Request for Information on Geospatial Application Programming Interfaces

RFI Issuance Date: March 8, 2017
Response Due Date: March 31, 2017

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Abstract

Application Programming Interfaces (APIs) have been used for years in complex software systems. Today, APIs remain popular as organizations can publish their API for use by other organizations to access systems, data and applications. Per the ProgrammableWeb site, there are over 16,000 publicly available APIs available for different markets. When search for "mapping" APIs, roughly 800 Public APIs are available.

This Request For Information (RFI) seeks to gather information in support of a Concept Development Study (CDS) on the current level of interoperability of APIs that support mapping and the geospatial community. The OGC has recently published an OGC Open Geospatial APIs White Paper, which created additional interest in the geospatial community on the state and status of GEO APIs.   The CDS supported by this RFI will build on the concepts laid out in the White Paper: See http://docs.opengeospatial.org/wp/16-019r4/16-019r4.html

The CDS initiative is sponsored by
- Federal Geographic Data Committee
- United States Geologic Survey

The pace of expansion in the geospatial world highlights the need for nurturing an ecosystem-based approach by enabling the discovery, access and use of data and tools for many applications across a wide variety of stakeholder groups (e.g. commerce, science and decision making).

The project will lead to increased understanding of the requirements for enhanced interoperability of geospatial APIs, increased commonality of the semantic elements of APIs and reduced effort by software developers who need to use multiple APIs. The longer term goals include a roadmap that leads to efficient integration of data and information using standard APIs across applications, systems or use.

The purpose of the study will be to:
- Examine existing geospatial APIs
- Identify how APIs are used effectively to exchange geospatial information.
- Identify where the proliferation of API diversity has degraded interoperability
- Support planning for increased use of protocols to enhance interoperability
- Support increased use of essential elements of APIs that can enhance commonality across diverse APIs
- Suggest consensus activities that would improve the geospatial API ecosystem.

The study will lay the foundation, to develop and define the scope of a multi-phase API interoperability project to support implementation. The purpose of the study is to develop an in-depth understanding of all the components necessary to enable increased coordination

and effectiveness of APIs as applied to geospatial information.

The question of how geospatial APIs might be developed in a consistent manner across the entire community is the focus of this Study and the. FGDC and USGS have elected to use the OGC Geospatial APIs White Paper has identified by FGDC and USGS to serve as its foundation.

Results of the RFI responses will be analyzed and documented and used in a final report for the CDS phase. Also, the results are planned to be discussed at the Community do Data Integration Annual Workshop, to be held this year May 16-19, 2017 in Denver, Colorado. After the completion of the CDS, there are plans for API implementations to be analyzed in a future OGC Pilot.

This RFI includes instructions on how organizations can respond and submit questions about the RFI. Responses to the RFI are requested by March 31, 2017.

1.1 RFI purpose and scope

This Request for Information (RFI) is part of a study to assess the current state of application programming interfaces (APIs) that support mapping and the geospatial community.

The OGC Innovation Program utilizes a multi-step collaborative methodology for interoperability initiatives that seeks to uncover geospatial interoperability challenges and then develop ways to address them. The methodology begins with a Concept Development Study (CDS) to better understand and frame the current state of information technology in a target knowledge domain. A critical step in a CDS involves gathering critical insights from domain experts and other stakeholders about productive future directions that can then be explored in subsequent initiative activities such as testbeds, experiments and pilots. Ultimately the initiative methodology leads to development and adoption of consensus reference architectures and information standards that increase both the value and the utility of geospatial information.

Readers of this RFI are encouraged to respond with recommendations to be included in a recommended practice about how APIs can be developed and used in a consistent interoperable manner in the geospatial community. Recommendations may include technologies, system architectures, information models and vocabularies, as well as organizational practices and approaches to governance.

This Concept Development Study is governed by the OGC Interoperability Program Policy and Procedures[1].

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[1] After following the link provided, see document OGC 05-127r8 for a summary of the OGC Interoperability Program - recently renamed the OGC Innovation Program.

The scope of the study is to determine how different software vendors and different infrastructure data consumers can/are using APIs and improve interoperability whilst doing the below:
- Exchange data between systems without loss of information
- Results using different APIs are predictive and similar

An outcome of the project will be to enable connectivity and interoperability with different distributed or complex systems.

1.2 Request for Information

There are several areas of input requested from the community. Please respond to the questions below per the instructions in Section 3.

1- There are many who question whether or not there are issues achieving interoperability with APIs. Please document why you and/or your organization believes there is or is not an issue with interoperability in the geospatial community with the current use of APIs.

2- If you believe interoperability can indeed be improved, how do you think this can best be achieved?
   a. Is it by using a common set of semantics, such as the OGC Essentials as described earlier (or in more detail in the OGC API White Paper)?
      i.   If so, would you use and modify the current set of OGC Essentials or
      ii. Suggest a different common set of semantics upon which to begin
   b. Please provide other suggestions to improve geospatial API interoperability. Please provide as much detail, including references to the White Paper, or other industry publications, (per the instructions below) as possible.

3- Provide information about APIs that your organization manages or uses to discover, access, manipulate or use geospatial data. Use the outline described in Annex to provide that information. If your organization has a GitHub environment where you manage your API please provide a link.

2   Responding to this RFI

2.1 Who can apply
This RFI is open to the general public. It is open to all organizations with an interest in the use of API as related to topics in section 2.

2.2 General terms and conditions
Responses to this RFI will be distributed to members of the organizations listed in section 1.2. Submissions will remain in the control of this group and will used for the purposes identified in this RFI. A summary of the RFI Responses along with excerpts of some RFI

responses may be made public. If your wish to submit proprietary information, contact (techdesk@opengeospatial.org) in advance of sending the response.

2.3 How to transmit a response

Send your response in electronic version to the OGC Technology Desk (techdesk@opengeospatial.org) by the submission deadline. Microsoft® Word format is preferred, however, Rich Text Format, or Adobe Portable Document Format® (PDF) are acceptable.

2.4 RFI response outline

Responses to this RFI are urged to use this outline:
1. Description of responding organization
2. The numbering scheme as outlined in Section 1.2
3. Implementation examples if applicable

Respondents are free to add any additional topic as they think appropriate. An organization need not respond to all topics in the outline.

2.5 Questions and clarifications

Questions and requests for clarification should be sent to techdesk@opengeospatial.org. Questions received as well as clarifications from the RFI developers will be posted publicly at the OGC API CDS web site: http://www.opengeospatial.org/projects/initiatives/apicds

2.6 Reimbursements

The organizations issuing this RFI will not reimburse submitters for any costs incurred in connection with preparing responses to this RFI. Cost share opportunities may arise from the future phases of the project as described in the abstract of this document.

2.7 Schedule

Responses to this RFI are requested by or before March 31, 2017. At the discretion of the organizations support the RFI, responses may be accepted after that date, but those responses may have less effect on the CDS process.

# 3	Annex – Response Guidelines

A response to this RFI should respond to as many aspects defined in section 1.2 as possible. No particular format is required, but any response should be structured in such a way that allows understanding of the respondents' position on key aspects as listed in section 1.2. Respondents are free to add any additional topic they think appropriate.

Microsoft® Word format is the preferred format. However, Rich Text Format or Adobe Portable Document Format® (PDF) are acceptable.

Suggested format below:

Request for Information on Geospatial APIs

Prepared by:
Company name
Company Address

Contact information: *Person name*
Telephone number: *888-888-8888*
E-mail: *email address*

Repeat for principal writer(s)

Table of Contents *(if appropriate)*

Executive Summary
High level results or abstract of information gathered within the body of the document

Main Body
Divided in Chapters per theme as described in section 1.2

Conclusion and Observations