TITLE: OGC API - Tiles Standards Working Group Charter

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CATEGORY: SWG Charter

To: OGC members & interested parties

A new OGC Standards Working Group (SWG) is being formed. The OGC members listed below have proposed the "OGC API - Tiles SWG". The SWG proposal provided in this document meets the requirements of the OGC Technical Committee (TC) Policies and Procedures. The SWG name, statement of purpose, scope, list of deliverables, audience, and language specified in the proposal will constitute the SWG’s official charter. Technical discussions may occur no sooner than the SWG’s first meeting. This SWG will operate under the OGC IPR Policy. The eligibility requirements for becoming a participant in the SWG at the first meeting (see details below) are that:

* You must be an employee of an OGC member organization or an individual member of OGC;
* The OGC member must have signed the OGC Membership agreement;
* You must notify the SWG chair of your intent to participate to the first meeting. Members may do so by logging onto the OGC Portal and navigating to the Observer page and clicking on the link for the SWG they wish to join and;
* You must attend meetings of the SWG. The first meeting of this SWG is at the time and date fixed below. Attendance may be by teleconference.

Of course, participants also may join the SWG at any time. The OGC and the SWG welcomes all interested parties. Non-OGC members who wish to participate may contact us about joining the OGC. In addition, the public may access some of the resources maintained for each SWG: the SWG public description, the SWG Charter, Change Requests, and public comments, which will be linked from the SWG’s page. Please feel free to forward this announcement to any other appropriate lists. The OGC is an open standards organization; we encourage your feedback.

# Purpose of the OGC API – Tiles Standards Working Group

The purpose of this Standards Working Group is to:

* Develop and maintain an OGC API - Tiles core standard.
* Develop and maintain extensions of the OGC API - Tiles standard as identified in section 3 (Scope).
* Maintain the [Web Map Tile Service (WMTS)](https://www.ogc.org/standards/wmts) standard
* Develop and maintain the [Two Dimensional Tile Matrix Set (TMS)](https://www.ogc.org/standards/tms) standard.
* Maintain the Core Tiling Conceptual and Logical Models for 2D Euclidean Space OGC Abstract Specification

The formal proposed name of the new multi-part standard is "OGC API - Tiles". The short name “Tiles API” may also be used to refer to this effort in the charter and work products.

# Business Value Proposition

The lineage of OGC API - Tiles can be traced back to the release of the OGC’s Web Map Tile Service (WMTS) standard. WMTS offered what was then an alternative strategy for retrieving rendered maps. Rather than retrieving a complete map, WMTS client applications were required to retrieve subsets of the map in predefined sizes and representing predefined extents. Upon retrieving those tiles, the client applications were then able to mosaic the tiles together to display a complete map.

There are several benefits to delivering maps using a tiling approach. The restriction of image requests to a fixed predefined image allows for servers to scale based on communication processing capabilities rather than image processing abilities because serves can pre-render some or all of their images and can use image caching strategies. The fixed set of images also enables network providers to cache images between the client and the server, reducing latency and bandwidth use.

OGC API - Tiles follows in the footsteps of WMTS but adopts the OGC Web API guidelines and Spatial Data on the Web best practices. The Tiles API leverages the OGC Two Dimensional Tile Matrix Set standard, a specification that has established the Tile Matrix Set concept introduced by WMTS into a separate fully-independent standard. The Tiles API has been proven in OGC Innovation Program initiatives such as the Vector Tiles Pilot (VTP) to be able to support the handling of tiled feature data, colloquially referred to as vector tiles. This means that OGC API - Tiles will be able to handle different types of tiling content, whether that content is made of vector feature data, coverages or rendered maps.

# Scope of Work

OpenAPI frameworks have helped make describing and sharing API definitions more suitable for interoperability standardization. The concept of a Tiles API was demonstrated in various OGC Innovation Program initiatives.

The OGC API - Tiles SWG will build on those preliminary efforts to more fully develop and document a Tiles API candidate standard that will provide a modernized, common, and consistent interface to services that aligns with the current architecture of the Web and the Spatial Data on the Web Best Practices (<https://www.w3.org/TR/sdw-bp/>).

The OGC API - Tiles SWG will develop a Tiles API candidate standard which is informed by emerging OGC API best practices and prior API standards examples (e.g., OGC API - Features) to define core API functions of GET, PUT, PATCH, POST, DELETE applied to tiles as resources. The Tiles API will also document metadata requirements for tiles to enhance discovery and exchange of tiles.

* Architecture: The OGC API - Tiles standard will specify an implementation specification aligned with prior work in OGC for tiles and Web APIs. The proposed standard will define API building blocks for tiles in Web API. OGC API - Tiles will be consistent with HTTP and HTTPS.
* Encodings: The first version of the Tiles API will support JSON and HTML as encodings for descriptions of tile resources in the API. No encoding will be mandatory and other encodings may be used as well. The HTTP focus is designed to support the use of multiple formats and defines rules about how servers can return the encoding that the client can best handle (“content negotiation”).
* Information model: The Tiles API standard will conform to OpenAPI models and OGC API best practices. Additionally, the API will align or make use of the OGC Two Dimensional Tile Matrix Set. The conceptual models will consider recommendations from recent and current OGC Innovation Program initiatives such as Testbeds, Pilots, Sprint and others.
* Modularization: OGC API - Tiles - Part 1: Core will define a basic set of capabilities organized in multiple conformance classes building on each other. The minimal conformance class will specify a simple interface to access metadata from tiles that is sufficient for interfaces to exchange and perform basic web functions with the tiles. Additional conformance classes will define additional capabilities based on the requirements and requirements classes defined in the core to meet the needs of use cases that require such capabilities.
* Reuse: The use of unique Tiles API resources or components will be minimized and, where available, existing industry-standards or patterns that are commonly used by developers will be used instead. The most important example for this is the use of an OpenAPI definition instead of OGC-specific "Capabilities" documents and the use of OGC API - Common components to the maximum extent practicable.

Extensions may be proposed and addressed in revisions to this charter. The primary goal of the Tiles API SWG is to develop the core of "OGC API - Tiles" as quickly as possible and work on extensions after that, driven by community interest. An important aspect is to ensure that implementing the standard will lead to efficient implementations, happy developers of both server and client components, and satisfied users of such components.

Before finalizing parts of the future versions of the "OGC API - Tiles", completion of goals should be verified:

* Working implementations of all capabilities must be available and tested; and
* Implementation feedback must be taken into account.

A consequence of this verification is that the period between the availability of what is considered a mature draft and the finalization of the candidate standard may be longer than in the past, depending on the availability of evidence about the suitability of the candidate standard based on implementations. Developers should be encouraged as early as possible to implement the draft API specification and provide feedback. An aspect of this is public access to drafts from the beginning. To this end, the SWG intends to use a public GitHub repository in the development of this standard as this is the environment many developers are familiar with and use on a daily basis.

## Statement of relationship of planned work to the current OGC standards baseline

This proposed standard is intended to be a major component of the OGC API framework. The proposed standard will take advantage of Web API patterns identified in OGC API standards (e.g., OGC API – Features) and other ongoing API efforts (e.g. OGC API - Common development in OWS Common SWG) to better align with current and emerging IT practices. The Tiles API complements the OGC Two Dimensional Tile Matrix Set and provides a means for sharing tiles developed under OGC and other tile encodings.

## What is Out of Scope?

Standards are important for interoperability. At the same time, it is important that standards only state requirements that are important for a significantly large group of users. Proposals for new parts of OGC API - Tiles or change requests to existing parts must identify the user group that will benefit from the proposal and for each proposed conformance class; otherwise the proposal will be considered out-of-scope.

OGC API - Tiles is envisioned to be a modular, multi-part standard. Extensions and profiles not identified as in scope in the previous section will require a revision to the SWG charter prior to commencement of work. If a community has a need to develop a profile, the profile should be specified and governed by that community.

The basic resource described in OGC API - Tiles are tiles. The Tiles API describes the interface and exchange of tiles. The construction of the main components of tiles is addressed in OGC Two Dimensional Tile Matrix Set and multiple OGC and other tile encoding standards.

Tiled 3D data is outside the scope of the OGC API – Tiles SWG.

## Specific Contribution of Existing Work as a Starting Point

The starting point for the work will be the draft document that is currently on the proposed SWG’s repository (<https://github.com/opengeospatial/OGC-API-Tiles>). This charter recognises the prior work done by the Web Map Service (WMS) SWG. Upon approval of this Charter, responsibility for OGC API - Tiles, WMTS and the TMS standards shall be transferred to the proposed OGC API - Tiles SWG. The OGC API - Tiles SWG will meet with the OGC API - Maps SWG on a regular basis.

The work shall also be informed by the following specifications and by recommendations found in:

* OGC/W3C Spatial Data Working Group on the Web Best Practices (<https://www.w3.org/TR/sdw-bp/>);
* OGC Geospatial API White Paper [OGC 16-019r4];
* OGC API - Features - Part 1: Core standard, [OGC 17-069r3]; and
* OGC Two Dimensional Tile Matrix Set, [OGC 17-083r2].
* Core Tiling Conceptual and Logical Models for 2D Euclidean Space OGC Abstract Specification [OGC 19-014r3]

Each of these documents recommends an emphasis on resource-oriented APIs in future OGC standards development including use of tools such as OpenAPI.

## Is this a persistent SWG?

✓ Yes No

## When can SWG be inactivated?

The SWG can be inactivated once the final multipart standard has been developed and change requests become minimal or not applicable for consideration. The SWG can be re-activated at any time.

# Description of Deliverables

## Initial Deliverables

The following deliverables will result from the work of this SWG:

* A final version of the "OGC API - Tiles - Part 1: Core" document for submission to the TC;
* Identification of at least three prototype implementations for each conformance class of the standard — although more would be preferred; and

Part 1 will cover basic capabilities to GET tiles and GET information about the tile sets that the Web API provides, including tile metadata. Capabilities for richer tile interfaces or extension for unique geospatial resource considerations will be specified in additional parts.

The targeted start date is in July 2020 or once charter is approved. Formal approval of the core Tiles API is envisaged to take place nearer December 2020.

## Additional SWG Tasks

To be completed as SWG takes on new tasks.

# IPR Policy for this SWG

✓ RAND-Royalty Free. RAND for fee

# Anticipated Participants

* Geospatial resource providers.
* Developers implementing services.
* Producers of tile data.
* Users of geospatial resources.

# Domain Working Group Endorsement

The Architecture DWG will review the proof-of-concept at <https://github.com/opengeospatial/OGC-API-Tiles> and this SWG charter. A statement of endorsement is anticipated at or soon after the June 2020 Virtual OGC Members' meeting.

# Other Informative Remarks about this SWG

1. Similar or Applicable Standards Work (OGC and Elsewhere).

The following standards work may be applicable to the work of the proposed SWG:

* 17-069, OGC API - Features
* 17-083r2, OGC Two Dimensional Tile Matrix Set

Additionally, the proposed SWG will monitor other OGC API work ongoing in various Standards and Innovation Program activities.

1. Details of the First Meeting

The first meeting of the SWG will be within four weeks of approval of the SWG.

1. Projected On-going Meeting Schedule

The work of this SWG will be carried out primarily on GitHub and via email, conference calls, with potential face-to-face meetings at OGC TC meetings as agreed to by the SWG members. The teleconference calls will be scheduled as needed and posted to the OGC portal. Voting on Tiles API content will be limited to SWG members only.

1. Supporters of the Proposal (Charter Members)

The following people support this proposal and are committed to the Charter and projected meeting schedule. These members are known as SWG Founding or Charter members. The charter members agree to the SoW and IPR terms as defined in this charter. The charter members have voting rights beginning the day the SWG is officially formed. Charter Members are shown on the public SWG page.

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| --- | --- |
| Name | Organization |
| Joan Maso | UAB-CREAF |
| Jeff Harrison | AGC |
| Matt Sorenson | Strategic Alliance Consulting Inc. |
| Carl Reed | Carl Reed & Associates |
| Clemens Portele | interactive instruments GmbH |

1. Convener(s)

Joan Maso, UAB-CREAF.