Developing the System Model of Human Behaviour and Its Implications on Social Systems Design

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Abstract. With human interaction systems becoming more interconnected and complex, it is imperative that we validate the human model which solutions are based on to avoid unintended negative outcomes from any oversights. While various hypotheses of human factors relating to human performance have been proposed, they have largely been studied in isolated paradigms which pose the challenge for systems engineers to derive complete and precise requirements in designing human interaction systems. In light of this gap, this paper utilises model-based systems engineering methods to develop a working system model of human behaviour based on transdisciplinary research findings. By abstraction and synthesis of the human-environment relationship and its evolution in modern society, this research finds the need to expound on research beyond cognitive processes, to glean insights into the directives of the human body and its subjective bodily senses that affect behavioural outcomes. This paper demonstrates the use of systems engineering formalism to integrate humans into wider systems modelling efforts with a proposed human behaviour model as the basis for discussion.

Keywords. Model-Based Systems Engineering, Human Behaviour, Psychology, Human Factors, Transdisciplinary Research, Systems Design.

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