



Sécurité en ingénierie du Logiciel

Le cadre des Web Services

**Partie 9 : Introduction à 'Web Services
Definition Language' (WSDL)**

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- Introduction
- WSDL types
- WSDL messages
- WSDL porttype
- WSDL binding
- WSDL port
- Conclusion

- Spécification W3C
- Web Services Description Language (WSDL) 1.1 (2001),
- Descriptions des services web par un langage décrit en XML,
- Pas uniquement SOAP mais aussi HTTP GET et POST,
- API disponible en Java/Perl/Python....,

Peut aussi servir de générateur d'applications clients mais attention.

Eléments XML pour WSDL :

- types,
(types rencontrés dans le Web Service)
- message,
(description des appels distants (paramètres, retour,...))
- porttype,
(description des opérations à réaliser en utilisant des messages)
- binding,
(lie le porttype avec un type de protocole (p.ex. SOAP))
- port,
(lie un point d'entrée réseau avec un binding)
- service. (plusieurs entrées indirects)

Partie de définition des types disponibles :

```
<?xml version="1.0"?>
```

```
<definitions name="StockQuote"
```

```
targetNamespace="http://example.com/stockquote.wsdl"
```

```
xmlns:tns="http://example.com/stockquote.wsdl"
```

```
xmlns:xsd="http://www.w3.org/2000/10/XMLSchema"
```

```
xmlns:xsd1="http://example.com/stockquote/schema"
```

```
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
```

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

```
xmlns="http://schemas.xmlsoap.org/wsdl/">
```

```
<types>
<schema targetNamespace="http://example.com/stockquote/schema"
xmlns="http://www.w3.org/2000/10/XMLSchema">
<complexType name="TimePeriod"> <all>
<element name="startTime" type="xsd:timeInstant"/>
<element name="endTime" type="xsd:timeInstant"/>
</all>
</complexType>
<complexType name="ArrayOfFloat">
<complexContent>
<restriction base="soapenc:Array">
<attribute ref="soapenc:arrayType" wsdl:arrayType="xsd:float[]"/>
</restriction> </complexContent> </complexType> </schema> </types>
```

Description des paramètres et types des paramètres, valeur de retour,...

```
<message name="GetTradePricesInput">
```

```
<part name="tickerSymbol" element="xsd:string"/>
```

```
<part name="timePeriod" element="xsd1:TimePeriod"/>
```

```
</message>
```

```
<message name="GetTradePricesOutput">
```

```
<part name="result" type="xsd1:ArrayOfFloat"/>
```

```
<part name="frequency" type="xsd:float"/>
```

```
</message>
```

Description des opérations.

- One-way,
- Request-response,
- Solicit-response,
- Notification


```
<portType name="StockQuotePortType">  
  <operation name="GetLastTradePrice"  
    parameterOrder="tickerSymbol timePeriod frequency">  
    <input message="tns:GetTradePricesInput"/>  
    <output message="tns:GetTradePricesOutput"/>  
  </operation>  
</portType>
```

Description de la liaison entre un porttype et un ou des protocoles : (ex. SOAP RPC sur HTTP)

```
<binding name="StockQuoteSoapBinding" type="tns:StockQuotePortType">
  <soap:binding style="rpc" transport="http://schemas.xmlsoap.org/soap/http"/>
  <operation name="GetTradePrices">
    <soap:operation soapAction="http://example.com/GetTradePrices"/>
    <input>
      <soap:body use="encoded" namespace="http://example.com/stockquote"
        encodingStyle="http://schemas.xmlsoap.org/soap/encoding"/>
    </input>
    <output>
      <soap:body use="encoded" namespace="http://example.com/stockquote"
        encodingStyle="http://schemas.xmlsoap.org/soap/encoding"/>
    </output>
  </operation>
</binding>
```

Description des points des "endpoint" :

```
<service name="StockQuoteService">  
<documentation>My first service</documentation>  
<port name="StockQuotePort"  
binding="tns:StockQuoteBinding">  
<soap:address location="http://example.com/stockquote"/>  
</port>  
</service>
```

WSDL peut aussi décrire des simple GET et POST :
les valeurs sont part1=1, part2=2, part3=3

- port1: GET, URL="http://example.com/o1/A1B2/3"
- port2: GET,
URL="http://example.com/o1?p1=1&p2=2&p3=3"
- port3: POST, URL="http://example.com/o1",
PAYLOAD="p1=1&p2=2&p3=3"

Retour est une image gif ou un image jpeg.

WSDL service - description HTTP

GET/POST

```
<definitions .... >
<message name="m1">
<part name="part1" type="xsd:string"/>
<part name="part2" type="xsd:int"/>
<part name="part3" type="xsd:string"/>
</message>
<message name="m2">
<part name="image" type="xsd:binary"/>
</message>
<portType name="pt1">
<operation name="o1">
<input message="tns:m1"/>
<output message="tns:m2"/>
</operation>
</portType>
```

WSDL service - description HTTP

GET/POST

```
<service name="service1">
  <port name="port1" binding="tns:b1">
    <http:address location="http://example.com/"/>
  </port>
  <port name="port2" binding="tns:b2">
    <http:address location="http://example.com/"/>
  </port>
  <port name="port3" binding="tns:b3">
    <http:address location="http://example.com/"/>
  </port>
</service>
<binding name="b1" type="pt1">
  <http:binding verb="GET"/>
  <operation name="o1">
    <http:operation location="o1/A(part1)B(part2)/(part3)"/>
    <input>
      <http:urlReplacement/>
    </input>
    <output>
```

WSDL service - description HTTP

GET/POST

```
<binding name="b2" type="pt1">
<http:binding verb="GET"/>
<operation name="o1">
<http:operation location="o1"/>
<input>
<http:urlEncoded/>
</input>
<output>
<mime:content type="image/gif"/>
<mime:content type="image/jpeg"/>
</output>
</operation>
</binding>
<binding name="b3" type="pt1">
<http:binding verb="POST"/>
<operation name="o1">
<http:operation location="o1"/>
<input>
<mime:content type="application/x-www-form-urlencoded"/>
```

- `adulau@foo.be`
- `http://www.foo.be/cours/securite-webservices/`
- `3B12 DCC2 82FA 2931 2F5B 709A 09E2 CD49 44E6
CBCD`