

Service Oriented Status Monitoring for DIP Middleware (FRA003)

Brice Copy
ICALEPCS 2009
16 October 2009



Plan

- Service Oriented Architecture 101
- SOA for free with Spring
- Rich applications with the Google Web Toolkit
- Case study : The DIP Gateway
- Conclusions

Service Oriented Architecture 101

- Principle : Build software for easier testing and interoperability
- Platform independent and language independent
- Relying on commodity protocols (HTTP, RPC, CORBA, SMTP...)
- Simple but software pattern compliant :
 - Loosely coupled, transactional, composable, discoverable, stateless, secure, scalable
- A good idea all in all



SOA = web services ?

- Then the vendors arrived...
 - Interoperability ? yeah, sort of
- Then the confusion settled...
 - SOA = SOAP right ?
- Then the standards bodies arrived...
 - WS-Federation, WS-Trust, WS-Security, XACML, WS-Discovery, WS-MetadataExchange, UDDI, WS-Coordination, WS-CAF

Where were we ?

- Back to “Easier testing, better interoperability”
- Write code in ideal conditions
 - One end-user, fully trusted, on a single machine
- Add layers until you get the perfect mix of
 - Functionality
 - Scalability
 - Security
 - Performance

Affordable SOA with the Spring Framework

- Spring is an Open Source Java / .NET framework that helps you write simpler and cleaner code
 - Write as if each class was alone in the world
 - Unit test each (important) class
 - Integrate them
 - Add boring but essential functionality afterwards
 - Security, database persistence, transaction support, remoting, logging
 - Deploy where you want
 - Perform integration testing

Remoting

- SOA implies remoting, preferably HTTP based
- You have done the hard work...
- ...Spring opens up the door
 - SOAP service export, on the fly WSDL generation
 - REST
 - XML-RPC
 - DWR (Secure javascript remoting)
- With a minimal account of configuration
- With the possibility to add more layers as needed

Ok, but now we need a face

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1 a



Ok, but now we need a face

Google Maps

Start address e.g., "SFO" route Max planck
End address e.g., "94526" Route Zeeman @46.235938, 6.03
Get Directions

Search the map Find businesses Get directions

Search Results My Maps

Print Send

Avoid highways Get reverse directions

From: Route Max Planck
01630 Saint-Genis-Pouilly, France
Via Route Zeeman
Route Enrico Fermi

Drive: 2.0 km – about 4 mins

1. Head **north** on **Route Max Planck** 0.2 km
2. Slight **right** toward **Route Zeeman** 0.3 km
3. Turn **right** toward **Route Zeeman** 0.4 km
4. Turn **right** at **Route Zeeman** 0.1 km
5. Turn **left** to stay on **Route Zeeman** 62 m
6. Make a **U-turn** 62 m
7. Turn **right** to stay on **Route Zeeman** 0.1 km
8. Turn **left** toward **Route Enrico Fermi** 0.1 km
9. Turn **left** at **Route Enrico Fermi** 0.3 km
10. Sharp **left** at **Route Arago** 0.3 km

To: Route Arago

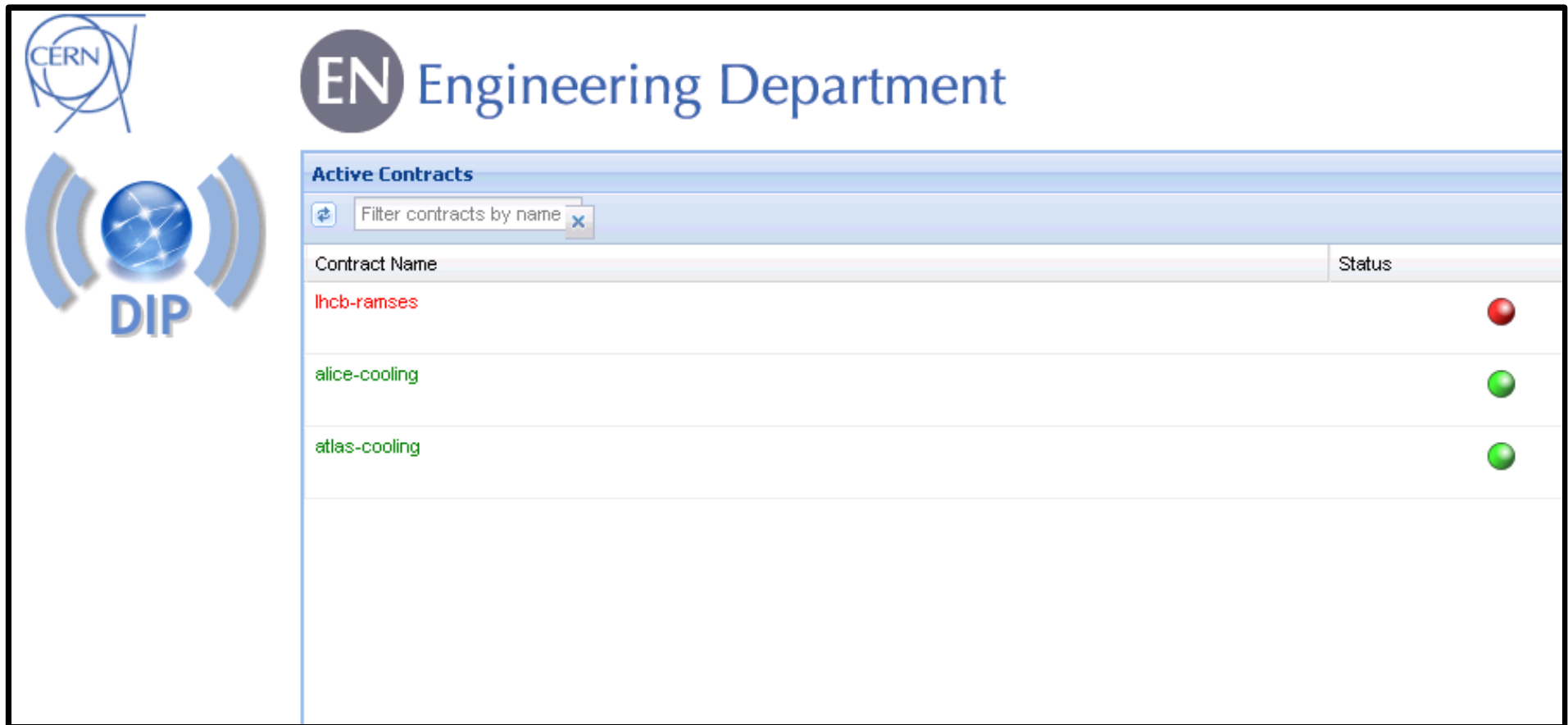
km | miles

Add destination ...

These directions are for planning purposes only. You may find that construction projects, traffic, or other events may cause road conditions to differ from the map results.

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Ok, but now we need a face



EN Engineering Department

Active Contracts

Filter contracts by name

Contract Name	Status
lhcb-ramses	●
alice-cooling	●
atlas-cooling	●

Ok, but now we need a face



EN Engineering Department

Contract

Refresh publications

Publication Name	Status	Value	Timestamp	Quality
└─ dip	NOK	-	-	-
└─ RAMSES	NOK	-	-	-
└─ SRV1	NOK	-	-	-
└─ LHC_B	NOK	-	-	-
PMIL8531	OK	[["PMIL8531", "2009-10-01 17 Thursday, October 01, 2009		GOOD
PMIL8511	OK	[["PMIL8511", "2009-10-01 17 Thursday, October 01, 2009		GOOD
PAXL8521	OK	[["PAXL8521", "2009-10-01 1 Thursday, October 01, 2009		GOOD
PMIL8501	OK	[["PMIL8501", "2009-10-01 17 Thursday, October 01, 2009		GOOD
PAXL8512	OK	[["PAXL8512", "2009-10-01 1 Thursday, October 01, 2009		GOOD
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PMIL8512	OK	[["PMIL8512", "2009-10-01 17 Thursday, October 01, 2009		GOOD
PAXL8522_CabOnly	NOK	-	-	-
PAXL8502_CabOnly	NOK	-	-	-
PAXL8511_CabOnly	NOK	-	-	-

Ok, but now we need a face

- Ever wonder how these applications can be faster than your desktop and serve millions of concurrent users ?
 - They are stateless services (serve and forget)
 - They make your web browser work very hard
- Low bandwidth usage
- Low server load (sockets, CPU time, session weight)
- Enter the Google Web Toolkit

The Toolkit in GWT

- Like any toolkit out there (Windows MFC, QT, Gtk+, Java Swing, Eclipse SWT...)
- Widgets (buttons, textboxes, windows...)
- Event based programming (change events, click events ...)
- So far, still the best approach for writing complex desktop applications

Rich applications with the Google Web Toolkit

- Write your event-based application in Java 5+
- Debug, Profile, Unit Test in your favorite IDE
- Load resources from the classpath (not some URL)
- Hit the “(gwt) COMPILE” button
- And you have a Javascript (and Java-free) web application ready to deploy anywhere, without needing a Java Virtual Machine

Inside GWT

Java Runtime Emulation
Class Library

java.lang.*
java.util.*

GWT
Class Library

DOM
Widgets
Remoting
I18N...

GWT Shell

Jetty Web Server
Firefox / Ms IE
Eclipse SWT

GWT Compiler

Code Generator
Resource Compiler

Case study : DIP Monitoring



EN Engineering Department

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Case study : DIP Monitoring



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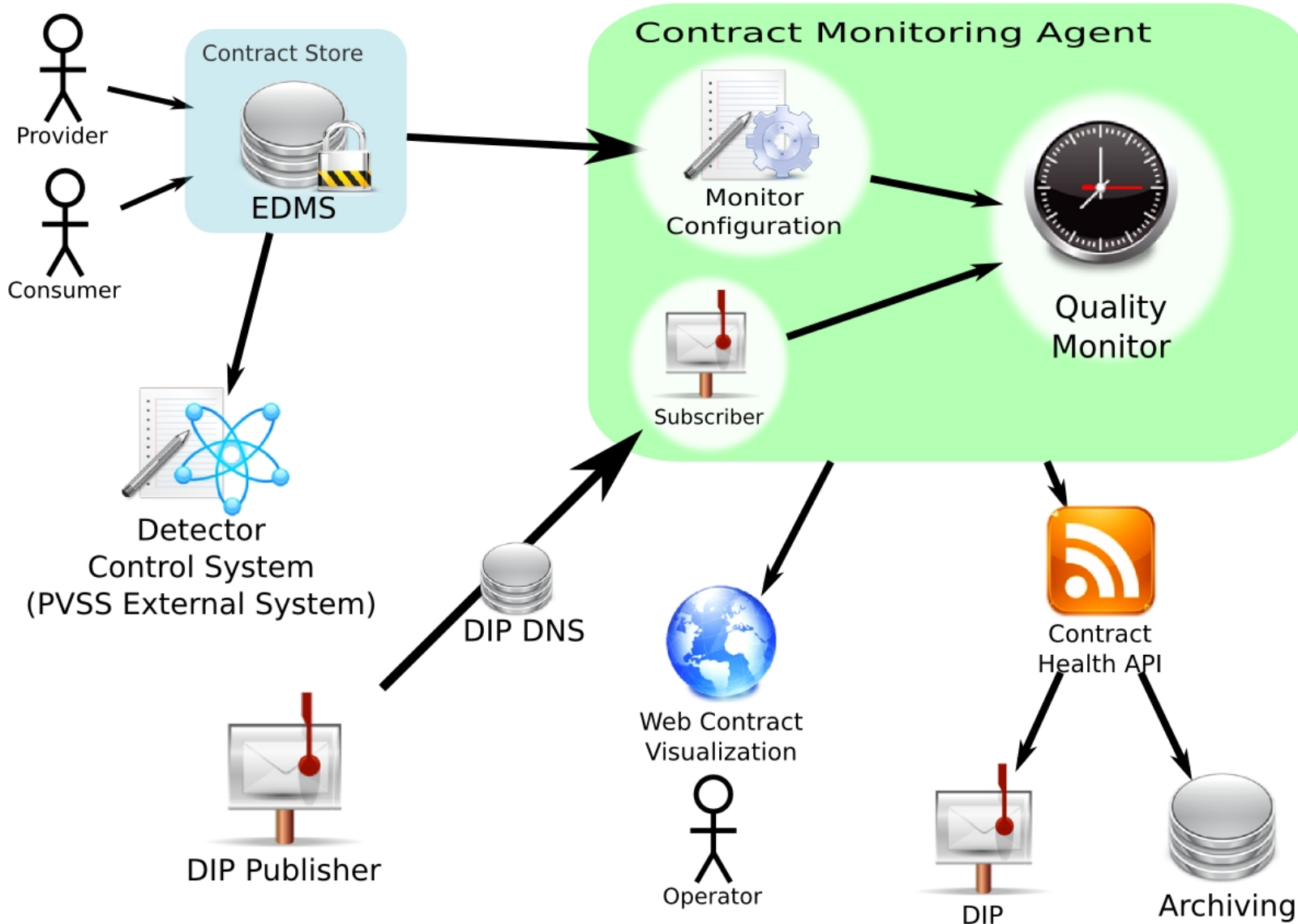
Contract

Refresh publications

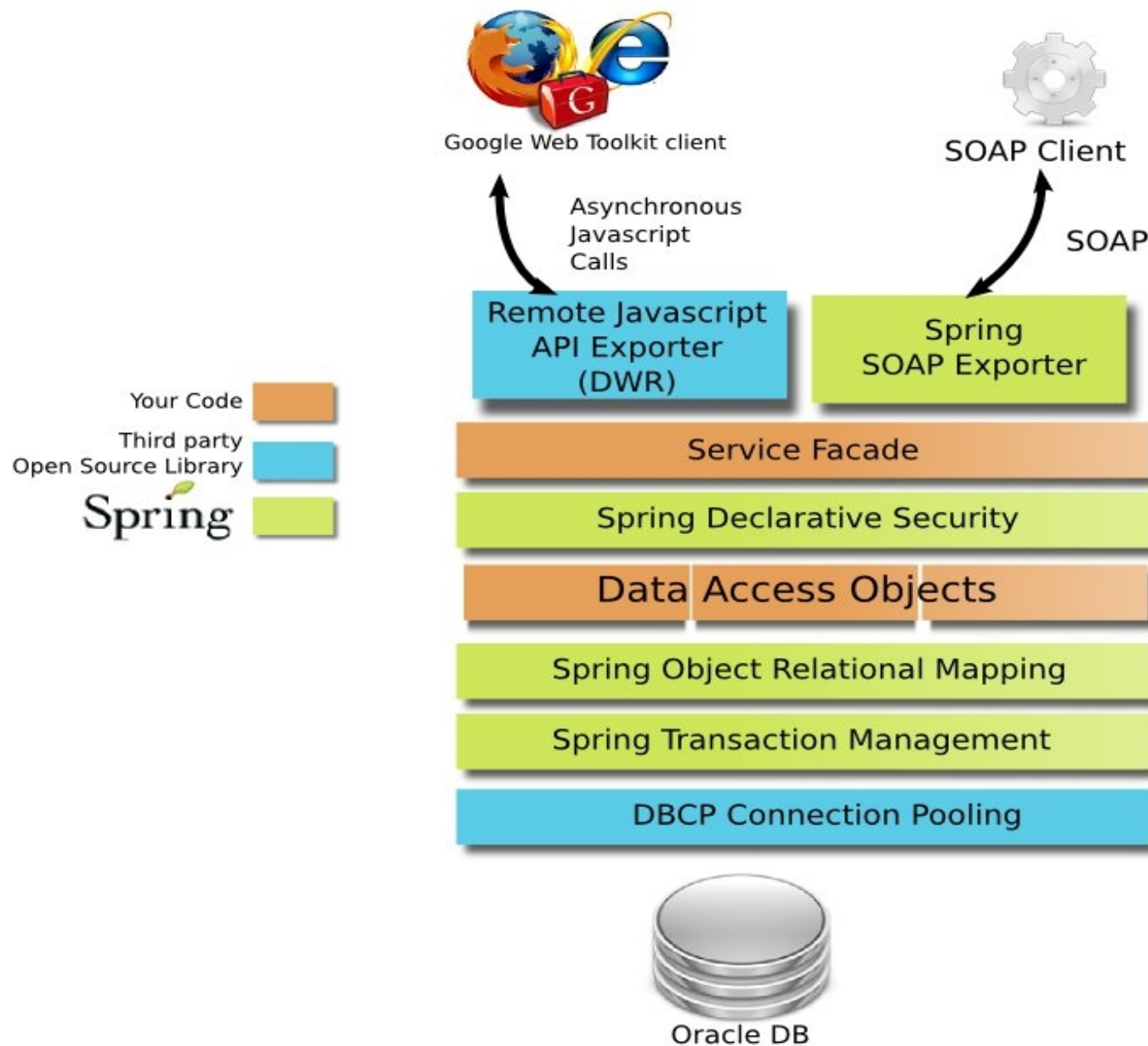
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PAXL8511_CabOnly	NOK	-	-	-



Case study : DIP Monitoring



Case study : DIP Monitoring



Conclusions on SOA

- SOA is a worthwhile approach to improve overall design and code quality
- SOA does not mean out-of-the-box interoperability
- SOA does not need to be complex and you can pick and choose according to your needs
- SOA does not require you to pick one software vendor and stick with it

Conclusions on GWT

- GWT is a great AJAX solution for Java developers
- Scales well for servers, insulates you from Javascript
- Provides a native feel, integrates well with existing HTML based applications
- Does not rely on proprietary plugins, is 100% open source (Apache License)
- Event driven programming is a complex discipline which requires mature tooling, unsuitable for scripting languages such as Javascript

Links

- SOA on Wikipedia
http://en.wikipedia.org/wiki/Service-oriented_architecture
- Home of the Google Web Toolkit
<http://code.google.com/webtoolkit>
- A feature rich, open-source, pure GWT widget library
<http://www.extjs.com/products/gxt/>
- Full details and references in ICALEPCS09 Paper FRA003