**Galileo mission recent results, ongoing support and future launches**

Florian Dilssner (2), Aaron Strangfeld (1), Francisco Gonzalez (1), Erik Schönemann (2), Michael Steindorfer (3)
(1) European Space Agency, ESA/ESTEC, Noordwijk, The Netherlands; (2) European Space Agency, ESA/ESOC, Darmstadt, Germany; (3) Austrian Academy of Sciences, Graz, Austria

Satellite laser ranging (SLR) has proven to be a unique and powerful tool for over two decades in the calibration and validation of spacecraft dynamics. The technique's greatest strength—in contrast to microwave measurements—is its ability to provide an independent, unambiguous, and absolute observation of a satellite's orbit. In this presentation, we characterize the Galileo satellite orbit quality and its temporal evolution since 2012 using tracking data from the global SLR network including the recently operational ESA station IZN-1 at Tenerife, Spain. The current size of Galileo SLR residuals indicates unsurpassed radial orbit accuracies up to 1 cm root mean square (RMS), suggesting that the SLR station accuracy limit has been reached. This result has prompted us to take closer look at the Galileo SLR data availability, link budget and normal point accuracy. One of the most important parameters of the link budget on the satellite side is the optical cross-section of the laser retroreflector array (LRA), as the amount of available tracking data for the two type of Galileo LRAs shows a dependency to this parameter. A statistical method has been applied on the available data to validate the LRA's optical crosssection in space. The results of this method are consistent with the specifications of the LRA and corresponding values for LAGEOS and Etalon satellites could be determined. In addition, the accuracy also depends on the LRA properties. A new normal point formation method, the so-called pattern correlation method, has been introduced taking into account the distance distribution of the individual prisms of the Galileo LRA. The new normal points have comparable precision as the standard method and a mean offset of 1.5 mm. Finally, a brief overview about the evolution of the Galileo mission including the future launches will be provided.