International

Virtual

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IVOA Web Services Basic Profile

Version 0.1

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Abstract

This document describes rules to take into account when implementing Web Services.
It explains also how to check the conformance to these rules.
It can be resumed as a ”Guideline for VO Web Services interoperability” or a “How to provide interoperable VO Web Services”.

Status of This Document

This is a Working Draft. The first release of this document was 2004 July 05.

This is an IVOA Working Draft for review by IVOA members and other interested parties. It is a draft document and may be updated, replaced, or obsoleted by

other documents at any time. It is inappropriate to use IVOA Working Drafts as reference materials or to cite them as other than "work in progress.

A list of current IVOA Recommendations and other technical documents can be found at http://www.ivoa.net/Documents/.

Acknowledgements

This work is based on discussions [1] and actions from the interoperability meeting in Cambridge MA, 24-28 May 2004.

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1. Introduction

The use of Web Services is increasing and it is foreseeable that many VO partners will provide services through this way in a near future.
VO Web Services providers need a guideline on how to use the existing specifications in the IVOA Web services context.
This guideline should be an “interoperability guarantee” for the future.
Our goal is not to create this guideline from scratch but to base it on existing works.

2. WS-I [2] and the Basic Profile [3] [4]

The Web Services Interoperability [2] organization is an open industry effort chartered to promote Web Services interoperability across platforms, applications, and programming

languages. Its role is not to develop new specifications (like the W3C for example) but to interpret the existing ones and to explain how to make them work together in the best way.

The WS-I Basic Profile is a set of non-property Web service specifications (SOAP, WSDL, UDDI, XML, XML Schema …)**.**

It provides clarifications because:

- Using a specification is very well but using it correctly and in the same way than others is better for a good interoperability
- Specifications are often ambiguous

WS-I Basic Profile is supported by the world major companies and working groups.

Examples:
On Microsoft web pages [6]: "Microsoft applauds the ratification of the Basic Profile 1.0…"

On Apache Axis web pages [7]: "For Axis 1.2, we are focusing on our document/literal support to better address the WS-I Basic Profile 1.0 …"

2.1 WS-I Basic Profile Goal

The WS-I "Basic Profile 1.0" describes:

- Messaging: exchange of Web service protocol elements
- Description: enumeration of the messages associated with a Web service, with implementation details
- Discovery: metadata which gives information about the Web Service
- Security: mechanism which provides integrity, confidentiality authentication

2.2 WS-I Basic Profile content

In each part (HTTP, SOAP binding, etc.) the profile explains recommendations with the following format:

Rxxxx *statement text*

Examples:
R0001 *An Instance of a Web service MUST be defined by a WSDL service description*
R1140 *A message SHOULD be sent using HTTP/1.1*
R1141 *A message MUST be sent using either HTTP/1.1 or HTTP/1.0*

Before each rule or set of rules, the document explains the context and justifies the rule creation.
The rules are not all at the same level, the compliance to one rule can be mandatory and the compliance to another can be optional.

See Appendix about RFC 2119 for additional information about the use of “MUST”, “SHOULD”…

3. WS-I Testing Tools [5]

3.1 Monitor and Analyzer

It is probably unattractive to check “by hand” every rule of the Basic Profile, so the WS-I has developed conformance testing tools. The first provided tool is a Monitor and Analyzer package.

3.2 Experiment to be carried out

The conformance testing-tools will be experimented for Tomcat/Axis and .NET in the context of the VO. The result will be published for the Pune interoperability meeting in September 2004 and a demo could also be done during these days.

4. A step further

4.1 A VO WS Basic Profile

It will be useful and complementary to the WS-I Basic Profile to add VO specific rules: a few recommendations to follow when implementing Web services.
It would not be at the same level than a document like the VO support interfaces but it could explain rules about it (getAvailability MUST be implemented, etc.).
It could also provide recommendations about data format (cf. discussion about VOTable result in a String or as an object).
It could be useful for the service provider and for the consumer: a check list for the service provider and a “guarantee” for the consumer that the provided service is not completely “exotic”.
A first inventory of the possible rules will be proposed for the Pune interoperability meeting in September 2004.

4.1 Conformance to VO WS Basic Profile

Tools could be provided for the compliance checking like for the WS-I Basic Profile conformance checking.
A first prototype will be available for the Pune interoperability meeting in September 2004.

Appendix A: RFC2119

A small extract from the RFC2119:

“MUST”: This word, or the terms “REQUIRED” or “SHALL”, means that the definition is an absolute requirement of the specification.
“MUST NOT”: This phrase, or the phrase "SHALL NOT", means that the definition is an absolute prohibition of the specification.
“SHOULD“: This word, or the adjective "RECOMMENDED", means that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.
“SHOULD NOT”: This phrase, or the phrase "NOT RECOMMENDED" means that there may exist valid reasons in particular circumstances when the particular behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label.
“MAY”: This word, or the adjective “OPTIONAL”, means that an item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because the vendor feels that it enhances the product while another vendor may omit the same item. An implementation which does not include a particular option “MUST” be prepared to interoperate with another implementation which does include the option, though perhaps with reduced functionality. In the same vein an implementation which does include a particular option “MUST” be prepared to interoperate with another implementation which does not include the option (except, of course, for the feature the option provides).

References

[1] André Schaaff, *A few words about WS-I Basic Profile*, http://www.ivoa.net/internal/IVOA/InterOpMay2004GridAndWebServices/WordsAbout-WS-I-BP.pdf

[2] WS-I, *WS-I Organization*, http://www.ws-i.org/

[3] WS-I, *Basic Profile 1.0 Final Material*, http://www.ws-i.org/Profiles/BasicProfile-1.0-2004-04-16.html

[4] WS-I, *Basic Profile 1.1 Board Approval Draft*, http://www.ws-i.org/Profiles/BasicProfile-1.1-2004-06-11.html

[5] WS-I, *WS-I Testing Tools*, http://www.ws-i.org/implementation.aspx

[6] Microsoft, *WS-I Basic Profile is released,* http://msdn.microsoft.com/webservices/community/industrynews/default.aspx

[7] Apache, *Axis,* http://ws.apache.org/axis/