Web Services

Chirag Mehta
“A Web service is a software system identified by a URI, whose public interfaces and bindings are defined and described using XML. Its definition can be discovered by other software systems. These systems may then interact with the Web service in a manner prescribed by its definition, using XML based messages conveyed by Internet protocols”
“The use of Web services on the World Wide Web is expanding rapidly as the need for application-to-application communication and interoperability grows. These services provide a standard means of communication among different software applications involved in presenting dynamic context-driven information to the user. In order to promote interoperability and extensibility among these applications, as well as to allow them to be combined in order to perform more complex operations, a standard reference architecture is needed”
Web “Service”

- Service Oriented Architecture
- Connection Points for the service
- Complex System underneath connections
Why Internet is not sufficient

• Lack of B2B standards

• Manual browser based searching against registry
Promise of Web Services

- Reintroduce flexibility
- JIT – Do it only when you need it
- Extend capabilities of existing system
- Help organization manage legacy systems
- Support integration across firewalls
- Provide easy B2B integration
- Increase business and technical agility
“In preparing for battle, I have always found that plans are useless but planning is indispensable”

- Dwight D. Eisenhower
Force Field Analysis – Kurt Lewin

Goal or Vision

Driving Forces

Restraining Forces

Status Quo
Adoption of Web Services

- Early Days (1996-97)
- The Terrible Teens (1998-99)
- The Glory Years (2000-04)
- Mainstream (2004 and beyond)
Adoption of Web Services

• Integration

• Collaboration

• Innovation

• Domination
Issues with current integration

• Significant Investment of time and money

• Poor data quality

• Limited operational visibility

• Lack of flexibility
“Nothing will ever be attempted, if all possible objections must first be overcome ”

- Samuel Johnson
Obstacles with adoption

• Security

• Service Management

• Asynchronous transaction

• Process orchestration and Workflow

• Paradigm Shift
“What business strategy is all about; what distinguishes it from all other kinds of business planning – is, in a word, competitive advantage. Without competitors there would be no need for strategy, for the sole purpose of strategic planning is to enable the company to gain, as effectively as possible, a sustainable edge over its competitors.”

- Keniche Ohnae
Strategic Planning

**Process**

- Business Strategy/Plan
  - Used As Foundation For
- Business Model
  - Determines basis of
- Value Chain

**Web Services Considerations**

- **Strategic Implications**
- **Organizational Implications**
- **Operational Implications**
Publish-Discover-Bind Model

Registry

Publish

Web Service

Discover

Bind

Client
Basic Web Services

- Coarse grained
- Loosely coupled
- Self-describing
Collaborative Web Services

• Reliability

• Security

• Business processing
Enterprise Class Web Services

Web Services Network

Web Services Broker

Web Services Platform (Provider/Requester)

Reliability
Security
Manageability
Partner Enablement

Provide registry of available services

WSDL Generation
UDDI Browsing
Web Service Provisioning
EIS Integration
“There is always an incentive for one company to try to move standards, to change standards and leave other companies inoperable, but there’s a tremendous incentive for the (World Wide Web) community to prevent that.”

How do you evaluate a standard?

- Industry support
- Standard governance (W3C and OASIS)
- Update Frequency
- Competing standards
“The architect must be a prophet…a prophet in the true sense of the term...if he can’t see at least ten years ahead don’t call him an architect”

- Frank Lloyd Wright
Web Services Stack

Least well defined

- Additional Standards
- Business Process Execution
- Service Publishing and Discovery
- Service Description
- Service Communication
- Metadata Language
- Network Transport Protocols

Well defined

Emerging

Evolving

Enabling

Least well defined

Well defined
## Adoption of Web Services

<table>
<thead>
<tr>
<th>Web Service</th>
<th>RPC Oriented</th>
<th>Document Oriented</th>
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<tr>
<td>Interaction Model</td>
<td>RPC</td>
<td>Messaging (RPC + XML)</td>
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<tr>
<td>Processing Model</td>
<td>(Business) Object centric</td>
<td>Document Centric</td>
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<tr>
<td>Interaction Type</td>
<td>Mostly synchronous</td>
<td>Mostly asynchronous</td>
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