

OGC[®]
Open Geospatial Consortium (OGC)

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

RFQ Issuance: 23 October 2015
Proposal Submission Deadline: 20 November 2015

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Annex B: Testbed 12 Architecture

Testbed 12 Response Template

Testbed 12 Finance Spreadsheet

1 Introduction

1.1 Purpose

The Open Geospatial Consortium (OGC[®]) has released this Request for Quotation / Call for Participation (“RFQ”) to solicit proposals for the OGC Testbed 12 initiative. The OGC, on behalf of initiative sponsoring organizations (“Sponsors”), will provide cost-sharing funds to partially offset expenses uniquely associated with the initiative. Thus this solicitation requests quotations from proposing organizations (“Bidders”) wishing to receive cost-sharing funds. However, not all proposals are expected to request cost-sharing funds. OGC intends to involve as many technology developers and providers (“Participants”) as possible to the extent that each Participant can contribute to (and benefit from) initiative outcomes. So this solicitation also seeks responses offering only in-kind contributions and seeking no cost-sharing funds. Responses may also include a blend of cost-sharing quotes and proposals for in-kind contributions.

1.2 Background

The OGC Interoperability Program provides global, hands-on, collaborative prototyping for rapid development and delivery of proven candidate specifications to the OGC Standards Program, where these candidates can then be considered for further action. In Interoperability Program initiatives, Participants team together to solve specific geo-processing interoperability problems posed by the initiative’s Sponsors. These initiatives include testbeds, pilot projects, interoperability experiments, and interoperability support services – all designed to encourage rapid development, testing, validation and adoption of open, consensus-based standards. The OGC Interoperability Program policies and procedures can be found at <http://www.opengeospatial.org/ogc/policies/ipp>.

The OGC recently reached out to potential initiative sponsors, conducting several meetings to review the OGC technical baseline, discuss results of prior initiatives, and identify current testbed requirements. After analyzing Sponsor inputs, the OGC recommended that the content of the testbed be organized around the following threads:

- 1) Field Operations (FO) Thread
- 2) Large-Scale Analytics (LSA) Thread
- 3) Linked Data and Advanced Semantics for Data Discovery and Dynamic Integration (LDS) Thread
- 4) Command Center (COC) Thread
- 5) Consolidation (CON) Thread
- 6) Aviation (AVI) Thread
- 7) Compliance Testing (COM) Thread

The deliverables to be made in each thread (and their associated funding status) are detailed in the *Sponsor Priorities* section below.

1.3 Participant Roles and Benefits

There are several possible roles that testbed Participants could play:

- Developer of one or more software components implementing interfaces and protocols for one or more of the testbed services,
- Developer of demonstrations and tests of the implemented software components,

- Editor of an engineering report that documents testbed results, findings and recommendations, and/or
- Provider of data, personnel, software, hardware, or facilities that will contribute to the overall success of the initiative.

In general, Bidders should propose specifically against funded deliverables defined by the Sponsors, but may go beyond that to propose in-kind contributions that address unfunded requirements. Participants should note that Sponsors are committed to funding only those deliverables identified as being funded in this RFQ.

This testbed provides a business opportunity for stakeholders to mutually define, refine, and evolve services, interfaces and protocols in the context of hands-on experience and feedback. The outcomes are expected to shape the future of geospatial software development and data publication. The Sponsors are supporting this vision with cost-sharing funds to partially offset the costs associated with development, engineering, and demonstration of these outcomes. This offers selected Participants a unique opportunity to recoup a portion of their testbed expenses.

1.4 RFQ Documents

This RFQ incorporates the following additional documents:

- Annex A Testbed 12 Management Requirements
- Annex B Testbed 12 Architecture
- Testbed 12 Response Template
- Testbed 12 Finance Spreadsheet (template)
- *Intellectual Property Rights of the Open Geospatial Consortium, Inc., version 2.1* dated 19 December, 2008, available at <http://www.opengeospatial.org/about/ipr> (“OGC IPR”)
- *OGC Principles of Conduct*, available at <http://www.opengeospatial.org/ogc/policies/conduct>

Any Bidder interested in participating in this testbed should respond by submitting a proposal per the instructions provided herein. Limited cost-sharing funds are available to partially offset costs incurred by Participants in support of this initiative.

1.5 Intellectual Property in the Testbed

One testbed objective is to support the OGC Standards Program in the development and publication of open standards. Each Participant will be required to allow OGC to copyright and publish documents based in whole or in part upon intellectual property contributed by the Participant during testbed performance. Specific requirements are described under the “Copyrights” clauses of the *OGC IPR* document identified above.

1.6 Principles of Conduct

The *OGC Principles of Conduct* document identified above will govern all personal and public interactions in this initiative.

2 Proposal Submission Instructions

2.1 General Requirements

Bidders *must be OGC members* and must be familiar with the OGC mission, organization, and process. Proposals from non-members will be considered provided that a completed application for OGC membership (or a letter of intent to become a member) is submitted prior to (or along with) the proposal.

Documentation submitted in response to this RFQ will be distributed to OGC and Sponsor staff members. Submissions will remain in the control of these stakeholders and will not be used for other purposes without prior written consent of the Bidder. Please note that each Bidder will be requested to release the content of its proposal (excluding financial details) once it agrees to participate in the testbed initiative. *Confidential information must not be submitted under 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. The primary objective of testbed Sponsors is to use cost-sharing funds to promote the development of open consensus standards based on successful implementation and demonstration. Bidders are asked to define the migration path for producing operational solutions. Those Bidders not selected for cost sharing funds are encouraged to participate in the initiative on an in-kind basis.

Each selected Participant must sign a Participation Agreement with OGC that outlines Participant roles and responsibilities, including a statement of work (SOW). By doing so, Participants will agree to work together for the realization of the testbed goals and for the benefit of the broader community.

2.2 How to Transmit Your Response

Transmit an electronic copy of your proposal, based on the to the OGC Technology Desk (techdesk@opengeospatial.org). Microsoft Word® 2003 for Windows, 2004 for Macintosh or higher format is preferred; however, Portable Document Format or Rich Text Format is acceptable.

Proposals must be received at OGC before the appropriate response due date indicated in the *Master Schedule*.

2.3 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 anonymously to a testbed RFQ announcement web page (link to be provided at a later date).

Questions must be received at OGC before the appropriate Bidder questions due date indicated in the *Master Schedule* below.

2.4 Reimbursements

The OGC will not reimburse organizations for any of the following:

- Costs incurred in procuring any hardware or software
- Costs incurred in connection with preparing proposals in response to this RFQ
- Costs incurred for travel to or from the Kickoff or demonstrations

2.5 Proposal Format and Content

For a Bidder's response to qualify for consideration, the response must provide all required information in accordance with RFQ instructions, including those contained in annexes and templates.

Two templates are provided as part of this RFQ: a *Response Template* and a *Finance Spreadsheet* containing one worksheet template for a cost-sharing request and another worksheet template for in-kind contributions. ***Bidders must use these templates in preparing their proposals.***

Reviewers will be instructed to avoid reading or evaluating any material in excess of the stated page limits.

2.6 Technical Proposal

The *Technical Proposal* should be based on the *Response Template* and must include the following:

- Completed Title Page
- Table of Contents
- Overview, not to exceed two pages (this section will not be considered in making the evaluation of the proposal)
- Proposed contribution(s) in each thread (this section will form the basis for the technical evaluation of the proposal)
 - Field Operations (FO) Thread (not to exceed 7 pages)
 - Large-Scale Analytics (LSA) Thread (not to exceed 7 pages)
 - Linked Data and Advanced Semantics for Data Discovery and Dynamic Integration (LDS) Thread (not to exceed 7 pages)
 - Command Center (COC) Thread (not to exceed 7 pages)
 - Consolidation (CON) Thread (not to exceed 7 pages)
 - Aviation (AVI) Thread (not to exceed seven pages)
 - Compliance Testing (COM) Thread (not to exceed 7 pages)
- Proposed work organized by technical activity type (this section will be considered in making the management evaluation of the proposal)

Additional instructions are contained in the template itself.

2.7 Cost Proposal

The *Cost Proposal* should be based on the two worksheet templates contained in the *Finance Spreadsheet* and must include the following:

- Completed *Testbed Cost-Sharing Funds Request Form*
- Completed *Testbed In-Kind Contribution Declaration Form*

Additional instructions are contained in the templates themselves.

3 Evaluation Criteria

Proposals will be evaluated according to criteria that can be divided into three areas: Technical, Management, and Cost.

3.1 Technical Criteria

- How well applicable requirements in the RFQ are addressed
- Provision of a risk-adjusted technical approach in support of the requirements
- Creativity and originality in the proposed solutions
- Proposed solutions could be executed within available resources
- Proposed solutions support and promote the Initiative system architecture and demonstration concept
- Where applicable, proposed solutions are OGC-compliant

3.2 Management Criteria

- Adequate, concise descriptions of all proposed activities, including how each activity contributes to achievement of particular requirements and deliverables. To the extent possible, it is recommended that Bidders utilize the language from the RFQ itself to help trace these descriptions back to requirements and deliverables.
- Willingness to share information and work in a collaborative environment
- Contribution toward Sponsor goals of enhancing availability of standards-based offerings in the marketplace

3.3 Cost Criteria

- Cost-share compensation request is reasonable for proposed effort
- In-kind contribution is of value to the initiative

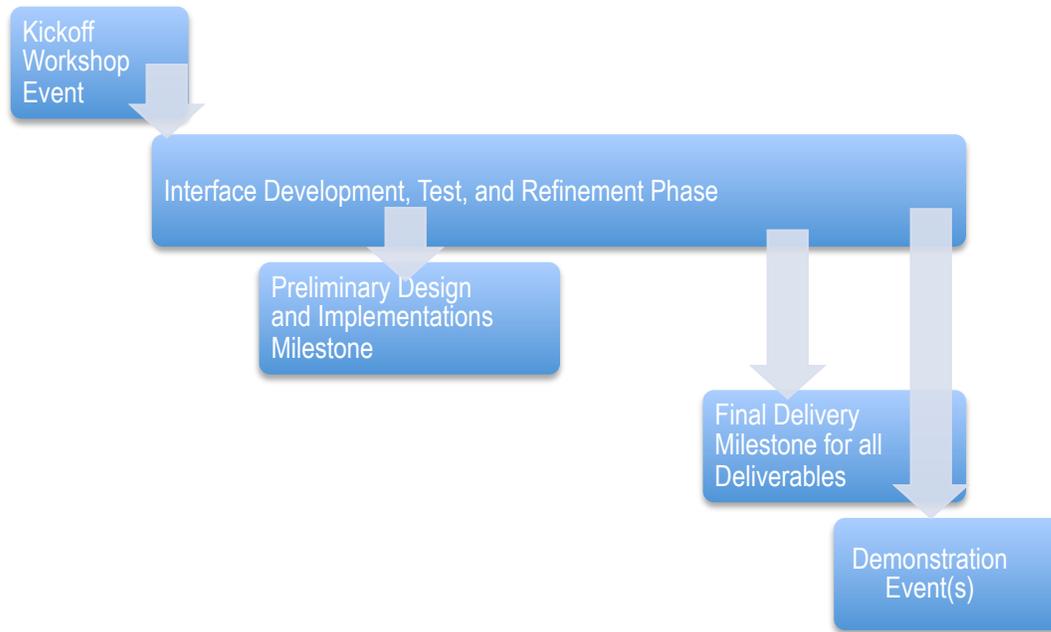
4 Master Schedule

The following table details the major events and milestones associated with the testbed and this RFQ:

Milestone / Event	Completion Date
RFQ Issuance	Friday, 23 October 2015
Bidders Q&A Webinar	Monday, 2 November 2015
Final Bidder Questions Due	Thursday, 5 November 2015
Proposal Submission Deadline	Friday, 20 November 2015
First Round of Bidder Notifications Started	Wednesday, 25 November 2015
Second Round of Bidder Notifications Started	Tue 1 December 2015
All Participation Agreements Signed	Fri 18 December 2015
Kickoff Workshop Event	Tues-Thurs, 19-21 January 2016
Preliminary Design and Implementations Milestone	Friday, 15 April 2016 (additional interim dates to be established)
Complete Component Implementation and Testing Milestone	June 2016 (additional interim dates to be established)
Final Delivery of All Deliverables (including demo materials and engineering reports)	July 2016
Demonstration Event (in conjunction with TC meeting)	September 2016

4.1 Sequence of Events, Phases, and Milestones

The following diagram provides a notional schedule of major testbed events, phases, and milestones and their approximate sequence of occurrence. The testbed will use rolling-wave project management whereby more detailed scheduling will take place as each milestone draws near.



Participant Selection and Agreements: Once the RFQ is issued, potential Bidders will be permitted to submit questions to support their proposal development and submission. OGC will conduct a Bidder’s Question and Answer webinar to respond to questions submitted in advance and to receive additional question during the webinar. Formal responses to all questions will be provided via a publicly available Clarifications document. Following the closing date for submission of proposals, OGC will evaluate received proposals, negotiate with selected Bidders, and communicate testbed status to the OGC Technical and Planning Committees. Participant selection will be complete once Participant Agreement contracts, including statements of work (SOWs), have been signed with all Participants.

Kickoff Workshop: A Kickoff Workshop is a face-to-face meeting where Participants, guided by thread architects, will refine the initiative system architecture (including generic interfaces and protocols to be used as a baseline for software components) and the Demonstration Concept. Participants will be **required to attend the Kickoff Workshop, including thread activities of each thread for which they were selected.**

Component Development, Test, and Refinement: After the Kickoff, Participants will develop components based on the interface designs for insertion into the testbed, and integrate selected components for support of prototype testing and development. These activities will be conducted remotely via web meetings and teleconferences.

Preliminary Design and Implementations Milestone: Development work leads up to the *Preliminary Design and Implementations* milestone. This is a critical milestone to complete draft documents based on collaboration among participants in thread teams during Kickoff (e.g., design documents or preliminary service implementations). These draft documents should confirm each Participant’s understanding of its requirements, components to be delivered, and delivery schedule.

Final Delivery Milestone: Participants will be **required to make final delivery of all items, including demonstration materials and engineering reports, by the Final Delivery milestone.** This will constitute the close of funded activity, and all final reports and deliverables will be due. Further development may take place to refine demonstrations for placement on the OGC website or for subsequent OGC meetings.

Final Activities and Demonstration Event: The testbed Demonstration will be conducted in conjunction with an OGC Technical Committee (TC) meeting. Testbed outcomes and highlights will be demonstrated to the TC, Sponsors, and the broader community of interest. This event could entail multiple demonstrations to highlight particular capabilities. While delivery of final artifacts such as components and engineering reports must be made at the *Final Delivery Milestone*, Participants selected to deploy any (server or client) testbed components ***must provide a technical representative to participate in or support the development of the Demonstration***. In addition, Participants selected to deploy any (server or client) testbed components ***must maintain this software for a period of no less than one year after the completion of the first Demonstration***. However, some sponsors may be willing to entertain exceptions to this requirement on a case-by-case basis.

Participant requirements for proposing activities to support these phases can be found in *Annex A*.

5 Sponsor Priorities

The following tables show the full set of testbed deliverables, organized by thread.

Each item is classified in a Funding Status column as being funded (“F”), unfunded (“U”), or under negotiation (“Un-Neg”), depending on the current state of sponsor funding.

- Items designated with an “F” are deliverables that sponsors are currently funding.
- Items with a “U” are within scope of this RFQ but have a lower sponsor priority and do not have any sponsor funding in this testbed.
- An “Un-Neg” item is one for which a sponsor intends to provide funding, but a final commitment of this funding is still pending.

Please note that each deliverable indicated as “F” or “Un-Neg” would be funded at most once. No deliverable should be interpreted as offering multiple instances.

In the case of a deliverable with sponsor funding under negotiation (“Un-Neg”), if funding for that deliverable ends up not being committed, any bid for cost-sharing on that deliverable will be rejected.

All deliverables are assigned to one or more threads. Multiple entries within a single cell in the “Thread” column indicate a multi-thread deliverable that is of interest to other threads. For any particular deliverable, a single thread is marked in **bold**. The thread marked in bold is the primary thread where the selected Participant responsible for this deliverable **must participate fully** as described by the corresponding activity description(s) in Annex A.

As a multi-thread deliverable also plays a role in one or more secondary threads, Participants are encouraged to participate in the relevant secondary thread activities as well. At a minimum, Participants **must ensure that all deliverable requirements are fulfilled independently of the thread where these requirements arose**.

For convenience in reading the tables, when a deliverable is listed under one of its secondary threads, it is shaded gray.

All Participants **are required to provide at least some level of in-kind contribution** (i.e., requesting no cost-share compensation). Some participation may be fully in-kind. Bidders are encouraged to propose at least part (or even all) of a particular deliverable in-kind. Any item proposed as a fully in-kind contribution will likely be accepted if it (1) meets testbed requirements and (2) conforms to the testbed architecture. The level of in-kind contributions will be considered during evaluation of proposals seeking cost-share compensation.

5.1 Field Operations (FO) Thread Deliverables and Funding Status

Table 1 – Field Operations (FO) Thread Deliverables and Funding Status

ID	Documents	Threads	Funding Status
A068	Vector Tiling ER	FO	Un-Neg
A069	Compression ER	FO	Un-Neg
A077	Multi-Tile Retrieval ER	FO, LSA	Un-Neg
A081	NSG GeoPackage Profile Assessment ER	FO	Un-Neg
A082	GeoPackage Routing and Symbology ER	FO	Un-Neg
A083	GeoPackage Mobile Apps Integration ER	FO	Un-Neg
A085	GeoPackage Change Request Evaluations ER	FO	Un-Neg
A086	OWS Context: JSON, JSON-LD and HTML5 ER	FO, LDS, COC	Un-Neg
B004	Geopackage US Topo ER	FO	F
U001	Low Bandwidth & Generalization ER	FO	F

ID	Components	Threads	Funding Status
A008	Vector and Raster Tiling Scheme	FO	Un-Neg
A009-1	Compression Tests WFS Server	FO	Un-Neg
A009-2	Compression Client	FO	Un-Neg
A022	GeoPackage NSG Profile with Vector Tiles Implementation	FO	Un-Neg
A024	GeoPackage Off-Road Routing Data Implementation	FO	Un-Neg
A025	GeoPackage Symbology Implementation	FO	Un-Neg
A026	Mobile Off-Road Routing App based on GeoPackage Implementation	FO	Un-Neg
A027	GeoPackages Mobile App Data Implementation	FO, COC	Un-Neg
A037	WFS-T Server	FO	Un-Neg
A042	WMTS REST Server	FO, LSA	Un-Neg
A048	WPS Conventional (GeoPackage) Server	FO	Un-Neg
A054	Mobile Device GeoPackage Common Map API Implementation	FO	Un-Neg
A055	Mobile Device GeoPackage Commercial APPs	FO	Un-Neg
A109	Client 1, Browser Based	FO, LSA	Un-Neg
B005	Geopackage Converter	FO	F
U002	WFS DGIWG Low Bandwidth Implementation	FO	F
U003	WPS Generalization Implementation	FO	F

5.2 Large-Scale Analytics (LSA) Thread Deliverables and Funding Status

Table 2 – Large-Scale Analytics (LSA) Thread Deliverables and Funding Status

ID	Documents	Threads	Funding Status
A067	Implementing Asynchronous Service Response ER	LSA	Un-Neg
A074	PubSub / Catalog ER	LSA	Un-Neg
A076	Big Data Database ER	LSA	Un-Neg
A077	Multi-Tile Retrieval ER	FO, LSA	Un-Neg
A080	WPS ISO Data Quality Service Profile ER	LSA	Un-Neg
A087	UGAS Shapechange ER	LSA	Un-Neg
DG003	Imagery Quality and Accuracy ER	LSA	F
NA004	WCS Profile Update ER	LSA	F
NA005	WMS/WMTS enhanced ER	LSA	F

ID	Components	Threads	Funding Status
A007	Comparison of Asynchronous Service Interaction	LSA	Un-Neg
A016	CSW 2.0.2 with PubSub Core Support Server	LSA	Un-Neg
A017	Big Data Tile Database Implementation	LSA	Un-Neg
A018	WPS for Tile Access Server	LSA	Un-Neg
A031	UGAS support for NAS RDF/OWL/SKOS Implementation	LSA	Un-Neg
A034	WFS SOAP Server	LSA, COC	Un-Neg
A036	WFS Conventional Server	LSA, CON	Un-Neg
A042	WMTS REST Server	FO, LSA	Un-Neg
A043	WCS SOAP Server	LSA, COC	Un-Neg
A045	WCS Conventional Server	LSA, CON	Un-Neg
A046	WPS SOAP (asynchronous) Server	LSA, COC	Un-Neg
A047	WPS REST (conflation) Server	LSA, LDS	Un-Neg
A049	WPS Conventional (Data Quality) Server	LSA	Un-Neg
A079	WPS Conflation Service Profile ER	LSA	Un-Neg
A109	Client 1, Browser Based	LSA, FO	Un-Neg
DG002	Generic Client to Interact with Services	LSA	F
DG004	WMTS Server for Temporal Accuracy	LSA	F
NA001	WCS New Profile 1	LSA	F
NA002	WCS New Profile 2	LSA	F
NA003	WCS Client	LSA	F
NA006	WMTS for Time-Varying Layers	LSA	F
NA007	WMS for NetCDF	LSA	F
NA008	WMS / WMTS Client	LSA	F
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DG001	WCS Server for Data Quality and Spherical Accuracy	LSA	U

5.3 Linked Data and Advanced Semantics for Data Discovery and Dynamic Integration (LDS) Thread Deliverables and Funding Status

Table 3 – Linked Data and Advanced Semantics for Data Discovery and Dynamic Integration (LDS) Thread Deliverables and Funding Status

ID	Documents	Threads	Funding Status
A005-1	REST Architecture ER	LDS	Un-Neg
A005-2	Javascript, JSON, JSON-LD ER	LDS	Un-Neg
A005-3	TopoJSON, GML ER	LDS	Un-Neg
A006	Evaluate Semantic Enablement ER	LDS	Un-Neg
A060	REST User Guide	LDS, CON	Un-Neg
A062	(Geo)JSON User Guide	LDS, COC, CON	Un-Neg
A063	OWS Context User Guide	LDS, COC, CON	Un-Neg
A066	Semantic Portrayal, Registry, Mediation Services ER	LDS	Un-Neg
A072	Catalogue, SPARQL ER	LDS	Un-Neg
A073	OWS Context / Capabilities ER	LDS, COC	Un-Neg
A086	OWS Context: JSON, JSON-LD and HTML5 ER	FO, LDS, COC	Un-Neg
B003	Arctic SDI ER	LDS	F

ID	Components	Threads	Funding Status
A035	WFS REST Server	LDS	Un-Neg
A040	WMS REST Server	LDS	Un-Neg
A044	WCS REST Server	LDS	Un-Neg
A047	WPS REST (conflation) Server	LSA, LDS	Un-Neg
A050	CSW 2.0.2 Server	LDS, CON	Un-Neg
A051	CSW ebRIM Server	LDS, CON	Un-Neg
A052	SPARQL / GeoSPARQL Server	LDS	Un-Neg
A053	Schema Registry Server	LDS	Un-Neg
A102	Prototype WFS 2.5	LDS, COC, CON	Un-Neg
A103	DCAT REST Service	LDS, CON	Un-Neg
A104	CSW v3.0 with OpenSearch, SOAP	LDS, COC, CON	Un-Neg
A105	Semantic Portrayal Service	LDS, CON	Un-Neg
A106	Semantic Mediation Service	LDS, CON	Un-Neg
A110	Client 2 (desktop) GIS Based	LDS, CON	Un-Neg
B001	WCS Arctic SDI	LDS	F
B002	Client WMS/WCS Arctic SDI	LDS	F

5.4 Command Center (COC) Thread Deliverables and Funding Status

Table 4 – Command Center (COC) Thread Deliverables and Funding Status

ID	Documents	Threads	Funding Status
A011-3	WFS Synchronization ER	LDS	Un-Neg
A061	SOAP User Guide	COC , CON	Un-Neg
A062	(Geo)JSON User Guide	LDS , COC , CON	Un-Neg
A063	OWS Context User Guide	LDS, COC , CON	Un-Neg
A065	OWS Common Security Extension ER	COC	Un-Neg
A071	LiDAR Streaming ER	COC	Un-Neg
A073	OWS Context / Capabilities ER	LDS, COC	Un-Neg
A078	Web Integration Service ER	COC	Un-Neg
A086	OWS Context: JSON, JSON-LD and HTML5 ER	FO, LDS, COC	Un-Neg

ID	Components	Threads	Funding Status
A004	Evaluate Security and SOAP, Common Security Extension WFS Server	COC	Un-Neg
A010	LiDAR Streaming Client	COC	Un-Neg
A011-1	WFS Synchronization Server 1	COC	Un-Neg
A011-2	WFS Synchronization Server 2	COC	Un-Neg
A012	SOS Compression (LiDAR) Server	COC	Un-Neg
A019	Web Integration Server	COC	Un-Neg
A027	GeoPackages Mobile App Data Implementation	FO , COC	Un-Neg
A030	OWS Context Document Production Client Implementation	COC	Un-Neg
A034	WFS SOAP Server	LSA, COC	Un-Neg
A039	WMS SOAP Server	COC	Un-Neg
A043	WCS SOAP Server	LSA, COC	Un-Neg
A046	WPS SOAP (asynchronous) Server	LSA, COC	Un-Neg
A102	Prototype WFS 2.5	LDS, COC , CON	Un-Neg
A104	CSW v3.0 with OpenSearch, SOAP	LDS , COC , CON	Un-Neg
A111	Client 3 (desktop) GIS Based	COC	Un-Neg

5.5 Consolidation (CON) Thread Deliverables and Funding Status

Table 5 – Consolidation (CON) Thread Deliverables and Funding Status

ID	Documents	Threads	Funding Status
A060	REST User Guide	LDS, CON	Un-Neg
A061	SOAP User Guide	COC, CON	Un-Neg
A062	(Geo)JSON User Guide	LDS, COC, CON	Un-Neg
A063	OWS Context User Guide	LDS, COC, CON	Un-Neg
A064	Team Engine VM User Guide	CON	Un-Neg
A090	Testbed 12 Web Service Implementations ER	CON	Un-Neg
A092	DGIWG Portal ER	CON	Un-Neg
A075	General Feature Model ER	CON	Un-Neg

ID	Components	Threads	Funding Status
A032	2D Test Dataset Implementation with Documentation	CON	Un-Neg
A033	2D Test Dataset Symbols and Styles Implementation with Documentation	CON	Un-Neg
A036	WFS Conventional Server	LSA, CON	Un-Neg
A041	WMS Server	CON	Un-Neg
A045	WCS Conventional Server	CON	Un-Neg
A050	CSW 2.0.2 Server	LDS, CON	Un-Neg
A051	CSW ebRIM Server	LDS, CON	Un-Neg
A102	Prototype WFS 2.5	LDS, COC, CON	Un-Neg
A103	DCAT REST Service	LDS, CON	Un-Neg
A104	CSW v3.0 with OpenSearch, SOAP	LDS, COC, CON	Un-Neg
A105	Semantic Portrayal Service	LDS, CON	Un-Neg
A106	Semantic Mediation Service	LDS, CON	Un-Neg
A107	WOS 1	CON	Un-Neg
A108	WOS 2	CON	Un-Neg
A110	Client 2 (desktop) GIS Based	LDS, CON	Un-Neg

5.6 Aviation (AVI) Thread Deliverables and Funding Status

Table 6 – Aviation (AVI) Thread Deliverables and Funding Status

ID	Documents	Threads	Funding Status
E001	Catalog ER	AVI	F
E002	Brokering [Data Broker] ER	AVI	F
E003	Asynchronous Messaging ER	AVI	F
F001	Aviation Security ER	AVI	F
F002	Aviation Semantics ER	AVI	F
F011	FIXM GML ER	AVI	F
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E004	SBVR ER	AVI	U
E005	Aviation Architecture ER	AVI	U

ID	Components	Threads	Funding Status
F003	CSW	AVI	F
F004	Aviation Client Data Broker + CSW	AVI	F
F005	WFS AMXM	AVI	F
F006	Data Broker	AVI	F
F012	WFS FIXM	AVI	F
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E006	WFS-TE AIXM	AVI	U
F007	Aviation Web Service (WMS/WCS)	AVI	U
F008	Aviation Client JMS + AMQP	AVI	U
F009	JMS + AMQP Server	AVI	U
F010	WFS AIXM	AVI	U

5.7 Compliance Testing (COM) Thread Deliverables and Funding Status

Table 7 – Compliance Testing (COM) Thread Deliverables and Funding Status

ID	Documents	Threads	Funding Status
A088	CITE User Guide with Profile Testing ER	COM	Un-Neg
A089	WFS 2.0 CITE and Reference Implementation Installation ER	COM	Un-Neg

ID	Components	Threads	Funding Status
A056	TEAM Engine – Virtual Machine Implementation	COM	Un-Neg
A057	CITE User Interface Implementation	COM	Un-Neg
A058	WFS Test Update Implementation	COM	Un-Neg
A059	WFS Reference Implementation	COM	Un-Neg

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