What’s Next?
Galileo Services Roadmap

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Deployment and Service Provision

- Initial Services
- Enhanced Services
- Full Operational Capability

- Satellite Launches and Commissioning
- Ground Infrastructure Upgrades
The Way to Improving Services

- Service Monitoring
- Infrastructure Deployment
- Operations
- Service Validation
Service Monitoring

- Continuous Service Monitoring
  - Operator
  - GRC

- Performance Data
- Continuous Improvement
- Lessons Learned

Service Exploitation Reviews
Infrastructure Deployment

Launch → Early Operations → In-Orbit Test → Service

Factory → Site / Non-Operational → Site / Operational
Operations

Continuous operation

Deployment of new infrastructure
- Preparation of updated procedures

Hand-over of infrastructure
- Operational Validation

Deployment in operational
- Support to the migration
- Routine Operation

Service Continuity
Service Validation

- Service Monitoring
- Qualification
- Operational Validation

Service Targets

Measurement Campaign

Accreditation

Service Reviews
OS Service Provision Phases

Initial Service
- Initial Ranging Accuracy (95%) < 7m
- Initial Ranging Availability > 87%
- Full Timing Accuracy (95%) < 30 ns
- Initial Timing Availability > 87%

Enhanced Service
- Full Ranging Accuracy
- Enhanced Ranging Availability
- Enhanced Timing Availability
- Initial Positioning Service Accuracy and Availability

FOC
- Full Positioning Accuracy
- Enhanced Positioning and Timing Availability
- Navigation Message Authentication
- INAV Improvements

- OS NMA Consolidation and SiS Tests
The provision of the CS High Accuracy for free is being discussed, which would mean a diversion of the current baseline with possible impact on the above described phasing.
Galileo contribution to High Accuracy

- New OS signals with promising performance
  - E1b, E5b, (E5a)
  - E5 AltBOC
Galileo Commercial Service HA

- **EC Implementing Decision**
  - Galileo CS shall support **HA** and Authentication

- **Galileo CS support to HA**
  - Ranging signal in E6
  - Data dissemination capability in E6B

- **CS Demonstrator**
  - Live broadcast of PPP corrections

“Authenticated PPP”
Data Dissemination Capability

• E6B data rate around 450bps
• Benefits from former Galileo SoL design
  • Latency of a few seconds
  • Constellation subset (“connected satellites”)
  • Global coverage
• Availability under consolidation
  • Infrastructure deployment
• GNSS Service Centre
Authentication

E1 / OS-NMA
Free access

E6 Encrypted Ranging
Commercial Service
SAR Service Provision Phases

Initial Service
- FLS: Service provision for contribution to MEOSAR Early Operational Capability (EOC)
- Initial detection and location performances over the SGC (SAR/Galileo Coverage)

Enhanced Service
- FLS: Service provision for contribution to MEOSAR IOC
- Improved location performances w.r.t. to Initial Service
- Commitment on availability of the Localisation < 2km in single burst over the SGC
- RLS: Start of Service

FOC
- FLS: Service provision for contribution to MEOSAR FOC
- Service Provision relying on L-band satellites Downlink only
- Extension of SAR Ground Segment Coverage in South Indian Ocean
- Increased Ground Segment Capability to Support 2nd Generation of beacons
Conclusions

• Galileo is delivering high quality services

• And at the same time working in the next improvements

• Challenging Service Roadmap up to 2020
• Next stop: Enhanced Services (2018)

• Service Roll-out Strategy
  • Joint work of Stakeholders
  • Monitoring, Development, Operations, Validation
  • Security and Service Continuity
NOW IT’S YOUR TURN
How much would you benefit from the Galileo CS features?

- **High Accuracy**

1. Not beneficial at all
2. Slightly beneficial
3. Beneficial
4. Fairly beneficial
5. Highly beneficial
How much would you benefit from the Galileo CS features?

• Authentication

1. Not beneficial at all
2. Slightly beneficial
3. Beneficial
4. Fairly beneficial
5. Highly beneficial
How important is the following for your application…

• Position or timing accuracy?

1. Not important at all
2. Slightly important
3. Important
4. Fairly important
5. Very important
How important is the following for your application...

• Availability

1. Not important at all
2. Slightly important
3. Important
4. Fairly important
5. Very important
Thank you