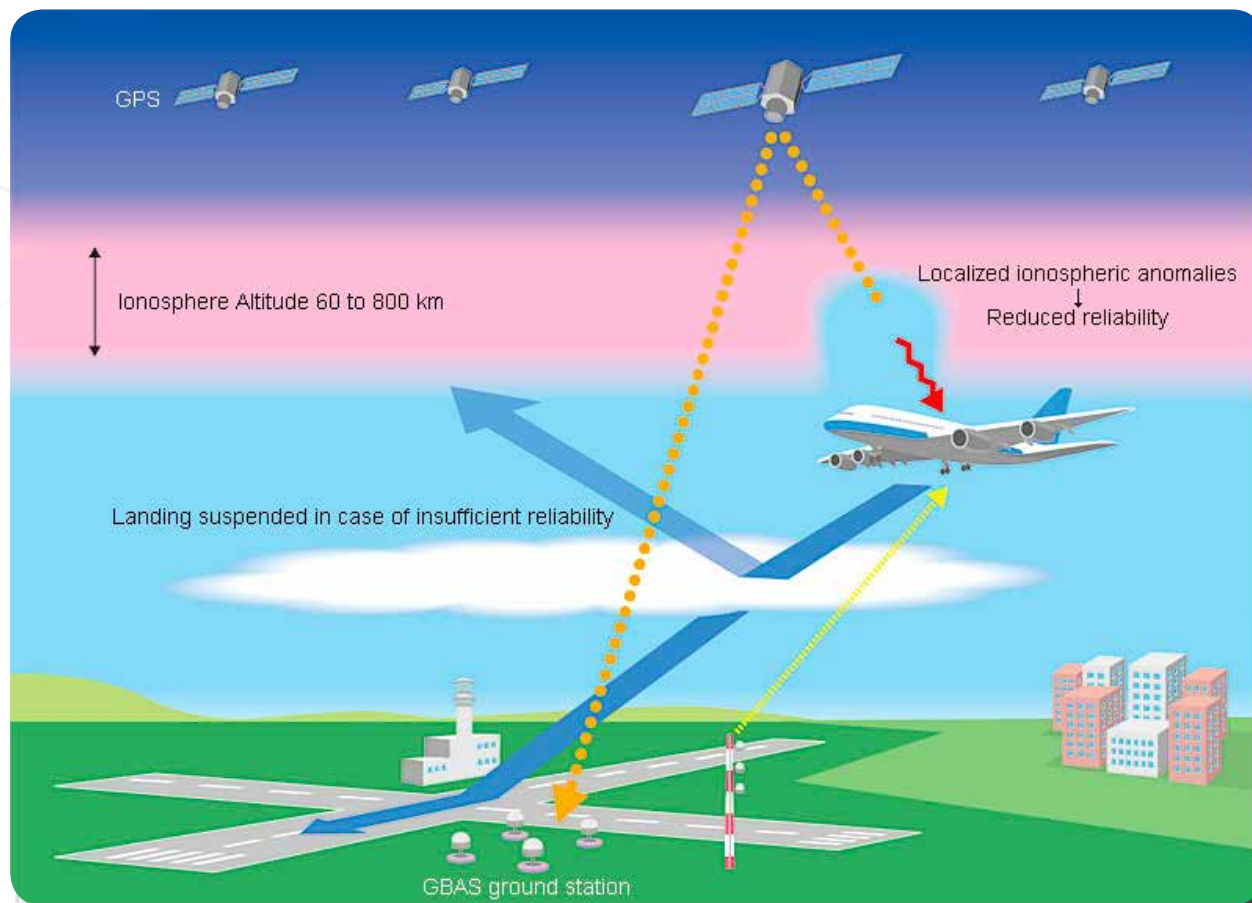




## DEVELOPMENT OF PROCESSING MODELS FOR MULTI-CONSTELLATION/MULTI-FREQUENCY GBAS

In civil aviation, there is currently a demand for greater airspace capacity and efficiency. In order to meet these long term goals, services must be expanded to provide more reliable, robust and frequent approach and landing operations at airports around the world. One such application is the use of the Ground Based Augmentation System (GBAS) – which augments the existing Global Positioning System – to enable Cat II/III precision approaches, the most stringent operation currently defined and with the lowest separation minima. However, enabling such services by assuring the accuracy and integrity of such a system is not a simple task.



In Europe, the Galileo constellation has the potential to enable such services by providing improved geometry when used interoperability with the GPS constellation and also greater robustness through the availability of a redundant civilian-owned system. For these reasons, European research is addressing the transition from single frequency GBAS to multi-constellation (MC), multi-frequency (MF) GBAS. The Galileo system as well as a modernized GPS will provide measurements on two protected frequency bands such that dual-frequency (DF) processing could potentially be used to improve performance through removal of ionospheric errors.

The primary aim of this thesis is to determine an optimum processing methodology for Dual Constellation (GPS and Galileo) and Dual Frequency GBAS, thus resolving the challenges this presents. The thesis is performed within the scope of SESAR WP 15.3.7 and more precisely sub-task 3.6 of this work package on the subject of measurement processing. SESAR WP 15.3.7 is a SESAR Joint Undertaking funded project consisting of major European industry and research institutes.

