



ÉCOLE DES MINES D'ALBI  
C A R M A U X

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# MANAGEMENT TOOL FOR SEMANTIC ANNOTATIONS IN WSDL

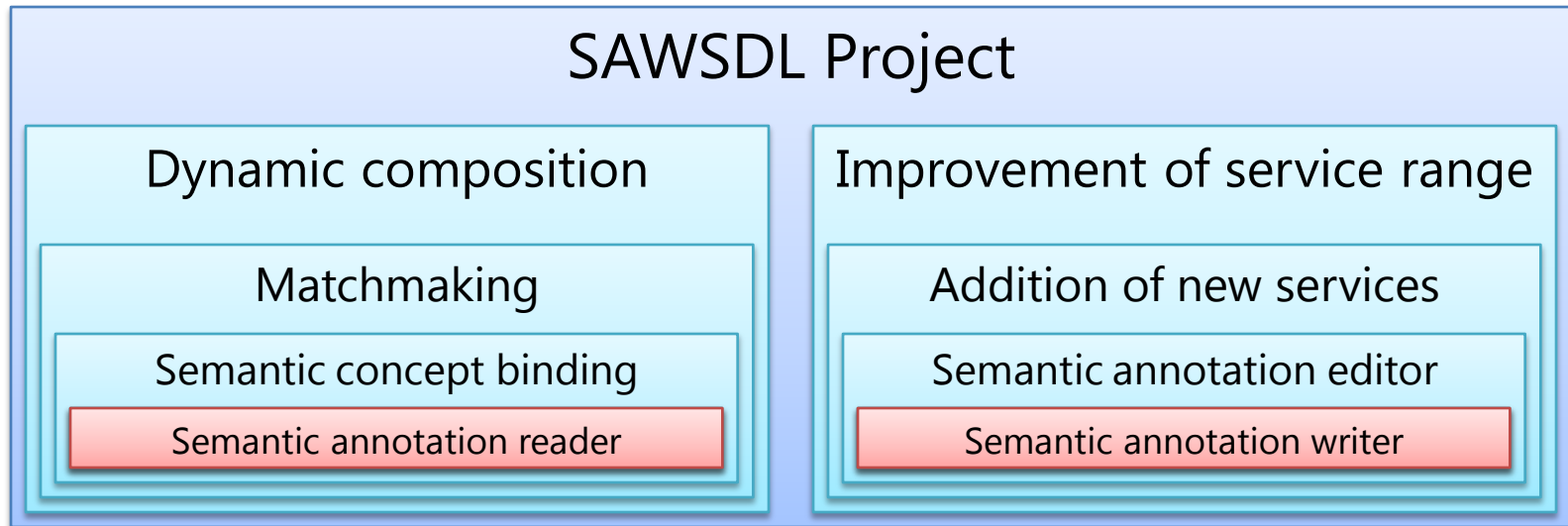
OnTheMove 2009 Workshop

Beyond SAWSDL'09

Authors : Nicolas Boissel-Dallier,  
Jean-Pierre Lorre and Frederick Benaben.

Villamoura, Portugal, 2<sup>nd</sup> of November 2009





➔ Spread of SAWSDL involves existence of a good implementation

- Business needs analysis
- Existing tools comparison
- EasyWSDL presentation
- Performance tests
- Integration in Dragon SOA Governance





## Classical needs

- Respect of W3C standards (WSDL 1.1, 2.0, XML Schema and SAWSDL)
- Short handling time (read & write)
- Write/Create valid WSDL descriptions
- Adaptable to other standards (WSMO-Lite, YASA4WSDL...)

## Our specific needs

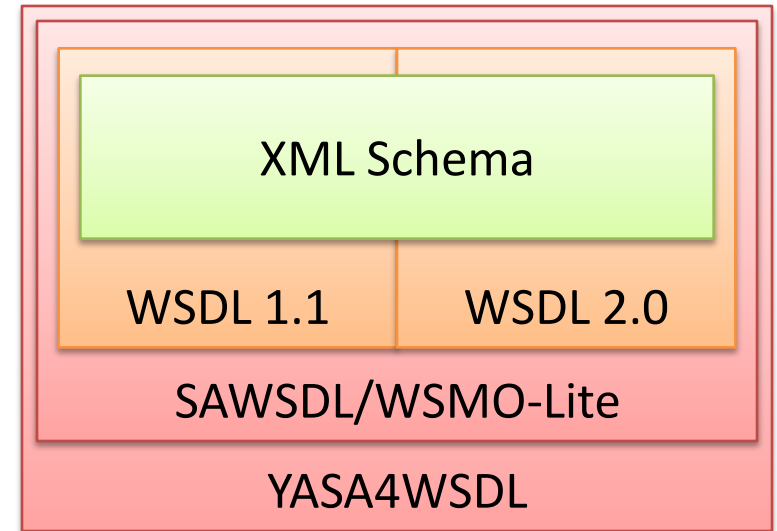
- Java Library
- Permissive license (LGPL or equivalent)





## Based on W3C standards/submissions

- XML Schema
- WSDL
  - 1.1: W3C submission but used in almost all existing system
  - 2.0: W3C standard intended to replace 1.1



## Several WSDL annotation languages

- SAWSDL (W3C)
- WSMO-Lite (SOA4All project)
- YASA4WSDL (ANR Semeuse project)
- ...





	WSDL4J + SAWSDL4J	Woden + Woden4SAWSDL
<b>Development team</b>	IBM + Knoesis	Apache + LSDIS
<b>WSDL version</b>	1.1	2.0
<b>XML Schema</b>	No	Other library (Apache-commons)
<b>Annotations reading</b>	Partial	<b>Full</b>
<b>Annotations writing</b>	Partial	No
<b>License</b>	CPL	<b>Apache 2.0</b>
<b>Uses</b>	-	Axis2, ServiceMix

Do not fit our needs  
→ Development of a new SAWSDL parser





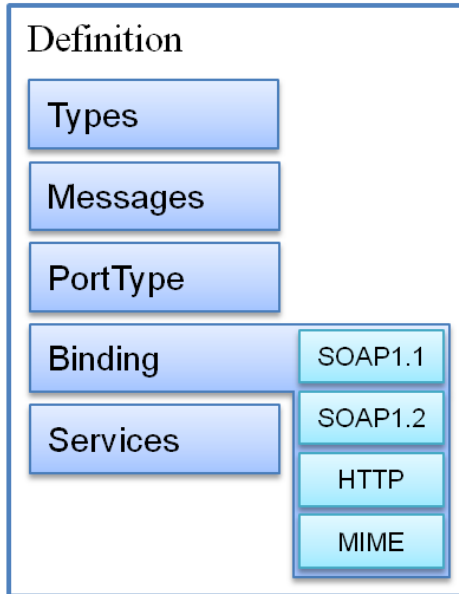
## EasyWSDL features

- Management of WSDL 1.1, 2.0 and XML Schema standards
- BSD License
- Plug-in system
- Uniform API
- Used in:
  - Petals ESB
  - SOA Dragon governance tool
  - Maestro orchestration (BPEL engine)

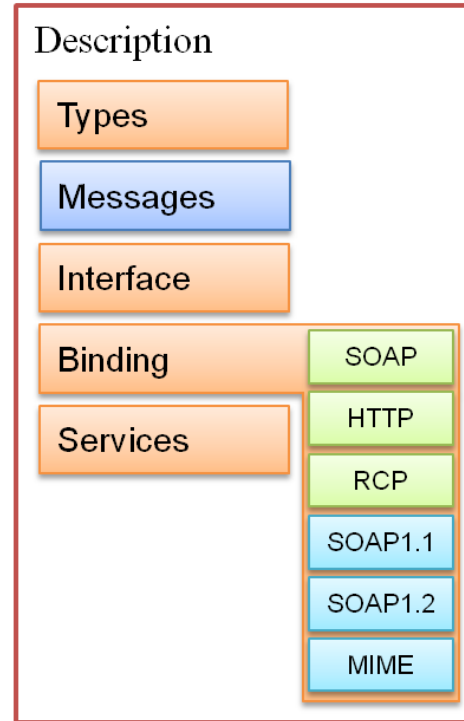




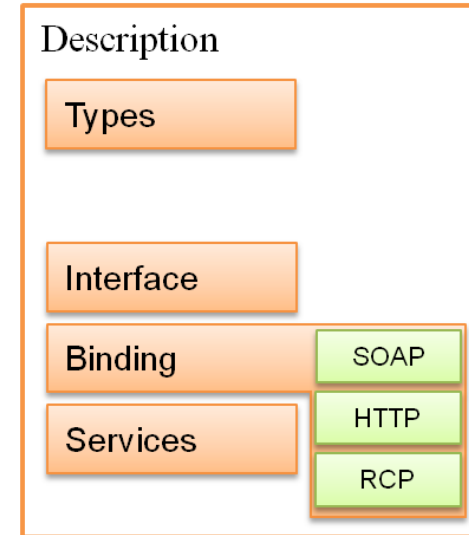
## WSDL 1.1 – WSDL4J API



## EasyWSDL API



## WSDL 2.0 – Woden API



Uniform API – WSDL 2.0 oriented



## Extension system

- Plug-in based architecture
- Three extensions already available:
  - WSDL4BPEL : Add recognition of `partnerLink` tag
  - Complex4WSDL : Enable distributed work
  - SAWSDL : Semantic annotation handling (SAWSDL W3C standard)
- Enable multiple extension use

## SAWSDL Extension

- Enable CRUD on semantic annotations in all WSDL tags
- Already SAWSDL and WSMO-Lite compliant
- Adjustable to other standards (YASA4WSDL)







	<b>WSDL4J + SAWSDL4J</b>	<b>Woden + Woden4SAWSDL</b>	<b>EasyWSDL + extensions</b>
<b>Development team</b>	IBM + Knoesis	Apache + LSDIS	EBM WebSourcing
<b>WSDL version</b>	1.1	2.0	<b>1.1 &amp; 2.0</b>
<b>XML Schema</b>	No	Other library (Apache-commons)	<b>Yes</b>
<b>Annotations reading</b>	Partial	<b>Full</b>	<b>Full</b>
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<b>License</b>	CPL	<b>Apache 2.0</b>	<b>BSD</b>
<b>Uses</b>	-	Axis2, ServiceMix...	Petals, Dragon...





## Tests conditions

- Compared to both existing Java libraries
  - EasyWSDL vs. WSDL4J with WSDL 1.1 definitions
  - EasyWSDL vs. Woden with WSDL 2.0 descriptions
- Large-scale performance test
  - 40.257 WSDL 1.1 from SEEKDA base
  - 38.377 WSDL 2.0 (transformed from WSDL 1.1 files)
  - 894 SAWSDL from SAWSDL-Test Collection
- Noticed points
  - Parsing errors
  - Parsing time
  - Memory leak
- Protocol
  - Only parsing/marshalling for WSDL
  - Parsing, Reading and Result comparison for Semantic Annotations





## WSDL 1.1: WSDL4J vs. EasyWSDL

Java library	WSDL4J	EasyWSDL
Tested files	40257	40257
Errors	51	<b>9</b>
% of success	98.87	<b>99.98</b>
Avg. time (ms)	<b>24</b>	30
Memory leak	Yes	<b>No</b>

## WSDL 2.0: Woden vs. EasyWSDL

Java library	Woden	EasyWSDL
Tested files	38377	38377
Errors	-	-
% of success	-	-
Avg. time (ms)	46	<b>30</b>
Memory leak	<b>No</b>	<b>No</b>

**SAWSDL:** No influence on performances  
Same return results in common reading ranges





## Dragon SOA Governance

- Open source application under LGPL license
- Service registry
  - Publish/Discovery
  - Service metadata management
  - Dependencies
  - Versioning / Lifecycle
- Contract Manager (SLA)
  - Contract production
  - XML export
  - Workflow
- Execution Environment Integration
  - Monitoring agents
  - Modules and probes





## Integration in Dragon

- Add semantic annotations in database (in progress)
- Add semantic information in user interface (in progress)
- Create embedded SAWSDL Editor
  - Semantic Annotation overview
  - Online annotation management

→ Demonstration





## EasyWSDL

- Good alternative to existing solutions
  - Complete functionality range
  - Equivalent performances
- Light lack of maturity
  - Young project (10 months)
  - Used in several projects

## Dragon

- Integration of semantic database
- Development of dynamic composition functionalities





Questions?

