DIP
Data, Information and Process Integration with Semantic Web Services
FP6 – 507483

Deliverable

WP4: Service Usage
D4.3
Publishing Process Development

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**SUMMARY**

This deliverable covers the development of the publishing process of services in DIP. The Publishing Prototype supports the publishing of Semantic Web Services both via a browser-based GUI and via a Web Service interface.

This deliverable contributes to the exploitable tools developed in DIP.

This deliverable is of relevance to Work Package 6 “Interoperability and Architecture” in general and to the Component API and Architecture deliverables in particular (D6.5 – D6.14).

The publishing prototype should be used by developers of Semantic Web Services who want to publish their services.

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Document Information

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1 INTRODUCTION

This deliverable describes the Publishing Prototype. The specification in D4.2 [1] originally advocated an approach of using a UDDI-style registry for publishing. However, it was later decided that the focus in DIP should primarily be on storing Semantic Web Services in WSML/WSMO-style data stores (see D6.2 [2]).

The current Publishing Prototype uses wsmo4j as underlying tool for reading and writing the published services in wsml. Existing RDF-stores such as Jena and SESAME have also been experimented with. Whereas Jena did not perform satisfactorily, a version using SESAME is still maintained by inubit.

In principle, it is straightforward to exchange the underlying data store. Once the Ontology Repository (D2.5 [3]) becomes available, the Publishing Prototype will use it as underlying data store.

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2.3 Short description of purpose, scope and functionality
The Publishing Prototype allows the specification of non-functional-properties of WSMO-style Semantic Web Services. These specifications can be entered manually via a browser-based GUI as well as programmatically via a Web Services interface (WSDL).

Currently, the Publishing Prototype supports the operations “publish” for publishing an SWS, “update” for updating information for an SWS already published, and “findInstances” for retrieving published SWS.

2.4 Technical requirements for using/installing the prototype
There are two different ways to use the publishing prototype:


1 The main reason for this decision was that an ontology-based registry is a much more straightforward solution for SWS than a UDDI-style registry. Note that the approach realized in this deliverable is consistent with the approach proposed in D4.2. It will thus be possible to extend the current version with a UDDI-style approach later in the project.
GUI can be accessed with any standard Web Browser (the login name is **dip** and the password is **inubit**). If a firewall is installed, it has to be ensured that port 8888 is accessible.

2. The publishing prototype can also be accessed by making a SOAP call to the WSDL interface (see 2.5).

Internally, the publishing prototype uses the inubit IS 4.0 [4] for the workflows implemented in the browser-based GUI and wsmo4j version 0.3.1. This version of wsmo4j is compliant with the WSMO v.1.2 and WSML 0.2 specifications [5,6].

Since publishing is provided via a Web Service and a browser-based GUI neither the inubit IS nor wsmo4j have to be installed in order to use the publishing prototype.

### 2.5 Detailed information on how to use/evaluate the prototype

The service description includes all information that you need to use the service. The service description (WSDL) provided at:


The service itself is accessible at:

http://demo.inubit.com:8888/ibis/services/SWS%20WebService%20Connector

In addition, the browser-based GUI available at


can be used (the login name is **dip** and the password is **inubit**).

### 3 DOCUMENTATION

#### 3.1 Service Interface Documentation

This section lists the operations provided by the Publishing Prototype and their respective parameters. The formal description of the interface is available as a WSDL file at:


#### 3.1.1 findInstances()

- **concept** (String): The concept, whose instances are to be searched.
- **attribute** (String): The name of the attribute that must have a certain value.
- **attributeValue** (String): The value that must be assigned to the attribute.

```xml
<findInstances>
  <concept>web-service-non-functional-properties</concept>
  <attribute>language</attribute>
  <attributeValue>german</attributeValue>
</findInstances>
```

#### 3.1.2 update()

- **instanceName** (String): The name of the instance that is to be updated (the class is determined automatically)
• attributes: the **non-functional** attributes of the service

• attributeValues: The attribute 'name' contains the name of the attribute that receives the new values.
  - value (String) - attribute value
  - value (String) - attribute value
  - ...

• Example:
  ```xml
  <update>
    <instanceName>web-service-2</instanceName>
    <attributes>
      <attributeValues name='language'>
        <value>german</value>
        <value>english</value>
      </attributeValues>
    </attributes>
  </update>
  ```

3.1.3 **publish()**

• concept (String): Name of the concept

• instanceName (String): Name of the instance

• attributes: the **non-functional** attributes of the service

• attributeValues: The attribute 'name' contains the name of the attribute that receives the new values.
  - value (String) attribute value
  - value (String) attribute value
  - ...

• Example:
  ```xml
  <publish>
    <concept>web-service</concept>
    <instanceName>web-service-test</instanceName>
    <attributes>
      <attributeValues name='language'>
        <value>german</value>
        <value>english</value>
      </attributeValues>
      <attributeValues name='creator'>
        <value>bj</value>
      </attributeValues>
    </attributes>
  </publish>
  ```

4 **Demonstration Information**

The publishing prototype can best be demonstrated by using the browser-based GUI at: http://demo.inubit.com:8888/ibis/servlet/FormServlet?loginPage=dip.html

The login name is **dip** and the password is **inubit**.
The GUI is more or less self-explaining.

After login, the user can choose which kind of WSMO entity to publish. The current prototype only supports publishing of Web Services, however. After choosing the Web Service entity, a list of already published service instances is displayed.

The use now has three options:

  o Updating an already published service by selecting the instance and clicking on “Okay”
  o Creating a new service by specifying the service name and clicking “Create”
  o Clicking on “Discovery” to search for published services with specific properties.

When choosing a particular service instance, all current values of non-functional-properties attributes are displayed. The user can change the values for these attributes or add new values (using the “+” button). The user can also search for published service instances by specifying attribute values and clicking the “?” button.

In Discovery mode the user can specify values for attributes and choose type-specific operators such as “equal” or “contains” for strings and “=”, “<”, and “>” for floats.

The screenshots below illustrate the functionality of the GUI.

  o Selection of an Instance

![Screenshot of GUI](image-url)
- Presentation of instance information
- Discovery query:

![Discovery query screenshot](image)

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```
Presentation of discovery results:

![Browser window with a form and a result box.](image)

**REFERENCES**


[3] D2.5 Ontology Repository

