

Master Project

«Implementation of ADS-B data transmission in ULTRAS environment »

Background

ADSB stands for Automatic Dependent Surveillance-Broadcast. A methodology employed by aircrafts to determine its position using satellite navigation or other sensors and periodically broadcast it for situational awareness. ADSB is capable of working at either on 1090 or 978 MHz bands and in Europe, it only operates at 1090 MHz. There are two kinds of ADSB; ADSB-IN which is similar to Air-to-Air communication and ADSB-OUT which is similar to Air-to-Ground communication (2 broadcasts/second occur). Reference: https://en.wikipedia.org/wiki/Automatic_Dependent_Surveillance%E2%80%93Broadcast

The goal of this project is to implement ADSB communication operating at 1090 MHz band in the ULTRAS environment. So far air-to-ground communication is implemented using OMNeT ++ discrete event simulator for ideal air-to-ground communication and with this project, we want to extend it to an ADSB communication system and evaluate the performance of the system.

Your Tasks

- Implement the ADSB communication channel operating at 1090 MHz band inside the ULTRAS environment. Realistic channel conditions to be considered.
- Implement ADSB-OUT communication scenario (air-to-ground)
- Evaluate the performance of the system when different number of air crafts are active in the environment under the performance indicators for example:
 - Latency
 - Data Delivery Ratio
 - Total Amount of Data being exchanged
- Writing the report

Your Profile

- Prior experience in working with C++ and OMNeT++
- Knowledge of ADSB communication systems would be an added advantage

Contact: Shashini Wanniarachchi, Prof. Volker Turau

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shashini.wanniarachchi@tuhh.de

Phone: 040 / 428 78 - 3745

Office: E4.073