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Space-based PNT (Position, Navigation, Timing) Architectures, Applications, and Services (1)

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EVOLUTION OF SERVICE MONITORING TOOLS
IN THE CONTEXT OF AN INCREASINGLY COMPLEX GLOBAL SATELLITE NAVIGATION
SYSTEM

Abstract

Operating a complex system such as Galileo is not straightforward. Multiple key performance indicators (KPI) are imposed to the Service Operator, many of them which may derive in liquidated damages, if not met. Galileo, a constellation of currently 28 satellites (soon 30), backed by 2 Control Centres and a network of 6 Telemetry, Tracking and Control Stations, 5 Mission Uplink Stations and 14 Ground Sensor Stations, supported by a Service Centre and several more Support Facilities needs constant monitoring and extraordinary synchronisation. Besides, apart from the increasing size of the infrastructure as the system evolves towards full operational capability, new services are being declared, which means further elements to care about and new metrics to measure.

Spaceopal GmbH, operator of the Galileo Services, introduces in this paper how it manages to match the constant evolution needs of such a complex system. The KPI monitoring tools in place are presented, as well as the approaches followed to ensure service continuity whenever there are new satellites launched, new system versions deployed and new services (such as the Galileo High Accuracy Service or the Open Service Navigation Message Authentication Service) declared.

Finally, an outlook of the evolution strategies devised to address the incoming Galileo Second Generation and the envisaged new services (Commercial Authentication Service, Emergency Warning Service, Timing Monitoring Service) will be introduced.