

SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
Mobile Satellite Communications and Navigation Technology (3)

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ESA IRIS PROGRAMME: TECHNICAL OPTIONS FOR A NEW SATELLITE COMMUNICATIONS
SYSTEM FOR AIR TRAFFIC MANAGEMENT

Abstract

Iris is the ESA programme of satellite communications for Air Traffic Management (ATM). Iris aims at designing, developing and validating a new system for air-ground safety communications within the framework of the Single European Sky ATM Research (SESAR) Programme, to enable operational use by 2020.

Iris is funded and managed by ESA, while the SESAR Joint Undertaking (SJU) defines requirements on behalf of end users. As aviation is global in nature, this new communication system would need to be available on a worldwide basis. For this purpose, the communication system will require ICAO standardisation, and technical specifications will be made openly available to any interested party for implementation in any world region.

From a technical perspective, the ESA role with the Iris Programme covers the design of the new Communication Standard, the design and development of the Satellite Communication System, the procurement and deployment of the Pre-operational System and the System Validation by 2015. ESA is also supporting the SJU and the European Commission in facilitating the definition of the service model. Activities relative to design of the communication as well as the satellite system are carried out by the manufacturing industry, while activities relative to operation/service provision involve several prospective operators and service providers working in competition.

The Iris Programme development phase (Phase 2) has started in 2009, and is now proceeding with system design studies, in an iterative process with SJU. Phase 1 feasibility studies had defined the process by which, from the user requirements defined by aviation, one can deduce the requirements for the user terminals, the characteristics required of the communication protocols, the link budget and, consequently, determine the requirements for the space segment and the ground segment.

User requirements are being defined during 2010 and some of them require a better understanding of their impact on the system design before consolidation. To this end, several technical options are proposed for a purpose-built system design, and a study of adapting Inmarsat's Swift Broadband system is also carried out. The design of the new communication system and development of associated technical specifications are planned to be completed by end 2011.

The present Paper provides the latest results of the design options developed during 2010, focusing on the design of the satellite communication protocols and the air interface.