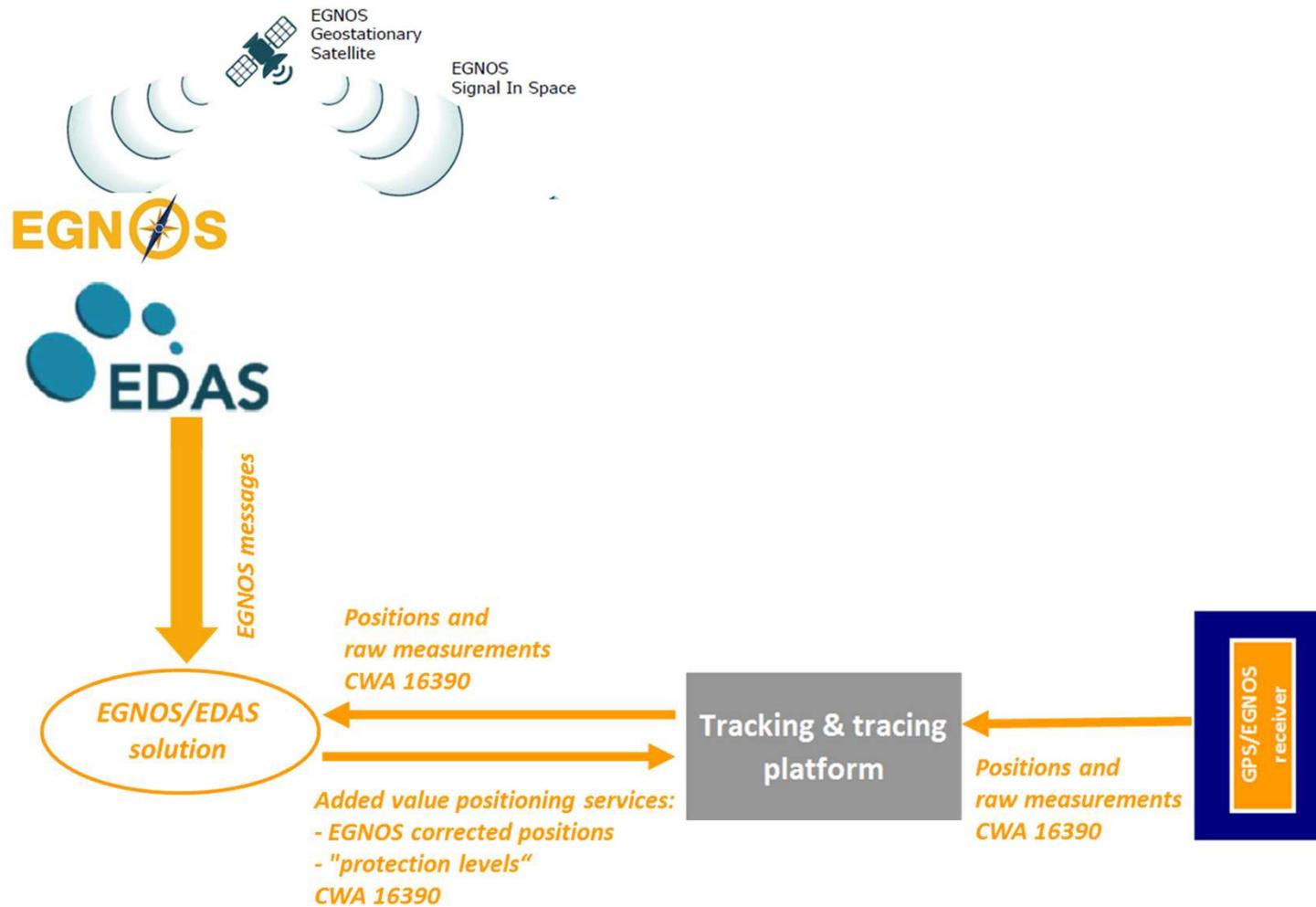
# EGNOS services for road/freight transport

- Augmentation system improving GPS:
  - Corrections for a higher accuracy
  - Integrity for the reliability of the positioning/navigation data
- EGNOS OS and EDAS suitable for applications requiring accurate and reliable positioning in the land mobility and freight transport domains
- Available now, free of charge, widely available in consumer-grade receivers

 <b>Open Service (OS)</b>	Higher accuracy Free
<b>Safety of Life Service (SoL)</b>	Higher accuracy Compliant to aviation standards
 <b>EGNOS Data Access Service (EDAS)</b>	EGNOS corrections/augmentation provided by terrestrial networks



# EDAS for road/freight transport



# EGNOS OS for road/freight transport

- Added value wrt GPS alone:
  - Higher position accuracy up to 3 m (in various operational environments)
  - Higher stability
- EGNOS OS static test receivers

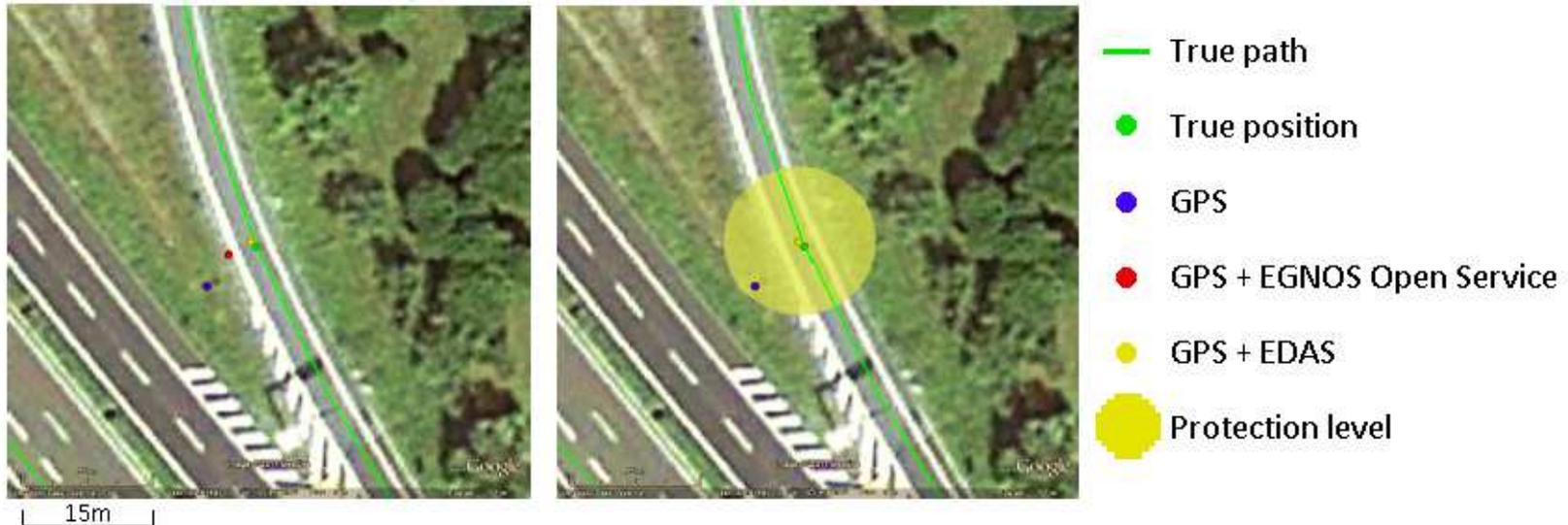


GPS

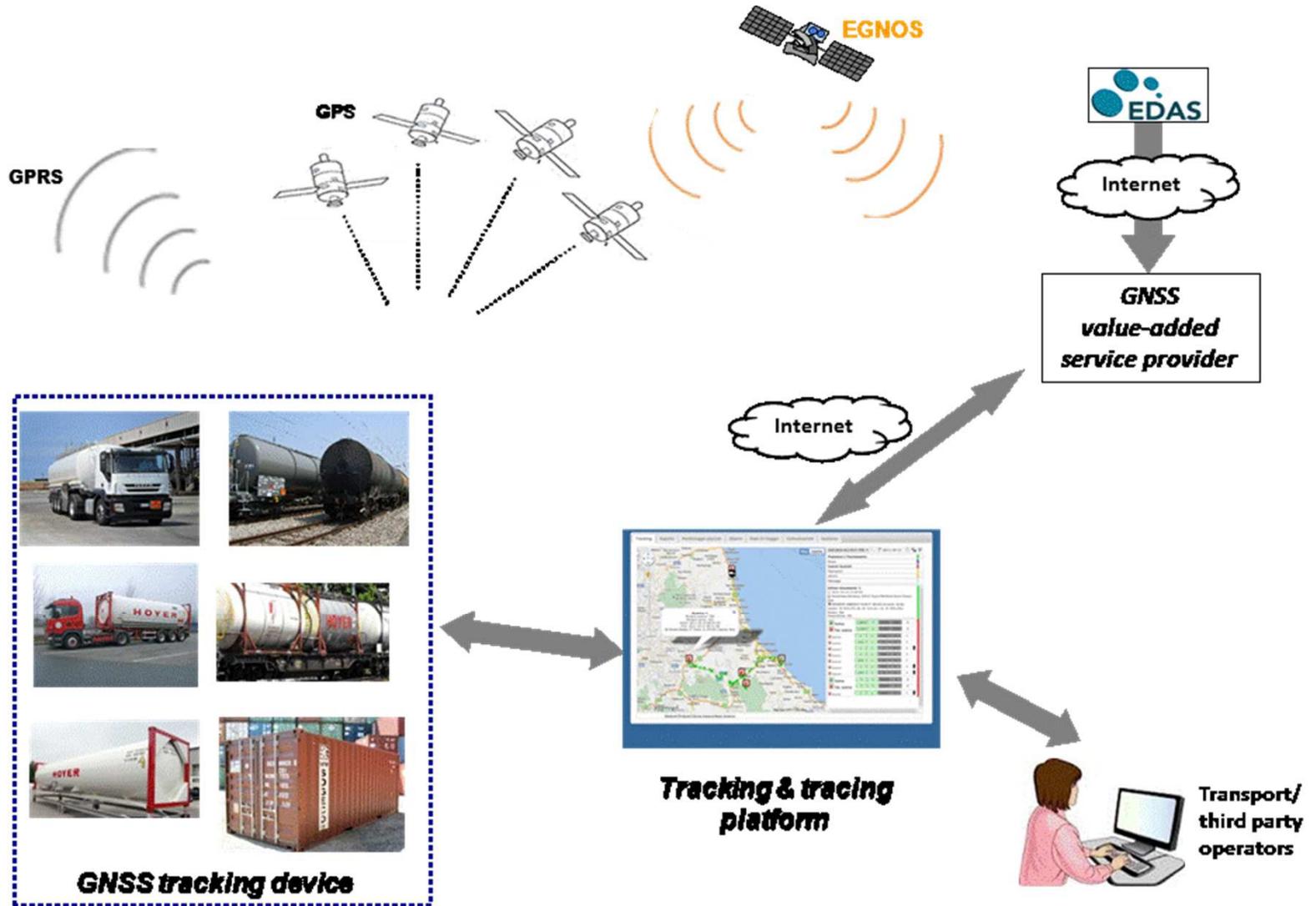
GPS + EGNOS OS

# EGNOS OS and EDAS for road/freight transport

- Added value wrt GPS alone:
  - Enhanced accuracy up to 4 m (in various operational environments)
  - Protection level availability 97 % (in life scenarios/real use cases)
- EDAS dynamic test



# EGNOS OS and EDAS for road/freight transport



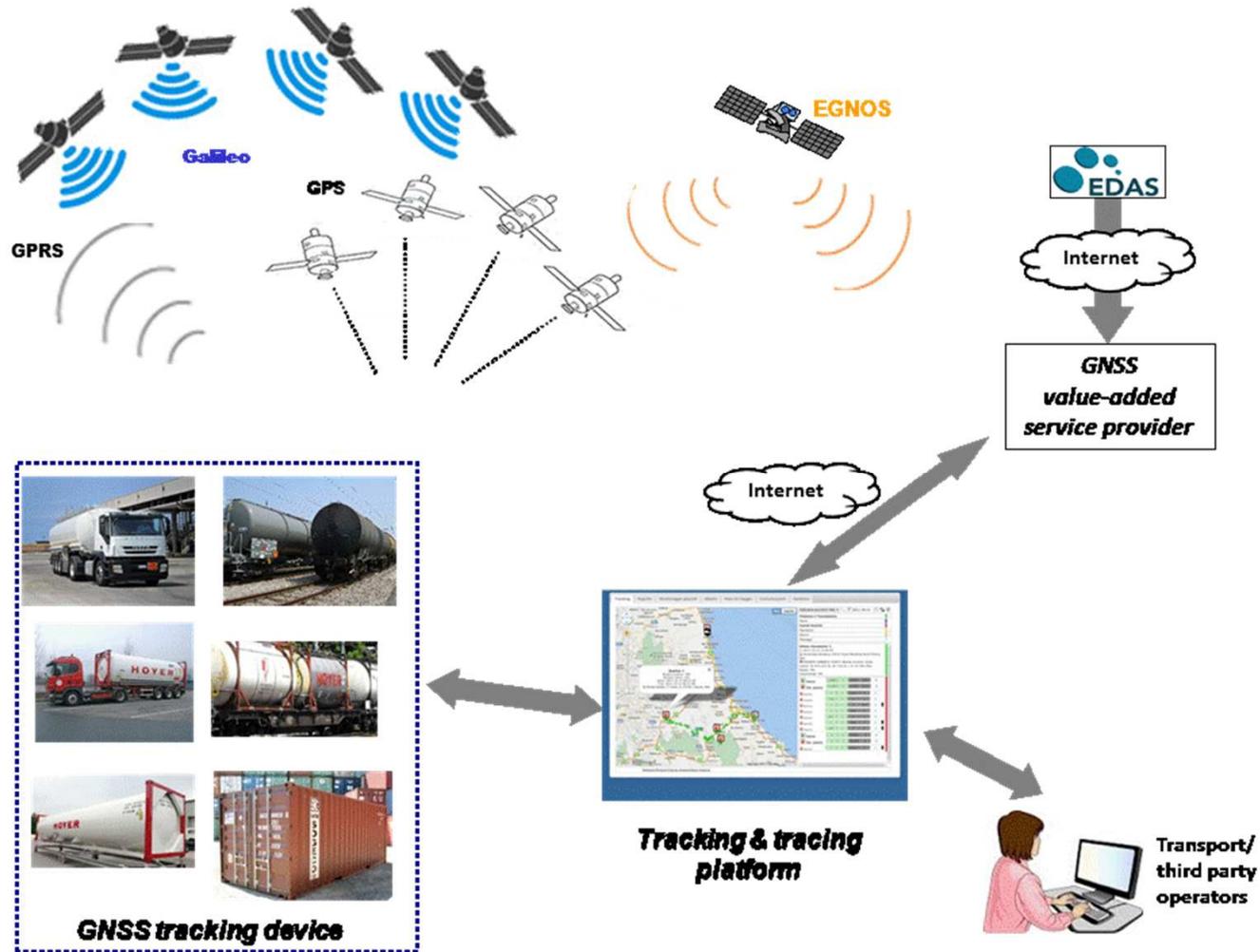
# EGNOS OS and EDAS for road/freight transport

- *Operational today*
- Consumer-grade receivers integrated in systems/tracking devices on the market are EGNOS-enabled (the trend is towards multi-constellation)
- Software solutions and technologies needed to utilize EDAS are available
- Use of EGNOS OS and EDAS empowers GPS-only based systems/provides more robust position information:
  - Higher position accuracy (\*)/stability
  - Position guarantee/confidence on the position (\*\*)
- (\*) Position accuracy improvement wrt GPS-only:
  - By 3 metres (EGNOS OS)
  - By 4 metres (EDAS)
- (\*\*) Protection level ~ 97 % availability in different environments
- *EGNOS will also augment Galileo*

# Galileo for road/freight transport

- Galileo will enhance EGNOS based solutions
- Multi-constellation will provide further improvements: when buildings block the signal and reduce the number of visible satellites, the availability of more constellations ensures a much more accurate/robust final position
- Consumer-grade receivers are multi-constellation ready (GPS, GLONASS, ready for Galileo)

# EGNOS and Galileo for road/freight transport



# Road/freight transport regulated applications

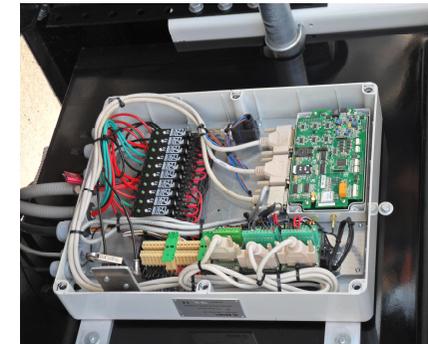
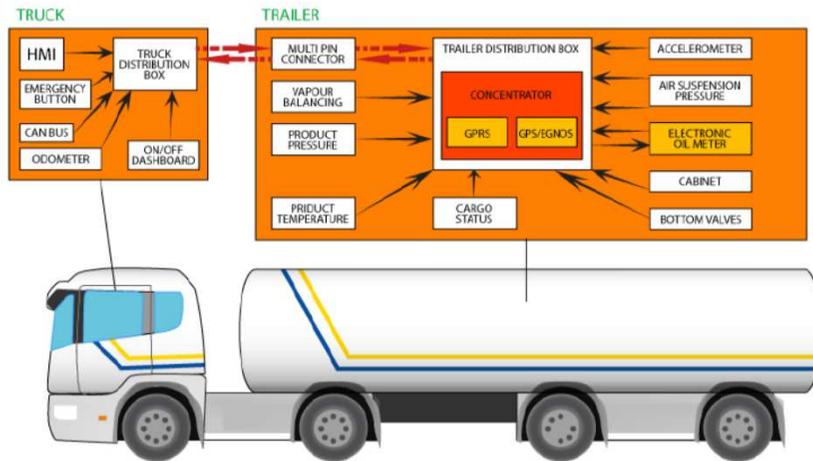
- Higher position accuracy for enhanced risk management, prevention/statistics
- Confidence/guarantee on the position for a better control & enforcement/transport quality contract & liability check

Examples of regulated applications:

- Tracking & tracing of the dangerous goods transport
- Monitoring the intermodal containers shipment
- Control of regulated fleets in urban areas (e.g. public transport, service fleets)/access to limited traffic-sensitive zones

*Some figures: “sensitive goods monitoring service will reduce cost related to transport administration by 5%, total number of heavy goods vehicles related road accidents by 0.2% and more information will lead to about 0.1% reduction in the costs of missing and delay of goods (Swedish study “Assessment of Telematic Systems for Road Freight Transport”, School of Computing Blekinge Institute of Technology Sweden)”*

# Tracking & tracing of the dangerous goods



- Trimble Copernicus
- ATEX certified



- Safety



- Security



- Efficiency

# Monitoring the intermodal containers shipment

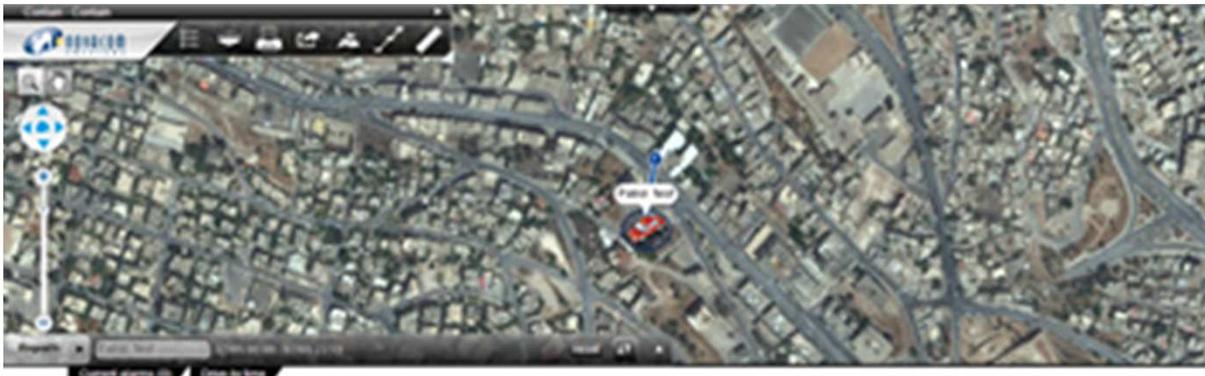
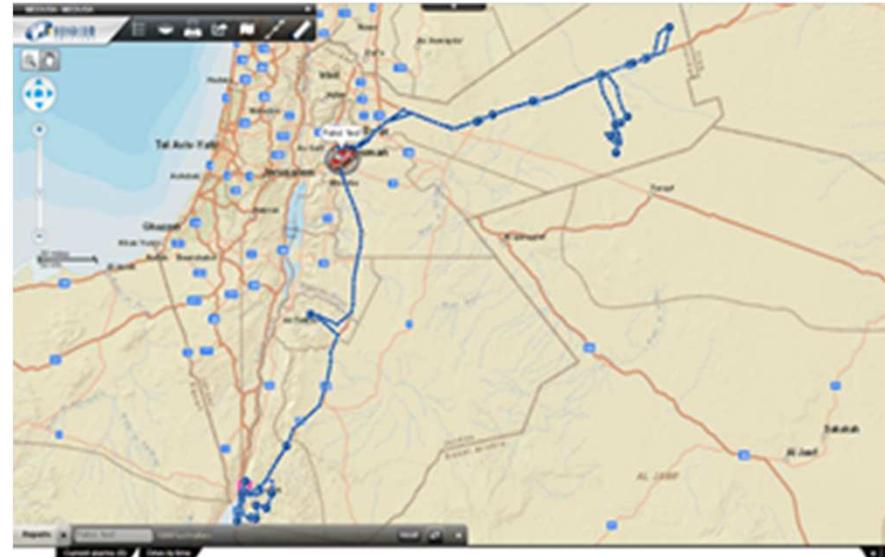


- Telit Jupiter JF2 (based on SiRFstarIV™ architecture)
- Robust/slim/self-powered/combined GPRS - Sat Comm



- Safety
- Security
- Efficiency

# Monitoring the intermodal containers shipment

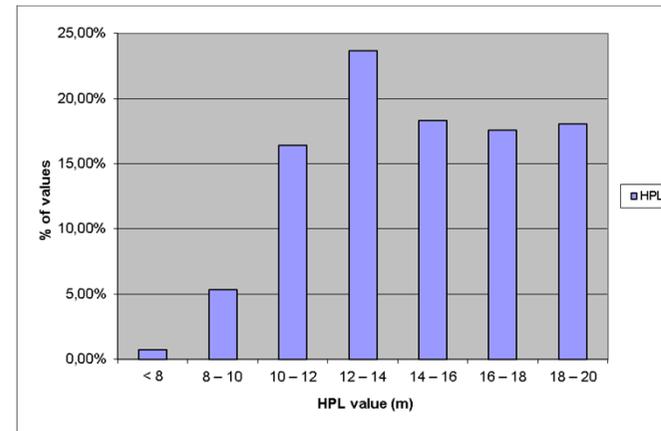
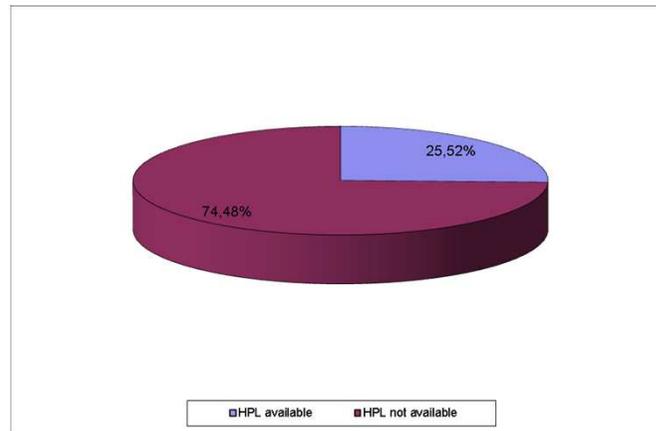


experimentations in Jordan with Jordan Customs  
*Euromed GNSS II/MEDUSA project*

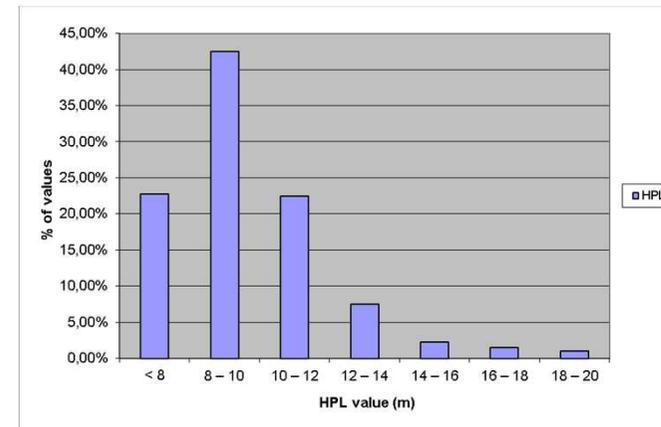
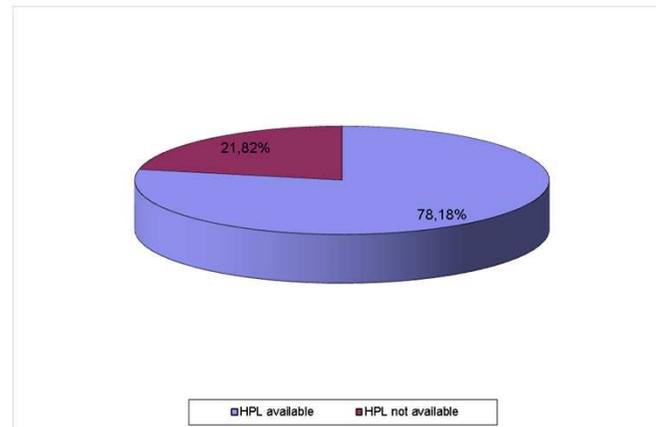
# Monitoring the intermodal containers shipment

Availability of the horizontal “protection level”/relevant statistical distribution

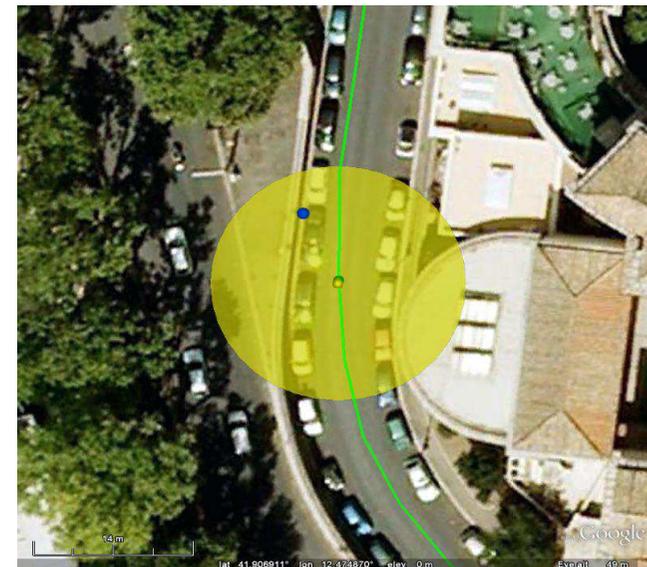
case Jordan



case Europe



# Urban fleets



- STMicroelectronics STA2058 (Teseo)
- u-blox LEA 5T
- Comparison of receivers' performances

# Urban fleets



- GPS-only
- GPS+EGNOS OS

experimentations in Tunisia with Green Control  
*Euromed GNSS II/MEDUSA project*

- u-blox NEO-M8N
- STA8088 (Teseo II) – work in progress (also GLONASS raw data)

# Conclusions/way forward

- EGNOS operational today for use
- Added value for road/freight applications regulated applications
- Experimentations with various receivers in Europe and outside Europe
  
- Next steps: EGNOS+multiconstellation



<http://galileo.cs.telespazio.it/medusa/public>



**Thank you !**

**Questions ?**

Antonella Di Fazio

[antonella.difazio@Telespazio.com](mailto:antonella.difazio@Telespazio.com)



**Telespazio**

A Finmeccanica/Thales Company