OpenGIS Project Document 04-050r1

TITLE:	**WMS Change Request: Support for WSDL & SOAP**	
AUTHOR:	**Name:**	**Philippe Duschene & Jerome Sonnet**
	Address:	**IONIC Software s.a.**
		Rue de wallonie, 18, 4460 Grace-Hollogne,
Belgium		
	Phone:	**+32 4 364 0 364**
	FAX:	
	Email:	**jerome.sonnet@ionicsoft.com**
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CATEGORY:		**Change Proposal**

1. Background

This change proposal is an outcome of the Common Architecture thread of the OpenGIS Web Service 2 initiative. The aim is to add support for a standard WSDL description of the WMS interface in version 1.3.1.

2. References

[1] . 03-109r1, Web Map Server Interface, 01-2004.

3. Proposal

Change Request 1: *Add a normative WSDL description as a Annex to the WMS specification.*

3.1.1 Affected section(s), table(s), figure(s):

Annex shall include WSDL definition and schema folder shall include wms_abstract.wsdl and wms.wsdl, as well as the common schemas as provided by OWS 2 Common Architecture work.

3.1.2 Purpose of the proposed change:

Add WSDL description as a normative part to the specification.

3.1.3 Reason for change:

To provide the normative definition of the WSDL description of the WMS interface to be used each time a WMS is describe using this language.

3.1.4 Summary of change:

Add a WSDL description of WMS as an Annex to the document and provide the electronic description integrated with the existing XSD description. OWS 2 Common Architecture has published such integrated schemas and WSDL documents.

3.1.5 Consequences of the change

WMS implementation shall use this WSDL definition to describe their WMS instances ensuring a better interoperability of the WMS interface while using the commonly used WSDL technology.

3.1.6 Consequences if not approved

Different WMS provide might define different way to describe WMS interface using WSDL reducing the interoperability of the interface.

Change Request 2: *Add a clear normative clause that state WSDL definition shall be used by all service providers that make a WSDL description available.*

3.2.1 Affected section(s), table(s), figure(s):

???

3.2.2 Purpose of the proposed change:

Add a normative clause that explain the intended use of the WSDL.

3.2.3 Reason for change:

It is important to explain the intended use of the normative WSDL description to avoid misused.

3.2.4 Summary of change:

Add a normative clause saying:

"All WMS service described using a WSDL document shall use the standard WSDL as described in Annex X. It is not required to import the document provided by the OpenGIS but it is required to use exactly the same definition as in the provided WSDL. "

3.2.5 Consequences of the change

WMS instances describe using WSDL will use the standard WSDL, improving interoperability.

3.2.6 Consequences if not approved

Different WMS providers might define different way to describe WMS interface using WSDL reducing the interoperability of the interface.

Change Request 3: *Include an optional link from the Capabilities to the WSDL.*

3.3.1 Affected section(s), table(s), figure(s):

???

3.3.2 Purpose of the proposed change:

This optional link will ease discovery and use of WSDL description.

3.3.3 Reason for change:

The access to a WSDL description may facilitate the binding phase of Web Service access.

3.3.4 Summary of change:

Add an element in the Capabilities document that refers to the WSDL.

3.3.5 Consequences of the change

A link to the WSDL description will be available in the Capabilities document.

3.3.6 Consequences if not approved

There will be no way the advertise in the Capabilities that a service is described by a WSDL document.

Change Request 4: *Include the description of the SOAP binding.*

3.4.1 Affected section(s), table(s), figure(s):

Adding SOAP support require creation of a new section. Proposal is to add a section 6.3.5 SOAP that is presented here under.

6.3.5 SOAP

A Web Map Service may support the "SOAP" protocol.

The implementation of the SOAP protocol is using document/literal encoding and the messages are the one defined in the Annex E of this document.

There is two step in supporting SOAP,

- Adding definition of the SOAP binding to the WSDL description of the service
- Adding support for SOAP document/literal envelope

6.3.5.1 WSDL description of the SOAP binding

```xml
<?xml version="1.0" encoding="UTF-8"?>
<wsdl:definitions
     targetNamespace="http://www.opengis.net/wms/soap"
                    xmlns:wms-
     soap="http://www.opengis.net/wms/soap"
                    xmlns:wms-
     req="http://www.opengis.net/wms/requests"
     xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
    xmlns:mime="http://schemas.xmlsoap.org/wsdl/mime/"
  xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/">

     <wsdl:documentation>
     </wsdl:documentation>

     <!-- import WMS interface definitions -->
     <wsdl:import
     namespace="http://www.opengis.net/wms/requests"
     location="./wms-xml-interfaces.wsdl"/>

    <!-- ***************************************
                         Bindings
         *************************************** -->

    <wsdl:binding name="WMS_SOAP_Binding"
                   type="wms-req:WMS_XML_Port">
    <soap:binding style="document"
    transport="http://schemas.xmlsoap.org/soap/http"/
    >
        <wsdl:operation name="GetCapabilities">
             <soap:operation/>
             <wsdl:input>
                  <soap:body use="literal"/>
             </wsdl:input>
             <wsdl:output>
                  <soap:body use="literal"/>
             </wsdl:output>
             <wsdl:fault name="exception">
                  <soap:fault name="exception"
    use="literal"/>
             </wsdl:fault>
        </wsdl:operation>
        <wsdl:operation name="GetMap">
             <soap:operation/>
```

```
                <wsdl:input>
                    <soap:body use="literal"/>
                </wsdl:input>
                <wsdl:output>
                 <mime:content type="image/*"/>
                </wsdl:output>
                <wsdl:fault name="exception">
                    <soap:fault name="exception"
        use="literal"/>
                </wsdl:fault>
            </wsdl:operation>
        </wsdl:binding>
</wsdl:definitions>
```

6.3.5.2 Declaring SOAP support in Capabilities

SOAP support shall be declared in the Capabilities of the services. This will allow usage of SOAP independently of WSDL.

If SOAP is supported, the services shall advertise

<DCPType>

  <HTTP>

   …….

   <SOAP
onlineResource="http://webservices.ionicsoft.com/ionicweb/wfs/BOSTON_SHAPE?"/>

  </HTTP>

</DCPType>

6.3.5.3 SOAP document/literal envelope

A Web Map Service that support SOAP binding shall accept document/literal SOAP messages which contains a message as defined in the XML encoding for Web Map Service. It is not required for the Web Map Service to support any other feature or extension of the SOAP protocol.

```
<?xml version="1.0" encoding="UTF-8"?>
<env:Envelope
xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
    <env:Body>
        <Operation>
                …
        </Operation>
    </env:Body>
</env:Envelope>
```

If the result of the operation is an XML document, it shall be included in a SOAP envelope as well,

```xml
<?xml version="1.0" encoding="UTF-8"?>
<env:Envelope
xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
      <env:Body>
            <Result>
                  …
            </Result>
      </env:Body>
</env:Envelope>
```

If the result is a Binary, the content of the Body is not specified and the binary is attached to the SOAP message using SOAP with attachement [SOAP-Attachement].

References :
[SOAP-Attachement] http://www.w3.org/TR/2004/NOTE-soap12-af-20040608/

Adding an informative Annex with some example is important too,

```xml
<?xml version='1.0' encoding='utf-8' ?>
<env:Envelope
      xmlns:env="http://schemas.xmlsoap.org/soap/envelo
      pe/">
 <env:Body>
   <wms:GetCapabilities
     xmlns:wms="http://www.opengis.net/wms"
     service="WMS" version="1.3.0" />
 </env:Body>
</env:Envelope>
```
GetCapabilities Request

```xml
<?xml version='1.0' encoding='utf-8' ?>
<soap:Envelope
      xmlns:soap="http://schemas.xmlsoap.org/soap/envel
      ope/">
 <soap:Body>
   <wms:Capabilities version="1.3.0" ….
 </soap:Body>
</soap:Envelope>
```
GetCapabilities Response

```
<?xml version='1.0' encoding='utf-8' ?>
<soap:Envelope
     xmlns:soap="http://schemas.xmlsoap.org/soap/envel
     ope/">
  <GetMap xmlns:gml="http://www.opengis.net/gml"
     xmlns="http://www.opengis.net/ows"
     version="1.1.1" service="WMS">
    <sld:StyledLayerDescriptor
     xmlns="http://www.opengis.net/sld"
     xmlns:sld="http://www.opengis.net/sld"
     version="1.0">
      <NamedLayer>
        <Name>highways</Name>
      </NamedLayer>
    </sld:StyledLayerDescriptor>
    <gml:BoundingBox srsName="EPSG:4326"
     xmlns="http://www.opengis.net/gml">
     <coordinates>-
    71.08503056559105,42.29748471720447 -
    71.07496943440891,42.30251528279554</coordinates>
    </gml:BoundingBox>
    <Output>
      <Format>image/png</Format>
      <Transparent>true</Transparent>
      <BGcolor>0xFFFFFF</BGcolor>
      <Size>
        <Width>400</Width>
        <Height>200</Height>
      </Size>
    </Output>

     <Exceptions>application/vnd.ogc.se_xml</Exception
     s>
    <Vendor>
    </Vendor>
  </GetMap>
 </soap:Body>
</soap:Envelope>
```

GetMap Request

3.4.2 Purpose of the proposed change:

This change aims to add support for SOAP document/literal binding.

3.4.3 Reason for change:

The W3C standard way of doing web services is WSDL/SOAP/UDDI. Adding SOAP support will increase the potential user base of this specification.

3.4.4 Summary of change:

This change add support for SOAP. It requires the XML encoding of WMS request to be included in the specification.

3.4.5 Consequences of the change

The WMS interface will support SOAP binding.

3.4.6 Consequences if not approved

The industry standard for web services is WSDL/SOAP/UDDI, leaving the WMS without support for these is a thread for its mid-term adoption.