PhD Outline: Integrating the Real-World with the Web to Foster and Ease Application Development

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Chapter 1

Introduction

1.1 Real-World Service Integration Paradigms

1.1.1 WS-*

1.1.2 REST

1.1.3 UpnP

1.1.4 A Web-Service Integration Infrastructure for the Real-World

SOCRADES Integration Architecture [1, 2]. In [3] we implemented Web proxies for Smart Meters.

1.2 Understanding Differences between Integration Models

1.2.1 Qualitative

Show ease of use.
TODO:Still to SHOW that it does foster and make it easier to build apps upon, for that use: Distributed Sys. lecture, OSS eval.

1.2.2 Quantitative

Studies of [4] and [5]

1.2.3 Federative Architecture

We proposed a system federating both RESTful and WS-* services for things in [2].

1.3 Empowering Users: Physical Mashups

1.3.1 Web 2.0 Web Mashups

Explain Web Mashups.

1.3.2 Physical Mashups

Explain the concept introduced in [4].

Chapter 2

A Web Oriented Architecture for a Composable Ecosystem of Smart Things

In [6], we introduced the Web of Things architecture which we further described in [4].

2.1 From the Internet of Things to the Web of Things

2.2 Designing RESTful Smart Things

2.2.1 Smart Gateways

From this we derived the concept of Smart Gateways in [2] and [7].

2.2.2 Modeling Functionality as Linked Resources

2.2.3 Representing Resources

2.2.4 Servicing Through a Uniform Interface

2.2.5 Syndicating Things

2.2.6 Real Time Web of Things

2.2.7 Finding and Describing Smart Things

Infra-WOT, Microformats, etc.

2.2.8 Sharing Smart Things

We developed a sharing and service advertising platform making use of social networks [8] (SAC and FAT).
TODO:Evaluation of SAC/FAT?

2.2.9 Design Automatization

Auto-WOT
TODO:Include discovery and real-time

Chapter 3

Wireless Sensors and Actuator Networks

RESTful Sun SPOTs [9], RESTful Ploggs [3, 6, 10]

3.0.10 Design

3.0.11 Prototyping

3.0.12 Home Mashups

We evaluated different approaches and proposed a Web-oriented prototype in [11] and [12]. Clickscript project, Energy Mobile Mashup, Physical Mashup Framework, etc.
TODO:Better publication/eval?

3.0.13 Evaluation

Chapter 4

Resource-Oriented Auto-ID Networks

RESTful EPCIS [5]
TODO:More to come thanks to the project at Auto-ID

4.0.14 Design

4.0.15 Prototyping

4.0.16 Evaluation

4.0.17 RFID Mashups

Make it easy to build simple RFID apps.
TODO:"Clickscript" for RFID

Chapter 5

Conclusion

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