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Request For Quotation
And
Call For Participation
In the
EMPIRE CHALLENGE 09 OGC PILOT
Annex A—EC09 OGC IP
Work Breakdown Structure

RFQ Issuance Date: December 22, 2008
Proposal Due Date: January 14, 2009
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Annex A: EC09 OGC IP Work Breakdown Structure

1 Introduction
This document describes the EC09 OGC IP Work Breakdown Structure for this Sensor Web Enablement (SWE) / Web Services Initiative.

The OGC Pilot for EC09 will be conducted with a contractual obligation to collaborate closely with the DIA Sensor Web Project that is funded by the same sponsor. It is expected that this collaboration will rely on Sensor Web for the provision of live sensors and work with the Distributed Common Ground Station – Army (DCGS-A) to enable our services to not only integrate with those from Sensor Web itself, but also to be exposed on the DCGS Interconnect Backbone (DIB).

As a result of this collaboration we expect to accomplish the expected OGC outcomes by relying on Sensor Web and others for clients to exploit all of the OGC-fronted services that are provided. In the EC08 OGC Pilot we demonstrated five clients in our own enclave: In EC09 the intention is to demonstrate just a single client that handles the maximum number of services, and rely on Sensor Web and work the Pilot will partially fund to enable existing military programs of record and those in advanced development to perform the client function. Examples of this could include globe viewers built on platforms from Google, Microsoft, ESRI or Skyline with the only requirement being that they are either in use in the DoD community now or are on track to be so within 12 months. We are particularly interested in any proposal to modify an existing system to make it either an OGC service or client. Adequate demonstration services exist for the Open Web Services (OWS) family, so we welcome proposals for the addition of SWE services for sensors provided by programs of record or deployment in the Global War on Terror. Sensors not in theater or on track to be there in the near future will be welcomed, but they will be lower in priority for cost sharing funding.

2 Interoperability Initiative Process Framework
This section describes a flexible framework of standard, repeatable processes, which can be combined and adapted as necessary to address the requirements of each Interoperability Initiative. These tasks are executed with a Virtual Team Infrastructure. This Process Framework forms the basis for the OGC Web Services Initiative Work Breakdown Structure.
2.1 **Coordination**

Enables overall Initiative coordination between OGC Staff, OGC IP Team, Sponsors, Participants, and other TC/PC Members as required. Initiative Coordination includes the following Subtasks:

- **Collaborative Environment** - OGC IP Team provides synchronous and asynchronous collaboration environments for cross organizational, globally distributed, virtual teams working interdependently to execute Initiative Orders. Activities under this subtask include reading email and engaging in collaborative discussions including teleconferences.

- **Management** - Services ensuring Initiative Order participants are staying within designated budgets, that the work is progressing according to the agreed schedule, and that the tasks identified in the Statement of Work are executed. Including status reporting.

- **Communication** – Includes communicating ongoing and planned Initiative and Work Item Status to OGC and other organizations such as ISO. This task does not include IP Business Development functions.

2.2 **Specification Development**

This task defines and develops models, schemas, encodings, and interfaces necessary to realize required Architectures. Includes specification Pre-design and Design tasks. This task may include activities to coordinate ongoing Initiatives with Specification Program activities.

2.3 **Component Development**

This task develops prototype interoperable commercial software components based on standards, profiles and schemas necessary to realize the required Architecture. These documents will be provided by the sponsor and IP Team at Kickoff.
2.4 Testing and Integration

This task integrates, documents and tests functioning interoperable components and infrastructures that execute operational elements, assigned tasks, and information flows required to fulfill a set of user requirements. Includes Technology Integration Experiments (TIEs).

2.5 Solution Transfer

This task prepares prototype and / or commercially available interoperable components so that they can be assembled at required sites.

2.6 Demonstration

This task defines, develops and deploys functioning interoperable components and infrastructures that execute operational elements, assigned tasks, and information flows required to fulfill a set of user requirements. Each participant shall provide onsite personnel at the location of their demonstration hardware site for the period of the demonstration.

2.7 Documentation

This Task ensures development and maintenance of the pre-specification, pre-conformant interoperable OpenGIS technologies (including Draft Engineering Reports) and the systems level documentation (example user documentation, etc.) necessary to execute the Initiative. This task may include coordination with OGC Specification Program activities including the Documentation Team.

3 EC09 OGC IP Work Breakdown Structure (WBS)

The following Work Breakdown Structure (WBS) is derived from the OGC Interoperability Initiative Process Framework. This WBS should be interpreted in the following manner:

- Items that are grayed out are either IP Team tasks, have already been completed, or are not required for the EC09 OGC IP Initiative.
- Bold text is a task grouping or subtask grouping.
- Plain text indicates tasks against which proposing organizations should respond.
- Italic text indicates the task explanation (These task explanations are valid only for EC09 OGC IP; subsequent initiatives will issue appropriate task explanations).

A proposing organization does not have to respond to all tasks below. However bold italic text in the task explanation indicates which tasks are mandatory or conditional. Conditional tasks are those that are mandatory if a proposing organization takes on certain non-mandatory tasks. All responses shall use this WBS to structure their responses. Evaluations of responses will be based on whether a proposal addresses the WBS task items. So a company anticipating working on a particular task that fails to indicate their intent by using the WBS structure below will not be considered for the desired task. The EC09 OGC IP project plan and schedule will use this WBS as a template as well.
3.1 **Coordination**

3.1.1 **Collaborative Environment**

3.1.1.1 Routine and ad hoc telecons as assigned

*Task Explanation* - The proposing organization shall provide a technical representative and an alternate to participate in regularly scheduled telecons. If a participant organization has a representative that is requested or volunteers to participate in an ad hoc telecon, then that representative or a reasonable alternative shall join the ad hoc telecon if at all possible. **This item is mandatory for all proposing organizations.**

3.1.1.2 E-mail review and comment

*Task Explanation* - The proposing organization shall provide technical representatives to participate in specification and prototypical component development discussions via the EC09 OGC IP mail list. **This item is mandatory for all proposing organizations.**

3.1.1.3 Action Item status reporting

*Task Explanation* - Proposing organizations' representatives shall report the status of their work in response to any action item accepted by them in whole or part. Action Items will be assigned to relevant work groups with an identified work group leader. Action item status shall be reported to the relevant work group leader. **This item is mandatory for all proposing organizations.**

3.1.2 **Initiative Plan Development**

3.1.2.1 Project Plan Development

3.1.2.2 Project Schedule Development

3.1.2.3 WBS Development

3.1.2.4 Concept of Operations Development

3.1.3 **Management**

3.1.3.1 Status Reporting

*Task Explanation* - Proposing organizations' business representatives shall report the status of their work as assigned to and accepted by them in their SOW following the structure of this WBS. Status reports will reflect the WBS item number and name, the "health" of the effort with green indicating optimal; yellow indicating issues have arisen that appear resolvable; and red indicating that issues have arisen that require immediate resolution or the effort will not succeed, and finally the report will describe the work done to fulfill the WBS item. Reports will be submitted to the EC09 OGC IP Initiative Manager and Operations Manager on a Monthly basis. The first status report will be due 30 days after award of contract with all subsequent reports being due on the third of the
month or the first Monday thereafter by COB. **This item is mandatory for all proposing organizations.** Additionally all proposing organizations shall submit by 2 February 2009 an initial status report indicating personnel assigned to support the EC09 OGC IP initiative. **This initial status report will use a form to be supplied to proposing organizations that have been invited to participate in the EC09 OGC IP initiative. These initial status reports shall be submitted to EC09 OGC IP Operations lead no later than the first day of the EC09 OGC IP kickoff in soft copy format only.**

3.1.3.2 Initiative Accounting

**Task Explanation**-Proposing organizations' business representatives shall submit an invoice to Jeffrey Burnett of OGC. The invoice shall include the OGC Accounting Job Code. This Job Code will be provided to contracted participants by OGC via the contract. The invoice shall be submitted monthly for work completed during the prior month. Deliverables shall be itemized. The invoice shall include the budgetary not to exceed figure. **This item is mandatory for all proposing organizations.**

Communication
3.1.3.3 OGC Internal IP Status Briefings
3.1.3.4 OGC External IP Status Briefings

3.2 Assessments and Analysis
3.2.1 Organizational Capability Review
3.2.2 Organizational OGC Requirements Review

3.3 Concept Development
3.3.1 Sponsor Feasibility Study Review
3.3.2 RFT Development
3.3.3 RFT Response Analysis
3.3.4 RFT Response Review

3.4 Architecture Development
3.4.1 Operational Architecture Development
3.4.2 System Architecture Development
3.4.3 Technical Architecture Development

3.5 Initiative Preparation
3.5.1 Sponsor Planning TEMs
3.5.2 RFQ Development
3.5.3 Participant Budget Development

3.6 Specification Development

Task Explanation—Proposing organizations should respond to this task and its associated subtasks (or a subset thereof). See Table in Para 3.10: EC09 OGC IP Requirements for services, interfaces and encodings to be supported. To support this all organizations selected for participation shall send a technical representative to the EC09 OGC IP Kickoff; kickoff attendance is mandatory for all organizations chosen to participate.
3.6.1 Prototypical Interoperable Software Development

Task Explanation-Proposing organizations’ technical representatives shall either develop server software or modify existing product server and/or client software to provide the interfaces necessary under EC09 OGC IP. This requirement includes software modifications made to sensors and sensor platforms and potential middleware implementations to link proprietary sensors and sensors platforms to the selected OGC SWE interfaces. It includes wrapping existing/implementing services in SOAP bindings described in WSDL.

3.6.2 Legacy server/client software enhancement

Task Explanation-Alternatively, the proposing organization may propose to adapt existing sponsor or fielded, or in development hardware to make it OWS or SWE compliant for EC09 OGC IP.

3.6.3 Server software development

Task Explanation-Proposing organizations’ technical representatives shall develop server software or modify existing product server software to provide the interfaces under the EC09 OGC IP.

3.6.3.1 OGC Network Unclassified Environment

Task Explanation- Proposing organizations will make this server software available for sponsor review and input during the course of the EC09 OGC IP located on the unclassified OGC Network.

3.6.3.2 EC09 Classified Network Environment

Task Explanations- When selected to do so proposing organizations will install this server software on selected EC09 classified network(s) during the course of the EC09 OGC IP. Network(s) To be Announced at Pilot Kickoff

3.6.4 Client software development

Task Explanation-Proposing organizations’ technical representatives shall develop/provide client software or modify existing product client software to satisfy the client use case of EC09 OGC IP in Annex B, EC09 OGC IP Architecture.

3.6.4.1 OGC Network Unclassified Environment

Task Explanation- Proposing organizations will make this client software available for sponsor review and input during the course of the EC09 OGC IP located on the unclassified OGC Network.

3.6.4.2 EC09 Classified Network Environment

Task Explanations- When selected to do so proposing organizations will install this client software on selected EC09 classified network(s) during the course of the EC09 OGC IP. Network(s) TBD at Pilot Kickoff.
3.7 Testing and Integration

3.7.1 Configuration Management

Task Explanation- A single CM plan that will encompass both the unclassified and classified networks will be developed and maintained by IP team with assistance from participants.

3.7.1.1 CM Plan Development

Task Explanation-The Proposing organization shall provide a representative to assist in development of a configuration management plan for interfaces and components implemented during the EC09 OGC IP initiative.

3.7.1.2 Initiative CM

The Proposing organization shall provide a monthly report to update the configuration management plan for interfaces and components developed during the EC09 OGC IP initiative.

3.7.2 Infrastructure Setup

Task Explanation -- The Proposing organization shall set up as many components as possible on the same hardware and operating systems as possible. All hardware will be evaluated monthly using the DISA Gold Disk Platinum report. The results of this evaluation will be included in the monthly CM report. This item is mandatory for all organizations proposing to provide software and / or hardware components for EC09 OGC IP.

3.7.3 Technology Integration Experiments

3.7.4 Iterations 1-N

3.7.4.1.1 Component Interface Test

Task Explanation-The Proposing organization shall provide a technical representative to conduct formal Technology Integration Experiments that exercise server and/or client component software's ability to properly implement the interfaces, operations, encodings, and messages developed during EC09 OGC IP. There will be multiple TIEs during the course of EC09 OGC IP that will exercise various interfaces, operations, encodings, and messages developed during EC09 OGC IP. There may also be multiple iterations of a particular TIE or set thereof. This item is mandatory for all organizations proposing to provide software components for EC09 OGC IP.

3.7.4.1.2 Test Result Analysis

Task Explanation-The Proposing organization shall provide a technical representative to report the outcome and relevant software reporting messages from TIEs in which the proposing organization participates. These TIE reports shall be submitted to the EC09 OGC IP email list and within Monthly Status Report to be courtesy copied to the
initiative architect. This item is mandatory for all organizations proposing to provide software components for EC09 OGC IP.)

3.7.5 System Tests

3.7.5.1 Functional Test

Task Explanation – The Proposing organization shall demonstrate the functionality of all software delivered against the Use Cases in Annex B, EC09 OGC IP Architecture. This item is mandatory for all organizations proposing to provide software components for EC09 OGC IP.

3.7.5.2 Interface Test

Task Explanation – The Proposing organization shall demonstrate conformance with the appropriate OGC interfaces by using the OGC CITE Web site where the appropriate test suites are available. This item is mandatory for all organizations proposing to provide software components for EC09 OGC IP.

3.8 Solution Transfer

3.8.1 Software Installation OGC Network

Task Explanation-The Proposing organization shall provide licensed copy / copies of EC09 OGC IP relevant software components for installation/integration onto the EC09 OGC IP Network. This must take the form of the proposing organization installing it on a machine in the EC09 OGC IP Network, whether at a sponsor’s site or a participant’s own site. This item is mandatory for all organizations proposing to develop software components for EC09 OGC IP.

3.8.2 Software Installation EC09 Network (s)

Task Explanation-The Proposing organization shall provide licensed copy / copies of EC09 OGC IP relevant software components for installation/integration onto the EC09 OGC IP Network(s). The proposing organization will be required to install it on a machine in the EC09 OGC IP Network, whether at a sponsor’s site or a participant’s own site. This item is mandatory for all organizations proposing to develop software components for EC09 OGC IP.

3.8.3 Software Integration

3.8.4 Data Loading

Task Explanation-The Proposing organization shall provide a technical representative to load data to any server components the proposing organization may provide. This task includes data loading to EC09 OGC IP Classified Network based servers. This item is
mandatory for all organizations proposing to develop server components for EC09 OGC IP.

3.9 Demonstration

3.9.1 Use Case Development

Task Explanation-The Proposing organization shall provide a technical representative to develop or support the development of use cases that define and explain the utility of the interfaces developed during EC09 OGC IP. These use cases shall be used to provide a basis for demonstration storyboards and the demonstration itself.

3.9.2 Storyboard Development

Task Explanation-The Proposing organization shall provide a technical or business representative support the development of the Multi Domain Awareness Joint Capability Thread (JCT) that will define the structure and content of the demonstration. The JCT effort is an overall EC09 activity that will be attended by an IP Team member and participants may, at their choice, provide information to that representative in lieu of actual attendance.

3.9.3 Venue Access

3.9.3.1 OGC Network Unclassified Environment

Task Explanation- Proposing organizations shall provide their own hardware and access points to this network

3.9.3.2 EC09 Classified Network Environment

Task Explanations- Proposing organizations will have access, at a minimum to an NGA lab located at Reston, VA. Proposing organizations shall provide and install their own hardware and software at that location or at EC09 operations at China Lake, CA (Access to both is restricted to personnel who hold appropriate clearances). Proposing organizations that represent countries that have access to the CFBL network can, at their own effort, arrange access and privileges at other locations.

3.9.3.3 EC09 Classified Demonstration Site Access

EC09 Demonstration site access is restricted to personnel with security clearances. Proposing organizations with sensor platforms or server and client applications that must be installed in this environment shall provide and install their own offerings if they can gain access. OGC and NGA staff will accomplish this part of the work for proposer if they cannot gain access
3.9.4 Data Requirements Assessment

3.9.5 Data Acquisition and Distribution

3.9.6 Demonstration Preparation and Delivery

Task Explanation-The Proposing organization shall provide a technical and/or business representative to develop or support the development of demonstration that will exercise the functionality of the interfaces developed during EC09 OGC IP. The representative(s) will also support the demonstration event(s) as required. The proposing organization will maintain server and client software for a period of no less than 6 months after the completion of the EC09 OGC IP demonstration. This item is mandatory for all organizations proposing to provide software components for EC09 OGC IP.

3.9.6.1 OGC Network Unclassified Environment

Task Explanation- Proposing organizations shall participate in demonstrations on the EC09 OGC IP located on the unclassified OGC Network.

3.9.6.2 EC09 Classified Network Environment

Task Explanations- When selected to do so proposing shall participate in demonstrations on the EC09 OGC IP located on the selected EC09 classified network(s) during the course of the EC09 OGC IP. Network(s) TBD at Pilot Kickoff.

3.10 Components

Task Explanation – The Proposing organization shall provide services and clients to accomplish the demonstrations and fill out Table 1 to indicate which services and clients they are offering to provide.

<table>
<thead>
<tr>
<th>Services*</th>
<th>Profile*</th>
<th>Schema*</th>
<th>Data Type</th>
<th>Data Source</th>
<th>Comments</th>
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<tbody>
<tr>
<td>1. WMS</td>
<td>NCGIS</td>
<td>IPT Provides</td>
<td>JPG, PNG</td>
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<td></td>
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<td>2. WMS Context</td>
<td>NCGIS</td>
<td>IPT Provides</td>
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<td></td>
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<td>3. WFS/Filter</td>
<td>NCGIS</td>
<td>IPT Provides</td>
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<td>IPT Provides</td>
<td>GML</td>
<td></td>
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<tr>
<td>5. WCS</td>
<td>TBD</td>
<td>IPT Provides</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. CSW</td>
<td>NCGIS</td>
<td>IPT Provides</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. WPS</td>
<td>TBD</td>
<td>IPT Provides</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. SOS</td>
<td>ASXT</td>
<td>IPT Provides</td>
<td>Video</td>
<td>Predator</td>
<td></td>
</tr>
<tr>
<td>9. SOS</td>
<td>ASXT</td>
<td>IPT Provides</td>
<td>Video</td>
<td>Scan Eagle</td>
<td></td>
</tr>
<tr>
<td>10. SOS</td>
<td>ASXT</td>
<td>IPT Provides</td>
<td>Raster</td>
<td>EO-1</td>
<td>Add as needed</td>
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</tbody>
</table>
11. SOS  | ASXT  | IPT Provides | Point | NOAA Wx  |
12. SOS  | ASXT  | IPT Provides | Video | CHP Hwy  |
13. SPS  | ASXT  | IPT Provides |       | Propose One |
14. SAS  | ASXT  | IPT Provides |       | Propose One |
15. WNS  | NCGIS | IPT Provides |       |          |

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<tr>
<th>Clients</th>
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<th>GOTS</th>
<th>Open / Srce</th>
<th>Services</th>
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<tr>
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<td>Insert X to indicate YES</td>
<td>List please</td>
</tr>
<tr>
<td>17. Omnibus: OWS and SWE for Coalition net</td>
<td>Insert X to indicate YES</td>
<td>Insert X to indicate YES</td>
<td>Insert X to indicate YES</td>
<td>List please</td>
</tr>
</tbody>
</table>

* See Annex B

** May be same client on both networks, TBD.
*** More is better

3.11 *IPR Development*

Task Explanation-The Proposing organization shall provide a technical representative to serve as editor of a relevant Engineering Report (ER). Not all organizations responding to this item will be required to provide an editor; alternatively however they shall support the editor by providing authors for sections of the ER and for reviews of the Draft ER (DER). The ER is the deliverable of the work items within EC09 OGC IP.

3.11.1 System Documentation Development

3.11.1.1 Functional Specification

3.11.1.1.1 Architectural Overview

Task Explanation-The Proposing organization shall assist the IP Team representative to develop an architectural overview of their software component(s) relevant to the EC09 OGC IP architecture. **This item is mandatory for all organizations proposing to develop software components for EC09 OGC IP.**

3.11.1.2 Use Cases

Task Explanation-The Proposing organization shall assist the IP Team representative to refine use cases to show the functionality of their software components in the context of the EC09 OGC IP architecture. **This item is mandatory for all organizations proposing to provide software components for EC09 OGC IP.**
3.11.1.3 UML System Models

3.11.1.4 System Configuration

Task Explanation-The Proposing organization shall assist the IP Team representative to develop a detailed document describing the combined environment of hardware and software component(s) that compose their contribution to EC09 OGC IP. This item is mandatory for all organizations proposing to develop software components for EC09 OGC IP to be installed at data provider or other host sites.

3.11.1.2 Installation Guide

Task Explanation-The Proposing organization shall assist the IP Team representative to develop an installation guide for their software component(s). This item is mandatory for all organizations proposing to develop software components for EC09 OGC IP to be installed at data provider or other host sites.

3.11.1.3 Training Material & Users Guide

Task Explanation-The Proposing organization shall assist the IP Team representative to develop a User's Guide and Training Materials pertaining to their software component(s) developed or modified for EC09 OGC IP. The documents shall be provided to sponsors and IP Team to support their ability to demonstrate the proposing organization’s contributions to the EC09 OGC IP initiative. This item is mandatory for all organizations proposing to develop software components for EC09 OGC IP.

3.11.2 Planning Study Report

3.12 Draft Conformance Test Document (DCTD) Development

Task Explanation-Proposing organizations’ technical representatives shall develop a Draft Conformance Test Package pertaining to an interface developed for EC09 OGC IP. The representatives shall submit the Draft Conformance Test Package, as an ER, to the OGC Technical Committee for review. Those representatives shall present said Reports to relevant OGC TC special interest and working groups. Those representatives will work with WG members to resolve issues that the members may raise with regard to the Draft Conformance Test Package/ER and the conformance test(s) described therein. Proposing organizations should respond to this task AND its associated tasks (task 4.6 Specification Development and task 4.11 Documentation.

3.12.1 Summarize TIEs, demo results and data issues

Task Explanation-Proposing organizations’ technical representatives shall include a section in the DCTD detailing progress pertaining to the implementation of the interface by including TIE results, lessons-learned from the demo, and particular data issues.)
3.12.2 Conformance Test

Task Explanation—Proposing organizations’ technical representatives shall outline in the DCTD all of the necessary information to conduct a valid conformance test of the interface, including the sub items below)

3.12.2.1 Test Cases

Task Explanation—Proposing organizations’ technical representatives shall outline a valid conformance test for the interface. A valid conformance test will include identification of all required and optional server requests in the interface and the acceptable results for testing servers and the syntax checks to perform for testing client requests; an explanation of an acceptable verification of the results (machine, human, etc); a list of expected/valid warnings or exceptions to interface behavior; a matrix of test dependencies and explanation of ordering tests appropriately for inherent tests and dependencies.

3.12.2.2 Data

Task Explanation—Proposing organizations’ technical representatives shall identify appropriate data sets for use in conducting a conformance test for an interface.

3.12.2.3 Recommendations

Task Explanation—Proposing organizations’ technical representatives shall document recommendations to resolve issues with the current state of the interface, or with the conformance tests.

4 EC09 OGC IP Deliverables

<table>
<thead>
<tr>
<th>Deliverable</th>
<th>Applicability</th>
<th>Due Data</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security Information</td>
<td>All participants proposing to use computers on controlled networks</td>
<td>Base Data:15 February 2009 DISR Platinum Reports: Last day of each month Feb-Jun</td>
<td>OGC will provide correct DISR CD for Platinum Reports</td>
</tr>
<tr>
<td>TIE Reports</td>
<td>For TIE cycles for all services / clients participant provides</td>
<td>First: 17 April 2009 Second: 15 May 2009 Third: 19 June 2009</td>
<td>OWS OWS and SWE OWS and SWE</td>
</tr>
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<td>Engineer Reports</td>
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<td>Draft: 19 June 2009 Final: 21 August 2009</td>
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