

Why We Need a Common Platform for Digital Worlds

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What are digital worlds?

The term "digital world" denotes a version of the real world where, on the one hand, real world objects are represented in the digital domain. This representation can then be used to refer information about that object, to control that object, to use its processing capabilities, or to interact directly with a human user. On the other hand, in a digital world there may be also objects of the digital domain with no counterpart in the real world. Users shall be able to interact also with these "augmenting" objects.

Which problems do we face?

The problems we are facing towards digital worlds are twofold. On the one side, there are problems on a lower layer dealing with aspects like identifying objects, locating objects, and establishing a communication with objects etc. The current research addresses mainly these problems and already has presented promising approaches in these areas.

On the other side, there is little research in the "upper" layers, i.e. the level that supports applications and the interaction between applications, in short: there is no open global software infrastructure for digital worlds. This results in two consequences. First, every application has to be developed from scratch. This means high development costs, especially for complex applications. Second, only self-contained applications are possible, i.e. such that have everything "on board", while applications that are based on a global infrastructure might use services outside their own boundaries. Such services can comprise the usage of an extensible set of e.g. different network technologies, different localization systems, communication between different applications, the usage of other applications and so on.

A common platform

What is needed to solve this second problem is a set of standardized interfaces or protocols that define an open infrastructure for applications for digital worlds. This set then establishes a *common platform*. This platform should fulfill the following requirements:

- *a separation between applications and services*
- *a set of services shared by applications*
- *a mechanism to discover services on a global scale*
- *a functionality library for applications*
- *a framework for adding new services*
- *the possibility of an incremental growth*
- *an open, scalable infrastructure*

In our presentation, we will present these aspects in more detail. We will try to initiate a common activity of the research community to build such a common platform.