

# Flexible Service Ecosystems

The serviceplatform.org perspective

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8th KuVS Fachgespräch NGSDP  
Competitive SD Infrastructures

Königswinter  
April 2013



**TECHNISCHE  
UNIVERSITÄT  
DRESDEN**



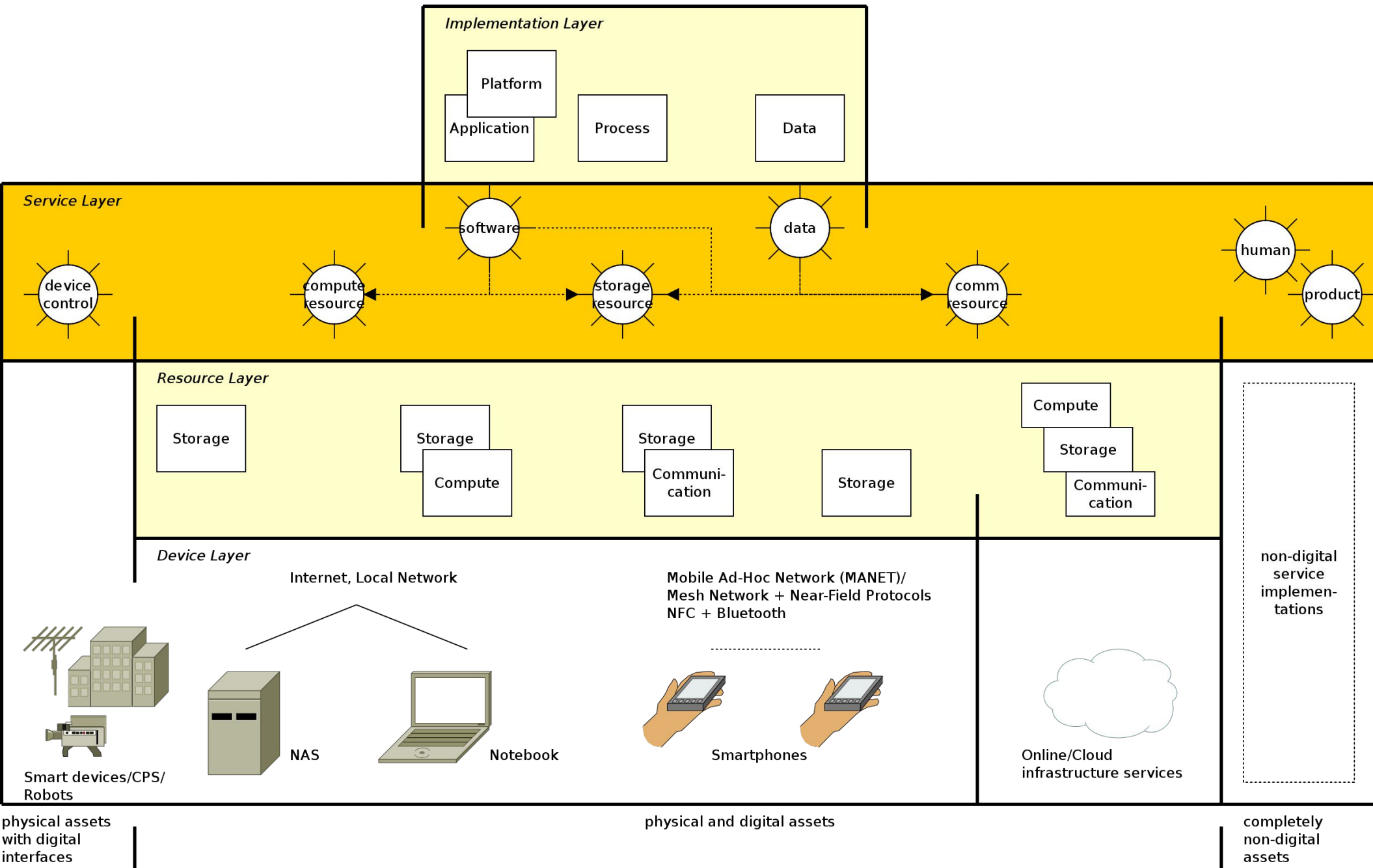
Open Source Service  
Platform Research Initiative  
<http://serviceplatform.org>



## Research activities and prototypical development around the topics of Service & Cloud Computing

Research Activity	Prototypes
Service Platforms	SPACE (XaaS Broker & WS Hosting), WSMO4IoS Ontology Catalogue
Service Ecosystems	Social Service Networks, Service Engineering & Provisioning Toolchain, Service Consumption Desktop & Frameworks, Hosting Technologies incl. SPACE-Cloud/HVCRB Connector, Service Marketplaces & Spot Markets, <b>SPACEflight Live Demonstrator</b>
Cloud Storage	NubiSave Storage Controller, FlexDDPL Policy Framework, Storage Gateway, SecCSIE Storage Integrator
Autonomic Clouds and Cloud Robotics	Online Service Signup Tool
Personal Clouds	CloudRemix Cockpit, FlexiSource Hardware Discovery, DaaS Creator, Adaptive Data Synchronisation, <b><math>\pi</math>-Box Live Demonstrator</b>

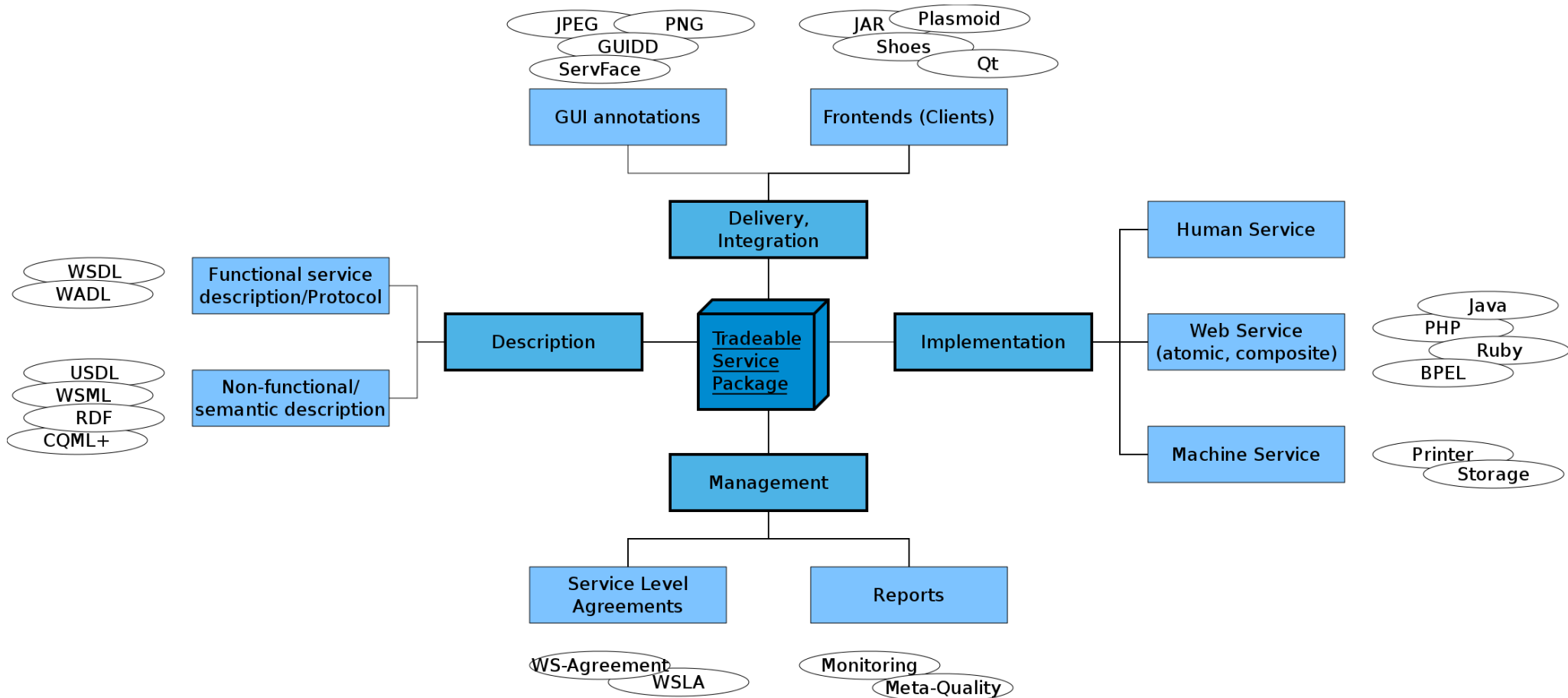
# The World of Services: XaaS



## XaaS Service Models

### Tradeable Service Model

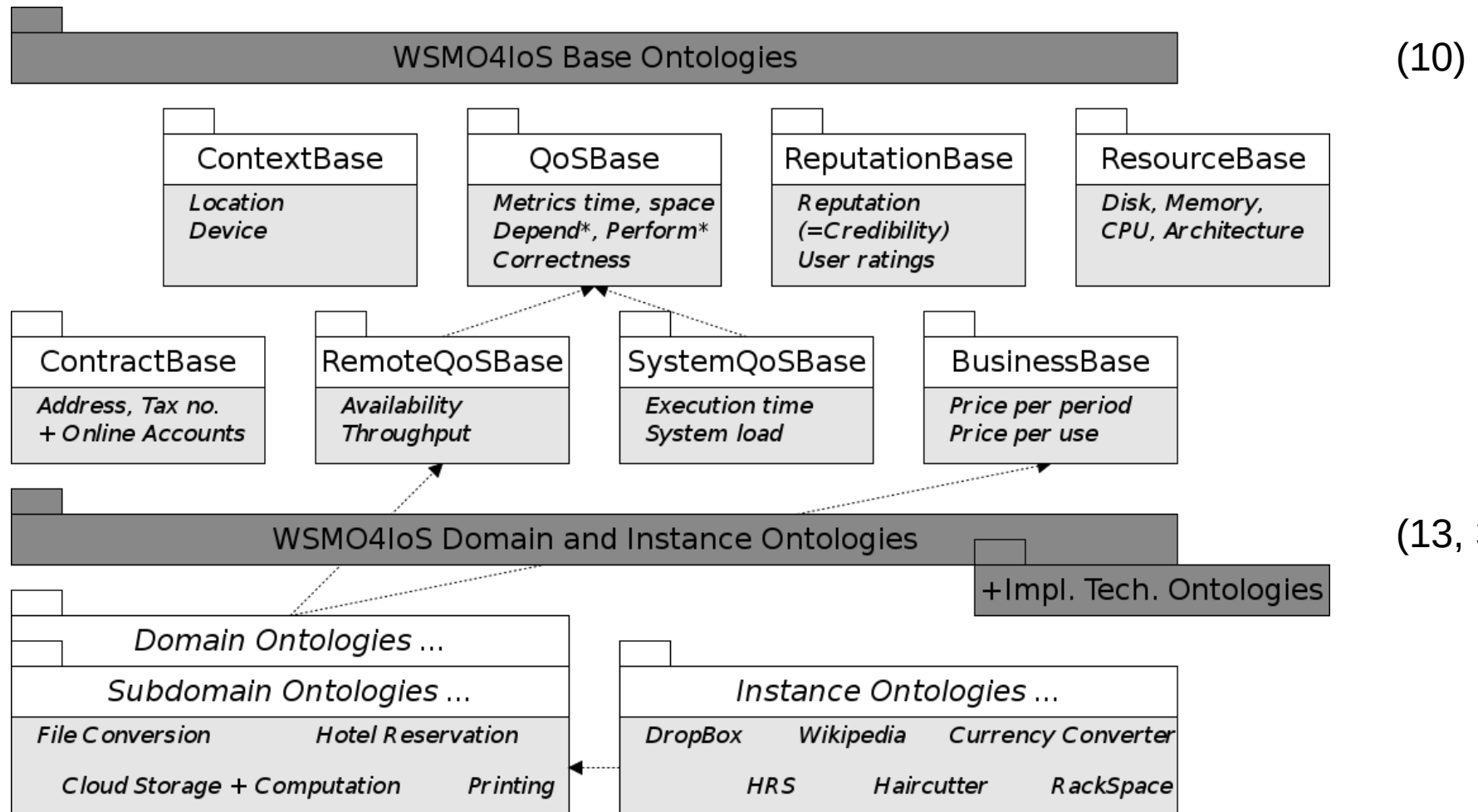
- Packages & Artefacts



## XaaS Service Descriptions

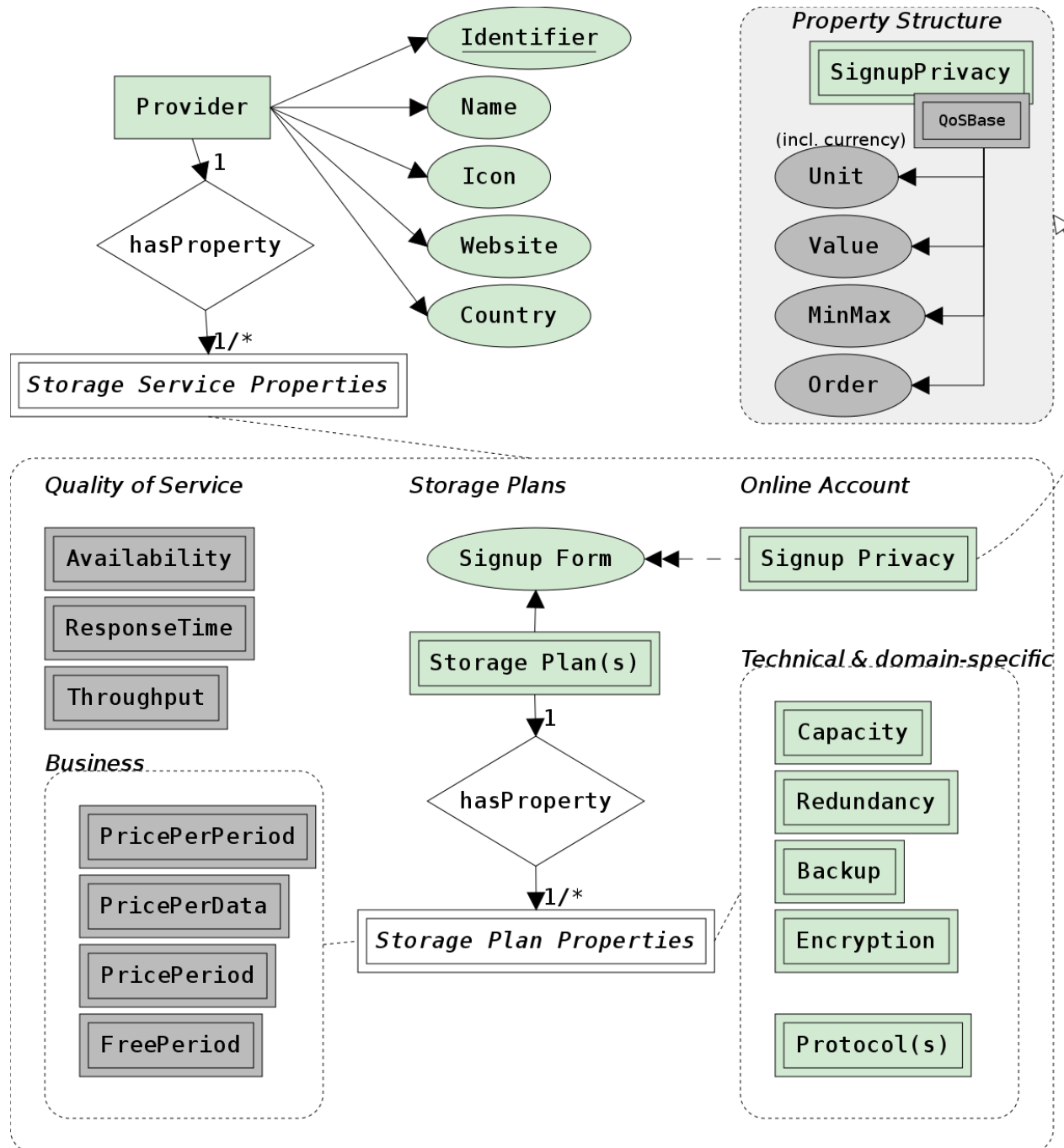
### Ontology Catalogue »WSMO4IoS«

- WSMO: (Web) Service Modelling Ontology
- IoS: Internet of Services

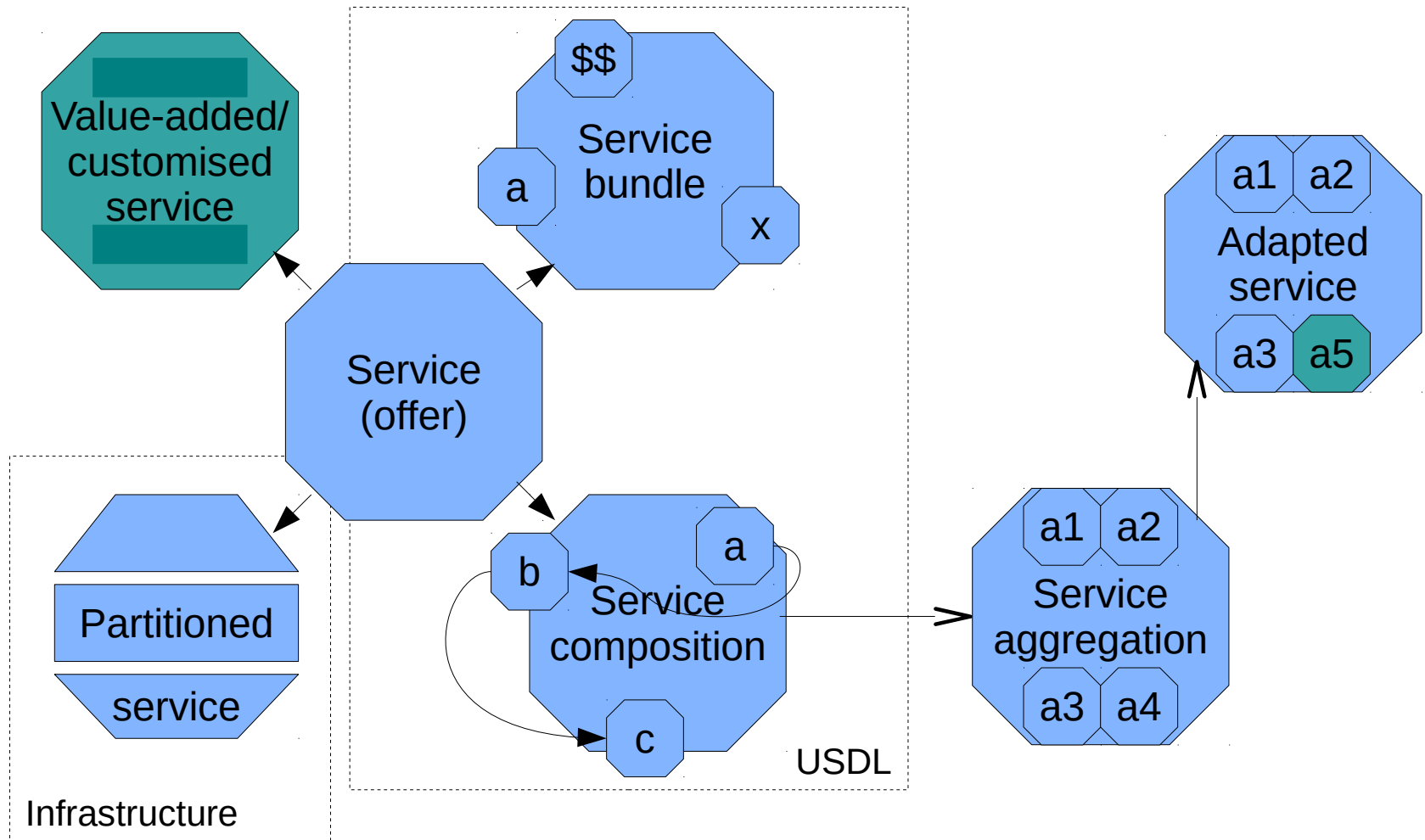


## XaaS Service Descriptions

### Deep Dive: Cloud Storage Ontology



## Service Variation Models





## Service Models Community Resources

Main | About

# service models

The art of describing XaaS in an internet of services

- Languages  
USDL, WSML & co.
- Concept Collections  
Security, Price & Features
- Instance Collections  
Cloud Storage & more
- Markets  
Registries & Discoveries

### modelling highlights



Unified Service Description  
Language



Cloud Storage Services

### service models news

OCT  
29  
2012

#### Bunch of changes

We've added the OCCI standard and the Membrane Service-Repository, among other additions, and also improved a couple of the existing entries.

MAR  
8  
2012

#### Launch day

3.. 2.. 1.. We're launching *servicemodels.org* as a *special service* to the service and cloud computing community! This place is intended to become a project- and vendor-independent place to contribute and find service models and service description approaches, including service level agreements (SLAs) and other related artefacts.

### modelling tools

- WSMO Studio
- USDL Editor
- USDL Editor light
- WSMT
- NeOn
- WSMO4IoS Editor
- SLA Editor

### modelling resources

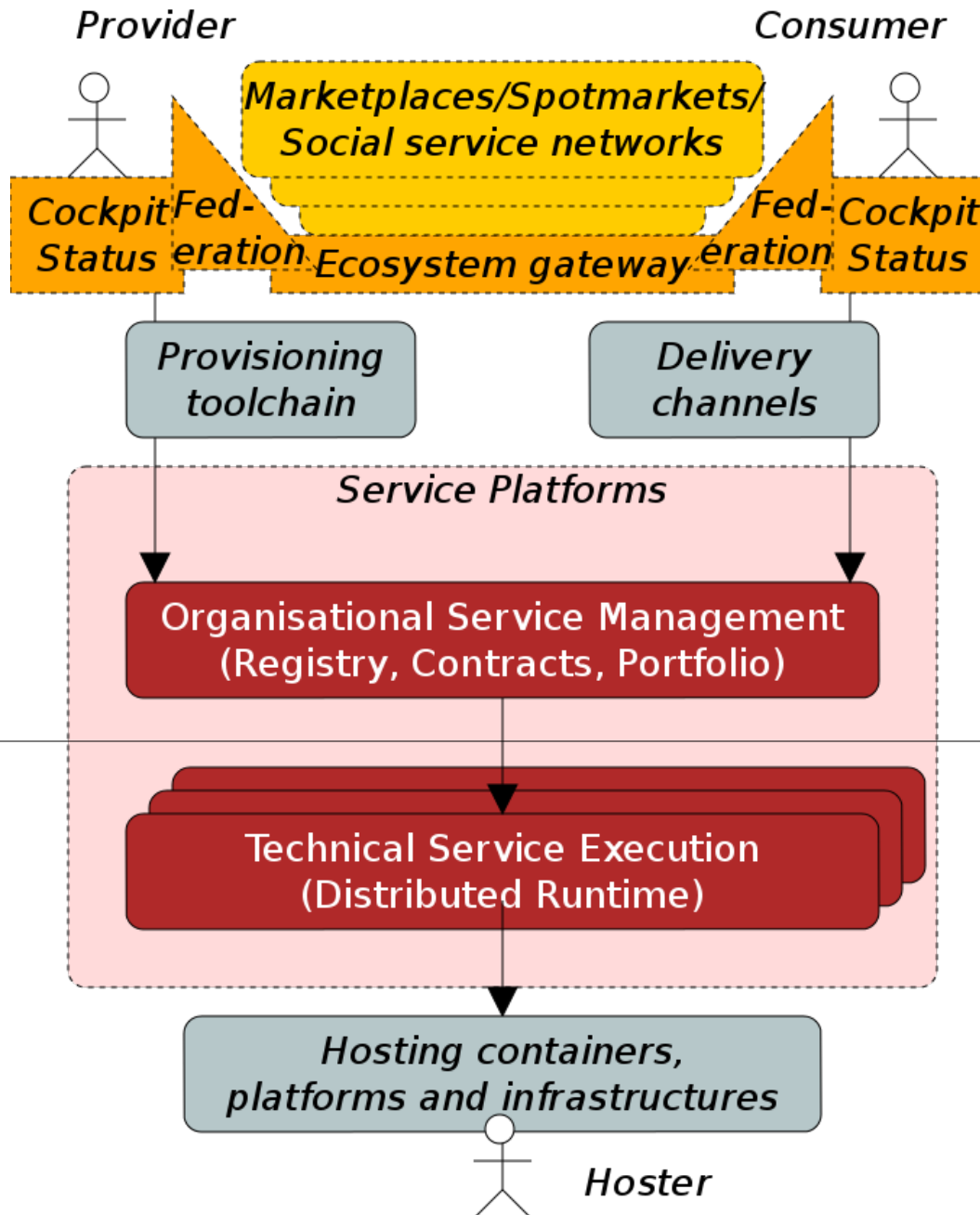
- Handbook of Service Desc.

**Website: [servicemodels.org](http://servicemodels.org)**

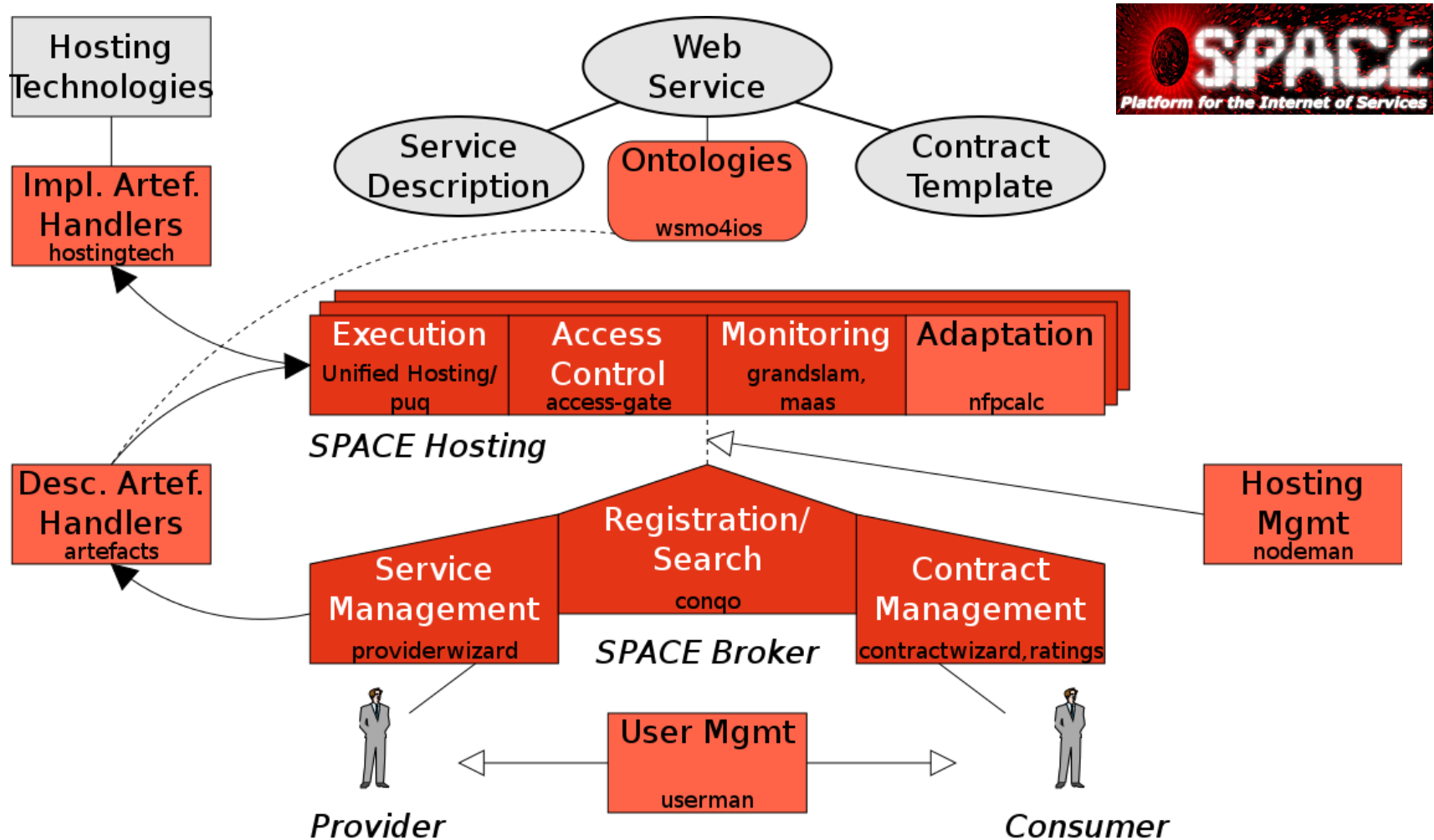
Web Design by STUDIO7DESIGNS



# Service Ecosystems



## SPACE: Service Platform Architecture for Contracting and Execution



## Spot Markets, Social Service Networks

# Servomat<sup>2.0</sup>

Web Services Review and Test Environment

[Nutzer](#)
[Communities](#)
[Unternehmen](#)
[Services](#)
[Ereignisse](#)

[Login](#)

**LOGIN**

Nutzername

Passwort

[Anmelden](#)

[Ich habe mein Passwort vergessen!](#)

Willkommen auf **Servomat** im Wintersemester 2011/12! Servomat ist ein studentisches **Soziales Dienstnetzwerk** zum kollaborativen Aufbau verteilter serviceorientierter Anwendungen. Es unterstützt euch bei der Durchführung des **SOA-Praktikums**.

Anleitung: Handbuch

**2 COMMUNITIES** [Zeige alle](#)

SOA-Vorlesung    Praktikumsb

**NUTZER** [Zeige alle](#)

Steffen Huber    Rico Meyer    Sebastian Haedorn

**14 UNTERNEHMEN** [Zeige alle](#)

G08    G12    G02

STATISTIK FÜR SERVOMAT

- >> 30 Nutzer
- >> 14 Unternehmen
- >> 2 communities

NEUER INHALT

- >> Welche Dienstbeschreibungssprache ist die beste? WSDL, WADL, USDL, ...
- >> Präsentation Gruppen 05,09,10,11,12,13
- >> Präsentation Gruppen 01,03,04,06,07,08
- >> SOA-Diskussion
- >> Neueröffnung des Servomat

### A Spot market for highly virtualized resource cloud broker

**Provider**

[Change provider profile](#)

### Provider interface

[Add computing service](#)

[Add storage service](#)

### spot's services

- Service 10\_type: computing**

Provider: spot

Descriptions: [XML](#) [WSML](#)

Cpu capacity: 1

Cpu number: 1

Memory capacity: 1

Storage capacity: 0

Free period (days): 0

Price per period: 0.0 euro/month

Price per unit: 0.0 euro/month
- Service 9\_type: computing**

Provider: spot

Descriptions: [XML](#) [WSML](#)

Cpu capacity: 1

Cpu number: 1

Memory capacity: 1

Storage capacity: 0

[admin interface](#)

[Hi, spot](#)

[Logout](#)

## Products/Services

**Fortune Client**

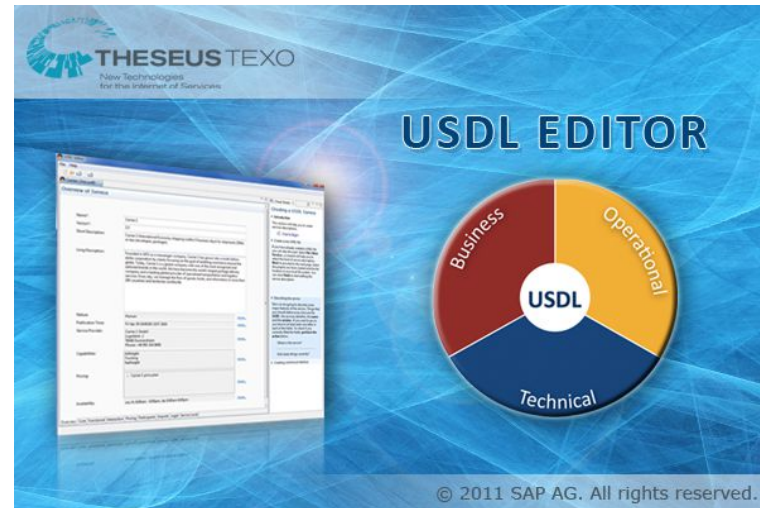
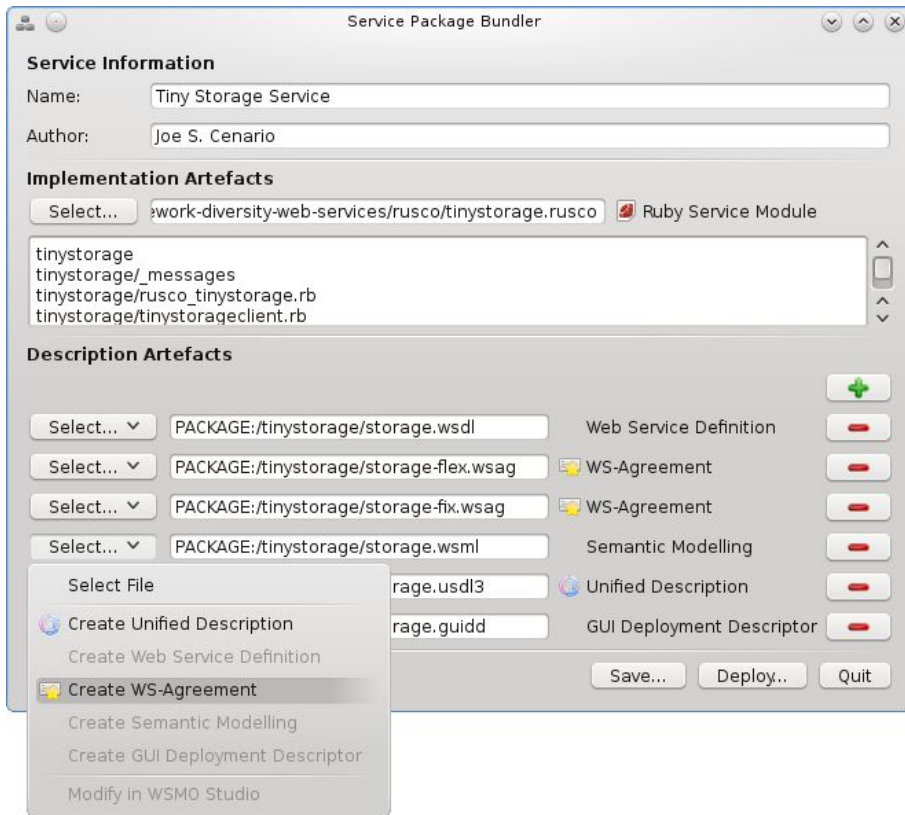
Price: 0.00

Uncategorized product

A Ruby/Qt4 client to the Fortune service. It can bind dynamically through a WSDL file, and it can employ various WS-Security authentication schemes if needed.

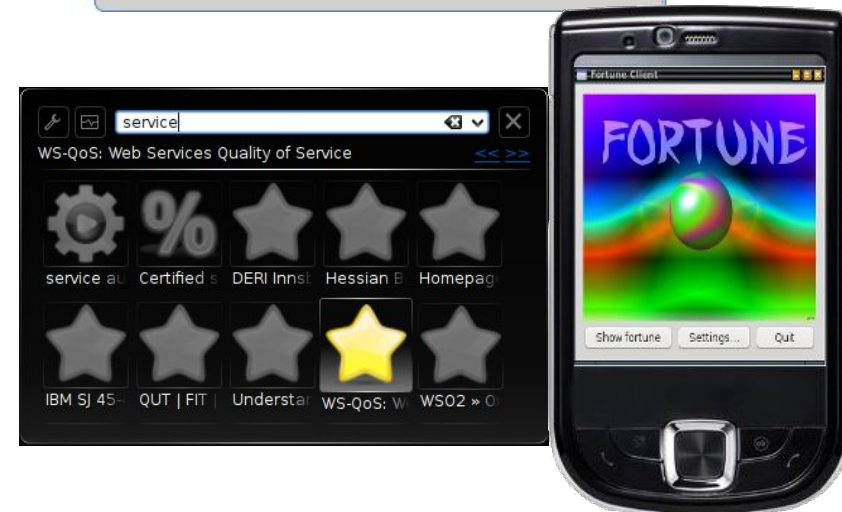
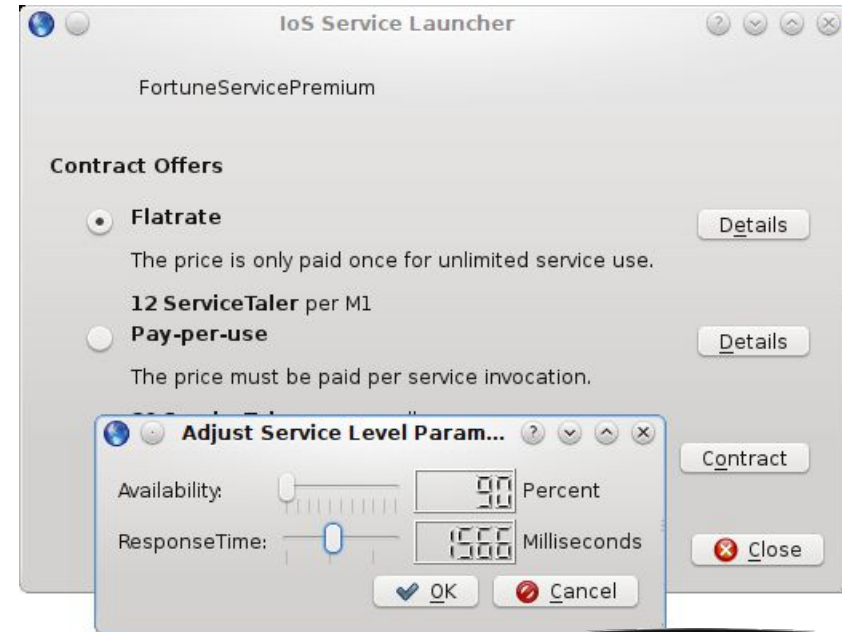
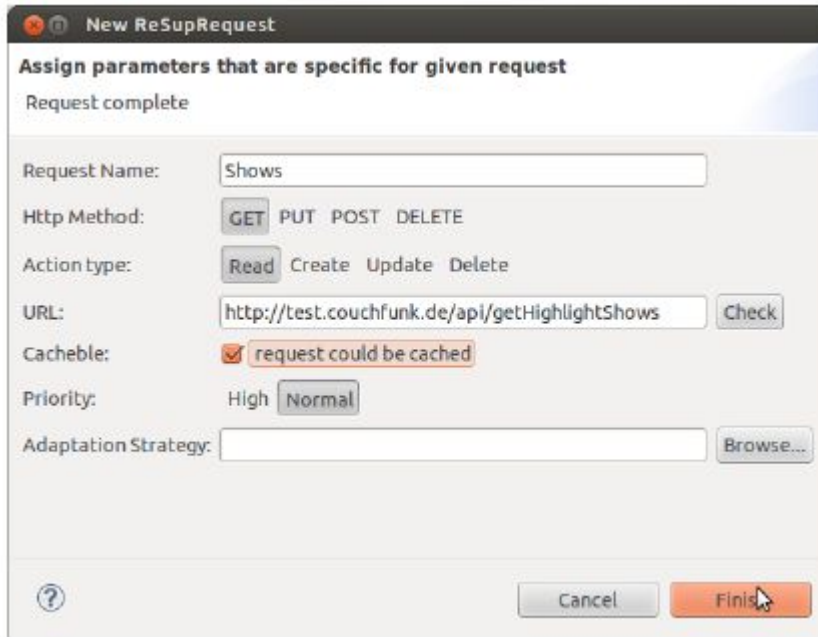
Download:  
[git.orious.org/rusco/rusco/blobs/raw/master/client/selfcontainedfortuneclient.rb](http://git.orious.org/rusco/rusco/blobs/raw/master/client/selfcontainedfortuneclient.rb)

## Service Engineering and Provisioning Toolchain





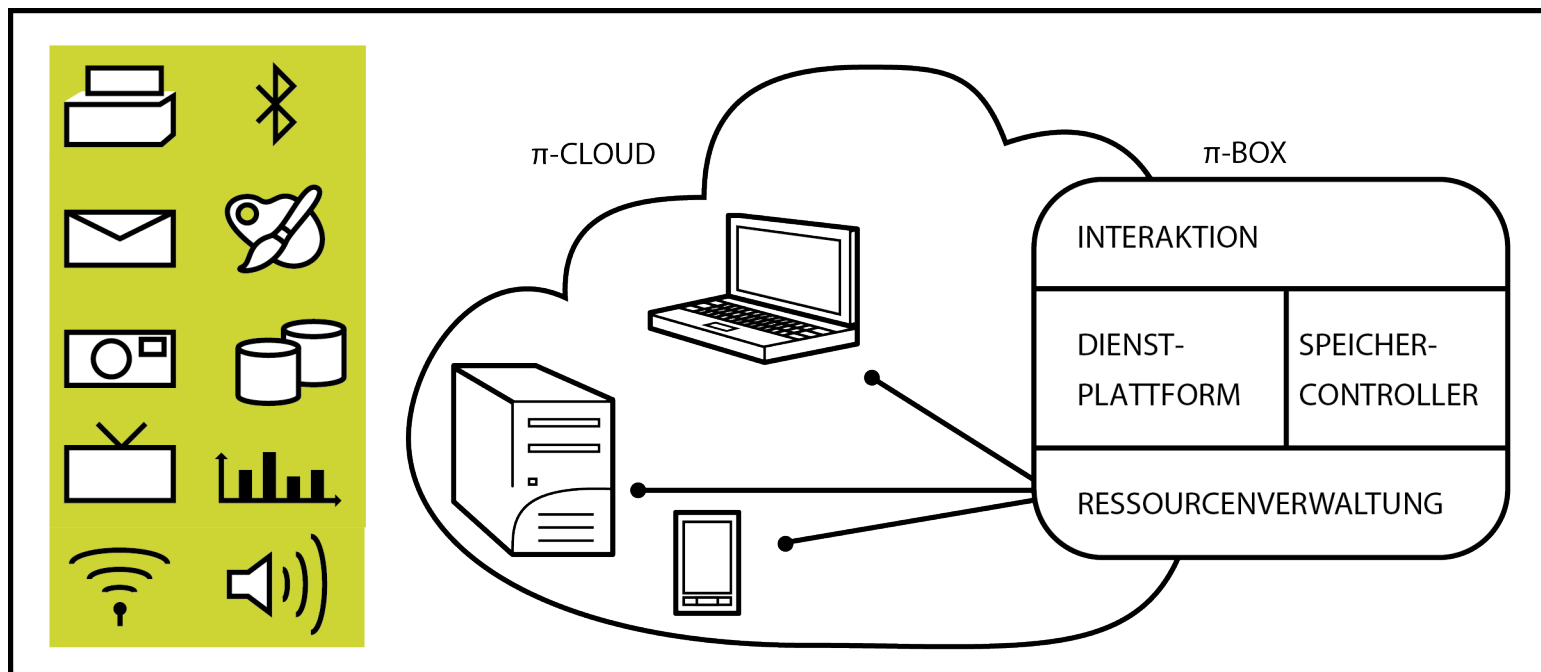
## Service Consumption and Delivery Channels



## Combined Provisioning and Consumption

### Service Ecosystem Interaction Cockpit

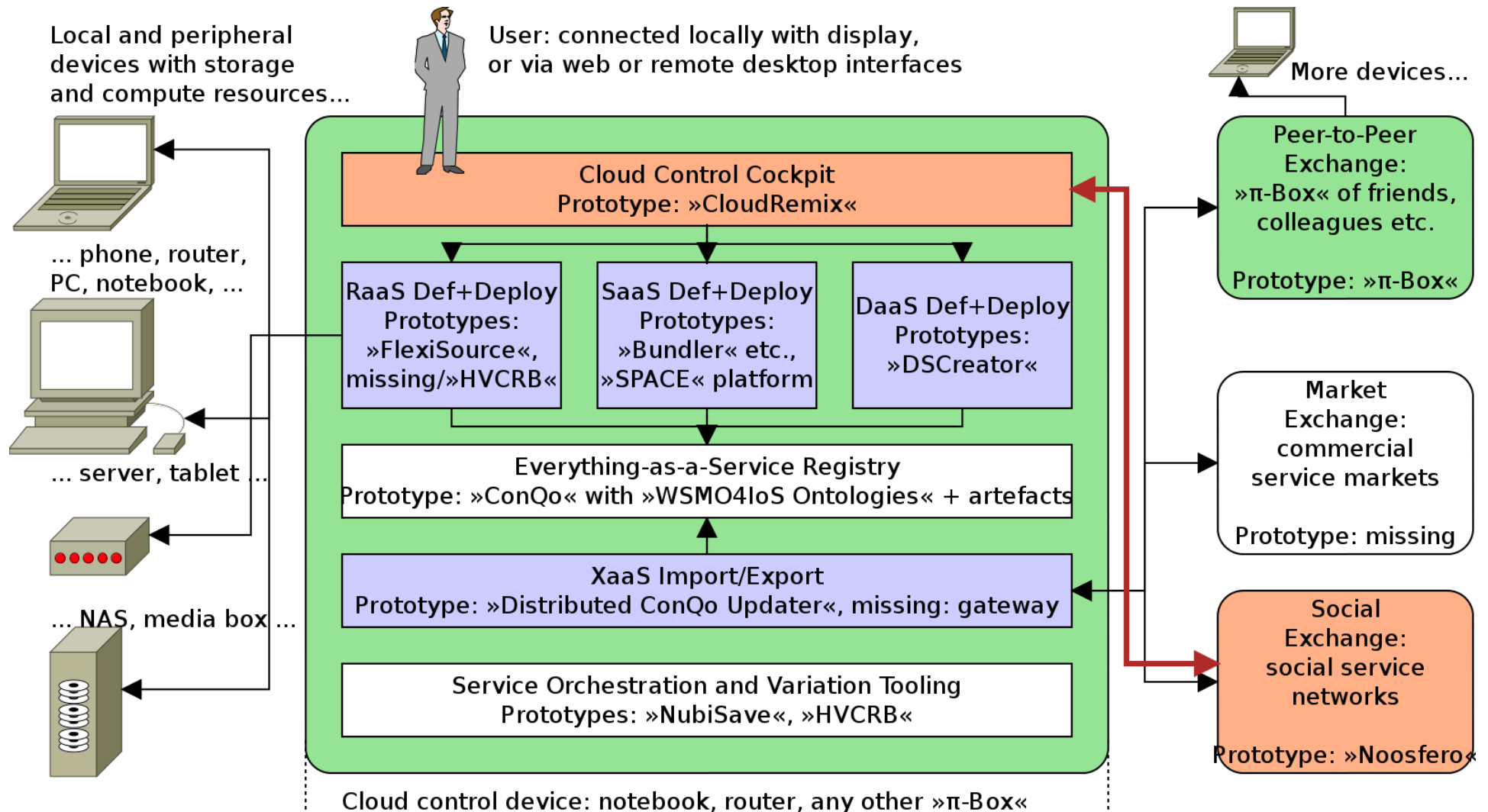
- offer, use, exchange and share services
- service class-specific integration controllers
- client-side autonomic aspects: sign-up and usage assistance
- low-effort provisioning: resources, data





# Combined Provisioning and Consumption

## Implementation as »π-Box« to enable personal clouds



## Unified Hosting, Nested Clouds

### Legend

#### Complex SaaS:

Noosfero

[noosfero.org](http://noosfero.org)

Business social network service (or other scenario)

#### IaaS Stack:

Eucalyptus

[eucalyptus.com](http://eucalyptus.com)

Private cloud stack (or other stacks connected by adapter)

#### Service Management:

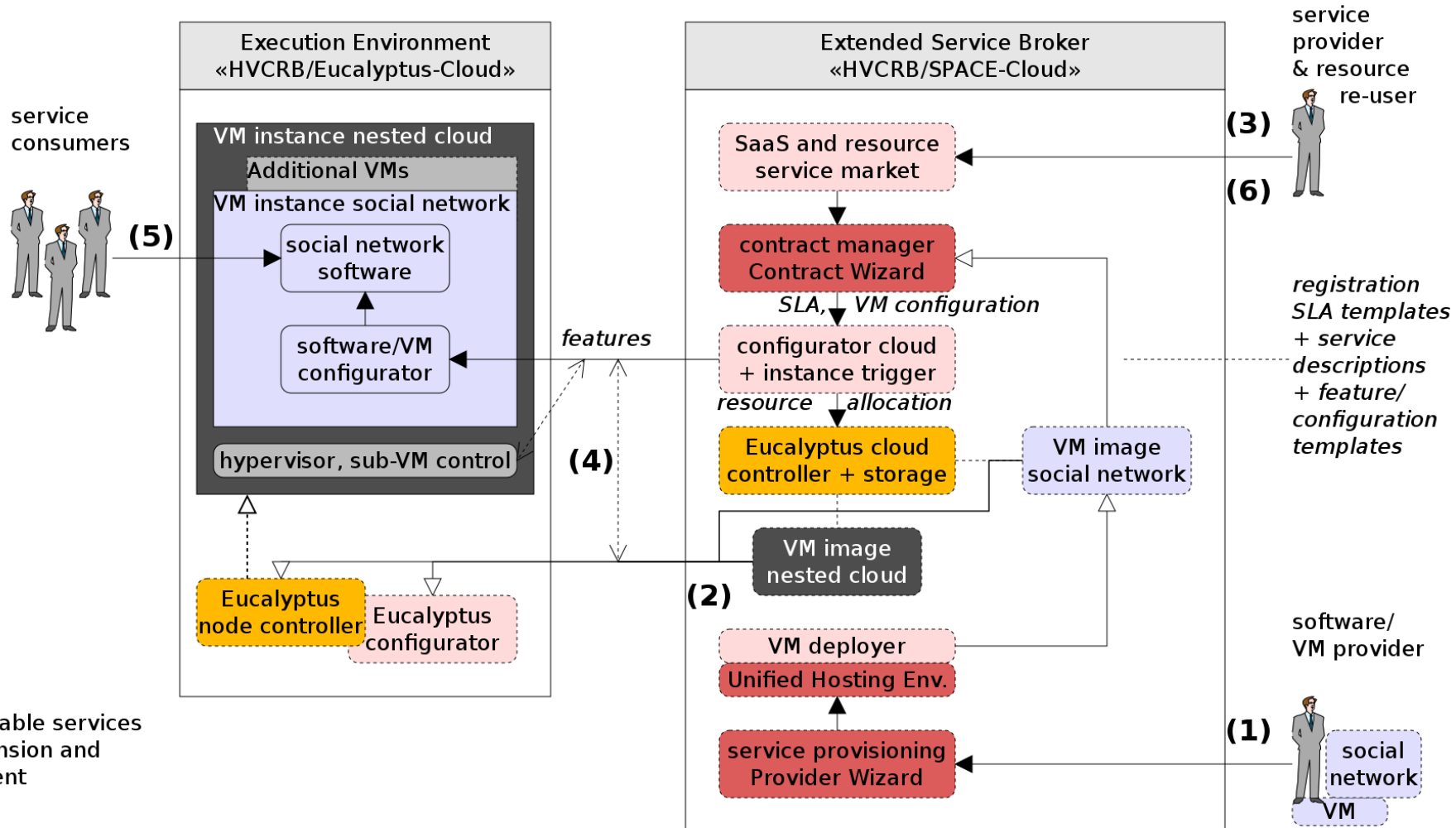
Nested Cloud

SPACE

SPACE extensions

[serviceplatform.org](http://serviceplatform.org)

Base platform for tradeable services with cloud hosting extension and nested cloud environment



## Technology Demonstrator: Micro-Ecosystem

### Flagship Demonstrator »SPACEflight«

- contains scenario-enriched service ecosystem
- runs as VM, remote desktop in the Cloud, USB stick, DVD



**includes Internet of Services desktop integration! (since beta4)**

**includes Cloud Computing extension for complex services! (since beta5)**

**includes service description and contract template engineering tools! (since beta6)**

**includes Hosting Technologies, XaaS Ontologies and self-hosting environment (since beta7)**

**includes a highly-virtualising cloud resource broker with nested clouds and OurGrid integration (new in beta8!)**

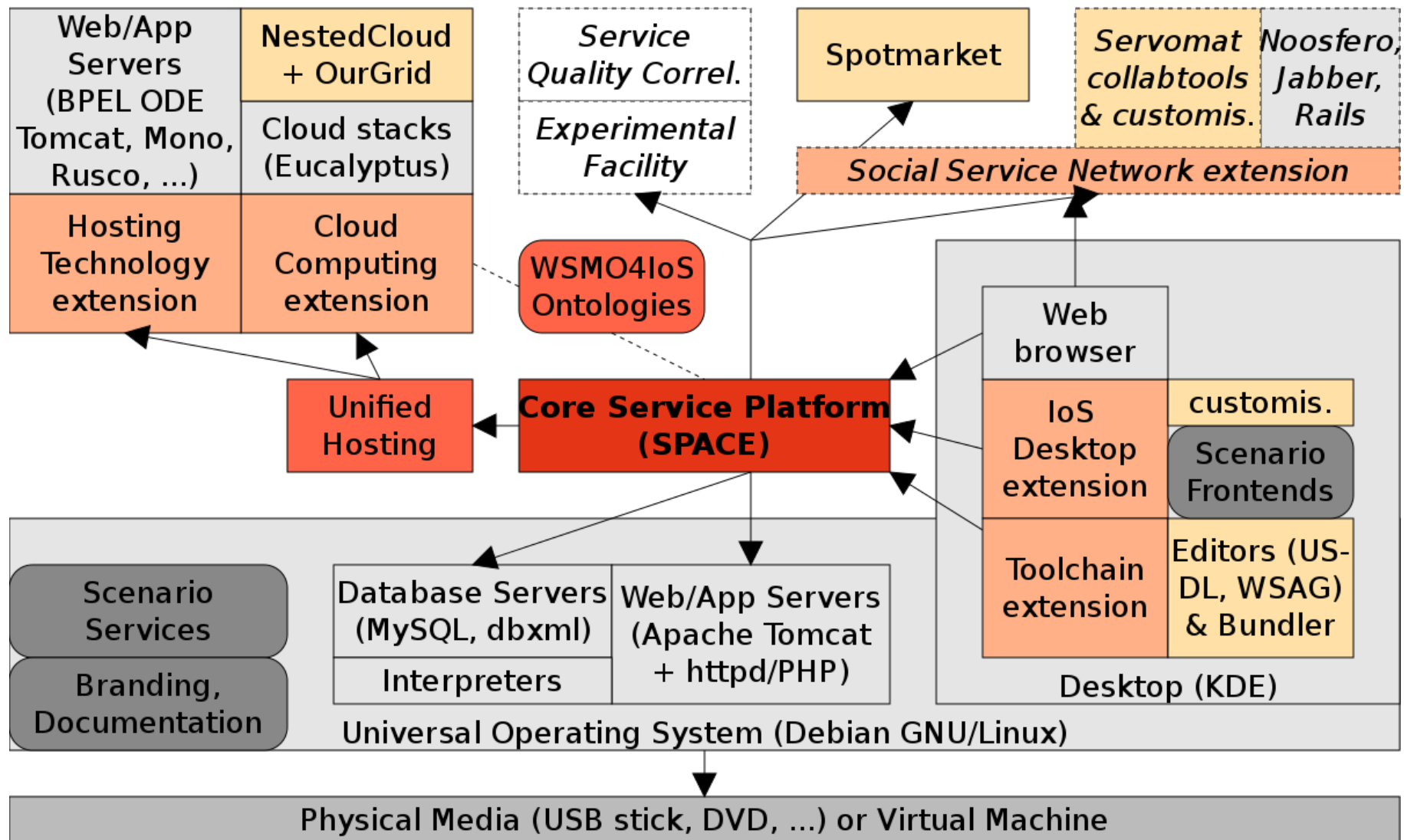
**SPACEflight**  
Live Demonstrator for the Internet of Services

Version 1.0 beta8 «.....»

1.0 beta8  
in April 2013



## SPACEflight Live Demonstrator





# Evaluation and Dissemination



SPACEflight at CINIQ Innovation Centre, Berlin 2010-2013



SPACE-Cloud at CeBIT BMWi booth, Hannover 2011



SPACE at CeBIT SAP booth, Hannover 2012



DAAD Summer Internships, Dresden 2012



Cloud Services at CeBIT FfdZ booth, Hannover 2013

## Service Ecosystems Community Resources

serviceplatform.org  
- Open Source Service Platform Research



Home

Projects

Showcases

Resources

Contact



Welcome to serviceplatform.org! The Open Source Service Platform Research initiative is committed to exploring, hosting and promoting innovative research ideas in the Internet of Services and related topics such as Cloud Computing. We invite researchers everywhere to use our results and to contribute back.

### Highlights

Experience the Internet of Services:  
Download and run the live demonstrator  
SPACEflight natively or virtualised.



Use the Internet of Services: Access  
the Crowdserving social service  
network from your browser.



Services in the Cloud: Try out the built-  
to-order virtual machine execution and  
the resource service descriptions.



### News and Announcements



#### 19. June 2012: SPACEflight 1.0 beta7 released

The latest version of SPACEflight lets you run deploy services easily from the desktop with drag-and-drop into one of the many runtime environments now present in the demonstrator. Services can be more flexibly described thanks to WSMO4IoS ontologies. Especially for cloud computing services, this is demonstrated through several additional scenarios. Find all the details about changes and download links for various media and virtualisation choices at the [SPACEflight versions](#) page.

**Website: [serviceplatform.org](http://serviceplatform.org)**



## Flexible Service Ecosystems: Our perspective

### What's in a service ecosystem

- Service models/ontologies/descriptions
- Services as distributable and tradeable entities
- Platforms and hosting backends
- Markets
- Tools for providers and consumers

### Looking forward to the next challenges!



**Website: [serviceplatform.org](http://serviceplatform.org)**