Title	Automation strategies in five domains – A comparison of levels of automation, function allocation and visualisation of automatic functions
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Abstract

This study was conducted as a field study were control room operators and engineers from the refinery, heat & power, aviation, shipping and nuclear domain were interviewed regarding use of automation and the visualisation of automatic functions. The purpose of the study was to collect experiences and best practices from the five studied domains on levels of automation, function allocation and visualisation of automatic functions. In total, nine different control room settings were visited. The studied settings were compared using a systemic approach based on a human-machine systems model.

The results show that the “left over principle” is still the most common applied approach for function allocation but in high risk settings the decision whether to automate or not is more carefully considered. Regarding the visualisation of automatic functions, it was found that as long as each display type (process based, functional oriented, situation oriented and task based) are applied so that they correspond to the same level of abstraction as the technical system the operator’s mental model will be supported. No single display type can however readily match all levels of abstraction at the same time – all display types are still needed and serve different purposes.

Key words control room, automation, function allocation, visualisation