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Biography

Christian Müller-Schloer graduated in 1975 in EE at the Technische Universität Munich where he also received his PhD in 1977. From 1977 through 1990 he was a member of the Siemens Corporate Research Laboratories for Applied Computer Science, Munich. From 1980 - 1982 he was a member of the Siemens Research Laboratories in Princeton, NJ, U.S.A. He is the author of more than 70 papers and three books. Since 1991 he is a Professor at the University of Hanover and director of the Institut für Technische Informatik - Rechnerstrukturen und Betriebssysteme (IRB, Institute of Computer Engineering - Computer Architecture and Operating Systems).

His working experience includes: CAD systems for telecommunications networks, cryptography, VLSI design, RISC processors, workstation architect special purpose simulation multiprocessors, Artificial Life, system design and simulation.

The institute's current main research areas are

- Modeling and simulation of complex heterogeneous technical systems (discrete and continuous), especially embedded control and distributed systems. Virtual prototyping. Real time simulation.
- Ubiquitous Computing
- Educational Technology

Current Activities in Educational Technology and Ubiquitous Computing at IRB

IRB is involved in several cooperation projects in the area of Educational Technology and Ubiquitous Computing. General objective is the utilization of multi media technologies for applications in an academic environment, predominantly for the improvement of teaching. We are working on contents (PROMISE and WWR) as well as on new infrastructure (IMPRESS and I&U Spaces).

PROMISE (1999 - 2001) is a content-oriented project at the universities of Hannover, Braunschweig and Clausthal (PROMISE - Project-oriented multimedia-based learning in EE and CS). We are working on two sub-projects:

- Learning module for a systems software course: Starting from an existing UNIX seminar and lecture based on Powerpoint and Interleaf lecture notes, an electronic lecture has been developed. It can be used for presentations as well as for selfstudy.
- Integration of simulation in presentation and selfstudy modules: We will make our multi-domain simulation system ClearSim_MultiDomain available in this context which allows for the modeling and simulation of heterogeneous mechatronic systems - including software and RTOS - (Virtual Prototypes) like cars or telecommunication devices.

WWR (2001 - 2004) is a large cooperation project, sponsored by BMBF, with the objective, to develop electronic multi-media learning modules for the field of computer engineering. The modules are standardized and can be retrieved from a common database. IRB is responsible for 4 learning modules: system software, computer architecture/pipelining, embedded systems and system design. We are especially working on the possibility to integrate simulation into electronic presentations.

IMPRESS (Intelligent Multimedia Presentation System: The objective of the research project is to develop a system that makes possible the simple reusing of multimedia presentations. Computers, operating systems and application programs used today have different data formats that are not always compatible with each other. That makes difficult, often impossible to reuse a multimedia presentation once created or a teaching/learning module. The system will consist of a multimedia database, platform-independent presentation modules and a set of programs for designing and creating of database contents, data structure and presentation layout. These programs must also man-

age presentation modules, parameters and user's profiles. With tools such as XML, Java or PHP for developing of presentation modules it will be possible to reuse multimedia presentations and teaching/learning modules in the form of printout, for display on a PC or a PDA without any additional transformation. The system will be accessible over the Internet.

I&U Spaces aims at building and using a local ubiquitous computing environment on (a part of the) the campus of the University of Hannover. It serves as a testbed for a variety of PhD projects on infra-structure, services and applications in a modern university. The project is centered around the new 3000 m² Computer Engineering Building at the University of Hannover housing 4 Computer Engineering institutes. It is equipped with a multimedia lecture hall and a multimedia seminar room, a 100 Mbit / 1 Gbit LAN, a WLAN, Bluetooth islands and current technology laptops, notebooks, PDAs, handhelds as well as PCs, workstations and servers.

The infrastructure will be based on a Java/Jini service architecture. We are especially interested in the idea of virtual associative communication spaces (like JavaSpaces or T Spaces). Questions to be answered are the following: Are existing solutions feasible and stable? Do they perform? Is a single communication space sufficient or is a hierarchy of related spaces necessary? Can the paradigm of tuple space communication be used also for innovative GUIs? How can information stored in an associative space be presented to the user?

We explore the feasibility of the infrastructure by implementing and testing a few services and applications. Scenarios typical for a university environment are:

- Information kiosk or electronic pinboard: large wall mounted displays, touch sensitive screen, user recognition through Java button. User adaptive information offering.
- Information kiosk with local user interaction via PDA/laptop.
- Interactive lecture support based on PDAs with dynamic interaction between lecturer and students. Inclusion of task assignments and simulations in a lecture.
- Ad hoc communication between (accidentally) neighboring devices.

Recent Publications

Bruns, Müller-Schloer: "*An Integrated System-Level Modelling and Simulation Environment for Embedded Control Systems*", ESM 99 Warschau, June 1-4, 1999, pp. 247 - 251

H. Krisp, C. Müller-Schloer: "*Towards a High Level System Design Using UML and Java*", 3. Intern. UML-Konferenz York, U.K., Oct. 2000

C. Müller-Schloer, P. Mähönen: "*The UbiCampus Project: Applying Ubiquitous Computing Technologies in a University Environment*", Proc. IDMS 2000, October 2000, University of Twente, Springer pp 297-303

H. Krisp, J. Bruns, S. Eilers, C. Müller-Schloer: "*Multi-Domain Simulation for the Incremental Design of Heterogeneous Systems*", Proc. ESM 2001, Prague, June 2001, pp. 318-322

Müller-Schloer, C.: "*Ubiquitous Computing: Auf dem Weg zur dritten Generation der Computernutzung*", APS+PC-Nachrichten 2/01 in Client-Server-Computing, August 2001