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**Request For Quotation**

**And**

**Call For Participation**

**In the**

**NSG PLUGWEEK PILOT (NPP)**

**Annex C—NSG Plugweek Concept of Operations**

**RFQ Issuance Date: 13 July, 2009**

**Proposal Due Date: 3 August, 2009**

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# Annex C: NSG Plugweek Pilot Concept of Operations

## 1 Introduction

This Annex describes the Concept of Operations for the NSG Plugweek Pilot. This document is organized around nine particular time frames or phases. The phases are:

1. Proposal Development (Completed)—the time during which RFQ respondent proposals will be developed. This time will also be used by the OGC to develop draft management and communication plans for the initiative operational phases.

2. Initiative Design Analysis (August 3, 2009 – August 9, 2009)—the time that responses will be analysed, the initiative design will be solidified, the initiative architecture[1] will be refined, the initial System Architecture will be revised and a demonstration concept will be determined.

3. Participant Negotiations (August 10, 2009 – August 17, 2009):—the time will also be used to communicate with RFQ respondents concerning their proposals, to negotiate with them on their initiative participation, and to communicate the status of the NSG Plugweek Pilot to NGA partners as well as the OGC Technical and Planning Committees. During this time, purchase orders for targeted participants and Memoranda of Understanding will be signed.

4. Initiative Kick-off (August 21, 2009):— the time that starts the initiative operation. This meeting will be held in the DC area. During the Kick-off, the participants will 1) agree upon generic interfaces and protocols to be used as the starting place for software components, 2) finalize the initial System Architecture, and 3) refine the Demonstration Concept. This phase is covered specifically during the period of performance of this RFQ. Participants may attend in person or by WebEx, teleconference to hold costs down.

5. Plugweek Execution (September 28, 2009 – October 2, 2009):—the time of preparing for and conducting the Plugweek on OGC Network. This phase is covered specifically during the period of performance of this RFQ.

6. Plugweek After Action Report and Engineering Reports – the time period where the final report and Engineering Reports are prepared and submitted (October 3, 2009 – October 27, 2009).

## 2 NSG Plugweek Pilot Lifecycle Phases

### 2.1 Proposal Development

*The RFQ and Responses*—The primary activity during this period is the development of proposals. Proposals should reflect an understanding of the following:

- Proposing organizations must be members of OGC, or must submit an application for membership and join if their proposals are accepted.

- The OpenGIS® Abstract Specification, as well as OpenGIS Interface Standards, will used in the Plugweek.

- Proposing organizations should plan on performing all development work at their own facilities. These facilities should include a server (where applicable) that is accessible to other participants

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[1] The testbed architecture consists of the operational, technical, and system architectures as described in Annex B.

via the Internet. TIEs will be carried out among the participants based on these Internet-accessible servers.

- Proposing organizations shall plan to install their components at any of their own facilities for the OGC Network based activities

- Proposing organizations selected for participation in the Plugweek environment may choose to install their server components at the OGC Office in Herndon, VA, or at their own locations so long as high speed Internet connectivity is provided. Clients will be required to be located at the OGC Office in Herndon.

- The desired outcome of the Pilot includes an implementation that becomes part of the OGC Network for the performance period. OGC will provide network connectivity at Herndon and participants will be responsible for all other hardware they need.

- Proposals need not address the full spectrum of the NSG Plugweek Pilot architecture as outlined in Annex B. Proposals can focus on specific portions of that architecture.

- Proposing organizations should be prepared to provide interoperable components and thus should be prepared to cooperate with all selected development teams, regardless of whether individual proposals covered the full NSG Plugweek Pilot architecture or portions of it.

- Software components developed in the NSG Plugweek Pilot initiative may either be based upon currently shipping products, or prototypes or pre-release versions of products that the responding organization intends to sell or otherwise distribute for ultimate deployment.

- Proposal selection and funding may be on the basis of portions of the proposal deemed most likely to lead to a successful NSG Plugweek Pilot implementation. All in-kind funding will be allocated for the provision of services. There will be no in-kind funding for the provision of clients.

- Proposing organizations should be familiar with the existing OGC Network infrastructure. OGC Network provides a set of services, datasets, components, toolkits, and reference materials that can and should be used to leverage the NSG Plugweek Pilot.

- Proposing organizations shall use the supplied template and forms to complete to their proposals.

- Sponsor funding is limited and will be awarded only for the provision of services. Cost sharing is not available for the provision of clients

The primary activity during this period is the development of proposals by potential participants.

During this period, there will be a bidder's meeting, so that respondents can ask questions, request clarifications, and advise the NSG Plugweek Pilot Team of issues.

Those organizations or companies choosing to respond are expected to have representatives available to attend this meeting in person or by phone on July 20, 2009. Please note that this meeting will be conducted by WebEx and will be used to answer your questions. Complete information is available in the RFQ/CFP document Paragraph 4.4

### 2.1.1   Management Approach and Communications Plan

The NSG Plugweek Pilot Team will apply the standard OGC Pilot Initiative management approach, and initiate its communication plan during the period between the release of the RFQ and the submission of the responses. These activities will provide guidance to the NSG Plugweek Pilot Team and participants for the conduct of NSG Plugweek Pilot.

The management approach for NSG Plugweek Pilot, as for other OGC IP initiatives, is outlined in the Interoperability Program Standards Operating Policy, Processes and Procedures (IPSOP[3]). This document

details the following roles and responsibilities of individuals providing management support to OGC initiatives a[3]:

1. Sponsor Team—representatives from the organizations that have provided sponsorship for the Pilot initiative.

2. OGC Initiative Liaison—the OGC staff person responsible for the oversight of the initiative.

3. Operations—the individual responsible for the day-to-day operation of the initiative.

4. Architecture—the individuals responsible for the overall initiative architecture during the course of the initiative.

5. Marketing—the individual responsible for the marketing aspects of the initiative.

6. Interface Team—a team of individuals representing all of the participants that are engaged in component development and representing sponsor organizations. The primary task of this team is to develop component interface and protocol definitions, implement components, revise interface and protocol definitions, and evolve the Initiative Architecture.

7. Operation Team—a team of individuals representing all of the participants and sponsoring organizations that are engaged in demonstration, testing, or data provision. The primary task of this team is to prepare scenarios for demonstrations, design tests that exercise the components, perform data development in support of these scenarios, build demonstrations and tests, and evolve the Demonstration Concept.

8. NSG Plugweek Pilot Team—a group composed of the Plugweek contractors and volunteers, OGC Initiative Manager, Architecture, Operations, and Marketing.

The Communications Plan, to be published as Annex D, details resources and procedures for reporting and exchanging information with participants, relevant WGs, TC, PC, and sponsors. This plan includes the development of a Web page with appropriate documents and regular updates to NSG Plugweek Pilot information. The NSG Plugweek Pilot Team will provide a list server for participants to exchange project-relevant e-mail. A teleconferencing plan and online collaboration plan will be developed to further support communications among participants.

### 2.1.2   Letter of Intent and Contract Execution

Respondents to this RFQ must include a signed letter of intent (LOI) with their submittal. The LOI must state that if they are selected for inclusion in the NSG Plugweek Pilot Initiative, and they elect to participate, then they will sign a Statement of Work (SOW) by the end of the Negotiation Period. The SOW, also to be signed by OGC, will contain common vision and goal statements, will be an agreement to work toward these goals, and will define the roles and responsibilities of the participant. Respondents who do not submit a signed SOW by the end of the Negotiation Period will not have access to the project.

## *2.2  Initiative Design, Response Analysis, Selection and Negotiations*

Figure 2 depicts the processes involved in the Initiative Design phase. Each of these processes, their inputs and outputs, and other aspects are detailed in this section.

**Input:**
• RFQ Responses
• Project   Design
• Concept of Operations

**Clarification**   **RFQ Respondents**

**Initial Response Analysis**

**Output/Input:**
• Component Analysis
• Database Analysis
• Project   Design (Recommendation)
• Demo Concept (Recommendation)

**Dialog (as time permits)**   **RFQ Respondents**

Draft Communications Plan
Draft Budget Plan

**Decision TEM I**

**Output/Input:**
• Project   Design (Revised)
• Demo Concept (Revised)

**Negotiation**   **RFQ Respondents**

Participant Recommendation
• Funded Participants
• Unfunded Participants
Final Communications Plan

**Decision TEM II**

**Output:**
• Project   Design (Draft)
• Demo Concept (Draft)

Draft Purchase Orders
• Targeted Participants
Draft SOW
Draft SOP

**Negotiations**

Final Purchase Orders
• Funded Participants
Final SOW
Final SOP
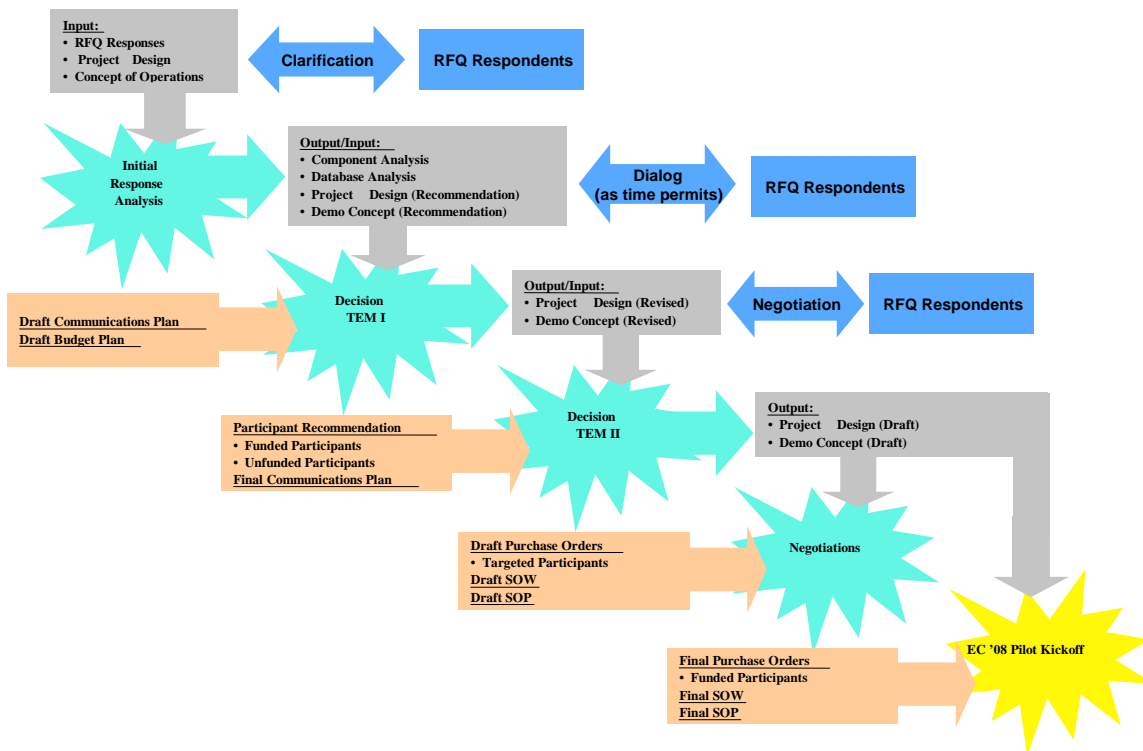
**EC '08 Pilot Kickoff**

## Figure 2: Processes Leading up to the NSG Plugweek Pilot Initiative Kickoff WebEx

The NSG Plugweek Pilot Team and partners will review the RFQ responses beginning immediately after they are received. During the analysis process the IP Team may need to contact respondents for clarification; thus respondents should prepare for this eventuality. Time permitting, the Team may also communicate with RFQ respondents about details of the recommended Initiative Design and Demonstration Concept.  Early submission will not be used as an evaluation criterion, but it is encouraged as timelines are very tight for the pilot.

### 2.2.1   Component and Requirement Analysis

The review team will accomplish three tasks:

1. Analyze the components proposed in the RFQ responses in the context of the Pilot WBS found in Annex A.

2. Compare the proposed efforts with the requirements of the initiative and determine viability.

3. Assess the feasibility of the RFQ responses against the use cases.

4. Analyze proposed specification development

5. Analyze proposed testing methodologies, including but not limited to performance testing methodologies.

### 2.2.2   Initiative (System) Architecture

The proposal review team will then draft a straw system architecture technology viewpoint, which will include the set of proposed components for use within the initiative, and relate them to the hardware and software available.

### 2.2.3 Plugweek Concept

The team will incorporate the preliminary analysis of responses into a Plugweek plan. This document will discuss the ability of proposed software components to work together and will identify gaps.

In the case of proposals for demonstration and database development tasks, proposed databases that are applicable to the project, and the details of their contents, will be listed. The review team will evaluate the ability of the proposed databases to support anticipated scenarios, and will develop an estimate of the effort required to develop metadata for the proposed data sets. Respondents are encouraged to provide as much information in this regard as they have available.

The team will also construct a listing of database compatibility and related issues (accuracy, scale, coordinate system, data type), to inform the scenario development process, and will develop early recommendations regarding the applicability of the databases with respect to demonstration scenario support.

The demonstration concept document will include references to existing and emerging resources on OGC Network, including the resources under development in this project.

### 2.2.4 Decision TEM I

At Decision Technical Evaluation Meeting I, NSG Plugweek Pilot Team will present (with the Component and Database Analyses as background):

- The Initiative (System) Architecture Recommendation, and

- The Plugweek Concept Recommendation.

This presentation will be made in the context of first drafts of the plans described above:

- Communications Plan

The primary decisions to be made by the sponsors at this TEM are:

- Is the recommended Initiative Architecture workable? If not, how to make it workable.

- Which RFQ responses, or subset thereof, should be provided cost-sharing funds and at what level given all inputs?

- Is the Plugweek Concept workable? If not, how to make it workable.

- Are the management approach and the Communications Plan reasonable and complete?

Immediately following Decision TEM I, Initiative staff will begin to evaluate recommendations to the various plans and will revise the plans and concepts accordingly. It will also make budgetary adjustments based on sponsor inputs.

### 2.2.5 Decision TEM II

At Decision Technical Evaluation Meeting II, the NSG Plugweek Pilot Team will present:

- The Initiative (System) Architecture Revision, and

- The Plugweek Concept Revision.

- The Participant Recommendation

The primary decisions to be made by the sponsors at this TEM are:

- Is the revised Initiative Architecture workable? If not, how to make it workable.

- Is the Participant Recommendation correct and affordable?

- Is the Plugweek Concept workable? If not, how to make it workable.

- Are the management approach and Communications Plans reasonable and complete?

Immediately following Decision TEM II, the Team will 1) finalize the Initiative Architecture and Concept of Operation (now including the Plugweek Concept), 2) begin to insert specific information into the existing purchase order template for each targeted participant organization, and 3) make the insertions of specifics for all participants into a contract template. Each targeted respondent POC should be available or make arrangements for alternates during this period. The output of Decision TEM II will be a final Initiative Architecture and Plugweek Concept. Proposing organizations that have been selected for funding will be notified after the completion of Decision TEM II.

## *2.3   Initiative Kickoff*

The NSG Plugweek Pilot project will be launched officially with a web-based Kickoff meeting in the Washington, DC, Northern Virginia area (exact location for those who wish to attend, to be announced). Prior to the Kickoff meeting all the participants will sign a Contract, as indicated above, that includes a description of the aspect of NSG Plugweek Pilot in which they will participate.

The Kickoff meeting will address three development activities in the NSG Plugweek Pilot process: 1) component interface and protocol clarifications, 2) best practices for component network operations, and 2) test plan development.

## *2.4   NSG Plugweek Pilot Interface and Demonstration Development*

This section defines an initial concept for the conduct of development activities in NSG Plugweek Pilot. The actual schedule and further information will be provided at the Initiative Kickoff.

### 2.4.1   Interface Refinement and Project Testing

This section normally defines the phase called Interface Selection (IS) and Project Testing Phase.  In this case the sponsor has specified which standards and which versions of those standards and a specific profile of those standards that will be used, so that will not be done here.  The schedule and further information will be developed and provided at the Testbed Kickoff. This phase corresponds with WBS Tasks 3.6 to 3.8 and their related sub-tasks.

During the ID phase, the Engineering Architecture will be refined while groups of participants work on development of specific components.. This mutual interaction will allow problems and successes to surface early, and will guide early TIEs, without waiting until Plugweek.  Plugweek Testing will then become a matter of ensuring the interoperability can be achieved uniformly across all implementations.

Technology Integration Experiments (TIEs) will be conducted on a regular basis, in an iterative manner, as outlined by the initiative architects in the development schedule. During identified TIE phases of the initiative, participants developing components within the Architecture shall test interfaces for component accessibility, behavior, and most important, interoperability.  The IP Team will develop a TIE matrix defining the nature of TIEs that shall be conducted and their scheduled occurrence within the initiative. Participants will report the outcome of each TIE following the TIE reporting template provided by IP Team.   The OGC Network based TIEs will be scheduled such that software chosen by the NGA for insertion can be included in the Plugweek.

TIEs will be conducted within the development cycle of the Initiative.  TIEs will follow initial interface refinement, interface construction, component creation, and integration of the interface with application logic. During each TIE iteration, server components under test shall have data loaded to allow client software to exercise the current functionality. Participants working behind firewalls shall take any necessary steps to allow the test to be conducted through the firewall or outside of the firewall. All

participants are expected to provide appropriate documentation to allow the successful conduct of these experiments. All participants are expected to upload a reference to their components to the Initiative web site, for each TIE iteration. Participants shall report the outcome of TIEs to the Initiative Architecture Team.

To the extent possible in an initiative of this duration, interface refinement, software development, and test will follow the spiral development paradigm. In particular, issues exposed in each round of TIEs will drive requirements for the following round of specification (interface definition) refinement, coding, and test. The development cycle may also proceed incrementally, with primary attention on a limited set of operations at each turn of the cycle. This approach may require more closely coordinated interactions among participants than in previous OGC initiatives.

Annex B, the Technical Architecture, describes a set of services and interface mechanisms. It also contains a schematic Engineering Architecture. Individual items in that architecture are to be refined during the Kickoff meeting and will be further refined during the ID phase. Consistent with the spiral development paradigm, it is intended that there be periods of development followed by periods of synchronization between the various component developers. This will allow for issues to be resolved and documented before divergence begins to occur between individual component developers (i.e., two server developers) and between dependent component developers (i.e., server and client developers).

## 2.4.2   Plugweek

This section builds upon the initiative characteristics developed during the Kickoff and subsequent TIE testing. To be successful, participants must execute four activities—designing a demonstration, building a demonstration, testing the demonstration, and participating in the Plugweek.

The goals of the OGC IP are to 1) ensure that different products interoperate together as intended, and 2) to attain an 'installed base maturity' in the market by providing a reliable procedure for assuring that OGC specification-based solutions work together.

To achieve this goal, the OGC IP adopts specific guidelines and principles, utilize various test suites from the OGC Compliance Testing Program, and develop a process to test specific aspects of the OGC specifications. If for any reason, the Plugweek discovers any problems or difficulties with an OGC specification, it will forward that information back to the OGC Technical Committee.

The Plugweek will be conducted in an open environment (meaning that everyone is under Confidentiality Agreement and thus the atmosphere of technical discussion shall be open) during which an informal and formal test process will be conducted. Tests run during the Plugweek can come from both OGC or participant sources. Tests developed by either the OGC or paid for by OGC will be open sourced and available to participants. Those tests developed and provided for use by individual companies may or may not be available to participating companies, depending upon the conditions set forth but the company developing the test. It will be up to individual companies to make arrangements with those companies that provide test scripts that are not provided as an open source test script.

The OGC Plugweek will be open to members of participating companies, the staff of the OGC, sponsors and Interoperability Program team members and consultants paid to support the event. Visitors will NOT be allowed into the Plugweek area anytime a Plugweek is being conducted.

Specific activities performed during the plugweek include

- Plugweek Test Plan will be drafted in advance of the plugweek, will be reviewed on the first day of the plugweek and updated throughout the week. The test plan will identify the list of tests to be performed in the plugweek. The test plan will indicate the components and services and data to be used in the tests.

- Configuration Plan will be drafted in advance of the plugweek, will be reviewed on the first day of the plugweek and statused throughout the week. The configuration plan will identify all

components that will participate in the plugweek, where those components are located, IP addresses and point of contact information for the organizations hosting the component.

- Review of Tests Scripts. Test Scripts will include reuse of compliance tests and well as other tests identified for the Plugweek.

- The main activity will be conducting the tests between the participants in the plugweek. Emphasis will be placed upon achieving as many tests by different participants during the week as possible.

- Test Log. During the week results of the tests will be recorded in Test Logs. The contents of the test logs will be used as a basis for the conclusions contained in the NPP Engineering Report.

It will be an aim of the OGC IP team and participants to host the various information items listed above using online capabilities such as wikis and issue trackers.

The test activities will be used to develop demonstration scenarios. Participation in demonstration exercises is predicated upon full engagement with development, testing, and planning activities throughout the NSG Plugweek Pilot initiative.

### 2.4.3  NPP Completion

After the Plugweek, the OGC IP Team and NPP participants will finalize the various deliverables of the NPP. In particular will be development of the NPP ER.

**Final Report -** The OGC and the Plugweek Participants shall document the results of Plugweek initiative in an OWS-7 NSG Profiles Plugweek Engineering Report that will be posted to the OGC Specification Program Pending Documents. It is intended that this Engineering Report will evaluate the NSG Profiles and whether they enabled the capabilities NGA requires. The OGC will identify if the profiles and tests perform as expected. The OGC will identify any recommended changes to the NSG Profile, the Compliance tests, or the OGC service being tested.

# 3  Progress Reporting

The NSG Plugweek Pilot Team will provide regular (monthly) progress reports pertaining to progress of the Pilot to the sponsors (See WBS task item 1.3.1). The OGC IP Team and the sponsors intend to provide committee..

# 4  Integrated Initiatives

Other ongoing IP activities may present opportunities to support NSG Plugweek Pilot and be coordinated with the activities within NSG Plugweek Pilot. Any such resources and related activities may be integrated with those of NSG Plugweek Pilot in order to take advantage of economies of scale, and possibly to explore the deployment of innovations coming from NSG Plugweek Pilot .

# 5  NSG Plugweek Pilot RFQ Scope

The purpose of this Request For Quotation is to solicit your proposal in response to a refined set of requirements for the Open Geospatial Consortium (OGC) NSG Plugweek Pilot project. Using the attached template and forms, please submit your technical proposal, your cost sharing request, and your in-kind contribution declaration. Please limit your response to only those elements defined as and associated with NSG Plugweek Pilot.