

# Proposing Web Service to Web Service Management Standards

Akhil Sahai, Vijay Machiraju  
HP Laboratories  
akhil\_sahai@hp.com

## Categories of Standards (related to web service management)

- A. Standards for *describing functionality* of web services.
- B. Standards for *describing non-functional attributes* of web services.
- C. Standards for *manageability* of web services.
- D. Standards for *execution of transactions* across web services.
- E. Standards for web service to web service management

# Standards for describing functionality of web services

**What?** standards for describing web services, their operations, flows, relationships to other web services, how they can be contacted, and protocols they support.

**Why?** they tell a web service management system about the managed objects (services, transactions, composition, etc.)

**Examples:** WSDL, WSFL.

# Standards for describing non-functional properties of web services

**What?** standards for describing performance, reliability, security, availability, and other quality guarantees of a web service (either absolute guarantees or guarantees as they relate to one customer or a class of customers).

**Why?** they set the goals for a web service management system. The job of the management system is to meet the constraints specified in them.

**Examples:** WSEL (Absolute QoS for web services), SLAs between web services.

# Standards for manageability of web services

**What?** standards for obtaining measurements and other data from web services; standards for uniform control of web services; standards for instrumenting web services.

**Why?** they will help easy integration with management systems despite the heterogeneity in web services; they will also enable new forms of management that are otherwise not possible.

**Examples:** ARM, XARM, JMX, CIM, SNMP for web services.

# Standards for execution of transactions across web services

**What?** standards for format of messages exchanged between web services; standards for transaction and conversation execution.

**Why?** they will enable a management system to intercept messages flowing between web services and to understand the state of transaction/conversation.

**Examples:** SOAP.

# Standards for web service to web service management

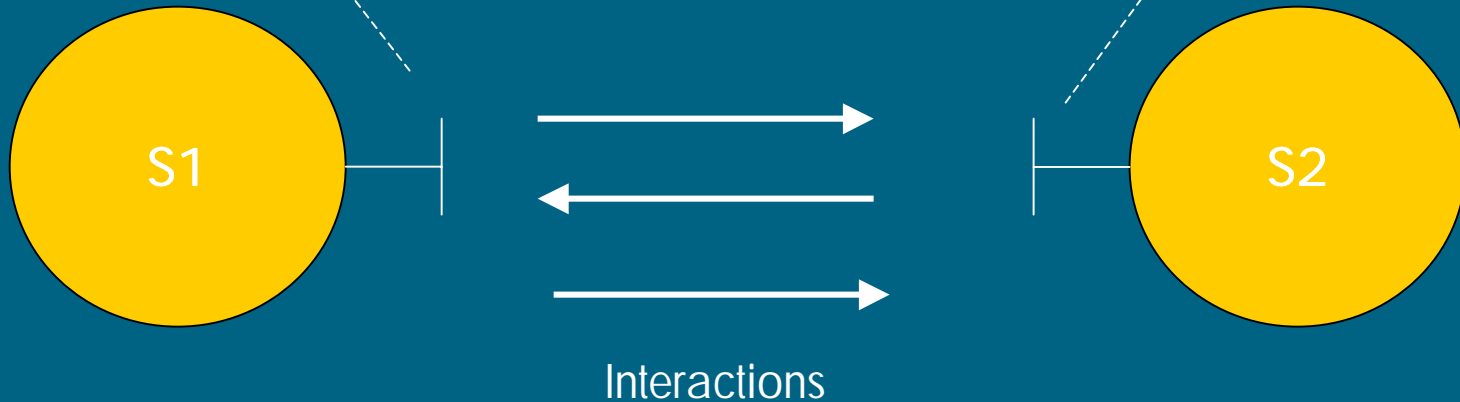
**What?** Management interfaces that will enable web service to web service management

**Why?** *visibility* and *control*. That will enable cross-enterprise management of web services – SLAs, transactions, etc; they will also help in better dynamic selection and automatic negotiation of web services.

# Web Service to Web Service Management

Consumer's manageability interface

Provider's manageability interface



# Need for such standards

- Discovery or pre-composition phase
  - negotiation and selection based on new set of attributes (as opposed to static attributes in UDDI)
    - Quality of service-performance, availability, reliability
    - Service-level guarantees
- Execution or post-composition phase
  - Visibility and control
  - Monitoring and controlling of users, tasks, compliance
  - Dynamic business interaction for re-engineering business process

# Elements of server-side manageability interface

Service-level Visibility	Interaction-level Visibility
Nature of visibility and control supported	Expected time an interaction will take to execute prior to submission
Quality levels-performance, availability, reliability	Expected time an interaction in progress will take to complete. Track an interaction in progress.
Quality levels currently being guaranteed to the consumer	Amount of time a completed interaction took
History of quality levels with all consumers	Quality level being guaranteed on certain types of interactions
Generic service metrics no of current consumers, avg turn – around time	
Service specific metrics-books sold per second for a book selling service	

# Elements of server-side manageability interface

Service-level control	Interaction-level control
Change current quality levels being guaranteed to the customer. For e.g., change the consumer from bronze to gold customer	Abort an interaction, suspend an interaction, resume a suspended interaction
Report a consumer-perceived service level violation to the provider. Ask for an explanation. May result in compensation according to the contract.	Change the desired quality level for an interaction

# Elements of consumer-side manageability interface

Service-level Visibility	Interaction-level Visibility
Nature of visibility and control supported	quality levels for a particular interaction or a class of interactions as perceived on the consumer side
Quality levels currently being guaranteed to the consumer	

# Elements of consumer side manageability interface

Service level control	Interaction level control
Slow down the request rate, fail over to a different service	Re-issue or restart an interaction. Suspend an interaction

# Realizing the vision

- Standards for transporting management and context related information in the headers of other messages
- Management interfaces explicitly defined to enable management conversations

# Realizing the vision

- Define set of standard terms
  - Terms such as QoS, contracts, transactions
  - Define standard conversations
  - Need to adhere to standards for being certified manageable
- Standardize extensions to protocols like SOAP as to include manageability information.
  - Headers of request documents capturing quality level expected and conversation context
  - Headers of response documents containing quality level delivered, response time information, and conversation context

# Conclusion

- Need for web service to web service management
- Standardization need of the hour

# References

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