

Cloud Computing Standards Cataloging, Categorization, and Coordination Workshop

***Towards a Formal Guidebook: Standards
Projects, Industry Associations, Community
Efforts, and Government Initiatives***

**Steve Diamond, David Bernstein, IEEE
Dawn Leaf, Bob Bohn, NIST**

**IEEE CloudCom 2010
Friday, 3 December 2010
University Place Conference Center**



Cloud Standards Workshop

<http://salsahpc.indiana.edu/CloudCom2010/ccsccc2010.html>

- Steve Diamond
 - Chair, IEEE Cloud Computing Initiative
- David R. Bernstein
 - Vice Chair, IEEE Cloud Computing Standards Study Group
- Dawn Leaf
 - NIST Senior Executive for Cloud Computing
- Bob Bohn
 - NIST
- Prof. Tomonori Aoyama
 - Chair, Global Inter Cloud Technology Forum
- Wayne Adams
 - Senior VP, DMTF Board of Directors
 - Chairman, SNIA Board of Directors

Agenda

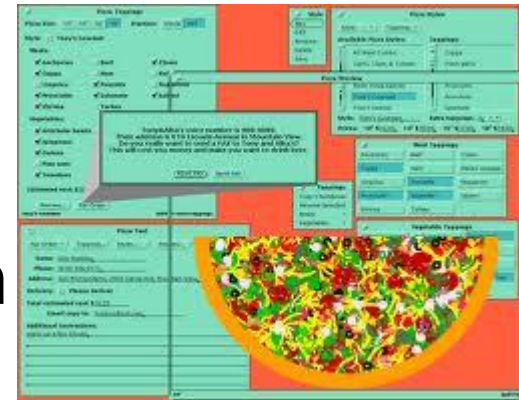
Time	Topic	Presenters
9:00-9:15am	Welcome and Introductory Remarks by the Sponsors/Moderators	Stephen Diamond, David Bernstein IEEE Cloud Computing Standards Study Group Dawn Leaf, Bob Bohn NIST Cloud Computing Group
9:15-9:45am	Presentation of Guidebook Concept Proposal, Characterization (Diagram) Approach	Sponsors/Moderators
9:45-11:30am	Current Cloud Computing Standards Activities (15 minutes each)	IEEE, NIST USG Cloud Computing Roadmap, SNIA, DMTF, GICTF
11:30am-12n	Lunch Break	
12n-1pm	Continuation Current Cloud Computing Standards Activities (15 minutes each)	NIST USG Reference Architecture; Others TBA
1-2:30pm	Identification of completeness of Inventory of Groups, and Additional Groups needed to Participate Structured Discussion towards a Guidebook, using Characterization (Diagram) and Reference Architecture approach Open Collaboration and Discussion	All
2:30-3pm	Concluding Remarks and Follow-up Action Items	Sponsors/Moderators
3:00pm	Adjourn	

James Gosling

- Unix emacs (1981)
 - Programmable editor



- Co-developer of NeWS (1985)
 - Programmable window system

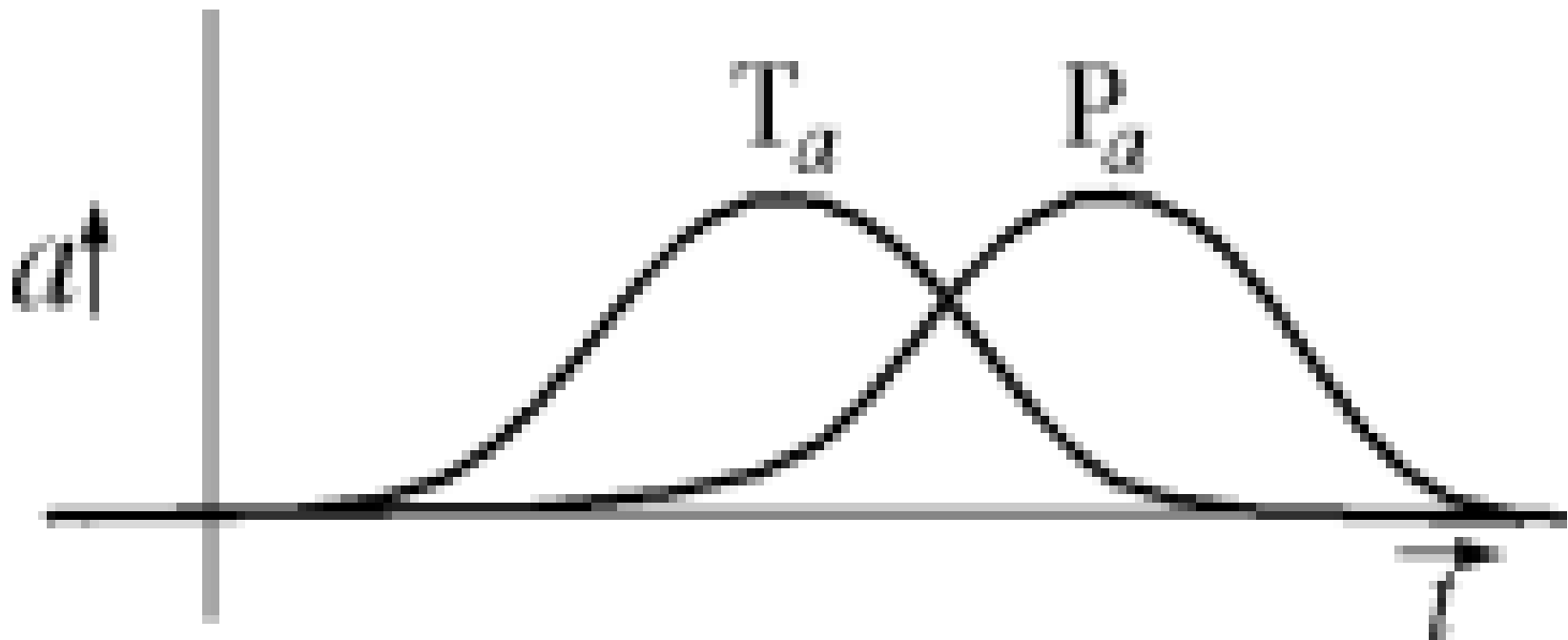


- Inventor of Java (1994)
 - Programmable browser



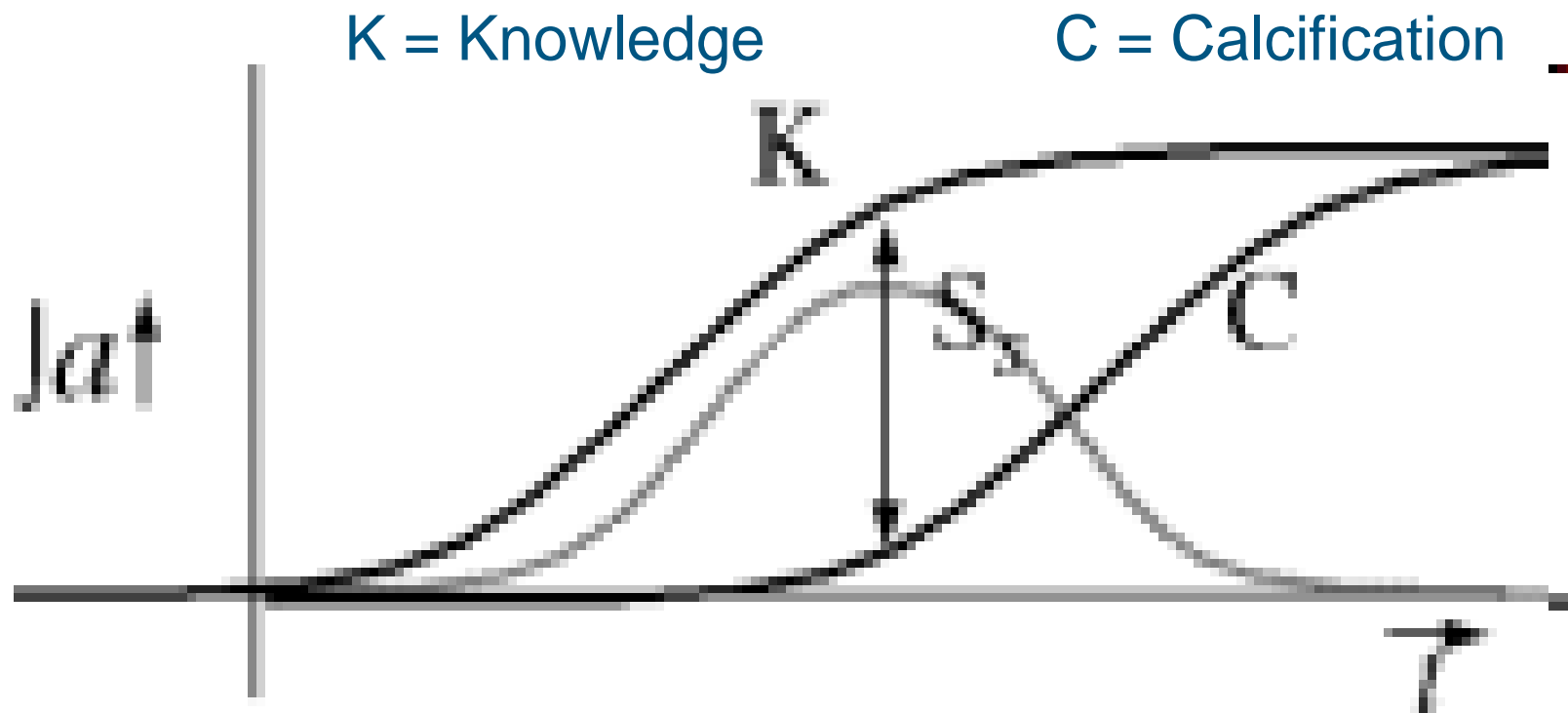
Phase Relationships in the Standardization Process

James Gosling, August, 1990



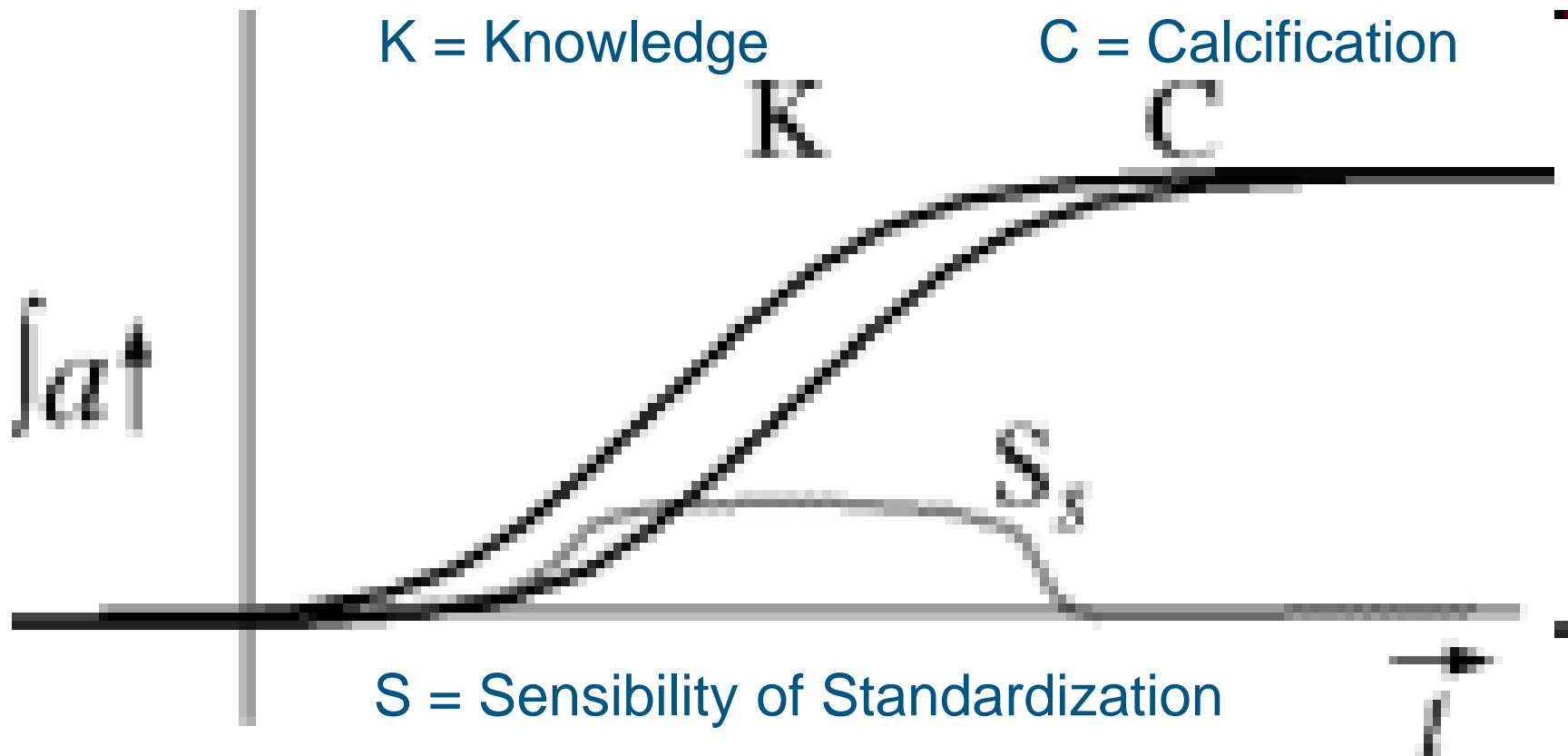
T_a = Technical Activity P_a = Political Activity

Phase Relationships in the Standardization Process



S = Sensibility of Standardization

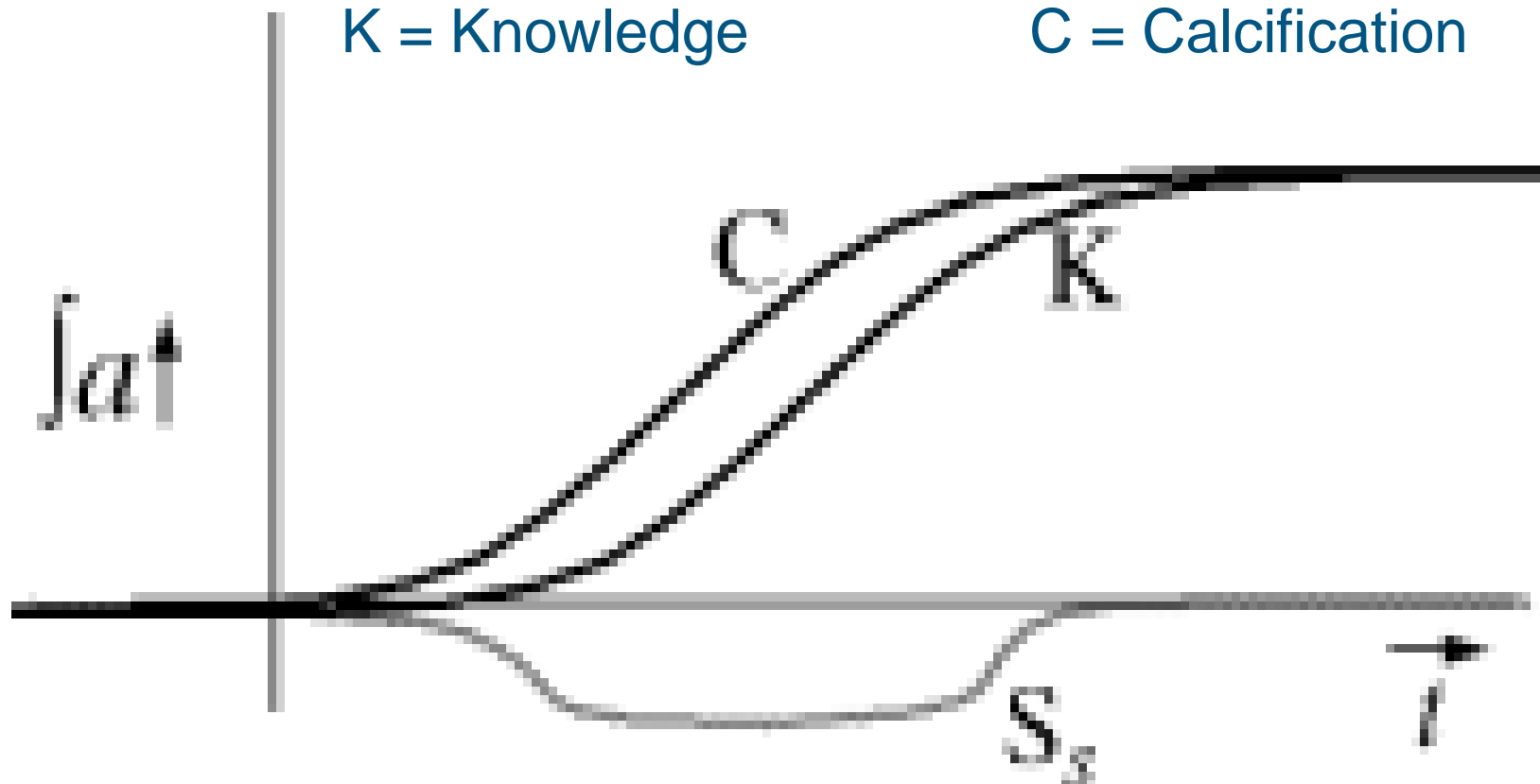
Phase Relationships in the Standardization Process



Phase Relationships in the Standardization Process

K = Knowledge

C = Calcification

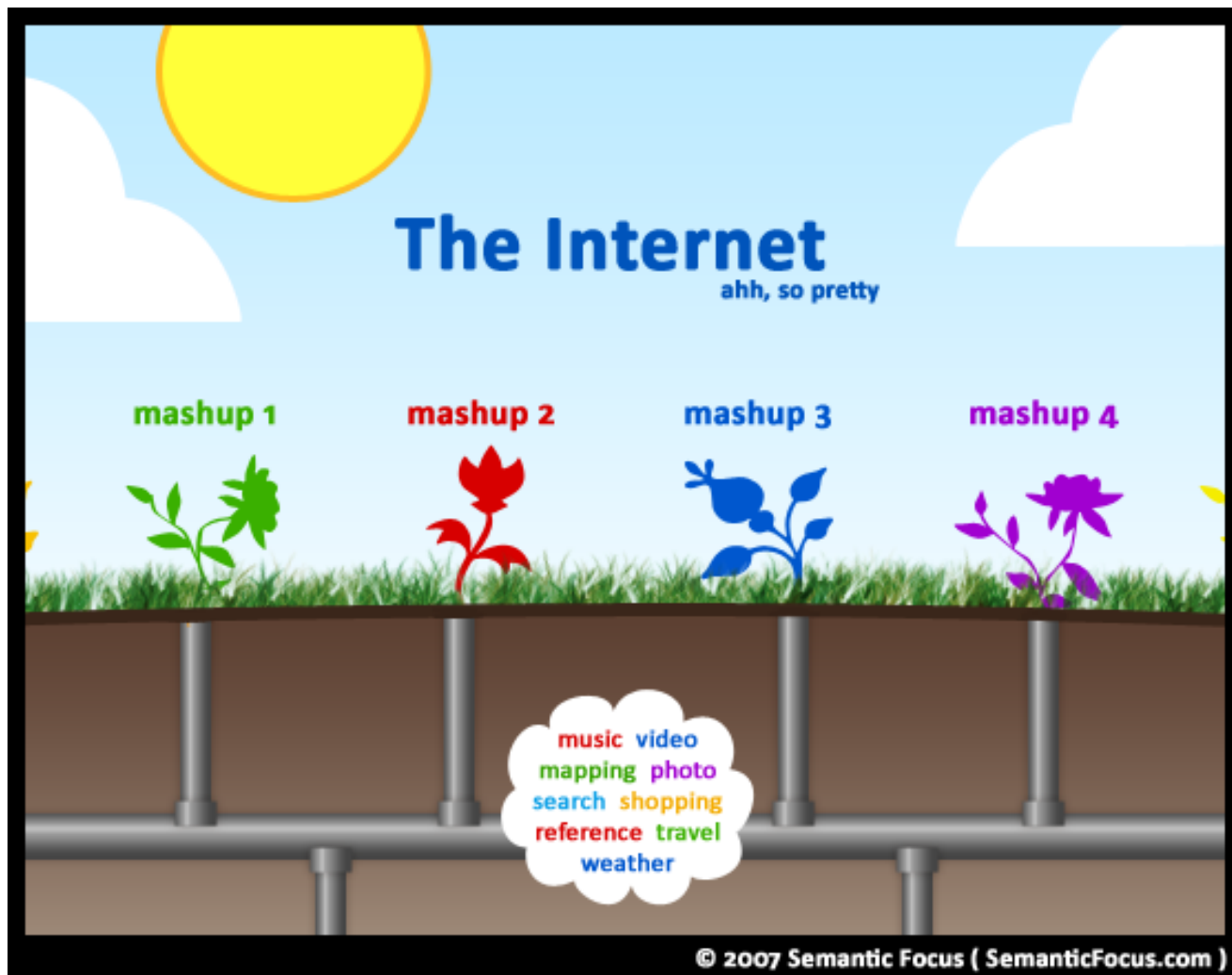


S = Sensibility of Standardization

“This standard is too early.”
“This standard is too late.”
“This standard is *just* right.”



Another Lesson



The Web Services Standards Set

Additional Capabilities	Management	Portals	
Business Process Orchestration	Composition/Orchestration		
Composable Service Elements	Security	Reliable Messaging	Transactionality
Messaging	Endpoint Identification, Publish/Subscribe		
Description	XML Schema, WSDL, UDDI, SOAP with Attachments		
Invocation	XML, SOAP		
Transports	HTTP, HTTPS,Others		

Web Services Standards Overview

Interoperability Issues

- Basic Profile** (WS-2004-08)
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- Basic Profile** (WS-2004-08)
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- Basic Profile** (WS-2004-08)
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- Attachments Profile** (WS-2004-08)
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- Simple SOAP Binding Profile** (WS-2004-08)
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- Basic Security Profile** (WS-2004-08)
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- REL Token Profile** (WS-2004-08)
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- SAML Token Profile** (WS-2004-08)
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- Confidentiality Claim Attachment Mechanism** (WS-2004-08)
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- Reliable Asynchronous Message Profile** (WS-2004-08)
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile

Standards Bodies

W3C (World Wide Web Consortium) is the main international standards organization for the World Wide Web. It is a not-for-profit organization that is the main international standards organization for the World Wide Web.

ISO (International Organization for Standardization) is an international standard-setting body composed of representatives from various national standards organizations. It promotes the development of standardization within the various industries.

IEC (International Electrotechnical Commission) is an international organization that promotes the development of standardization within the various industries.

ITU (International Telecommunication Union) is a specialized agency of the United Nations that is responsible for coordinating the use of radio frequencies globally and for promoting international cooperation in the telecommunications field.

Business Process Specifications

- Business Process Execution Language for Web Services 1.1** (BPEL4WS)
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- Business Process Management Language (BPMN)**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- XML Process Definition Language**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile

Management Specifications

- Management Using Web Services (MWS)**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- Service Modeling Language (SML)**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile

Presentation Specifications

- Web Services for Remote Portals**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile

Metadata Specifications

- WS-Policy**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-PolicyAttachments**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-PolicyAttachment**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-Discovery**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-MetadataExchange**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- Universal Description, Discovery and Interference (UDDI)**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- Web Service Description Language 2.0 SOAP Binding**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- Web Service Description Language 2.0 Core**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- Web Service Description Language 1.1**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile

Reliability Specifications

- WS-ReliableMessaging**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-ReliableMessaging Policy Assertion and WS-ReliableMessaging**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-Reliability**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile

Security Specifications

- WS-Security**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-SecurityPolicy**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-Security: SOAP Message Security**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-Security: Username Token Profile**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-Security: Kerberos Binding**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-Security: SAML Token Profile**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-Security: X.509 Certificate Token Profile**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-Security: Confidentiality**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile

Transaction Specifications

- WS-Coordination**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-AtomicTransaction**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-CompositeApplication Framework**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-Coordination**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile

Resource Specifications

- Web Services Resource Framework**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-ResourceProperties**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-ResourceDiscovery**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-ResourceTransfer**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-ResourceDiscovery**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-ResourceTransfer**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
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Messaging Specifications

- WS-Notification**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-Notification**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- WS-Notification**
 - WS-Addressing
 - WS-Reliability
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SOAP

- WS-Notification**
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SOAP

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- WS-Notification**
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 - WS-Trust
 - WS-BaseProfile
- WS-Notification**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile

XML Specifications

- XML 1.1**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- XML 1.0**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
 - WS-Transfer
 - WS-Trust
 - WS-BaseProfile
- XML Schema**
 - WS-Addressing
 - WS-Reliability
 - WS-Security
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XML Specifications

- XML 1.1**
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 - WS-Transfer
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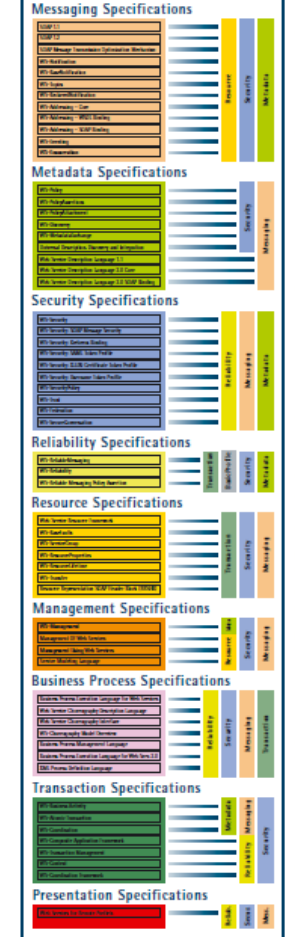
XML Specifications

- XML 1.1**
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Dependencies



Detail of Web Services Security

WS-Security: SAML Token Profile

1.1
OASIS
Public Review Draft

- ▲ WS-Security: SAML Token Profile defines the use of Security Assertion Markup Language (SAML) v1.1 assertions in the context of WSS: SOAP Message Security including for the purpose of securing SOAP messages and SOAP message exchanges.

WS-Trust

BEA Systems, Computer Associates, IBM, Layer 7 Technologies, Microsoft, Netegrity, Oblix, OpenNetwork, Ping Identity Corporation, Reactivity, RSA Security, VeriSign and Westbridge Technology · Initial Draft

- ▲ WS-Trust describes a framework for trust models that enables Web Services to securely interoperate. It uses WS-Security base mechanisms and defines additional primitives and extensions for security token exchange to enable the issuance and dissemination of credentials within different trust domains.

WS-Security: X.509 Certificate Token Profile

1.1
OASIS
Public Review Draft

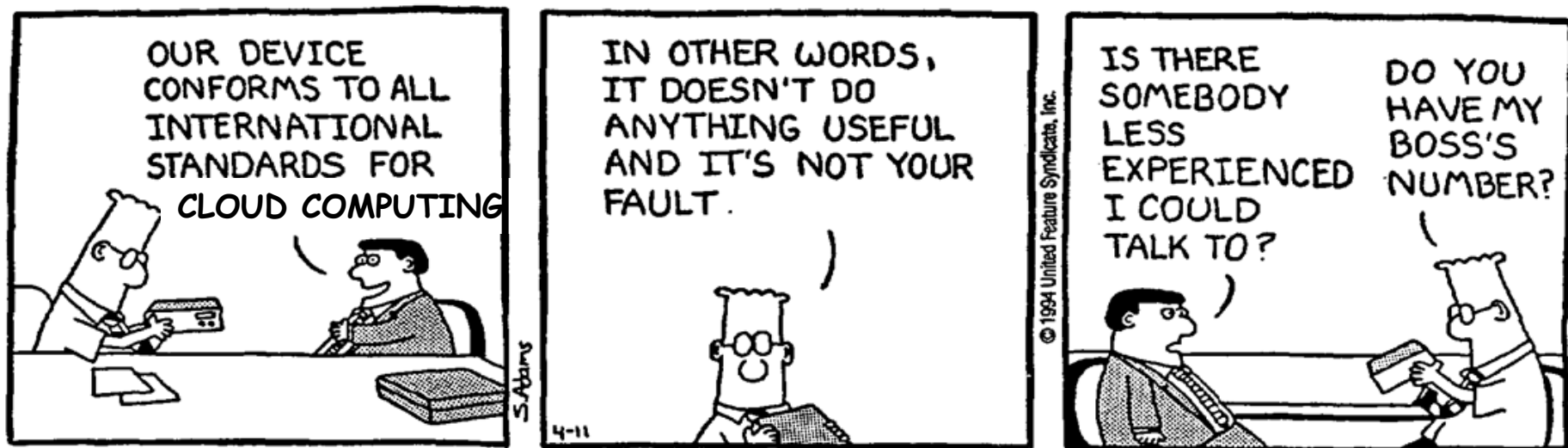
- ▲ WS-Security: X.509 Certificate Token Profile describes the use of the X.509 authentication framework with the WS-Security: SOAP Message Security specification.

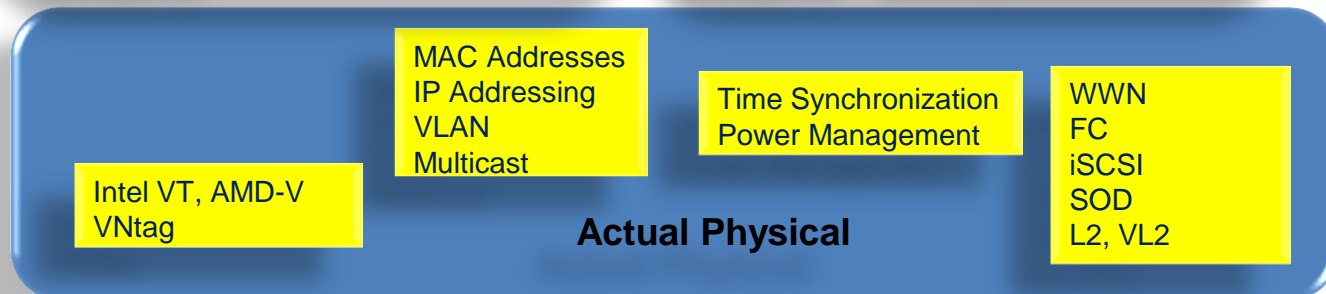
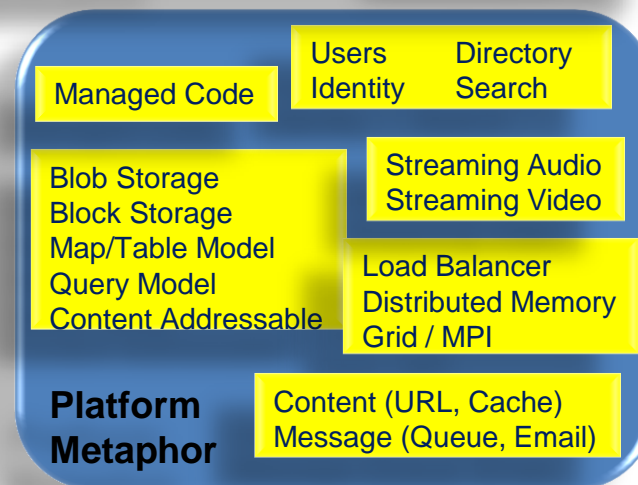
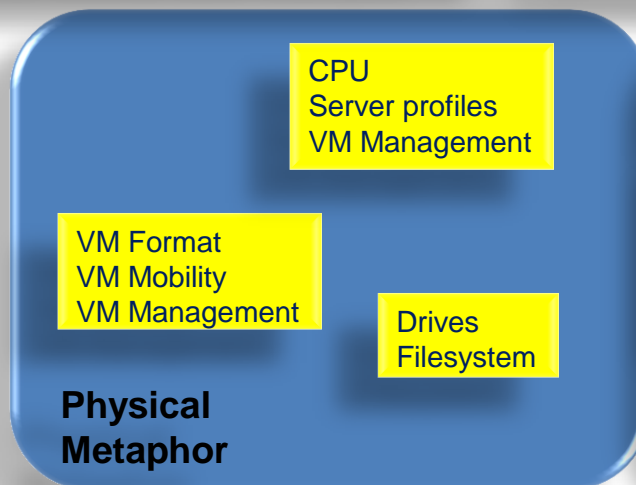
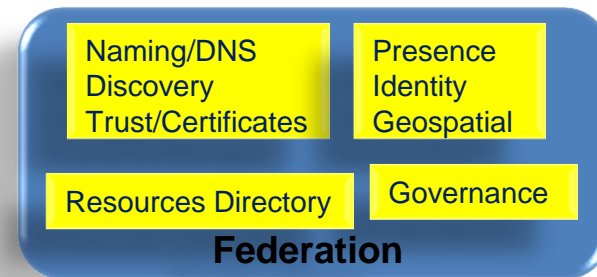
WS-SecureConversation

BEA Systems, Computer Associates, IBM, Layer 7 Technologies, Microsoft, Netegrity, Oblix, OpenNetwork, Ping Identity Corporation, Reactivity, RSA Security, VeriSign and Westbridge Technology · Public Draft

- ▲ WS-SecureConversation specifies how to manage and authenticate message exchanges between parties including security context exchange and establishing and deriving session keys.

Cloud Computing Standards





Agenda

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