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Request For Quotation And Call For Participation In the OGC Web Services Initiative Phase 2 and Demonstration Annex A—OWS-2 Requirements and Work Breakdown Structure

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Table Of Contents

Annex A: OWS Requirements and Work Breakdown Structure	3
1 Introduction.....	3
2 Sponsor Requirement Priorities by Tier	3
3 Interoperability Initiative Process Framework	4
Tasks	5
Coordination	5
Assessment and Analysis.....	6
Concept Development	6
Architecture Development	6
Initiative Preparation	6
Specification Development.....	6
Component Development	6
Testing and Integration	6
Solution Transfer	6
Demonstration.....	6
Documentation.....	7
4 OWS Work Breakdown Structure (WBS)	7

Annex A: OWS-2 Requirements and Work Breakdown Structure

1 Introduction

This document describes the OWS-2 Requirements segregated by sponsor priorities and the Work Breakdown Structure for OGC Web Services Initiative.

2 Sponsor Requirement Priorities by Tier¹

The following table shows the OWS-2 Requirements segregated by sponsor priorities. Those that have a Tier 1 priority are the *only* requirements that will be funded by the sponsors for this OGC Web Services Initiative Phase 2 Request for Quotation. Those requirements having a Tier 2 priority, while *not* funded in this RFQ, may be funded in a subsequent RFQ..

Prospective participants should propose for cost sharing funds only against Tier 1 requirements. Only submissions (or relevant sections thereof) that address Tier 1 requirements will be considered for cost sharing funds. Any submission (or relevant section thereof) that addresses Tier 2 requirements will be viewed and treated as proposed in-kind contributions by the proposing organization.

Due to the need to coordinate with on-going sponsor activities, not all of the funded requirements have been formally identified as of the release date. Those requirements indicated by an * have been tentatively identified by sponsors for funding. An update to this RFQ will be issued once these requirements have been formalized.

Table 1-OWS-2 Requirements by Tier

Service/Requirement	Priority	Annex B Paragraph
1 Common Architecture for WMS, WFS, CS-W, WCS, WOS		
1.A RIM	Tier 2	3.2.1.2
1.B SIM	Tier 2	3.2.1.2
1.C WSDL	Tier 1	3.2.1.2
1.D SOAP	Tier 1	3.2.1.2
1.E UDDI	Tier 1	3.2.1.2
2 Information Interoperability		
2.A Application Schema from GML Schema	Tier 1*	3.4.1.2.1
2.B WFS Support for GML Level 0 Profile	Tier 1*	3.4.1.2.2
2.C Integrated Reference Client supporting:		3.4.1.2.2, 3.3.5.6
2.C.1 WFS	Tier 1*	
2.C.2 WMS	Tier 1*	
2.C.3 CS/W	Tier 1*	
2.C.4 WCS	Tier 1*	
2.C.5 WOS	Tier 2	
2.D WFS support for schema translation	Tier 2	3.4.1.2.2
2.E Application schema compliance with	Tier 2	3.4.1.2.3

¹ Please see Annex C for an explanation of the Tier system.

Service/Requirement	Priority	Annex B Paragraph
ISO 19109		
2.F Semantic repository support for schema transforms	Tier 2	3.4.1.2.4
3 Image Handling/Decision Support		
3.A Image Archive Server Enhancements	Tier 1	3.5.1.2-2, 5
3.B Image Metadata	Tier 1	3.5.1.2-2
3.C Image Processing Services	Tier 1	3.5.1.2-3
3.D Chaining and Orchestration	Tier 1	3.5.1.2-4
3.E Decision Support Client	Tier 1	3.5.1.2-1
4 Technical Baseline Maturation		
4.A WFS	Tier 1	3.3.3.3
4.B WMS	Tier 2	3.3.3.3
4.C CS/W	Tier 1	3.3.3.3
4.D WCS	Tier 1	3.3.3.3
4.E Location Services	Tier 2	3.3.3.3
4.F GML	Tier 2	3.3.3.3
4.G WFS		
5 Open Location Services		
5.A Enhance Existing OLS Services	Tier 2	3.6.5.1
5.B Harmonize ADTs with GML 3.0	Tier 1*	3.6.5.2
5.C Enable SOAP messaging	Tier 2	3.6.5.3
5.D Enable seamless indoor/outdoor location services	Tier 2	3.6.5.4
5.E Add Tracking and Traffic services	Tier 2	3.6.5.5 3.6.5.6

* Requirements that are awaiting formal funding authorization.

3 Interoperability Initiative Process Framework

This section describes a flexible framework of standard, repeatable processes, which can be combined and adapted as necessary to address the requirements of each Interoperability Initiative. These tasks are executed with a Virtual Team Infrastructure. This Process Framework forms the basis for the OGC Web Services Initiative Work Breakdown Structure.

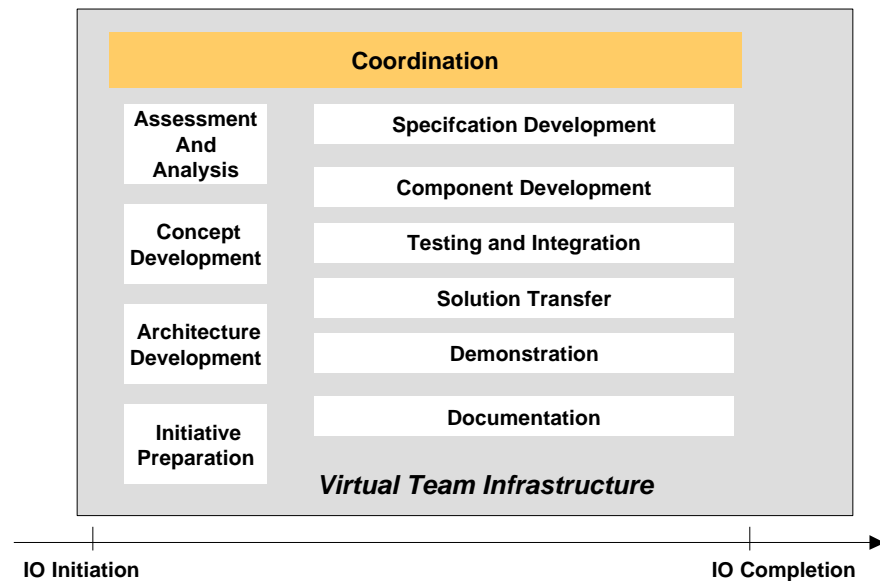


Figure 3: Interoperability Initiative Process Framework.

3.1 Tasks

3.1.1 Coordination

Enables overall Initiative coordination between OGC Staff, OGC IP Team, Sponsors, Participants, and other TC/PC Members as required. Initiative Coordination includes the following Subtasks:

- **Collaborative Environment** - OGC IP Team provides synchronous and asynchronous collaboration environments for cross organizational, globally distributed, virtual teams working interdependently to execute Initiative Orders. Activities under this subtask include reading email and engaging in collaborative discussions including teleconferences.
- **Initiative Plan Development** – Support development of Project Plans, Project Schedules and Work Breakdown Structures (Work Package). May include Technical and Project Management Approach, Tasks/Schedules, Communications Plans, Resource Plans, Risk and Mitigation Strategies, and definition of the Specification and/or Component Development and Integration Tasks necessary to realize the Technical, Operational and Systems Architectures.
- **Management** - Services ensuring Initiative Order participants are staying within designated budgets, that the work is progressing according to the agreed schedule, and that the tasks identified in the Statement of Work are executed. Including status reporting.
- **Communication** – Includes communicating ongoing and planned Initiative and Work Item Status to OGC and other organizations such as ISO. This task does not include IP Business Development functions.

3.1.2 Assessment and Analysis

This task analyzes and documents an organization's or domains existing capabilities and assesses requirements for OGC compliant technology. This task is implemented during Planning Studies.

3.1.3 Concept Development

This task conducts a Feasibility Study that assesses emerging technologies and architectures capable of supporting eventual Interoperability Initiatives (ex. Testbed). Part of the concept development process is the use of a Request for Technology (RFT) to gain a better understanding of the current state of a potential technology thrust and the architecture(s) used in support of that technology. The feasibility study examines alternative prototype mechanisms that enable commercial web-services technology to interoperate. The study may also assess the costs and benefits of the architectural approaches, technologies, and candidate components to be utilized in a testbed and potential demonstration. This task also collates Sponsor requirements and assesses the applicability of current specifications.

3.1.4 Architecture Development

This task defines the architectural views for any given Initiative. In the context of the Open GIS Interoperability Program, there are potentially three--and perhaps more - architectural views for any given effort. These views are the Operational Architecture, Technical Architecture, and System Architecture. Part of the Architecture Development task may be the use of an RFQ/CFP to industry to enable organizations interested in participating in an Interoperability Initiative to respond with a proposal. This task may also be implemented during Planning Studies.

3.1.5 Initiative Preparation

This task defines the participant budget (if any) and defines and executes agreements and contracts that outline roles and responsibilities of each participant. This task may refine the Work Package.

3.1.6 Specification Development

This task defines and develops models, schemas, encodings, and interfaces necessary to realize required Architectures. Includes specification Pre-design and Design tasks. This task may include activities to coordinate ongoing Initiatives with Specification Program activities.

3.1.7 Component Development

This task develops prototype interoperable commercial software components based on draft candidate implementation specifications or adopted specifications necessary to realize the required Architecture.

3.1.8 Testing and Integration

This task integrates, documents and tests functioning interoperable components and infrastructures that execute operational elements, assigned tasks, and information flows required to fulfill a set of user requirements. Includes Technology Integration Experiments (TIEs).

3.1.9 Solution Transfer

This task prepares prototypical interoperable components so that they can be assembled at required sites.

3.1.10 Demonstration

This task defines, develops and deploys functioning interoperable components and infrastructures that execute operational elements, assigned tasks, and information flows required to fulfill a set of user requirements.

3.1.11 Documentation

This Task ensures development and maintenance of the pre-specification, pre-conformant interoperable OpenGIS technologies (including Draft Interoperability Program Reports and Interoperability Program Reports) and the systems level documentation (example user documentation, etc.) necessary to execute the Initiative. This task may include coordination with OGC Specification Program activities including the Documentation Team.

3.1.12 Conformance Testing Design

This Task ensures development of draft conformance test guidelines (at a minimum) and test suites for engineering specifications detailed in Interoperability Program Reports. This task includes coordination with OGC Specification Program activities including the Conformance Testing and Interoperability Evaluation Subcommittee.

4 OWS-2 Work Breakdown Structure (WBS)

The following Work Breakdown Structure (WBS) is derived from the OGC Interoperability Initiative Process Framework. This WBS should be interpreted in the following manner:

- Items that are grayed out are either IP Team tasks, have already been completed, or are not required for the OWS-2 Initiative.
- Bold text is a task grouping or subtask grouping.
- Plain text indicates tasks against which proposing organizations should respond.
- Italic text indicates the task explanation (These task explanations are valid only for OWS-2; subsequent initiatives will issue appropriate task explanations).

A proposing organization does not have to respond to all tasks below. However bold italic text in the task explanation indicates which tasks are mandatory or conditional. Conditional tasks are those that are mandatory if a proposing organization takes on certain non-mandatory tasks. All responses shall use this WBS to structure their responses. Evaluations of responses will be based on whether a proposal addresses the WBS task items. So a company anticipating working on a particular task that fails to indicate their intent by using the WBS structure below will not be considered for the desired task. The OWS-2 project plan and schedule will use this WBS as a template as well.

1 Coordination

1.1 Collaborative Environment

1.1.1 Routine and ad hoc telecons as assigned

*Task Explanation-The proposing organization shall provide a technical representative and an alternate to participate in regularly scheduled telecons. If a participant organization has a representative that is requested or volunteers to participate in an ad hoc telecon, then that representative or a reasonable alternative shall join the ad hoc telecon if at all possible. **This item is mandatory for all proposing organizations.***

1.1.2 E-mail review and comment

*Task Explanation-The proposing organization shall provide technical representatives to participate in specification and prototypical component development discussions via the OWS-2 mail list. **This item is mandatory for all proposing organizations.***

1.1.3 Action Item status reporting

*Task Explanation-Proposing organizations' representatives shall report the status of their work in response to any action item accepted by them in whole or part. Action Items will be assigned to relevant work groups with an identified work group leader. Action item status shall be reported to the relevant work group leader. **This item is mandatory for all proposing organizations.***

1.2 Initiative Plan Development

1.2.1 Project Plan Development

1.2.2 Project Schedule Development

1.2.3 WBS Development

1.2.4 Concept of Operations Development

1.3 Management

1.3.1 Status Reporting

*Task Explanation-Proposing organizations' business representatives shall report the status of their work as assigned to and accepted by them in their SOW following the structure of this WBS. Status reports will reflect the WBS item number and name, the "health" of the effort with green indicating optimal; yellow indicating issues have arisen that appear resolvable; and red indicating that issues have arisen that require immediate resolution or the effort will not succeed, and finally the report will describe the work done to fulfill the WBS item. Reports will be submitted to the OWS-2 Initiative Manager and Operations Manager on a Monthly basis. The first status report will be due on 17 June 2002 COB with all subsequent reports being due on the third of the month or the first Monday thereafter by COB. **This item is mandatory for all proposing organizations. Additionally all proposing organizations shall submit an initial status report indicating personnel assigned to support the OWS-2 initiative. This initial status report will use a form to be supplied to proposing organizations that have been invited to participate in the OWS-2 initiative. These initial status reports shall be submitted to OWS-2 Operations lead no later than the first day of the OWS-2 kickoff in soft copy format only.***

1.3.2 Initiative Accounting

Task Explanation-Proposing organizations' business representatives shall submit an invoice to Marilyn Gallant of OGC. The invoice shall include the OGC Accounting Job

*Code. This Job Code will be provided to contracted participants by OGC via the contract. The invoice shall be submitted monthly for work completed during the prior month. Deliverables shall be itemized. The invoice shall include the budgetary not to exceed figure. **This item is mandatory for all proposing organizations.***

Communication

1.3.3 OGC Internal IP Status Briefings

1.3.4 OGC External IP Status Briefings

2 Assessments and Analysis

2.1 *Organizational Capability Review*

2.2 *Organizational OGC Requirements Review*

3 Concept Development

3.1 *Sponsor Feasibility Study Review*

3.2 *RFT Development*

3.3 *RFT Response Analysis*

3.4 *RFT Response Review*

4 Architecture Development

4.1 *Operational Architecture Development*

4.2 *System Architecture Development*

4.3 *Technical Architecture Development*

5 Initiative Preparation

5.1 *Sponsor Planning TEMs*

5.2 *RFQ Development*

5.3 *Participant Budget Development*

5.4 *Contract Development*

5.5 *SOW/SOP Development*

6 Specification Development

Task Explanation-Proposing organizations should minimally respond to this task and its associated subtasks (or a subset thereof) OR to task 7 Component Development To

support this responding organizations shall send a technical representative to the OWS-2 Kickoff; this kickoff attendance is mandatory for all proposing organizations.

6.1 Model Development

Task Explanation-Proposing organizations' technical representatives shall develop or support the development of models that represent a service, interface, operation, message, or encoding that is being developed for the OWS-2 initiative. These models may be in UML or some other appropriate modeling language. A proposing organization may propose an individual to lead modeling efforts for a particular interface or set thereof.

6.2 Schema Development

Task Explanation-Proposing organizations' technical representatives shall develop or support the development of schemas that specify an interface that is being developed for the OWS-2 initiative. These schemas will be written in XML Schema or some other appropriate language. A proposing organization may propose an individual to lead modeling efforts for a particular interface or set thereof.

6.3 Encoding Development

Task Explanation-Proposing organizations' technical representatives shall develop or support the development of encodings that specify an interface that is being developed for the OWS-2 initiative. These encodings will be specified in XML Schema or some other appropriate language. A proposing organization may propose an individual to lead modeling efforts for a particular interface or set thereof.

6.4 Interface Development

Task Explanation-Proposing organizations' technical representatives shall develop or support the development of interfaces that specify operations, encodings or messages that are being developed for the OWS-2 initiative. These interfaces will be specified in XML Schema or some other appropriate language. A proposing organization may propose an individual to lead development efforts for a particular interface or set thereof.

6.5 Specification Program Coordination

Task Explanation-Proposing organizations' technical representatives shall submit Interoperability Program Reports (IPRs) pertaining to interface developments for OWS-2 to the OGC Technical Committee for review. Those representatives shall present said Reports to relevant OGC TC special interest groups. Those representatives will work with SIG members to resolve issues that the members may raise with regard to the IPR and the interface(s) described therein.

7 Component Development

Task Explanation-Proposing organizations should minimally respond to this task and its associated subtasks (or a subset thereof) OR to task 6 Specification Development.

7.1 Prototypical Interoperable Software Development

Task Explanation-Proposing organizations' technical representatives shall either develop server software or modify existing product server software to exercise the interfaces developed under the Specification Development tasks of OWS-2.

7.1.1 Server software development

Task Explanation-Proposing organizations' technical representatives shall develop server software or modify existing product server software to exercise the interfaces developed under the Specification Development tasks of OWS-2. The proposing organizations will make this server software available for sponsor review and input during the course of the OWS-2 initiative.

7.1.1.1 Legacy server software enhancement

*Task Explanation-Additionally, the proposing organization shall integrate a Web Feature Server (WFS) or enhance the existing WFS interfaces to interoperate with a simulated and unclassified version of the Military Intelligence Data Base (MIDB). The simulated MIDB will be a combination of GFE (i.e., the data model) and sponsor provided information. The MIDB will contain a limited set of information that supports the data model and the extent of its content are to be resolved. The proposing organization's WFS-T shall be capable of querying, and updating, and adding new items to the simulated MIDB. **It is recommended that proposing organizations that are proposing WFS technologies propose against this clause.***

7.1.2 Client software development

*Task Explanation-Proposing organizations' technical representatives shall develop client software or modify existing product client software to exercise the servers developed under the Component Development tasks of OWS-2. The proposing organizations will make this client software available for sponsor review and input during the course of the OWS-2 initiative. Proposing organizations shall be prepared to develop client software to support their server software. However, they may make arrangements with other participants to use that organization's client software to exercise their server during the course of the initiative. This is applicable only so long as the sponsors and IP Team agree that the third party client is appropriate for exercising the functionality of the relevant server. **If the proposing organization is developing server software and client software, then the client software shall exercise all OWS-2 or other OGC services provided by their server.***

7.2 Special Adaptation Development

Task Explanation-Proposing organizations' technical representatives shall adapt client or server software to exercise relevant mainstream IT technology and standards such as PKI and e-commerce technologies.

8 Testing and Integration

8.1 Configuration Management

8.1.1 CM Plan Development

Task Explanation-The Proposing organization shall provide a representative to develop a configuration management plan for interfaces and components developed during the OWS-2 initiative.

8.1.2 Initiative CM

Task Explanation-The Proposing organization shall provide a representative to exercise the configuration management plan for interfaces and components developed during the OWS-2 initiative.

8.2 Infrastructure Setup

8.2.1 Operating Systems

8.2.2 Networks

8.2.3 Web Server

8.2.4 Database Server

8.2.5 Web Browsers

8.2.6 SW Installation & Integration

8.2.7 Data Loading

8.3 Technology Integration Experiments

8.3.1 Iterations 1-N

8.3.1.1 Component Interface Test

*Task Explanation-The Proposing organization shall provide a technical representative to conduct formal Technology Integration experiments that exercise server and/or client component software's ability to properly implement the interfaces, operations, encodings, and messages developed during OWS-2. There will be multiple TIEs during the course of OWS-2 that will exercise various interfaces, operations, encodings, and messages developed during OWS-2. There may also be multiple iterations of a particular TIE or set thereof. **This item is mandatory for all organizations proposing to develop software components for OWS-2.***

8.3.1.2 Test Result Analysis

*Task Explanation-The Proposing organization shall provide a technical representative to report the outcome and relevant software reporting messages from TIEs in which the proposing organization participates. These TIE reports shall be submitted to the OWS-2 email list and within Monthly Status Report to be courtesy copied to the initiative architect. **This item is mandatory for all organizations proposing to develop software components for OWS-2.**)*

8.4 System Tests

8.4.1 Functional Test

8.4.2 Interface Test

8.4.3 Performance Test

9 Solution Transfer

9.1 Software Installation

*Task Explanation-The Proposing organization shall provide a licensed copy of OWS-2 relevant software components for installation/integration onto the OGC Network. This may take the form of the proposing organization making the software component(s) available from an open site on their network OR by installing it on a sponsor or other host machine on the OGC Network. If the latter option is taken, then the proposing organization shall provide a technical representative to install the software component(s). **This item is mandatory for all organizations proposing to develop software components for OWS-2.***

9.2 Software Integration

9.3 Data Loading

*Task Explanation-The Proposing organization shall provide a technical representative to load data to any server components the proposing organization may develop. This task includes data loading to OGC Network based servers. **This item is mandatory for all organizations proposing to develop server components for OWS-2.***

10 Demonstration

10.1 Use Case Development

Task Explanation-The Proposing organization shall provide a technical representative to develop or support the development of use cases that define and explain the utility of the interfaces developed during OWS-2. These use cases shall be used to provide a basis for demonstration storyboards and the demonstration itself.

10.2 Storyboard Development

Task Explanation-The Proposing organization shall provide a technical or business representative to develop or support the development of the demonstration storyboards that will define the structure and content of the demonstration.

10.3 Venue Access

10.4 Data Requirements Assessment

10.5 Data Acquisition and Distribution

10.6 Demonstration Preparation and Delivery

*Task Explanation-The Proposing organization shall provide a technical and/or business representative to develop or support the development of demonstration that will exercise the functionality of the interfaces developed during OWS-2. The representative(s) will also support the demonstration event(s) as required. The proposing organization will maintain server and client software for a period of no less than six months after the completion of the OWS-2 demonstration. **This item is mandatory for all organizations proposing to develop software components for OWS-2.***

11 Documentation

11.1 IPR Development

*Task Explanation-The Proposing organization shall provide a technical representative to serve as editor of a relevant Interoperability Program Report (IPR). Not all organizations responding to this item will be required to provide an editor; alternatively however they shall support the editor by providing authors for sections of the IPR and for reviews of the Draft IPR (DIPR). **The IPR is the deliverable of the work items within OWS-2.***

11.2 System Documentation Development

11.2.1 Functional Specification

11.2.1.1 Architectural Overview

*Task Explanation-The Proposing organization shall provide a technical representative to develop an architectural overview of their software component(s) relevant to the OWS-2 architecture. **This item is mandatory for all organizations proposing to develop software components for OWS-2.***

11.2.1.2 Use Cases

Task Explanation-The Proposing organization shall provide a technical representative to develop use cases to show the functionality of their software components in the context of

the OWS-2 architecture. This item is mandatory for all organizations proposing to develop software components for OWS-2.

11.2.1.3 UML System Models

11.2.1.4 System Configuration

Task Explanation-The Proposing organization shall provide a technical representative to develop a detailed document describing the combined environment of hardware and software component(s) that compose their contribution to OWS-2. This item is mandatory for all organizations proposing to develop software components for OWS-2 to be installed at sponsor or other host sites connected to the OGC Network.)

11.2.2 Installation Guide

Task Explanation-The Proposing organization shall provide a technical representative to develop an installation guide for their software component(s). This item is mandatory for all organizations proposing to develop software components for OWS-2 to be installed at sponsor or other host sites connected to the OGC Network.

11.2.3 Training Material & Users Guide

Task Explanation-The Proposing organization shall provide a technical representative to develop a User's Guide and Training Materials pertaining to their software component(s) developed or modified for OWS-2. The documents shall be provided to sponsors and IP Team to support their ability to demonstrate the proposing organization's contributions to the OWS-2 initiative. This item is mandatory for all organizations proposing to develop software components for OWS-2.

11.3 Planning Study Report

12 Draft Conformance Test Document (DCTD) Development

Task Explanation-Proposing organizations' technical representatives shall develop a Draft Conformance Test Package pertaining to an interface developed for OWS 1.2. The representatives shall submit the Draft Conformance Test Package, as an IPR, to the OGC Technical Committee for review. Those representatives shall present said Reports to relevant OGC TC special interest and working groups. Those representatives will work with SIG and WG members to resolve issues that the members may raise with regard to the Draft Conformance Test Package/IPR and the conformance test(s) described therein. Proposing organizations should respond to this task AND its associated tasks (task 6 Specification Development and task 11 Documentation.

12.1 Summarize TIEs, demo results and data issues

Task Explanation-Proposing organizations' technical representatives shall include a section in the DCTD detailing progress pertaining to the implementation of the interface by including TIE results, lessons-learned from the demo, and particular data issues.)

12.2 Conformance Test

Task Explanation-Proposing organizations' technical representatives shall outline in the DCTD all of the necessary information to conduct a valid conformance test of the interface, including the sub items below)

12.2.1 Test Cases

Task Explanation-Proposing organizations' technical representatives shall outline a valid conformance test for the interface. A valid conformance test will include identification of all required and optional server requests in the interface and the acceptable results for testing servers and the syntax checks to perform for testing client requests; an explanation of an acceptable verification of the results (machine, human, etc); a list of expected/valid warnings or exceptions to interface behavior; a matrix of test dependencies and explanation of ordering tests appropriately for inherent tests and dependencies.

12.2.2 Data

Task Explanation-Proposing organizations' technical representatives shall identify appropriate data sets for use in conducting a conformance test for an interface.

12.2.3 Recommendations

Task Explanation-Proposing organizations' technical representatives shall document recommendations to resolve issues with the current state of the interface, or with the conformance tests.