

SOA and Web Services

Stefan Tilkov

innoQ Deutschland GmbH

stefan.tilkov@innoq.com

Contents

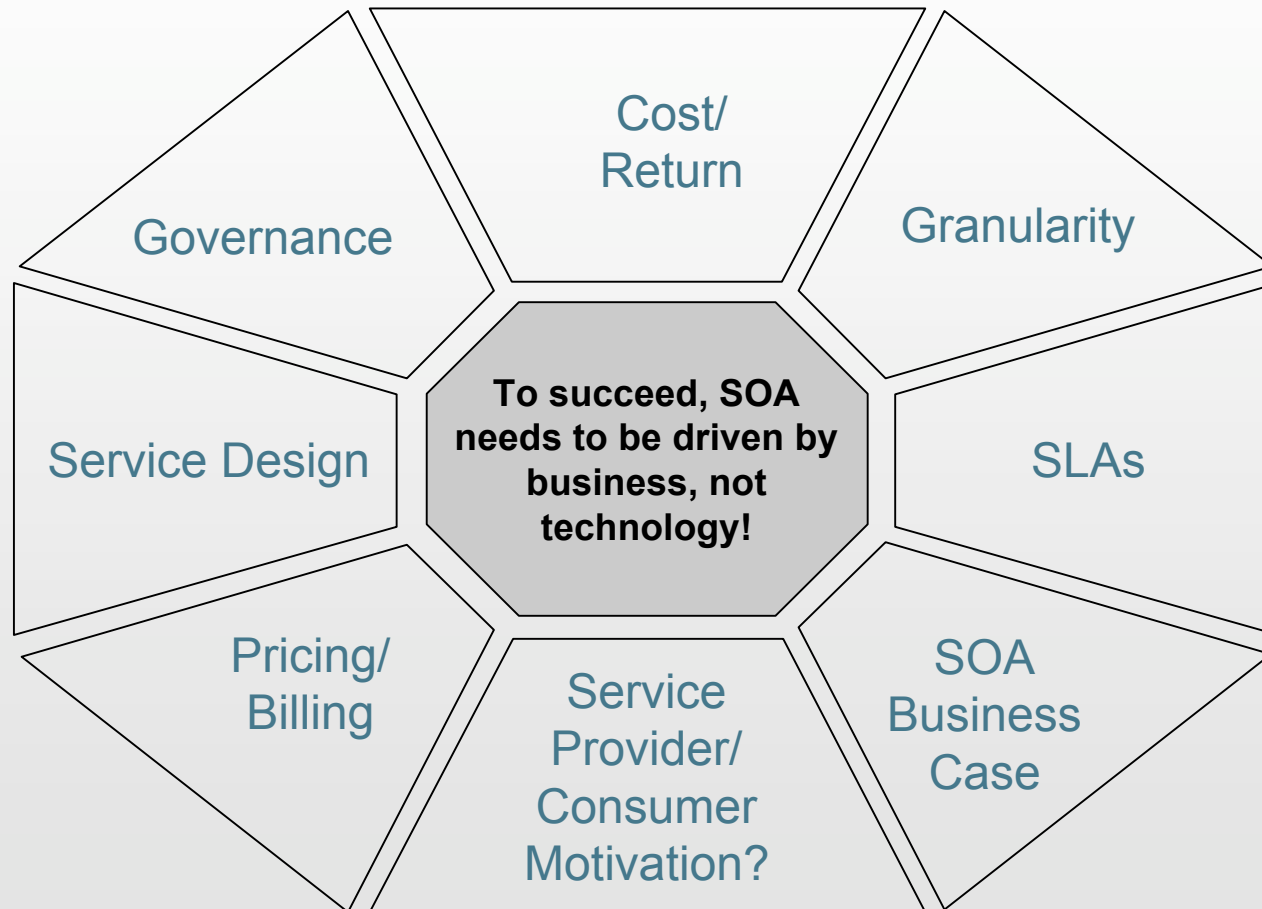
- I. Business vs. Technology
- II. SOA Styles
- III. Web Services Standards: Process and Contributors
- IV. Web Services Standards Overview
- V. Summary

Part I:

Business vs. Technology

Business vs. Technology

SOA comprises many non-technical challenges



Business vs. Technology

Business needs must come first, but you need technology to realize your SOA goals

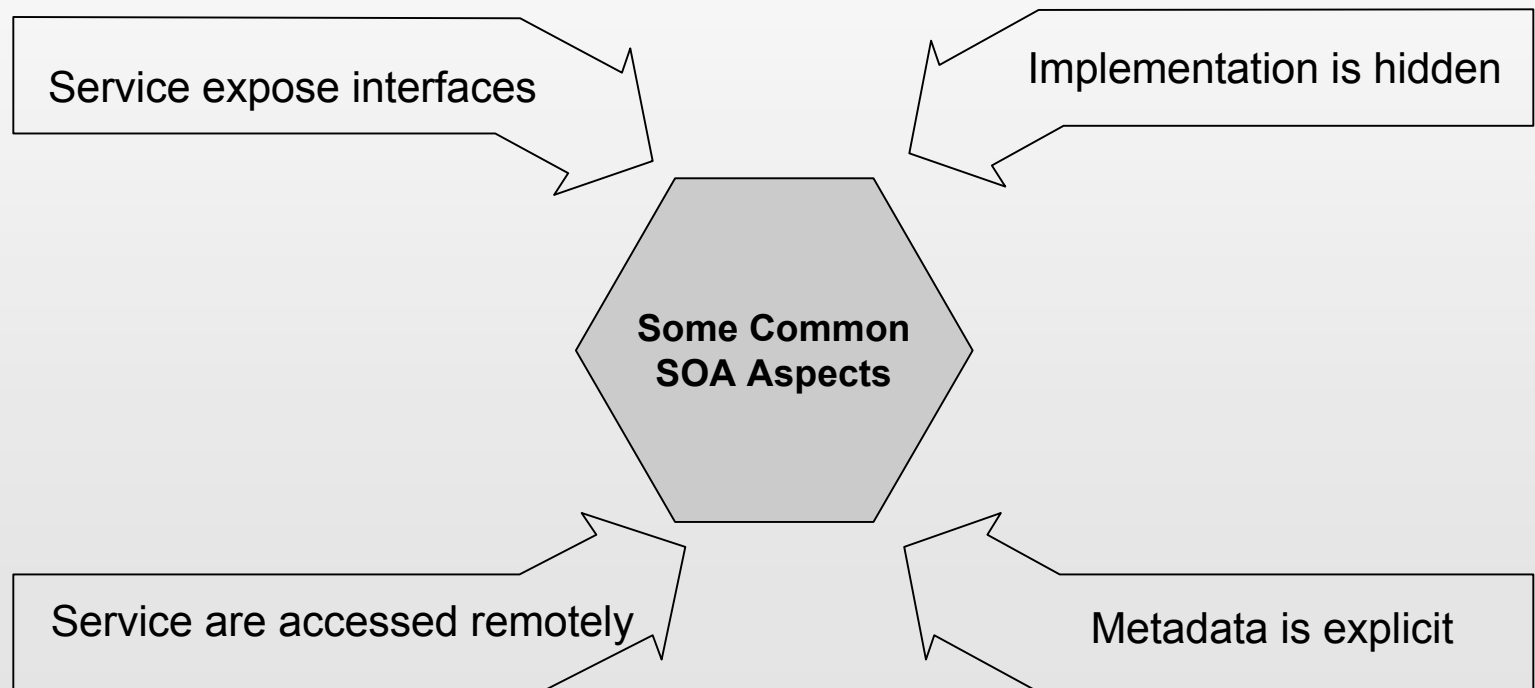
- ❑ Business case needs to come first
- ❑ But Technology is not irrelevant
- ❑ Many claims of doing SOAs for years
- ❑ As usual: a matter of perspective

Part II:

SOA Styles

SOA Definition

SOA has no clear definition, Vendors define it according to their own interests



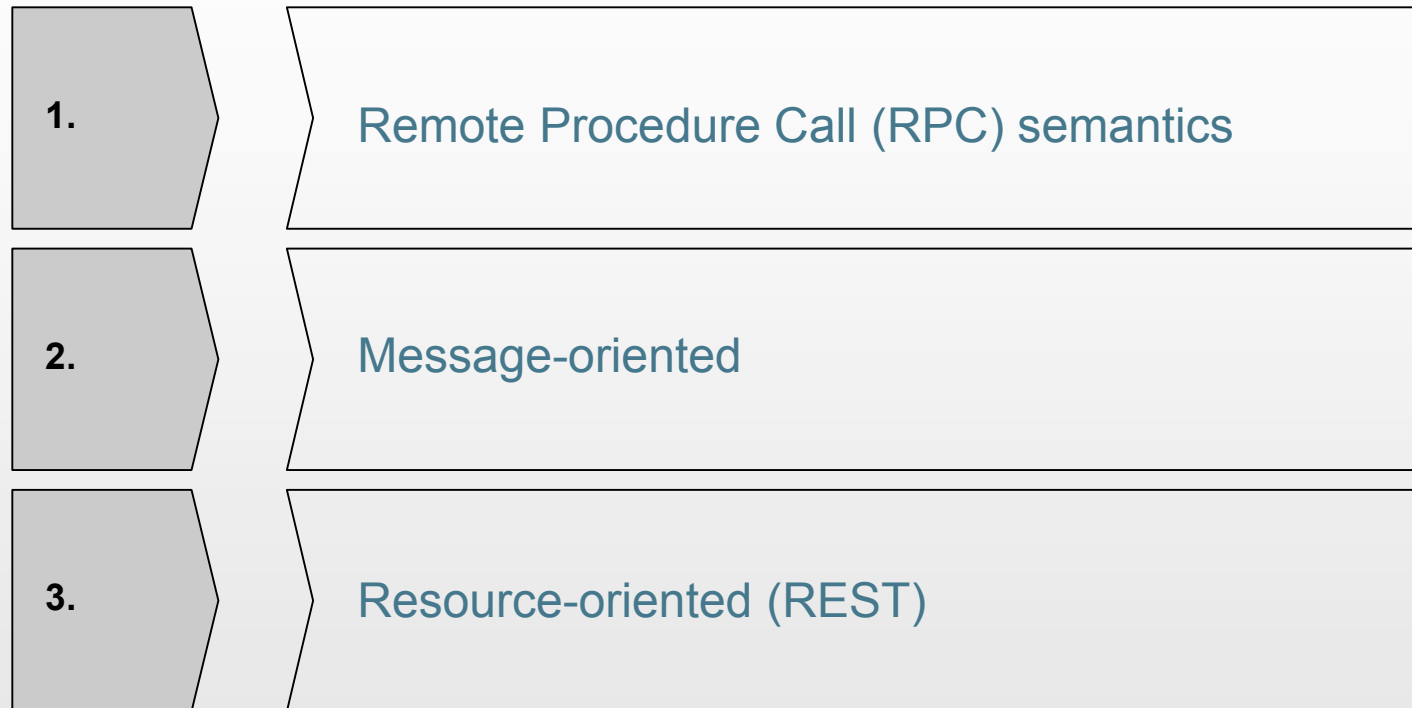
SOA Vendor Styles

Many Players with different background jumped onto the SOA bandwagon:

- ❑ Application Server vendors
- ❑ CORBA vendors
- ❑ EAI vendors
- ❑ One-stop-shops (IBM & MS)
- ❑ Web enthusiasts

SOA Technical Styles

Different technical "styles" of designing SOAs:



None of them "right" or "wrong" - but clearly different !

1. Remote Procedure Call

Rooted in RPC and Distributed Object Technologies (Sun RPC, DCE-RPC, CORBA, DCOM, RMI)

- ❑ Describe remote interfaces using some IDL - WSDL in case of Web services
- ❑ Generate programming language bindings (stubs/skeletons)
- ❑ Web Services technologies (such as WSDL, SOAP, XML) become an implementation detail
- ❑ Mainly synchronous communication
- ❑ "CORBA with angle brackets"

 *Driven by WSDL*

2. Messaging

Roots in MOM-based systems, EDI messaging, more loosely integrated systems

- ❑ Focus not on interface description, but on messages
- ❑ Usually focused on XML and SOAP
- ❑ Agnostic to transport protocols
- ❑ Mainly asynchronous communication
- ❑ Messages as a means of decoupling

 *Driven by XML/SOAP*

3. Resource-oriented (REST)

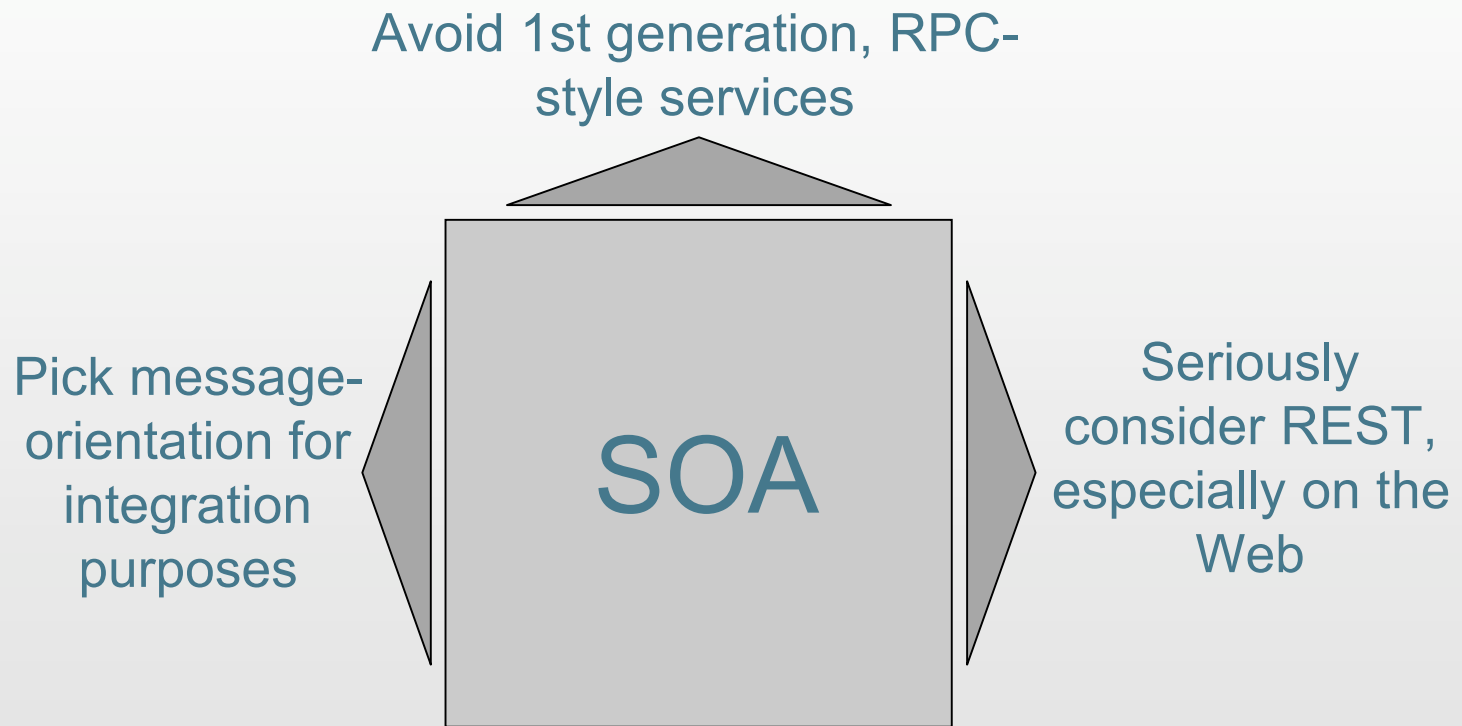
Architecture of the Web -
the only style that merits the "Web" moniker

- Exchange of resource representations e.g. in XML format
- Resources are identified by URIs
- Uniform interface (GET, PUT, POST, DELETE)
- Usually associated with the (intended) use of HTTP as a transfer, not transport protocol
- Synchronous, client/server-style communication

 *Driven by HTTP*

SOA Styles: Summary

Many different things are called "SOA" - what style should you use?



In any case, build on top of standards, not products!

Part III:

Web Services: Standards Process and Contributors

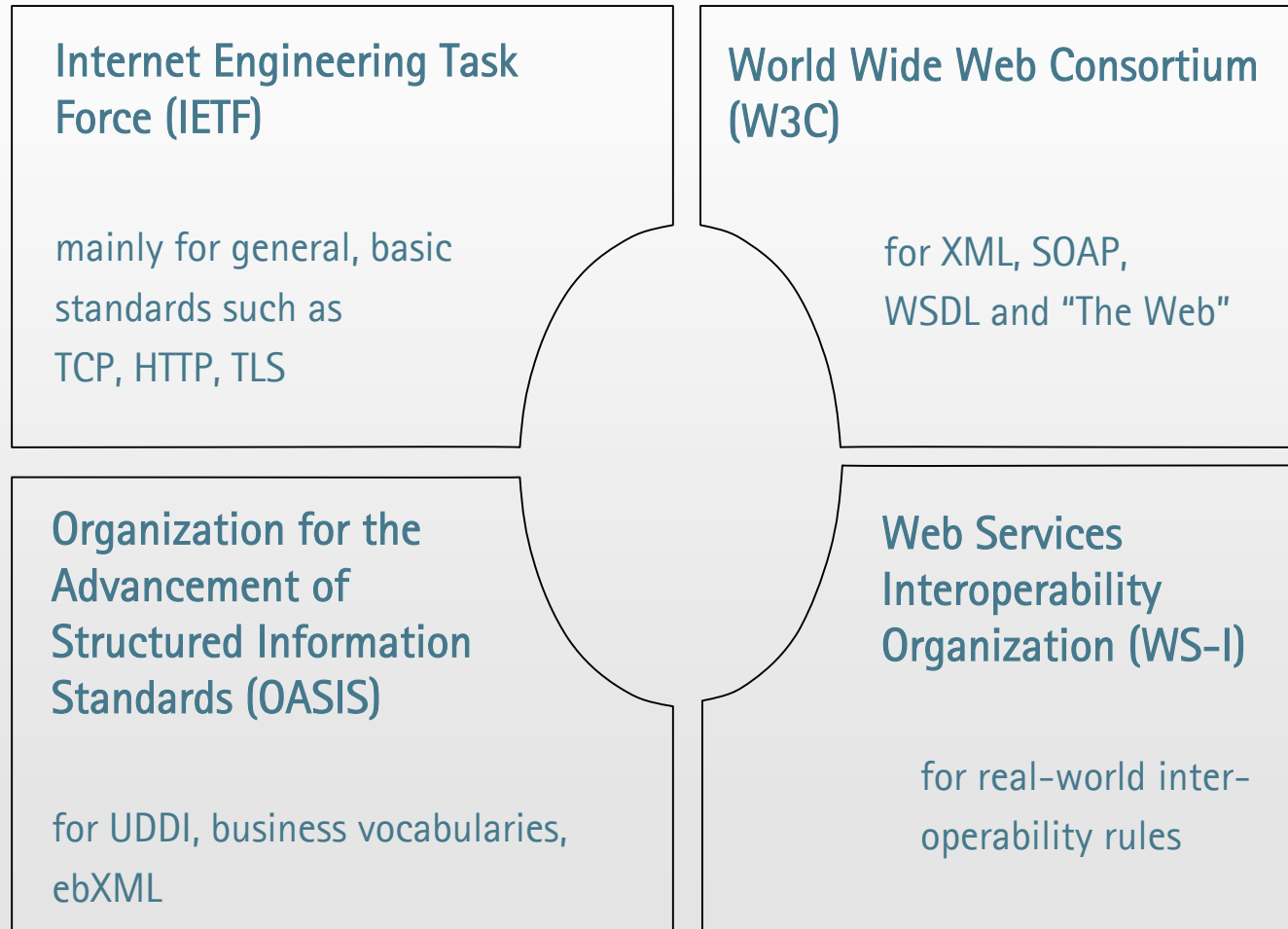
Web Services Standards Process

There is no such thing!

- ❑ Some Web Services "standards" are only "specifications"
- ❑ Many Web Services "standards" are only in working draft or draft status
- ❑ Vendors and - to a lesser degree - standards bodies use standards for political purposes
- ❑ Some topics are covered by multiple competing specifications
- ❑ Although many standards use the common prefix "WS-", that does not mean there's a "WS-Architecture"

Standards Bodies

Who is involved in standardizing Webservices?



Major Vendor Contributors

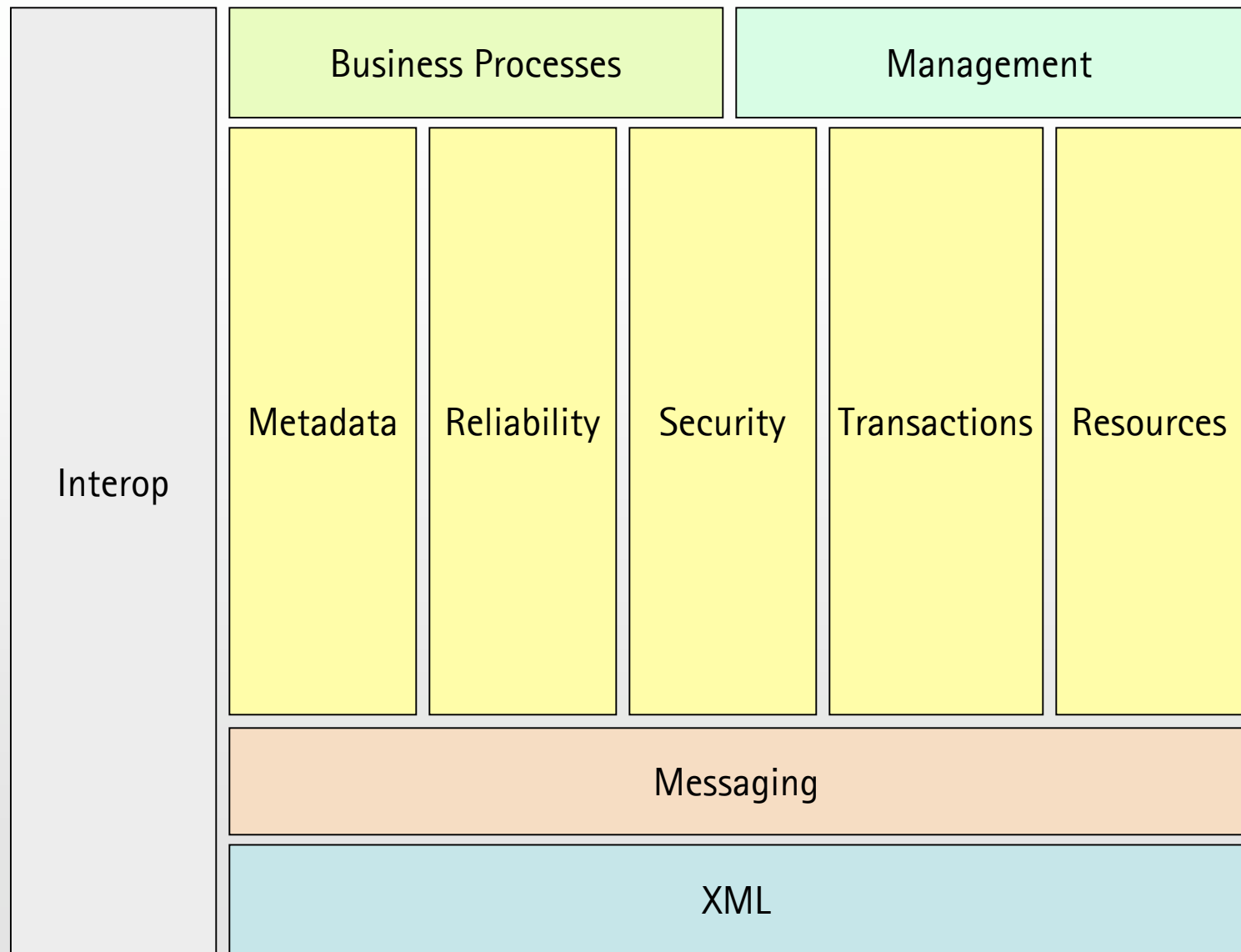
A lot of of the work in Web services standardization is driven by a few large vendors

- Microsoft (.NET)
- IBM (WebSphere)
- BEA (Weblogic)
- Sun (Java)
- SAP
- HP (multiple, mainly management)
- Verisign (security)
- plus a multitude of other companies such as TIBCO, webMethods, CA, Systinet, ...

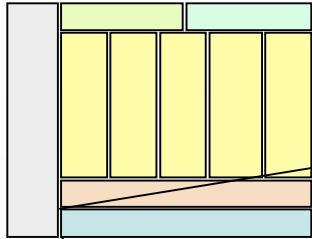
Part IV: Web Services Standards Overview

ATTENTION: BOREDOM WARNING!

Standardization Areas



Standardization Areas

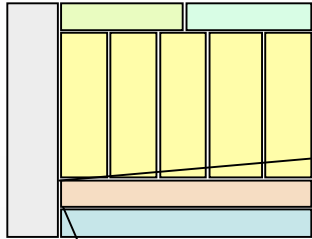


XML

- ❑ XML 1.0 (forget 1.1)
- ❑ XML Namespaces
- ❑ XML Infoset
- ❑ XOP (XML Binary Optimization)
- ❑ XML Schema

Alternatives:
RELAX NG,
Schematron

Standardization Areas

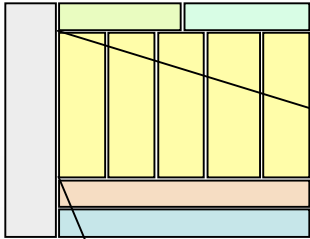


Messaging

- ❑ SOAP 1.1 and 1.2
- ❑ WS-Addressing
- ❑ MTOM (Message Transmission Optimization Mechanism)
- ❑ SOAP with Attachments/MIME
- ❑ WS-Attachments/DIME
- ❑ WS-Eventing
- ❑ WS-Events
- ❑ WS-Notification
- ❑ ...

will be replaced
by MTOM in
the long run

Standardization Areas

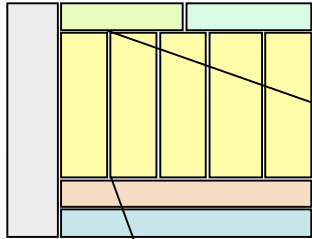


Metadata

- ❑ WSDL (1.1 Note, 2.0 Working Draft)
- ❑ UDDI (v2, v3)
- ❑ WS-Policy
- ❑ WS-Metadata Exchange
- ❑ WS-Discovery

Not as essential
as you think

Standardization Areas

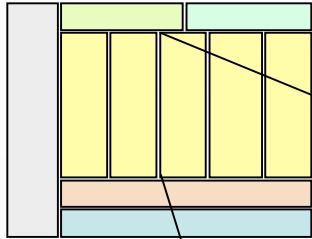


Reliability

- ❑ WS-Reliability
- ❑ WS-ReliableMessaging

convergence
has started

Standardization Areas



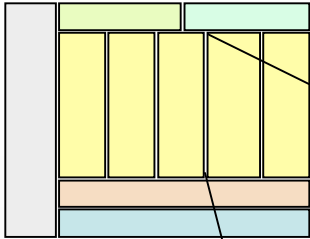
Security

- ❑ TLS (SSL)
- ❑ WS-Security
(uses XML Encryption, XML DSIG)
- ❑ WS-SecurityPolicy
- ❑ WS-SecureConversation
- ❑ WS-Trust
- ❑ WS-Federation

universally supported

universally supposed to be supported

Standardization Areas



Transactions

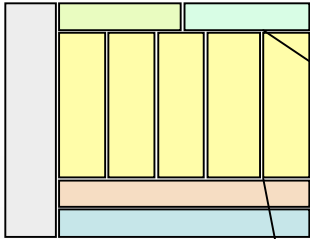
- ❑ WS-Coordination
- ❑ WS-Business Activity
- ❑ WS-Atomic Transaction

- ❑ WS-CAF (WS-Composite Application Framework)
- ❑ WS-CTX (WS-Context)
- ❑ WS-CF (WS-Coordination Framework)
- ❑ WS-TXM (WS-Transaction Management)

Microsoft, IBM,
BEA

OASIS
IONA , Oracle,
Sun

Standardization Areas

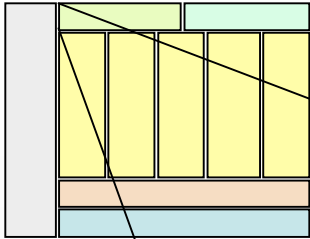


Resources

- ❑ WS-RF (WS-ResourceFramework)
 - ❑ WS-BaseFaults
 - ❑ WS-ServiceGroup)
 - ❑ WS-ResourceProperties
 - ❑ WS-ResourceLifetime

- ❑ WS-Transfer
- ❑ WS-Enumeration

Standardization Areas

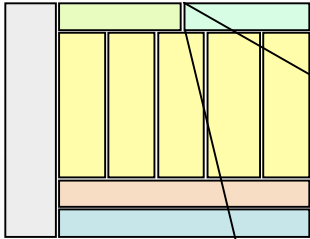


Business Processes

- ❑ BPEL4WS (Business Process Execution Language for Web Services)
- ❑ WS-Choreography
- ❑ CDL4WS (Web Service Choreography Language)
- ❑ BPML
- ❑ WSCI, XLANG, WSFL, ...

BPEL has the most industry support

Standardization Areas



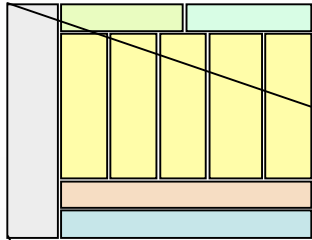
Management

- ❑ WSDM (Web Services Distributed Management)
- ❑ MUWS (Management Using Web Services)
- ❑ MOWS (Management Of Web Services)

- ❑ WS-Management

Dependency on non-final standards

Standardization Areas



Interoperability Issues

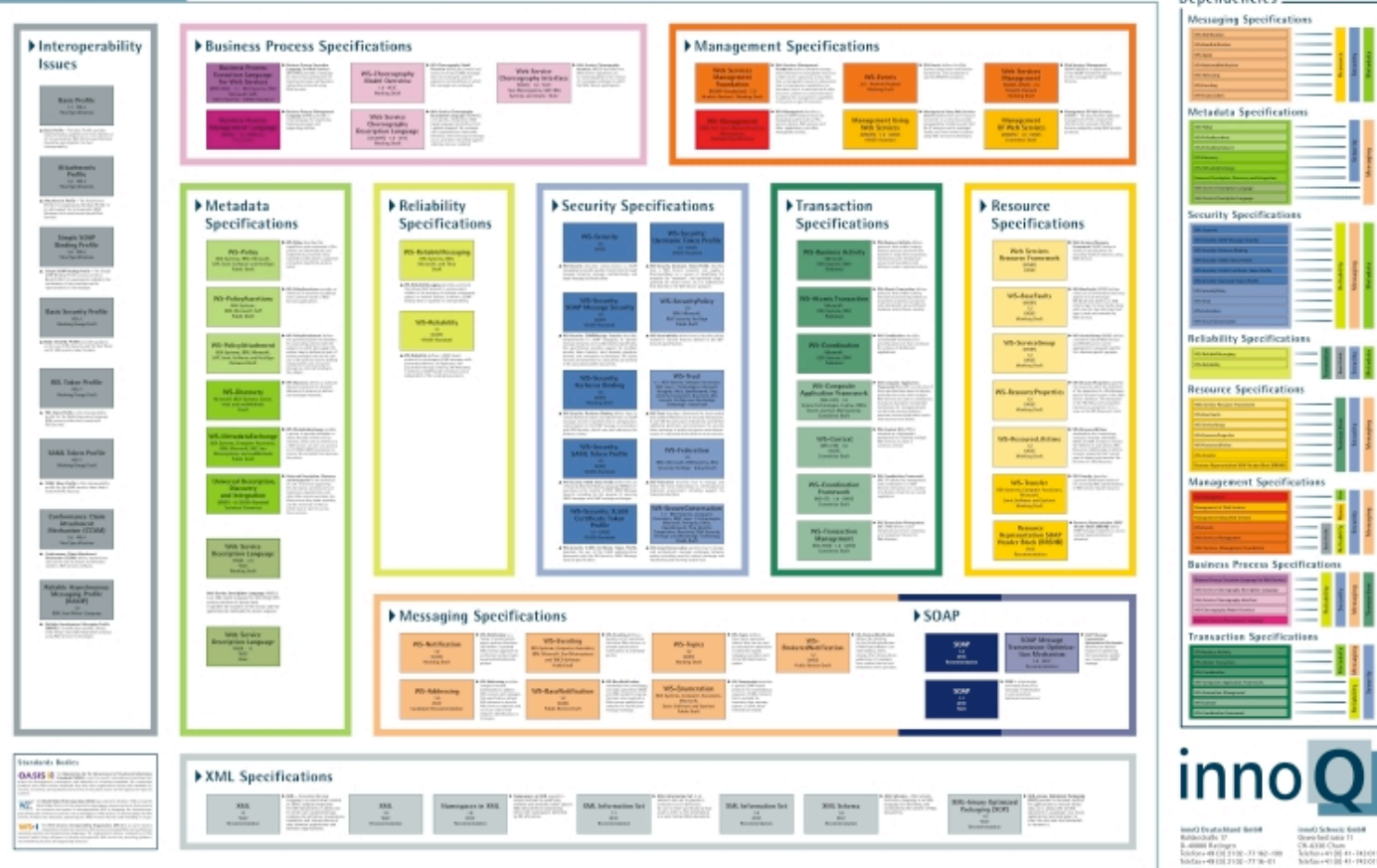
- ❑ Basic Profile
- ❑ Simple SOAP Binding Profile
- ❑ Attachments Profile
- ❑ Basic Security Profile

- ❑ Reliable Asynchronous Messaging Profile (RAMP)

WS-I

IBM, Ford

Web Services Standards



Webseite 2.0 - September 2005

<http://www.innoq.com/soa/ws-standards/poster>

Web Services Standards: Now what?

There is a huge number of specifications, standards and documents that aim to define Web services functionality

Standards will evolve,
merge,
or become irrelevant

Standards alone
don't buy you
anything if nobody
else supports them

Even standards
that die contain
value and ideas

Safe bets and *likely winners*

Interop Basic Profile Security Profile SOAP Binding <i>RAMP</i>	Business Processes BPEL4WS		Management		
	Metadata	Reliability	Security	Transactions	Resources
	WSDL 1.1 (2.0 maybe later) UDDI (WS-Policy)	<i>WS-ReliableMessaging</i>	TLS/SSL WS-Security	<i>WS-Coordination</i>	REST
	Messaging		SOAP 1.1/1.2 + HTTP/HTTPS WS-Addressing <i>MTOM</i>		
	XML		XML Schema XML 1.0 <i>XOP</i>		

Summary

1.

While business needs must come first, technology is relevant

2.

There's more than one way to do SOA

3.

You *can* and you *should* build your SOA on Web services standards

4.

Be careful to pick the winners :-)

Questions?

Contact Information

innoQ Deutschland GmbH
Halskestraße 17
D-40880 Ratingen
Tel +49 2102 77 1620
Fax +49 2102 77 1601

innoQ Schweiz GmbH
Gewerbestrasse 11
CH-6330 Cham
Tel +41 41 743 01 11
Fax +41 41 743 01 19

Web Sites

innoQ	www.innoq.com
WS-Standards	www.innoq.com/soa/ws-standards
iQgen	www.innoq.com/iqgen
Weblog	www.innoq.com/blog/st/