NEWSKY
Networking the Sky

Vision of "Networking the Sky"

Information availability and sharing resulting in global situation awareness will be a key enabler for future aeronautical systems.

To achieve this aim, the NEWSKY project will develop a concept of a global mobile communication network for aeronautical communications.

NEWSKY pursues the vision of "Networking the Sky" by integrating a range of data links based on different communication technologies (ground based, satellite-based, aircraft-to-aircraft) as well as different application classes (air-traffic services, airline operational and administrative communication, aeronautical passenger communication) into a single, seamless network.

Fact sheet

Project Name	NEWSKY - NEtWorking the SKY for Aeronautical Communications
Research Programme	EC Framework Programme 6, Aeronautics and Space
EC Instrument	Specific Targeted Research or Innovation Project (STREP)
Call	AERO-2005-1.3.1.4G (Innovative ATM Research)
Contract Number	37160
Project Duration	26.02.2007 - 26.08.2009 (30 months)
Man-Power Effort	250 Person-Month
Total Financial Volume	3.6 Million Euro
EC Funding	2.1 Million Euro

Coordinator:
German Aerospace Center (DLR), Institute of Communications and Navigation, Germany

DLR

Partners:
Thales Alenia Space France
QinetiQ Ltd, United Kingdom
University of Salzburg, Austria
Frequentis GmbH, Austria
TriaGnoSys GmbH, Germany
Deutsche Flugsicherung GmbH (DFS), Germany

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NEWSKY
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Networking the Sky for Aeronautical Communications

Project co-funded by the European Commission within the 6th Framework Programme

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Project Goal

Efficient and reliable communication systems are required to support the expected sustainable growth of European air transport. However, aeronautical communication technologies are already running at their maximum capabilities today. Moreover, the expected air-traffic management (ATM) paradigm shift towards less voice and more data communications and towards more strategic planning of flight routes requires additional communication capabilities which are not provided by current aeronautical communication systems.

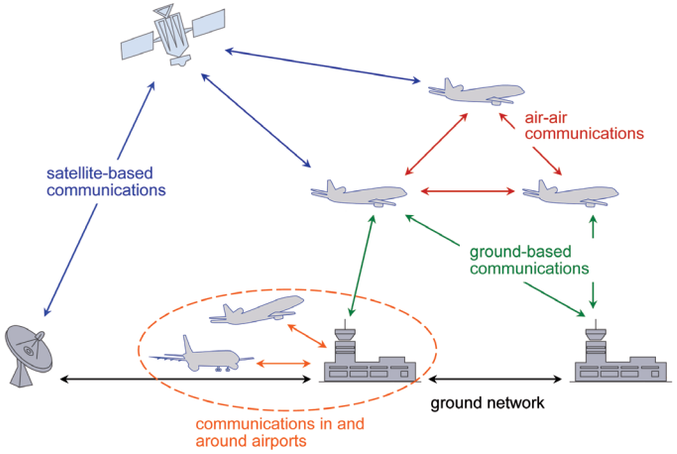
Currently, several European research activities are being undertaken with the goal to develop improved communication technologies for aeronautical communication. These activities comprise ground-based, satellite-based, aircraft-to-aircraft and airport communication for all different application classes, like air-traffic services, airline operational and administrative communication, and aeronautical passenger communication. However, an initiative which aims at the integration of existing and emerging communication technologies into a global approach has so far been missing. NEWSKY fills this important gap by conducting upstream research activities focussed on a global aeronautical network design.

The main goal of NEWSKY is to integrate both different communication technologies and different application classes into a global heterogeneous aeronautical network with appropriate priority properties. The NEWSKY approach enables to achieve improved communication capabilities and assists the expected ATM paradigm shift. Moreover, real air-ground integration is achieved and System Wide Information Management (SWIM) is made available to the aircraft, enabling Collaborative Decision Making (CDM).
As a consequence, the NEWSKY approach supports the realization of the Single European Sky concept and helps to create a future European ATM system which is viable well beyond 2020.

Expected Benefits

- Increased availability and reliability through efficient use of different communication links
- Increased capacity and coverage of overall system
- Globally optimized network performance by using the right communication link technology at the right place and time
- Interoperability between different communication links, thus, seamless system which is fully transparent to end users
- Modular system concept which enables simple introduction of new technologies
- Efficient and flexible utilization of the overall aeronautical frequency spectrum
- Better information availability and sharing possibilities enable the aircrafts to be included in System Wide Information Management (SWIM)
- Cost savings, high reliability and an optimal alignment with the evolution of communication and security technologies by using Commercial-Off-The-Shelf (COTS) solutions (e.g. based on IPv6) wherever possible.

Integration of different aeronautical communication systems into a global heterogeneous aeronautical network to realize the vision of "Networking the Sky"



Work Program and Challenges

- Identification of application scenarios and service requirements
- Business case study
- Explore the concept of network-enabled capability (NEC) for enhanced information sharing and collaboration possibilities in civil aeronautical networks
- Screening and identification of communication links that might be integrated in the NEWSKY infrastructure
- Development of an innovative networking concept and architecture comprising appropriate routing algorithms, system-level resource management strategies, and seamless hand-over techniques in order to implement a global QoS concept
- Development of appropriate techniques to ensure security
- Validate the NEWSKY integrated airborne network design through computer simulations and a laboratory test-bed.

Flexible and efficient use of available aeronautical spectrum allocation