



JAX-WS.Next: Progress and Feedback

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Agenda

- New Features to be considered
- Spec Clarification & Ratification

New Features to be considered



Bean Validation

New Feature to be considered

- JSR-303

```
@DecimalMax("30.00")
```

```
BigDecimal discount;
```

```
@Pattern(regex="\\(\\d{3}\\)\\d{3}-\\d{4}")
```

```
String phoneNumber;
```

```
@Size(min=2, max=240)
```

```
String briefMessage;
```

- JAXB2 integration



Bean Validation

New Feature to be considered

- JAVA 2 WSDL/Schema

- Some BV constraints may be translated to schema constraints

`@NotNull`

```
private String firstname;
```

```
<xsd:element name="firstname" nillable="false"/>
```

- WSDL/Schema to JAVA

- Some schema constraints may be translated to BV constraints

```
<element name="item" type="xsd:string" minOccurs="2" maxOccurs="10"/>
```

```
@Size(min=2, max=10)
```

```
List<String> item;
```



Web Service Reliable Messaging

New Feature to be considered

- AtMostOnce: No duplication
- AtLeastOnce: No lost message
- ExactlyOnce
- InOrder: Messages are delivered in the order that they were sent
 - InOrder may need new programming models



Security

New Feature to be considered

- WS-Security provider plugability
 - WebServiceFeature and Annotation for WS-Security
 - Portable WS-Security implementation
- JSR-196 JASPIC SOAP Profile
 - Pluggable SAM (Server Authentication Module) and CAM (Client Authentication Module)
 - SOAP profile: javax.xml.soap.SOAPMessage as message type
 - Async: the response is sent as a 'http request'



Jigsaw – JDK modular system

New Feature to be considered

- Jigsaw changes class/service loader semantics
- Affects the way factories are loaded
- Use JDK default `java.util.ServiceLoader`
 - Supports both modular & non-modular modes
 - Keep old behaviour for backwards compatibility?
- Modularize JAXWS in JDK, end of 'endorsed'



Client Side Features

New Feature to be considered

- Provider Selector feature
 - Multiple implementations in the client classpath
- WSDL connection config
 - Local WSDL file as workaround
- Port Injection for multi-thread component
- JAX_WS-1067 BindingProvider extends `java.io.Closeable`
 - or No API change, but client objects must implement the `java.io.Closeable`



Server Side Async

New Feature to be considered

- Non-anonymous replyTo
 - `@Addressing(responses={NON_ANONYMOUS})`
 - Container MUST response HTTP 202 before dispatching the request
 - Container may buffer the request messages



Server Side Async

New Feature to be considered

- Long Running Async Operation
 - App uses `ResponseDispatch` to send response

```
@WebService
public class StockQuote {
    public void getPriceAsync(String ticker,
        ResponseDispatch<Float> responseDispatch) {
        storeOrDispatchRequestToBackend(ticker, responseDispatch);
    }
}

//Later
responseDispatch.send(response);
```



Server Side Async

New Feature to be considered

- Bi-direction SEI (Callback Interface)
 - Server implements the SEI and specifies a callback interface
 - Client implements the callback interface
 - SEI and callback interface must have only one-way operations
 - Found in MS.net WCF and early SCA

Server Side Async


New Feature to be considered

- Bi-direction SEI (Callback Interface)

//The service implementation bean

```
@WebService
public class QuotationService {
    @Callback
    QuotationCallback callback;

    public void requestQuotation(Request req) {
        ...
        callback.update(status);
        ...
        callback.sendResponse(res);
    }
}
```



```
public interface QuotationCallback {
    void update(Status s);
    void sendResponse(Response res);
}
```



Stateful Conversation

New Feature to be considered

- Programming Models
 - Stateful Session EJB
 - The component instance has client specific states
 - The component instance has the same lifecycle as the ‘conversation’
 - Servlet HttpSession
 - The component instance states are not specific to a client interaction
 - The component instance has a property bag to store client specific state objects

Stateful Conversation

New Feature to be considered

- Servlet HttpSession

```
@Resource WebServiceContext wsContext; //Injected by the container
@WebMethod
public Response process(Request request) {
    HttpServletRequest httpRequest = (HttpServletRequest)
        wsContext.getMessageContext().get(MessageContext.SERVLET_REQUEST);
    Object mySessionObject =
        httpRequest.getSession().getAttribute("mySessionObject");
```

- HttpSession is usually implemented by using http Cookies

```
Map<String, Object> states = wsContext.getConversationStates();
```



Stateful Conversation

New Feature to be considered

▪ Stateful Web Service with JAX-WS RI

```
@Stateful @WebService @Addressing
public class Book {
    private final String id;
    private List<String> reviews;
    public Book(String id) {
        this.id = id;
        reviews = new ArrayList<String>();
    }
    public synchronized void addReview(String review) {
        reviews.add(review);
    }
    public List<String> getReviews() {return reviews;}
    public static StatefulWebServiceImpl<Book> manager;
}
```

```
@WebService //"Manager of the 'stateful objects'
public class BookStore {
    public W3CEndpointReference getProduct(
        String id) {
        return Book.manager.export(new Book(id));
    }
}
```



Raw XML in SEI

New Feature to be considered

- Raw XML types: DOM Element, SAAJ SOAPElement
- Allows XML operations: XPath, XSLT, etc.

```
@WebService
public class RawXmlOperations{

    public Element domElement(Element element) {...}

    public String test2(SOAPElement element, String str) {...}

    //The @XMLParam is to annotate the corresponding XML schema type
    public void test3(@XMLParam(type="...", element="...") Element element) {...}
}
```



Clarification & Ratification



Databinding related Issues

Spec Clarification & Ratification

- JAX_WS-497: Array, Collection

Ex. `public int[] retArrayInt1D(int[] intArray){ return intArray; }`

- JAX_WS-570 `@XmlElementWrapper` or `@WebParamWrapper`
- JAX_WS-483 nillable Ex. `null`, `{null}`, or `{}`
- Supported in Document-literal-Wrapped

Unspecified for RPC-Literal or Document-Literal-Bare

- JAX_WS-499 `java.util.Map`



Databinding related Issues

Spec Clarification & Ratification

- Document-Literal Wrapped only
 - JAX_WS-755 @XmlAttachmentRef
 - JAX_WS-517 DataHandler
 - Array and Collections
 - Null value
- JAX_WS-498 Setting elementFormDefault to qualified by default
- JAX_WS-659 Unwrap parameters but wrap the response
- JAX_WS-858 wrapper style criteria



Issues

Spec Clarification & Ratification

- JAX_WS-495 Generating wsdl:documentation and xsd:documentation
 - Tool time vs. runtime
- JAX_WS-711 Support for schema validation in the API
- JAX_WS-828 WSDL 1.1 binding extension for SOAP 1.2

Spec Clarification

Spec Clarification & Ratification

- Client side thread safety
 - Client objects (dispatch and proxy) are not thread safe
 - WebServiceRef injection of multi-thread EE component (servlet)
 - Are dispatch and proxy 'light-weight' objects, or heavy but reusable?
- WSDL is required for init
 - Proxy cannot init without WSDL. (Issue 843)
 - Service Endpoint developed from top-down(wsdl2java)
 - The jaxws tool does not preserve all the WSDL metadata in wsdl2java



Spec Clarification

Spec Clarification & Ratification

- `javax.xml.ws.Holder`
 - Using Holders in document style operation is ugly
 - EJB: Does RMI support `passByReference`? (Issue 776)
- Handler
 - Global, application, and other scope of handler
 - Handler to process explicit `soap:header`
 - Share handler config



Q & A



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