

Integration Approach And Flight Testing Of A Wide Band Data Link Within A Multi-Link Network Study

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Abstract: Flexible networking of different information providers and subscribers is a precondition for modern military concepts i.e. Network Centric Warfare (NCW) in Germany. This leads to the requirement for a multi-link network to combine different kinds of data links. Within the scope of the European Technology Acquisition Program (ETAP), Technology Demonstration Program (TDP) 1.4, a first demonstration of certain components of a wide band data link system was performed as part of a data link network. Demonstrations took place at the facilities of EADS and the Official Test Centre (OTC) of the German Air Force at Manching, Germany.

The network established consisted of

- A high bandwidth data link for transmission of high-resolution images from a digital camera on-board of a fast moving platform to a ground station
- A glass fiber connection to transfer commands on ground via TCP/IP
- An existing tactical data link (i.e. MIDS / Link 16) to control the equipment from ground.

Several test flights at different weather conditions were performed. Expected results in terms of network configuration, tracking, connectivity, range and data rate could be accomplished.

This paper describes the architecture which was implemented in a TORNADO aircraft and on ground. Individual ground- and flight test steps performed will be addressed as well as the requirements concerning the involved test facilities. The characteristics of the different data links will be described in more detail and an assessment of their data rates, ranges and reliabilities will be resumed.

The overall results of the study and its relevance for future multi-link networks are discussed. Further experiments dealing with aspects like air-to-air wide band data link communication are planned and will be described in a short outlook. Finally, a summary of lessons learned, way ahead and customer benefits will be given.