The Open Geospatial Consortium (OGC®)

Request for Quotation

And

Call for Participation

in the

GEOSPATIAL ENHANCEMENT FOR THE NATIONAL INFORMATION EXCHANGE MODEL (NIEM)

(GEO4NIEM)

RFQ Issuance Date: 14 February 2013

Proposal Due Date: 4 March 2013

Table Of Contents

1   Introduction

1.1   Purpose

The purpose of this Request for Quotation and Call for Participation (hereafter referred to as RFQ/CFP) is to solicit your proposal in response to a refined set of requirements for the OGC's Geospatial Enhancement for the National Information Exchange Model (NIEM) (Geo4NIEM) Interoperability Program Pilot initiative.

The OGC, on behalf of the project sponsors, will provide cost-sharing funds to partially offset expenses uniquely associated with the initiative, thus the solicitation is for quotations from bidders wishing to receive cost-sharing. However, not all proposals are expected to seek cost-sharing. OGC intends to involve as many participants in the initiative as possible; to the extent each participant can enhance and/or make use of the initiative outcomes.

1.2   Background

Geospatial information technologies are increasingly a foundation for supporting Information Sharing Environment (ISE), homeland security (HLS), homeland defense (HLD), law enforcement (LE), emergency management (EM) and public safety missions in the US. The inability to transport, deliver and exchange geospatial information for critical geospatial assets for prevention, preparedness, response, recovery and mitigation to all-hazards and all-threats increases the risk to the nation.

Many ISE HLS/HDS/LE mission partners have developed standalone geospatial information systems (GIS) or Common Operating Pictures (COPs) to support their stakeholder communities during incidents and for daily operational support. While different missions, these GIS/COP capabilities rely upon much of the same data or generate specific data during an event. These data are often stove piped and not exposed to a broader community that could benefit from these data resulting in duplication and delayed or incorrect decisions. While mission partners do not need to use the same GIS/COP tools, they could benefit from shared access to the common operating data and services used within these systems if they were exposed and exchanges in open standards.

Under the US Program Manager-Information Sharing Environment's (PM-ISE) legislated authorities, an identified and highlighted government-wide information sharing shortfall will be resolved by funding the Department of Homeland Security (DHS) National Information Exchange Model (NIEM) Program Management Office (PMO), to enhance the NIEM to further enhance its geospatial exchange capability to significantly improve inter-government information sharing of this critical data source. The PM-ISE's Assured Interoperability and Standards and Architecture Divisions intend to document and test recommended geospatial enhancements to the National Information Exchange Model (NIEM) to further enhance its geospatial representation and exchange in keeping with the Open Geospatial Consortium (OGC) open standards guidelines.

An important aspect of OGC initiatives such as Geo4NIEM project is that vendors, developers, administrators, and subject domain experts are brought together to learn from each other and collaboratively solve interoperability problems, which arise in the course of developing geospatial data architectures and information exchange following OGC standards.

1.3   The RFQ Documents and Pilot Process

The Geo4NIEM Initiative Management team, consisting of Sponsors and OGC personnel, has developed this RFQ to describe the requirements and architecture; and deliverables, schedule, and concept of operations, including communications plans organized in the following structure:
- RFQ Main Body (this document)
  - Initiative Objectives
  - Deliverables

- o   Master Schedule
        - o   Terms and Conditions for Responding
- Development Approach (Annex A)
        - o   OGC IP Policy and Procedures
        - o   Work Breakdown Structure (WBS)
        - o   Concept of Operations
        - o   Communications Plan and Reporting
- Technical Architecture (Annex B)
        - o   Description of the architecture using Reference Model for Open Distributed Processing (RM-ODP).

All organizations interested in participating in the project effort shall respond with a proposal. Instructions for submitting proposals are provided in Section 6.

The limited cost-sharing funding available is intended to partially offset costs incurred by participants in support of this effort. **No funds shall be used to procure any proprietary hardware or software associated with this effort.**

Each organization with a role in the initiative shall sign a Participation Agreement that includes a Statement of Work (SOW) with OGC that outlines roles and responsibilities of each participant in the Geo4NIEM Initiative. By doing so, participants will agree to work together for the realization of the initiative goals and for the benefit of the industry. Participants SOW and related roles and responsibilities will be made available to interested parties.

1.4   Benefits to Participants

The Geo4NIEM Initiative offers a prime opportunity for vendors, users, and other interested parties to contribute to the enhancement of interoperability of OGC geospatial standards, such as GML, with the US National Information Exchange Model (NIEM) to be documented in Engineering Reports (ERs) in the context of a hands-on engineering experience. This initiative is aimed to enhance geospatial architecture of NIEM and implementation best practice patterns and prepare implementation guidance for industry and government agencies alike. This initiative aims to develop and demonstrate geospatial interoperability and improve core capabilities in NIEM to meet Sponsors' objectives.

In addition, this initiative will provide a significant opportunity for participants to explore significant geospatial integration within application domains, such as Law Enforcement and Maritime Domain Awareness, using NIEM as the cornerstone of the US government's information sharing environment strategy and practice in a unique hands-on engineering context.

1.5   Intellectual Property in the Pilot

The Geo4NIEM project will be conducted in accordance with the OGC Intellectual Property Rights Policy and Procedures that can be found here: http://www.opengeospatial.org/about/ipr

The Geo4NIEM project is aimed to support the OGC Standards Program in the development and publication of open standards.   Participants in the Geo4NIEM project will be required to allow OGC to publish documents based in whole or in part upon any intellectual property contributed by Participant ("Participant IP") in connection with the Geo4NIEM project. OGC shall be the owner of the copyright of any documentation developed as a part of the Geo4NIEM project.   The Participant will be required to grant OGC a perpetual, non-exclusive, royalty-free license, with right to sublicense, to the patent rights in any Participant IP to the extent incorporated in, and necessary for the use of, the Specification. Beyond these requirements, The Participant retains ownership in all Participant IP, including all patent, trade secret, copyright and other intellectual property rights in the Participant IP. Unless otherwise stated in participant's statement of work, a participant is not required to deliver software to OGC that may be developed or modified during this project.

If, during the course of Pilot Project execution, modifications to an existing OGC standard are found necessary, then a Change Request (CR) must be developed that documents the change. This CR does not need to be adopted by OGC during the initiative; rather it is intended to serve as documentation of both the change and the requirement that led to the change. The CR must be submitted to OGC Change Request Log (http://www.opengeospatial.org/standards/cr/). The TC Chair will assign the CR to the appropriate Standards Working Group.

1.6   OGC Membership

Proposing organizations must be an OGC member and familiar with the OGC mission, organization, and process. Proposals from non-members will be considered, if a completed application for OGC membership or a letter of intent to become a member is submitted prior to or along with the proposal.

2   Context

2.1   Sponsor Objectives

The Geo4NIEM Project Sponsors have worked with OGC to outline specific functional requirements to meet the following objectives:

- Develop recommendations for the inclusion and standard use of embedded GML with NIEM IEPDs.
- Develop recommendations for the standardize use of Naming and Design Rules and the use of adaptors (e.g. NIEM wrapper for GML)
- Test and demonstrate use of a standardized embedded GML and adaptors within NIEM IEPDs.
- Develop architecture documentation and "Fact Sheet" for the use of embedded GML and adaptors for use with NIEM IEPDs
- Develop recommendations for the inclusion of a Geospatial Domain within NIEM

2.2   Open Geospatial Consortium

The primary purpose of OGC's Interoperability Program is to bring Sponsors and Participants together in rapid, hands-on, collaborative engineering efforts to advance the development and use of OGC standards for open geospatial interoperability.

A Pilot in the OGC Interoperability Program is a collaborative effort that applies technology elements from the OGC Technical Baseline and other (non-OGC) technologies to Sponsor scenarios. In practice, a Pilot is where an OGC standard – or set of OGC standards – can be "stress tested" based on real-world application and experience. While some research may be done during a pilot in terms of refining, documenting, and distributing specifications and in terms of developing pilot/beta-level software that exercises the refined specification, this research is directed at improving existing standards rather than in creating new specifications.

2.3   Geo4NIEM Context

The sponsors have identified important Information Exchange requirements to be analyzed and used as exemplars as case studies for development of recommendations to enhance the geospatial capabilities within the National Information Exchange Model (NIEM). Sponsors have identified specific Information Exchange Packages (IEPs) from Department of Homeland Security (DHS), Justice/Law Enforcement domain and Maritime domain as representative examples for investigation in this initiative. The focus of these requirements is described in the following paragraphs.

Request for Information. On August 5, 2010, Information Sharing Governance Board (ISGB), chaired by the DHS Office of Intelligence & Analysis (I&A) endorsed the need to establish a Common Operating Picture (COP) Integrated Product Team (IPT) to provide a governance structure for information sharing

across DHS COP investments. The challenge is to ensure that the 20+ COP investments are interoperable and not redundant to share data, services and infrastructure. The goal - Provide the right information at the right time to the right people in a secure manner at the right cost.

The RFI exchange is focused on the interagency processes that affect requirements, tasking and information gathering activities used to support the collections and awareness within intelligence and response operations.

The RFI IEP provides the mechanism through which intelligence analysts, operations managers, and can request and receive relevant information for processing and analysis. The process of collection in the intelligence cycle refers to the methods and activities used to gather raw data for the later stages of the cycle. The Collection process is driven by inputs from the Planning process as well as from other tasking and requirements activities such as RFIs.

The ability to identify, process, and comprehend the critical information about an incident -- knowing what is going on around you. Situational awareness requires continuous monitoring of relevant sources of information regarding actual incidents and developing hazards. The scope and type of monitoring vary based on the type of incidents being evaluated and needed reporting thresholds. Critical information is passed through established reporting channels according to established security protocols.

Maritime Domain Awareness . The Maritime domain supports the effective understanding of anything associated with global maritime that could impact the United States' security, safety, economy, or environment. NIEM facilitates this understanding through effective, timely sharing of vital, secure information among many key partners *by representing vessels, people, cargo, and maritime locations and activities*.

Justice/Law Enforcement. The Justice domain provides an XML-based framework that enables the entire justice and public safety communities to effectively share information at all levels. The Justice domain is defined by a model that evolved through a reconciliation of definitions that began as the Global Justice XML Data Model (Global JXDM which originated in March 2001. The Justice domain continues to provide the criminal justice system with the data elements, objects, and properties it needs to share critical information between jurisdictions and levels of government.

2.3.1   Operational Context

Geo4NIEM initiative aims to enhance interoperability involving geospatial information based on OGC standards and information exchanges developed in accordance with the requirements of NIEM. The operational context for the Geo4NIEM initiative will focus on Use Cases associated with the following NIEM Information Exchange Package Documents (IEPDs):

- DHS I&A - Request for Information (RFI)
- Law Enforcement - Suspicious Activity Report (SAR)
- Maritime Domain Awareness – Vessel Track

These Use Cases provided in Annex B describe information exchanges to be analyzed for the Geo4NIEM Project. The Use Cases will be used in the analysis, testing and demonstration to be performed according to the plans set forth in the Concept of Operations, contained in Section 4 of Annex A to this RFQ/CFP. Deliverable requirements are provided in Section 5 of this RFQ Main Body and in Annex B (Architecture).

2.3.2   Technical Context

Participants in this initiative will bring available or proposed application software, develop XML Schema and related XML instance documents as needed to support analysis, testing and validation of the Use Cases described in Annex B. Based on the architecture described in Annex B, participants will have flexibility to design the test environment, test harnesses, validation and assessment tools to for use in demonstrations associated with the operational context. Specific technical requirements are provided in Annex A.

3   Your Role in the Project

There are several possible roles that organizations may play in the initiative. These are:

- Provide one or more software and/or components needed to generate, process, test or validate interoperability of geospatial content within NIEM Information Exchange Package (IEP) for one or more use case scenarios described in Annexes A and B

- Provide contributions as a Subject Matter Expert (SME) on GML, NIEM or other topics required for analysis, modelling, development or testing to address requirements in the initiative

- Participate in demonstrations and tests using provided application software components, XML schema and related XML instance documents, and/or

- Provide content, personnel, software, hardware, or facilities that will contribute to the overall success of the initiative.

Participants should propose specifically against funded Work Items defined by the sponsors (see Annex A), but may go beyond that to request and propose in-kind contributions that address unfunded requirements. For example, Participants may propose in-kind contributions that are supportive and compatible with the initiative objectives but is not specifically listed as a work item in the architecture. Participants should note that sponsors plan only to fund Work Items labelled as funded in this current RFQ.

4   Master Schedule

The following table details the events and activities associated with this RFQ (more details can be found in Annex A):

Schedule Event/Milestone	Date
RFQ Issued	14 February 2013
Deadline to submit questions on RFQ to OGC Technology Desk	21 February 2013
RFQ Clarifications Posted and final questions due	25 February 2013
RFQ Responses Due	4 March 2013
Task Initiation Workshop	21-22 March 2013
Task 1: NIEM Embedded GML and Adapter Assessment Recommendations	28 June 2013
Task 2: NIEM Embedded GML and Adapter Test and Demonstration	30 July 2013
Final Documentation complete	16 September 2013
Completion of Pilot Activities	26 September 2013

5   Deliverables and Supporting Software and Tools

Deliverables for the Geo4NIEM Initiative are shown in the following table. Three types of deliverables are requested:

1. Documentation (to be prepared in accordance with the format requirements of an OGC Engineering Report (ER)
2. XML Schema and XML Instance documents
3. Demonstration and capture media materials

The deliverables for this project are described in the following table:

Table 1, Geo4NIEM Deliverables

Name/Type	Description	Funded / In-kind
Engineering Report (ER) - Geospatial Enhancements to NIEM (Geo4NIEM)	The ER documents the architecture design and implementation guidance for development and use of embedded GML and adaptors within NIEM and NIEM IEPDs, which incorporates the results of findings in described in Section 2 in Annex B	Funded
Engineering Report (ER) - Embedded GML and External Adapter Guidance Inputs for Fact Sheet	Prepare guidance for use of embedded GML and adaptors within NIEM for awareness and adoption by the user and developer communities.	Funded
XML Schemas	Schema and instances documents that were used and identified in the final ER	Funded
Change Requests for OGC standards, as needed	Prepare Change Requests to document recommended changes to OGC standards, as needed	Funded
Demonstration	Prepare and conduct a demonstration of the draft architecture and capabilities; capture results of demonstration using a variety of media, such as slides, screen captures and other media	Funded

5.1   Non-Deliverable Supporting Software and Tools

The following software or tools contributed or applied during the performance of tasks during this initiative are not deliverables. These software or tools would be used for various purposes in the analysis, testing or demonstration of architecture models, XML schemas or instances prepared during the initiative.

Table 2 – Supporting Software Applications and Tools

Description	Funded / In-kind
1. DHS/Information Sharing – Request for Information (RFI) - Information Exchange Producer application/source	In-kind
2. DHS/Information Sharing – Request for Information (RFI) - Information Exchange Producer application/source	In-kind
3. Maritime Domain – Vessel Track - Information Exchange Producer application/source	In-kind
4. Maritime Domain – Vessel Track – Information Exchange Consumer application	In-kind
5. Law Enforcement – Suspicious Activity Report (SAR) - Information Exchange Producer application/source	In-kind
6. Law Enforcement – Suspicious Activity Report (SAR) – Information Exchange Consumer application	In-kind
7. OGC GML Validator	Provided by OGC

6   Proposal Submission Information

6.1   General Terms and Conditions

Documentation submitted in response to this RFQ will be distributed to members of OGC staff, the IP Team, and Sponsor representatives. Submissions will remain in the control of this group and will not be used for other purposes without prior written consent of the proposing organization. Please note that you will be asked to release the content of your proposal (less financial details) once you agree to participate in the Pilot effort. Proprietary and confidential information must not be submitted in response to this request.

Participants will be selected to receive cost sharing funds on the basis of adherence to the requirements stipulated in this RFQ and the overall quality of their proposal. Those proposing organizations not selected for cost sharing funds are encouraged to participate in the Geo4NIEM Initiative on an in-kind basis.

Each participant, funded or unfunded will be required to enter into a contract with OGC. This Participation Agreement will include a Statement of Work defining a participant's responsibilities. The Participation Agreement also establishes that a participant agrees to work together towards the common goals of the initiative. Further details on this issue are found in the Concept of Operations (Annex A).

6.2   Response Instructions

To be considered, all responses to this RFQ shall be "complete"; that is, your submission must provide all information requested in section 7. Responses shall use the response template provided in the RFQ package.

Your response shall consist of a technical volume and a separate volume to indicate your cost-share request and in-kind contribution. An outline with page limits is provided in section 7.1. Reviewers will be instructed to not read or evaluate any materials in excess of the page limits.

6.3   How to Submit

Submit an electronic copy of your proposal to the OGC Technology Desk (techdesk@opengeospatial.org) at OGC. Microsoft Word® 6.0 or higher format is preferred; however, Portable Document Format or Rich Text Format is acceptable.

Proposals must be received at the OGC Technology Desk no later than **1700 EDT (2100 UTC) 4 March 2013**.

6.4   Questions and Clarifications

Questions and requests for clarification should be sent electronically to the OGC Technology Desk (techdesk@opengeospatial.org). All clarifications will be posted to the public Geo4NIEM announcement web site located here: (http://www.opengeospatial.org/projects/initiatives/TBD).

Deadline to submit questions for this solicitation is: **26 February 2013**

6.5   Reimbursements

The OGC will not reimburse submitters for any costs incurred in connection with preparing proposals in response to this RFQ.

7 RFQ Format and Content

7.1 Proposal Outline

Included with this RFQ archive you will find several templates: the response template, the cost sharing request spreadsheet template, and the in-kind contribution spreadsheet template. <u>Proposing organizations shall use these templates in preparing their proposals</u>. The proposal should follow the outline:

Technical Proposal

- ❐ Cover page (does not count in the page count)
- ❐ Overview (Not to exceed two pages; will not contribute to technical evaluation)
- ❐ Proposed contribution (Basis for Technical Evaluation) (not to exceed 7 pages)
  - Understanding of interoperability issues and potential enhancements to the NIEM and OGC Architecture
  - Recommendations to enhance Information Interoperability through industry-proven best practices.
- ❐ Proposed contribution cross referenced to WBS (Contributes to Management Evaluation)

Cost-Share and In-Kind Proposal (Not to exceed seven pages)

- ❐ Cost sharing request (include details using the Excel template for reporting cost-share request)
- ❐ In-Kind contributions (include details using the Excel template for reporting in-kind contributions)

Each of these Sections is described below.

7.2 Cover Page

Provide the name(s) of the proposal submitter(s) and point of contact information. Teams should list all teammates and point of contact information for each. When submitting point of contact information, please provide both a business/financial and technical point of contact.

7.3 Overview

Provide an introduction to the contents of your proposal and its benefits.

7.4 Technical Proposal

7.4.1 Proposed Contribution

Describe your proposed contribution to the initiative based on your desired role (consistent with the Technical Architecture (Annex B). Please organize your description using the categories described in paragraphs 7.4.1.1 through 7.4.1.5 below. The emphasis of this initiative is on interoperable solutions to the Geo4NIEM functional requirements. Your RFQ response should be developed from that perspective. Justify your approach.

7.4.1.1 Specification Development

If you are proposing to contribute to the refinement or support the refinement of interoperability specifications or Best Practices for interfaces, operations, encodings, messages, or other relevant technologies, please the following in your proposal:

1) Your views on the Architecture and the modifications/additions you would recommend that Geo4NIEM pursue during the course of the initiative.

2) Suggestion modifications/additions you would recommend for affected OGC baseline standards.

3) A list of personnel and brief summary of their qualifications to carry out proposed tasks.

4) Roles and responsibilities that your technical representatives may perform (e.g., Engineering Report (ER) author, schema editor, model designer, or technical contributor. Technical contributors shall write or design subsets of the specification. Everyone is expected to review work in progress.

7.4.1.2   Software Application or Tools Support

If you are proposing to contribute by providing or using software application or tools to perform analysis, testing, or demonstration of requirements specified in the Technical Architecture (Annex B), please include as much detail as possible in your proposal concerning the purpose of the software application or tools to be provided or used that relate to your proposed effort.

7.4.1.3   Demonstration or Test Development

If you are proposing to develop demonstrations or tests, please provide as much detail as possible concerning your proposed effort. Delineate aspects of the sponsor scenarios to which you believe you can contribute. In particular explain how your work will show the sponsor's desired level of interoperability as well as provide reliable measures of service performance and appropriate use.

7.4.1.4   Personnel

If you are proposing to contribute personnel to the initiative, please indicate the capabilities and experience of the personnel, location and mobility information (in other words, will the personnel need to remain at their present location? Will you support travel?). Indicate which personnel would be able to participate in Task Initiation activities and other project activities.

7.4.1.5   Sponsor-Provided Data

Geo4NIEM Sponsors will provide necessary IEP documentation, which includes NIEM XML schema and example XML messages, for this pilot as described in Annex B (Information Viewpoint). You may also propose to contribute other forms of content which you feel will be required or useful to achieve or enhance results of the initiative.

7.4.2   Proposed Contribution Cross Referenced To WBS

Review the WBS found in Annex A and map your proposed contribution to the task categories and items found there. Indicate which requirements are being met with your contributions in the descriptions of activities that your organization proposes to undertake. WBS elements in Annex A that are shaded gray do not require a bidder's response.

7.5   Level of Effort and Cost-Share Proposal

Please provide an estimate of the value of your proposed contributions, including engineering, management, communications, travel, and so forth.

Your proposed Level of Effort and Cost-Share request shall be provided as a separate document from the Technical Proposal.

7.5.1   Cost-Sharing Proposal Request

This section is *required* only from proposing organizations requesting cost sharing funds. Please provide a requested amount of cost-sharing funds (in US Dollars) and provide details of the costs that are being offset (e.g., labor category, number of hours, and hourly rate). Note that the sponsors intend to provide cost-sharing funds for only those activities uniquely attributable to initiative participation; e.g., a recipient should not request funds to offset costs that would have otherwise been incurred and funded through some

other source such as internal research and development funding. This section must include a certification that the proposed reimbursable costs would not be otherwise incurred in support of non-Pilot activities. Use the attached cost-sharing template to itemize the costs being offset. This should be included in the section beginning with Level of Effort Estimate.

7.5.2   In-Kind Contributions

Provide an estimate of the in-kind contributions that your organization will make to the Geo4NIEM initiative. **This should reflect such contributions as labor, equipment, software, or data.** Use the associated in-kind contribution template spreadsheet to itemize the contributions being provided. Sponsors and OGC will use this information in the development of future initiatives. This information should be included in the section beginning with Level of Effort Estimate.

It is expected that the in-kind contributions will be approximately equal in value to the cost-sharing requests of each proposer.

8   Evaluation Criteria

Geo4NIEM RFQ/CFP responses will be evaluated according to criteria set by Sponsors and partners. Those criteria can be divided into three areas: Technical, Management, and Cost.

8.1   Technical

The Technical criteria are described below.

- All applicable Requirements in the RFQ are addressed in the proposal

- Response takes a risk-adjusted technical approach that supports accomplishing requirements

- Creativity and originality in the proposed solutions

- Proposed solutions could be achieved with available resources and involves no more than acceptable risk for a pilot type of initiative

- Proposed solutions are relevant to initiative goals

- Proposed personnel have the necessary skills and experience to support the proposed contribution

8.2   Management

- Proposal adheres to and addresses Work Breakdown Structure

- Willingness to work in collaborative environment

- Achieves Sponsor goal of enhancing availability of SCOTS or standards-based open source products in the market place

8.3   Cost

- Cost-share request is reasonable for proposed effort

- In-kind contribution is of value to Geo4NIEM initiative