

MORE

Network-centric Middleware for group communications and resource sharing across heterogeneous embedded systems

KEYWORDS: Embedded Systems, Group Communication, Middleware, Mobile Devices, Wireless Communication

Introduction

MORE is a European research project focussing on the development of a Network-centric **M**iddleware for **G**roup communication and **R**esource Sharing across **H**eterogeneous **E**mbodied Systems:

MORE will implement new technology to facilitate communication and distributed intelligence across groups of users using different wireless standards.

MORE will address the problem of how the interaction between humans and embedded systems can be efficiently supported by developing a system that can be tailored to the specific needs of diverse organisations.

Central to the project is the design of a middleware that hides the complexity of the underlying heterogeneity of embedded systems through providing simplified APIs and management mechanisms for the future operators of these systems.

The validation phase of the MORE middleware by future operators demonstrates the ease with which target organisations can put a usable and reliable system of networked embedded devices into operation using the MORE middleware. Two use case scenarios will be implemented: Mitigation management (forestry and environment) and Medical environment (Diabetes).

Objectives

The goal of the MORE project is to drive the embedded systems technology one step

further by supporting true distributed intelligence across groups of networked devices.

The MORE project will build on the most recent approaches in Embedded Systems research that extend the classical isolated embedded systems with networking support, demanding middleware to **overcome the heterogeneity of available network technologies**.

The MORE middleware adopts the network-centric point of view to embedded systems design. To support the group intelligence concept, the MORE middleware will support the following functionalities:

Alleviate heterogeneity of devices: heterogeneity arises not only of hardware constraints (devices with different capabilities, such as bandwidth, HW (power, CPU, disk, ...)) but also appears through different operating systems and programming languages.

Support scalable group communication: reliable communication within different angles starting from the personal area (e.g. to connect a sensor to a mobile phone) to wide-area communication incl. cellular networks (e.g. to manage communication and resource sharing of groups across long distances).

Allow for multi-media communication and resource sharing between humans (voice, pictures, video) **and machines** (e.g. sensors).

Ensure **security of communications**, data exchanges and **protection of sensitive data**.
Provide Gateway services, providing access to

embedded networks and increasing range of accessibility (e.g. connecting small scale local Bluetooth networks to largescale mobile networks like UMTS).

Expected Results

MORE will leverage results of related European projects in the design of MORE middleware (e.g. High Integrated Java). Through validation in real life scenarios and exploitation by future middleware operators the MORE middleware shows the lightweight process of installation and operation, which aids new users to deploy a reliable system for embedded device communication.

MORE will provide a set of IP-based communication services that hides underlying network complexity thus making it easier to implement and integrate services. MORE will have the means to ensure the protection of sensitive data and role based access control of services. MORE is going to provide the user and device with optimised communication configuration through ambient decision making and context. Furthermore, the results of the MORE project will be disseminated through freely available publications, deliverables and reference implementations that set industry standards.

Partners and their roles

The MORE consortium consists of 8 partners from 5 different countries, France, Germany, Hungary, Ireland and Spain: One industrial partner (Thales - France), 2 SMEs (PRO DV - Germany, Applied Logic Laboratory - Hungary), 3 universities / institutes specialised on embedded systems (University of Dortmund - Germany, Waterford Institute of Technology - Ireland, Universidad Politécnica de Madrid - Spain) and 2 end-users (Dresden University of Technology – Germany, University of Debrecen - Medical and Health Science Center- Hungary). The department of the Dresden University of Technology is specialised in forestry and natural disasters in forestry like flood, storm and fire.

This project is part of the portfolio of the

**Embedded Systems Unit – G3
Directorate General Information Society**

For more information please check:

<http://cordis.europa.eu/ist/embedded/index.html>



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CONTRACT NUMBER

IST - 032939

FULL NAME

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TYPE OF PROJECT

Specific Targeted Research Project

PROJECT PARTICIPANTS

PRO DV Software AG (Germany)
Thales Communications SA (France)
University of Dortmund (Germany)
Applied Logic Laboratory (Hungary)
Waterford Institute of Technology (Ireland)
Dresden University of Technology (Germany)
University of Debrecen (Hungary)
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PROJECT WEBSITE

www.ist-more.org

BUDGET

Total cost: 2.7 M€
Funding: 1.7 M€

TIMETABLE

Starting date: 1. June 2006
Duration: 36 months