Open Geospatial Consortium

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OGC GeoPackage SWG Charter

Chapter 1. Purpose of the Standards Working Group

The purpose of this SWG is to lead the development of revisions to the GeoPackage Encoding Standard, revisions to its adopted extensions, and new GeoPackage extensions.

Chapter 2. Business Value Proposition

Revisions to the version 1.3.0 of the GeoPackage Encoding Standard will improve the interoperability, capability, and clarity of that standard. The Tiled Gridded Coverage and Related Tables Extensions have not been revised since their initial release and could benefit from additional review. New extensions would enable new capabilities that have been requested by the OGC community.

Chapter 3. Scope of Work

The GeoPackage SWG intends to do the following:

- Develop a logical model for GeoPackage so that it can be separated from the SQLite implementation.
- Revise existing GeoPackage standards, namely the GeoPackage Encoding Standard 1.3.0, the GeoPackage Tiled Gridded Coverage Extension, and the GeoPackage Related Tables Extension. In particular, the SWG SHALL review all Change Request Proposals submitted before the adoption of this charter.
- Develop new GeoPackage extensions that have been requested by OGC Domain Working Groups.
- Perform outreach to promote GeoPackage understanding and use.

The SWG will plan to perform these activities by the end of calendar year 2022.

3.1. Statement of relationship of planned work to the current OGC standards baseline

The GeoPackage Encoding Standard is already consistent with the OGC baseline. The activities performed by the SWG will maintain this consistency. In particular, the development of a Tile Matrix Set Extension will bring GeoPackage in closer alignment to that standard.

A number of SWGs are engaged in work that will likely impact GeoPackage.

- The Styles and Symbology Encoding SWG produced the SymCore that the portrayal encoding is based.
- The OGC API - Tiles SWG developed the Tile Matrix Set standard and is developing a standard for vector tiles that will be consistent with the one proposed here.
- The OGC API - Styles SWG passed a motion concurring with the proposed design for the Portrayal Extension
- As part of the CDB-X initiative, the CDB SWG has developed rules for using GeoPackage as part of CDB and is exploring very large holdings, 3D models, and other GeoPackage-related issues.

3.2. What is Out of Scope?

The SWG will not produce a major revision to the GeoPackage Encoding Standard. The SWG MAY choose not to review Change Request Proposals that are submitted after the adoption of this charter.

3.3. Specific Existing Work Used as Starting Point

The following documents are to be used as a starting point:

- GeoPackage Encoding Standard 1.3.0 (OGC 12-128r17)
- GeoPackage Tiled Gridded Coverage Extension (OGC 17-066r1)
- GeoPackage Related Tables Extension (OGC 18-000)
- OGC Vector Tiles Pilot 2: Summary Engineering Report (OGC 19-088r2)
- OGC Testbed-16 GeoPackage Engineering Report (pending, planned as OGC 20-019)
- Image Matters GeoPackage Portrayal Extension https://gitlab.com/imagemattersllc/ogc-vtp2/-/blob/master/extensions/5-portrayal.adoc
- Image Matters GeoPackage Semantic Annotations Extension https://gitlab.com/imagemattersllc/geopackage-metadata-profiles/-/blob/master/extensions/13-semantic-annotations.adoc
- Image Matters Vector Tiles Extensions https://gitlab.com/imagemattersllc/ogc-vtp2/-/tree/master/extensions items 1-4
- Image Matters Tile Matrix Set Extension https://gitlab.com/imagemattersllc/ogc-vtp2/-/blob/master/extensions/14-tile-matrix-set.adoc

3.4. Is This a Persistent SWG

[x] YES

[ ] NO

Chapter 4. Description of deliverables

4.1. Revision to the GeoPackage Encoding Standard and its extensions

The SWG will produce a corrigenda and/or minor revisions to the GeoPackage Encoding Standard, the GeoPackage Tiled Gridded Coverage Extension, and the GeoPackage Related Tables Extension if warranted by the Change Request Proposals received.

4.2. Creation of new GeoPackage Extensions

The SWG will consider the creation of four GeoPackage extensions.

4.2.1. Portrayal

Systems require an interoperable way to store portrayal information so that information can be rendered consistently. There are a number of architectures where portrayal information needs to be shared. The Portrayal DWG has identified a particular need to store portrayal information in the GeoPackage so that it is available along with the data and accessible in off-line scenarios. The candidate extension has undergone a number of revisions. In the latest version, used by Testbed-16 participants, five new tables are created. One contains style names and URIs. One contains stylesheets, so that a single style may be represented by multiple encodings. One contains symbol names and URIs. One contains symbol images, so that multiple images may be grouped into a sprite file. One contains symbol content, so that a single symbol may be represented by multiple encodings.

4.2.2. Semantic Annotations

There is a common pattern where it is useful to annotate any business object (layer, feature, tile, style, etc.) with a resolvable URI. One scenario where this pattern occurs is stylable layer sets which aggregate groups of styles that are designed to be used together. *add more scenarios…*

4.2.3. Vector Tiles

Conventional features have proven to be inefficient when visualization is the top priority. Through the work of the OGC Vector Tiles Pilot Phase 1 and Phase 2, tiled feature data has proven to be a robust, more efficient solution. Support of tiled feature data in GeoPackage would create a way for GeoPackage clients to leverage the superior efficiency in a way that is consistent with other emerging uses in the OGC baseline (e.g., OGC API - Tiles). In the Pilot, four extensions were proposed. The first extension declares that vector tiles are in use and establishes two new tables for tiles metadata. The second and third extensions declare that tiles may be in the Mapbox Vector Tiles and GeoJSON formats, respectively. The fourth establishes a mechanism for encoding feature attribute information in a relational way so that it can be queried more easily. These extensions would be published as part of the same document.

4.2.4. Tile Matrix Set

The tiling supported by the GeoPackage core is simplistic and does not support all of the options provided by the OGC Tile Matrix Set Standard (OGC 17-083r2). An extension developed in Vector Tiles Pilot Phase 2 (see above) is a candidate for meeting this need. In the candidate extension, four new tables are added that align to the conceptual model from 17-083r2. The existing tiles tables would be replaced with views that reflect the content of the new tables. In addition, triggers would allow reverse compatibility by redirecting insert, update, and delete statements on the views to the relevant tables.

This extension would replace the existing Zoom Other Intervals extension (Annex F.6).

4.2.5. 3D Models

There is the work that is being done on the next version of CDB to support 3D models. However, this capability is desirable in GeoPackage because some users may want to avoid the burden of CDB. Candidate technologies include 3D tiles and glTF.

Chapter 5. IPR Policy for this SWG

[x] RAND-Royalty Free

[ ] RAND for fee

Chapter 6. Anticipated Audience / Participants

Participants of the SWG will include representatives from software vendors, customer organizations, and prospective users.

Chapter 7. Domain Working Group Endorsement

The Portrayal DWG passed a motion requesting that the GeoPackage SWG consider extensions for portrayal and semantic annotations. The Defense and Intelligence DWG passed a motion requesting that the GeoPackage SWG consider extensions for vector tiles and tile matrix sets. The Defense and Intelligence DWG subsequently passed a motion requesting that the GeoPackage SWG consider an extension for 3D models.

Chapter 8. Other informative information about the work of this SWG

8.1. Collaboration

The SWG will continue to use a GitHub repository (https://github.com/opengeospatial/geopackage) for version control, issue tracking, and community outreach. The SWG will continue to use the OGC Wiki for meeting notes and historical information.

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

There are no known standards that currently provide the functionality anticipated by this committee's deliverables.

8.3. Details of first meeting

The first meeting will occur on the first open time slot (see below).

8.4. Projected on-going meeting schedule

The work of the SWG will be carried out primarily by email and conference calls, as frequently as every two weeks, with face-to-face meetings perhaps at each of the OGC TC meetings. The intended schedule for conference calls is Tuesdays at 11 AM Eastern Time on weeks that the OGC Architecture Board does not meet. This schedule is subject to change depending on member availability.

8.5. Supporters of this Charter

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. Extend the table as necessary.

Name	Organization
Jeff Yutzler	Image Matters
Jerome St. Louis	Ecere
David Wilson	Strategic ACI
Joetta Kreck	Army Geospatial Center

8.6. Conveners

The GeoPackage SWG has convened this charter.