# Research Issues in Pervasive Information Mangement for Health Monitoring and e-Inclusion

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## Abstract

Pervasive Computing leads to dramatic changes in information technology in general: As a consequence of enormous progress in processor speed and storage capacity and - at the same time - extreme reduction in size and power consumption computers will be more and more invisible. They can be embedded into clothes or into tools of our daily life. Progress in wireless communication technology leads to a "network of everything" [Mat01] and to an information exchange between these. Closely related to these technologies are new developments in the database and information systems area.. Information will be ubiquitous: Relevant information must be made available to anybody anytime and everywhere, depending on the context.

Socially relevant applications of these developments can be found in health care, especially in monitoring of high risk patients and persons suffering from chronic diseases (Health Monitoring) and in the support of the elderly society with the objective to enable a longer autonomous life (e-Inclusion). Since elderly people often suffer from diseases both areas overlap and complement each other.

In view of such applications many research issues in the area of ubiquitous information management exist [Com03]. Out of many challenges, the following seem to be most important for health monitoring and e-inclusion:

- Data from various different sources are heterogeneous and must be integrated.

- Information security is most urgent in view of the many personal data.

- Usability and controllability of systems is a great challenge considering the large number of hardware components and software systems.

- Reliability to a very high degree must be ensured. Users must be able to count on the information infrastructure, they depend on it. Research issues here include verification of process definitions, handling of all exceptions and recovery from these, often called autonomous computing.

In the talk we will give an overview on research in (some of) these issues and will describe ongoing research at the University of Basel on an new information infrastructure called

OSIRIS [BSS05, BSS06]. Research and development on OSIRIS had been started at ETH Zurich and was further developed at UMIT. [SWSS03, SWSS04, SST$^+$05].

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