Interaction Engineering and Design

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Abstract: This panel aims to discuss existing approaches to Interaction Engineering and Design both at university and in industry. We acknowledge a clear shift from *energy-based* to *information-based* human-machine interaction because computers are more integrated into most systems that we use in our lives. Work is consequently more cognitive. Workers as managers of artificial agents. Consequently, there are new emerging skills and practices. We will discuss human-centered design and development. What kinds of principles and methods design teams need to take human factors into account during the life cycle of interactive systems. A major claim will be discussed, that is "Interaction should be designed according to principles that still need to be developed". Panelists: Peter Johnson, University of Bath, UK; Kees Overbeeke, Technical University Eindhoven, The Netherlands; Michele Visciola, Politecnico di Milano, Italy; Nadia Magnenat-Thalmann, University of Geneva, Switzerland; Marcin Sikorski, Gdansk University of Technology, Poland.

Keywords: Interaction, engineering, design

Why has interaction engineering become so important? One of the best explanations is that the over-computerization of systems has produced a clear shift from *energy-based* to *information-based* human-machine interaction. For instance, force feedback (energy-based feedback) does not provide the same information as a red light on a computer screen (information-based feedback). The level of interpretation is quite different. While in the past people could assess directly a force or a pressure, today they need to reconstruct these physical concepts from computer-generated information usually available through the central vision channel. Work is consequently more cognitive. Furthermore, several cognitive tasks have been delegated to the machine, and users have progressively become managers of artificial agents. They need to learn new skills such as trust, supervisory control, evaluation, and to coordinate activities of a new type. The emergence of artificial agents has raised a novel socio-cognitive issue that is impossible to address using traditional human-factors methods and techniques. Interaction Engineering and Design needs to be taken into account seriously. The panel will consider four primary themes: Information technology in engineered systems (This theme covers research efforts and experience in information technology that help taking human factors into account in a global information and technology society); Organizational aspects of Interaction Engineering and Design (Task and tool understanding is a critical aspect of any organization. Computers have emerged to contribute to a reorganization of work); Operations and maintenance (This theme emphasizes analyses and experimentation of crucial aspects of operational interaction systems); Task models and training (The use of computer-based technology in interaction technology is closely related to the way professionals are trained. New needs and requirements are emerging from this evolution). Human-technology interaction and human-human interaction through appropriate information technology. Computers are becoming invisible, more integrated into usable devices, making new appliances that create new practices. Interaction technology has become a reality and is developing fast. New directions of research needs to be developed. There is a need for a structured networking that would help develop and promote interaction engineering research and practice. Among application domains are aerospace, car industry, telecommunication and education. The network should gather engineers, designers, human factors specialists, psychologists, sociologists, and related researchers.