Economic Commission for Europe

Inland Transport Committee

Working Party on the Transport of Dangerous Goods

**Joint Meeting of the RID Committee of Experts and the
Working Party on the Transport of Dangerous Goods**   **4 January 2016**
Bern, 14–18 March 2016
Item 6 of the provisional agenda
Reports of informal working groups

Report of the informal working group on telematics (Bordeaux, 6 – 8 October 2015)

Presentations made during the workshop – CORE intermodal transport of dangerous goods demonstrator

CORE
intermodal transport of dangerous goods demonstrator

Antonella Di Fazio

antonella.difazio@telespazio.com

October 2015

Index

- EGNSS for transport of dangerous goods

- Where we are

- On-going initiative and next steps

- Possible synergies with UNECE OTIF WG

EGNSS for transport of dangerous goods: EGNOS

- 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 and widely available in consumer-grade receivers

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

Tracking & tracing dangerous goods with EGNOS: how it works
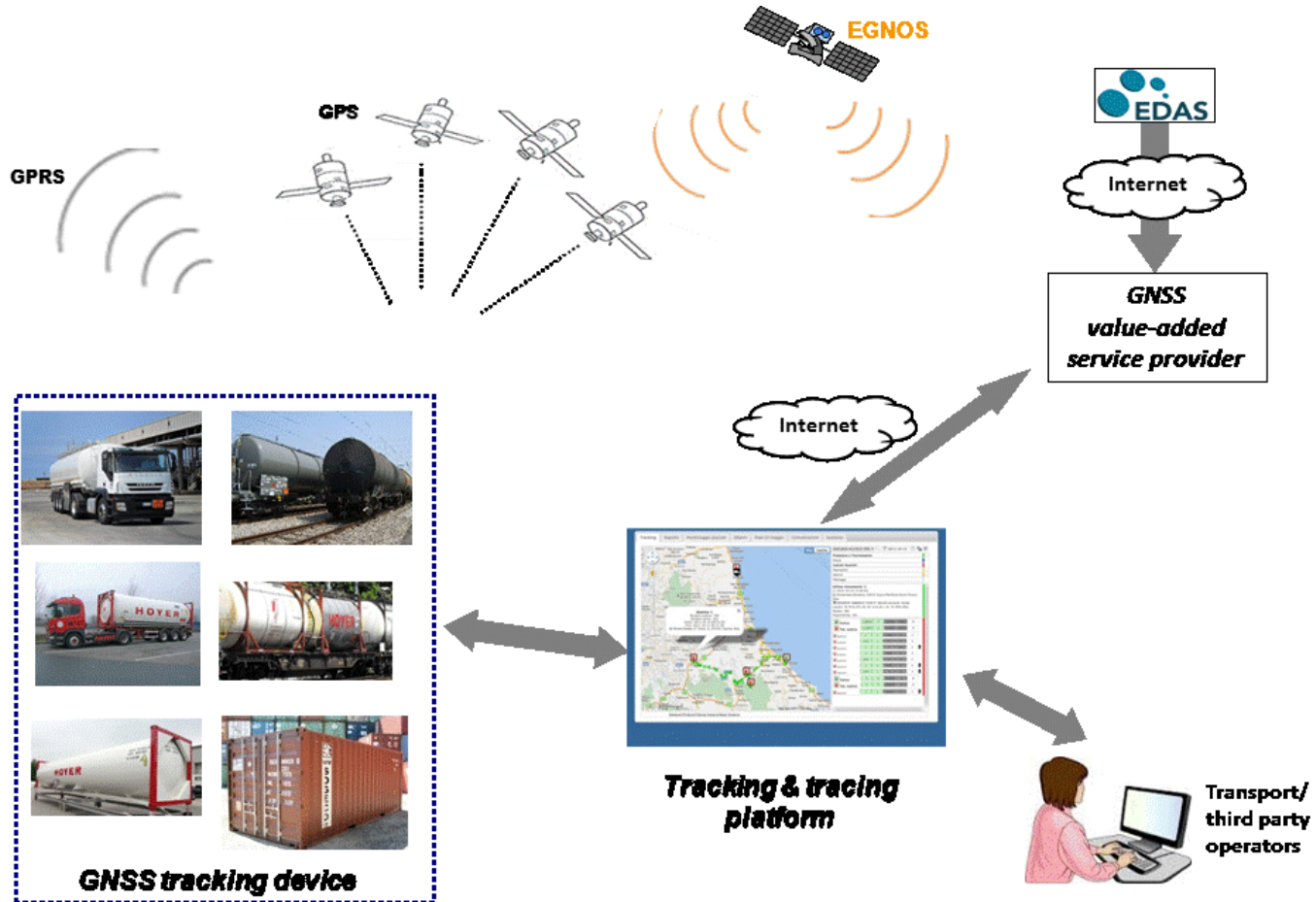
Tracking & tracing dangerous goods with EGNOS: added value
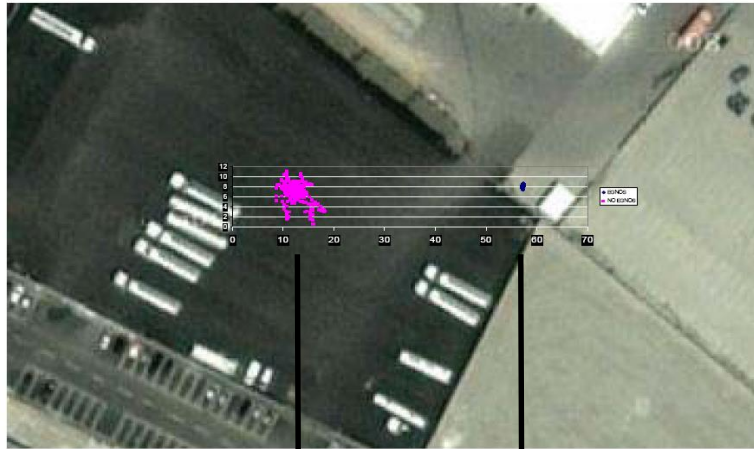

GPS   **GPS + EGNOS**

Empowering GPS-only based systems

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 meters (EDAS)*

— True path

● True position

● GPS

● GPS + EGNOS Open Service

● GPS + EDAS

⬡ Protection level

Protection level *~97 % availability* in different environments

EGNSS for transport of dangerous goods: Galileo/multi-constellation

- **Multi-constellation**: when buildings block the signal and reduce the number of visible satellites, the availability of more constellations ensures a *further more accurate/robust position*

- **Multi-frequency increases robustness of the position** against jammers, because even if a satellite is not available or providing incorrect data, a reasonable accuracy will be achieved

- Consumer-grade receivers are multi-constellation ready
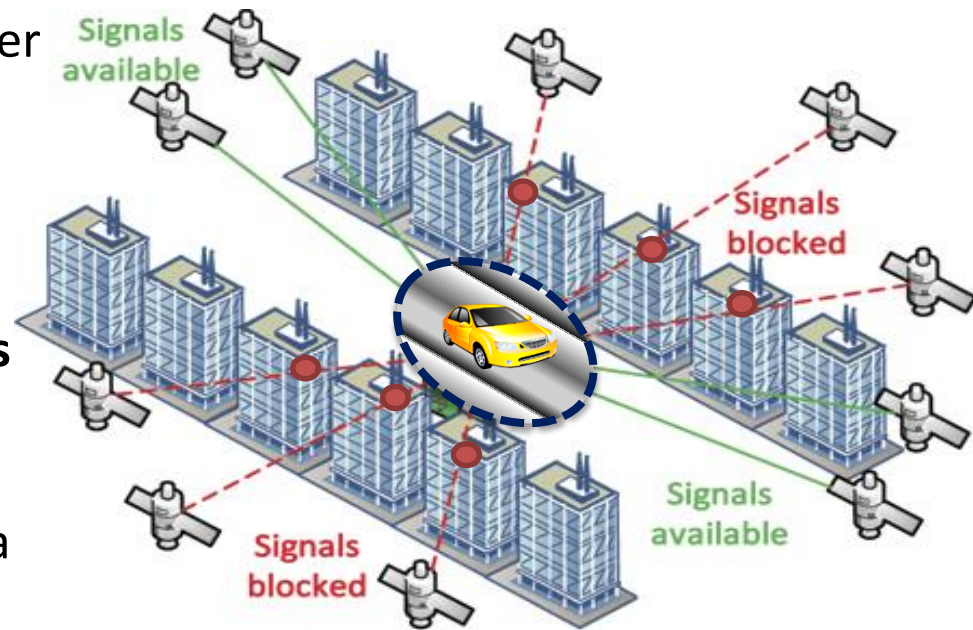
Tracking & tracing dangerous goods with EGNOS + Galileo: how it will work
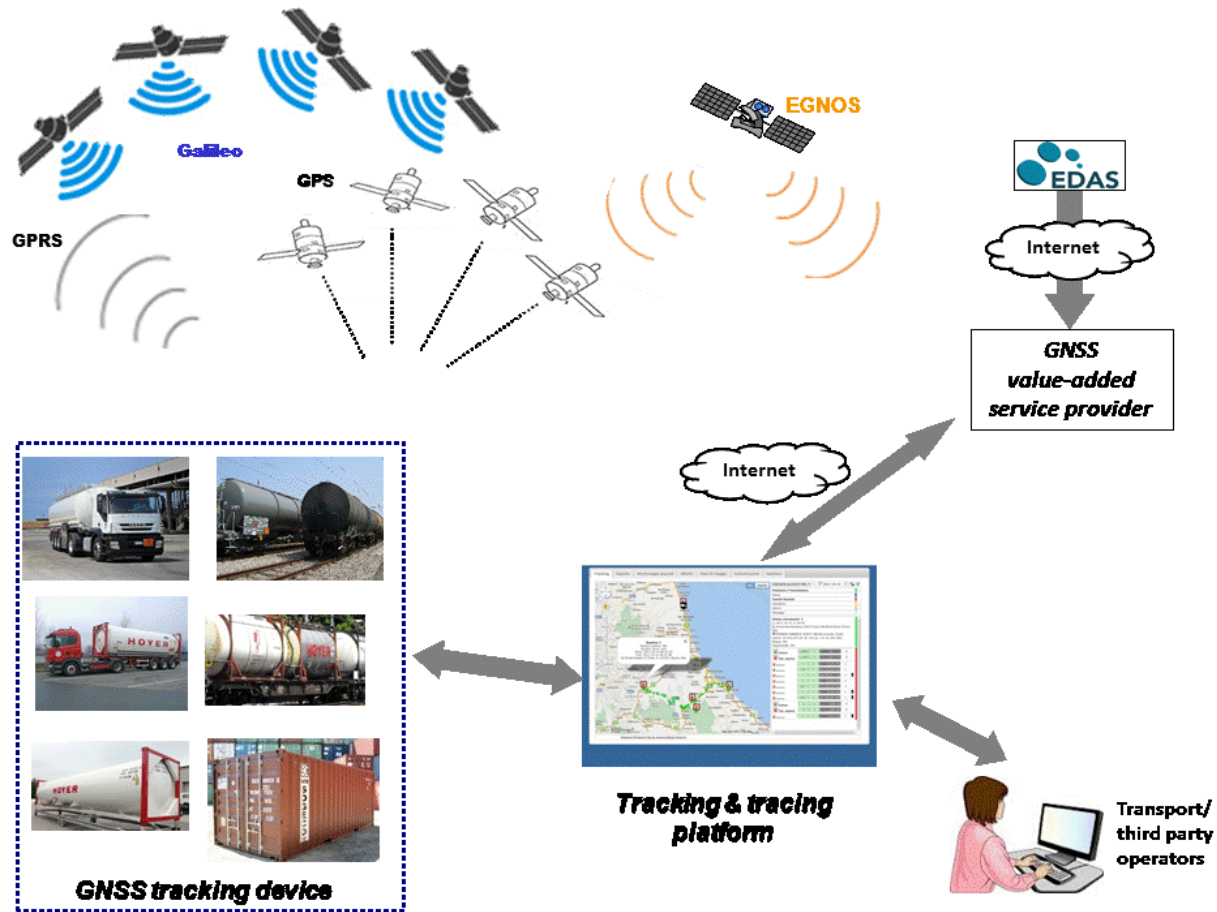
EGNSS for transport of dangerous goods: implementation path

- Concrete use/business cases

- Conveying best practices based on GPS into EGNSS (gradual implementation, EGNOS OS use at first and then EDAS)

- Use of technology ready for EGNOS today and preparing for Galileo

- Easy retrofitting of existing (GPS-based) technology

- Proven solution into large-scale operation

- Involvement of key players (decision-makers, main users and relevant technology providers)

- Extending in Europe a national best practice, on a cross-border implementation basis

- Evolution from prototypes to fruition/proven solutions into large-scale operations & standardization

EGNSS for transport of dangerous goods: implementation path through European experiences

2009: eni and Italy's Ministry of Transport validated EGNOS and considered EGNOS OS added value interesting for operational use

2010:

- eni started a step-wise adoption of EGNOS OS and EDAS for monitoring the tankers transporting dangerous goods in Italy
- Existing GPS systems retrofitted to use EGNOS

2011:

- Implementation of a best practice in Italy
- Extending in Europe the Italian best practice/EU large-scale operations through cross-border implementation in neighbouring countries (France and Austria)
- Standardization

EGNSS for transport of dangerous goods: CWA 16390

- CWA 16390: EU CEN technical specification/standard for the development of solutions/products/services based on EDAS (ftp://ftp.cen.eu/CEN/Sectors/List/ICT/CWAs/CWA16390.pdf)

- Elaborated with MEDDE, MIT, eni and ERF

- Endorsed by EU stakeholders from industries, institutions and research sector

- Compliant with the guidelines of the UNECE OTIF WG "who does what" table

- Applicable to ITS and mobility applications

- Reference for products and applications based on EDAS
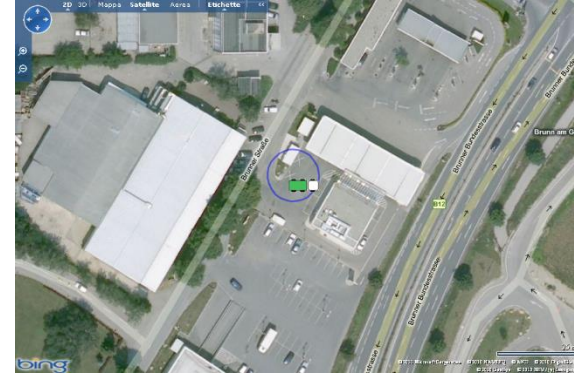
SCUTUM in operations (1)

Two typologies: *Baseline* and *Slim*
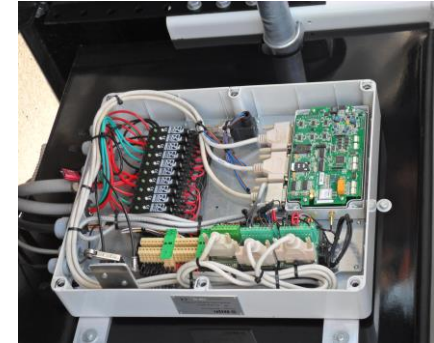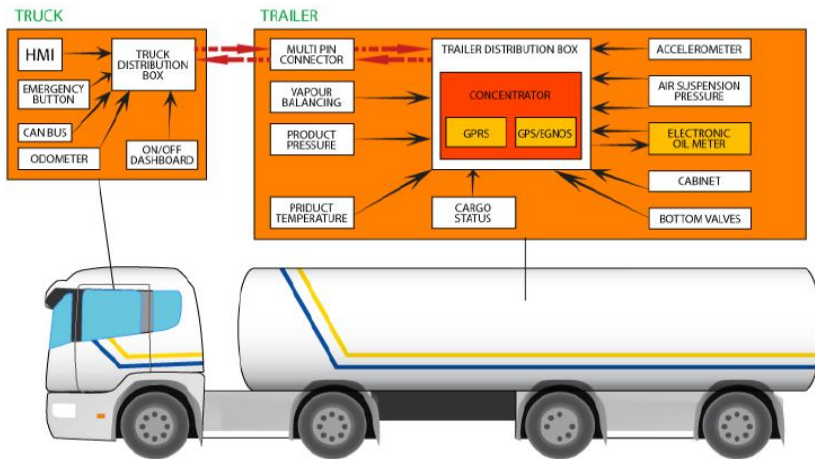
- **ATEX certified**
- **CWA 16390 compliant**

SCUTUM in operations (2)

- Monitoring

- Risk management

- Prevention/statistics

- Quality contract & liability check

Where we are

eni's operational fleets in Italy and in Europe

Italy

- *ITS Directive* (Decree 1 February 2013): use of EGNOS/Galileo for systems tracking & tracing dangerous goods transport by road
- Today operational on about *1200 tankers* in Italy (EGNOS OS and EDAS CWA 16390 compliant)

- *Puglia regional system (SITIP II)* for the control of dangerous goods transport presently under implementation (up to 60 vehicles + eni's fleet):
  - Monitoring and control
  - Planning/decision-making/risk reduction
  - Emergency management
  - GPS/EGNOS compliant to CWA 16390

Where we are:
container tracking & tracing

Example of applicability beyond dangerous goods transport

On-going initiative: CORE (2014-2018)

Intermodal (road/rail) tankers transporting argon:

- Duisburg (Germany) to Terni (Italy)
- Linz (Austria) or Lyon (France) to Terni (Italy)

End-to-end demonstration in real operations involving:

- Institutions/regulators
- Transport operator

Next steps

Key issues:

- Galileo/multi-constellation

- CWA 16390 evolution

- Technical feasibility - size/accommodation/power of the tracking device

- Data sharing

- Transport and cross border operations (TP1/TP2 architecture)

CWA 16390 evolution

- Updating after 3 years

- Configuration of GNSS chipsets/receivers
- EGNOS evolutions
- Galileo/multi-constellation
- Others (to be identified/confirmed) (*)

- 1 year, starting from second/third quarter of 2016

- Open to participation from interested entities

(*) survey on-going

https://de.surveymonkey.com/r/CORE_external_stakeholders

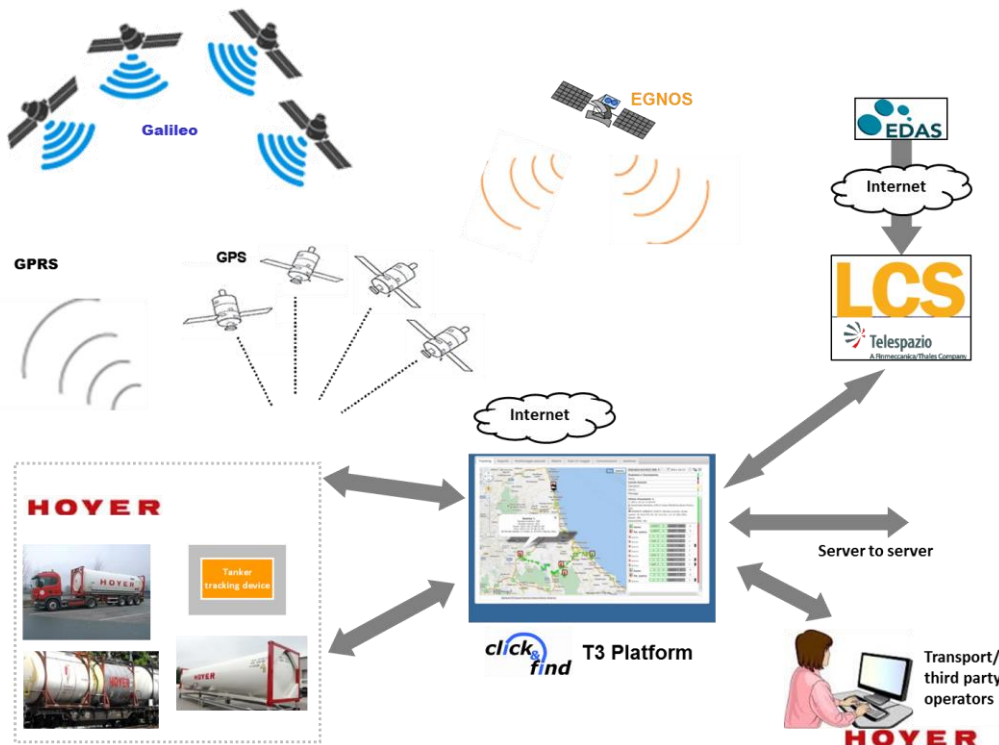# Technical feasibility for size/accommodation/power of the tracking device

Solar panels system

Data sharing
Transport and cross border operations

- Data sharing survey on-going
  https://de.surveymonkey.com/r/CORE_external_stakeholders

- Transport and cross border operations

Conceived as demonstration of TP1/TP2 architecture with tracking & tracing data:

- T3 Platform acting as TP2

- SITIP II acting as TP1 Italy

- GeoTransMD acting as TP1 France

Possible synergies with UNECE OTIF WG

- Participation in the survey on-going

    https://de.surveymonkey.com/r/CORE_external_stakeholders

- Participation in CWA 16390 evolution

- Feedbacks on the demonstration (especially in relation to TP1/TP2)

Thank you !

Questions?

EGNSS for transport of dangerous goods: rationales

- Traceability and monitoring are not only a matter of an intelligent and efficient logistics

- 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)

- The risk associated to the rail transport of dangerous goods is major with respect to road (source: SECTRAM project)