SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
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Author: Mr. Alberto Tuozzi
ASI - Italian Space Agency, Italy, alberto.tuozzi@asi.it

Dr. Claudia Facchinetti
Italian Space Agency (ASI), Italy, claudia.facchinetti@asi.it
Dr. Luigi Ansalone
Agenzia Spaziale Italiana (ASI), Italy, luigi.ansalone@est.asi.it
Mr. Salvatore Viviano
Italian Space Agency (ASI), Italy, salvatore.viviano@asi.it

THE ITALIAN APPROACH FOR CIVIL AVIATION: THE ADOPTION OF NEW NAVIGATION SYSTEMS AND APPLICATIONS

Abstract

In the aviation field, much has been done in the last years at European Level, although innovative systems are required to cope with the growing volume of traffic and the related operating costs. In this contest and to avoid possible future congestion and limitations of capacity, the need of innovate systems has been carefully considered. In Italy these issues were addressed in the project SENECA (SatEllite Navigation sErvices for Civil Aviation), now being completed. SENECA is the National Program of Satellite Navigation of Civil Aviation, it is the result of the collaboration between ASI (Italian Space Agency) and ENAV (Italian Company for Air Navigation Services) in the air navigation field using satellite systems. The aim of the project is the design and the realization of an infrastructure prototype to evaluate, through experimentation gate to gate, the benefits of a gradual introduction of the satellite navigation in civil aviation. SENECA also considers the evolution of GNSS (GPS, EGNOS and Galileo) and the interoperability between various systems, according to different operational concepts. The infrastructure is divided into seven regional civil airports distributed evenly on the Italian territory, the activities of interest are related to the avionics and in general to all the issues involved the whole airport area. The cases analyzed range from: detection, characterization and localization of electromagnetic interference band GNSS; monitoring the performance of GBAS (Ground Based Augmentation System)/ SBAS (Satellite Based Augmentation System) satellite services; the increasing of the navigation performance using a network prototype of pseudolites, wireless antennas, and the transmission of the differential Corrections GBAS-like; the development of devices for testing the performance of the navigation aeronautical services and integrated satellite communications. The future developments intend to analyze the use of UAVs (Unmanned Aerial Vehicles) for civil and commercial scopes in not limited areas. The critical elements arising from safety for the remote control procedures, techniques and methodologies for certification and finally the regulations and requirements for the introduction of UAVs in the ATM have been considered. This paper deals mainly with the analysis of the results of the SENECA system, evaluating the improvements that could be necessary to optimize the process to the final use for systematic procedures. SENECA could allow the growth of air traffic maintaining high requirements in safety and performances.