



DLR is Germany's national research center for aeronautics and space and it is also the German space agency. Approximately 6,700 people are employed at thirteen locations in Germany making extensive research and development work in the fields of Aeronautics, Space, Transportation and Energy.

The **Department of Safety Critical Systems & Systems Engineering**, part of the **Institute of Flight Systems** in Braunschweig, offers with immediate effect a:

MASTER THESIS

“Development of a simulation environment for wireless technologies onboard civil aircraft”

The technological development suffered by electronic in the last decades has enabled research and development in many different technical areas. One of these areas is telecommunications, especially in the field of wireless data transmission.

The department of safety critical systems and systems engineering of the institute of flight systems investigates new and alternative ways of transmitting data inside airplanes, in order to substitute the wires associated with data transmission inside those vehicles used nowadays while maintaining the minimum number of cable in them.

At the time of designing and optimizing a wireless network, simulations have become of critical importance. Simulations allow: 1) the existence of short iterative cycles during design, 2) the validation of design requirements through performance tests as well as 3) coverage and signal strength analysis. Unfortunately, the environmental and physical characteristics of aircraft create additional challenges that make the current simulation tools not suitable for analyzing them.

Definition of tasks:

- State of the art analysis of existing tools for wireless systems simulation
 - Tools for simulating lower layers of the ISO OSI stack
 - Tools for simulating upper layers of the ISO OSI stack
- Assessment of the most suitable tool for simulating airborne wireless networks
- Integration of both simulating tools
- Validation with a simple example

Academical background:

- Telecommunications engineering

Desired skills:

- Knowledge in wireless system simulation
- Knowledge in Matlab/simulink
- German language (the master thesis can be written in English)

Thesis duration: 6 months (prolongable)

Supervisor: Dipl.-Ing. Oroitz Elgezabal Gómez

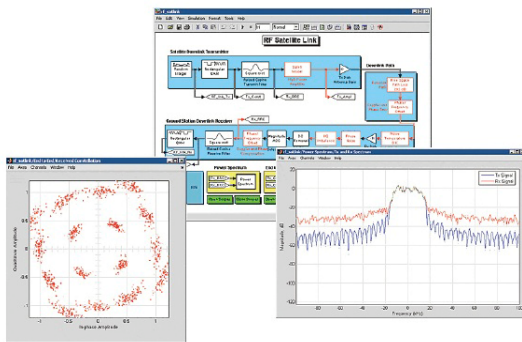


Fig. 1: Wireless system simulation model
Source: The mathworks

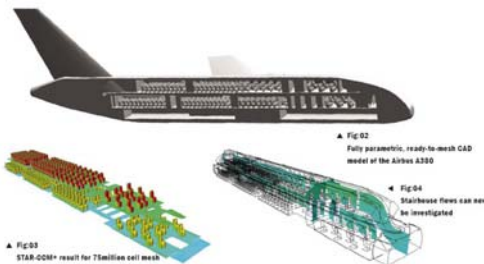


Fig. 2: CAD model of Airbus A380
Source: CD-adapco