



THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

Information Technology and Systems Center

**OOSTethys MMI Services
Application Developer's Guide**

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE
INFORMATION TECHNOLOGY AND SYSTEMS CENTER

OOSTethys MMI Services Application Developer's Guide

November 21, 2006

© 2006 by the University of Alabama in Huntsville. All rights reserved.
Huntsville, Alabama 35899
Phone +1.256.824.6868

Copyright 2006 by The University of Alabama in Huntsville (UAH)
Information Technology and Systems Center (ITSC)
All rights reserved.

Permission to use, copy, and modify this software and its documentation for any purpose, without fee, is hereby granted, under the following conditions:

1. The source code, as a whole or part, may not be redistributed to any other individual or organization without written permission of UAH ITSC.
2. Modifications made to the source code should be reported to UAH ITSC before the organization receiving the source code distributes the intellectual property. UAH ITSC will then have the option of including the modifications within the baseline code maintained at UAH ITSC.
3. Results of the implementation of this software will be reported to UAH ITSC.

The above copyright notice, this paragraph, and the following three paragraphs must appear in all copies, modifications, and distributions.

Created by the Information Technology and Systems Center, University of Alabama in Huntsville, sponsored by NASA Earth Science Enterprise. For technical information, contact info@itsc.uah.edu

IN NO EVENT SHALL UAH BE LIABLE TO ANY PARTY FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS, ARISING OUT OF THE USE OF THIS SOFTWARE AND ITS DOCUMENTATION, EVEN IF UAH HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

UAH SPECIFICALLY DISCLAIMS ANY WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE SOFTWARE AND ACCOMPANYING DOCUMENTATION, IF ANY, PROVIDED HEREUNDER IS PROVIDED "AS IS". UAH HAS NO OBLIGATION TO PROVIDE MAINTENANCE, SUPPORT, UPDATES, ENHANCEMENTS, OR MODIFICATIONS.

Table of Contents

Introduction	3
Changes in This Version	3
Register Provider	5
Request Message	6
Response Message	6
Example	6
Get Valids	7
Request Message	7
Response Message	7
Example	7
Get URLs	9
Request Message	9
Response Message	10
Example	11

Introduction

The OOSTethys MMI registry services permit data providers to register their sites and observation offerings in the registry as well as permitting end-users to search the registry to find observation offerings and/or sensors having characteristics that meet their criteria.

This manual provides human-readable documentation for the interfaces.

Changes in This Version

Initial release.

Register Provider

A data provider may request that his/her observation offerings be recorded in the registry for others to search. This is accomplished via the “Set Capabilities” service. This same service also provides the update capability which the data provider should use each time his/her site’s observation offerings change.

Any site wishing to register must provide two web-accessible services:

GetCapabilities

The site must support a “GetCapabilities” service which is invoked via the following command:

```
http://sitename-and-path?request=GetCapabilities&service=SOS&version=0.0.31
```

where “*sitename-and-path*” is the URL of the service application. At present, the “service” and “version” values are fixed using the values shown.

The response to this message must be a “Capabilities” message in XML format. The schema for this message may be found at *TBD*.

DescribeSensor

Among other things, the “Capabilities” response must include a “DescribeSensor” service URL which is invoked via the following command:

```
http://sitename-and-path?sensorid=sensor
```

where “*sitename-and-path*” is the URL of the service application and “*sensor*” is the URI of the sensor that is to be described.

The response to this message must be a “SensorML” message in XML format. The schema for this message may be found at *TBD*.

Request Message

The request for registration is as follows:

```
http://score.itsc.uah.edu/MMI/SetCapabilities.pl?url=getcapabilitiesurl
[&service=service][&version=version]
```

where “*getcapabilitiesurl*” is the URL for the GetCapabilities service (described above). The optional “*service*” and “*version*” parameters may be included if the GetCapabilities service does not utilize the default values as shown in the previous section.

Response Message

The response to the request is a single line of ASCII text in one of the following forms:

```
Accepted
Accepted - message
Rejected - message
```

“Accepted” means that the registration (or update) has been accepted unconditionally. This is the usual response to an update.

“Accepted” followed by a message means that the registration (or update) has been conditionally accepted. This is the usual response to an initial registration.

“Rejected” indicates that the registration failed for the reason described in the message. These messages are often quite terse and may need additional explanation. If that is needed, contact the registry provider site directly.

Note: If the site being registered has a large number of observation offerings or if the site’s server is particularly slow, the message may time out.

Example

For an example, type the request URL into your favorite browser and provide a well-formatted, but meaningless value for the GetCapabilities URL. A “Rejected” message should be returned.

Get Valids

A “valid” is, quite simply, a valid value for something. The database has quite a number of searchable fields, all of which contain values that are often difficult for an end-user to guess. This service provides a listing of *all* the valid values for all of the searchable fields in the database, with the exception of geotemporal bounds.

If the value desired is already known, it is not necessary to use this service.

Request Message

The service is invoked using the following URL:

```
http://score.itsc.uah.edu/MMI/GetValids.pl
```

There are no parameters.

Response Message

The response to this request is an XML message containing information about all of the searchable fields and the valid values to search for. Since these values are returned in lists, there is no association among the values; that is, there is no way to tell if sensor “x” is used by observation offering “y” without performing a search (see next chapter).

The schema for the XML message may be found at the following location: <http://score.itsc.uah.edu/services/MMI/GetValidsResponse.xsd>. It is up to the recipient to parse the message.

Example

For an example, enter the request URL into your favorite browser. If the browser understands XML (Internet Explorer and Firefox do), the complete list of valids should be displayed in XML format.

Get URLs

This service is the “search” service. It allows an end-user to search the registry for observation offerings and/or sensors meeting his/her search criteria.

Request Message

The request message is formed as follows:

```
http://score.itsc.uah.edu/MMI/GetURLs.pl[?parameter=value[&parameter=value]...]
```

If no parameter/value pairs are specified, the entire contents of the registry are returned.

The optional parameters are as follows. They may be specified in any order, but only *one* instance of each parameter may be specified. In all cases, the value for the parameter must be an exact match to the value in the registry. (To get the valid values, see Get Valids in Chapter 3.) Furthermore, note that many ASCII characters are not permitted in URLs. For example, a sensor may have a name of “urn:site.name:sensor#xxx”. The “#” is not a valid URL character and must therefore be escaped using HTTP hexadecimal notation as follows: “urn:site.name:sensor%23xxx”. Note also that the values may *not* be enclosed in quote marks of any kind.

serviceprovider	Specifies the “SiteName” of the desired service provider. This is typically a URL.
observationoffering	Specifies the “id” of the desired observation offering. Note that these values may not be unique among all service providers.
featureofinterest	Specifies the “href” of the desired feature of interest of the observation offering. This is typically a URN.

observedproperty	Specifies the “id” of the desired observed property of the observation offering.
sensor	Specifies the “SensorId” of the desired sensor. This is typically a URN.
sensorclass	Specifies the “classifier” of the desired sensor. [We currently have no examples of this.]
sensoroutput	Specifies the “name” of the output of the desired sensor.
begindate	Specifies the beginning date of the time range of interest in the format “yyyy-mm-dd”.
enddate	Specifies the ending date of the time range of interest in the format “yyyy-mm-dd”.
north	Specifies the northernmost bound of the geographic area of interest in decimal degrees with north latitudes being positive and south latitudes being negative.
west	Specifies the southernmost bound of the geographic area of interest in decimal degrees with north latitudes being positive and south latitudes being negative.
east	Specifies the easternmost bound of the geographic area of interest in decimal degrees with east longitudes being positive and west longitudes being negative.
south	Specifies the westernmost bound of the geographic area of interest in decimal degrees with east longitudes being positive and west longitudes being negative.

Response Message

The response to the service request contains a structure containing the following information:

A “Provider” tag brackets information about a single provider. It will contain the following information:

- The provider's site identification (URL)
- The provider's "GetCapabilities" URL
- One or more "ObservationOffering" tags

Each "ObservationOffering" tag will contain the following information:

- The name of the offering
- The "SensorId" associated with the offering
- The full "DescribeSensor" URL for the sensor

The response is formatted in XML. It may be of one of three forms:

- If the search was successful and one or more providers were found to have observation offerings matching the criteria, their information will be returned.
- If the search was unsuccessful (i.e., no provider sites matched), an empty response message will be returned. That is, the message will contain the XML envelope with no provider information contained within it.
- If there was a problem with the search, a message containing a single "Error" tag will be returned. The value of the Error tag will indicate the nature of the error.

The schema for the response message may be found at <http://score.itsc.uah.edu/services/MMI/GetURLs.xsd>.

Example

Enter the following URL into your favorite web browser to get a list of all of the GetCapabilities and DescribeSensor URLs for all known sites:

`http://score.itsc.uah.edu/MMI/GetURLs.pl`