

Have It or Test It. On the Necessity of Valid Digital Human Models for Ergonomics of Future Products

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Meanwhile the approach of user-centered-system-design is well established in the product development cycles of many companies. Due to its tradition it leads to remarkable experimental efforts that will increase in the future as products have to cover e.g. a greater demographic variability, follow a global approach or enter (e.g. automotive active safety systems) extreme evaluation scenarios. Moreover additional evaluation criteria arise that touch the field of user-experience. Big success was made in the development of easy to apply valid experimental laboratory methods (so-called surrogates) to save time and cost in evaluation. Furthermore development and evaluation of HMI can benefit remarkably from the application of digital human models within the development-evaluation cycle. One example is the usage of the DHM RAMSIS and its capabilities to model perceptive processes, the second example is based on the modelling of visual behaviour in intersection situations. Both paradigms show how these models help to refine prototypes before empirical testing and to sharpen experimental designs to be more efficient.

Klaus Bengler graduated in psychology at the University of Regensburg in 1991 and received his Doctorate in 1994 in cooperation with BMW. After his diploma he was active on topics of software ergonomics and evaluation of human-machine interfaces. He investigated the influence of additional tasks on driving performance in several studies within EMMIS EU project and in contract with BMW. Multifunctional steering wheels, touchscreens and ACC-functionality are examples for the topics of these investigations.

In 1997 he joined BMW. From several projects he is experienced with experimental knowledge and experience with different kind of driving simulators and field trials. At BMW he was responsible for the HMI project of the MOTIV program a national follow on program of PROMETHEUS. He was work package leader in an actual EU project Speechdat Car, dealing with voice recognition in vehicles. Within BMW Research and Technology he was responsible for projects on HMI research.

He was active as a subproject leader for subproject 2 “Evaluation und Methodology” within the EU funded integrated project AIDE. He is active member of ISO TC22 SC13 WG8 „Road vehicles - Ergonomic aspects of transport information and control systems“.

Since May 2009 he is leader of the Chair of Ergonomics at Technische Universität München which is active in research areas like digital human modeling, driver assistance HMI and human reliability. Among intensive industrial cooperation the chair is engaged in the funded Projects DH-Ergo on Digital Human Modeling and ECOMOVE on anticipative driving.