

Galileo Information Day: CELESTE

Road Applications

AGENDA

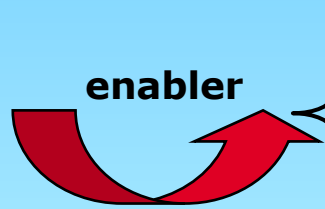
1. Introduction
2. Selection of targeted markets for Galileo in Latin America
3. Report of Galileo Services and Action Plan for selected markets
4. Conclusions

Road sector & Personal mobility



- Most relevant GNSS markets(number of users)
- Existing and future applications

Regional integrity



- Safety Critical applications
- Liability Critical applications
- Telematics (Non-Safety/Liability Critical)

Objective



- Investigate and identify Applications in LA where Regional Integrity will be key enablers to identify targeted markets
- Assessment of the targeted markets against technical and not technical facilitators
- Define Action Plan for Road Sector

Galileo Information Day: CELESTE

**Selection of targeted markets for
Galileo in Latin America**

Selection of targeted markets for Galileo in Latin America

Objective

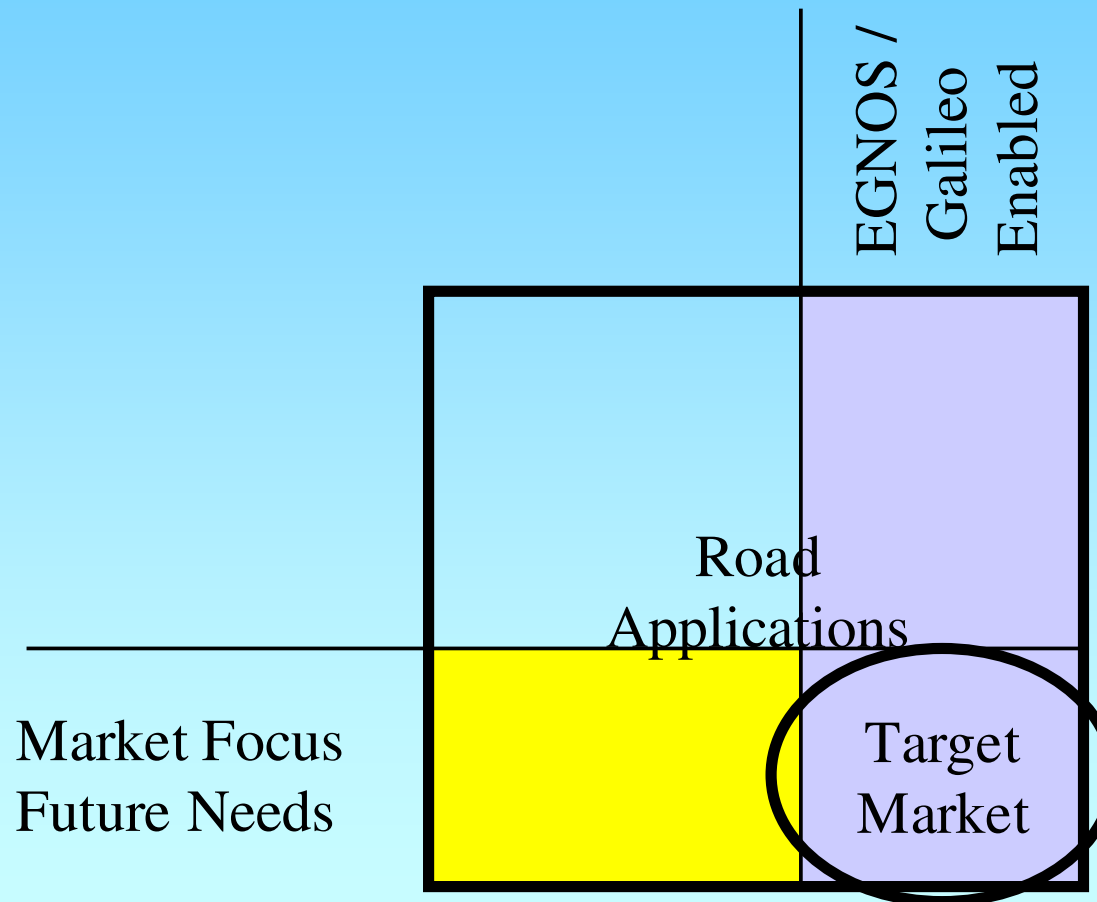
- Investigate and identify the Road Sector applications in Latin America where EGNOS and Galileo will be key enablers and, then, identify the targeted markets.

Approach

- Revision of the GNSS Road Sector
- Assessment of the current use of GNSS in that sector and specific future needs in Latin America
- Identification of new applications/markets where GNSS are enablers
- Identification of targeted ones basically derived from the Market needs and the GNSS (Galileo and SBAS) enablers

Selection of targeted markets for Galileo in Latin America

APPROACH



Selection of targeted markets for Galileo in Latin America

GNSS Road Sector Review

- GNSS applications identified today in the frame of GJU projects:

- Electronic Toll Collection (ETC) and road pricing
- On-street parking pricing
- Taxi services pricing
- Pay-per-use insurance pricing
- Legal speed enforcement and environmental enforcement
- Emergency services
- Advanced Driver Assistance Systems applications (ADAS).
- Navigation and in-car information
- Information for vulnerable road users and disabled
- Traffic information

- Accident reconstruction and identification of responsibilities
- Traffic management
- Road lighting management
- Infrastructure management
- Fleet management
- Management and tracking of special vehicle classes
- Livestock transport management
- Passenger transport management
- Transport on demand
- Recovery after theft

Selection of targeted markets for Galileo in Latin America

GNSS Road Sector Market in Latin America

Strategy:

- Identification of overall figures as identified from existing market studies
- Identification of existing GNSS application in Latin America as the basis to understand the current most relevant needs
- Identification of other peculiarities of Latin America that can have direct implications in the future GNSS market and, from that, identification of the most relevant applications in the future

Road Applications Overall Status in LA

- **Emergency services.**
- Navigation and in-car information.
- **Fleet management.**
- Management and tracking of special vehicle classes.
- **Passenger transport management**
- Transport on demand.
- Recovery after theft

Selection of targeted markets for Galileo in Latin America

Road Sector Applications Classification

Road Sector Applications



- Safety Critical applications (SC)
- Liability Critical applications (LC)
- Non-Safety/Liability Critical (Non-SC/LC)

Safety Critical



- Advanced Driver Assistance System (ADAS)
- Emergency services
- Information for disabled users

Liability Critical

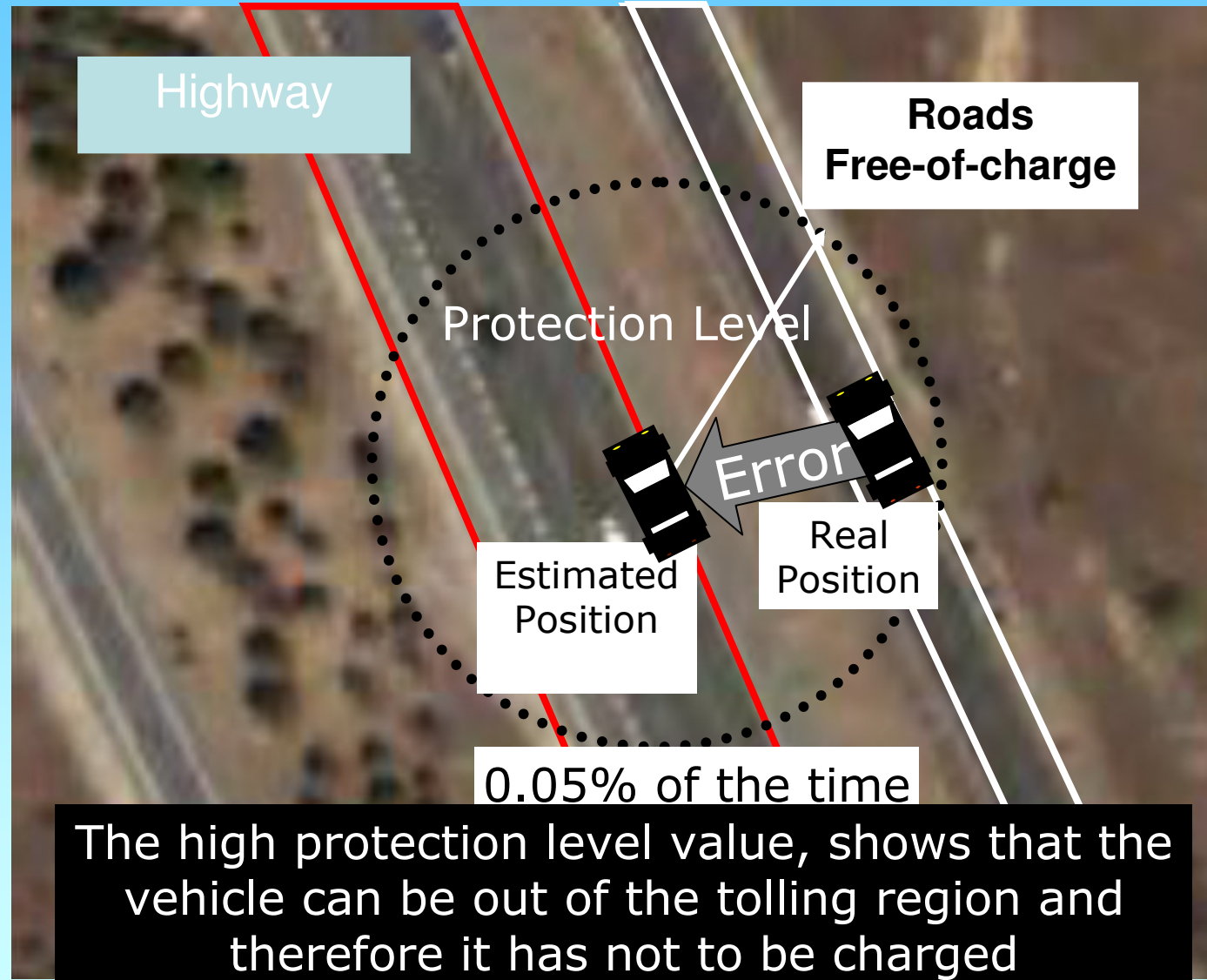


- Electronic Toll Collection
- On-Street parking pricing
- Law enforcement
- Taxi services

Non-Safety / Liability Critical



- Location based driver/vehicle assistance
- Traffic/infrastructure management
- Fleet management
- Recovery of vehicles after theft



Selection of targeted markets for Galileo in Latin America


Analysis and selection of Targeted markets for the region:

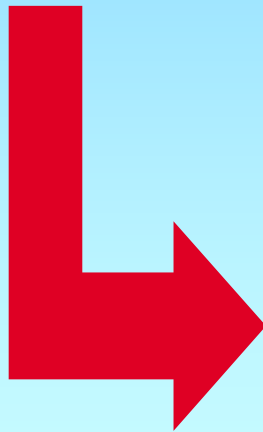
- Application
- EGNOS/Galileo Enabler
- Interest for S.A Market

Application	EGNOS/Galileo Enabler?	Interest for S.A Market
Electronic Toll Collection and road pricing.	Yes	High
On-street parking pricing.	Yes	Low
Taxi services pricing.	Yes	Medium
Pay-per-use insurance pricing.	Yes	Low
Legal speed enforcement and environmental enforcement.	Yes	Low
Emergency services.	Yes	Medium
Advanced Driver Assistance Systems applications (ADAS)	Yes	
Navigation and in-car information.	No	Medium
Information for vulnerable road users and disabled.	No	Low
Traffic information.	No	Medium
Accident reconstruction and identification of responsibilities.	Yes	Low
Traffic management.	No	Medium
Road lighting management.	No	Low
Infrastructure management.	No	Medium
Fleet management.	No	High
Management and tracking of special vehicle classes.	Yes	Low
Passenger transport management.	No	Medium
Transport on demand.	No	Medium
Livestock transport management.	Yes	Low
Recovery after theft.	No	Medium

Selection of targeted markets for Galileo in Latin America

ANALYSIS RESULT:

Four major applications  **Target for CELESTE study**



Electronic Toll Collection and Road Pricing

Emergency Services

On-Street Parking Services

Taxi Services Pricing

Galileo Information Day: CELESTE

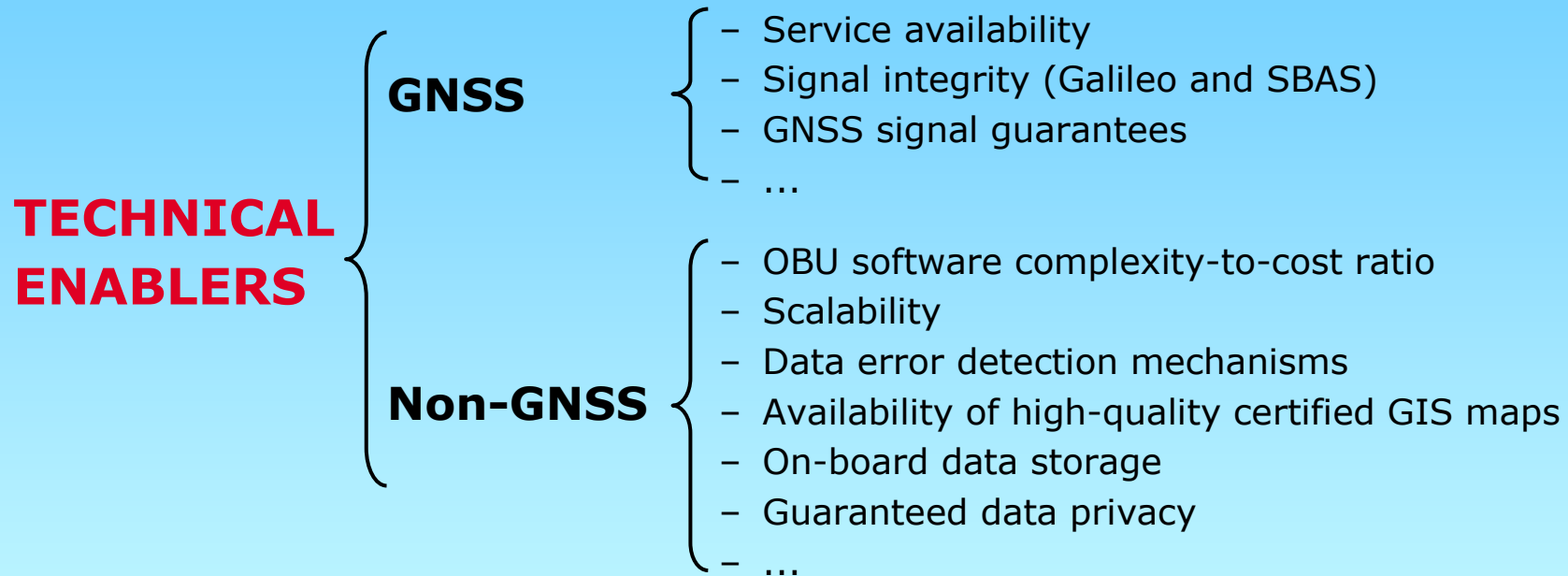
**Report of Galileo Services and
Action Plan for selected markets**

Report of Galileo Services and Action Plan for selected markets

Objectives

- Assessment of the applications and markets identified on previous analysis against all different technical and non-technical facilitators and impediments
- Definition of Action Plan for Road Sector

Report of Galileo Services and Action Plan for selected markets



EACH APPLICATIONS GROUP (SC, LC, ...) WILL HAVE DIFFERENT TECHNICAL ENABLERS

Report of Galileo Services and Action Plan for selected markets

NON-TECHNICAL ENABLERS

- Legal framework**
 - Legal framework for standardisation
 - Recognition of OBU data as admissible in liability disputes
 - Fraud protection guaranteed
 - ...
- Institutional**
 - Interoperability with Europe
 - Unification of different levels of Administrations
 - ...
- Financial**
 - Use existing in-vehicle technology
 - Single device / multiple services
 - ...
- Commercial**
 - Ensure Quality of Service
 - Improvements in road safety
- Social**
 - ...

EACH APPLICATIONS GROUP (SC, LC, ...) WILL HAVE DIFFERENT NON-TECHNICAL ENABLERS

Report of Galileo Services and Action Plan for selected markets

Analysis of the major road applications regarding all technical and non-technical enablers

- Impact level of each enabler in the application under study

ENABLERS	Electronic Toll Collection	Emergency Services	On-Street Parking	Taxi Pricing
GNSS	HIGH	HIGH	HIGH	HIGH
Non-GNSS	HIGH	MEDIUM	MEDIUM	MEDIUM
Legal Framework enablers	HIGH	HIGH	HIGH	HIGH
Institutional enablers	HIGH	MEDIUM	HIGH	HIGH
Financial enablers	MEDIUM	MEDIUM	MEDIUM	LOW
Commercial enablers	HIGH	MEDIUM	HIGH	MEDIUM
Social enablers	LOW	LOW	LOW	LOW
TOTAL	HIGH	MEDIUM	MEDIUM/HIGH	LOW

Report of Galileo Services and Action Plan for selected markets


ACTION PLAN FOR EACH SELECTED MARKET


User needs  **Packages of services**



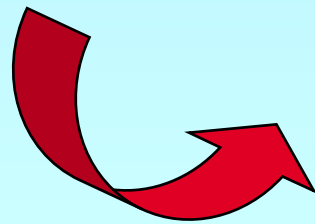
- Liability Critical
 - Non-SC/LC
- Safety Critical

PROPOSED IDEA:

User equipment  Compute general information (PVT+I)

Common infrastructure  Offer these data to service providers

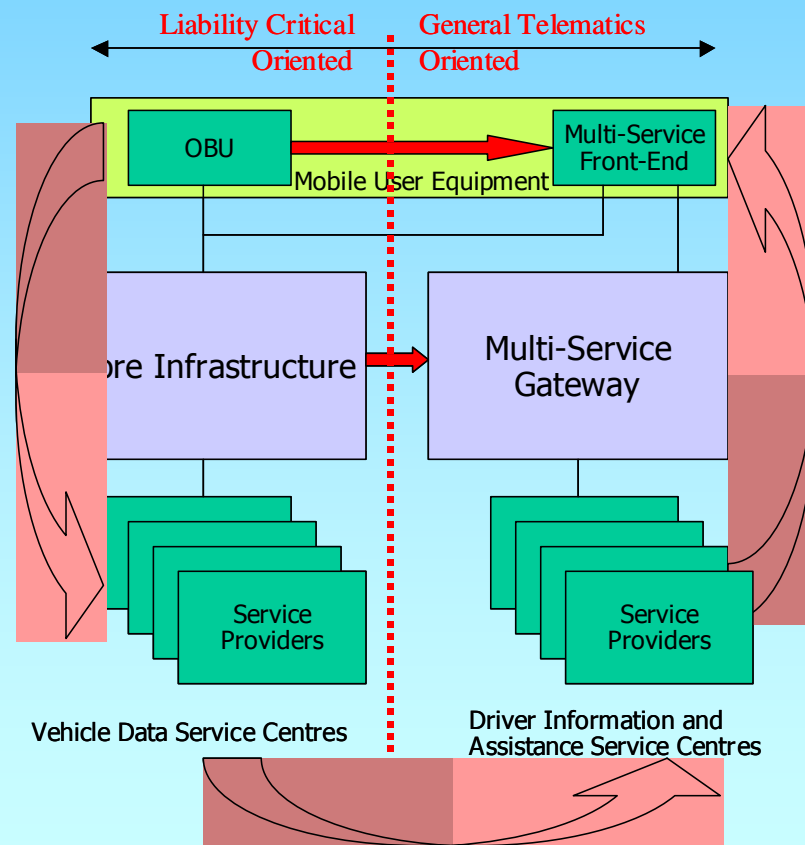
Service providers  Provide high-level applications for users



**Common infrastructure scheme
(One OBU – Multiple Services)**

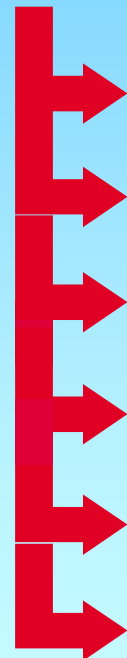

Report of Galileo Services and Action Plan for selected markets

Common platform
high-level architecture
(one OBU)



Report of Galileo Services and Action Plan for selected markets

Why this architecture?

- 
- Share cost among applications(OBU+Common Infrastructure)
 - Facilitate market penetration
 - Different added-value service providers
 - Different applications  Different nature of requirements
 - Follow LBS market evolution (PDAs, smart phones, ...)
 - Promote standardisation and regulation of road market

Galileo Information Day: CELESTE

Road Applications Conclusions

ROAD MARKET

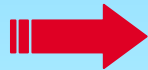


Interesting and appropriate sector for GNSS



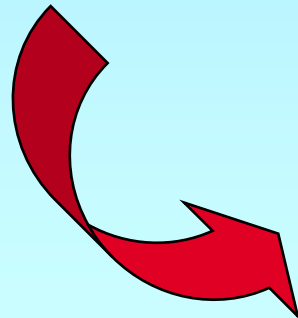
INTEGRITY

CELESTE Target applications



**Electronic Toll Collection and Road Pricing
Emergency Services
On-Street Parking Services
Taxi Services Pricing**

ACTION PLAN



**Common infrastructure
One OBU – Multiple Services**