Mobile Multi-Service Smart Room Client: Initial Study for Multi-Platform Development

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Mobile Multi-Service Smart Room Client





2 Development of SR clients





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Smart Room system



 Smart Room aims at many services: informational, control, collaborative work, ...

- Participation of many users
 - → Many (mobile) clients running and accessing SR services
- Users come with own devices
 - ~ Many mobile platforms



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Multi-Service Property

- Services allow user interact with SmartRoom and get different sort of information
- Access to services go via a **client** from a mobile device of user



Client for Smart Room

Basic services

- everyone uses them, e.g., slide show
- Personalized service access (UI design problem)
 - appropriate services from a large set
- SR services appear and disappear dynamically
- Development unification (as much as possible, trade-offs)
 - Windows Phone and Symbian (Qt) are our reference cases
 - Desktop solutions (Windows, Linux)
 - Android and iOS are in progress



Multi-platform considerations

Platform	Programming language	IDE
Android	Java, partly C, C++	Eclipse
iOS	Objective-C	Xcode
Symbian platform	C++, QML	Qt Creator
Windows Phone 7&8	C#, Visual Basic	Visual Studio 2010
Windows desktop	C#, Visual Basic	Visual Studio

- A lot of programming languages and IDEs
- GUI is platform-aware
 - Universal GUI frameworks are not mature enough



Object oriented design

- KnowledgeProcessor SmartSpace interaction
- Classes of main services e.g. Agenda (list of participants), Projector (presentation, changing slides) and etc
- Internal logic logic of work with got data
- Graphical user interface representation of information on user's device
- Green same part
- Red different part



Smart Spaces SDK

The primary SDK is SmartSlog

http://oss.fruct.org/wiki/SmartSlog/

- ANSI C version for mobile Linux family, Qt/Symbian, Android, iOS
- C# version for Windows desktop family, Windows Phone 7&8
- High-level (model-driven, ontology-based) programming
- Modest to device capacity

Use of native code is required for some platforms



User interface



- Each service as tab
- Menu with all services
- Static and dynamic services

- Agenda Proiector Sensors Main menu Person 1 Value Meaning 🖂 Agenda Title 1 Temprature 22 C Getting Person 2 × Projector Title 2 Jghting 40 % Turn on X Sensors Person 3 Title 3 Cameras Person 4 Block of control buttons Title 4 Rating of SR users
- Static implemented for each platform

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 Dynamic - download from available services



HTML5 solutions

- HTML5 application with specialized mobile frameworks (PhoneGap, jQuerry Mobile, ...):
 - "+" one code for any platform
 - "+" application can be used in any browser
 - "-" bad performance on old mobile devices
 - "-" some difficulties in implementation

HTML5+CSS+JavaScript pages

- "+" many platforms support HTML5
- "+" one page for all platforms
- "+" cross-platform
- "-" some difficulties in implementation



MVVM pattern



- Model is data required for the application;
- View is graphical user interface;
- ViewModel contains data for View and commands for work with Model.



Graphical user interface examples

[?]·





Access to Smart Room Service Se from End-user Mobile Devices Dmitry Korzun



Event Recording System for Smar Space Applications Ilya Paramonov



SmartSlog Session Scheme for Smart-M3 Applications



Distributed service environment (smart spaces) security model development Kirill Yudenok



Securing Interactions of Smart Objects in Smart-M3 Spaces Ilya Nikolaevskiy

Agenda on WP



Agenda on Windows



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Graphical user interface examples

Agenda



Mechanism for Robust Data Flo... Andrew Vasilev



RedSib: a Smart-M3 Semantic In. Francesco Morandi



Sensors in a Smart Room: Preli... Rustam Kadirov



Securing Interactions of Smart 0. Ilya Nikolaevskiy



Distributed service environment. Kirill Yudenok



SmartSlog Session Scheme for S... Aleksandr Lomov



Event Recording System for Sma. Ilya Paramonov

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Android and iOS

Android

- Java
- ANSI C SmartSlog
- IDE Eclipse
- iOS
 - Objective-C
 - ANSI C SmartSlog
 - IDE XCode
- Every platform use MVC pattern for default

Come to our demo to see what we have



Results

Service	Platform
Agenda	Windows family, Symbian, Android, iOS
Projector	Windows family, Symbian
Autorization	Windows family, Symbian, Android
Blogging	In future
Sensors	In future
Google Schoolar	In future

- We have solution for dynamic services;
- We almost have basic services for each platform;



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