

RECEIPT AND DISPATCH OF AN AIRCRAFT: A FUNCTIONAL RISK ANALYSIS

*Riccardo Patriarca*¹
*Arie Adriaensen*¹
*Mark Peters*²
*Joel Putnam*²
*Francesco Costantino*¹
*Giulio Di Gravio*¹

¹*Department of Mechanical and Aerospace Eng., Sapienza University of Rome, Italy*
²*Safety Quality & Compliance, Qantas Engineering, Qantas Airways Limited, Australia*

Abstract

Receipt and dispatch operations in aviation require the contribution of a variety of tightly interconnected agents (dispatchers, pilots, ground-handlers, air traffic controller, etc.). These agents have to deal with processes that are frequently affected by variable working conditions and limited resources. In this context, human actions acquire a crucial role to cope with situations underspecified by procedures, and to manage unanticipated circumstances.

This paper proposes the application of the Functional Resonance Analysis Method (FRAM) for modelling receipt and dispatch process for Boeing-737 in a major airport (about 70 movements per day). The proposed FRAM has been enriched by the adoption of a multi-level representation aimed at deconstructing the complexity of work at different abstraction levels. The analysis focuses on agents and macro-meso-micro functions (i.e. functions aggregated into a single function at a higher abstraction level), combining qualitative and semi-quantitative analyses. This paper aims to detail the main project phases for the development of a FRAM model to be used as a basis for systemic risk analyses in large socio-technical systems.

Keywords: system safety, socio-technical system, airport safety, aviation safety, airline safety