# GRA-UML

# Design Document

3/31/2014

# WSDL Extensions

This document is intended to start the discussion on the scope of GRA-UML and how the open ended possibility of extensions in WSDL should be handled. There is a wide gulf between what, in theory, could be in a GRA specification and what is typically found. It seems clear that some of the choices and semantics of these options should be in the model, but not all as that would be enormous. Besides choices in the model there may be a necessity for extension “profiles” that are included as a package and, perhaps, parameterized in some way. The choice for such a package would be in the model.

Since there are questions as to what should be provided for as well as how we suggest a discussion leading to eventual consensus. This document sets the stage for that discussion. Many thanks to Tom Digre for developing this information.

# GRA Specification

A GRA Service Specification Package MUST contain one conformant Service Description and MUST contain at least one conformant Service Interface Description. The Service Interface Description MUST conform to one or more GRA Service Interaction Profiles **[GRA SIP]**. A Service Interaction Profile defines the technology stack for information sharing.

For example,

|  |  |
| --- | --- |
| **Select this profile…** | **If your technology stack for information sharing includes:** |
| Reliable Secure Web Services SIP | SOAP, WS-I, WS-\*, SAML 2.0, GFIPM,, WS-I Basic Profile 1.2 and (to the extent practical) the WS-I Reliable Secure Profile 1.0 |

There does not appear to be any particular constraint on which aspects of the technology stack may or may not be used. Each of these technology specifications is dependent upon a number of other specifications. Since most of the referenced specifications have extensibility points, additional technology specifications may be incorporated, apparently without constraint, into a Service Interface Description. Ultimately, these technology specifications become bound to a WSDL and/or a message interchange instance. Thus, web service interaction requirements are primarily realized in terms of WSDL Extensions.

While the mechanics of adding technology specifications to WSDL is open-ended, the participants will need to adapt their technical capabilities to a specific technology contract. This open-ended technology specification stack presents some challenges in the development of a UML Profile which is capable of reflecting the semantics and constraints of potentially a large number of individual specifications.

To better understand the problem, we will examine the list of specifications explicitly cited by the SIP Specification, what specifications are used in the SSP Template, and what specifications are actually used in the inventory of SSPs.

# SIP Specifications

The following specifications are directly referenced by SIP. Those specifications in turn reference other specifications, etc. Associated with each of those specifications is a list of schema namespaces referenced by those specifications (which we have abbreviated to their commonly used prefix). These specifications reference namespaces to be used as WSDL extension points and/or Instance Document extension points.

* **SAML** OASIS Security Assertion Markup Language, Version 2.0 specification set, OASIS standard—Errata composite, February 12, 2007, http://saml.xml.org/saml-specifications *(references saml, samlp, ds, xenc,SOAP-ENV, md, ecp, xenc, paos, dce, x500, xacmlprof)*
* **SwA** W3C SOAP Messages With Attachments, W3C Note, December 11, 2000, http://www.w3.org/TR/SOAP-attachments
* **WS Notification** OASIS Web Services Notification, http://www.oasis-open.org/committees/tc\_home.php?wg\_abbrev=wsn *(references S, wsa, wsrf-rp, wsrf-bf, wsnt, wsntw, wstop, wsn-b, wsn-br,wsn-bw, wsn-brw, wsrf-bfw)*
* **WS-Addressing Core** W3C Web Services Addressing 1.0—Core , W3C Recommendation, May 9, 2006, <http://www.w3.org/TR/2006/REC-ws-addr-core-20060509/> *(references S, wsa)*
* **WS-Addressing SOAP Binding** W3C Web Services Addressing 1.0—SOAP Binding, W3C Recommendation, May 9, 2006, <http://www.w3.org/TR/2006/REC-ws-addr-soap-20060509/> *(references S, S11, wsa,wsaw)*
* **WS-Addressing WSDL Binding** W3C Web Services Addressing 1.0—WSDL Binding, W3C Recommendation, May 29, 2006, <http://www.w3.org/TR/2006/CR-ws-addr-wsdl-20060529/> *(references S, S11, wsa, wsaw, wsoap)*
* **WS-Atomic Transaction** OASIS Web Services Atomic Transaction 1.1, OASIS standard, April 16, 2007, http://docs.oasis-open.org/ws-tx/wstx-wsat-1.1-spec-os/wstx-wsat-1.1-spec-os.html *(references S11, S12, wscoor, wsat, wsa)*
* **WS-Business Activity** OASIS Web Services Business Activity 1.1, Committee Draft, March 15, 2006, http://docs.oasis-open.org/ws-tx/wstx-wsba-1.1-spec-cd-01.pdf *(references S, wscoor, wsba)*
* **WS-Coordination** OASIS Web Services Coordination 1.1, Committee Draft, March 15, 2006, http://docs.oasis-open.org/ws-tx/wstx-wscoor-1.1-spec-cd-01.pdf *(references S, wscoor, wsa)*
* **WS-I AP** WS-I Attachments Profile, Version 1.0, Final Material, April 20, 2006, http://www.ws-i.org/Profiles/AttachmentsProfile-1.0.html *(references soap, soapenc,soapbin, mime, uddi, wsi, ref)*
* **WS-I BP** WS-I Basic Profile, Version 1.1, April 10, 2006, http://www.ws-i.org/Profiles/BasicProfile-1.1.html *(references soap, soapenc, soapbind, uddi)*
* **WS-I BSP** WS-I Basic Security Profile, Working Group Draft, March 30, 2007, <http://www.ws-i.org/Profiles/BasicSecurityProfile-1.0.html> *(references soap, wsi, ds, xenc, c14n, wsse, wsu, b10, bp11, saml, samlp, rel)*
* **WSDL 1.1** W3C Web Services Description Language, Version 1.1, W3C Note, March 15, 2001, <http://www.w3.org/TR/wsdl> *(references soap, http, mime, soapenc, soapenv, )*

# The SSP Template

The SSP Template includes sample wsdl, including policies applied at the WSDL Definition level and referenced by elements within the technology bindings.

The following is an exhaustive list of namespaces used for WSDL Extensions. Entering the given URL in a browser typically displays a page giving access to the underlying schema and the specification. Most specifications provide sample usage patterns. The following list contains a remark if the corresponding namespace was not directly referenced by any document in the list of SIP Specifications.

xmlns:wsrm=[*http://schemas.xmlsoap.org/ws/2005/02/rm/policy*](http://schemas.xmlsoap.org/ws/2005/02/rm/policy) *(not referenced above)*

xmlns:wsaw=[*http://www.w3.org/2006/05/addressing/wsdl*](http://www.w3.org/2006/05/addressing/wsdl)

xmlns:soap=[*http://schemas.xmlsoap.org/wsdl/soap/*](http://schemas.xmlsoap.org/wsdl/soap/)

xmlns:wsdl=[*http://schemas.xmlsoap.org/wsdl/*](http://schemas.xmlsoap.org/wsdl/)

xmlns:wsam=*"http://www.w3.org/2007/05/addressing/metadata"* (not referenced above)

xmlns:wsu=*"http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd"*

xmlns:wsp=*"http://schemas.xmlsoap.org/ws/2004/09/policy"* (not referenced above)

xmlns:sp=[*http://docs.oasis-open.org/ws-sx/ws-securitypolicy/200702*](http://docs.oasis-open.org/ws-sx/ws-securitypolicy/200702) *(not referenced above)*

xmlns:t=[*http://schemas.xmlsoap.org/ws/2005/02/trust*](http://schemas.xmlsoap.org/ws/2005/02/trust) *(not referenced above)*

# Published SSPs

The published SSPs contain additional namespaces used as various kinds of extension points. Again, there is a note if the namespace was not directly referenced by the SIP Specifications.

xmlns:ns=[*http://schemas.xmlsoap.org/soap/encoding/*](http://schemas.xmlsoap.org/soap/encoding/) *(not directly referenced above, defined in SOAP 1.1 at http://www.w3.org/TR/2000/NOTE-SOAP-20000508/)*

xmlns:http=[*http://schemas.xmlsoap.org/wsdl/http/*](http://schemas.xmlsoap.org/wsdl/http/)

xmlns:wsx=[*http://schemas.xmlsoap.org/ws/2004/09/mex*](http://schemas.xmlsoap.org/ws/2004/09/mex) *(not referenced above)*

xmlns:wsa10=[*http://www.w3.org/2005/08/addressing*](http://www.w3.org/2005/08/addressing) *(not referenced above)*

xmlns:soap12=[*http://schemas.xmlsoap.org/wsdl/soap12/*](http://schemas.xmlsoap.org/wsdl/soap12/) *(not referenced above)*

xmlns:mime=[*http://schemas.xmlsoap.org/wsdl/mime/*](http://schemas.xmlsoap.org/wsdl/mime/)

xmlns:soapenc=*"http://schemas.xmlsoap.org/soap/encoding/"*

xmlns:ws-policy=[*http://www.iir.com/sirs/1.0/ws-policy*](http://www.iir.com/sirs/1.0/ws-policy) *(not referenced above)*

xmlns:sp=[*http://docs.oasis-open.org/ws-sx/ws-securitypolicy/200702*](http://docs.oasis-open.org/ws-sx/ws-securitypolicy/200702) *(not referenced above)*

# Patterns used in SSPs

While there are a lot of elements associated with these extensions, most SSPs are virtually identical in terms of their policy declaration. The policy is either a direct copy of the corresponding template policy (except for target namespace change), or removal of perhaps one of the policies. There are a couple of SSPs which have larger differences, however.

# Samples

In addition to the referenced schemas, specifications, and specification examples, we have all the published SSPs on the eGit repository. Under relative path /GRA-UML-Project/GRA-Modeling-Tool/plugins/org.ijis.gra.uml.examples/src/main/resources/org.ijis.gra.ssp.examples