

## Deutsche Telekom, Alcatel-Lucent and Airbus successfully test high-speed broadband for in-flight services to passengers using a direct-air-to-ground communication system based on LTE.

- Successful testing of the world's first broadband connection between an airborne passenger plane and a ground-based LTE network
- Early step toward future commercial implementation of wireless offerings to help travelers stay connected

The fourth generation mobile broadband access technology LTE (Long Term Evolution) provides high-speed mobile Internet connections for people on the road and, in the future, it will provide that connection for air passengers when in flight. Deutsche Telekom, Alcatel-Lucent and Airbus have successfully tested direct data communication - using LTE technology, a commercial wireless radio solution - between an aircraft and a wireless networks on the ground. When commercial, this solution will be able to provide in-flight mobile voice and broadband data communications services cost-effectively.

These tests represent the first steps on the road toward future commercial implementation of in-flight wireless services for passengers over continental Europe leveraged by a terrestrial cellular LTE network. Current solutions target international routes and are based on satellite systems. These can now be supplemented with a number of improvements. When made available in the future, LTE technology can provide a more efficient, cost-effective alternative to satellite, offering high-speed connections for passengers via onboard Wi-Fi and onboard cellular services. This approach offers an attractive way to give travelers access to the Internet along with the huge range of services that are now available via home and office broadband networks.

"We're very pleased with the successful outcome of the test flight," explained Bruno Jacobfeuerborn, CTO at Deutsche Telekom. "Based on our In-flight experience, we know that in-flight surfing at broadband speeds is very popular. Expanding the service to cover flights within Europe would therefore be a natural extension and is being requested by the airline passengers. The anticipated lower costs can be an important factor for establishing the offering, and I'm looking forward to the evaluation of the results."

"Airbus has been heavily involved in the development of onboard connectivity (GSM/GPRS + Internet) systems since years" – said Dr. Jörg Schuler – Head of Cabin & Cargo at Airbus. "Airbus policy is to offer aircraft-centric solutions, optimizing resources, weight and drag. Today, our solutions are essentially based on Satellite technology and this R&D project represents a key demonstrator of what could shape airline passenger experience in the near future, in particular the low integration efforts for the airborne part of the system could be very attractive for our customers."

Wilhelm Dresselhaus, Chairman of the Board of Alcatel-Lucent Deutschland AG said: "With this successful test flight we have set the course for an innovative telecommunications service for European airline passengers. Our joint R&D project has proven that there is a technical alternative for satellite links to bring high-speed Internet access to planes at lower cost: LTE technology could be this alternative on domestic and continental flights. The solution offers flight passengers a way to improve productivity by working online or interacting with their social network"

The first flight test took place in November 2011 over the German state of Saxony-Anhalt. It is a part of the joint R&D project between Airbus, Alcatel-Lucent and Deutsche Telekom. Airbus provided an A320 test aircraft equipped with test equipment and Alcatel-Lucent was responsible for the overall technical solution. This included an "onboard unit" installed in the test aircraft to send and receive mobile data signals, for which Alcatel-Lucent developed special algorithms. On the ground, Alcatel-Lucent provided its end-to-end LTE solution including radio access and core network. Deutsche Telekom prepared a ground network of two base stations positioned about 100 kilometers apart. The base stations were connected to Alcatel-Lucent's LTE test center in Stuttgart via Deutsche Telekom's data transport network.

### Deutsche Telekom AG

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