

OGC[®]
Open Geospatial Consortium (OGC)

Request for Quotations (RFQ)
and
Call for Participation (CFP)
for OGC Testbed 12

Annex A
Testbed 12 Management Requirements

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1 Initiative Activities and Roles

1.1 Roles

The roles generally played in any OGC Interoperability Program initiative are defined in *The OGC Interoperability Program (05-127r8)* (<http://www.opengeospatial.org/ogc/policies/ipp>). The following role definitions are derived from that document with added detail to clarify how the roles will be played in this particular testbed initiative.

- Sponsors are OGC member organizations that contribute financial resources in support of the testbed. They drive testbed requirements, technical scope & agenda, and demonstration form & content. Sponsor *Representatives* are assigned by the Sponsor to represent the Sponsor's interests and position to OGC throughout the testbed duration.
- Participants are OGC member organizations that contribute to the definition of interfaces, prototypical implementations, and other engineering support for testbed. Participants typically commit to making a substantial in-kind contribution to an initiative. Participants will be represented in the testbed by assigned business and technical representatives.
- Observers are OGC member organizations that have agreed to the initiative's intellectual property requirements. Observers do not have a vote in an initiative, but they are afforded the privilege of access to initiative email lists, web sites and periodic initiative-wide teleconferences. Observers may make recommendations and comments to the participants via any of these fora. The Initiative Manager has the authority to table any comments, recommendations or other discussions raised by observers at any point without prior warning. Failure of an observer to comply may result in suspension of privileges.
- The IP Team is the engineering and management team that will oversee and coordinate the initiative. This team is comprised of OGC staff, representatives from member organizations, and OGC consultants. It facilitates architectural discussions, synthesizes technology threads, and supports the specification editorial process.

The IP Team for this testbed will include an Initiative Manager, an Initiative Architect, and multiple thread architects. Unless otherwise stated, the Initiative Manager will serve as the OGC primary point of contact ("OGC POC").

The thread architects will work with the IP Team, other thread Participants, and Sponsors to ensure that testbed work (activities and deliverables) is properly assigned and performed. The thread architects are responsible for work and schedule control, as well as for within-thread communication. They will also provide timely notice to the full IP Team on important issues or risks that could impact initiative success.

1.2 Activities

Testbed program management activity requirements on Bidders and Participants are presented below. These requirements govern what obligations Bidders must meet to properly propose and what obligations selected Participants must meet to properly perform during testbed execution. The order of topics roughly parallels the *Master Schedule* in the *RFQ Main Body* document.

In general, these requirements are expressed as various technical *activities* that may be proposed in a bid. Additional activities may be considered during bid evaluation based on cost (i.e., in-kind vs. cost-share) and the extent to which the proposed activity meets testbed requirements and conforms to the testbed architecture. However, Bidders are advised to avoid attempts to use the testbed as a platform for introducing new requirements not included in the *Sponsor Priorities*.

To avoid potential confusion, the RFQ avoids use of term *Work Breakdown Structure* (WBS). Instead, the term *activity* describes work to be performed and *deliverable* describes work to be

memorialized and delivered. This annex focuses primarily on activities, while the *Sponsor Priorities* in the *RFQ Main Body* document focuses on deliverables.

In the requirements listed below, ***bold italic*** text indicates that the work described is mandatory. Just as a Bidder is not required to propose all deliverables in the *Sponsor Priorities*, a Bidder is not required to propose to perform all listed activities. For example, a Bidder that is already a member of the OGC should forego the activity of submitting a membership application with its proposal. Some activities are absolutely required, however, and a Bidder has no choice but to propose performing it. For example, every Bidder must use the supplied templates in its proposal.

2 Proposal Development Requirements

The following requirements apply to the proposal development process and activities.

- Selected Participants must be OGC members. Any Bidder who is not already a member of the OGC **must submit an application for membership with its proposal.**
- Bidders should identify any relationships between the proposed work and relevant OGC standards.
- Bidders should identify any relationships between the proposed work and related international standards (including specific sections) being developed by ISO, OASIS, IEEE, IETF, IAI or other standards development organizations.
- No work facilities will be provided by OGC. Selected Participants will perform all awarded work at their own facilities. Some work, particularly servers in *Technical Interoperability Experiments*, also known as *Technology Integration Experiments* (TIEs), will require Participants to provide access via the public Internet.
- Proposals may address selected portions of the testbed requirements and architecture as long as the solution ultimately fits into the overall testbed architecture.
- A single proposal may address requirements arising from multiple threads. To ensure that Sponsor priorities are met, the OGC may negotiate with individual Bidders to drop, add, or change some of the proposed work.
- Bidders proposing to build interoperable components **must be prepared to test and demonstrate interoperability with components supplied by other Participants.**
- Components proposed as in-kind contributions should be publicly or commercially available products or services or prototype/pre-release versions intended to be made available. Exceptions may include products/services which are internally used by government/sponsor agencies.
- Selected Participants who will be delivering components (vs. mere documents) **must participate in the full course** of interface and component development, test and integration experiments, and other activities throughout the initiative in order to have access to and participate in demonstration exercises. Selected Participants who will be delivering documents that depend on these delivered components **must also participate in the full course** of interface and component development, test and integration experiments, and other activities throughout the initiative.
- Bidders are welcome to suggest alternatives to the initial testbed architecture. However, it should be noted that proposals will be selected on the basis of how successfully the various components from all Participants interoperate. A radically divergent architecture that would require intensive rework on the part of a significant number of other Participants **must be supported by a substantial benefit-to-cost rationale.** In such a case, advance coordination with other potential Participants to present a coherent, realistic, and reasonable approach acceptable to all involved Participants could improve the likelihood of acceptance.
- In general, a proposal including a product that has earned OGC Certification will be evaluated more favorably than that same proposal without OGC Certification.
- All Bidders **must use the supplied templates** in their proposals.
- All Selected Participants receiving cost-sharing funding **must send at least one technical representative to the Kickoff Workshop.** Participants providing only in-kind contributions may forego this requirement with prior permission. Participants are also encouraged to send at least one technical representative to the Demonstration event.

3 Proposal Evaluation Process

Proposal evaluation criteria are listed in the *RFQ Main Body* document. Several steps conducted solely by the IP Team are presented below to aid readers in understanding the overall process. The IP Team and Sponsors will begin reviewing proposals soon after the *Proposal Submission Deadline*. During this analysis, the IP Team may need to contact Bidders to obtain clarifications and better understand what is being proposed.

3.1 IP Team Review of Proposals

Each review will commence by analyzing the proposed deliverables in the context of the *Sponsor Priorities*, examining viability in light of the requirements and assessing feasibility against the use cases. The review team will analyze (1) proposed specification refinement or development and (2) proposed testing methodologies (including performance testing).

The review team will then create a draft Initiative System Architecture from tentatively selected Proposals. This architecture will include the proposed components and relate them to available hardware and software. Any candidate interface and protocol specification received from a Bidder will be included with this draft architecture as an annex.

The review team will then create a draft Demonstration Concept document that will explain the ability of proposed software components (from tentatively selected Proposals) to work together in a demonstration context. It will also identify any remaining gaps. The Demonstration Concept document may include references to existing and emerging resources on OGC Network, including those expected to be under development in this testbed. The testbed initiative will eventually culminate in one or more sponsor Demonstrations, which could be a combination of virtual and physical events (depending on sponsor constraints and preferences).

3.2 Decision Technical Evaluation Meeting I

At the *Decision Technical Evaluation Meeting I* (TEM I), the IP Team will present Sponsors with draft versions of the Initiative System Architecture, the Demonstration Concept, and program management approach. The team will also present draft recommendations regarding which parts of which proposals should be offered cost-sharing funding (and at what level). Sponsors will decide whether and how draft recommendations in all these areas should be modified.

3.3 Initial Notification of Potential Participants

Immediately following TEM I, the IP Team will begin to notify Bidders of their selection to enter negotiations for potentially becoming Participants. Selected Bidders ***must be available for these contacts to be made*** to enable confirmation of continued interest.

3.4 Decision Technical Evaluation Meeting II

A *Decision Technical Evaluation Meeting II* (TEM II) meeting will be conducted where the IP Team will present to Sponsors the revised artifacts and Participant recommendations. In addition to confirming the modifications decided in TEM I, Sponsors will have a final opportunity to decide whether the proposed Participant recommendations are correct and affordable.

3.5 Second Notification of Potential Participants

Following TEM II, the IP Team will finalize the Initiative System Architecture, Demonstration Concept, and program management approach. It will also develop the SOW and full *Participant Agreement* for each selected Bidder and notify this organization of its selection to enter final negotiations for becoming an initiative Participant. Selected Bidders ***must be available for these contacts to be made*** to enable ongoing negotiation of a contract.

4 Kickoff Workshop Requirements

Performance of testbed execution commences with a Kickoff Workshop event (“Kickoff”). Refer to the *Master Schedule* for the target date(s). Each Participant ***must attend the Kickoff of any thread for which it was selected.***

Prior to Kickoff, each Participant ***must have attested to its commitment to a preliminary Statement of Work*** with the understanding this may undergo minor modification during Kickoff, where deeper understandings of project scope, architecture, and implementation are reached.

After Kickoff, each Participant ***must sign a Participation Agreement contract***, which will include a final description of all assigned deliverables (i.e., including any mutually agreed modifications decided upon during Kickoff).

The Kickoff itself will address two interdependent and iterative development activities: (1) component interface and protocol definitions, and (2) Demonstration Scenario development. The scenarios used in the testbed will be derived from those presented in the RFQ and other candidates provided by OGC and the sponsors.

Kickoff activities will include the following (note that there could be multiple iterations of interface definition and scenario development breakouts, and these may be interleaved):

- **Interface Definition Technical Breakouts**: Participants assigned to deliver components ***must have technical representatives in attendance*** to assist in the initial assessment and interaction of the interfaces. Participants assigned to work on interface definitions should consider in their analyses any use cases developed during Demonstration Scenario development.
- **Demonstration Scenario Technical Breakouts**: assigned Participants will begin Demonstration Scenario design and creation. The activity will include the development of use cases to record their decisions and to enable other Participants to explore the impact of Scenario design decisions on other parts of the testbed. Participants assigned to work on Demonstration Scenario development should consider in their analysis any use cases developed during Interface Definition activities. Participants in this activity must understand that various data sources will be proposed, and should receive consideration, as part of Demonstration Scenario design. The design must also account for the requirements and dependencies of the overall testbed system, including any client/tool designs, any server designs, and service interfaces.
- **Technical plenary sessions**: these meetings will enable Participants working on Interface Definitions to interact with those working on Demonstration Scenario development.

One of the Kickoff work products will be a development schedule that includes specific milestones for the Interface Definition and Demonstration Scenario development activities. Among these milestones will be due dates for TIEs.

5 Communication and Reporting Requirements

5.1 Participant Points of Contact

Each selected Participant, regardless of any teaming arrangement, ***must designate a primary point of contact (“Primary POC”) who shall remain available throughout testbed execution for communications regarding status.*** The POC ***must identify at least one alternative point of contact*** to support the Primary POC as needed. The POCs shall provide contact information including their e-mail addresses and phone numbers.

All proposals ***must include a statement attesting to the POCs’ understanding and acceptance of the duties described herein.***

5.2 Kickoff Status Report

Selected Participants ***must provide a one-time Kickoff status report*** that includes a list of personnel assigned to support the initiative. This report must be submitted in electronic form to the testbed Initiative Manager ***no later than the last day of the Kickoff event.***

5.3 Monthly Progress Reporting

Participant business/contract representatives ***are required*** (per a term in the *Participation Agreement* contract) to report the progress and status of the Participant’s work. Detailed requirements for this reporting will be provided during contract negotiation. Initiative accounting requirements (e.g., invoicing) will also be described in the contract.

The IP Team will provide monthly progress reports to Sponsors. Ad hoc notifications may also occasionally be provided for urgent matters.

To support this reporting, each Participant ***must submit (1) a Monthly Technical Progress Report and (2) a Monthly Business Progress Report by the first working day on or after the 10th of each month.***

Templates for both of these report types will be provided and ***must be followed.***

The purpose of the *Monthly Business Progress Report* is to provide initiative management with a quick indicator of project health from the perspective of each Participant.

Each Thread Architect will consolidate the thread’s *Monthly Technical Progress Report* to send to the Initiative Manager by the 15th of each month. The Initiative Manager will then consolidate these into a testbed progress report to the Sponsors by the 20th of each month. The IP Team may also provide occasional status reports to the OGC Technical Committee and Planning Committee. Participants may be invited to at those times to present interface designs and other findings to these committees.

The IP Team will review action item status on a weekly basis with Participants assigned to complete those actions. Participants ***must be available for these contacts to be made.*** Action item status reports will be posted to testbed web sites each week. Email will be used to notify Thread Architects and responsible Participants of pending actions.

5.4 Regular and Ad Hoc Web Meetings and Teleconferences

At least one of the Participants POCs ***must be available for both regularly scheduled and ad hoc web meetings and teleconferences for each thread in which it is participating.***

In particular, weekly (or biweekly at IP Team discretion) thread web meetings will be conducted and recorded in minutes posted on the portal. These meetings are intended to accelerate understanding and action regarding all relevant testbed activities, particularly Participant work assignments and responses to requests for additional status by the IP Team.

In addition to a Participant POC, a knowledgeable engineer who has been (or will be) working on an activity to be discussed during a meeting would likely be a valuable attendee. Participants are strongly urged to invite such an individual to join the meeting.

5.5 Email Correspondence

At least one of the Participants POCs *must be available to participate in specification and prototype component development via the testbed email lists.*

5.6 Action Item Status Reporting

At least one of the Participants POCs *must be available to report the status of the Participant's work to the relevant thread architect in response to assigned actions.*

5.7 Communication Tools

The following tools will be implemented for use during the testbed:

- A testbed-wide email reflector, primarily for non-technical communication and accessible via the email address testbed-12@lists.opengeospatial.org
- A thread email reflector for each testbed thread, primarily for technical discussions
 - The reflectors are not intended for exchanging files. Instead, the *Portal* should be used to upload files, followed by notification via reflector to others
- Public project web site (<http://www.opengeospatial.org/projects/initiatives/testbed12>)
- Wiki sites for collaboration
- Web meeting tools such as GoToMeeting, and teleconferences
- The OGC Web Portal (<http://portal.opengeospatial.org/>) with modules for calendaring, contact lists, file upload (with version control), timeline, action items, and meeting scheduling

6 Requirements for Proposing Technical Activities

Each work item in a labor funding request or in-kind labor contribution declaration (1) **must identify the particular Deliverable** from the list of *Sponsor Priorities* to which the work item applies and (2) **must identify the particular Technical Activity Type** for the proposed activity to perform the work item. The mandatory *Response Template* and *Finance Spreadsheet* template provided in this RFQ will assist Bidders in meeting these requirements.

An extended outline of predefined Technical Activity Types is provided below. Each work item that a Bidder proposes or declares **must either match (approximately) one of these types or provide an explanation and justification for why the proposed work item does not match** anything from the list.

Adopting predefined activity types will help maintain consistency across Participants during the *Interface Development, Test, and Refinement* testbed phase (refer to the *RFQ Main Body* document for the *Master Schedule*).

Under the testbed's rapid pace, issues exposed in each round of TIEs will drive requirements for the following round of specification refinement, coding, and test. Guided by the thread architect, each cycle will proceed incrementally but rapidly, with focus on a bounded scope at each turn of the cycle. Periods of development will be followed by periods of synchronization between various component developers, enabling issue resolution before divergence can occur between the various components that must interoperate.

6.1 Specification Development Activity Types

This type of activity would define and develop models, schemas, encodings, and/or interfaces necessary to realize the testbed architecture. This type of activity may include coordination with the OGC Standards Program. Particular Specification Development Activity Types that may be specified in the Proposal include the following:

- Model Development: representing a service, interface, operation, message, or encoding that is being developed for the initiative
- Schema Development: specifying a representation of a model as an XML Schema that is being developed for the initiative
- Encoding Development: specifying an encoding that is being developed for the initiative
- Interface Development: specifying operations, encodings or messages that are being developed for the initiative
- Standards Program Coordination: submitting Engineering Reports (ERs) developed in the testbed to the OGC Technical Committee for review and presenting reports to relevant OGC TC groups and working with members to resolve issues that the members may raise with regard to the ER

6.2 Component Development Activity Types

This type of activity would develop prototype interoperable software components based on draft candidate implementation specifications or adopted specifications necessary to realize the testbed architecture. Particular Component Development Activity Types that may be specified in the Proposal include the following:

- Prototype Server Software Development: development of new server software or modification of existing server software to exercise the interfaces developed under Specification Development activities. Selected Participants **must make this server software available for sponsor review and input during the initiative**.

- Note that the development of prototype server software intended primarily for use in the OGC Compliance Program would fall under one of the Compliance Test Development Activity Types (described below).
- Prototype Client Software Development: development of new client software or modification of existing client software to exercise the servers being developed. Participants who develop server software ***must also develop client software (or make arrangements with other Participants to utilize their client software) to exercise this server software during the course of the initiative.*** Use of another Participant's client is subject to approval by the IP Team to ensure that the third-party client is appropriate for exercising the functionality of the relevant server.
- Special Adaptations: adaptations of client or server software to exercise relevant mainstream IT technology and standards such as PKI and e-commerce technologies.

6.3 Testing and Integration Activity Types

This type of activity would integrate, document, and test functioning interoperable components that execute operational elements, assigned tasks, and information flows required to fulfill a set of testbed requirements. Particular Testing and Integration Activity Types that may be specified in the Proposal include the following:

- Component Interface Tests: Participants selected to deploy any testbed components ***must conduct multiple, formal TIEs*** that exercise each server and client component's ability to properly implement the interfaces, operations, encodings, and messages developed during the testbed. Multiple TIEs and multiple iterations of a particular TIE will be conducted during the testbed.
- Test Result Analysis: Participants required to participate in TIEs ***must report the outcomes and relevant software reporting messages to the IP Team and in Monthly Technical Progress Reports.***
- Configuration Management: communication of the location (URLs) of the server and other components, provision of any updates about the location and operational status of the components, and provision of information about the interface implemented by the servers.

6.4 Solution Transfer Activity Types

This type of activity would prepare prototype interoperable components to enable them to be assembled at another site. Particular Solution Transfer Activity Types that may be specified in the Proposal include the following:

- Software Installation: Participants selected to deploy any testbed components ***must provide a licensed copy of testbed-relevant software components*** for integration onto the OGC Network. This could be accomplished by making the software components available from an open site on their network OR by installing it (and ensuring stability) on a sponsor or other host machine on the OGC Network. If the latter option is taken, then the Participant ***must provide a technical representative to support installation*** of the software components.
- Data Loading: Participants selected to deploy any server testbed components ***must provide a technical representative to load data to any server components the Participant develops.***

6.5 Demonstration Activity Types

The testbed Demonstration will build upon the initiative characteristics developed during Kickoff demonstration scenario design and creation discussions. The goal is for Participants to build and

implement prototypes that clearly demonstrate the capabilities of the components by exercising Sponsor scenarios. All Demonstrations ***must be made available to Sponsors via the Internet, either for presentation purposes, or for use in their internal labs.***

Demonstration activities (instances of the Activity Types listed below) would define, develop, and deploy functioning interoperable components that execute operational elements, assigned tasks, and information flows required to fulfill a set of testbed requirements. In contrast to Testing and Integration activities, Demonstration activities are intended primarily to support demonstration of enabled end-user capabilities. Particular Demonstration Activity Types that may be specified in the Proposal include the following:

- Demonstration Use Case Development: provision of a technical representative to develop or support the development of use cases that define and explain the utility of the interfaces and encodings developed during the testbed. These use cases will be used to provide a basis for Demonstration storyboards and for the Demonstration itself.
- Demonstration Storyboard Development: provision of a technical representative to develop or support the development of the storyboards that will define the structure and content of the Demonstration.
- Demonstration Preparation and Delivery: ***Participants selected to deploy any testbed components must provide a technical representative to develop or support the development of the Demonstration*** that will exercise the functionality of the interfaces developed during the testbed. This representative ***must also be available to support the Demonstration event itself.*** Participants ***must perform four sub-activities: design, build, and test the Participant's demonstrated components, and then package these for public sharing.*** This activity could also include the identification of other relevant data providers and incorporation of their data sources.
- Assurance of One Year of Availability: Participants selected to deploy any (server or client) testbed component ***must maintain this software and make it available to OGC for a period of no less than one year after the completion of the first Demonstration.*** Some sponsors may be willing to entertain exceptions to this requirement on a case-by-case basis.

6.6 Documentation Activity Types

This type of activity would ensure development and maintenance of the pre-specification, pre-conformant interoperable OGC technologies (including draft and final Engineering Reports) and the system-level documentation (sample user documentation, etc.) necessary to execute the testbed. This type of activity may include coordination with the OGC Standards Program.

Particular Documentation Activity Types that may be specified in the Proposal include the following:

- Engineering Report Development: Participants selected to perform engineering report development ***must provide a technical representative to serve as editor of, reviewer of, or contributor to the relevant Engineering Report (ER) (or subsection thereof).*** Engineering reports ***must include all relevant items from the following list as applicable:***
 - Findings
 - Recommendations
 - Change Request(s)
 - Use Case(s)
 - Architectural Overview
 - Relevant UML Model(s)
 - XML Schema Document(s)

- Abstract Test Suite(s)
- Independent Change Request Development (not included as part of an ER): Participants selected to perform independent change request development (not included as part of an ER) **must provide a technical representative to serve as editor of, reviewer of, or contributor to the relevant Change Request (CR)** to an existing OGC standard. All developed CRs **must be entered into the CR system** at <http://www.opengeospatial.org/standards/cr>.
- Independent Use Case Development (not included as part of an ER): Participants selected to deploy any (server or client) testbed components **must provide a technical representative to develop use cases to show the functionality of their software components** in the context of the testbed architecture.
- Independent Architectural Overview Development (not included as part of an ER): Participants selected to deploy any (server or client) testbed components **must provide a technical representative to develop an architectural overview** of their software components as relevant to the testbed architecture.
- System Configuration Development: Participants selected to deploy any testbed components to be installed at sponsor or other host sites connected to the OGC Network **must provide a technical representative to develop a detailed document describing the combined environment of hardware and software components that compose their contribution** to the testbed.
- Installation Guide Development: Participants selected to deploy any testbed components to be installed at sponsor or other host sites connected to the OGC Network **must provide a technical representative to develop an installation guide for their software components**.
- Training Material & User Guide: Participants selected to deploy any testbed components to be installed at sponsor or other host sites connected to the OGC Network **must provide a technical representative to develop a User Guide and Training Materials pertaining to their software components developed or modified for the testbed**.

6.7 Compliance Test Development Activity Types

This type of activity involves the development of draft compliance test guidelines (at a minimum) and test suites for engineering specifications detailed in Engineering Reports. This type of activity would likely include coordination with the OGC Compliance Program. Particular Compliance Test Development Activity Types that may be specified in the Proposal include the following:

- Summarization of TIEs, Demo Results, and Data Issues: provision of a summary of information detailing progress pertaining to the implementation of the interface by including TIE results, lessons-learned from the demo, and particular data issues.
- Full Compliance Test: provision of an outline of all of the necessary information to conduct a valid compliance test of the interface, including the sub activities below.
 - Compliance Test Cases: provision of an outline of a valid compliance tests for the software component, including identification of all required and optional server requests in the interface, the acceptable results for testing servers, 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, and a matrix of test dependencies and explanation of ordering tests appropriately for inherent tests and dependencies.
 - Compliance Test Data: identification of appropriate data sets for use in conducting a compliance test for an interface(server or client) or encoding.

- Compliance Test Recommendations: documentation of recommendations to resolve issues with the current state of the interface or with the compliance tests. For candidate specifications, this documentation ***must, at a minimum, consist of test guidelines that would form the basis for development of more detailed and complete test scripts as the specification matures*** toward an approved specification. For mature candidate specifications, Participants ***must evolve existing or prepare test scripts to form a complete set of tests to fully test an implementation of a specification for compliance with its requirements***. This documentation ***must be embodied in an Engineering Report as well as any GitHub repository that exists for a particular standard***.

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