The Open Geospatial Consortium (OGC®)

Request for Quotation
And
Call for Participation
for the
Future City Pilot Phase 1 (FCP1)

-- Main Body --

RFQ Issuance Date: 5 February 2016

Proposal Due Date: 4 March 2016

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1 Introduction

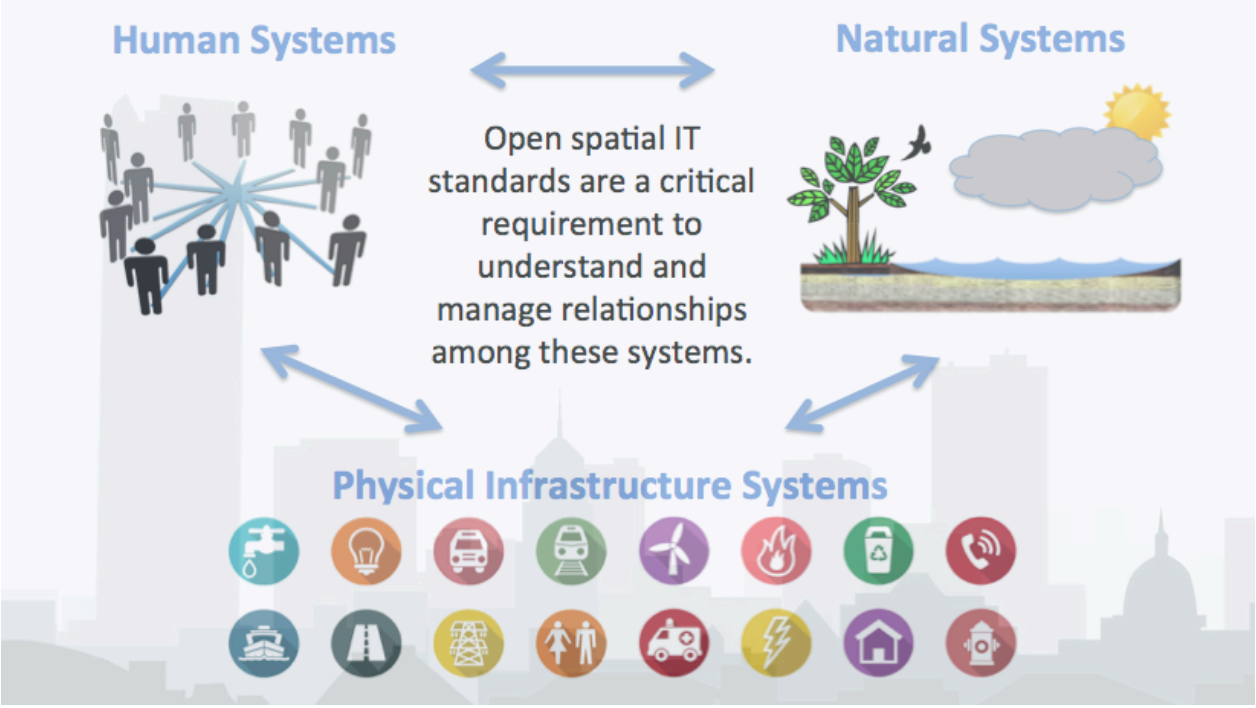
1.1 Purpose

The purpose of this Request for Quotation and Call for Participation (hereafter referred to as RFQ/CFP) is to solicit proposals in response to a set of requirements for the Future City Pilot Interoperability Program (IP) 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-share funding. OGC intends to involve as many participants in the initiative as possible; to the extent each participant can enhance and/or contribute to the initiative outcomes.

1.2 Background

Human, natural, and physical systems interact in space and time, and the digital systems in cities will become increasingly diverse and numerous, with many owners. Cities thus need an open, vendor-neutral standards platform for communicating spatial and temporal data. Many of the longstanding technical boundaries separating indoor, outdoor, underground and atmospheric information have been overcome. The Future Cities Pilot will show how cities can begin to reap the benefits.



OGC and other standards organizations have made recent progress in fields such as city modelling, indoor navigation, citizen science and the Internet of Things. bSI is extending its BIM Standards to encompass infrastructure and other elements of the built environment. bSI and OGC collaborate in areas such as urban and infrastructure modelling and indoor/outdoor navigation.

The first Future Cities Pilot (FCP1) brings together visionary sponsors to help define activities that meet cities' spatial information requirements. All requirements, lessons learned and results will be shared among participants and made available to the public and cities everywhere. Hosting cities will benefit from OGC/bSI-led workshops for scoping and requirements-collecting, introductions to vendors and developers with commitment to open systems, public demonstration and leave-behind solutions. Sponsoring organisations will benefit from the opportunity to directly work with municipal personnel and understand their cities' requirements first hand. Solutions to current urban challenges may act as forerunners for solutions in rural environments. In addition, results will guide future standards development.

An important aspect of OGC initiatives such as the FCP1 initiative 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 using OGC and other standards. Equally important in this collaborative framework is the identification of potential factors, barriers or considerations that while not directly under investigation, may/will have impact upon the technology applied, data used and decisions made by both the first responder community and the industry technology provides.

1.3 The RFQ Documents and Pilot Process

The FCP1 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
  - Master Schedule
  - Terms and Conditions for Responding
- Development Approach (Annex A)
  - OGC IP Policy and Procedures
  - Work Breakdown Structure (WBS)
  - Concept of Operations
  - Communications Plan and Reporting
- Technical Architecture (Annex B)
  - Description of the architecture using Reference Model for Open Distributed Processing (RM-ODP).
  - Reference to the standards and acronyms

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

The limited cost-share 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 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 (minus any financial information).

1.4 Benefits to Sponsors and Participants

The FCP1 offers a prime opportunity for **Ordnance Survey Great Britain, Sant Cugat del Vallès (Barcelona), Spain, Institut National de l'Information Géographique et Forestière (IGN) France and virtualcitySYSTEMS GmbH Berlin** to be at the forefront of the technological advancement and guide the standards process to achieve more and effective interoperability. Participants will be first to market with relevant tools needed for by the smart cities. The Pilot will demonstrate and enhance the ability of cities to use diverse, interoperating spatial technologies to deliver improved quality of life, civic initiatives and resilience. Results from this initiative will be documented in Engineering Reports (ERs) in the context of a hands-on engineering experience. This initiative is aimed to develop, test, identify gaps and demonstrate the use of these technologies in a real world-type scenario developed in collaboration with the sponsors.

1.5 Intellectual Property in the Pilot

This FCP1 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

Participants in this 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 this project. OGC shall be the owner of the copyright of any documentation developed as a part of this 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, a Specification that may be developed in this initiative. 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 this Project, any modifications to an existing OGC standard that may be 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 request. 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 upon acceptance of working on the FCP1.

2 Context

2.1 Open Geospatial Consortium

The primary purpose of OGC's Interoperability Program is to bring Sponsors and industry 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 and other industry standards – can be "stress tested" based on real-world application and experience.

This Project will involve research and development as well as refining and documenting specifications or enhancements; and for implementing prototype software that exercises existing or enhanced specifications. The results of this project are directed at improving specifications, or providing profiles of existing standards rather than in creating new standards.

2.2 Sponsor Objectives

The FCP1 Sponsors have identified specific functional requirements to address the following objectives:

- Develop and document the making of a draft city models from available data sources, to support the main scenarios of the pilot.
- Prepare initial specifications, profiles, Best Practices, and demonstration designs that demonstrate serving IFC using OGC WFS (Acronyms are spelled out in Annex B, Information Viewpoint)
- Prepare initial profiles, Best Practices transforming IFC to CityGML and CityGML to IFC
- Prototype capabilities that will associate sensor readings (hydrological sensor, air quality sensors, weather information) or other aggregated indicators (e.g. building information, energy performance indicators) to elements in the City Models. Aggregated data can come from a variety of models and data sources.
- Investigate the inclusion of Crowd Sourced (VGI) data into City Models
- Make aggregated data available through interoperable OGC web services.
- Visualize the sensor readings and indicators in a comprehensive way that is useful for urban and city planner and decision makers.
- Prepare engineering reports to document prototype capabilities and results demonstrated in a realistic scenario
- Plan and conduct a final demonstration using the pilot scenario
- Develop as part of the Engineering Report, potential factors, barriers or considerations that while not directly under investigation, may/will have impact upon the technology applied, data used and decisions made by both the first responder community and the industry technology providers

2.3 FCP1 Context

Around the world, cities are exploring how to provide a more sustainable, prosperous, healthy and inclusive future for their citizens by using advanced digital systems. The goal: better coordination of human activities and better integration of human, natural, and physical systems in the built environment. All these systems interact in space and time, and the digital systems will be diverse and numerous. Cities thus need an open standards platform for communicating spatial and temporal data.

In the pilot project, OGC members will deploy and demonstrate standards-based location enabled information technology to advance a range of city services, improve governance and enable innovative (and potentially locally developed and globally marketed) citizen and consumer services. The pilot will demonstrate and enhance the ability of national spatial data infrastructures to support indicators of quality of life, civic initiatives and resilience.

2.3.1 Scenario Context

2.3.1.1 Urban Planning

Urban planning authorities have to instruct application for permit to build coming from BIM contractors, and check the conformance with urban planning rules (UPR). The use of BIM models encoded in IFC will become mandatory for important building projects.

The proposed building project (provided as a BIM and encoded in IFC) should be:
- validation against urban rules planning (this process should be automated)
- validation with human verification; the analyst should be able to view the building project within the existing 3D model of the city.

Once the project has been validated and realized, the BIM data needs to be added to the exiting 3D City Model or database, according to local city rules, with mappings to the various LODs. The provided BIM data should also be stored with links between the geospatial data (at feature level) and BIM data.

Develop City Data navigation, search & reporting application to enable simultaneous queries across a number of linked data sources, e.g. Housing Survey, Socio-demographic data, collection and street cleaning, lighting, drainage, public roads, parks and gardens, transport and telecommunications networks, telephone, electricity, water and gas and various other city datasets.

2.3.1.2 Unified urban Services

Urban services (collection and street cleaning, lighting, drainage, public roads, parks and gardens, transport and telecommunications networks, telephone, electricity, water and gas) are often kept in separate systems, that are difficult and expensive to connect to each other (each connection is a ‘one-of’ and hard to repeat). Unifying the existing and future information for each of the different areas, included within urban services, using standards-based interoperable web services will give the city the ability to do ‘cross urban service’ analysis and visualize the results in a 3D environment that helps the decision makers of the city. The ability to simulate the various scenario’s (environmental simulations, disaster management, training simulators) helps to pick the best variant of proposed studies. (see dynamic properties for semantic 3D city models in the use cases)

2.3.1.3 Social Services

Fuel poverty and provision of adult social services are important to all local authorities. It is felt that part of the solution to improving adult social services and addressing fuel poverty issues lies in ensuring that the built environment is age friendly and well maintained: a better understanding of the energy efficiency of the housing is required.

A lot of data is available on the performance of homes, as is open geo-demographic data, but there is a need for more specific data on individual homes and the link to household need, and potentially to real-time data on performance to identify need for increased or urgent care of those at risk and to improve social outcomes.

2.3.2 Use Case Context

2.3.2.1 Social Services

The objective of the OGC pilot project is to demonstrate how use of open data sets, CityGML data and IFC data together can provide stakeholders with information, knowledge and insight which enhances financial, environmental, and social outcomes for citizens living in cities. CityGML is an open data model and XML-based format for the storage and exchange of virtual 3D city models. Industry Foundation Classes (IFC) are the open and neutral data format for an open BIM environment.

Develop outline City Model View Definition (MVD) to enable relevant IFC information to be exported into the City Data set, and improve interoperability with CityGML. This should be two-way, enabling CityGML and other City Data sources to be read in IFC and feed into new development information models.

Identifying what attributes about the facilities, floors, spaces, systems and components is needed for analysis in order to achieve the outcomes and create a City Model View Definition (MVD). The pilot can potentially link existing data from a number of sources to demonstrate how this can be delivered.

Connecting to real-time data on performance may include Internet of Things (IoT) data from within a home environment, including movement sensors, temperature and temperature change, energy and water use. At pilot stage there may be potential to demonstrate gathering and use of data from relevant sensor technologies without the need for sensor installation.

An alternative to the real-time sensor data, could come from “aggregating” existing, non-real data sources (in a variety of formats) and representing them as sensor information.

2.3.2.2 Urban Planning rules control

Various cities in Europe and around the world have successfully created digital city models (encoded in CityGML), as part of a project or to support a specific event in the city. It has proven harder to maintain a city over time and to keep it up to date. That requires continuous attention and a vision from the city urban planners, IT department or other groups in the city administration.

Urban planners also have to make sure that new projects conform to the urban planning rules, and require that newly build building come with a BIM that make checking realistic possible. Checking should be possible through automation and by human verification.

Once the project has been validated and is realized, the BIM data need to be added to the exiting 3D City Model / database, according to the (emergent) French IGN CityGML profile (Ref3DNat), with mapping to the various LODs. The provided BIM data should also be stored; links between created geospatial data (at feature level) and BIM data should be created.

Data used for rules checking include: cadaster information, urban planning rules for the designated area, BIM model (IFC) of the intended project and existing CityModel on the area of interest (CityGML profile, according to Ref3DNat recommendations, in LOD2 – or 3 in close future – with textures) and BD topo, as necessary, e.g. for roads and buildings.

The use of WPS is recommended, but not required.

2.3.2.3 Dynamic properties for semantic 3D city models

There are several studies/applications intended towards city-wide estimation of the energy demands of buildings. One such project 'Energy Atlas Berlin' includes all data from the Solar Atlas Berlin including the rating of the suitability of all individual roof surfaces for each of the 550,000 buildings in Berlin for the production of photovoltaic and solar thermal energy. It also integrates methods for energy demand estimation (heating energy, electrical energy and warm water) and assessment of the energetic retrofitting possibilities on the individual building level (so far, for all residential buildings only). As shown in Figure 1, the authorities may explore the energy demand of individual buildings for different months of a year.

However, such values can be stored within standards such as CityGML as static values only. The current version of CityGML does not allow to store such values varying with respect to time. In this application, one attribute for each month is explicitly modeled. “Dynamizers” would allow to model and define such time-dependent values within CityGML.

There is an ongoing work for the development of a tool, which automatically calculates insolation values for wall- and roof surfaces of buildings, stored in the CityGML data model. Furthermore, the results are used to accumulate the original data with suitable attribute aggregations. The sky view factor (SVF), which indicates the amount of visible sky from an observation point, is calculated as well as the monthly and yearly insolation value of roofs and walls with respect to the surrounding three dimensional topography, whereby the global insolation value is assumed of being composed of a direct and diffuse irradiance component. All surfaces of a building are sampled into points in a regular pattern to generate a basis for the calculations. Consequently, each point represents a specific mount of surface area. Using a simplified algorithm the sun positions are calculated for specific points in time. Afterwards the positions are represented as simple point objects just as the building points. The hemisphere, which is used to calculate the SVF and the diffuse irradiation, is approximated by a set of uniform spread points.

For each building point a line of sight is generated to each hemisphere and sun point. These three dimensional lines are checked for 3D-intersections with the surrounding topography to determine shadowed areas at the considered points of time. Based on the computed information on shadowed areas monthly and a yearly insolation values are computed using a simplified transition model with respect to the exposure of each surface. The transition model contains some parameters, which can be used to calibrate the calculated irradiance values to particular climatic properties. Afterwards the calculated SVF and insolation values are aggregated and saved as generic attributes in the original CityGML data file.

2.3.2.4 Overcoming Semantic Heterogeneity for Smart Cities: A Case Study of Solar Potential Analysis for Singapore

With open formats available for geospatial data, exchange of data across different platforms no longer poses a critical challenge. Spatial data can be exchanged in the formats of CityGML, IndoorGML, LandXML, IFC, and others, or through web services such as WMS, WFS. What poses a challenge however is the conceptual and terminological differences that exist between the diverse data sources and services. In the smart cities context for instance, building design data can come from Building Information Models (BIM). Topography information can be obtained from city models in the format of CityGML, and legal property boundaries can be provided in LandXML. These data sources represent different aspects of a building, namely design, physical and legal, and these data are developed based on different domain knowledge (e.g. AEC industry, surveyors). Different domain background knowledge causes conceptual and terminological differences when data and services are fused. Conceptual and terminological difference is referred to as semantic heterogeneity.

To achieve a seamless integration of spatial data and services, the issue of semantic heterogeneity must be overcome. The domain knowledge inherited in the data and services must be made explicit and formal so that applications using a variety of computer systems can work together. When semantic heterogeneities are overcome, various resources including geometries, files, images, can be linked and pulled together seamlessly for specific applications. What is required, therefore, is an enhanced metadata structure tailored to the kinds of data encountered in urban applications. We propose to provide a solution to this problem, in the first instance using the specific example of solar insolation (irradiance averaged over time) data as the application.

Insolation analyses are an important study for smart cities, as modern buildings often aim to deploy maximum solar photovoltaic and thermal power systems, and optimize building design for ambient lighting and solar radiant heat gain. To perform the required analyses, appropriate algorithms and a large variety of building and environmental datasets are required. For instance, from BIM models, the buildings' geometry and materials can be obtained to calculate incident, shadowed and reflected solar radiation. From CityGML models, the usage and function of a building can be determined. If a building is for habitation, lighting and thermal loads due to radiant heat gain must be considered. Legal boundaries from LandXML describe building ownership and may provide energy demand information.

2.3.3 Technical Context

Participants in this initiative will bring available or proposed application software, develop schema and related schema instance documents and data as needed to support design, testing and validation of the scenario and use cases described in Annex B (Participants that bring software in the pilot continue to own that software and they get to improve the software during the FCP1). Based on the architecture described in Annex B, participants will have flexibility to design components and deployment architecture for use in testing and demonstrations associated with the operational context. The Development Approach to be used in this initiative is described in Annex A.

3 Your Role in the Project

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

- Provide one or more components needed to generate, process, test or validate interoperability in the architecture in one or more use case scenarios described in Annexes A and B
- Provide contributions as a Subject Matter Expert (SME) in the Stakeholder community required for analysis, modelling, development or testing to address requirements in the initiative
- Participate in demonstrations and tests using provided application software components, schema and related schema instance documents, and/or
- Provide content, personnel, software, hardware, data, or facilities that will contribute to the overall success of the initiative. Contributors still maintain ownership of the material used in the FCP1.

Participants should propose specifically against funded Work Items defined by the sponsors, 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 key events and activities associated with this RFQ (more details can be found in Annex B):

Table 1, FCP1 Master Schedule

Schedule Event / Milestone	Date
RFQ/CFP Issued	5 February 2016
Prospective Bidder's Q&A Webinar	18 February 2016
Deadline to submit questions on RFQ/CFP to OGC	26 February 2016
Proposals due to OGC	4 March 2016
Project Kick-off Workshop in London	12 April 2016 (Entire day)
Project Plan refined following Kick-off Workshop	18 April 2016
Draft reports complete	September 2016
Integration and Interim Demonstrations complete	Begin October 2016
Conduct final demonstration in Barcelona	15-17 November 2016 at Smart City Expo
Final reports complete	Nov-Dec 2016
Project end date	December 2016

5 Deliverables

Deliverables for the FCP1 are shown in the following table. Three types of deliverables are requested:

1. Documentation such as Engineering Reports (ERs) and Change Requests (CRs)
2. Schema and schema instance documents
3. Demonstration and related presentation media materials

Change Requests that are raised and accepted during the course of the project will be included in the FCP1 ER's and also be submitted to the appropriate OGC Working Group.

The deliverables for this project are identified in the following tables. Details of the technical requirements are contained in Annex B, Technical Architecture.

Table 2, FCP1 Documentation Deliverables

Del #	Name / Type	Funded
D1	FCP1 Engineering Report (ER) (also send to BuildingSMART International relevant Room) The overall engineering report also includes the orthogonal or cross cutting items. Relevant Change Requests will also be created and submitted to appropriate Working Groups.	Yes
D2	Recommendations on Mapping IFC/CityGML to 3DIM Engineering Report (ER) (also send to BuildingSMART International relevant Room) and relevant Change Requests	Yes
D3	Recommendations on Serving IFC via WFS Engineering Report (ER) (also send to BuildingSMART International relevant Room) and relevant Change Requests	Yes
D4	Recommendations on use of TJS (aggregation of non real-time administrative data as sensor information) ER in 3DIM and SWE environment and relevant Change Requests	Yes
D5	Demonstration Script and Final demonstration materials (slide presentation and related video materials)	No*
D6	Urban planning rules checking Engineering Report (ER) and relevant Change Requests	Yes

OGC approved Engineering Reports will be send and promoted to the relevant BuildingSMART International Rooms.

Table 3, FCP1 Component Deliverables

Del #	Name / Type	Funded
C1	Web Feature Service (WFS) serving IFC Feature Layers	No*
C2	Sensor Observation Service (SOS) for In Situ Sensors	No*
C3	Sensor Observation Service (SOS) / WFS for "aggregated data"	No*
C4	Client rendering IFC from WFS	No*
C5	Urban planning rules checking	No*
C6	Transformation of IFC to and from CityGML as a service component	No*

* we welcome fully in-kind proposals and we are seeking additional sponsorship to fund these deliverables.

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 FCP1 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 **the date and time shown in** Table 1, FCP1 Master Schedule

6.4 Questions and Clarifications

Questions and requests for clarification should be sent electronically to the OGC Technology Desk (fcp-responses@opengeospatial.org). All clarifications will be posted to the public FCP1 announcement web site located here: (http://www.opengeospatial.org/standards/requests/147).

Deadline to submit questions for this solicitation is shown in Table 1, FCP1 Master Schedule.

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. Proposing organizations shall use these templates in preparing their proposals. 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, understanding of technical requirements, and potential enhancements to OGC and related industry architectures and standards
  - 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 Annex B Technical Architecture. 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 FCP1 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 be undertaken during the course of the initiative.

2) Suggestion modifications/additions you would recommend for affected OGC baseline standards or other industry standards or protocols.

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 Implementations

If you are proposing to contribute by providing or using software implementations, schemas, tools, 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 implementations or tools to be provided or used that relate to your proposed effort.

7.4.1.3 Demonstration or Test Development

All components being implemented in this initiative have some roll to play in the overall demonstration. If you are proposing to develop specific demonstrations or tests, please provide as much detail as possible concerning your proposed effort. Delineate aspects of the initiative scenarios to which you believe you contributions would contribute. In particular explain how your work will demonstrate interoperability as well as provide reliable measures of service performance and appropriate use to meet initiative objectives.

7.4.1.4 Personnel

Each bidder proposing to contribute personnel to the initiative should 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 attend the Kickoff Workshop and other project activities.

7.4.1.5 Sponsor and Government-Provided Information

Initiative sponsors or other government representatives will provide selected information or data, such as scenarios, use cases, data or specifications for information sharing types or formats to support the scenarios and demonstrations for this pilot as described in Annex B (Information Viewpoint). Participants may also propose to contribute these or other forms of content that you believe would 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 B and maps your proposed contribution to the applicable task categories and items. Indicate which requirements are being met with your contributions in the

descriptions of activities that your organization proposes to undertake. WBS elements in Annex B 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 cost-sharing funds will only be provided 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 associated cost-sharing template (excel spreadsheet) 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 value of in-kind contributions that your organization will make to the 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 value of in-kind contributions will be approximately equal to **or greater** in value as compared to the cost-sharing requests of each proposer.

8 Evaluation Criteria

Proposal responses will be evaluated according to criteria set by the Sponsor and associated 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 FCP1 initiative