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Dear Reader, welcome to the CeBIT issue of COMPUTER GRAPHIK Topics. As usual this issue will present current research and development, news announcements and abstracts of previously finished theses from INI-GraphicsNet institutions. It will pay special attention to research and development that will be presented at this year's CeBIT Fair in Hannover from March 10 to 16th. Here, according to the slogan 'get the spirit of tomorrow', INI-GraphicsNet institutions will present innovative applications and newest developments, especially in the area of mobile computing and Ambient Intelligence.

Rapid technical development of mobile and miniaturized computer systems has opened up new areas of life and work in which computer support was previously not possible. Since the availability of the first handheld computers in the early 90s, mobile computers have become so small and powerful that they can even be integrated in portable objects. After the triumphal procession of mobile phones and mobile communication infrastructures, a completely new perspective for our work and everyday life has been opened.

Location-based services provide a wide range of diverse and qualified applications in a mobile environment. Beside detecting the user's actual position and visualizing it within a map to support orientation and navigation through unknown terrain, location-dependent services contribute to applications for safeguarding mobility or individual recreational activities.

The INI-GraphicsNet is also involved in numerous projects, solutions and models in the fields of human-computer-interaction, self-organizing architectures and Ambient Intelligence (Aml). These need the input of

the embedded systems domain to enhance the interaction of users with their technical infrastructures by providing intelligent assistance and multimodal interaction within a unified framework for self-organizing ad-hoc networks.

Ambient Intelligence is the vision of a world where we are surrounded by a huge amount of intelligent and small things that are seamlessly embedded in the user's surroundings. Here a human, animal or commodity is a functional part with needs and agendas. The environment around it is also a functional part, which reacts upon the needs of these so-called smart players and offers its services. A distributed middleware for spontaneous device ensembles is an essential requirement for the self-organization of distributed device ensembles and embedded systems. Technologies developed in this area provide users with personal assistance to interact intuitively and effectively with the devices dispersed throughout our everyday environments.

Examples in this research field are DynAMITE (Dynamic Adaptive Multimodal IT-Ensembles), with the goals of a self-organizing decentralized middleware, the support of a dynamic extensibility by new components and a component topology for dynamic device ensembles, and the Personal Environment Controller (PECo), which intuitively accesses complex infrastructures of the physical world based on 3D visualization of the user's environment.

Together with several other mobile solutions, security technologies and new visualization technologies that will be presented at CeBIT this year, current research in Ambient Intelligence and developments in location-based services are introduced within this issue.

Beside these, contributions from Rostock concerning current user studies for usability research (RealEYES) and internet-based learning environments (SmartBLU) are presented.

We hope this selection of research and development efforts from the INI-GraphicsNet will find your interest and encourages further probing into areas only touched upon within the confines of this issue. We would also like to welcome you at our booth at CeBIT, where we will be ready to demonstrate several of the research projects described. You will find us in hall 9, booth B36.