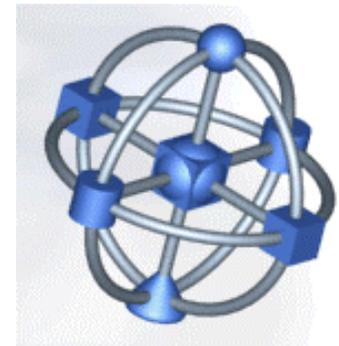


Grid Services and Web Services: Harmonic Convergence



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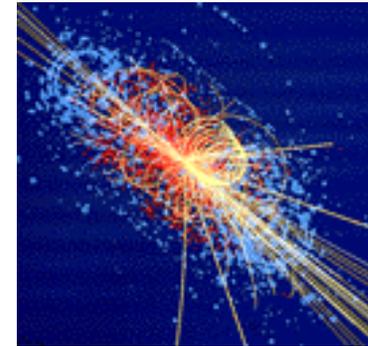
Some Grid-Related Buzzwords

- **On Demand**
 - Computing Resources Provided When Needed
- **Autonomic**
 - Automatic Setup and Configuration, Self-Healing
- **Pervasive**
 - Resources Available Anywhere, Anytime, on Any Platform
- **The Grid**
 - Dynamic Set of Shared Computing Resources
- **Web Services**
 - Description, Discover, Communications with Distributed Resources
- **Grid Services**
 - Adaptation of Web Services for Grid Computing



Different Motivators

- **Big Science**
 - Massive Amounts of Data
 - Never Enough Cycles
 - Widely Scattered Collaborators
 - Long Development Times
 - **Answer: The Grid!**
- **Big Business**
 - Huge Number of Incompatible Systems
 - No Consistent Accounting and Security
 - Spiraling Software Costs
 - Need Administrators and Maintenance for Each System
 - **Answer: Web Services!**





Common Desires

- **Leverage Existing Systems**
- **Enable Faster Development Cycles**
 - Free Developers from Inventing Everything
- **Use Open Standards**
- **Enable Easy Scaling**
 - Geographically and Numerically
- **Maintain Traditional Level of Security and Monitoring**



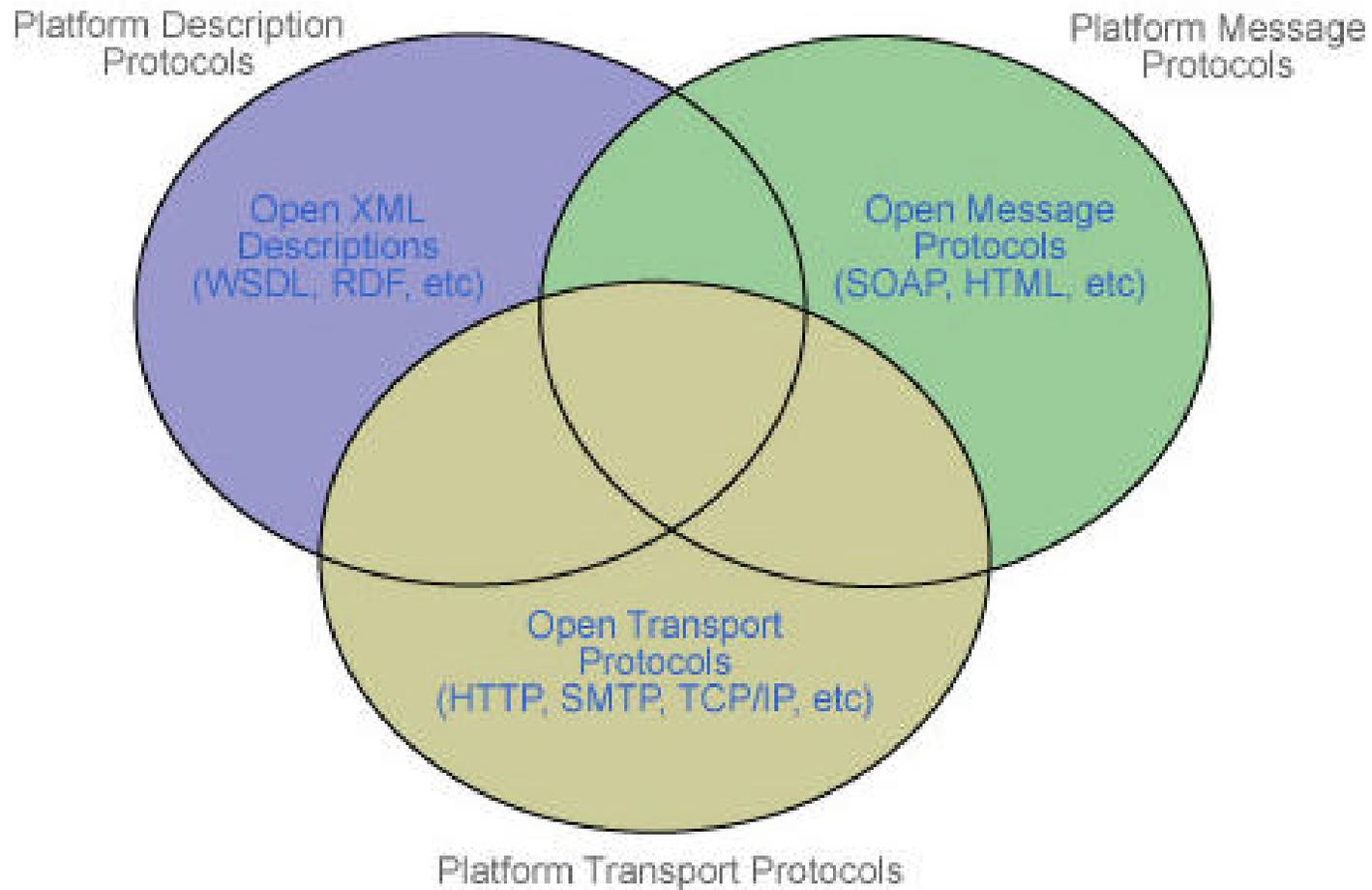
So What Are Web Services?

- Web services standards and technologies allow us to describe and deploy applications or services on a network in a consistent way so that they can be discovered and invoked in a secure and reliable manner.
- A "web service" is an application that uses these standards and technologies.
- It is likely that a given web service will be employed as part of a larger set of transactions or involved in a business process/workflow with many activities.
- XML is a critical component to this, but so is a pragmatism about using existing protocols.





Web Services Basics





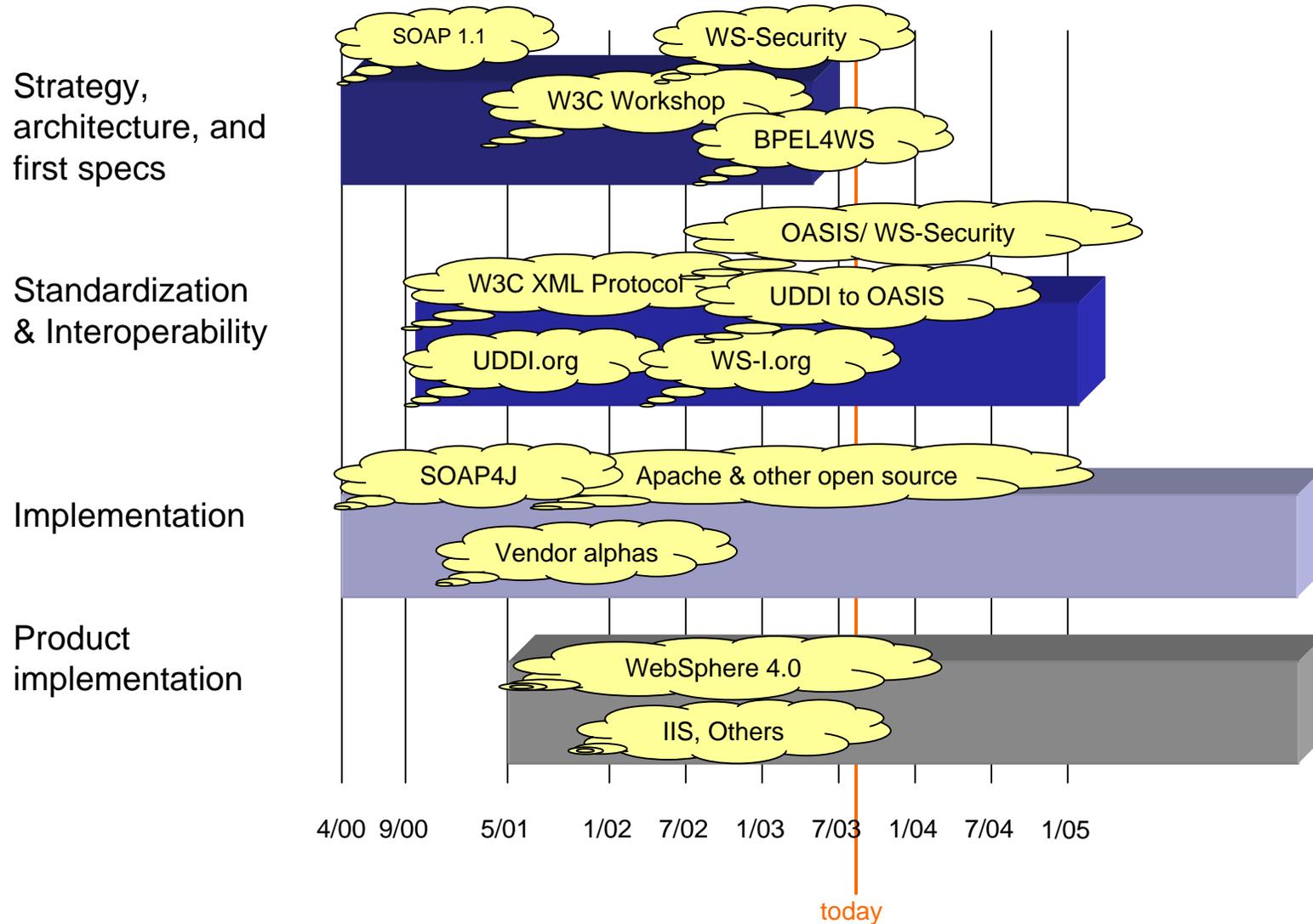
Web Services Specs

Management	Enterprise	TBD (Autonomic & grid)
Business Processes		BPEL4WS
Transactions		WS-Transaction, WS-Coordination
Reliability	Security	HTTP-R, TBD
Security		XML Digital Signature, XML Encryption, SAML, WS-Security, SSL
Discovery	Connection	UDDI, WS-Inspection
Publication		UDDI, WS-Inspection
Description		WSDL, UDDI
Messaging		TCP/IP, SOAP, WS-Attachments

Key: **W3C** – **OASIS** – IETF - TBD



Web Service Development Timeline





Conclusion

- **Science and Industry Are Dealing with the Same Problems**
- **Industry Can Learn from the Scientific Community**
- **The Scientific Community Can Leverage the Work of Industry**
- **The Grid is an Evolution/Revolution That Will Change Both Science and Industry**



Questions?



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