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Interactive architecture ´08

”In the next few years, emerging practices in interactive architecture are set to transform the built environment. ‘Smart’ design was once regarded as the preserve of museum exhibits or Jumbotrom advertising screens, but 'multi-mediated' interactive design has started entering into every domain of public and private life as a spatial medium, interactive architecture is revolutionising and reinventing our work, leisure and domestic spaces. Fast-changing social contexts are dominated by the blurring of boundaries between work and play, information retrieval and use. Pliable and responsive digital environments raise the haptic and intuitive threshold of public and private space by harnessing physical and mental responses.” (Bullivant, 2005).
Interactive architecture will embrace a wider scope of functions and experiences – from sensing mechanisms, to the info-lounge, to the ambient home environment and the holistic hospital – through customisable design possibilities (Bullivant, 2005).

Interactive architecture research group at Lulea University of Technology (LTU) is aiming to investigate, define, develop, and demonstrate the core architectures and frameworks for future ambient systems.

The following expertises are taken into consideration to form an interdisciplinary group:

LTU:
- Engineering psychology (Environmental psychology)
- Architecture and infrastructure
- System technology
- Music and Media
- Industrial design
- Building Acoustics

TU Delft:
- Industrial design (Social and Contextual Interaction Design)

TU Twente:
- Distributed Embedded Systems

Industrial supporters:
MAF Arkitektkontor AB (Luleå), Ericsson, IKEA, LKAB, SAS, SJ, Volvo, Phillips

Reference

Bullivant, L. (2005). *4DSpace*. Whiley & Sons

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A project example:

Background
Home and office environments are becoming increasingly complex with respect to functionality and use of products, system applications, and may result in the loss of control, thus increasing stress. Improving the level of awareness of the user's state and context is essential for increasing the acceptability and transparency of the emerging complex systems.

Aim
Designing dynamic prototypes of home and office environments based on physiology and user behaviour monitoring as input for the interactive systems.

Research objectives:
- non-obtrusively derived physiological indexes of stress to determine the user's state
- influences of environmental variables on the user's level of functioning
- feedback to the user based on the current emotional/physical state
- transparency of models of system behaviour
- user control and acceptability
- integration in everyday life (linking system behaviour to user activities / daily routines) (interaction on higher level)
- user interfaces for all; adapt interaction to individual users
- collaborative and mixed-initiative systems
- multi modal / distributed interfaces to move the system/interaction to the background
- guidelines for the design of social & contextual decision making

Platform
LTU: Environmental psychology lab
TU Delft:StudioHome/Office: living room setting + office cubicle

Envisioned applications
- well-being (stress reduction in office/public environment)
- interrupt-ability in the home (social / task etc)
- aware systems for elderly care
- rapid-prototyping toolkit for designers to create prototypes of aware products