TriaGnoSys GmbH

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The WirelessCabin project officially starts under EC contract IST-2001-37466

Brussels, Weßling – WirelessCabin (Development and Demonstrator of Wireless Access for Multimedia Services in Aircraft Cabins) a partly EC funded project officially starts off to develop the future of passenger communication for airliners. Nine international partners lead by the German Aerospace Center will focus their research and development towards an wireless infotainment and communication infrastructure for aircraft passengers on board.

Project Goal:

The WirelessCabin project is developing wireless access technologies for a aircraft cabins. Several access technologies in the cabin are envisaged for passengers: UMTS for personal telephony and packet data, Bluetooth and W-LAN for IP access. The Bluetooth interface will also be used for transport of UMTS services.

The project will define a system architecture for wireless access in an aircraft cabin. The passenger will have the possibility to use its own personal equipment (mobile phone, laptop). For this, the project will develop a service integrator that maps the cabin services on a satellite bearer to be connected to the terrestrial infrastructure.

The concept of the wireless cabin access will be demonstrated in flight via satellite using an Airbus long-haul aircraft. The cabin services will provide mobility, VPNs and AAA functions which need to be developed for the mobile users.

Technical Approach:

The concept of having several mobile users with different access standards is called Collectively Mobile Heterogeneous Network (CMHN). The aircraft cabin represents such a CMHN supporting several radio access networks.

The architecture consists of (i) several wireless access segments in the aircraft cabin, (ii) a satellite segment for interconnection of the cabin with the terrestrial telecom networks, and (iii) an aircom service provider segment supporting the integrated cabin services.

The CMHN concept will be elaborated and the required protocols will be analyzed and designed. A concept for providing different quality of service with variable bandwidth for each of the access standards will be developed and a handover strategy among several available satellite segments with eventual asymmetric bandwidth in up- and down-link will be defined.

For the wireless access, the propagation channel in the aircraft will be determined by a channel measurement campaign, and channel statistics and a model will be derived. This will yield to an interference analysis to determine the cell topology, but also the impact on avionics equipment in flight deck and bay.

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On the protocol side the project will investigate the effect of the propagation delay on UMTS protocols and an encapsulation of UMTS services over Bluetooth will be developed.

Furthermore, a market survey will perform passenger and airline interviews, and a business relation model between service providers, airlines, and satellite providers will be established.

Key Issues:

- Interference to aircraft avionics and ground
- cabin topology planing
- service integration over satellite
- protocol design for mobility, VPN, AAA
- in-flight demonstration
- business model for aeronautical services

Expected Impact:

- WirelessCabin will bring mobile telephony and wireless IP services to aircraft cabins.
- WirelessCabin will create opportunities for new services for satellite operators, service provider and airlines
- WirelessCabin will contribute to standardisation bodies in the context of aeronautical spectrum, interference, equipment certification processes

Start date: 01/07/2002

End date: 31/12/2004

Action line: IST 2002 - IV.5.2, IST 2002 - IV.5.1

List of participants:

Airbus Deutschland GmbH

Deutsches Zentrum für Luft- und Raumfahrt e.V.

Ericsson Telecomunicazioni S.p.A.

ESYS plc

Inmarsat Ltd.

KID-Systeme GmbH

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