

Smart Spaces Development:

Open Innovations Association FRUCT Activities

**Dmitry Korzun, Sergey Balandin,
Alexey Kashevnik, Kirill Krinkin,
Ilya Paramonov**

Open International M3 Semantic Interoperability Workshop
12.11.2013, EIT Open Innovation House, Espoo, Finland

FRUCT WG on Internet of Things and Smart Spaces

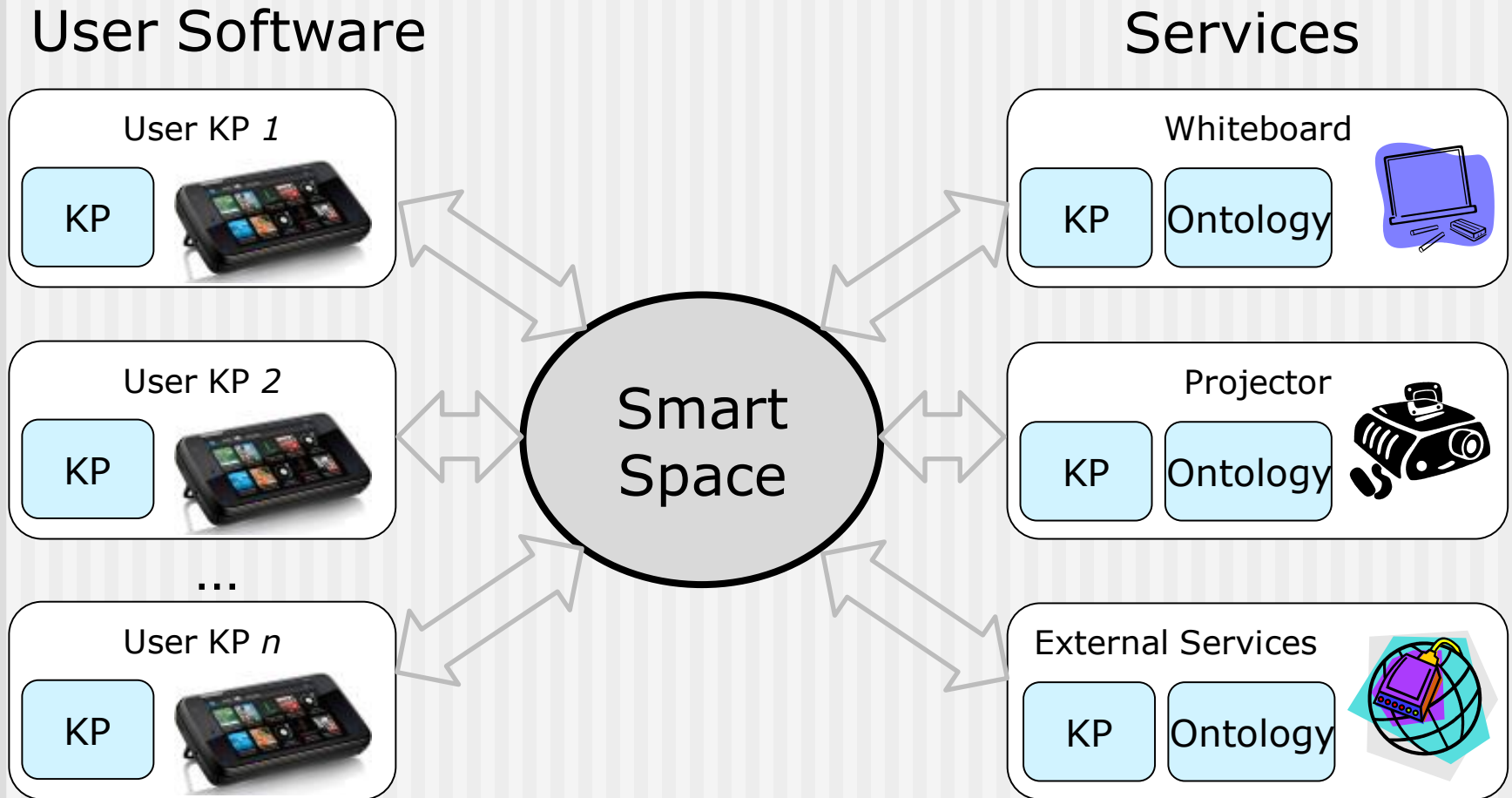
- Since 2008
- Research organizations and SMEs from Europe and Russia, fruct.org/smart/
- “Are You Smart (ruSMART)” community and annual international conference, rusmart.e-werest.org
- Collaborative network with international R&D projects in the area of Ubiquitous Computing, IoT and Smart Spaces
- Leading developer team for Smart-M3 open source platform, sourceforge.net/projects/smart-m3/

Services: Examples

- SmartConference
 - Assistance for conferencing activity
- SmartScribo
 - Mobile semantic multi-blogging
- SmartRoom
 - Service environment for collaborative activity
- Mobile Tourist Guide
 - Ridesharing: shared use of cars
 - Tourist Attraction Information Service (TAIS): information and recommendations

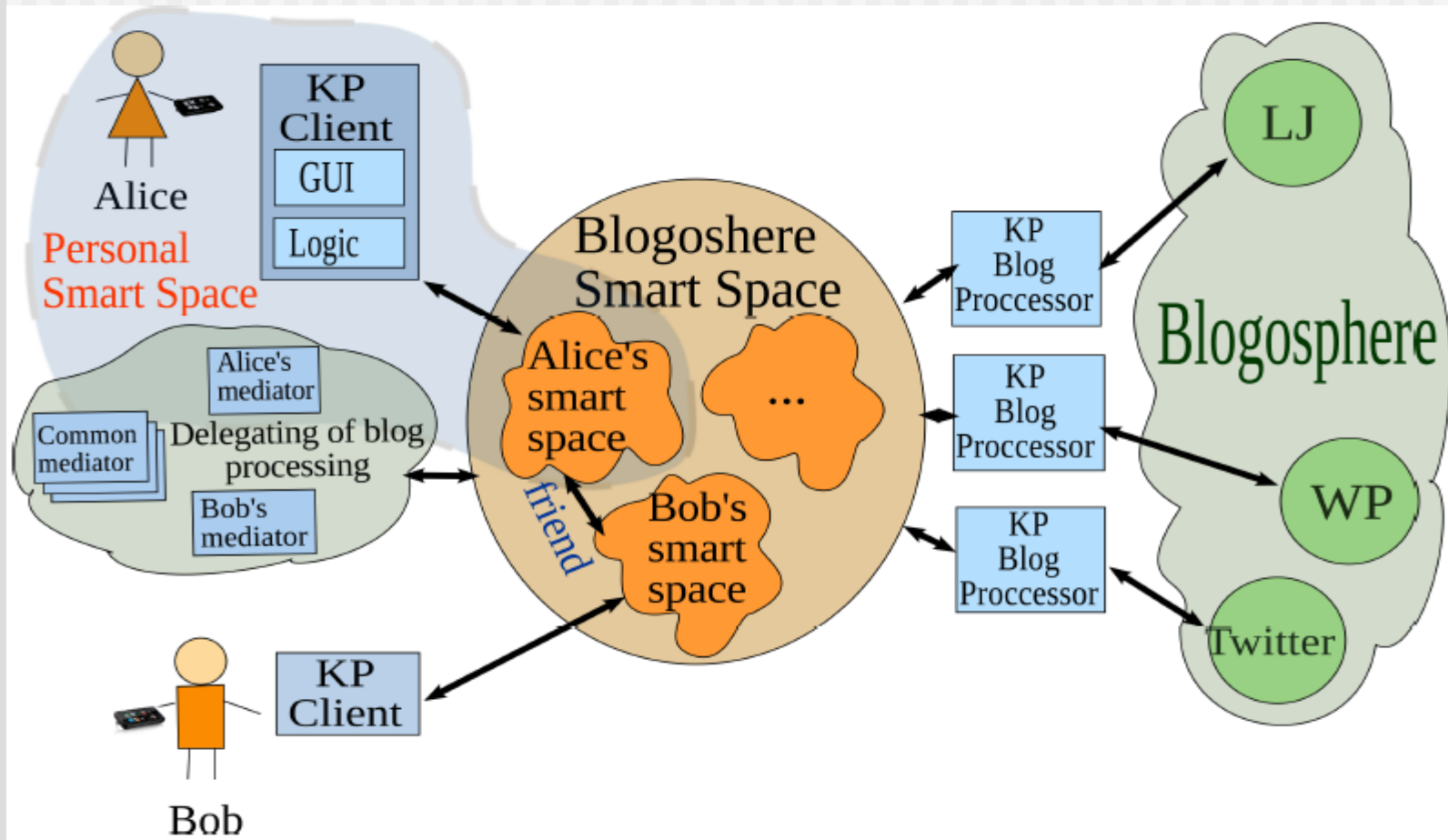
SmartConference

sourceforge.net/projects/smartconference



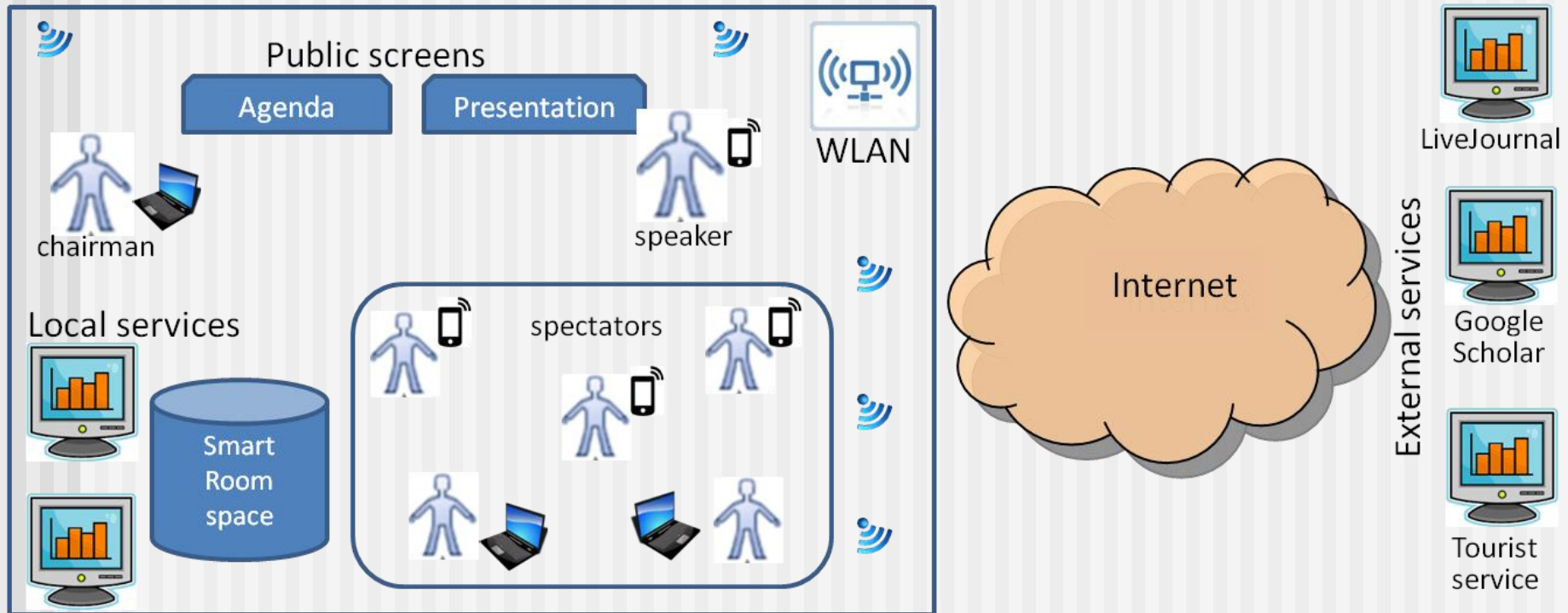
SmartScribo

sourceforge.net/projects/smartscribo

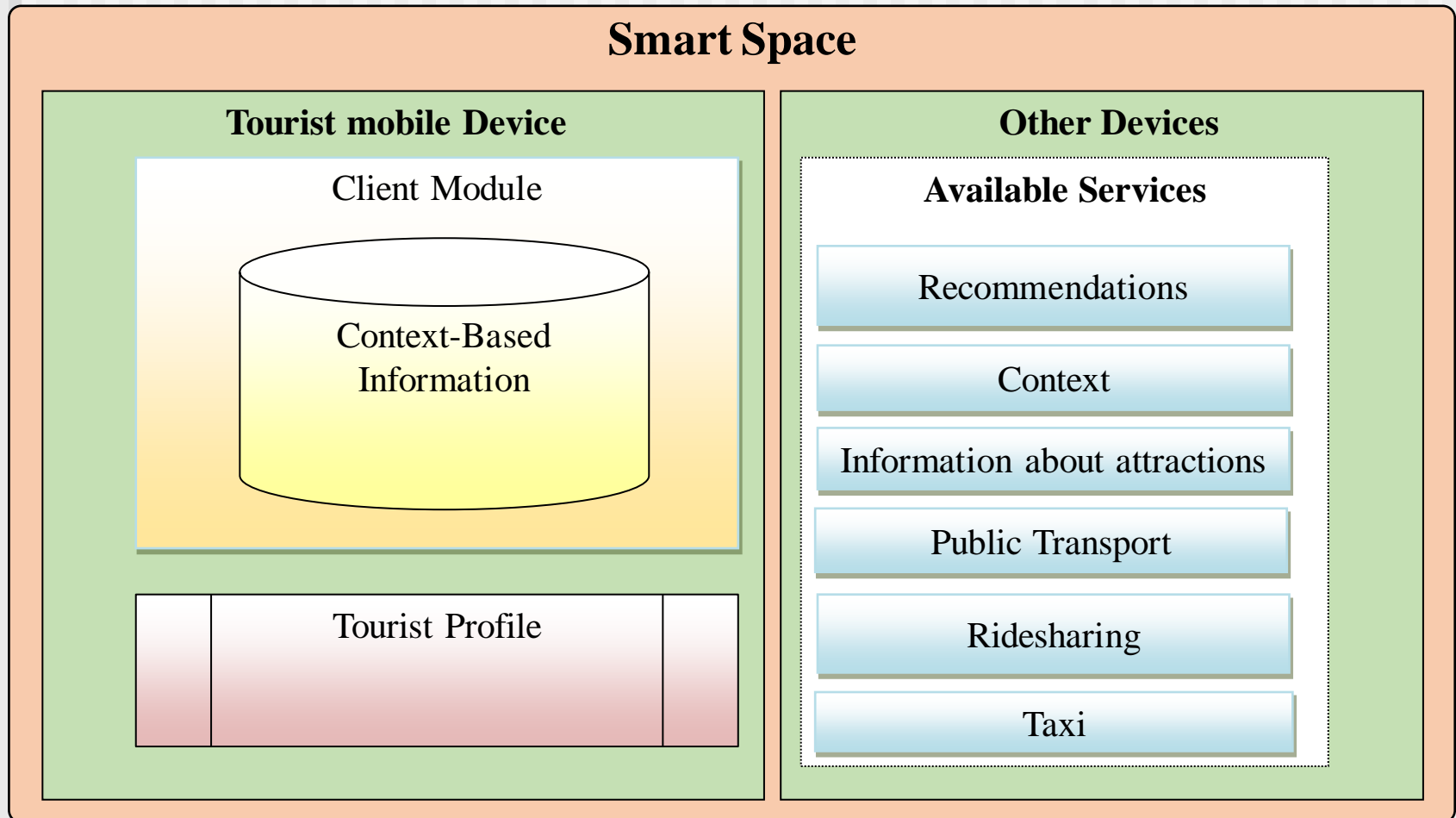


SmartRoom

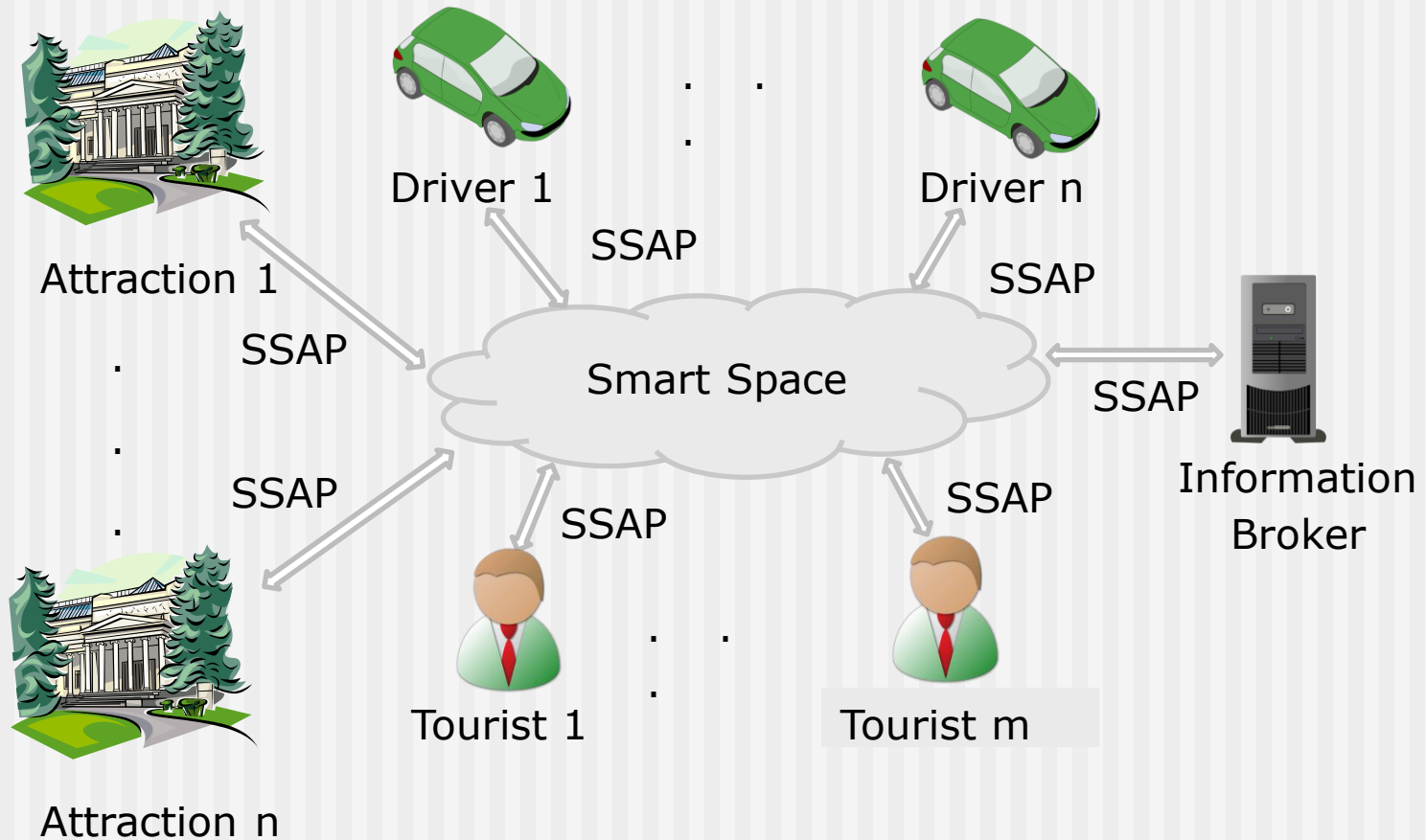
sourceforge.net/projects/smartroom



Mobile Tourist Guide



Ridesharing



Service Integration

- Pecha Kucha for SmartConference
 - Special client for automatic demo presentations show
- Blogging in SmartConference
 - Discussion service in conferencing
- Event Recording in SmartRoom
 - Summary report on the passed activity
- Ridesharing for Mobile Tourist Guide
 - Alternative transportation means for the tourist

Smart-M3 Platform

sourceforge.net/projects/smart-m3

- Maintenance and installation packages
- SDK
- Platform-embedded solutions
- Application-level solutions

Smart-M3 Maintenance (1/2)

Developers server: <http://smart-m3.atlassian.net>

Assigned to Me

T	Key	Summary	P ↓
+	SMART-13	deb packages for smart-m3 components	↑
+	SMART-14	Debian repository for end users	
☑	SMART-16	Apply hip fixes from Ilya	
●	SMART-20	redsib hangs when running basic_test_e	
☑	SMART-21	Upload python KP to github as own repo	
+	SMART-27	Repository with deb packages for smart-platform	
☑	SMART-28	Create and share Smart-M3 platform dev policy	
●	SMART-72	Redsibd couldn't get ses	
⚡	SMART-74	Smart-m3 platform is ave	
☑	SMART-75	Add waiting loop and pr tcp	

1-10 of 11

Issue Statistics

STATISTICS: SMART-M3 (STATUS)

Open	20	26%
In Progress	3	4%
Resolved	34	45%
Closed	19	25%

Total Issues: 76

Road Map: Next 365 Days (Until 10/Nov/14)

Smart-m3 : current	15/Apr/13	9 of 9 issues resolved.
Smart-m3 : Smart-m3 Platform 0.1	31/Oct/13	19 of 27 issues resolved.
Smart-m3 : next	01/Nov/13	No issues.

Activity Stream

JIRA

Friday

Michael Bazhenov stopped progress on Smart-M3 roadmap on wiki
 Friday at 11:49 AM

Thursday

Michael Bazhenov added Smart-M3 platform features

Features	Date
Integrate RedSIB 0.9	05.11.201
Support for raptor2	05.11.201
Agent substitution mechanism	15.12.201
Support for Virtuoso db	15.12.201
Public package for C++/Qt KPI	15.01.201
Support for Python 2.7	15.01.201

Thursday at 9:05 PM

Michael Bazhenov started progress on Smart-M3 roadmap on wiki
 Thursday at 8:39 PM

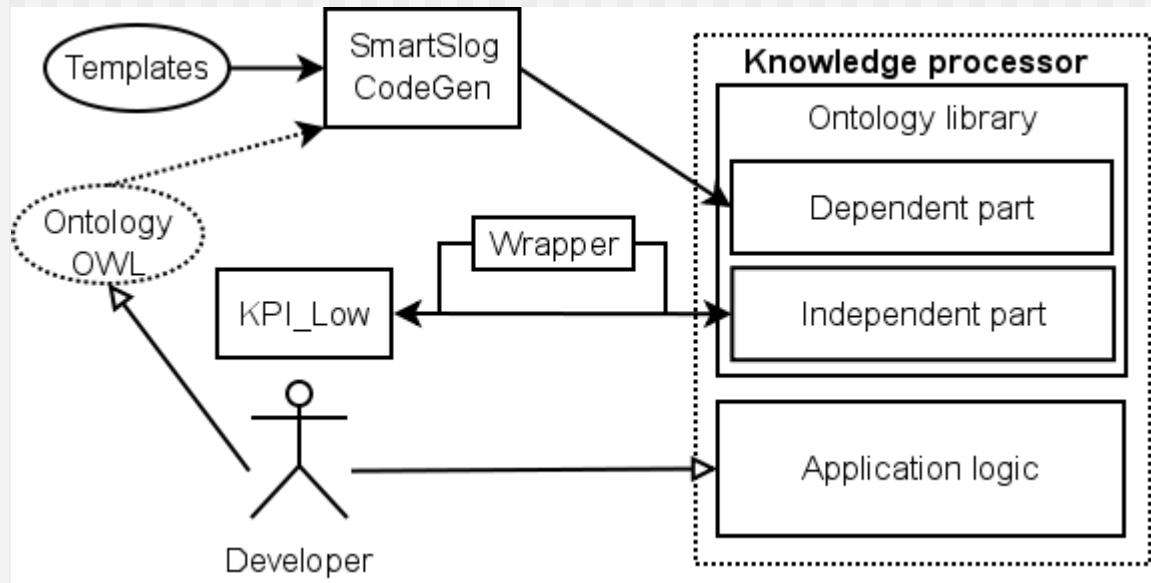
Smart-M3 Maintenance (2/2)

- Installation packages (deb repository)
<http://download.geo2tag.org/smart-m3-repo/>
- Short-term release plan

Feature set	Release	Date
<ul style="list-style-type: none">- Red SIB 0.9 integration- Support for raptor2	0.1	05.11.2013
<ul style="list-style-type: none">- Agent substitution mechanism- Virtuoso DB support- Unit test set	0.2	05.02.2014
<ul style="list-style-type: none">- Smart-M3 security- Systematization of KPIs- Performance test suite	0.3	05.04.2014

SmartSlog: Ontology-driven SDK

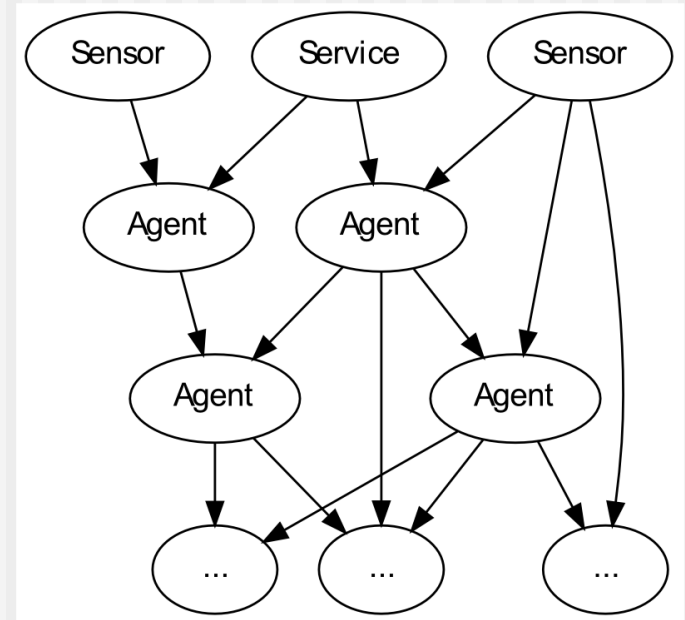
- Code generation
- Low-capacity devices
- Session
- Subscription
- Multiple OWL ontologies



- ANSI C: Linux, Windows, Android, Raspberry Pi, Qt-based, Mac OS (C KPI)
- C#: Windows, Windows Phone (C# KPI, C KPI)
- <http://sourceforge.net/projects/smartslog/>

Agent substitution mechanism for dataflow network

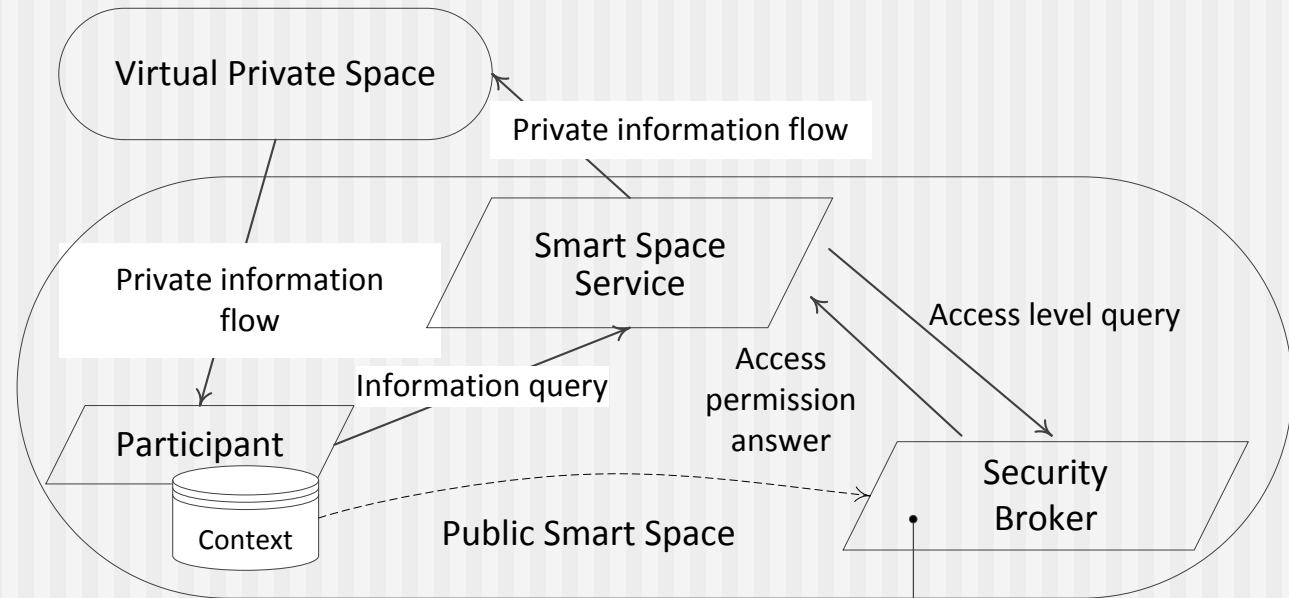
- Uses restricted computational model: dataflow network
- When an agent falls down it is substituted by another agent
- Dependent services in the network are not disrupted
- Mechanism is implemented as SIB modification



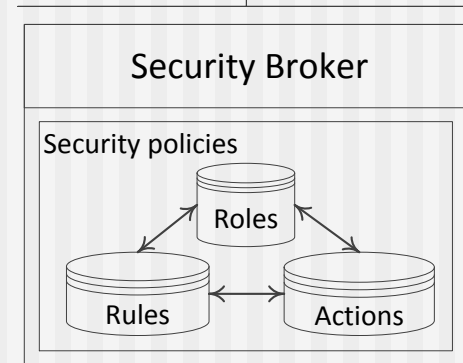
RoDaFlow Framework

- SDK for services based on dataflow network model
- Simplifies creation of dataflow network agents
- Developer describes only data processing procedure of the agent
- No knowledge of substitution implementation details expected from developer
- No boilerplate code for agent lifecycle needed

Access Control Model for Information Sharing



Application-level solution



Properties (1/2)

- Mobile participants
 - Personal end-user device is a primary access/control point
- Objects universe
 - devices, agents, services, compositions of them, etc.
- Interoperability
 - devices, information, services
- Dynamicity
 - presence-aware programming
- Localization
 - hub-like relation of locally and globally accessed knowledge

Properties (2/2)

- Ambient Intelligence in services
 - Adaptability, personalization, service composition, recommendation, proactive delivery
 - Delegation, mediation
- User collaboration
- Resilience in IoT-settings
- Security

Conclusion

- Pilot services for Smart-M3
 - New use cases and business models
 - Emerging market of smart spaces services
- Open source Smart-M3 platform and SDK
 - Leader developer team for the Smart-M3 platform
- Toward a methodology of Smart Spaces development
 - Experience, principles, methods

smart-info@fruct.org

Partners

