

SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
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IRIS: SETTING THE STANDARD FOR FUTURE AIR TRAFFIC MANAGEMENT
COMMUNICATIONS VIA SATELLITE

Abstract

Iris, the ESA's programme for Air Traffic Management communications via satellite, started in 2007 and has since been progressing steadily with system design studies. The objective is to provide a new satellite communication system based on a new communication standard, to answer the needs of airspace users for datalinks between aircraft cockpits and ground controllers. The communication standard has the ambition to become the reference worldwide, with approval from the International Civil Aviation Organisation of its use for safety communications in continental airspace. Iris is designing a satellite solution for the Single European Sky ATM Research (SESAR) Programme, which is modernising air traffic management in Europe. At horizon 2020 Iris will contribute to the objectives of SESAR by providing digital datalinks to cockpit crews, with a system infrastructure deployed for European airspace. One of the main drivers behind SESAR is to reduce the costs of provision of ATM service provision to airlines. Iris therefore requires a cost-effective design, and design studies have included a broad range of technical trade-off to ensure that system costs are reduced while performances are guaranteed. The trade-off has progressed with the support of the EC, the SESAR Joint Undertaking, Eurocontrol, the European space industry, air navigation service providers and aviation stakeholders.

Some key requirements at system level will require further progress in the definition of SESAR operational concept before a design baseline can be consolidated, but the selection of telecommunication protocols for the future standard has been consolidated. The very specific constraints of the aeronautical environment, coupled with the very stringent requirements of safety communications and the need to close the link budget in demanding conditions (e.g. aircraft banking, low elevation of the satellite, multipath effects when flying in oceanic airspace) have led to choose specific techniques.

The present Paper describes the requirements and the results of the trade-off performed for the selection of communication protocols, and presents the way forward towards implementation of the European operational system.