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Design Patterns for Web Service Contract Versioning

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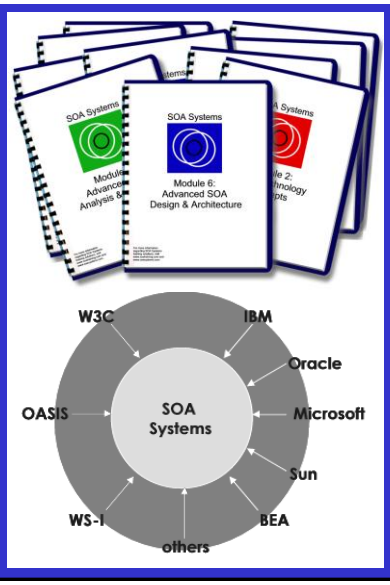


Introduction

- A series of versioning patterns covering ways to communicate and support change within services.
- Patterns provide proven and standardized approaches in the governance of change within services contracts and logic.
- Collaborative effort with Thomas Erl and David Orchard as part of SOA Design Patterns, Prentice Hall, 2008.

Service Versioning Introduction

- Service versioning focuses on changes that occur in WSDL, XML Schema and WS-Policy.
- The fundamental starting point is the WSDL definition.
- Version Identification tells consumers whether changes are large or small and extent of compatibility.
- Compatibility identifies the amount of impact changes will have on service consumers.

Overview

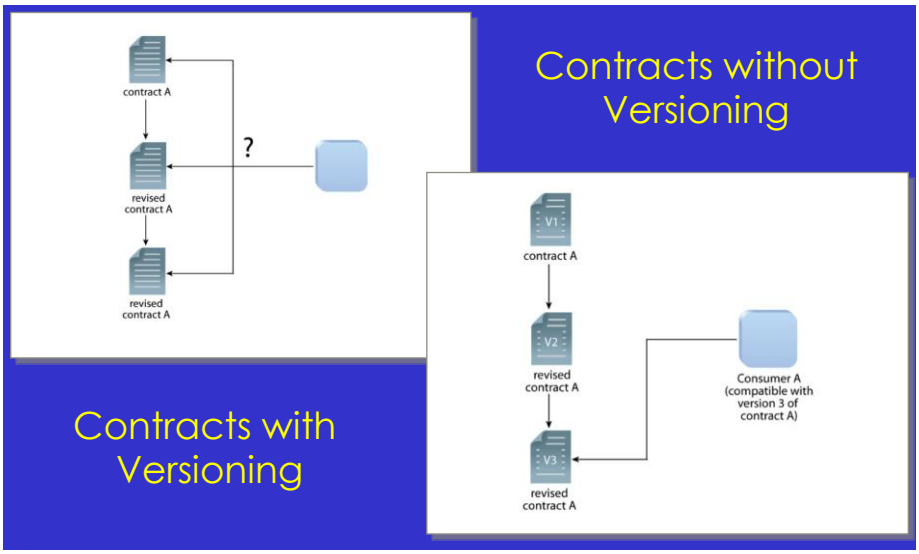
Five Service Versioning Design Patterns:

- Version Identification
- Compatible Change
- Partial Validation
- Termination Notification
- Canonical Versioning

Version Identification

- Problem: Service contracts are changed and there is no mechanism employed to notify consumers.
- Solution: The version of a service contract is important for communication and enforcement. Version identifiers can exist in namespaces and annotations.
- Impact: No standard approach towards version identification and communication with service consumers.

Version Identification



Version Identification

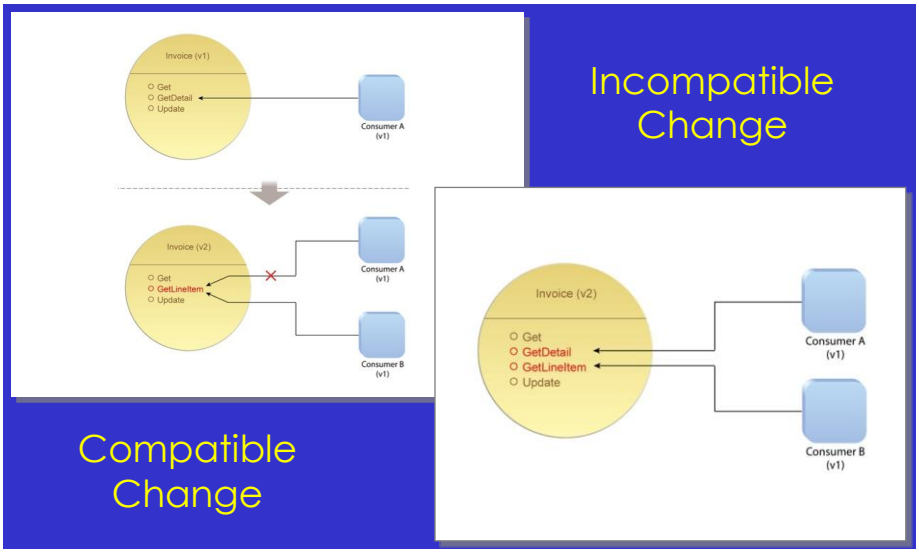
Two approaches for communicating versioning information via identifiers:

- Amount of Work - Major/Minor numbers indicate the level of effort in the change.
- Compatibility Guarantee - Major numbers indicate no backward compatibility. Minor numbers indicate backward compatibility.

Compatible Change

- Problem: Changes to service contracts can break service consumers if applied in an inappropriate way.
- Solution: Compatible changes provides approaches to maintain support for service consumers of different versions.
- Impact: Compatible change can introduce service contracts that are too generic and will still require the need for service governance.

Compatible Change



Compatible Change

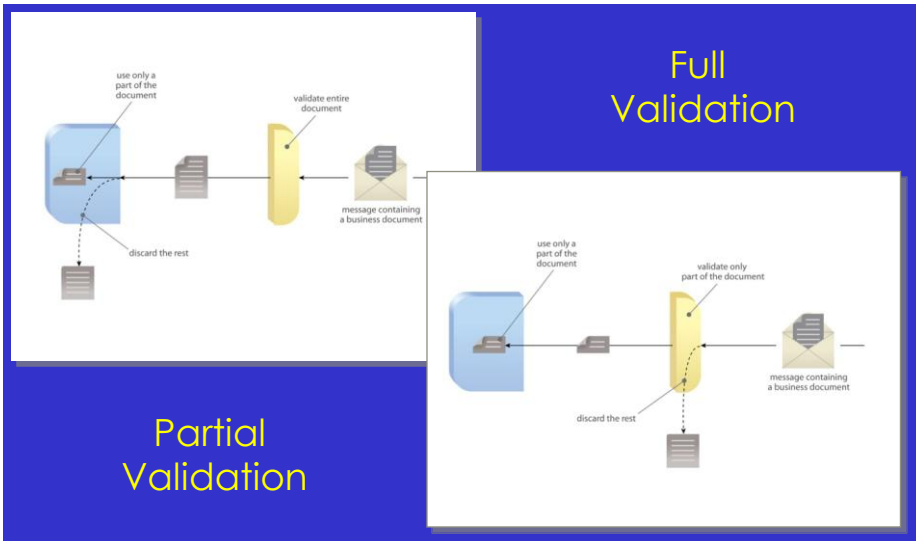
Some examples of backward compatible changes are:

- Adding new operations to existing WSDL
- Adding new optional elements/attributes
- Altering constraint of existing message via coarser validation.
- Addition of policy alternatives

Partial Validation

- Problem: Coarse/generic capabilities in services may provide consumers with unnecessary information.
- Solution: Avoid unnecessary processing of message allowing for loose coupling of consumer from service
- Impact: Increases design and run-time filtering efforts which may reduce the overall benefit.

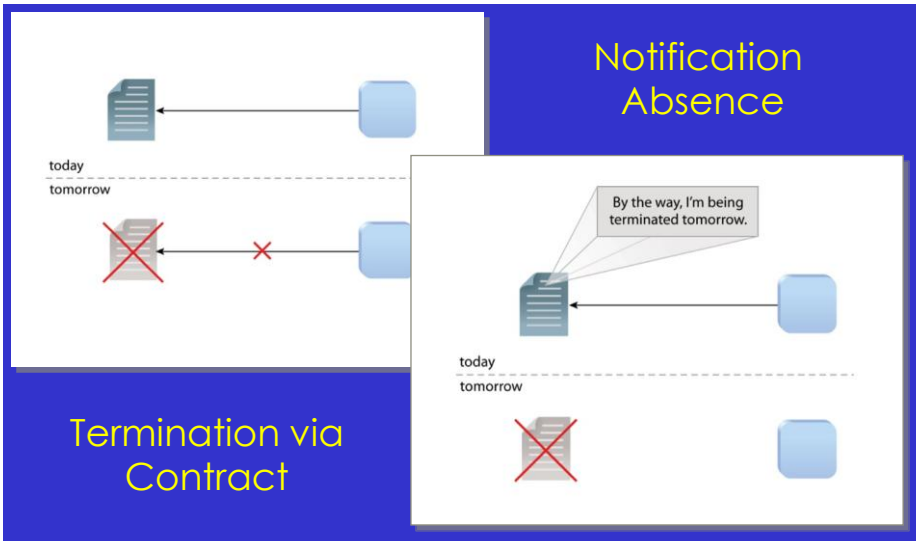
Partial Validation



Termination Notification

- Problem: Service consumers are unaware of service contract changes or service termination.
- Solution: Service contracts can describe service termination information for human/programmatic consumption.
- Impact: Service consumers must be aware of service termination information syntax in order to be supportive of changes.

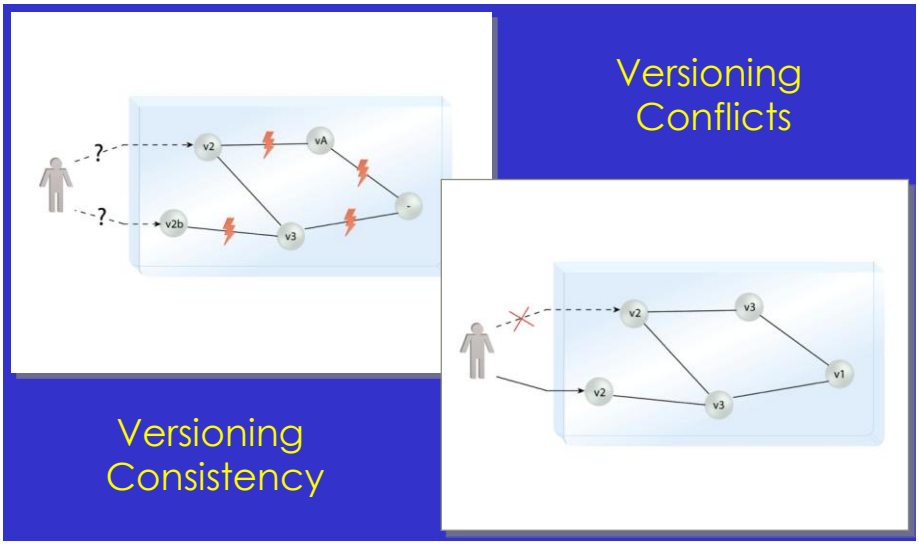
Termination Notification



Canonical Versioning

- Problem: Services within the same Inventory may utilize different versioning approaches which can impact native Interoperability between services.
- Solution: Standardization within the inventory boundary of version identification and version rules.
- Impact: New governance requirements will be introduced to support creation and enforcement of versioning standards.

Canonical Versioning



Canonical Versioning

Three common strategies include:

- Strict - All changes in contracts require a new version. No support for backward or forward compatibility
- Flexible - Focus on backward compatible changes only and any incompatible changes requires new version.
- Loose - Incompatible changes results in new version of contract which uses both backward and forward compatibility.

Q&A

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