

GEARS

Galileo Authenticated Robust timing System

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WHY A NEW TIMING RECEIVER

- Providing a Galileo-based timing receiver for Critical Infrastructures (CI) and targeted markets :
 - Telecom
 - Energy
 - Finance
- Subsidised by the European GSA (Fundamental Element Program) GSA/GRANT/05/2017-02
- Development and validation of prototypes
- Orolia will industrialise and market the product by 2021

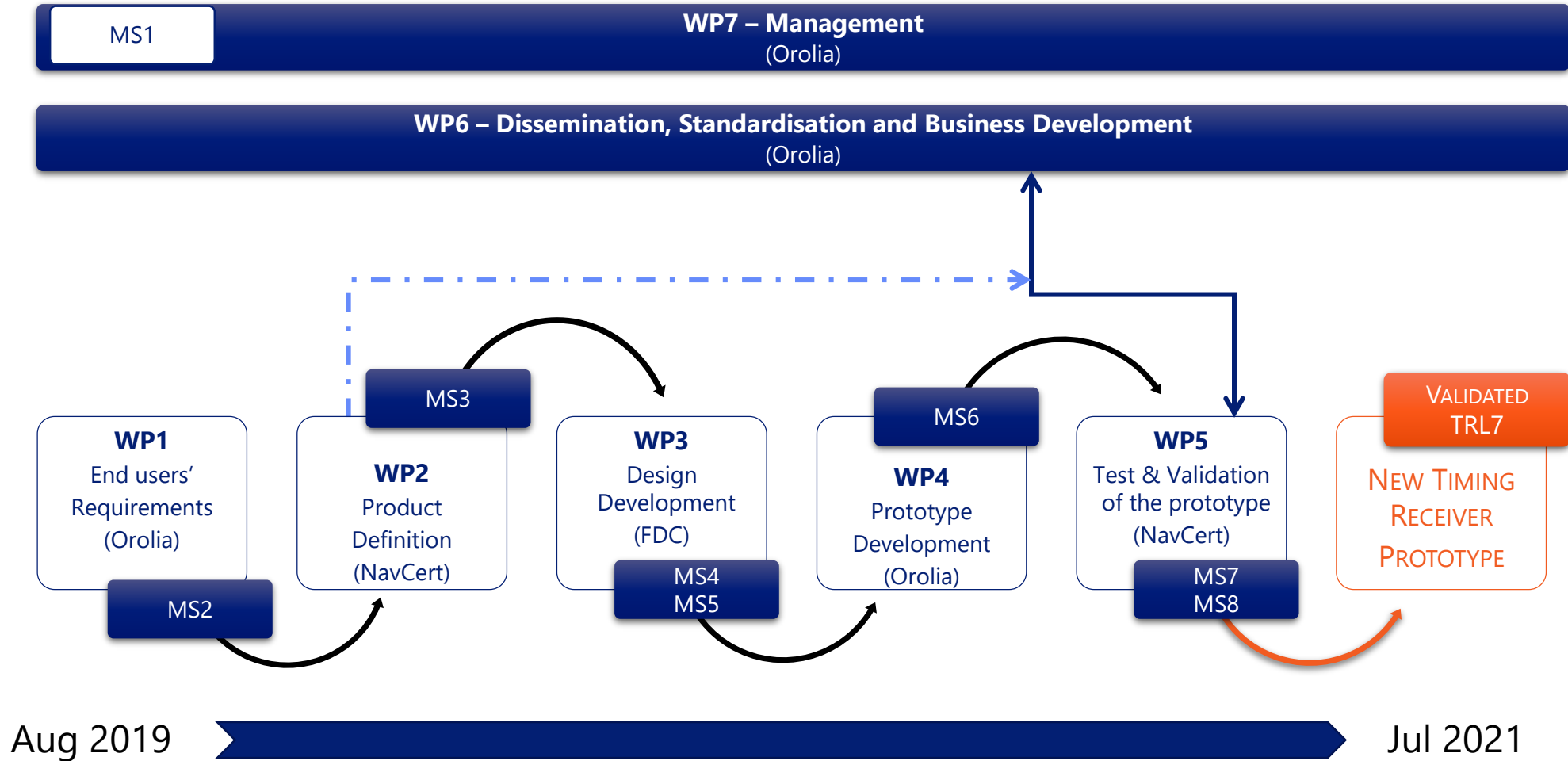


GEARS OBJECTIVES

- OBJ# 1 Improving performances and resilience of Galileo and GNSS Timing receiver
- OBJ# 2 Develop and demonstrate the effectiveness of unique Galileo services to operators
- OBJ# 3 Strengthen market adoption through Standardisation activities



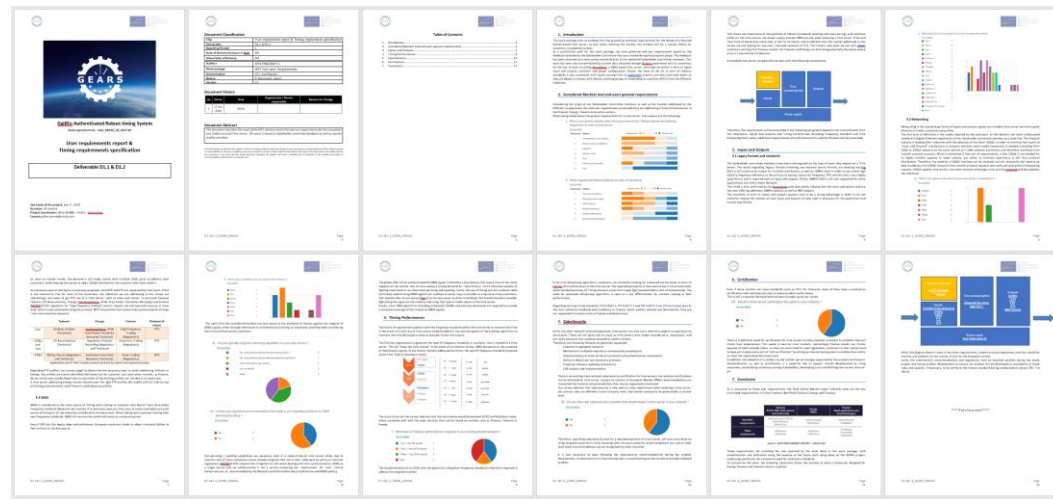
GEARS WORKPLAN



WP1 END USERS REQUIREMENTS

Data source:

On-line form initially sent in August to the Industry members and NML



Co-applicants direct input

Market data



* Obligatory

1. Which industry are you working for ? *

- Telecom
- Energy
- Finance
- Broadcast

Autre _____

2. What is the typical number of time-servers in your company/industry ? *

- <5
- <10
- <25
- 25+

Autre _____

3. What is your priority checklist when choosing a time-server ?
(Please organize the following propositions by order of importance) *

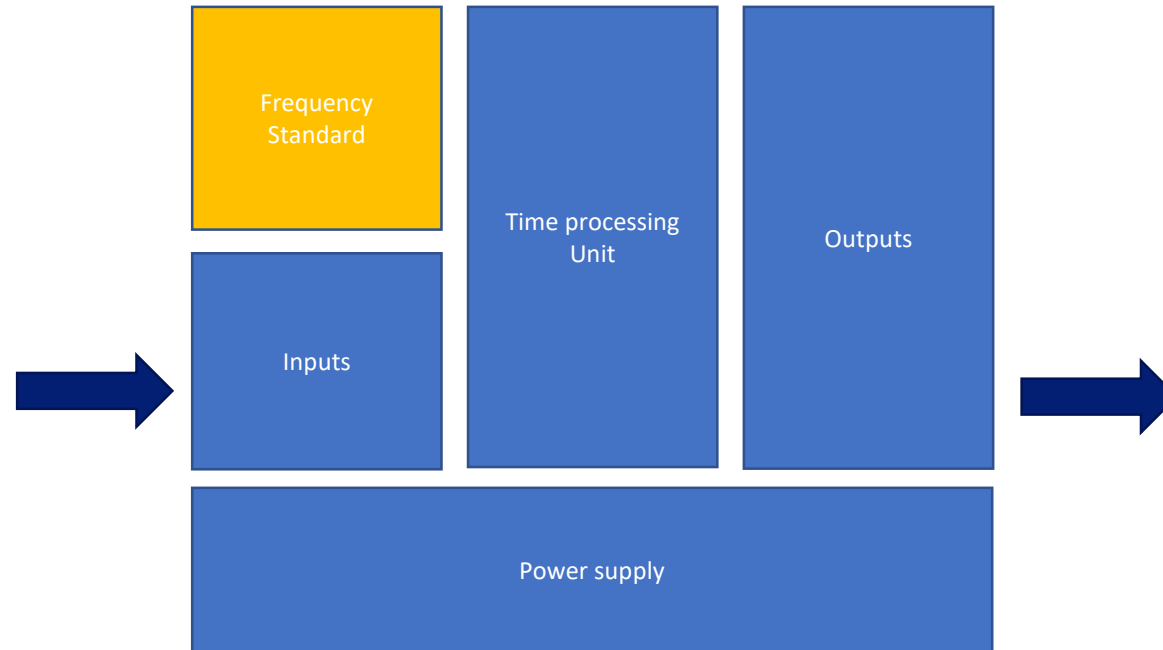
- Price
- Total Cost of Ownership
- Reliability
- Size
- Compatibility to your industry standards
- Network based compatibility
- Ease of use

4. Please organize the following features by order of importance. *

- Redundant power supply
- GPS evidence
- Time source resilience
- Remote monitoring
- Electrical alarm generation
- Control Authentication

WP1 END USERS REQUIREMENTS

Study goal : determine key elements of a next-generation time server around the following elements :



+ Certification needs

WP1 END USERS REQUIREMENTS

Questions **Réponses** 0

5. Please pick the required timing standard for your industry:

ITU G.826X1	2
ITU G.827X1	2
ITU G.827X2	2
None of the above	1
Autre	2

6. Please pick the I/Os necessary for you on a standard time-server:

PPS In	3
PPS Out	4
1pp1m	0
1pp1s	2
NTP Server	5
NTP Slave	3
PTP Master	5
PTP Slave	4
SynchE	3
10 MHz In	3
10 MHz Out	1
2.048 MHz In	0
2.048 MHz Out	0
1588 In	0
1588 Out	1
Proprietary S4D at 1u pulse	1
Autre	1

7. What level of holdover performance is required in your industry/implementation ?

< 1µs / 1 day (90 typical)	2
< 2µs / 1 day (DCSD typical)	1
< 100µs / 1 day (DCSD typical)	0
Autre	2

8. What is the typical level of accuracy to the utc required at time-server level ?

5 Réponses

Dernières réponses
"scale of the act"
"µs"
"NTP < 100 µs; PTP < 100 µs; WR < 80 ns"

9. What is the typical level of accuracy to the utc required at slave level ?

5 Réponses

Dernières réponses
"scale of the act"
"100µs"
"NTP < 1 µs; PTP < 1 µs; WR < 100 ns"

10. What is the typical number of time slave in your implementation ?

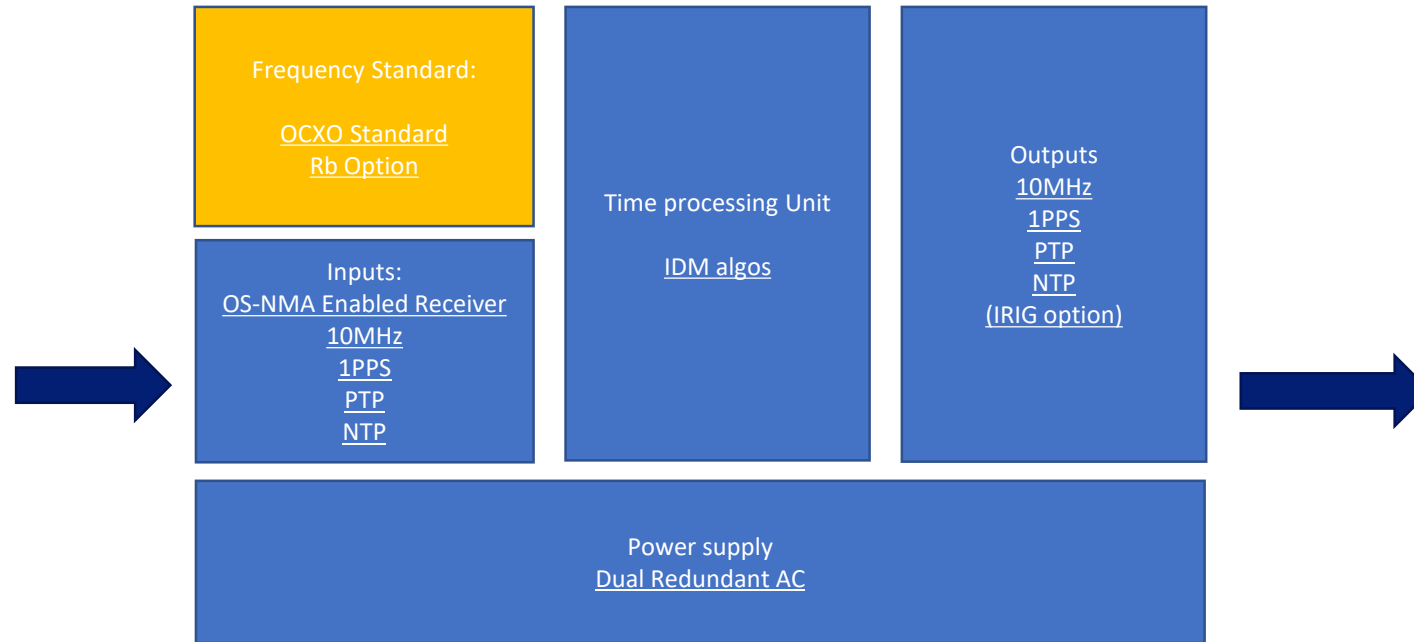
5 Réponses

Dernières réponses
"4 in your infrastructure, providing time to users; 100 slaves inside the..."
"1000 servers, no time slaves"
"NTP > 100; PTP < 2; WR about 10 and growing"

11. Please pick the PTF profile required for your industry:

Enterprise	1
Micros	0
SMART	0
Industry	0
Substation Automation	0
No PTF needed	0
IEC 61850	1

WP1 END USERS REQUIREMENTS CONCLUSION

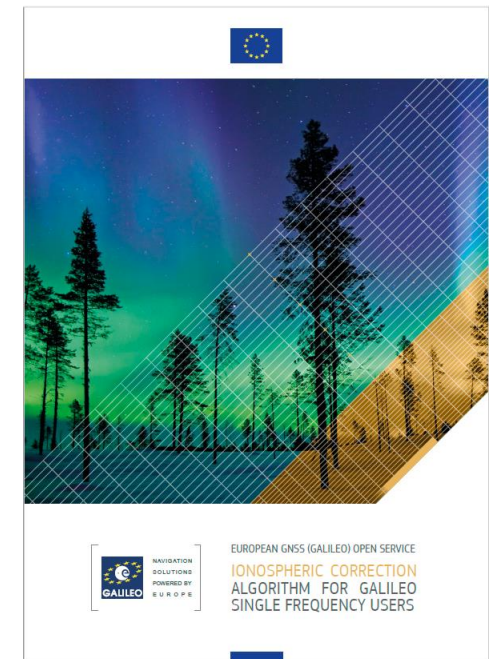


Plus, all the required EMC/EMI, RED, CE marking, RoHS and REACh...

GEARS MAIN TECHNICAL OBJECTIVES

Improving performances and resilience of Galileo and GNSS Timing receiver through:

- Development of an OS-NMA (E1/E5/E6) capable Galileo Receiver
- Implementation of new Galileo NeQuick-G algorithm for Iono compensation
- Development of new generation T-RAIM, anti-spoofing and other IDM algorithms
- Development of a « commercial-class » 4-elements CRPA



STRENGTHEN MARKET ADOPTION THROUGH STANDARDISATION ACTIVITIES

KPI's (e.g., accuracy, TDEV, TTFF), testing methodologies (e.g., equipment), a catalogue of GNSS RF threats (e.g., spoofing), pass or fail criteria for each defined test case

This objective shall be achieved by the development of a test specification standard for a timing receiver taken into account the:

- ETSI TS 103 246: Satellite Earth Stations and Systems (SES); GNSS based location systems
- CEN EN 16803: Use of GNSS-based positioning for road Intelligent Transport Systems (ITS)
- ETSI : EN 303 413: Satellite Earth Stations and Systems (SES); Global Navigation Satellite System (GNSS) receivers; Radio equipment operating in the 1 164 MHz to 1 300 MHz and 1 559 MHz to 1 610 MHz frequency bands

Sharing the timing receiver requirements and test specifications within ongoing standardisation work at ITU (ITU-T G.8272, ITU-T G.8272.1)

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