Release guide

LuciadFusion 2021.1

20 December 2021
## Contents

**About this release** ........................................................................................................................................... 3

**Benefits of the new features** .......................................................................................................................... 4

- Stream tiles faster and visualize them realistically with more 3D tiles processing capabilities ........ 4
- Create compact 3D tiles datasets by enabling Draco geometry compression ............................... 4
- Create 3D tiles data sets that preserve material properties ................................................................. 5
- Efficiently stream CAD and BIM data encoded as Binz and include material properties for realistic rendering .................................................................................................................................. 5
- Support additional panoramic data: GeoCycloramas .................................................................................. 5
- Enrich client applications with detailed background data ......................................................................... 6
- Other improvements ........................................................................................................................................ 6
About this release

The 2021.1 release of LuciadFusion focuses on 3D user experience via state-of-the-art 3D services. The 3D tiles processing engine is further optimized for fast streaming and added realism via material support.

Figure 1: The Luciad Product Portfolio.
Benefits of the new features
Stream tiles faster and visualize them realistically with more 3D tiles processing capabilities
In this release, the 3D tiles processing engine has been extended with material support and tile geometry compression.

Create compact 3D tiles datasets by enabling Draco geometry compression
3D tiles is an OGC community standard and a popular exchange format for 3D information. A typical example of data that is very suitable to be exchanged in 3D tiles format is 3D city models. Despite the efficiency that comes from the tiled and multi-level nature of the data, there are still cases where the amount of data causes a bottleneck. Data compression can solve that problem. Google’s Draco is a popular library for compressing geometry during the encoding of a 3D payload into the glTF format.

LuciadFusion’s 3D tiles processing engine has now been extended with the capability to encode meshes as Draco-compressed 3D tiles. The benefit of applying this compression is that the resulting data set is significantly smaller, and the conversion time is only slightly longer. It is recommended to apply Draco compression if the client application supports the decoding and visualization of such tiles. Note that LuciadRIA supports rendering of Draco-compressed 3D tiles.

The Draco compression option is integrated into the LuciadFusion REST API as well as LuciadFusion Studio. In the REST API, a new meshCompression property has been added to the service GET method. The LuciadFusion Studio UI offers an additional Mesh Compression option chooser when creating a service of type OGC3DTiles.

Figure 2: LuciadFusion Studio offers the possibility to enable mesh compression when creating an OGC 3D tiles service.
Create 3D tiles data sets that preserve material properties

3D data sets have become more and more detailed and now often include texture information. Visualizing the textures of a data set helps users distinguish between objects and makes clear what each object represents. In the absence of textures, this is less clear.

There are situations where objects are quite similar in geometry. Factory and building data typically consists of geometrically similar objects, for example. Although those objects may look similar in form, we can still tell them apart through their material properties.

If 3D objects offer information on their material, such as metallic-ness and roughness, the LuciadFusion 3D tiles processing engine will now pick it up and encode it within the tiles. Any compatible client can then offer quite realistic rendering of the data. Note that LuciadRIA supports the rendering of 3D tiles including material properties.

Because OBJ files typically do not encode a large variety of materials, support for input data in binary GLTF has been added to the processing engine. The GLTF format can contain more material information.

Sample code to get you started
The Command Line Interface (CLI) Meshup sample now includes Draco compression and material support.

The Developer Guide “Processing meshes into OGC 3D tiles” has been extended with a “File formats and material properties” section with guidance on including material properties within the generated OGC 3D tiles data sets.

Efficiently stream CAD and BIM data encoded as Binz and include material properties for realistic rendering

The added value of material support is typically very high in data of factories and buildings. Therefore, the Binz tiling engine, part of the Infrastructure Standards option, has been extended with material support.

Moreover, the Binz tiling engine now also offers Draco compression. For Binz data with complex geometries, geometry compression results in significantly smaller 3D tiles datasets.

Sample code to get you started
The Binz decoder automatically picks up any material information.

The samples.decoder.binz.BinzConverter sample shows how to configure the mesh compression.

Support additional panoramic data: GeoCycloramas

As of version 2020.1, LuciadFusion supports 360° panoramic imagery. Panoramic imagery in the formats E57 (ASTM E57 3D file format) and Leica Pegasus (from Leica Pegasus scanners) is automatically recognized and discovered through the LuciadFusion crawling capability. A new service type, PanoramicService, based on OGC 3D tiles, was added to stream 360° panoramic imagery data.

With this release, we added dedicated sample code to support GeoCycloramas¹. Even though LuciadFusion 2020.1 already included API to add more panoramic image formats, this new sample code greatly simplifies the development task for GeoCycloramas specifically.

¹ https://www.cyclomedia.com/en/cycloramas
Sample code to get you started
The Panorama Viewer Sample and the Panorama Converter CLI sample both use the sample model decoder for GeoCycloramas.

You can find more background information in the article "How to process panoramic images in a custom format."

Enrich client applications with detailed background data
Operational data becomes more relevant when you show it in context. For that, you need detailed background data. There are various providers of such imagery data, and LuciadFusion already offers numerous data connectors to serve imagery through OGC-compliant WMS and WMTS services.

With this release, we enrich our set of connectors with a connector for OpenStreetMap\(^2\) data that is not offered through OGC services, but through OpenStreetMap tile servers. This data can be consumed directly by applications that support the format. LuciadFusion can also convert these services into OGC WMS or WMTS.

Sample code to get you started
A dedicated OpenStreetMap decoder has been added to the LuciadFusion sample samples.earth.decoder.osm.OpenStreetMapModelDecoder. The article “How to load data from an OpenStreetMap tile server” provides additional guidance.

![Figure 3: An illustration of the OpenStreetMap data decoder using LuciadLightspeed for visualization.](image)

Other improvements
- The ECWP service type for LuciadFusion is now also supported on Linux. The corresponding native libraries have been updated.
- LuciadFusion runs on Java 17 in compatibility mode.
- LuciadFusion’s 3D tiles processing engine now uses optimized caching, resulting in faster processing.

\(^2\) [https://www.openstreetmap.org/](https://www.openstreetmap.org/)
About Hexagon

Hexagon is a global leader in digital reality solutions, combining sensor, software and autonomous technologies. We are putting data to work to boost efficiency, productivity, quality and safety across industrial, manufacturing, infrastructure, public sector, and mobility applications.

Our technologies are shaping production and people-related ecosystems to become increasingly connected and autonomous — ensuring a scalable, sustainable future.

Hexagon’s Safety, Infrastructure & Geospatial division improves the performance, efficiency and resilience of vital services. Its Safety & Infrastructure solutions enable smart and safe cities. Its Geospatial software leverages the power of location intelligence.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 21,000 employees in 50 countries and net sales of approximately 3.8bn EUR. Learn more at hexagon.com and follow us @HexagonAB.

Copyright
© 2021 Hexagon AB and/or its subsidiaries and affiliates. All rights reserved

Warning: The product made the subject of this documentation, including the computer program, icons, graphical symbols, file formats, audio-visual displays and documentation (including this documentation) (collectively, the “Subject Product”) may be used only as permitted under the applicable software license agreement, and subject to all limitations and terms applicable to use of the Subject Product therein. The Subject Product contains confidential and proprietary information of Intergraph Corporation, a member of the Hexagon Group of companies (“Hexagon”), its affiliates, and/or third parties. As such, the Subject Product is protected by patent, trademark, copyright and/or trade secret law and may not be transferred, assigned, provided, or otherwise made available to any third party in violation of applicable terms and conditions cited further below.

Terms of Use
By installing, copying, downloading, accessing, viewing, or otherwise using the Subject Product, you agree to be bound by the terms of the EULA found here: https://www.hexagonsafetyinfrastructure.com/-/media/Legal/Hexagon/SI/Licenses/EULA_SA_SIG-Eng_062021.pdf.

Disclaimers

Hexagon and its suppliers believe the information in this publication is accurate as of its publication date. Hexagon is not responsible for any error that may appear in this document. The information and the software discussed in this document are subject to change without notice.

Language Translation Disclaimer: The official version of the Documentation is in English. Any translation of this document into a language other than English is not an official version and has been provided for convenience only. Some portions of a translation may have been created using machine translation. Any translation is provided “as is.” Any discrepancies or differences occurring in a translation versus the official English version are not binding and have no legal effect for compliance or enforcement purposes. Hexagon disclaims any and all warranties, whether express or implied, as to the accuracy of any translation.

Reasonable efforts have been made to provide an accurate translation; however, no translation, whether automated or provided by human translators is perfect. If any questions arise related to the accuracy of the information contained in a translated version of Documentation, please refer to its official English version. Additionally, some text, graphics, PDF documents, and/or other accompanying material may not have been translated.
Links To Third Party Websites

This Document may provide links to third party websites for your convenience and information. Third party websites will be governed by their own terms and conditions. Hexagon does not endorse companies or products to which it links.

Third party websites are owned and operated by independent parties over which Hexagon has no control. Hexagon shall not have any liability resulting from your use of the third party website. Any link you make to or from the third party website will be at your own risk and any information you share with the third party website will be subject to the terms of the third party website, including those relating to confidentiality, data privacy, and security.

Hexagon provides access to Hexagon international data and, therefore, may contain references or cross references to Hexagon products, programs and services that are not announced in your country. These references do not imply that Hexagon intends to announce such products, programs or services in your country.

Revisions

Hexagon reserves the right to revise these Terms at any time. You are responsible for regularly reviewing these Terms. Your continued use of this Document after the effective date of such changes constitutes your acceptance of and agreement to such changes.

Questions

Contact us with any questions regarding these Terms.