The What, Who, Where, When, and How of Context-Awareness

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INTRODUCTION

When humans talk with humans, they are able to use implicit situational information, or *context*, to increase the conversational bandwidth. Unfortunately, this ability to communicate does not transfer well to humans interacting with computers. In traditional interactive computing, users have an impoverished mechanism for providing input to computers. By improving the computer's access to context, we increase the richness of communication in human-computer interaction and make it possible to produce more useful computational services. The use of context is becoming increasingly important in the fields of handheld and ubiquitous computing, where the user's context is changing rapidly. However, context-awareness is not well understood, and tools and techniques for developing context-aware applications are still in their infancy. Hence we are proposing this workshop, in order to facilitate discussion on the nature of context-awareness and its utility in handheld and ubiquitous computing.

CONTEXT-AWARENESS

A recent definition of context-awareness is due to Dey & Abowd [1] who defined it as 'any information that can be used to characterise the situation of an entity, where an entity can be a person, place, or physical or computational object'. They went on to define context-awareness or context-aware computing as 'the use of context to provide task-relevant information and/or services to a user, wherever they may be'. Following on from this, three important context-awareness behaviours that an application might exhibit can be identified:

- the presentation of information and services to a user,
- the automatic execution of a service, and
- the tagging of context to information for later retrieval.

Researchers in context-awareness have come to realise that there is a pressing need to obtain a better understanding of what context is in order to facilitate the exploitation of context through context-aware applications [1, 2].

GOAL OF THE WORKSHOP

The workshop will bring together leading researchers in the field in order that they can consolidate their understanding of what the main research challenges in context-aware computing are. At present, we think these include:

- the development of a taxonomy and uniform representation of context types;
- the development of infrastructures to promote the design, implementation and evolution of context-aware applications; and,
- a discovery of compelling context-aware applications that assist our everyday interactions with ubiquitous computational services.

We need a much better understanding of context-awareness if we are going to find solutions to these challenges. To improve our understanding of what these challenges are, and to facilitate discussion at the workshop, the workshop will address the following *six* questions:

1. *What* is context?
2. *Who* might benefit from an awareness of their context; whose context is important to who, or what?
3. *Where* can an awareness of context be exploited?
4. *When* is context-awareness useful?
5. *Why* are context-aware applications useful?

Answers to these 5 questions underpin the meta-question of:

6. *How* do we implement context-awareness so that we can develop context-aware applications?

These six questions can be summarised as the *what*, *who*, *where*, *when*, *why* and *how* of context.

REFERENCES

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2. Pascoe, J., Ryan, N.S. & Morse, D.R. (1999). Issues in developing context-aware computing, in *Proceedings of International Symposium on Handheld and Ubiquitous Computing* (Karlsruhe, Germany, Sept. 1999), Springer-Verlag, 208-221.