Task analysis from the expert point of view, a prerequisite condition to analyse physiological activity of fighter pilot aircraft

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1. Context and objective

The TAPAS project aims to evaluate the impact of quality of collaborative work on fighter aircraft pilot’s mental workload, in a dynamic situation (Hoc & Amalberti, 2007).

Mental workload is studied through variations of physiological signals in highly realistic simulated mission (Lassalle et al., HFES Europe Chapter 2014). Collaborative work (Barthe & Queinnec, 1999) is analysed from radio communications. These verbal reports are input data collected to conduct a task analysis.

The objective of task analysis (TA) was to provide a framework for physiological activity analysis (PAA) (Figure 1).

2. Task analysis method : allo-confrontation

PAA needs a dual framework, namely a temporal framework and an interpretative framework (Figure 1). These are two conditions to select among knowledge elicitation methods (Hoffman, 1987). Method selected is described in the Figure 2.

Uncertainties, time pressure or risk management are some features of complex dynamic situations managed by fighter aircraft pilots. Identification of relevant sequences needs a subject matter expert (SME) and contextualised records.

3. Results

29 types of collaborative sequences (or tasks) of communication (e.g. take-off, self-protection, etc.) (Figure 3).

4. Conclusion

Task analysis using allo-confrontation method offers timestamped and meaningful data for a SME to describe collaborative tasks and goals of fighter aircraft pilots. It gives the temporal and interpretative framework needed for PAA.

BIBLIOGRAPHY


