

## Template for comments and their resolution

Date: 2023-03-31	Document: <b>22-051r2</b>	Project: GGXF v1.0
------------------	---------------------------	--------------------

Commentator	Section Number	Type of comment	Comments	Proposed change	Observations
1 Chris Pearson Trimble Inc	Document	Major	At present Trimble does not plan to support the GGXF binary format in Trimble software however we do support using the GGXF YAML text file encoding as an interchange of exchange format to allow software companies like Trimble to be able to incorporate the geodetic data contained in the GGXF file into our proprietary formats. For that reason, Trimble supports the adoption of this candidate specification		Noted.
2 (a, b, c) Jack McCubbine, Anna Riddell (Geoscience Australia)	Document	Minor	Include a section which described points of difference or linkages to existing standards to assist with explaining necessity e.g. include notes regarding any linkage to GeodesyML or similar. This would assist with better demonstrating the purpose of the formats.		<b>Not accepted.</b> The GGXF specification describes the format. Its relationship to other formats is better suited to a paper or presentation on GGXF. <i>Resolution accepted by commentator.</i>
		Minor	Include more comments on the new format's similarity to NetCDF/HDF5 format. This would assist with better demonstrating the purpose of the formats.		<b>Not accepted.</b> GGXF use of NetCDF is explained in §6.3. <i>Resolution accepted by commentator.</i>
		Minor	Add clarity around what additional elements are being introduced. This would assist with better demonstrating the purpose of the formats.		<b>Not accepted.</b> No suggestion offered for what is unclear. <i>Resolution accepted by commentator.</i>

## Template for comments and their resolution

Date: 2023-03-31	Document: <b>22-051r2</b>	Project: GGXF v1.0
------------------	---------------------------	--------------------

Commentator	Section Number	Type of comment	Comments	Proposed change	Observations
3 Jack McCubbine, Anna Riddell (Geoscience Australia)	Document	Minor	More Meta data for gravity field models. It would be useful to include the full stack of parameters (where applicable) in the header data in the gcf format for the spherical harmonic models and a zero degree term (W_0). <a href="http://icgem.gfz-potsdam.de/ICGEM-Format-2011.pdf">http://icgem.gfz-potsdam.de/ICGEM-Format-2011.pdf</a> This would facilitate a better understanding of the compatibility and points of different between models.	Consider a meta data field to describe the underlying constants use in gravity field models.	GGXF is a grid exchange format. It is not designed to carry spherical harmonic data. GGXF may be used to carry a grid of gravity data (geopotential) values derived from a spherical harmonic model. The parameters from which these grid values have been derived may be documented through the Abstract or a Comment in the GGXF header. <i>This response accepted by commentator.</i> <b>Accepted with modification.</b> One further content types, "gravity" added to §5.3 table 2 and GGXF Conventions Annex B table B.3.
4 Joel Haasdyk, Spatial Sevices, NSW. #2	3	Minor	This draft defines 3.1.29: sibling grid. It would be useful to also define 'parent grid' and 'child grid'		<b>Accepted.</b>
5 Joel Haasdyk, Spatial Sevices, NSW. #1	3.1.6: displaceme nt	Minor	Given: [SOURCE: Deformation Model glossary] What is the SOURCE pointing to? This is not defined in 'Deformation_Model_Functional_Model' if that is the intent.		<b>Accepted.</b> 'DM glossary' document does not yet exist. It has been agreed that it should exist as an adjunct to but separate from the DMFM document. In GGXF spec the definition is retained but the source element of the definition is changed to the DMFM document.

## Template for comments and their resolution

Date: 2023-03-31	Document: <b>22-051r2</b>	Project: GGXF v1.0
------------------	---------------------------	--------------------

Commentator	Section Number	Type of comment	Comments	Proposed change	Observations
6 Joel Haasdyk, Spatial Sevices, NSW. #3	3.1.30 3,1.32	Minor	Review use of 'start epoch' for consistency within and across these drafts. Note 1: This document (Table A.1) also seems to use start epoch to mean the earliest defined temporal bounds of the grid. Note 2: Definition 3.1.31 uses 'from' in the same sense that 3.1.30 uses 'start'. (?) Note 3 : Table B.2 of this draft, as well as the Deformation Model Functional Model [1] uses 'startEpoch', 'endEpoch' and 'functionReferenceEpoch' as specific 'function parameters'. Consider to reserve these terms.		<b>Accepted.</b> In notes to definitions (renumbered as 3.1.33 and 3.1.35), 'start' and 'end' changed to 'from' and 'to' respectively.
7 Stefan Schliebner, LVG Rheinland- Pfalz	5.3	Question	Mandatory metadata elements: Why "filename" inside the file?		Having the file name given by the producer within the file preserves this information in the event of the user changing the file name.
8 Joel Haasdyk, Spatial Sevices, NSW. #4	5.3: 'Geodetic content type', page 10, final paragraph	Minor(?)	RE: Mandatory parameters.  It does not appear that 'version' and/or 'publication date' are mandatory parameters. I recommend that some mechanism for uniquely identifying a model should be mandatory. Publication date, or publication version, are both good candidates.		<b>Accepted with modification.</b> req/core/fileMetadata modified to add <i>version</i> as a mandatory attribute. Examples updated.

Template for comments and their resolution

Commentator	Section Number	Type of comment	Comments	Proposed change	Observations
9 Kevin Kelly, Esri	5.6, E.1.4	ed	<p><b>Cell storage.</b> What is the actual cell storage order in GGXF? The GGXF standard, p. 89, §E.1.4, states that:                      “In GGXF, parameter values are sequenced along each of the rows (count across <i>i</i> columns) then along each of the columns (count across <i>j</i> rows)...”</p> <p>However, p. 12, §5.6 of the standard when referring to the grid array cell coordinates states that:                      “The elements of the middle matrix are derived from the coordinates of the corners of the Interpolation CRS envelope and the distance between nodes in Interpolation CRS units. Their values depend upon the corner of the grid that is the grid origin and the positive direction and axis order of the Interpolation CRS axes: see Annex C.1.”</p> <p>Are these two statements in conflict? If the cell ordering depends on axis order then it seems that cells can be ordered row-wise or column-wise.</p>		<p><b>Accepted with modification.</b>                      The order mentioned in §E.1.4 does not imply anything about CRS axis order. The cell storage order refers to how the rows and columns are ordered. Row and column numbers are in terms of the "grid" coordinate system, i.e. the <i>i,j</i> of grid cells. The §E.1.4 sentence quoted “In GGXF ...” gives the order of the grid axes.</p> <p>The quoted sentence from §5.6 “<a href="#">The elements of the middle matrix ... see Annex C.1.</a>” is correct.</p> <p>But to clarify this point, in 5.6 after "... see Annex C.1" insert new sentence:  <u>"CRS axis order appears in the leftmost matrix, while the grid axis order (<i>i,j</i>) appears in the rightmost matrix. The relationship between the two axis orders is embedded in the middle matrix."</u></p>

## Template for comments and their resolution

Date: 2023-03-31	Document: <b>22-051r2</b>	Project: GGXF v1.0
------------------	---------------------------	--------------------

Commentator	Section Number	Type of comment	Comments	Proposed change	Observations
10 Joel Haasdyk, Spatial Services, NSW. #5	5.8.5 missing data values and associated 'noDataFlag'  6.3.5.5 noDataFlag vs <i>missing_value</i>	Minor(?)	<p>As noted in feedback to the Deformation Model Function Model document, It appears that there may be a conflict between:</p> <p>1) 'NoData' as synonymous with missing data. (in GGXF draft format) vs 'NoData' as distinct from missing data (in Deformation Model draft doc)</p> <p>2) Assumption that missing data = zero (in Deformation Model draft doc) vs Declaration that missing data "should be either larger than the largest actual packed data value or smaller than the smallest actual packed data value in the variable. (in GGXF draft format)</p> <p>(Note: Related comment made against DMFM 22-010 is <a href="#">in blue</a> below).</p>		<p><b>Not accepted.</b></p> <p>DMFM defines an extent for a model element and distinguishes between no data when the location is beyond this extent and no data when the location is within the extent but data is missing.</p> <p>In GGXF grids are rectangular. The GGXF header has the capability of defining irregular extents of valid data. When data is missing from within the extent of the [rectangular] grid, the information is needed to ensure that the count of data values is correct; there is no need to identify the reason why it is missing.</p>
11 Chris Pearson Trimble Inc	5.10.6 Check data	Major	We strongly support including check data in the GGXF header. Finding authoritative check data is often a significant problem in incorporating deformation models and geodetic grids in Trimble Geodetic Libraries.		Noted.

## Template for comments and their resolution

Date: 2023-03-31	Document: <b>22-051r2</b>	Project: GGXF v1.0
------------------	---------------------------	--------------------

Commentator	Section Number	Type of comment	Comments	Proposed change	Observations
12 Chris Pearson Trimble Inc	6.2 YAML Encoding	Major	Trimble believes that one of the major uses of the GGXF standard is to facilitate the exchange of geodetic grids and metadata between producers and software companies like Trimble that do not support the binary standard to be able to efficiently incorporate the geodetic data contained in the GGXF file into our proprietary formats. In our view, the YAML encoding is well suited for this purpose. For that reason, we request that a recommendation be added to support this use case in section 6.2. This change is required so that it is clear that producers are encouraged to make the YAML Encoding available as an exchange format.	This recommendation should state that “Producers are encouraged to share the GGXF YAML text file encoding with software companies for the purpose of incorporating the data into our proprietary formats”.	<b>Accepted with modification.</b> Recommendation 15 amended. Note: There is no obligation on producers to produce both binary and text versions of a GGXF file: they would be compliant by just providing the binary version. For very large files the GGXF text encoding may not be practical. If a user wishes to translate a GGXF binary file into their proprietary format, they can choose to do this directly or to do so via GGXF text format.
13 Chris Pearson Trimble Inc	6.2.3.2 GGXF external text file format	Minor	The external CSV format shown on page 88 are ideal for exchanging gridded data for implementation in TGL. The fact that it contains the latitude and longitude coordinates explicitly means that there is no ambiguity and reduces the chance of error in converting the grids to Trimble Binary.		Noted. In the GGXF external csv file definition (table B.18) the node coordinates may be given but there is no obligation for them to be present. E.1.3 happens to include them.

## Template for comments and their resolution

Date: 2023-03-31

Document: **22-051r2**

Project: GGXF v1.0

Commentator	Section Number	Type of comment	Comments	Proposed change	Observations
14 Stefan Schliebner, LVG Rheinland- Pfalz	Table B.2	Question	<p>Attribute "date" (page 48): Conformance to 8601-2 is ok but permits a variety as I cannot find an exact specification on how date has to be expressed. Am I right: Full variety of 8601-2 can be used?</p> <p>Why?</p>		<p>GGXF aligned to OGC API requirement to use RFC 3339.</p> <p>i) RFC 3339 added to clause 2 Normative References.</p> <p>ii) §5.9.5, temporal extent, replace paragraph 2 with: ... date is given as a date/time using the syntax defined in the RFC 3339 profile of ISO 8601-1, i.e. the 8601-1 extended format YYYY-MM-DD.</p> <p>iii) Table B.2, <i>date</i>, a) amend definition to "Instant in time given as a date/time data type with syntax in conformance with the RFC 3339 profile of the ISO 8601-1 extended format". b) insert additional note: Note: GGXF implementations are not required to support the extensions defined in ISO 8601 part 2, extensions. The 'extensions' of ISO 8601-2 should not be confused with the 'extended format' of ISO 8601-1. c) RFC 3339 added to Domain</p> <p>Note: no change made to the requirements. The requirement to use RFC 3339 profile of 8601-1 is picked up through req/core/conventions "A GGXF file shall adhere to the GGXF Conventions". Table B.2 is part of these Conventions.</p>

Template for comments and their resolution

Commentator	Section Number	Type of comment	Comments	Proposed change	Observations
15 Chris Pearson Trimble Inc	Table B.7 (Comment against 22-010 DMFM 6.2 Time functions)	Minor	Base time function types listed in table 2 under time function reference formulae make provision for a logarithmic time function but only the natural log ln is listed. However, the deformation model associated with the POSGAR-2007 datum from Argentina uses the log base 10 in their model of post-seismic deformation associated with the 27 Feb 2010 8.8 earthquake in Chile. For this reason ...	... We request that the log base 10 case is also supported in [DMFM] table 2.	<b>Accepted.</b>