The following questions and answers were collected by email and webinar as of 9-October-2013. Please send any corrections or additional questions to techdesk@opengeospatial.org.

Revision log:

2013-10-09	Nadine Alameh	First Draft

1. **<u>General Questions</u>**

Q1. Has the RFI deadline date and workshop date been affected by the government shutdown?
   A. Yes, the RFI response date has been extended to Oct 22, 2013. The workshop, initially scheduled for Nov 5-6, 2013 has been postponed. The new date will be available shortly and will be posted on the RFI request page.

Q2. Can potential respondents submit further questions by email?

   A. Yes, by October 22, 2013 to techdesk@opengeospatial.org. Each question will be reviewed and a response provided via the Clarifications document.

Q3. Can we submit a response to the RFI if we are not OGC members at the moment?

   A. Yes, you may submit a response to the RFI if you're not OGC members.

Q4. Is workshop attendance required?

   A. No, workshop attendance is not required but is highly encouraged to give you an opportunity to meet the sponsor of the initiative and to directly interact with the other members of the community. Webex and telecon arrangements may be established to make the workshop accessible to those who can't make it in person.

Q5. Are travel costs to the workshop reimbursed?

   A. No.

Q6. Where can I find the slides presented during the webinar on October 1, 2013?
      http://www.opengeospatial.org/standards/requests/111

Q7. What is the RFI response page length requirement?

   A. There is not page length requirement for the RFI responses. But concise and focused responses will be appreciated.

Q8. Is AAtS only directed to commercial aviation or is GA and BA considered?
   A. The information is available to anyone who'd like to use it.

Q9. With respect to the definition of the AAtS scope, and in particular in reference to the AAtS Logical Relationships diagram in the AAtS context slide set

(https://portal.opengeospatial.org/files/?artifact_id=55796): how is the scope determined and why isn't Command & Control not part of AAtS?

A. The Aircraft Access to SWIM (AAtS) capability provides information connectivity using a commercially available communication data link. Its design, operational approval, and use are intended to support strategic planning and non-tactical decisions in support of the safe separation of aircraft operating in the National Airspace System (NAS). The capability and the information provided are not considered to be safety critical.

However, the four capabilities cited (i.e., Voice, Data Comm, ADS-B, and ADS-C) are considered to be "safety critical". Their design, operational approval, and use must meet very specific/stringent performance, accuracy, reliability, availability, and integrity requirements to enable real-time air traffic control, tactical decisions (e.g., trajectory changes), and ensure safe separation of aircraft operating in the NAS. For the aforementioned reasons, this is why this is not AAtS.

Q10.   Will there be specific OGC standards efforts that relate to AAtS, e.g. enabling lightweight exchange of map information?

A. As mentioned during the webinar presentation (and as acknowledged by the questioner) a Data Management Service prototype has been developed within the OGC Web Services Testbed Phase 9. Results of this work are documented in a report available at: https://portal.opengeospatial.org/files/?artifact_id=51812 The prototype realized a set of DMS functionality defined in the AAtS Implementation Guidance Document (available at https://portal.opengeospatial.org/files/?artifact_id=55402). Some of the functionality related to the topic of efficient communication and data link use, including the use of compression as well as user-defined filtering of information that is sent to the client by DMS.

With respect to the specific example given in the question: previous OGC initiatives also investigated the use of Web Map Service (WMS) / Feature Portrayal Service (FPS) for user-defined portrayal of feature/vector and coverage/raster data and delivery in the form of map images. This supports lightweight clients, in cases where the client does not (always) need the full information (e.g. AIXM or WXXM datasets) but just a small graphical representation of it for display to the user. By using a WMS/FPS, clients (e.g. on an aircraft) can request a map for a given area (and define additional parameters such as image format as well as dimensions) and leave all work necessary for data retrieval and portrayal up to the WMS/FPS (which is usually located on the ground, and thus has sufficient bandwidth to get the actual data as well as processing power to create the map image).

Other work conducted in OGC testbeds includes an analysis of compression technologies such as the Efficient XML Interchange (EXI) Format (that was developed

by W3C) in order to identify how well they perform regarding: compaction performance, CPU consumption and memory footprint (for both setup, encoding and decoding phases). The according report is available at: https://portal.opengeospatial.org/files/?artifact_id=46394

Except for what has been described so far (both in this clarification and in the webinar presentation), at the moment there are no specific standardization efforts at OGC that directly target AAtS. The AAtS Harmonization Initiative welcomes further input and suggestions on potential OGC standardization efforts that would be relevant for AAtS as part of the RFI. Solutions based on or using OGC standards that involve the exchange of information between ground services and aircraft clients are of interest, particularly if they include specific extensions or alterations of OGC standards that are useful in general and that have not been fed back into the OGC standardization process yet. Input on gaps regarding the use of OGC standards for communication between ground services and clients located on an aircraft are also of interest.

Q11.   Can you elaborate on OGC's role in the exchange between SWIM and DMS and DMS to EFB?

A.   As explained during the webinar, Aviation Information Exchange Models (e.g. AIXM, WXXM) are based on OGC (and ISO) information model standards, for example GML. It is very likely that information is exchange between SWIM and the DMS via these exchange models. OGC's standardization efforts not only encompass the base models (such as GML) themselves, but also the creation of guidance, profiles and extensions to support specific requirements, functionality, and ultimately implementations for given domains such as Aviation. Examples have been mentioned in the presentation (also available in the OGC slides). The service interfaces to access and disseminate Aviation information (e.g. aeronautical, weather, flight) are defined by each of the SWIM environments that have been / are being / will be deployed. As mentioned during the presentation, these interfaces can be different in separate SWIM environments. OGC web service interface standards (such as the Web Feature Service, WFS) offer a way to facilitate interoperable dissemination for and access to (geospatial) Aviation information – either through direct implementation/deployment of OGC services in a SWIM environment or through adaptation of SWIM services. The latter approach has been illustrated in the presentation. Note that even though the details of how to access / disseminate information is defined in OGC service interface standards, SWIM environments may still define their own policies and procedures as well as security approach to actually connect to a service itself. Taking care of such policies and procedures as well as establishing the necessary security levels is not in scope of OGC, but can be managed by a vendor-provided DMS on behalf of the DMS's users. This concludes the response to the first half of the information exchange, i.e. between SWIM and DMS.

OGC standards can also be used for the exchange between DMS and the EFB/client. Note that this is not exclusive. OGC standards will very likely not only be used in communication between DMS and EFB/client. Efficiency and performance, especially via bandwidth-constrained and expensive data links is a crucial aspect. As outlined in this clarifications document, some tests and analysis have already been performed in this direction, but further work is required. This especially requires testing of OGC standards based systems against actual minimum performance figures defined for specific use cases. We also acknowledge standardization efforts outside of OGC that target information exchange between DMS and EFB. At this point OGC can be seen as an enabler/facilitator of information exchange between DMS and EFB. OGC standards facilitate some – but not necessarily all - use case relevant to DMS-EFB communication. It is also possible to incorporate OGC standards for very specific parts of the system, for example the creation of dynamic map images to be shown on the EFB.

To summarize, OGC can be seen as an enabler or facilitator of interoperable communication between SWIM and DMS, and potentially also between the DMS and EFB. It is also important to keep in mind that OGC standards do not solve all interoperability problems, but that they can be used to solve a range of particular problems (as shown in OGC Web Services Testbeds).