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Request For Quotation

And

Call For Participation

in the

OGC Emergency Mapping Symbolology (EMS-1) Initiative

Annex A

Requirements and Work Breakdown Structure

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Annex A: Requirements and Work Breakdown Structure

1 Introduction

This document describes the project requirements and the Work Breakdown Structure for the Open GIS Consortium (OGC) Emergency Mapping Symbology Initiative (EMS-1).

2 Scope

In response to the requirements of multiple Sponsors, the OGC Interoperability Program has designed the EMS-1 project to prototype the standards-based component framework necessary to enable geospatial interoperability, with a particular focus on symbology, for emergency mapping. The EMS-1 Initiative will mature OGC's specification framework for interoperable geographic symbolization while simultaneously testing emerging standard map symbol sets for emergency response developed by national-level agencies. The scope of the EMS-1 project is based on the current baseline of OGC's interoperable specification framework for geographic symbolization development, as follows:

- Style Management Service (SMS) implementation consisting of:
 - Symbol and Style management services (Web Object Service, Catalog Service-Web Profile)
 - Support for publishing and discovery of enhanced SLD
- Portrayal services consisting of:
 - WMS implementations supporting enhanced SLD
 - Symbol encodings for Emergency Management that are compatible for use with SLD+
 - "Component" WMS that accesses a WFS service for GML2.1.2 data
- Data Access services consisting of:
 - WFS 1.0 supporting GML2.1.2
 - Datasets pertaining to Critical Infrastructure & Emergency Management domains
- Client Application
 - Symbol manager application for publishing, discovering, editing and previewing Styles, Symbols and Feature Types
 - User documentation and training
- Solution Transfer
 - Each of the sponsors will be provided access to the Client as a deliverable
 - Server-side capabilities may be installed at the Sponsors sites or at the participant site

The EMS-1 project is based on adopted and draft Open GIS Implementation Specifications that are defined collaboratively by a variety of stakeholders, adopted in a consensus-based process, are freely published, and are able to be implemented by any vendor or organization. Two broad classes of Open GIS Specifications relevant to the interoperable specification framework for geographic symbolization include both Adopted and Draft Implementation Specifications. The functional requirements listed in Section 3 are manifested through components implementing the following specifications.

2.1 Adopted Implementation Specifications

1. Styled Layer Descriptor (SLD): the map-styling language for producing georeferenced maps with user-defined styling; the means to represent a style for a "layer" (i.e., of features)
2. Web Map Server (WMS): uses SLD for map portrayal of features

3. Geography Markup Language (GML): means to encode features
4. Web Feature Server (WFS): uses GML for encoding of geographic features

2.2 Draft Implementation Specifications

1. Style Management Service (SMS): the means to construct and manage a set of styles, symbols, and SLD (including changes to SLD schema)
2. Web Registry Server (WRS): the means to record instances of service, symbol and style metadata for discovery and access on the Web
3. Registry Information Model (RIM): the information model that pertains to WRS
4. Web Object Service (WOS): the means to store style and symbol instances

3 Requirements

This section describes the requirements and deliverables, organized by work item, for the EMS-1 initiative. Refer to Annex B of this Request for more information regarding the Concept of Operation of SMS for EMS-1 and further description of the information, computation and technical dimensions of the SMS Architecture.

3.1 Testing, enhancement and implementation of the Style Management Services Specification (SMS)

SMS is an emerging architecture specification defining a set of key design-patterns, interfaces and encodings for managing and relating symbols, styles and features in support of cartographic portrayal processes. The participants shall implement the SMS framework and provide an Interoperability Program Report (IPR) that summarizes the testing of the SMS framework during the course of the EMS-1 Initiative. The SMS Architecture was developed and initially tested in the OGC's Open Web Services Phase 1.2 (OWS-1.2) Interoperability Program initiative.

This EMS-1 work item and the resulting SMS Architecture IPR is intended to provide detailed information as a prototype demonstrating how the SMS Architecture supports the required capabilities of the EMS-1 Initiative. This includes description of dependencies and interactions between client applications and OWS services providing SMS capabilities (CS-W and the WOS), Portrayal Services and Data Services, which are part of the OWS framework of existing and emerging Implementation Specifications to be tested in this initiative. Discussion of recommended enhancements, if any, to OGC Adopted Specifications such as GML, SLD, WMS and WFS are to be described in this IPR and provided as an OGC Change Proposal for consideration by the OGC TC.

3.1.1 Specification, implementation and testing of metadata for Feature Types, Styles and Symbols

Participants to EMS-1 shall produce XML schema and instance documents for Symbol Metadata, Style (SLD) Metadata and Feature Type Metadata that will be demonstrated to work within the SMS framework. The following must also be delivered and included in the SMS Architecture IPR:

- XML Schema and worked-examples of XML instances for "Symbol Metadata" used to describe Symbol instances.
- XML Schema and worked-examples of XML instances for "SLD Metadata" used to describe SLD instances.

- XML Schema and worked-examples of XML instances for “Feature Type Metadata”, which may be expressed as a GML-encoded application schema, used to describe standard Feature Types for use with FGDC and GeoSym symbols.

3.1.2 Implementation, enhancement and testing of the existing Web Object Service (WOS) Interface Specification for EMS Styles and Symbols

Participants shall implement the Web Object Service (WOS) and provide an Interoperability Program Report (IPR) for the WOS Implementation Specification. This task is intended to enhance and mature the existing WOS Discussion Paper (DP), which is the baseline draft implementation specification for this service. The WOS defines a set of base XML types that define the behavior of a Web Object Service in a distributed computing platform based on HTTP. A Web Object Service is a generic web-based repository interface service. The WOS currently supports the following operations: GetCapabilities, DescribeObjectType, GetObjectById, GetObject, LockObject and Transaction.

The specific enhancements being sought under this task and the results that should be reflected in the WOS IPR (a draft Implementation Specification) are the following:

- The ability to Fetch, Insert, Update and Delete style and symbol objects encoded in XML or acting as XML proxies for other data types.
- The ability to perform these operations on multiple objects at one time for efficiency.
- The ability to reference an object using only a unique identifier

3.1.3 Implementation, enhancement and testing of the Catalog Service-Web Profile (CS-W) to support publishing and discovery of EMS Features, Styles and Symbols

Participants shall implement the CS-W Profile to support publication and discovery of FGDC and GeoSym symbol sets. Participants shall provide an IPR that summarizes the populating and subsequent testing of the CS-W with the appropriate metadata suite to support the FGDC symbol set and the appropriate subset of the GeoSym symbol set. Currently the CS-W baseline specification is an OGC Interoperability Program Report¹.

This EMS-1 work item is intended to provide detailed information on the implementation of CS-W and Registry Information Model (RIM) to support SMS capabilities. Deliverables for this task shall include the following:

- Development of a profile of RIM (XML Schema and worked examples) for packaging and relating Symbol Metadata suitable for publishing and discovery of FGDC and GeoSym Symbol instances via CS-W.
- Development of a profile of RIM (XML Schema and worked examples) for packaging and relating SLD metadata suitable for publishing and discovery of SLD instances via CS-W.
- Development of a profile of RIM (XML Schema and worked examples) for packaging and relating GML Application Schema suitable for publishing and discovery of Feature Types and Features Collections via CS-W.

The above set of XML Schemas and examples developed as a SMS profile of RIM for supporting the different forms of metadata used in this Initiative (e.g., metadata for Styles (SLD), Symbols and Feature Types) shall be included in the SMS Architecture IPR.

¹ OpenGIS® Web Registry Service (WRS) Interoperability Program Report. OpenGIS® Project Document 03-024. Available at: <http://member.opengis.org/tc/archive/arch03.htm>

Discussion of recommended enhancements, if any, to adopted OGC specifications relevant to this work item are to be provided as an OGC Change Proposal for consideration by the OGC TC.

3.2 Implementation, enhancement and testing of OWS Portrayal Services supporting enhanced SLD and EMS symbol sets.

This work item is intended to specify, implement, and test the following:

- Enhancements to the existing SLD Implementation Specification required to support the EMS-1 capabilities.
- Implementations, of WMS that support -SLD enhancements and rendering of FGDC HSWG and GeoSym symbol encodings (e.g., CGM, SVG).

Participants shall provide an IPR that summarizes the testing of the use of appropriate subsets of the FGDC HSWG and GeoSym symbol subsets with the enhancements to the SLD Implementation Specification developed in this initiative. This work item builds on the initial Style Management Services (SMS) work performed in the OWS1.2 Testbed Initiative. That work, including proposed revisions to SLD XML Schema, is documented in the SMS Discussion Paper² and comprises the baseline for this work item.

This task shall therefore include the development of revisions to XML Schema for SLD to ensure support for both the FGDC HSWG and the GeoSym Symbol Sets for use by WMS implementations. These SLD schemas should be based on a valid data model that should be captured in the appropriate modeling nomenclature (e.g., UML). The SLD XML Schemas and the data models developed shall be included as part of the IPR.

Currently, SLD is an OGC Implementation Specification. Proposed modifications of the SLD Implementation Specification developed and tested in this Initiative should include an annex providing a conformance test clause. Including a conformance test clause will allow testing of implementations of products that have a SLD component with the conformance test engine that was developed in the OGC Conformance and Interoperability Test and Evaluation (CITE) IP Initiative. This task will update the conformance test clause of the WMS and/or SLD specifications with potential scripts, cases, assertions, strategies and methods but will not include development of new conformance tests or execution of CITE conformance tests.

Deliverables for this work item include:

- Enhancements to SLD Schema, worked-examples and conformance test clause.
- Operational WMS supporting enhanced SLD
- Operational WMS supporting encodings of FGDC HSWG and Geosym symbols that are accessed via SMS services at deployment-time or at run-time.
- Transformation of Symbol encodings from CGM to alternatives such as SVG.

For implementation and testing to occur, participants shall be provided with:

- A subset of the FGDC HSWG Symbol Set, encoded in Computer Graphics Metafile (CGM) format or suitable equivalent, representing point (marker) symbols. Participants are encouraged to also support SVG encodings of this symbol set.
- A subset of the Geosym Symbol Set, encoded in Computer Graphics Metafile (CGM) format or suitable equivalent, representing point (marker) symbols. Participants are encouraged to also support SVG encodings of this symbol set.

² Style Management Service (SMS) Discussion Paper. OGC Project Document 03-031. Available at <http://www.opengis.org/info/discussion.htm>

3.3 Implementation of OWS Data Services with EMS datasets

Participants shall implement a Web Feature Service 1.0 (with GML 2.1.2 capability) and load EMS datasets, which should include, but not be limited to a subset of features suitable for representing geographic features from the Emergency Management domain. Suitable datasets include VMAP0, VMAP1, and Shape files containing feature instances corresponding to FGDC HSWG and Geosym symbols.

For implementation and testing to occur, participants shall be provided with:

- Suitable geospatial dataset(s) (e.g., Shape files) containing instances of point feature types corresponding to FGDC HSWG point symbols.
- Suitable geospatial dataset(s) (e.g., Shape or VPF files) containing a subset of geographic features sufficient to create a base map symbolized using the GeoSym Symbol Set.

3.4 Style and Symbol Management Client

In order to visualize and demonstrate the EMS-1 capabilities, a client application capable of discovering, publishing, editing and previewing Styles (enhanced SLD), Symbols and associated Metadata (Style, Symbol and Feature Type) resources. Proposing organizations shall offer three one-year licenses of the Client developed for this project, to be installed at each of the Sponsor sites. Preference will be given to thin or platform independent clients. User documentation and training for the client application shall also be provided. Proposing organizations may offer various training options including on-site, Web-based, or other.

The EMS-1 Application Client must be capable of the following:

- Discovering, publishing, editing, and previewing EMS Style objects (represented by enhanced SLD)
- Discovering, publishing, editing, and previewing EMS Symbol objects (encoded as CGM and/or SVG)
- Discovering, publishing, editing, and previewing EMS Feature Type objects
- Relating Style objects and Feature Type objects
- Relating Symbol objects and Style objects.

3.5 Solution Transfer

A solution transfer session for each of the Sponsors shall be executed before the end of the EMS-1 Initiative contract period. Successful demonstration of SMS requires the ability to portray symbolized geospatial datasets using the FGDC HSWG and GeoSym Symbol Sets. For SMS to be completely realized, a consumer of SMS capabilities, such as an enhanced implementation of a WMS service or a client application, is required. Such an enhanced portrayal capability must demonstrate the use of the critical elements of the SMS Architecture developed in this Initiative: WOS, enhanced SLD, CS-W and RIM, and required metadata. In addition to the requirement for a complete SMS implementation for portrayal (including enhanced WMS), one or more portrayal clients must be used to visually demonstrate the capabilities that SMS enables. Proposing organizations shall offer three one-year licenses of the components developed for this project – to be installed at the three Sponsor sites. In addition, proposals should include the option for the participating organization to host the server components on their networks.

4 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 Initiative Work Breakdown Structure.

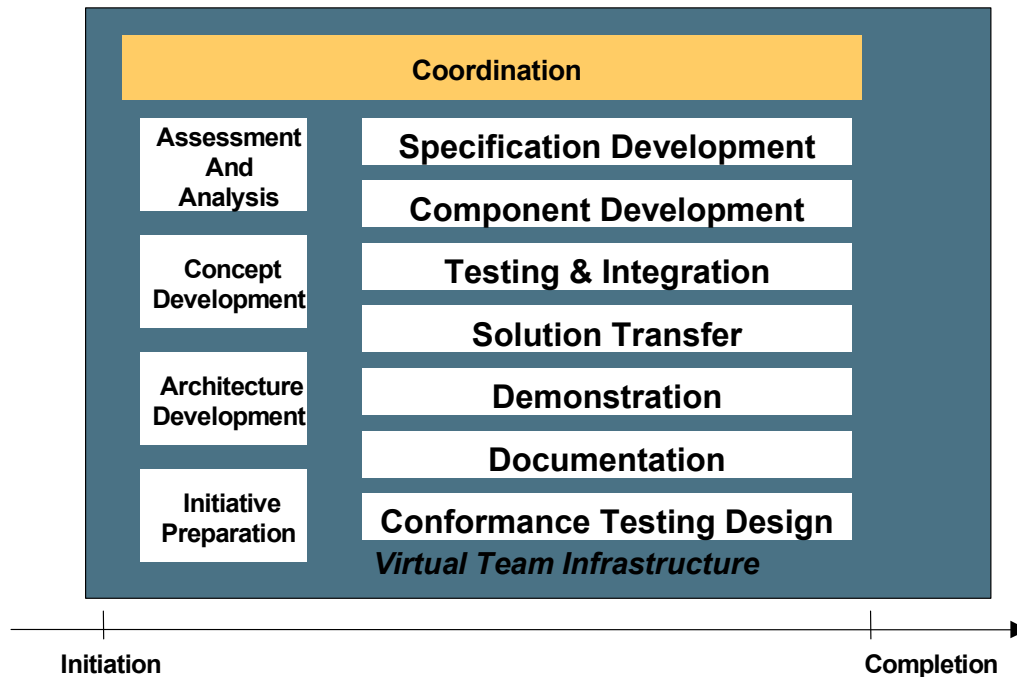


Figure 3: Interoperability Initiative Process Framework.

5 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 or Sponsor tasks, have already been completed, or are not required for the EMS-1 Initiative. Please note: you should review **grayed out** tasks where a task explanation is included, but you need not propose against the task.
- **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 EMS-1; 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 those tasks that 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. Therefore, 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 EMS-1 project plan and schedule will use this WBS as a template as well.

5.1 Coordination

5.1.1 Collaborative Environment

5.1.1.1 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.)

5.1.1.2 E-mail review and comment

*(Task Explanation: The proposing organization shall provide technical representatives to participate in component development, test and integration, solution transfer, and demonstration discussions. **This item is mandatory for all proposing organizations.**)*

5.1.1.3 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.**)*

5.2 Initiative Plan Development

5.2.1. Project Plan Development

5.2.2. Project Schedule Development

5.2.3. WBS Development

5.2.4. Concept of Operations Development

5.3 Management

5.3.1 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 EMS-1 Initiative Manager and Operations Manager on a Monthly basis. The first status report will be due TBD with all subsequent reports being due by COB on the third (3rd) of the month or the first Monday thereafter. **This item is mandatory for all proposing organizations. Additionally all proposing organizations shall submit an initial status report indicating personnel assigned to support the EMS-1 initiative. This initial status report will use a form to be supplied to proposing organizations that have been invited to participate in the EMS-1 initiative. These initial status reports shall be submitted to EMS-1 Operations lead no later than the first day of the EMS-1 kickoff in soft copy format only.**)*

5.3.2 Initiative Accounting

*(Task Explanation: Proposing organizations' business representatives shall submit an invoice Caroline Lindenberg 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.**)*

5.4 Communication

5.4.1. OGC Internal IP Status Briefings

5.4.2. OGC External IP Status Briefings

6 Assessments and Analysis

6.1. Organizational Capability Review

6.2. Organizational OGC Requirements Review

7 Concept Development

7.1. Sponsor Feasibility Study Review

7.2. RFT Development

7.3. RFT Response Analysis

7.4. RFT Response Review

8 Architecture Development

(Task Explanation: The EMS-1 initiative will further a Style Management Service (SMS) architecture framework described in Annex B. This task refines that framework. Proposing organizations should respond to this task if they have experience in designing or building an architecture for enabling scalable and interoperable management of symbols and styles in support of cartographic portrayal processes.)

9 Initiative Preparation

9.1 Sponsor Planning TEMs

9.2 RFQ Development

9.3 Participant Budget Development

9.4 Contract Development

9.5 SOW/SOP Development

10 Specification Development

(Task Explanation: For the most part, components for the EMS-1 initiative have already been developed under previous initiatives. The primary focus of this initiative will be to integrate existing SCOTS technologies in the development and deployment of specialized applications for a specific information community. There are many aspects of this initiative that may require the extension of current specifications as described in the Section 3.1 (Deliverables). In particular, this initiative requires the enhancement of the WOS, SLD, CS-W, and SMS. Proposing organizations may respond to one or more of the subtasks.

10.1 Model Development

10.2 Schema Development

10.3 Encoding Development

10.4 Interface Development

10.5 Specification Program Coordination

(Task Explanation-Proposing organizations' technical representatives shall participate in initiative working groups. Those representatives shall work with other initiatives to resolve issues that may arise with regard to the IPR and the interface(s) described therein.)

11 Component Development

(Task Explanation: Many components for the EMS-1 Initiative have already been developed under previous initiatives (WMS and WFS for example). The focus of this task will be to select and tailor components that enable scalable and interoperable management of symbols and styles in support of cartographic portrayal processes. Deliverable items were organized primarily by specification. In this WBS some components have to be aggregated into logical architectural divisions. While organizations may propose individual components, adhering to the organization in this section will be evaluated more favorably. Organizations may also propose alternative groupings, but should support the alternatives with architecturally based arguments.)

11.1 Style Management Service (SMS) implementation

The components below represent the core of the initiative to stand up the infrastructure for interoperable symbology management. The SMS interface provides the ability to store symbols and styles and to register metadata about them via the SMS sub-components. The sub-components are the Repository (for symbol and style storage, this is a WOS implementation), the Style Registry and the Symbol Registry (the latter are both CS-W implementations).

11.1.1 Provide implementation of Web Object Service (WOS) for Symbol and Style objects.

11.1.2 Provide implementation of Catalog Service-Web Profile (CS-W) for Symbol, Style and Feature Type Metadata.

11.1.3 Define metadata schema for Style, Symbol and Feature Type objects to be published and discovered via CS-W.

11.2 Portrayal services

The portrayal is, of course, important for the effort so that the use of the styles and symbols can be tested using the publisher/manager/previewer client. This WMS uses SLD to make a portrayal of features from the WFS by applying the SLD and symbols accessed from the SMS.

11.2.1 Define enhancements to SLD schema for use within SMS framework.

11.2.2 Provide WMS implementation supporting enhanced SLD, EMS Symbol Sets and access to GML2.1.2-enabled WFS implementations.

11.2.3 Use SMS to access EMS Symbol Sets encoded as CGM, SVG or suitable equivalent.

11.2.4 Use WFS to access GML2.1.2-encoded EMS feature instances for portrayal.

11.3 Data Access services

The data for the effort will be selected and inserted into a WFS. The current planning is to use source datasets such as VMAP 0, VMAP 1 and Shapefiles (of feature types consistent with semantics of FGDC HSWG symbols) as the basis for the effort---required for the GeoSym portion of the initiative.

11.3.1 Provide WFS 1.0 implementation supporting GML 2.1.2 and capable of handling EMS data.

11.3.2 Load EMS datasets to be served by WFS

11.4 Style and Symbol Management Client

11.4.1 Provide client application for publishing, discovering, and editing Symbol, Style and Feature Type objects

12 Testing and Integration

12.1 Configuration Management

12.1.1 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 initiative.)

12.1.2 Initiative CM

(Task Explanation: The Proposing organization shall exercise internal configuration management practices for interfaces and components developed during the initiative.)

12.2 Infrastructure Setup

(Task Explanation: The proposing organizations shall support the establishment of the EMS-1 components. Individual nodes will be maintained at the participant facilities until the solution transfer phase of the initiative.)

12.3 Technology Integration Experiments

12.3.1 Iterations 1-N

12.3.1.1 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 to be integrated during the initiative. There may be multiple TIEs during the course of the initiative. There may also be multiple iterations of a particular TIE or set thereof. **This item is mandatory for all organizations proposing to provide software components for the initiative**)*

12.3.1.2 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 initiative forum and within Monthly Status Report to be courtesy copied to the initiative architect. **This item is mandatory for all organizations proposing to provide software components for EMS-1.**)*

12.4 System Tests

12.4.1 Functional Test

*(Task Explanation: The Proposing organization shall conduct tests to demonstrate that its prototype can exchange data with other systems using OGC standards. **This item is mandatory for all organizations proposing to provide software components for the initiative.**)*

12.4.2 Interface Test

*(Task Explanation: The Proposing organization shall conduct tests to demonstrate that its prototype can find, bind, and publish data via the OGC interfaces. **This item is mandatory for all organizations proposing to provide software components for the initiative.**)*

12.4.3 Performance Test

*(Task Explanation: The Proposing organization shall conduct tests to demonstrate that its prototype performs well enough to encourage use as a public Web based application. **This item is mandatory for all organizations proposing to provide software components for the initiative.**)*

13 Solution Transfer

13.1 Client Software Components

Task Explanation: Providers of client software will be required to deliver software to sponsor locations (up to 3). Providers of client software should offer a one-year license for their software. Organizations proposing client should include hardware and system requirements. Thin or platform independent clients are preferred, as sponsor platforms may vary.

13.2 Server Side Software Components

Task Explanation: Providers of server side components are asked to propose two options:

- 1) The transfer of components to a sponsor location. This option should include hardware requirements, licensing, maintenance and support for one-year from the solution transfer.*
- 2) The maintenance of the server components at a participant provided facility for a period of one-year from the end of the solution transfer session. The proposing organization should include the operation hours and support hours that will be available.*

13.3 Software Documentation

*(Task Explanation: The Proposing organization shall provide technical documentation as specified in 8.2.2. **This item is mandatory for all organizations proposing to provide software components for the initiative.**)*

13.4 Software Support

*(Task Explanation: The Proposing organization shall provide technical support as specified in 13.2. **This item is mandatory for all organizations proposing to provide software components for the initiative.**)*

13.5 Data Loading

(Task Explanation: The proposing organization shall provide technical support as specified in 3.3)

14 Demonstration

14.1 Use Case Development

14.2 Storyboard Development

14.3 Venue Access

14.4 Data Requirements Assessment

14.5 Data Acquisition and Distribution

14.6 Demonstration Preparation and Delivery

(Task Explanation: The Proposing organization shall provide a technical and/or business representative to develop or support the development of a demonstration of the EMS-I technology. The proposed scope of this demonstration is intended to be limited to a solution transfer session.)

15 Documentation

15.1 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))

15.2 System Documentation Development

15.2.1 Functional Specification

15.2.1.1 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 SMS architecture. **This item is mandatory for all organizations proposing to develop software components for the initiative.**)*

15.2.1.2 Use Cases

15.2.1.3 UML System Models

15.2.1.4 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 the effort. **This item is mandatory for all organizations proposing to develop software components to be installed at sponsor sites.**)*

15.2.1.5 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 the effort to be installed at sponsor sites.**)*

15.2.1.6 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 the initiative. The documents shall be provided to sponsors and IP Team to support their ability to demonstrate the proposing organization's contributions to the initiative. **This item is mandatory for all organizations proposing to develop software components for initiative.**)*

15.3 Planning Study Report

16 Draft Conformance Test Document (DCTD) Development

16.1 Summarize TIEs, demo results and data issues

16.2 Conformance Test

16.2.1 Test Cases

16.2.2 Data

16.2.3 Recommendations