

# Human Factors in the display and use of aeronautic information from different sources and of different status

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## **Abstract**

In aeronautic operations and maintenance a large amount of information is provided by documentation and instruments which is needed for the safe operation of an aircraft. However, a development is taking place towards the use of multiple sources, with information being integrated in one display, and the construction of meaningful knowledge in interaction with the user, providing support for decision making and diagnostics. Combining information from different sources means that information could differ in status, age and certainty. The advantage of combining information is in providing the user with a clear picture of the situation, highlighting information that is context-relevant, and ensuring all available information is provided. A wide range of human factors issues is related to perceiving, interpreting and using information from different sources and of different statuses. Cases from different studies are presented in order to address common human factors and design recommendations. These studies deal with the development of demonstrators of information presentation as well as interviews and evaluations with users. Topics include maintenance manuals connected to aircraft systems, electronic flightbags, and cockpit displays. The paper addresses the human factors issues identified, and indicates directions for solutions for information presentation, such as layered information, contextualisation, and integrated information.

## **Introduction**

In flight operations and aircraft maintenance, a large amount of information is provided by documentation. Traditionally, information was provided in paper manuals. In flight operations pilots are also supplied with information from the cockpit instruments and from air traffic control. It is up to the operator to combine information from different manuals and sources to decide which action to take or how to perform a task. Now that documentation is becoming available in electronic formats, new possibilities arise to combine information from different sources, and to provide operators with integrated and complete information (Barnard & Chandra, 2004; Barnard et al., 2004). The advantage of combining information lies in providing the user with a clear picture of the situation, highlighting information that is context-relevant, and ensuring all available information is given. However, there

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