

Sensors in the Smart Room: Preliminary Study

Rustam V. Kadirov, Evgeny M. Cvetkov, Dmitry G. Korzun

Petrozavodsk State University
Department of Computer Science



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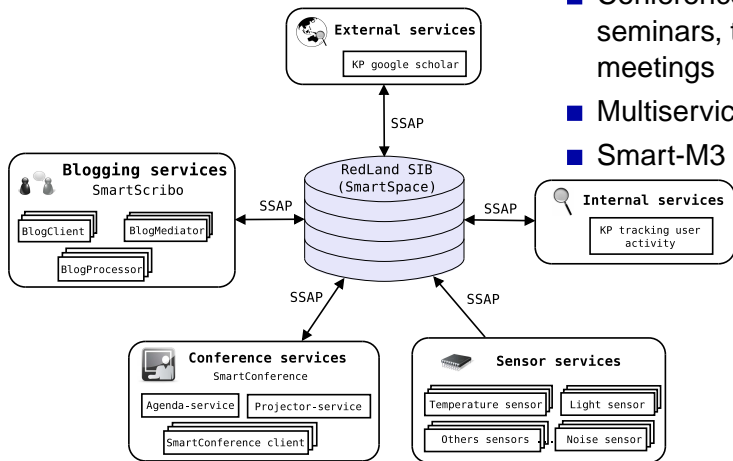


Table of Contents

- 1 PetrSU Smart Room
- 2 Smart-M3 based development
- 3 Scenarios
- 4 Design
- 5 Conclusion



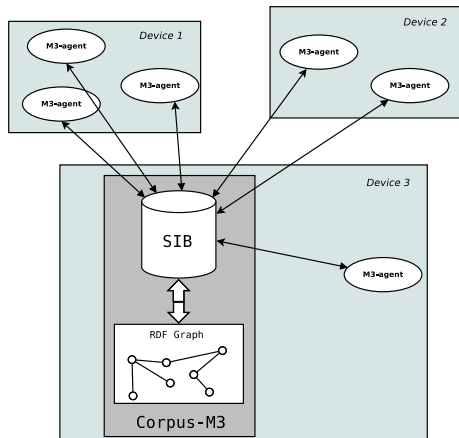
Smart Room



- Conferences, lectures, seminars, trainings, meetings
- Multiservice
- Smart-M3 platform



Smart-M3 platform



- Open source software project
- For each service own agent
- Ontological representation of data
- SmartSlog as Smart-M3 SDK



Scenarios types

- Basic scenarios:
Sense, publish and use

- Advanced scenarios:
Use of controllable devices









- Automated scenarios:
Some decisions are performed without human











Represents sensor data (basic scenaiio)

Measurements are represented on agenda and clients

Agenda:

	Title of presentation Name of presenter University		First name Last name Middle name Age Organization Department
	Title of presentation Name of presenter University		
	Title of presentation Name of presenter University	Citation index: 	
SOME ANOTHER PLUGIN		 25°C  66 g/m³  51 dB	

Smart Room client:

Smart Room client	Sensors Information
	 25°C
	 66 g/m³
	 51 dB
	
	

cs.karelia.ru

Alert notifications (basic scenaio)

Notify chairman about deviations from normal ranges

Warning:
Temperture is very high,
normal is 20-25 degrees

OK



Light control (advanced scenarios)

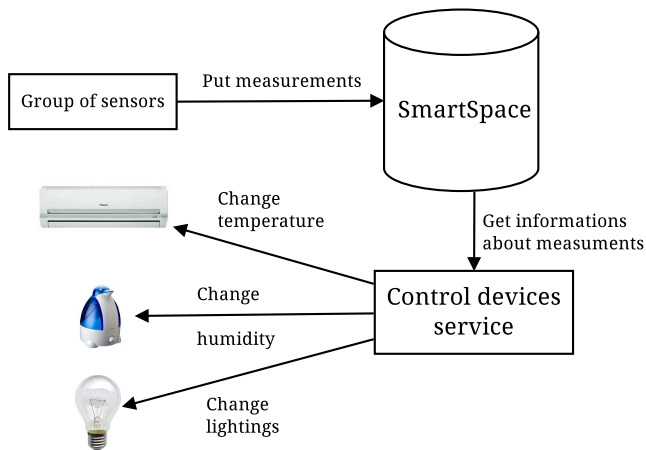
Chairman checks illumination level and applies special modes for changing the level

- Presentation: focus on presenter
- Discussion: normal room light



Automated control of devices (automated scenarios)

Example: conditioners, humidifiers, light devices.



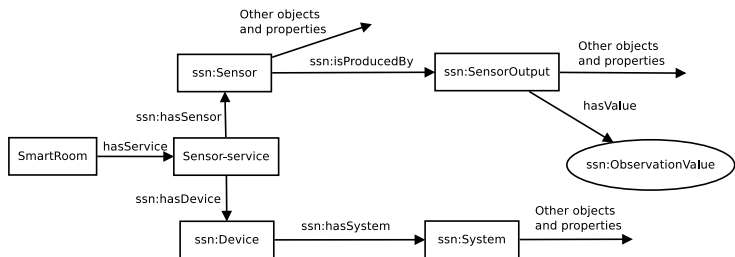
Detect noise in room (automated scenarios)

- Measure noise for each presentation
- Value of noise level link with each slide
- Information can be analyzed after conference
- Finding the slide which caused the most audience reaction

Report about FRUCT conference		
<i>// some another information</i>		
Sensors in th Smart Room: Preliminary Study	Slide #	Noise, dB
	1	100
	2	251
	3	234
<i>// some another information</i>		



Sensors ontology



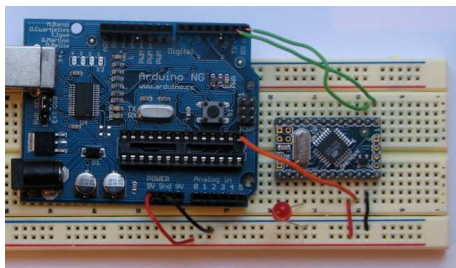
- Based on Semantic Sensor Network Ontology (W3C)

<http://www.w3.org/2005/Incubator/ssn/ssnx/ssn>

- Integration into Smart Room ontology



Development



Equipment:

- Arduino platform
- Light sensor, temperature sensor and noise detector
- Conditioner, humidifier and devices for light control

Program tools:

- Arduino IDE
- CKPI library
- SmartSlog SDK



Implementation

Centralized:

- managed by a computer
- software on computer
- applying all features of Smart-M3

Self-contained:

- low-capacity devices
- number libraries for install is minimized



Results

- Started developing basic scenarios with use of light, temperature and noise sensors
- Considered ontological model for sensor data representation
- Proposed two architectural options of connecting sensors
- Project available on
<http://oss.fruct.org/wiki/SmartRoom>

Future tasks:

- Implement advanced and automated scenarios
- Connecting a new type of sensors in Smart Room

