A model for context-aware applications

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Abstract
Purpose – Context correctness and fault handling are very important to the quality of service in context-aware applications. However, they are often ignored by researchers and application developers. This paper aims to present a model for context-aware applications.

Design/methodology/approach – This paper proposes a transaction model for context-aware applications, in order to provide a uniform infrastructure for service quality management.

Findings – The paper finds that, in this model, context-aware applications are organized as a number of logic units and each unit may have a compensation module, which will be executed when errors or exceptions occur during the execution of those applications in order to minimize the bad infection. This model supports nested scopes and the number of levels of subtransactions is unlimited.

Practical implications – The paper also presents an implementation of this transaction model, which is specialized for context-aware use.

Originality/value – This paper utilized a novel transaction model to manage the quality of context-aware applications. The authors have not seen similar work on this topic.

Keywords Transactional analysis, Modelling, Context-sensitive languages, Computer software, Quality, Error handling

Paper type Research paper

1. Introduction
Pervasive computing was introduced by Mark Weiser in 1991 and has attracted a lot of attention from both academic researchers and industrial practitioners in the recent years (Weiser, 1991). One of the long-term goals of pervasive computing is to build large-scale smart environments that provide adequate services for users, and make computation itself invisible to us. Context-aware computing plays a key role to achieve this goal.

Context-aware applications are driven by contexts, which are collected from environments by sensors or other devices automatically. In this way, it decreases users’ attention of computation and users’ intended input sometimes becomes unnecessary.

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