# Tokenized Interaction Architecture

Boxian Dong, Bernhard Wally, Alois Ferscha

{boxian.dong, bernhard.wally}@researchstudio.at, ferscha@pervasive.jku.at

**Abstract:** Out-of-Home (OOH) advertising is currently advancing into a new era: "pervasive advertising" is one of the buzz words describing a soft change from the traditional push-only media to an interactive and bi-directional advertisement experience. While ambient media solutions try to conquer each and every piece of potential advertisement surfaces by various sorts of print media, another trend can be observed as well: OOH advertising is becoming smarter (at least from an electronics point of view). Digital signage products, SMS, Bluetooth interaction in city lights and talking billboards that react on the feedback of motion sensors—pervasive advertising is on its way. However, the development of a pervasive advertisement platform is beyond the scope of any single engineering or art discipline; instead it is a multidisciplinary effort including electronic engineering, computer science, art, cognitive psychology and even social sciences. Therefore, we introduce a *tokenized interaction architecture*; a foundation on top of low level issues that simplifies sub sequent implementation efforts by addressing interaction, context awareness and hardware heterogeneity, so to release designers of pervasive advertising campaigns from computer related challenges.

## 1 Introduction

New wireless communication technologies, the unceasing evolution of CPU power and efficiency as well as improvements in signal processing systems make the Weiser's (1993) vision more and more realistic. Many implementations show the feasibility of systems where numerous computing devices are widely distributed throughout our natural environment but stay invisible to the human eye, operating in the background to support natural human behavior and interaction. At the same time, the advertisement industry is driving and expanding their market by permanently looking for and introducing new ways of advertising. Pervasive computing is a powerful force to advance and support the advertisement industry, because of its capabilities like personalization and ubiquity.

In our vision, it is necessary to introduce a relatively specific architecture to be commercially implemented, with the following key aspects: integrability into existing advertising platforms, hardware abstraction (release designers from technological burden) and a clear focus on innovative forms of advertisement. This paper first analyzes the features of pervasive advertisement systems and their implementations in Sec. 2 to sub sequentially abstract the requirements of such systems. Sec. 3 will first conclude the related work in pervasive platform research, and then introduce a tokenized interaction architecture, optimized for interactive advertising. Sec. 4 presents a proof-of-concept demonstration of the system, followed by conclusions and an outlook in Sec. 5.