Enabling Environments
Environments & features

- Automation
- Communication
- Media
- Security

- Automation
- Communication
- Media
- Navigation
What we need for this…

• Service concept
• Infrastructure management
• User interaction
• Connectivity
• Spatial information
• Reliable, extendable platform
Service concept

• Definition of a context in which certain features or devices of an environment can be used
• Mechanism to use personal data
• Authentification scheme
• Stateinformation
Infrastructure management

- Administration of devices & features
- Configuration of services
- Administration of spatial Information
- User administration
- Configuration of permissions
- Documentation
User interaction

Though it is possible to access everything with the same device there is no „one device“ that matches all requirements...
The „ideal“ device

• Display
• Mass storage
• Multiple connectivity options
• Enough processing power to host applications
• Small size
• Long-term operational
Connectivity

• Basis for user interaction
• Should be wireless for ease of use
• Should give spatial information
OSGi

- Platform for managed services
- Configuration management
- User management
- Modular & extendable
- Scalable & stable
- Platform independent - Java
RaumComputer, a company thinking of buildings as container for services of all kinds has choosen the OSGi service platform.
RaumComputer: overview

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RCmanagement

- Facilities management based approach
- Manages model of environment (CAD)
- Metaregistry for appliances and RCcpu's in the network

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RCcpu

- Kernel of the „Building Operating System“
- OSGi based
- Hosts services
- Hardware Abstraction Layer
Inside services: light

Environment

Automation Devices

Middleware

HAL

LightService

= BinaryOutputDevice

= BinaryInputDevice

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Inside services: temperature

Environment

Automation Devices

Middleware

HAL

Temperature Service

- BinaryOutputDevice
- FuzzyController
- AnalogInputDevice

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Inside services: music

Environment

IP Devices & Appliances

Automation Devices

Middleware

HAL

Music Service

Green circle = AudioOutputDevice

Dark green circle = AudioServerDevice

Orange circle = BinaryInputDevice

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Service exposure

• Services are organized in spatial contexts - areas

• Users navigate between areas and can only interact with the services of an area

• Users see only the services they have permission for
Service exposure: area

Environment

Middleware

LightService

Music Service

Temperature Service

Area 1

Area 2

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Service exposure: access
Summary

• Technologies are available today
• OSGi has proven its eligibility

• Enabling environments is possible now!
Projects

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<th>Date</th>
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<th>Architects</th>
<th>Investor</th>
<th>Space</th>
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<td>FOM, G.A.Müller</td>
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