



GALILEO

Galileo Presentation

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Jean-Christophe Martin

**DG Energy and Transport
European Commission**



Service Definition Study

MARKET ANALYSIS

- Most markets will not use Galileo alone – the need Galileo + “X”. “X” may be another navigation input, communications, multimedia,...

TECHNOLOGY AND INTEGRATION

- Integration with other technologies in various sectors.
- Integration with other positioning sensors – should allow the complexity of Galileo to be reduced
- The Navigation related data communications service would find a major market in fleet management



SERVICE DEFINITION (1)

General Interest

- Mass Market users; free of charge**

Commercial service

- Commercial & professional applications**
- Improved service: accuracy (three carriers), integrity, guarantee of service**

Public interests

- will be certified**
- governmental applications (customs, railways,...)-> highly sensitive applications**



SERVICES DEFINITION (2)

1 GENERAL INTEREST SERVICE

- free access to all the signals**
- no information on integrity**
- if possible, full compatibility with
GPS + GLONASS**



SERVICES DEFINITION (3)

2 COMMERCIAL SERVICE

- **restricted access**
- **integrity information available**
- **higher performances, depending on users**



SERVICES DEFINITION (4)

SERVICE OF PUBLIC INTEREST

- **Service dealing with security of life**
(information on quality of the signal;
availability, restricted access)
- **Service dealing with regulation (has to be in
more guaranteed and certified)**
- **Search and Rescue service**
(coupled with communication service)



Definition of the services

- OS General Purpose Service (Open Service)
 - Com S Commercial Service
 - PS Public Services
 - Public Service Safety of Life
 - Public Service Regulated Service

G Galileo only; GS Galileo & GPS; L Local Element



GALILEO

Service Level	Other System	Number of Frequencies	Coverage (lat)	Masking Angle (°)	Accuracy				Continuity risk	Integrity				Availability
					Position (NSE 95%)		Velocity	Timing		Risk	TTA	Hor. Alarm Limit	Vert. Alarm Limit	
					Hor.	Vert.								
OS-G1	No	1	90S/90N	10	16m	36m (30m up to 75°)	50 cm/s	0.1s		NA	NA	NA	NA	99%
OS-G2	No	2	90S/90N	10	7m	15m (12m up to 75°)	20 cm/s	0.1s		NA	NA	NA	NA	99%
OS-GS	GPS	2+2	90S/90N	10	4m	10m (8m up to 75°)	20 cm/s	0.1s		NA	NA	NA	NA	99%
ComS1-G	No	2	90S/90N	10	7m	15m (12m up to 75°)	20cm/s	10 to 20 ns static 100ns dynamic	2.10 ⁻⁴ /hour 5s outage	2.10 ⁻⁷ /hour	10s	20m	45m (35m up to 75°)	99%
ComS1-GS	GPS	2+2	90S/90N	10	4m	10m (8m up to 75°)	NA	10 to 20 ns static 100ns dynamic	2.10 ⁻⁴ /hour 5s outage	2.10 ⁻⁷ /hour	10s	13m	32m (25m up to 75°)	99%
ComS1-L1	No	2	local in 90S/90N	10	0.8m	1.2m (1m up to 75°)	NA	10 to 20 ns static 100ns dynamic	2.10 ⁻⁴ /hour 1s outage	2.10 ⁻⁷ /hour	1s	2m	3.5m	99%
ComS1-L2	No	2	local in 90S/90N	10	0.8m	1.2m (1m up to 75°)	NA	10 to 20 ns static 100ns dynamic	2.10 ⁻⁴ /hour 5s outage	2.10 ⁻⁷ /hour	10s tbc	2m	3.5m	99%
ComS1-L3	No	3	local in 90S/90N	10	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd	tbd
PS SAS-G	No	2	90S/90N	10	6m	7.7m	20cm/s	10 to 20 ns static 100ns dynamic	10 ⁻⁵ /15s 1s outage	3.510 ⁻⁷ /150s	6s	11m	20m	99.9%
PS SAS-GS	GPS	2+2	90S/90N	10	3m	4m	20cm/s	10 to 20 ns static 100ns dynamic	10 ⁻⁵ /15s 1s outage	3.510 ⁻⁷ /150s	6s	8m	10m	99.9%
PS SAS-L	No	2	local in 90S/90N	10	1m	1.5m	20cm/s	10 to 20 ns static 100ns dynamic	5*10 ⁻⁶ /15s 1s outage	2*10 ⁻⁹ /150s	1s	3m	5.5m	99.9%
RS-G	No	2	90S/90N	10	6m	7.7m	20cm/s	10 to 20 ns static 100ns dynamic	10 ⁻⁵ /15s 1s outage	3.510 ⁻⁷ /150s	6s	11m	20m	99.9%
RS-GS	GPS	2+2	90S/90N	10	3m	4m	20cm/s	10 to 20 ns static 100ns dynamic	10 ⁻⁵ /15s 1s outage	3.510 ⁻⁷ /150s	6s	8m	10m	99.9%
RS-L	No	2	local in 90S/90N	10	1m	1.5m	20cm/s	10 to 20 ns static 100ns dynamic	5*10 ⁻⁶ /15s 1s outage	2*10 ⁻⁹ /150s	1s	3m	5.5m	99.9%
EGNOS-2	GPS+GNSS1	1	Regional GNSS1	5°	100m	-	-	20 ns	2.10 ⁻⁵ /hour	2*10 ⁻⁷ /hour	10s	556m	-	99.9%
EGNOS-3A	GPS+GNSS1	1	Europe	5°	7.7m	7.7m	-	20 ns	10 ⁻⁶ /150s	3.5*10 ⁻⁷ /150s	6s	20m	20m	95%
EGNOS-3B	GPS+GLO+GNSS1	1	Europe	5°	4m	4m	-	20ns	10 ⁻⁶ /150s	3.5*10 ⁻⁷ /150s	6s	10m	10m	95%
EGNOS-3C	GPS+GNSS1	2	Regional GNSS1	5°	7.7m	7.7m	-	20ns	10 ⁻⁶ /150s	3.5*10 ⁻⁷ /150s	6s	20m	20m	99%



Security issues

- « intrinsic security » of the system
(infrastructure, links,...)
 - > Galileo will be securised as a spatial system

- « security against misuse »
 - > Governmental concern

- « **security of datas** » (**respect of private life**)
(Directive 95/46/CE in application since 10/25/1998)