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Creating a Lingua Franca for the Web out of SOAP

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Outline

- Technology Today
- Interoperability and Standardisation
- Timelines and Roadmaps
- Technology Tomorrow

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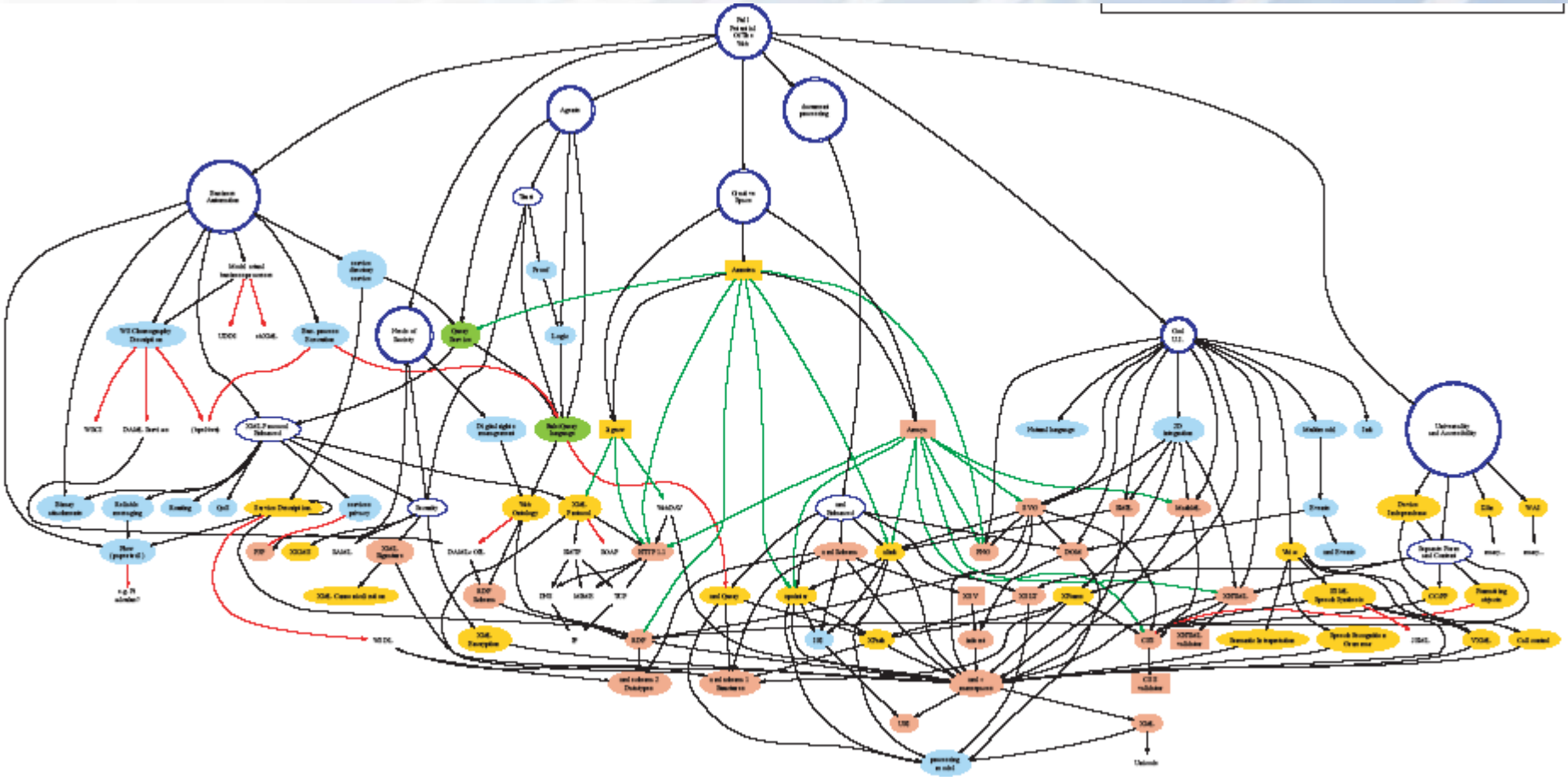
W3C Roadmap for the Web



Tim Berners-Lee
W3C Technology Roadmap Date: 2003/05/12

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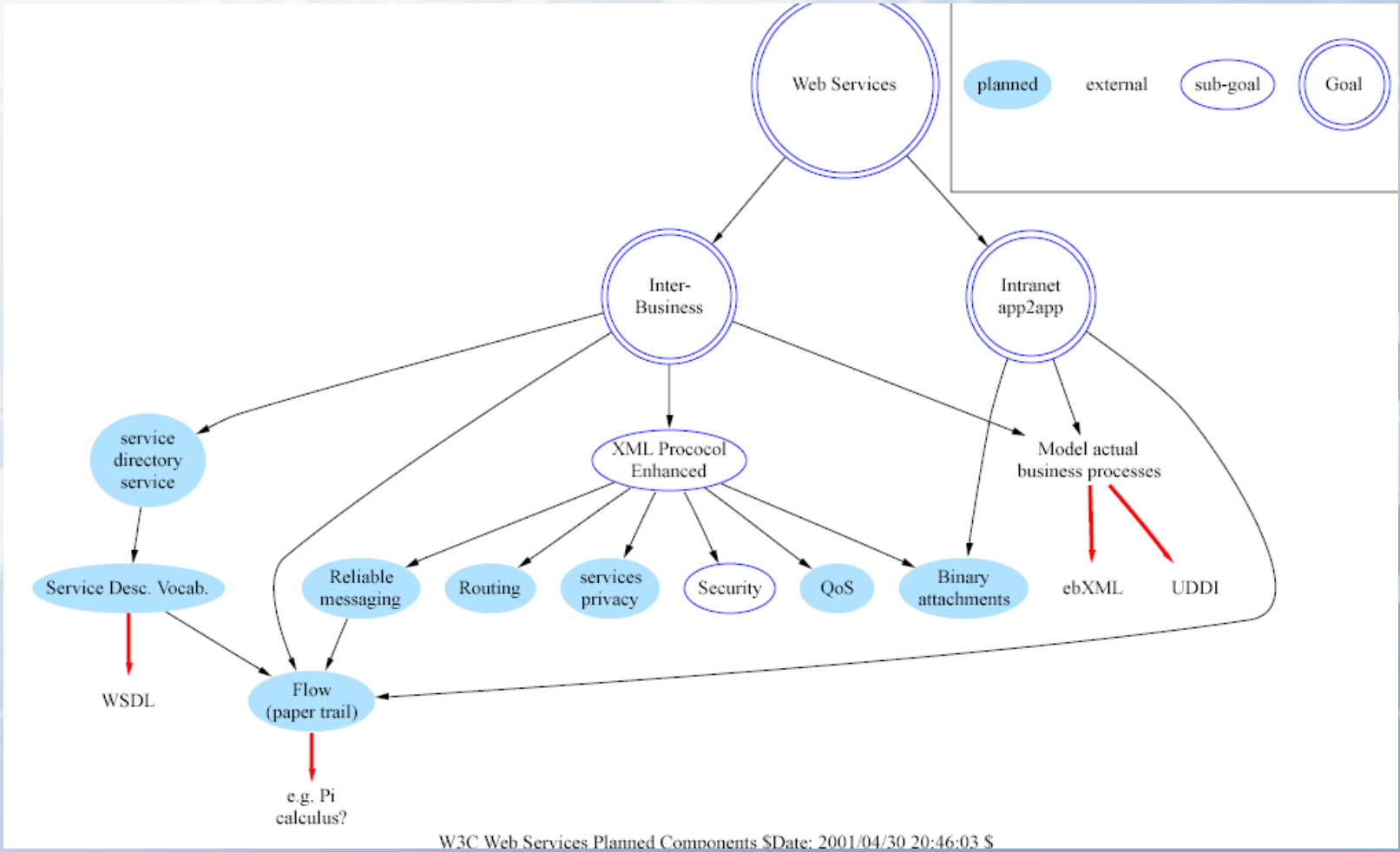
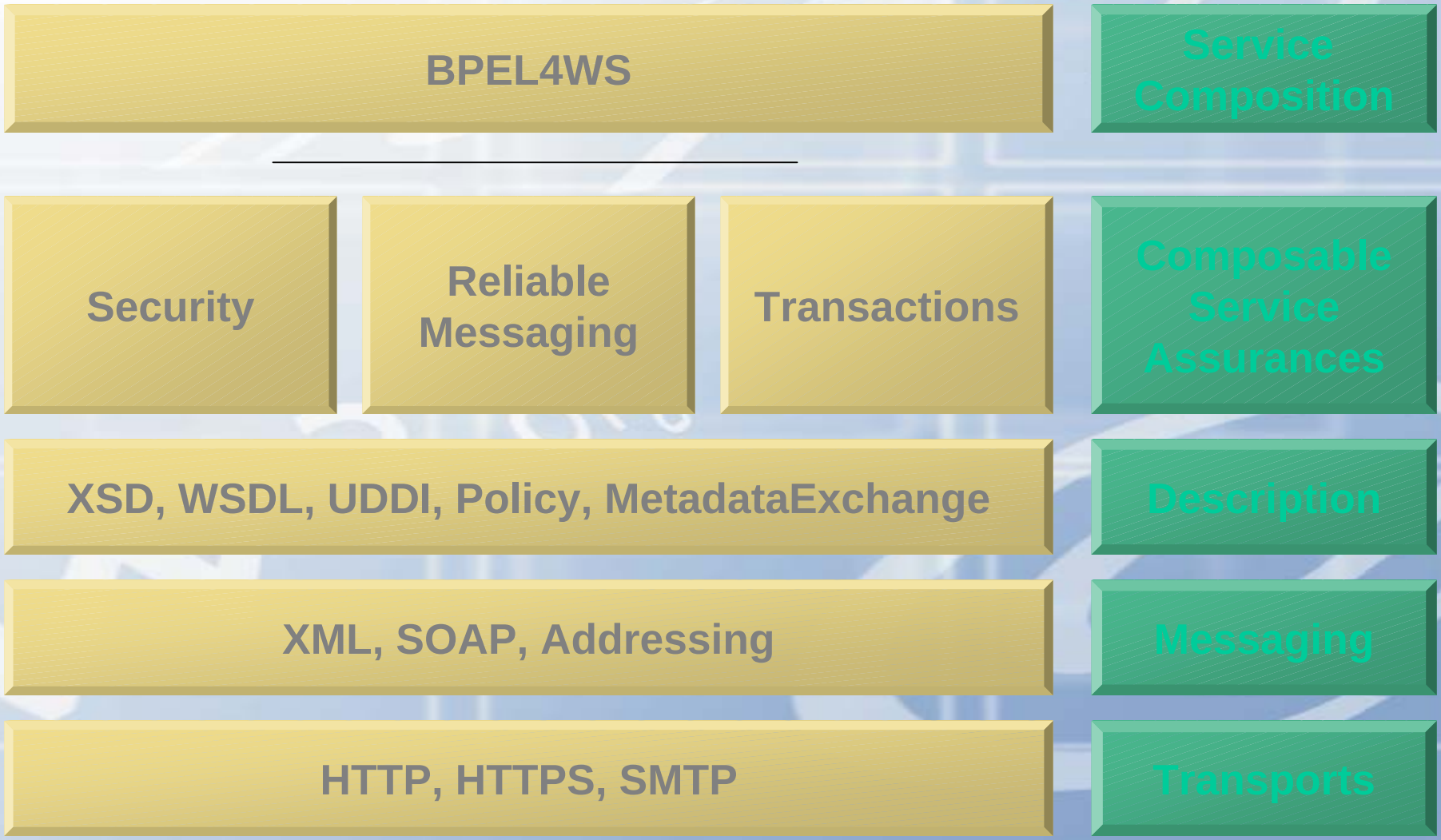
W3C Web Services Roadmap April 2001

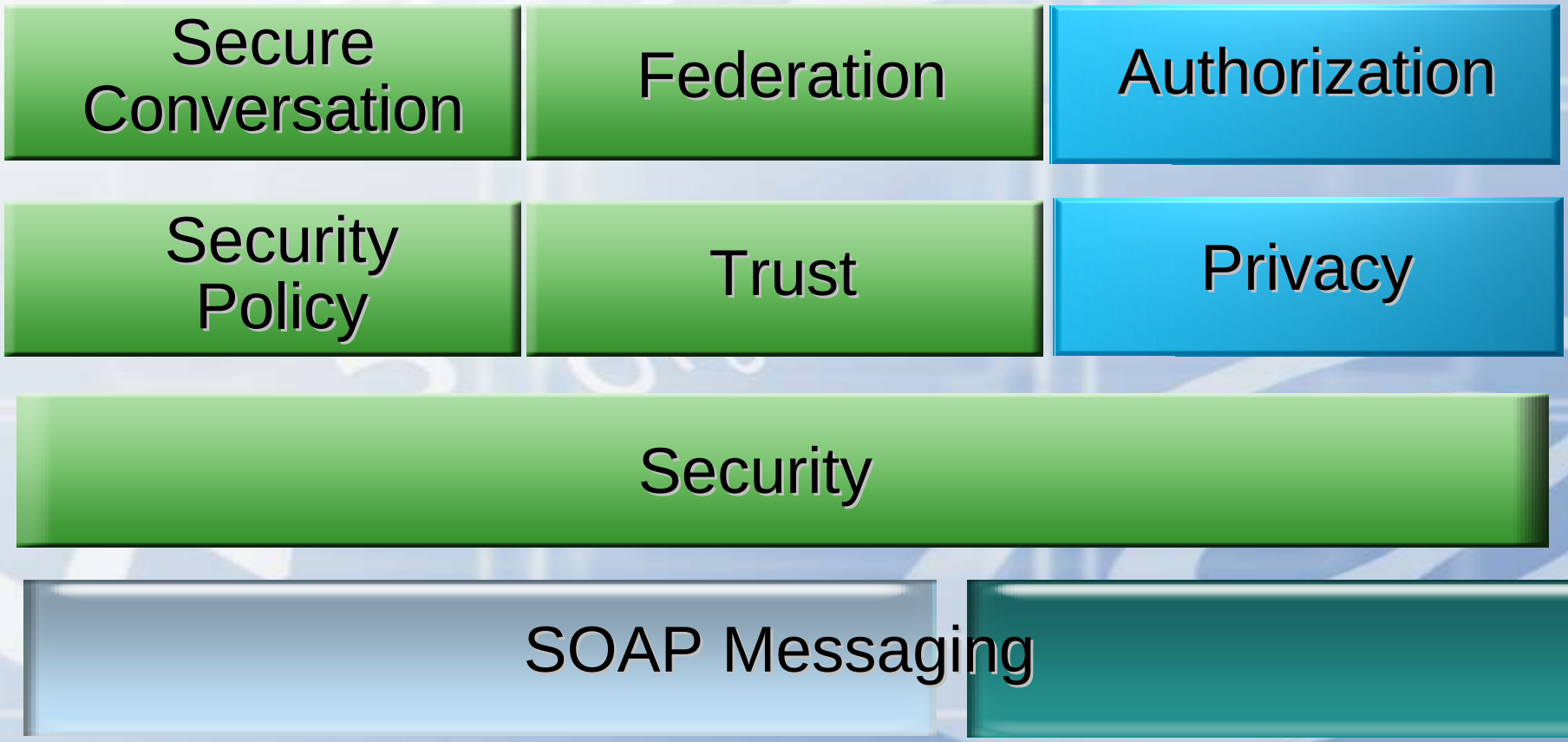


Secure, Reliable, Transacted Web Services – April 2002



From joint IBM/MSFT WS Whitepaper at
http://msdn.microsoft.com/webservices/default.aspx?pull=/library/en-us/dnwebsrv/html/wsoverview.asp

WS-Security Roadmap – April 2002



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Standardising - why and when?

Why - open standards should not lock businesses into a business partner, a product or another participant's capabilities.

When - one can standardise at various stages of the development cycle:

1. research *standardise* integrate adopt assimilate - e.g. IEEE registration
2. research integrate *standardise* adopt assimilate - e.g. many domain standards
3. research integrate adopt *standardise* assimilate - e.g. SOAP
4. research integrate adopt assimilate *standardise* - e.g. car bumper heights

Web Service technology specifications are not *all* mature.

As corporate adoption of web services show incremental benefits, so the technology development progressively adds benefits.

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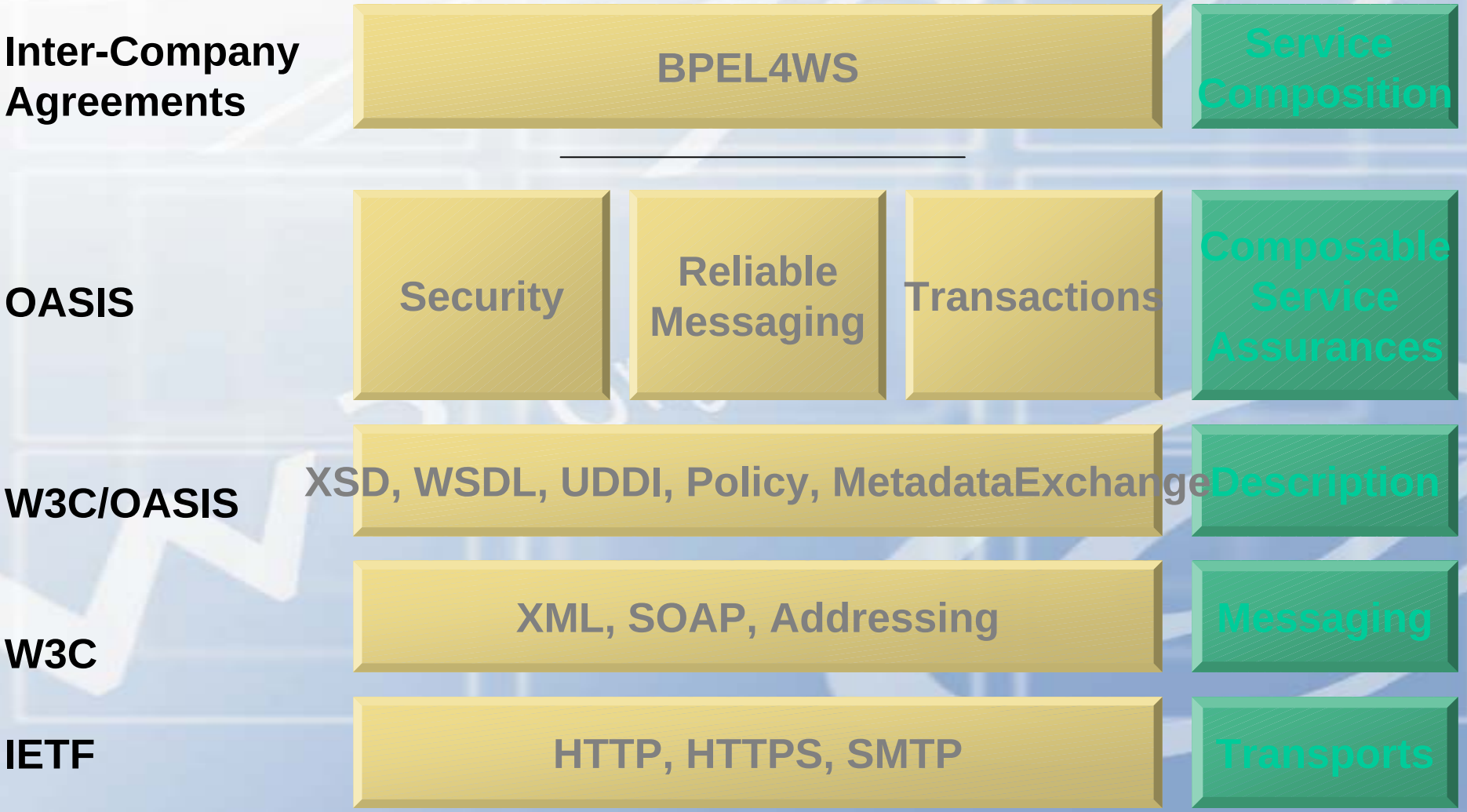
Standardising Web Services



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Who is W3C 1/2 ?

The World Wide Web Consortium (W3C) develops interoperable technologies (specifications, guidelines, software, and tools) to lead the Web to its full potential.

W3C director is Tim Berners-Lee who founded the web, and guides technical vision.

W3C has about 400 members, large and small, from the developer and user communities.

W3C addresses the generic technology layer between transport (IETF) and domain specific applications (e.g. business, health etc..).

•W3C follows a well defined process to establish recommendations

Who is W3C 2/2 ?

- recommendations are drafted by working groups of W3C members (20 to 50 members each)
- about 6 months to establish working group after initial proposal
- about 2 years for a group to reach a recommendation
- Each feature needs interoperable implementations before recommendation (like IETF, unlike ISO).
- Much W3C time and effort ensures recommendations are compatible and interoperate - not stand alone and not competing.
- W3C has 60 staff worldwide who edit recommendations, check consistency, produce small demonstrators etc..
- W3C staff are mostly very bright, young and technical, with a few very experienced old hands
- Decisions not by blind democracy, but by guided paternalism of Tim Berners-Lee.
- W3C has agreements with ISO and IETF for joint standardisation (e.g. PNG, XML Signature).

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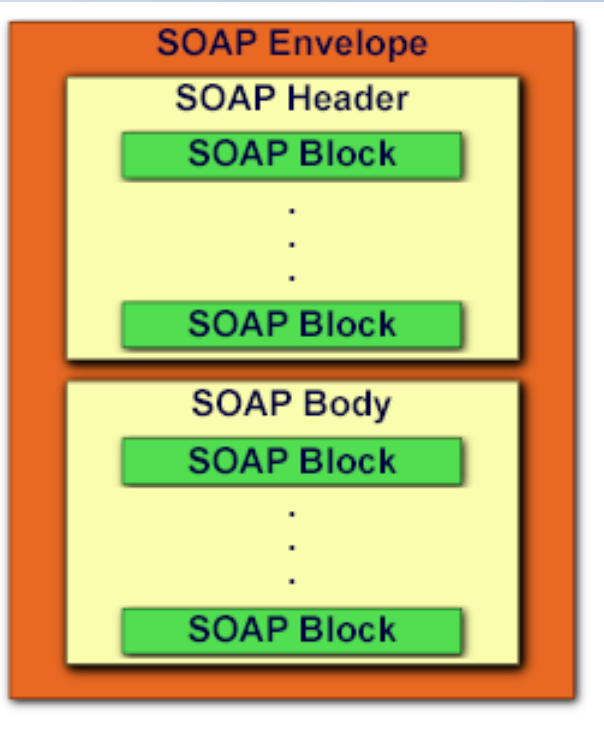
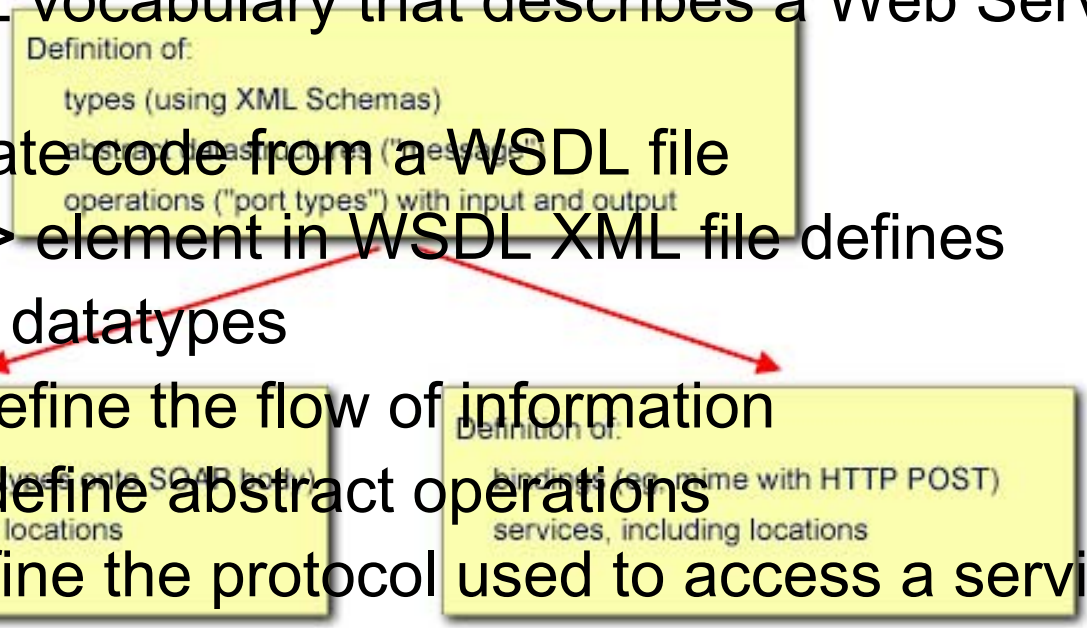
SOAP



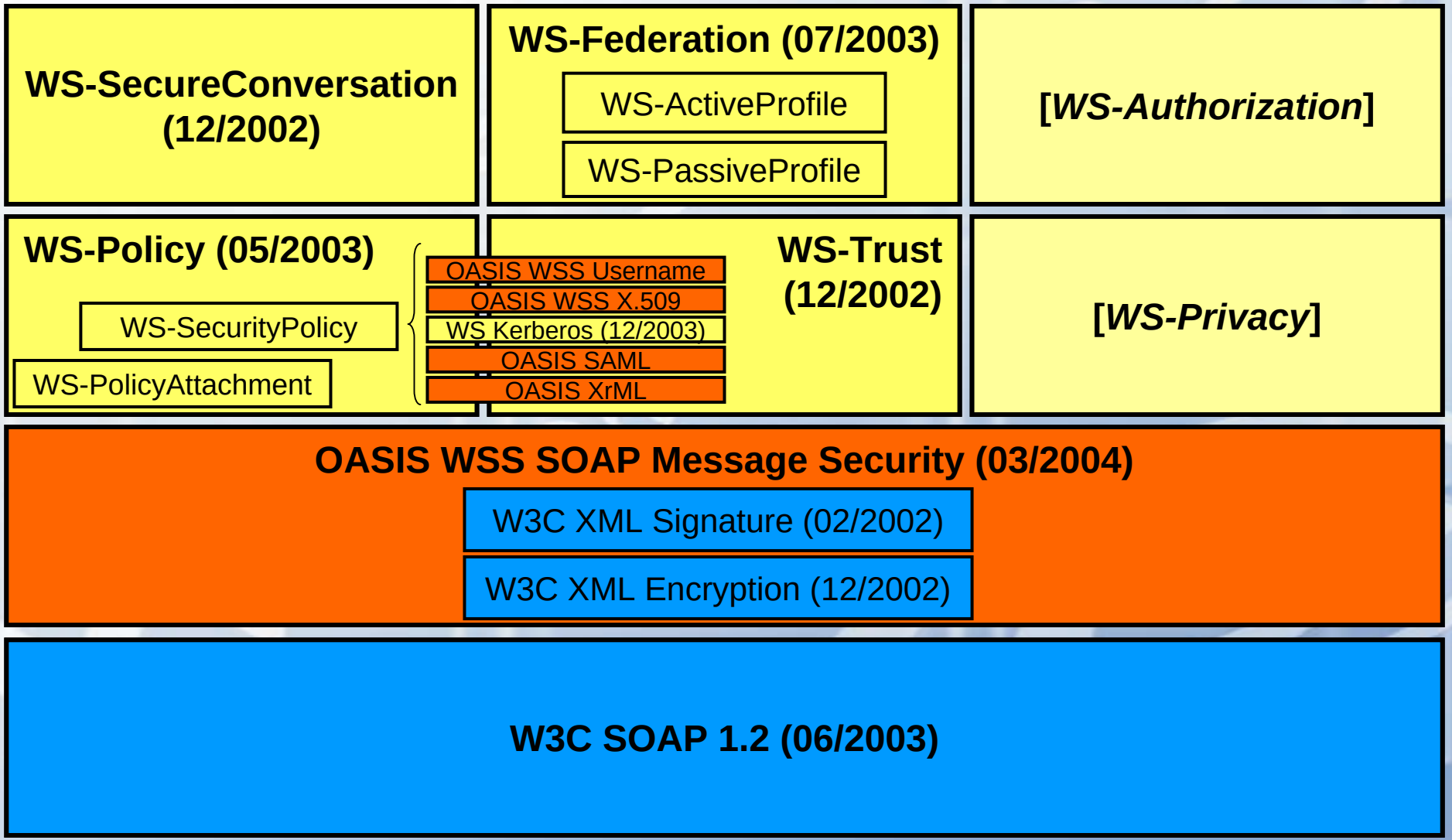
- An XML based protocol
- An envelope that contains a message
- Encoding rules for data types
- Rules for RPC requests and responses
- Rules for exchanging messages
- SOAP defines a one-way message
- Usually there are request and response messages
- A request involves a service on a remote server
- A response returns the results of the running operation
- The SOAP envelope contains the message itself.
- The message is in an application specific vocabulary
- Soap is independent of underlying transport
- Soap messages can be encrypted and digitally signed

WSDL

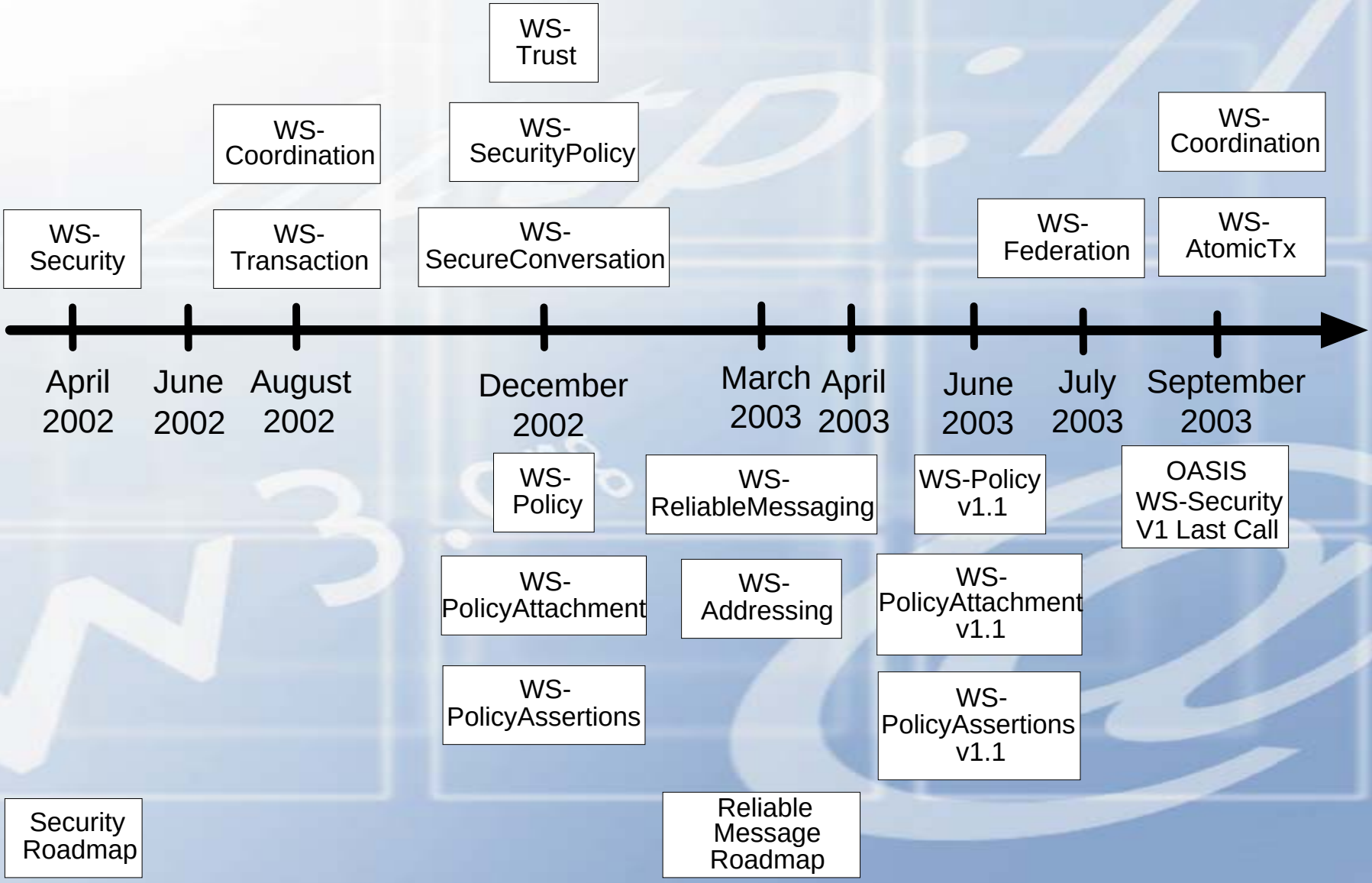
- I use WSDL to describe my service and publish it
- You find my service and use the WSDL description to invoke it
- WSDL is an XML vocabulary that describes a Web Service's interface.
- Tools can generate code from a WSDL file
- The **<definitions>** element in WSDL XML file defines
  - XML Schema datatypes
  - Messages - define the flow of information
  - Port Types - define abstract operations
  - Bindings - define the protocol used to access a service
  - Ports - link the port on a machine to a binding ...
  - Services - for a service
- with a WSDL file and software tools we have all we need to invoke a web service



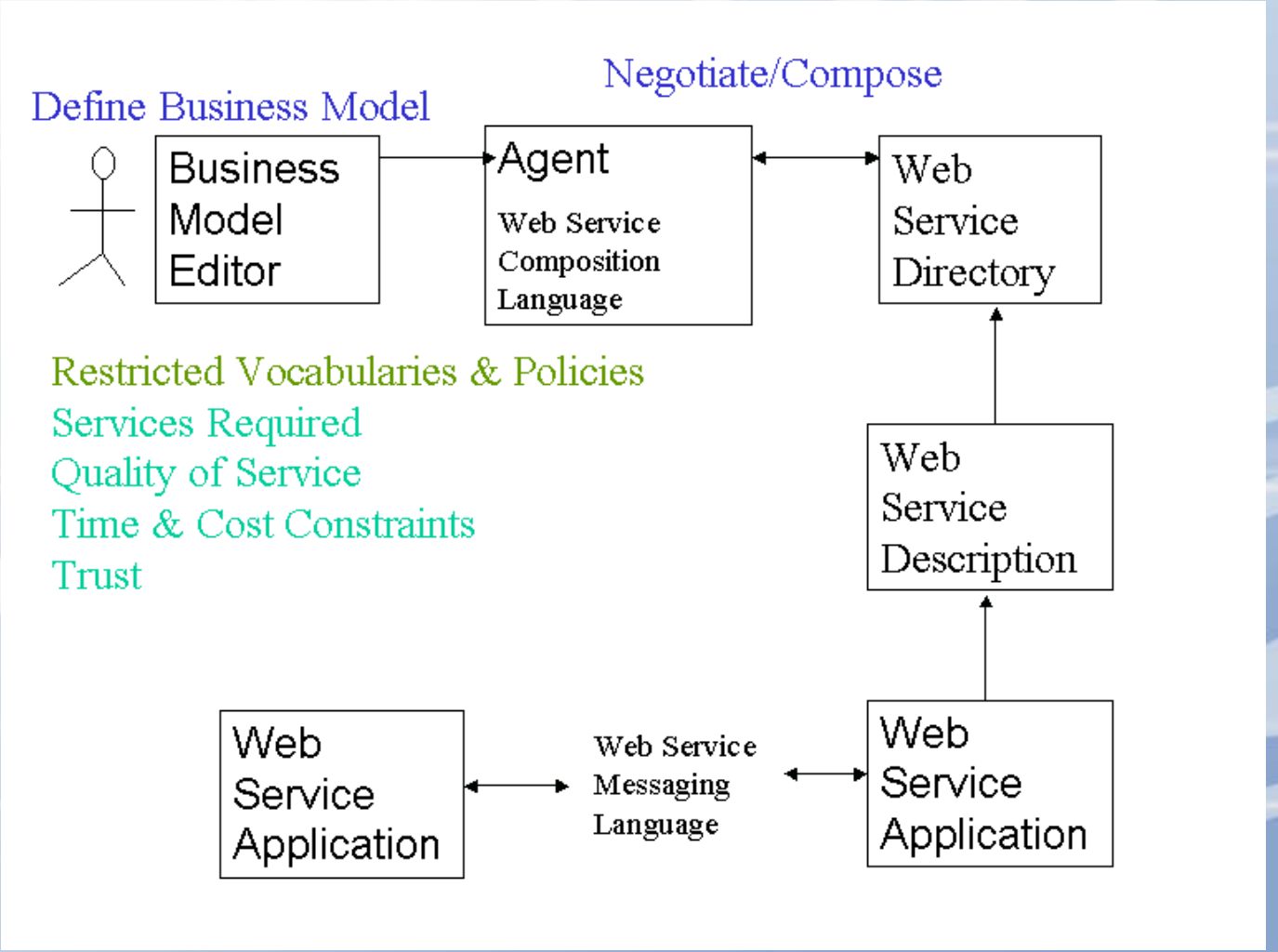
WSS landscape – April 2004



WS-* Specifications Timeline

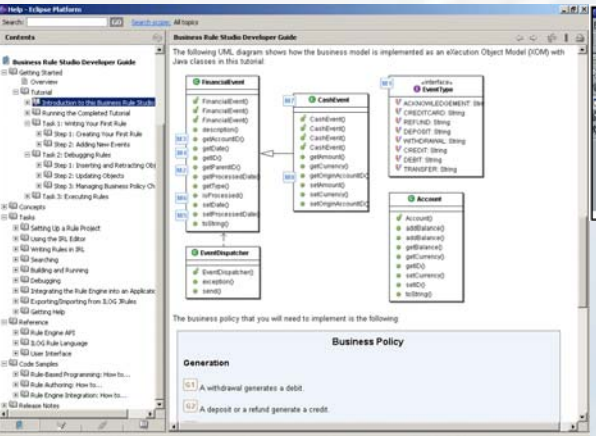


Web Services and Business Processes

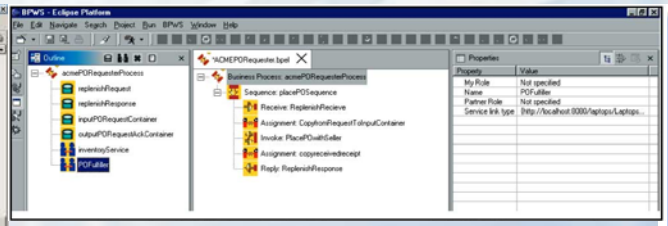


Web Service Editors

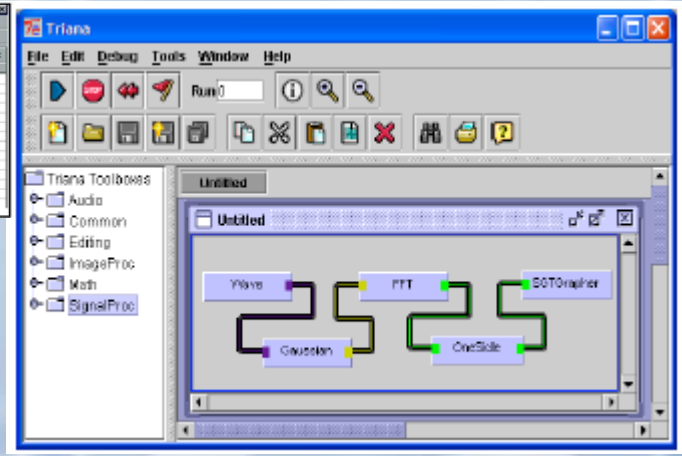
Several graphical editors produce service composition - BPEL4WS - descriptions of businesses



ILOG Jrules from UML in Eclipse -
http://www.ilog.com/products/brstudio/



BPS4J Editor in Eclipse
http://www.eclipse.org/



Triana editor
http://www.triana.co.uk

- They do not yet include the economic modelling of the business
- Will do as they mature to commercial products

Beyond business processes – policies and contracts

Fig. 5. The Trust Stack.

Enterprise Privacy Authorization Language (EPAL 1.1)

The Enterprise Privacy Authorization Language (EPAL) is an interoperability language for exchanging privacy policy in a structured format between applications or enterprises.

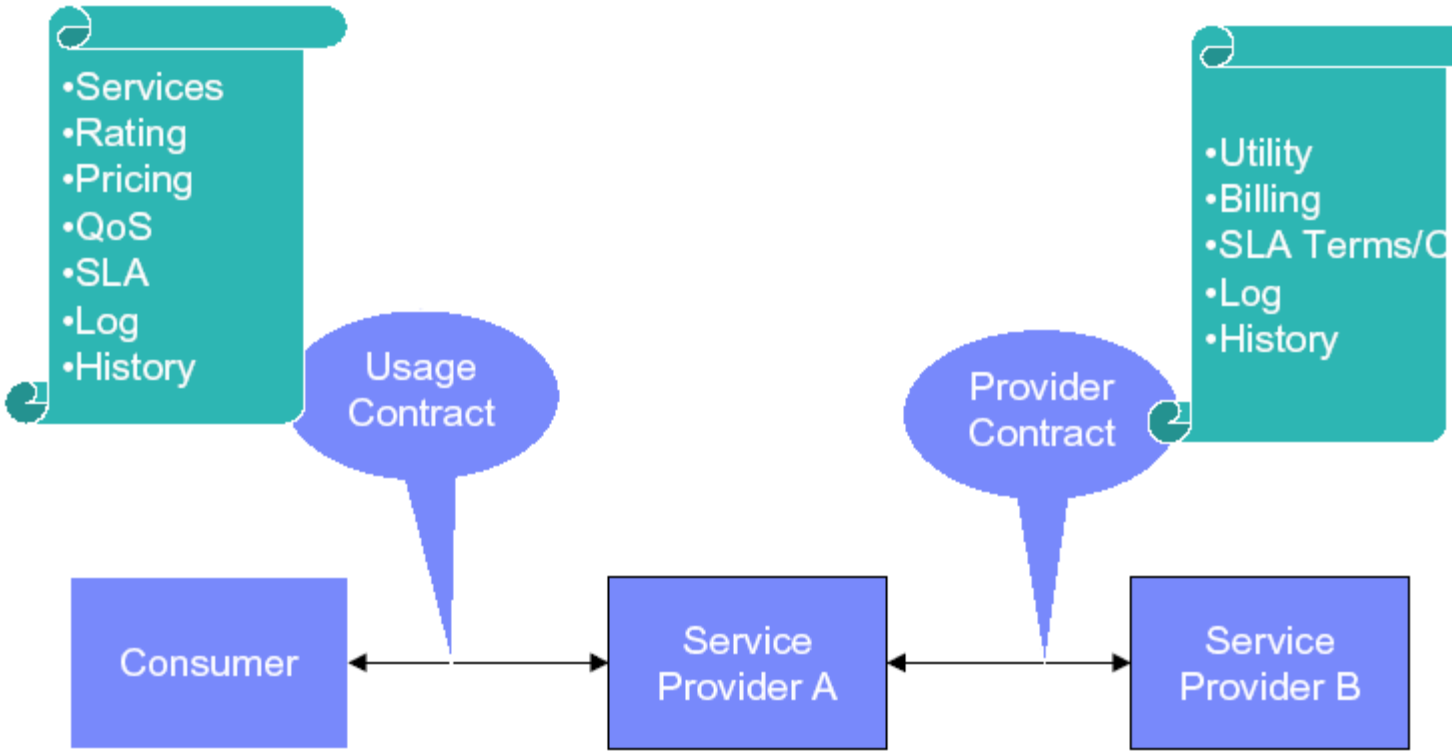
EPAL Applications –

- EPAL should be used as a common format to create, exchange and enforce privacy policy
- A privacy administrator, who has a legal background and no programming experience, creates EPAL rules to model her firm's privacy policy. This EPAL policy serves as input to a variety of privacy management, audit, and enforcement software tools.
- An independent auditor uses EPAL to model a client's privacy policy and to perform a privacy audit.

Latest public version:

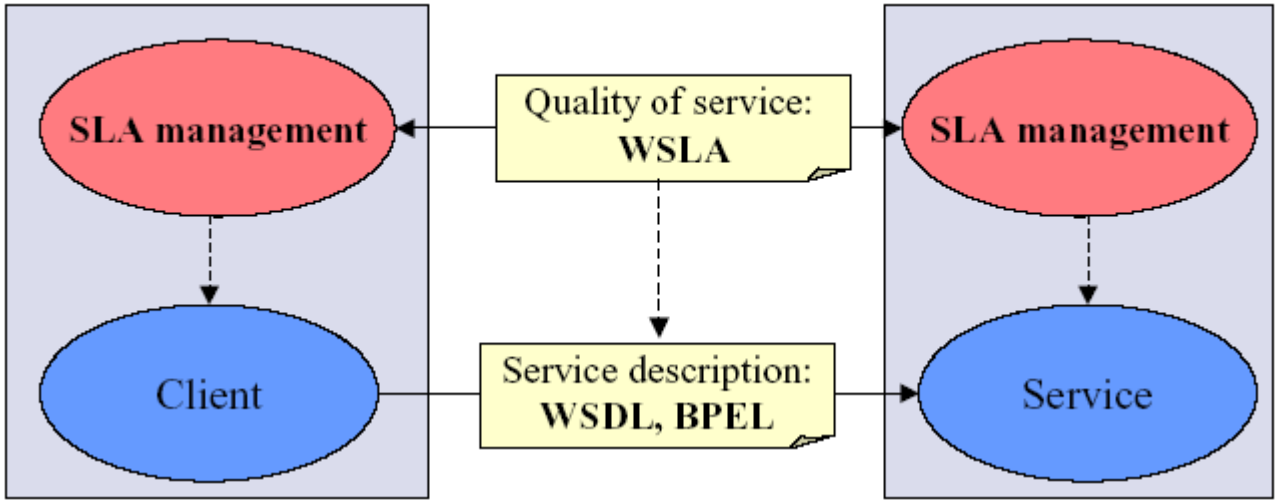
http://www.zurich.ibm.com/security/enterprise-privacy/epal

WSLA – Contract Management Model



Source: A. Dan et. al., "Web Services on Demand: WSLA-Driven automated Management, IBM Systems Journal, Vol 43, No 1, 2004

WSLA Concepts and Language



- WSLA relates to service description
- WSLA document defines performance characteristics:
  - QoS Metrics (mean response time)
  - Service Level Objectives (mean response time < 2 s)
  - Conditional Actions (if SLO is violated send notification)
  - Parties and interactions (client-measured and 3rd party-m. Metrics to be exchanged)

Summary

- Today's interoperable technology supports scalable services
- Today's proprietary technology supports secure services
- Research results support QoS, SLA management
- Research activity supports trust, contracts, business modelling
- Semantic issues need to be resolved before research is scalable

Acknowledgements

Jonathan Marsh, Microsoft, Maryann Hondo, IBM, Presentation at W3C AC, May 2004, NY, USA

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Matthias Schunter, IBM Zurich Research Lab, Presentation to Trustcom Project, Feb 2004, Spain

Tim Berners-Lee, W3C, Presentations to W3C AC Meetings, USA, France, Japan

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