

Middleware Platform for Developing and Deploying Advanced Mobile Services

The MIDAS project will make it easier to produce new and innovative mobile services, by providing middleware building blocks that free application developers from dealing with time-consuming reinvention of low-level technical functions.

At A Glance:

Project Coordinator

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Duration: January 2006 - June 2008

Total Cost: € 4.9M

EC Contribution: €2.9M

Main Objectives

The main objective of the project is to define and implement a platform to simplify and speed up the task of developing and deploying mobile services, making it commercially feasible for the wider IT industry (not just telecom companies) to provide such services.



The project will focus in particular on making it feasible to provide mobile services in situations where the following apply:

- The number of users may be very large;
- The network may need to be set up at short notice, or for limited duration;
- Infrastructure is limited and some users may have to use ad-hoc communications.

Today, it is technically difficult and time-consuming to provide customized services for such events. Existing approaches to service creation involve a great deal of re-

invention for each new service, and there are no standard approaches to key issues such as the need to combine infrastructure-based and infrastructure-less communications.

The core idea of MIDAS is to provide middleware building blocks addressing these problems, so that service developers can concentrate on providing the customised functionality required for the services being provided.

The project uses two proof-of-concept application scenarios to gather requirements and demonstrate project results. The first centres on the use of mobile devices to support emergency crews responding to an incident. Here the focus is on professional users and time-criticality: it must be possible to set up the network rapidly and at very short notice. The second scenario involves innovative services at a major sporting event. Here the focus is on different types of users (professionals, volunteers, the public), with a wider scope for commercialisation opportunities.

MIDAS will align its work with the standardisation activities of the OMA (Open Mobile Alliance - see <http://www.openmobilealliance.org>). The project will strive to adhere to the OMA standards, and use practical experience in the project to suggest modifications and additions to them.

Technical Approach

- When providing services for a specific event (e.g. sports, conference, emergency), the service provider sets up "Instant Infrastructure": a collection of nodes and communications facilities to support service provision.

- Services are realized by distributed software components running on nodes owned by the service provider *and* on devices operated by the end-users. MIDAS middleware components are installed on all of these nodes; the basic architecture is shown in the diagram.
- The middleware realizes a *Distributed Data Management System* (DDMS). All service functionalities will be realized by entering, retrieving or responding to changes in data stored in the DDMS.
- Nodes maintain the DDMS by asynchronously exchanging short messages. These are exchanged using *one or more communications mechanisms* – depending on what other nodes are present and what communications means are available. Service developers do not need to access low-level functionalities provided in specific mobile networks.
- MIDAS middleware *automatically adapts to changes in network topology*. This is not only to compensate for problems (e.g. failure of particular links) but also to exploit opportunities offered (e.g. when high-bandwidth connections to central machines are possible).
- The overall approach to service design takes account of the different infrastructure options that are likely to be available during *different phases of providing a service*.

Key Issues

Key technical challenges being addressed by the project include:

Middleware and application architecture

The success of MIDAS is closely linked to the architecture chosen: how should the middleware building blocks be structured to form a usable and coherent whole to service developers?

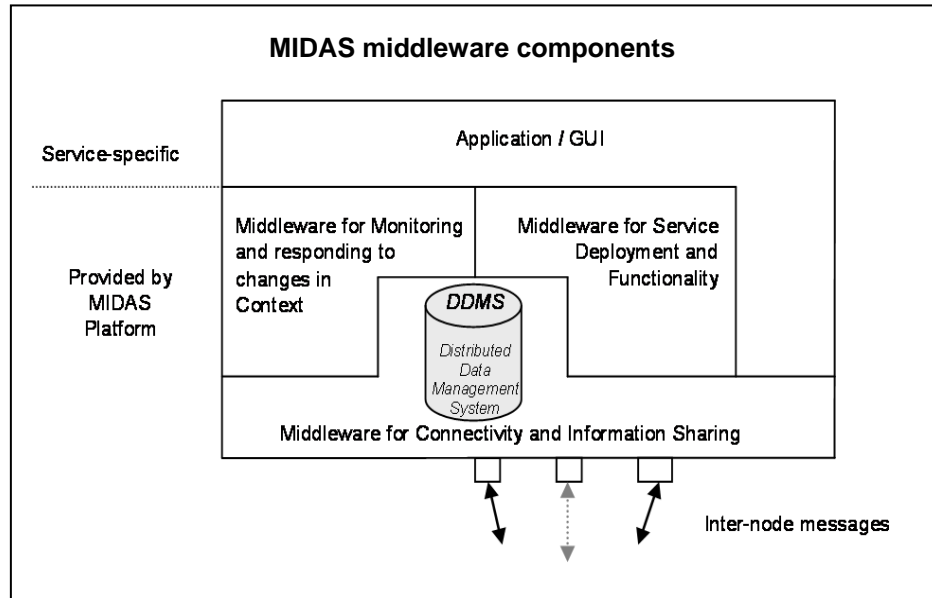
Information handling

The Distributed Data Management System (DDMS) is central to the MIDAS approach. Conceptually, it provides each node with access to a single, global data set. This can be implemented by accessing a central server, by storing copies of all/parts of the data on some/all

local nodes - or by flexible combinations of these. How can the middleware support different strategies, and adapt according to service and device characteristics and context?

Context awareness

In mobile services it is vital to keep track of individual users and respond to changes in their context (e.g. location, access rights, bandwidth).



How can context-addressable messaging be exploited to cater for situations where the number of users is large and context changes rapidly? How can this be integrated with the DDMS?

Service deployment and configuration

Service deployment and configuration aspects are often crucial to the success of a new service. How can middleware be used to help distribute applications to mobile devices, and to configure and update them before and during operation?

Expected Impact

The MIDAS platform frees service developers from the need to deal with low-level technical issues in each new development, and allows them instead to concentrate on innovation and provision of value-adding functions. This will speed up the task of developing and deploying wireless and mobile applications, an area in which companies are investing heavily. MIDAS will reduce costs, shorten time-to-market and limit risks.

The effect of this will be to increase the range and number of services, and to enhance user functionality. The service provision market will open up to new players; in particular it will become feasible for SMEs to participate actively in service development.