

WS Policy – Overview and status

Presentation for WSMO/WSML WGs

Jacek Kopecký
jacek.kopecky@deri.org

- **WS-Policy**
 - Policies of entities in a Web services-based system
 - Service requirements and capabilities
- **Two specs – WS-Policy and WS-PolicyAttachment**
 - Latest WDs: 27 Sep 2006, version 1.5
 - <http://w3.org/TR/ws-policy>
 - <http://w3.org/TR/ws-policy-attach>
- **Originally from IBM, Microsoft and many others**
 - Due to apparent political reasons, in W3C since April 2006
 - Work progresses in W3C WS-Policy WG
 - Planning Last Call in November

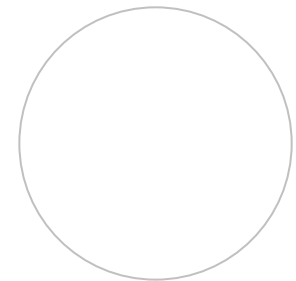
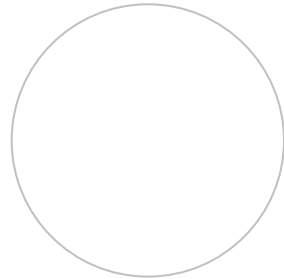
- **Policy** – a collection of alternatives
 - Unordered
 - Preferences, selecting an alternative out of scope
- **Policy alternative** – a collection of assertions
 - Unordered
 - Aggregating related assertions out of scope
- **Policy assertion**
 - An individual requirement, capability or other property of a behavior
 - Defined outside the framework

- **Policy attachment**
 - A mechanism for associating policy with one or more policy scopes.
- **Policy expression**
 - An XML representation of a policy
- **Policy scope**
 - A collection of policy subjects
- **Policy subject**
 - An entity with which a policy can be associated
 - E.g. an endpoint, message, resource, interaction
- **Policy assertion type**
 - A class of policy assertions, implies a schema and assertion-specific semantics
- **Policy vocabulary**
 - All policy assertion types used in a policy
 - Alternatives without some types explicitly prohibit those types

WS-Policy Expression in XML Normal Form



```
<wsp:Policy ... >  
  <wsp:ExactlyOne>  
    ( <wsp:All>  
      ( <Assertion ...> ... </Assertion> )*  
      </wsp:All> )*  
    </wsp:ExactlyOne>  
</wsp:Policy>
```

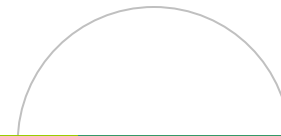
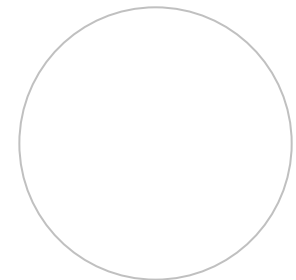
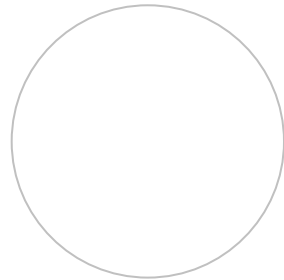


WS-Policy Expression in XML Compact Form



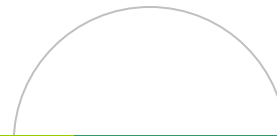
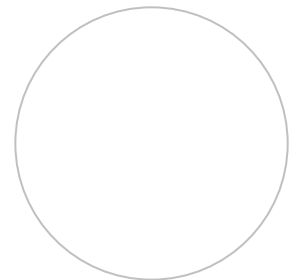
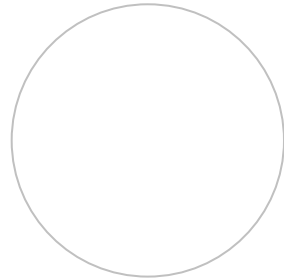
- Optional assertions
- Nesting of *and* and *or*
- Policy inclusion...

```
<wsp:Policy>  
  <ex:RequireDerivedKeys wsp:Optional="true" />  
  <wsp:ExactlyOne>  
    <ex:WssUsernameToken10 />  
    <ex:WssUsernameToken11 />  
  </wsp:ExactlyOne>  
  <wsp:PolicyReference URI="Protection.wsp" />  
</wsp:Policy>
```



- Checking if two policies have compatible alternatives
- **Assertion compatibility**
 - Involves domain-specific processing
- **Alternative compatibility**
 - Two alternatives are compatible iff every assertion in one is compatible to an assertion in the other
 - Intersection of compatible alternatives contains all assertions
- **Policy compatibility**
 - Two policies are compatible iff at least one alternative of one is compatible with an alternative of the other
 - Intersection is a set of pair-wise alternative intersections

- Provider conveys conditions for providing the service
- Requester may choose any alternative
 - But MUST choose exactly one for an interaction
 - Need not know assertions present in other alternatives



- Attaching policies to WS entities
 - In WSDL, UDDI, WS-Addressing EndpointReferences
- Effective policy
 - A **merge** of applicable policies – putting all in `wsp:All`
- Element attachment – in place
 - Attribute `wsp:PolicyURIs=" ... "`
 - Element `<wsp:PolicyReference URI=" ... " />`

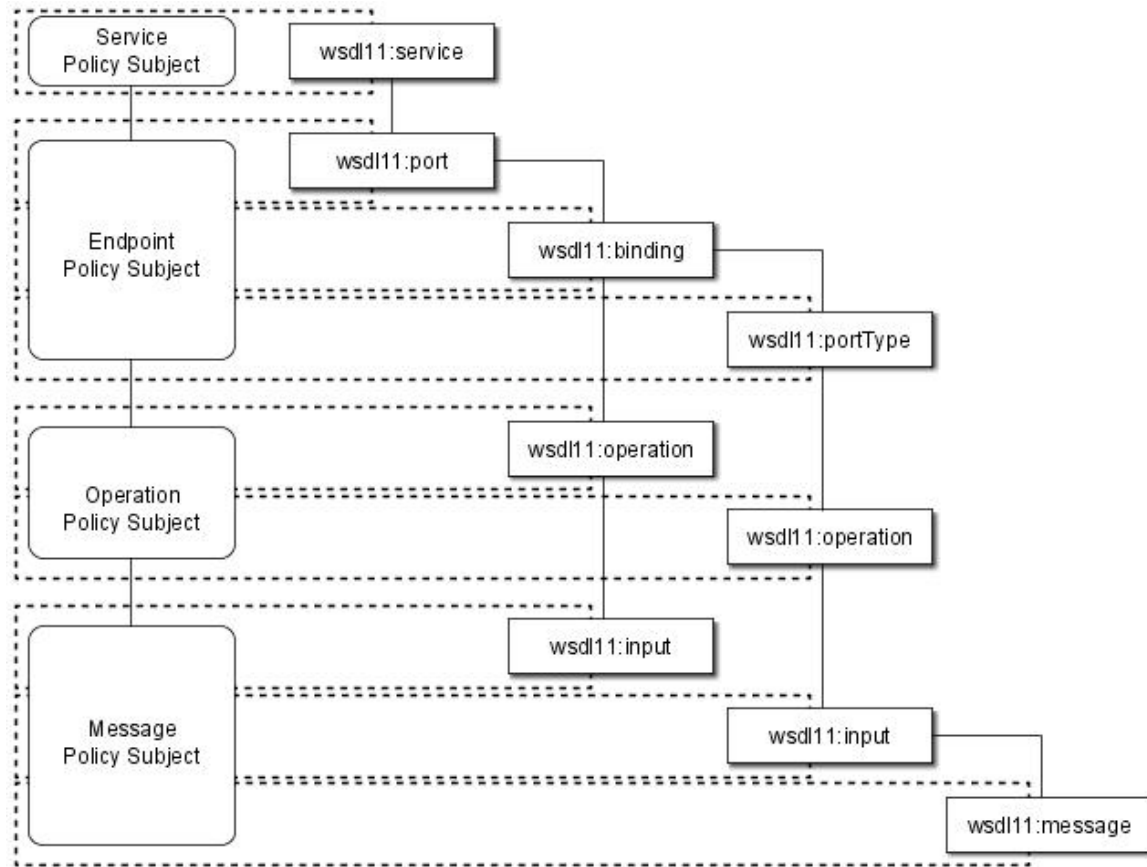
- External attachment

```
<wsp:PolicyAttachment>  
  <wsp:AppliesTo>  
    <x:DomainExpression/> +  
  </wsp:AppliesTo>  
  ( <wsp:Policy> ... </wsp:Policy> |  
    <wsp:PolicyReference> ... </wsp:PolicyReference> ) +  
  <wsse:Security> ... </wsse:Security> ?  
</wsp:PolicyAttachment>
```

Policy attachment to WSDL



- Service policy
 - Also from interface
- Endpoint policy
 - Also from binding
 - Only for interactions with that endpoint
- Operation policy
 - In interface, binding
 - For interactions using this operation
- Message policy
 - In interface, binding



(in WSDL 2.0 terms)

- Important points in WS-Policy
 - Two-level model – alternatives and assertions
 - Merging policies explicitly defined
 - Intersection of policies explicitly defined
 - But not compatibility and meaning – that's domain-specific
- Standardization started June 2006
 - Should be Recommendation by next summer
 - All major industrial players involved
 - Next f2f meeting: 7-9 Nov 2006, Bedford, MA, USA
- Not connected to SemWeb or SWS