

Company: Fokker Elmo

Project: Wireless Technologies in Future Aircraft

EngD trainee: Asterios Souftas, Eindhoven University of Technology

Design of Electrical Engineering Systems

Aviation is undergoing a major transition. Future aircraft are expected to be CO2 neutral and energy efficient. Wireless technologies are a key enabler for this transformation.

A reliable wireless network can be used instead of wiring to interconnect all the electrical systems within an aircraft. This allows for significant weight reduction and a configurable and flexible design. To reap the rewards of a wireless network many challenges need to be overcome. Such challenges include the high safety requirements and time-constrained nature of avionics data, the shared nature of the wireless propagation medium and the extremely constrained transmit power levels and frequency bands limitations. To face these challenges and guarantee the required quality of service, pioneering methods need to be developed to offer ultra-high reliability and low communication delays.

I have been investigating possible solutions to make wireless inter-aircraft communication a reality. My work has resulted in a helpful framework to understand the complexity of designing wireless aircraft data networks as well as practical solutions to increase network reliability and offer predictable performance. These solutions were put into practice through the development of a proof-of-concept demonstrator, showcasing the potential of wireless avionic networks.

