OSGi, Platform for Our Future

Marquart Franz
Siemens AG, Corporate Technology
SIEMENS - Active in six business areas

1) as of October 1, 2006

Automation and Control  | Power  | Transportation  | Medical  | Information and Communications  | Lighting

Automation and Drives  | Power Generation  | Transportation Systems  | Medical Solutions  | Communications  | OSRAM

Industrial Solutions and Services  | Power Transmission and Distribution  | Siemens VDO Automotive  | Siemens IT Solutions and Services
<table>
<thead>
<tr>
<th>Siemens Facts</th>
<th>Major R&amp;D investments</th>
</tr>
</thead>
<tbody>
<tr>
<td>(In millions of EUR; continuing operations)</td>
<td></td>
</tr>
<tr>
<td>FY 2006</td>
<td>FY 2005</td>
</tr>
<tr>
<td>Sales</td>
<td>87,325</td>
</tr>
<tr>
<td>Orders</td>
<td>96,259</td>
</tr>
<tr>
<td>Net income</td>
<td>3,033</td>
</tr>
<tr>
<td>Cash flow</td>
<td>739</td>
</tr>
<tr>
<td>Employees</td>
<td>475,000</td>
</tr>
</tbody>
</table>

*As of September 30, 2006*

- 5.7 billion EUR in fiscal 2006*
- 48,900 R&D employees worldwide
- **30,000 software engineers**
- 150 R&D locations in over 30 countries around the world

*Including R&D investments related to specific customer requirements, reclassified into cost of sales*
The consequences of megatrends require innovative and comprehensive solutions.
Solutions for Embedded and Enterprise

• **OSGi Technology for Embedded use**
  
  • Siemens has long experience with OSGi Technology in Embedded environments
  
  • Product devices range from Automotive Driver Information Systems, Smart Home Gateways to Home Appliances

• **OSGi Technology for Desktop / Enterprise use**
  
  • Desktop matters again with Rich Client Solutions and Enterprise Systems trend towards lightweight containers like Spring and OSGi
  
  • Siemens uses OSGi technology for desktop and enterprise internally and in a variety of developments and products like Siemens OpenSOA
Product Examples
Siemens VDO Top Level Architecture: Customization and Modularity

- Since Q4/2003 the BMW 5-series and 6-series proposes a Top Level Architecture (TLA) based system worldwide including:
  - Entertainment
  - Communication
  - GPS Navigation
  - Telematics
  - Car Configuration
  - Climate Control
Smart Home Showcase: T-Com Haus

- Single Family Home, Berlin, Leipziger Strasse
Smart Home Gateway: Siemens SX765
SGP (service gateway platform) Architecture

- ... it has to be scalable, extendable, based on Open Standards, easy to use and - it just works

Key Benefits
- Framework as application enabler
- Brings down mgt and rollout complexity (billing, security, ...)
- SGP architecture driver for cost-effective services

Platform Manager & Service Enabling Platform

Remote Control

Service

Device Handler

Controlled Device

Remote Control

Service

Device Handler

Controlled Device

Remote Control

Service

Device Handler

Controlled Device

UPnP/IP

UPnP/IP

UPnP/IP

Bridge

other network technology

Controlled Device
serve@Home - Control your home where ever you are

• Full range of white goods devices

• Remote control / status / diagnostics / maintenance

• Integration of non-white goods services such as web cams, news ticker, localized weather information, lighting (Siemens Touch manager)
serve@Home

Three serve@Home product variants based on OSGi plattform

1. Premium solution with IP-based clients (Tablet) PC, Pocket PC, WAP phone

2. Solution with DECT phone client

3. Headless solution with web-service based API

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Siemens OpenSOA Application Product Line

- OpenSOA provides the basis for shared business functionality among applications, creating new synergies for users across the enterprise.
  - Common Software assets are used to compose applications for the Unified Communication, Unified Messaging and Contact Center market.

- Siemens Enterprise Communication developed Siemens OpenSOA as a foundation for SOA-based applications. The OSGi service platform is being used as a component model and runtime environment for common SW assets.
  - Improved modularization of SW assets
  - Separation of (cross-cutting) concerns into the hosting environment

- HiPath 8000 Assistant and HiPath 8000 Media Server are first products already delivered based on Siemens OpenSOA, a new version of HiPath OpenScape is currently under development.
Integration Challenges

• Siemens has a to integrate heterogeneous landscapes (internally or at customer site)

  • OSGi technology based enterprise systems have to integrate into heterogeneous environments

  • **Service Component Architecture**¹ (SCA) is a promising solution as it is build on open standards and is technology and implementation independent.

  • SCA defines a model for assembling service components into a business solution in a Service Oriented Architecture (SoA)

  • SCA allows to select always the best-suited technology

¹ http://www.osoa.org/
SCA OSGi Integration

OSGi Container

SCA Container (a set of bundles)

Java Implementation Type
- Component A
  - JMS
  - SOAP
- Component B
- Component C

EJB Container

Session Bean

SCA Container

Java Implementation Type
- Component D
  - OPT

.NET Container

.Net Service

Client

JMS
SOAP

Client

JMS
SOAP

Corba

Optimized proto
Summary

• OSGi Technology is an important technology for Siemens

• Siemens uses OSGi Technology in different areas, from Embedded to Enterprise, and has shipping products

• To fulfill the enterprise requirements parts are still missing. Our goal is to drive the definition of standard solutions for missing parts in the OSGi Enterprise Expert Group by keeping OSGi useable for the Embedded area

• Integration is a key challenge for Siemens products and services

  The power combination “OSGi Technology and Service Component Architecture (SCA)” is most promising