

Monitoring behaviour of tower controllers

*Christoph Möhlenbrink, Anne Papenfuß, Maik Friedrich, & Meike Jipp
Institute of Flight Guidance, German Aerospace Center,
Germany*

Abstract

This paper provides insights on the tower controllers' information acquisition while working in a high-fidelity tower simulator. Within the DLR (German Aerospace Center) project RAiCE (Remote airport traffic control centre) a high-fidelity human-in-the-loop study was conducted to validate a concept for remote control of regional airports. The eye tracking data of 12 controllers were recorded to gather objective indicators of their information acquisition, during controller operations. In contrast to common studies in the domain of air traffic control, reporting dwell times and number of fixations aggregated time, a more detailed data analysis approach for information acquisition is suggested. Moving average time windows (maw) are used to analyse the monitoring behaviour of a controller team in respect to landing and starting aircraft. The data confirm that both controllers' visual attention on the runway (RWY) is related to the events "touchdown" and "enter RWY". The data reveal that it is the coordinator, spending more time on the RWY than the tower controller. The peak values of the maw are used to decide if an event was monitored or not. The monitoring behaviour of the controller team is discussed in respect to safety issues. The described methodological approach seems promising for a better understanding of monitoring behaviour of tower controllers.

Introduction

Remote Tower Operators (RTO) is a technique for remotely operating smaller and middle sized airports, without direct far view to the airfield. A high resolution augmented vision video panorama is used to replace the direct far view out of the tower windows. The remote control is implemented as a monitor-based surveillance system which can be placed hundreds of kilometres away from the airport (Fürstenau et al., 2004; Schmidt et al., 2007). The realization of such a workplace can only be successful if the understanding of the tower working positions is increased by detailed analysis. One important aspect of these analyses is the kind of information that a tower controller needs in order to guarantee the same level of safety whilst operating in the new environment.