

CoBIs

Collaborative Business Items

KEYWORDS: Wireless sensor networks, business logic on the item, embedded systems, ERP, RFID

Introduction

CoBIs will develop a radically new approach to business processes software involving physical entities such as goods and tools in enterprise environments. The intention is to apply advances in networked embedded systems in order to embed business logic in the physical entities (business logic on-the-item), thereby creating Collaborative Business Items (CoBIs).

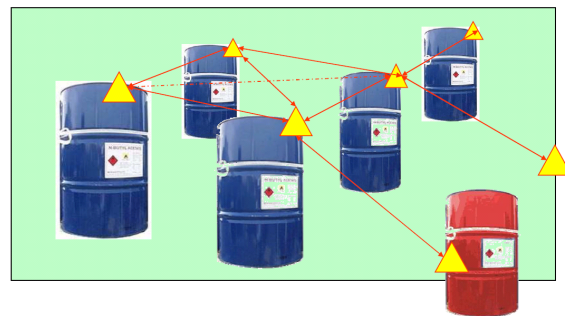
This will close the gap between networked embedded systems technologies and their application in large-scale business and enterprise software systems. The state of an enterprise as represented in a business process will much closer correspond to what is actually happening in the real world. Moreover, Collaborative Business Items constitute a platform for directly handling processes at the 'Point of Action': they facilitate business services that deal with problems and decisions where and when they arise. Many services that have traditionally been handled centrally in back-end systems can be made more reliable, responsive, scalable and cost effective by directly embedding them with the relevant goods and tools. Entirely new services can be introduced to support critical processes that so far had to rely entirely on manual and error-prone procedures.

Objectives

Items like materials, chemistry, machine parts, modules, etc. will have unique digital identities, embodied sensors to monitor their state and environmental conditions, communicate wirelessly and peer-to-peer, collaborate in order to fulfil collective services, and interface back-end systems to make their service integral with overarching business processes. The project will create a framework for the deployment of services across CoBIs networks.

One application vision driving the project is support for safety-critical processes such as alerting against

inappropriate materials being stored together or outside of approved storage facilities (see Illustration). This represents risk for safety and proper operation.



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Another application is preventing non-qualified people from using potentially hazardous equipment. Both application scenarios can only be supported if we introduce networked embedded technology into business processes in a way that enables reasoning not only about the state of individual physical entities but also about their spatial, temporal and semantic relations – this requires integration of leading-edge developments in networked embedded systems far beyond state-of-the-art embedded tagging and sensing.

Expected results

Results of these research efforts are expected in following areas:

- Identify and classify services that can be relocated from the back-end to the point of action or novel services that were not possible before networked business items were available. Find methods for modelling the services themselves and their communication with back-end systems.
- Develop a *collaboration framework* for CoBIs that

provides the core components for collaboration, reasoning and service development across CoBIs and back-end entities.

- Design and implement a *technology framework* of components that hides the details of different kinds of used hardware and constitutes the basis for the collaboration framework.
- Design and implement *management services* for large-scale CoBIs systems that provide run-time support for monitoring, error discovery, maintenance and propagation of changes.
- Investigate and evaluate CoBIs in real-world application trials in the oil and gas industry.

Combining research in the fields of enterprise systems and wireless ad hoc networked embedded systems drive both domains beyond the state of the art: Therefore the project creates physical items with embedded business logic, adds means of collaboration to ad hoc networks, extends business processes to the point of action and builds new, innovative services that cannot run with the hard- and software currently available.

Research efforts of CoBIs strengthen Europe's scientific leadership in this field of business intelligence and enterprise software systems.

Partners and their role

SAP is the project coordinator. SAP will insure interoperability with existing enterprise software systems, which is a key requirement, as well as generic and open data representation standards and modelling languages.

Infineon Technologies Austria takes responsibility for the RFID infrastructure and the associated (business) processes to be installed in the project.

Ambient Systems will provide a hardware platform and communication services for the project and will contribute in developing a distributed operating system with distributed resource management.

BP International Limited - Sensory Network - programme will manage the evaluation of key project deliverables from application deployment and usage standpoint, including concrete showcases and application trials.

University of Karlsruhe - Telecooperation Office will contribute with its experiences in embedded networked devices; in particular provide the developed Smart-Its hardware as a small, generic, programmable, mobile sensing and communication platform.

Lancaster University - Computing Department will work on the core architecture for integration of networked embedded technology in larger-scale processes.

University of Twente - Centre for Telematics and Information Technology contributes to the design of the distributed architecture of CoBIs with its

experience in distributed computing.

CoBIs

CONTRACT NUMBER

IST - 004270

FULL NAME

Collaborative Business Items

TYPE OF PROJECT

Specific Targeted Research Project

PROJECT PARTICIPANTS

SAP AG (Germany)
Infineon Technologies Austria (Austria)
Ambient Systems (Netherlands)
BP plc (United Kingdom)
Universität Karlsruhe (Germany)
Lancaster University (United Kingdom)
University of Twente (Netherlands)

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PROJECT WEBSITE

www.cobis-online.de

BUDGET

Total cost: 4.7 M€
Funding: 3 M€

TIMETABLE

Starting date: 1. August 2004
Duration: 30 months

This project is part of the portfolio of the

**Embedded Systems Unit - C3
Directorate General Information Society**

For more information please check:

http://www.cordis.lu/ist/directorate_c/ems/