

**Univ.-Prof. Dr. Alois Ferscha**  
**Johannes Kepler Universität Linz**  
**Institut für Pervasive Computing**

## **Contextware: Implementing the Pervasive Computing Landscape**

Most recent advances in microprocessor-, wireless communication- and sensor-/actuator technologies envision a whole new era of computing, popularly referred to as “pervasive” or “ubiquitous” computing. Autonomous, ad-hoc networked, wirelessly communicating and spontaneously interacting computing devices appearing in great number, and embedded into environments, appliances and objects of everyday use will deliver services adapted to the person, the time, the place – or most generally: the context – of their use. The nature and appearance of computing devices will change to be hidden in the fabric of everyday life, invisible networked, and will be augmenting everyday environments to form a pervasive computing landscape, in which the physical world becomes merged with a “digital world”. In an analogy to the term middleware, I will introduce the term "contextware" as the core of software technologies mediating services and the context of their use.

In this presentation I will explore the software engineering issues, challenges and enabling technologies associated with the provision of context aware services able to describe, gather, transform, interpret and disseminate context information within adhoc, highly dynamic and frequently changing computing environments. Approaches to dynamically discover, inspect, compose and aggregate software components in order to identify, control and extend context, as well as overcome context barriers (like time, position, user preference, etc.) will be discussed, and means to allow for dynamic interactions among software components in a scalable fashion and integrating heterogeneous computing environments and devices with different functionality, ability, form factor, size and limited resources wrt. processing power, memory size, communication, I/O capabilities, etc. will be analyzed. I will present some of the design issues of the SiLiCon contextware framework, and demonstrate applications that have been built on top of it.