May 2021 OGC API Code Sprint Summary Engineering Report

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OGC Public Engineering Report

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Table of Contents

Chapter 1. Subject

The subject of this Engineering Report (ER) is a code sprint that was held from 26 to 28 May 2021 to advance the development of the OGC API - Maps draft standard, OGC API - Tiles draft standard, and the OGC API – Styles draft standard. An Application Programming Interface (API) is a standard set of documented and supported functions and procedures that expose the capabilities or data of an operating system, application or service to other applications (adapted from ISO/IEC TR 13066-2:2016). The code sprint was hosted online. The event was sponsored by Ordnance Survey (OS) and Natural Resources Canada (NRCan).

Chapter 2. Executive Summary

This Engineering Report (ER) summarizes the main achievements of the May 2021 OGC API Virtual Code Sprint, conducted between May 26 – 28, 2021. The goal of the code sprint was to progress the specification of OGC APIs for Maps, Tiles and Styles. The sprint also sought to help to identify issues and options for addressing those issues.

The objectives of the code sprint were to:

- Develop prototype implementations of OGC API – Maps
- Develop prototype implementations of OGC API – Tiles
- Develop prototype implementations of OGC API – Styles
- Test the prototype implementations
- Provide feedback to the Editor about what worked and what did not work
- Provide feedback about the specification document, especially what is missing from the document

Part of the motivation for holding the sprint was:

- APIs have proven to be popular and very effective enabler of rapid software development
- There is an increasing need for optimizing geospatial interoperability between Web APIs
- There is phenomenal adoption of location-handling capabilities in software within and outside of geospatial developer communities

The draft OGC API – Maps specification describes an API that presents data as maps by applying a style. The draft specification enables a client application to request maps as images. This includes the ability to specify or change parameters such as the size of an image and coordinate reference systems at the time of request.

The draft OGC API – Tiles specification describes an API building block that can enable other OGC API implementations to serve maps or tiled feature data divided into individual tiles. The draft specification includes concepts such as tile matrix sets and tile schemes. The draft standard can be used to publish map tiles and tiled feature data (e.g. GeoJSON Vector Tiles and Mapbox Vector Tiles).

The draft OGC API – Styles specification defines a Web API that enables map servers, clients as well as visual style editors, to manage and fetch styles that consist of symbolizing instructions that can be applied by a rendering engine on features and/or coverages.

2.1. Document contributor contact points

All questions regarding this document should be directed to the editor or the contributors:

Contacts

Name	Organization	Role
Gobe Hobona	Open Geospatial Consortium	Editor
Full Name	from org	Editor/Contributor

2.2. Foreword

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Recipients of this document are requested to submit, with their comments, notification of any relevant patent claims or other intellectual property rights of which they may be aware that might be infringed by any implementation of the standard set forth in this document, and to provide supporting documentation.

Chapter 3. References

The following normative documents are referenced in this document.

- OGC: OGC 06-042, OpenGIS Web Map Service (WMS) Implementation Specification 1.3.0 (2006)
- OGC: OGC 05-078r4, Styled Layer Descriptor, Version 1.1 (2007)
- OGC: OGC 19-072, draft OGC API - Common - Part 1: Core candidate standard, http://docs.ogc.org/DRAFTS/19-072.html
- OGC: OGC 20-058, draft OGC API - Maps - Part 1: Core candidate standard, http://docs.ogc.org/DRAFTS/20-058.html
- OGC: OGC 20-057, draft OGC API - Tiles - Part 1: Core candidate standard, http://docs.ogc.org/DRAFTS/20-057.html
- OGC: OGC 20-009, draft OGC API - Styles - Part 1: Core candidate standard, http://docs.ogc.org/DRAFTS/20-009.html
- IETF: RFC-7946 The GeoJSON Format (2016)

Chapter 4. Terms and definitions

For the purposes of this report, the definitions specified in Clause 4 of the OWS Common Implementation Standard OGC 06-121r9 [https://portal.opengeospatial.org/files/?artifact_id=38867&version=2] shall apply. In addition, the following terms and definitions apply.

NOTE: Delete the first three terms because they are examples.

- **coordinate reference system**

  coordinate system that is related to the real world by a datum term name (source: ISO 19111)

- **portrayal**

  presentation of information to humans (source: ISO 19117)

- **LiDAR**

  Light Detection and Ranging — a common method for acquiring point clouds through aerial, terrestrial, and mobile acquisition methods.

- **term name**

  text of the definition

- **term name|synonym**

  text of the definition

4.1. Abbreviated terms

- **API** Application Programming Interface
- **CRS** Coordinate Reference System
- **OGC** Open Geospatial Consortium
- **WMS** Web Map Service
- **WMTS** Web Map Tile Service

Chapter 5. Introduction

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5.1. User Needs and Use Cases

Chapter 6. Architecture

6.1. High Level Overview

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6.2. Candidate Standards

6.2.1. OGC API - Maps

The draft OGC API - Maps standard describes an API that presents maps portraying data that has been rendered according to a style. The maps served by implementations of the draft OGC API - Maps standard are retrieved as images of any size, generated on-the-fly, and with the styling determined by the client application. The draft standard can be considered the successor to the widely implemented WMS standard. The draft OGC API – Maps specification is part of the OGC API [https://ogcapi.ogc.org/] family of standards.

6.2.2. OGC API - Tiles

OGC API - Tiles references the OGC Two Dimensional Tile Matrix Set (TMS) standard. The TMS standard defines the rules and requirements for a tile matrix set as a way to index space based on a set of regular grids defining a domain (tile matrix) for a limited list of scales in a CRS. The draft OGC API – Tiles specification is part of the OGC API [https://ogcapi.ogc.org/] family of standards.

6.2.3. OGC API - Styles

OGC API - Styles describes the interface and exchange of styling parameters and instructions. The construction of symbology components of styles is addressed in the OGC Symbology Conceptual Model: Core Part [https://docs.ogc.org/is/18-067r3/18-067r3.html] standard and multiple OGC and other style encoding standards. The draft OGC API – Styles specification is part of the OGC API [https://ogcapi.ogc.org/] family of standards.

Chapter 7. Results

7.1. Overview

7.2. Implementations and Experiences

7.2.1. APCO

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Motivation to Participate

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Implemented Solution

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Proposed Alternatives

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Experiences with OGC API Specifications

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7.2.2. Carmenta AB

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7.2.3. Connected places catapult

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7.2.4. CRTC

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7.2.5. CubeWerx Inc.

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7.2.6. Danish Defense

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7.2.7. EAD

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7.2.8. EarthPulse

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7.2.9. Ecere Corporation

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7.2.10. Elemental Earth Data Ltd.

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7.2.11. Esri

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7.2.12. Federal University of Technology Akure

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7.2.13. Fisheries and Oceans Canada

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Motivation to Participate

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Implemented Solution

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Proposed Alternatives

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7.2.14. FrontierSI

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7.2.15. GatewayGeo

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7.2.16. Geobeyond Srl

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7.2.17. GeoCat BV

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7.2.18. GeoLabs

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7.2.19. GeoSolutions

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7.2.20. Geus

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7.2.21. Global Nomad GIS Services

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7.2.22. Heazeltech

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7.2.23. interactive instruments GmbH

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7.2.24. intern

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7.2.25. İstanbul Technical University

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7.2.26. ITU

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7.2.27. JLL

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7.2.28. European Commission - Joint Research Centre

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7.2.29. Kinder Institute at Rice University

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7.2.30. Kongsberg Geospatial

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7.2.31. Lexco Limited

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7.2.32. Luxembourg Institute of Science and Technology

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7.2.33. Manipal University Jaipur

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7.2.34. Meteorological Service of Canada

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7.2.35. Met Office

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7.2.36. Montefiore IT

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7.2.37. Natural Resources Canada

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7.2.38. NIWA

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7.2.39. National University of Singapore

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7.2.40. Open Source Geospatial Foundation

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7.2.41. Ordnance Survey

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7.2.50. UFMG

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7.2.51. UK Defence Science and Technology Laboratory

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7.2.52. UK Hydrographic Office

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7.2.55. University of Lagos

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7.2.56. US Army Geospatial Center

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7.2.57. US Census

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7.2.58. uttar pradesh remote sensing application center

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Chapter 8. Discussion

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Chapter 9. Conclusions

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Appendix A: Revision History

NOTE	*Example History (Delete this note).* replace below entries as needed

Table 1. Revision History

Date	Editor	Release	Primary clauses modified	Descriptions
2021-05-26	G. Hobona	.1	all	initial version
TBA	TBA	TBA	TBA	TBA

Appendix B: Bibliography