

## **PERVASIVE COMPUTING IS AN INTER-DISCIPLINARY INTELLECTUAL ENDEAVOR**

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### **Abstract**

Pervasive computing is an inter-disciplinary intellectual endeavor in the sense that the vision spans issues of *user experience*, *contextual change*, and *technical requirements*. In order to further advance the state-of-the-art of pervasive computing, all three classes of issues should be considered. We use the term inter-disciplinary to denote research activities in which the boundaries of concepts and methodologies of multiple disciplines transcend, integrating knowledge from a number of perspectives. As such, we do not limit our activities to the disciplines of natural science and engineering, as we also consider social science and humanities. Issues of user experience refer to a wide scope of factors that are important for enabling a meaningful experience of pervasive computing technologies, of which many are related to user control and originally founded in human values. With contextual change, we address the fundamental change in previously established relationships between the practices of individuals, social institutions, and physical environments that pervasive computing entails. Finally, issues of technical requirements refer to technology neutrality and openness—factors that we argue are fundamental for realizing pervasive computing. As the main thesis of this dissertation, the above claim may seem non-controversial. However, descriptions of research efforts encompassing all three classes of issues in significant depth are surprisingly rare, limiting the value of many proposed theories, tools, and applications of the field, as well as hindering further progress. This dissertation motivates and justifies the thesis by further defining and arguing for important aspects of user experience, contextual change, and technical requirements of pervasive computing, as well as highlighting several ways in which they are interrelated. The arguments put forth are summarized in