



**HEXAGON**

Release Guide  
2021.0

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# Release Guide

LuciadFusion 2021.0

10 June 2021

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## About this release

The 2020.1 release of LuciadFusion puts the developer at the center of everything. LuciadFusion now offers support for Maven and an API to manage and set up your own custom services. Two new service types have been added as well: ECWP and HSPC, focusing on better integration with other Hexagon products. Moreover, we updated our support to include some new formats and references.

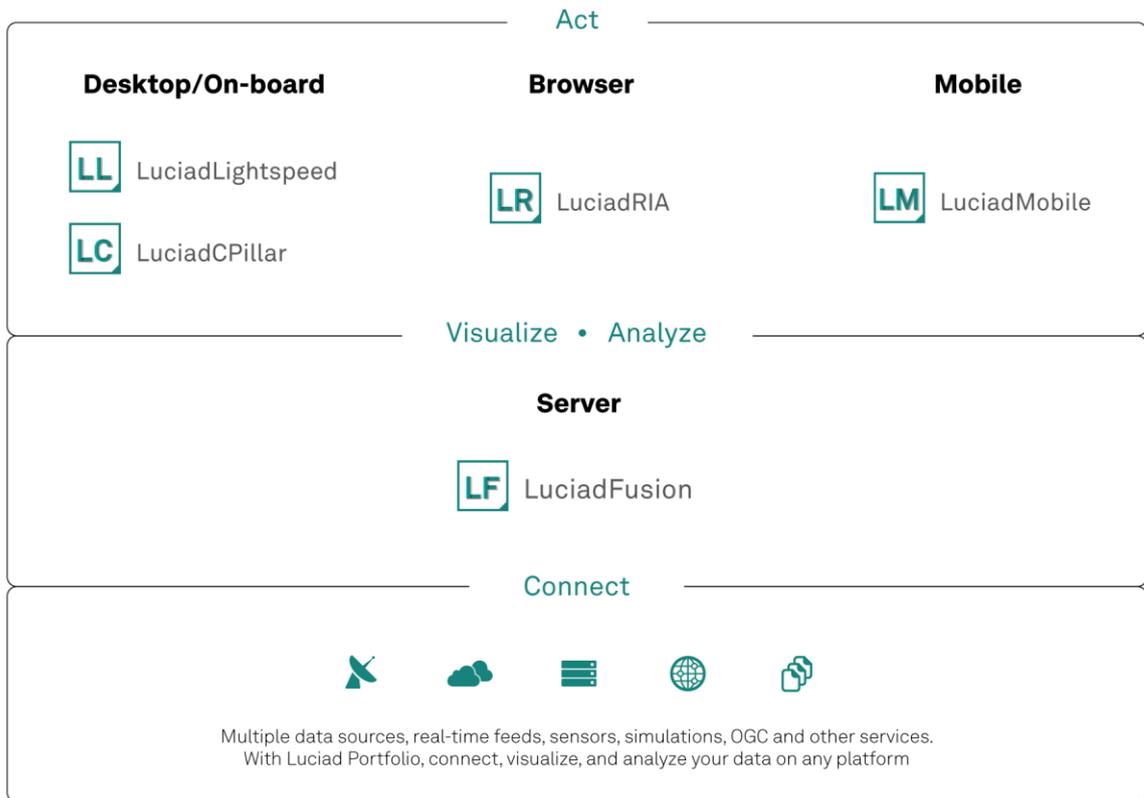


Figure 1: The Luciad Product Portfolio.

# Benefits of the new features

## Support for Apache Maven

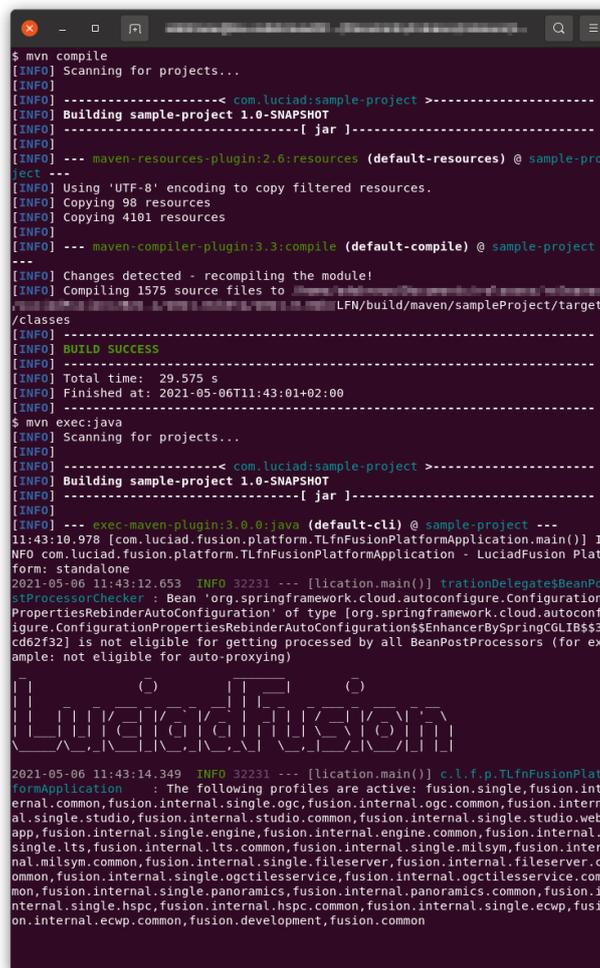
Maven<sup>1</sup> is a development project management and build automation tool. It facilitates managing the components and dependencies of your software project.

The 2021.0 release of LuciadFusion includes a set of scripts and Project Object Model (POM) files for all libraries within the product distribution. Convenience POM files reflecting the product structure with its tiers and optional components have been added. Support for obfuscation is also included.

## Sample code to get you started

To get you started, we have created a step-by-step guide: “Using LuciadFusion in a Maven repository.” This is part of a new section on Maven in the product documentation.

The release also includes example scripts that illustrate how to set up a project based on the LuciadFusion samples.



```
$ mvn compile
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.luciad:sample-project >-----
[INFO] Building sample-project 1.0-SNAPSHOT
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ sample-pro
ject ---
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] Copying 98 resources
[INFO] Copying 4101 resources
[INFO]
[INFO] --- maven-compiler-plugin:3.3:compile (default-compile) @ sample-project
---
[INFO] Changes detected - recompiling the module!
[INFO] Compiling 1575 source files to
LFN/build/maven/sampleProject/target
/classes
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 20.575 s
[INFO] Finished at: 2021-05-06T11:43:01+02:00
[INFO]
$ mvn exec:java
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.luciad:sample-project >-----
[INFO] Building sample-project 1.0-SNAPSHOT
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- exec-maven-plugin:3.0.0:java (default-cli) @ sample-project ---
11:43:10.979 [com.luciad.fusion.platform.TlfnFusionPlatformApplication.main()] I
NFO com.luciad.fusion.platform.TlfnFusionPlatformApplication - LuciadFusion Plat
form: standalone
2021-05-06 11:43:12.653 INFO 32231 --- [lication.main()] trationDelegatesBeanPo
stProcessorChecker : Bean 'org.springframework.cloud.autoconfigure.Configuration
PropertiesRebinderAutoConfiguration' of type [org.springframework.cloud.autoconf
igure.ConfigurationPropertiesRebinderAutoConfiguration$$EnhancerBySpringCGLIB$$3
cd62f32] is not eligible for getting processed by all BeanPostProcessors (for ex
ample: not eligible for auto-proxying)

LuciadFusion
ALUKKJLUCESION

2021-05-06 11:43:14.349 INFO 32231 --- [lication.main()] c.l.f.p.TlfnFusionPlat
formApplication : The following profiles are active: fusion.single,fusion.int
ernal.common,fusion.internal.single.ogc,fusion.internal.ogc.common,fusion.int
ernal.single.studio,fusion.internal.studio.common,fusion.internal.single.studio
.webapp,fusion.internal.single.engine,fusion.internal.engine.common,fusion.int
ernal.single.lts,fusion.internal.lts.common,fusion.internal.single.milsym,fusion.int
ernal.milsym.common,fusion.internal.single.fileserver,fusion.internal.fileserver.c
ommon,fusion.internal.single.ogctilesservice,fusion.internal.ogctilesservice.com
mon,fusion.internal.single.panoramics,fusion.internal.panoramics.common,fusion.i
nternal.single.hspc,fusion.internal.hspc.common,fusion.internal.single.ecwp,fusi
on.internal.ecwp.common,fusion.development,fusion.common
```

Figure 2: An example script illustrates how to set up a project based on the LuciadFusion samples.

<sup>1</sup> <http://maven.apache.org/>

## Crawl and serve Hexagon Smart Point Cloud data

LuciadFusion now directly supports point clouds in the Hexagon Smart Point Cloud format (HSPC). Certain Hexagon scanners allow exporting point clouds in HSPC, a 3D-tiled format. Hexagon customers can avoid additional conversion steps into LAS, E57, or OGC 3D Tiles. Advantages compared to OGC 3D Tiles are better compression of the tile payload and precise encoding of the point locations.

A new HSPC service type has been added to LuciadFusion. This means that data in the HSPC format can be served as HSPC service, preserving all the benefits of the HSPC encoding. Note that LuciadRIA offers a direct connector for HSPC services.

### Sample code to get you started

The new HSPC service type is illustrated via the integration into LuciadFusion studio. The LuciadFusion Studio end user guide has been updated and now explains how to use this service type.

The documentation on the LuciadFusion services and service types has been restructured and updated to reflect the changes.

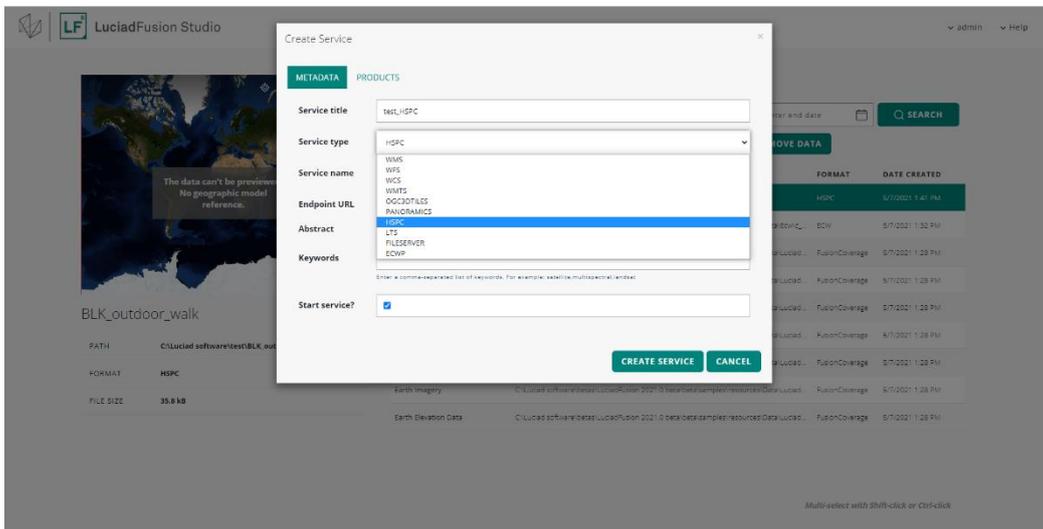


Figure 3: The new HSPC service type is available as an option when creating a new service in LuciadFusion.

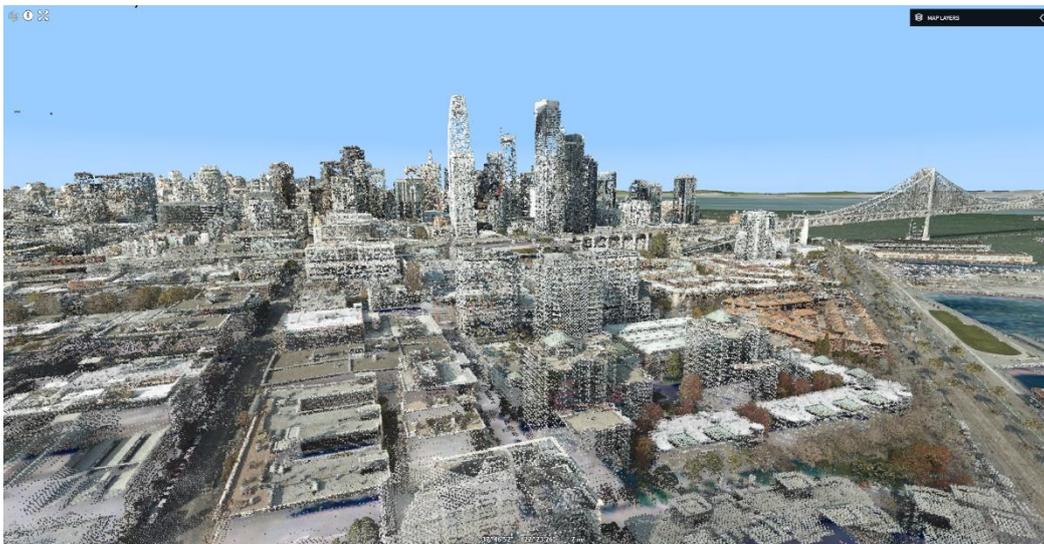


Figure 4: LuciadRIA can directly consume HSPC data served by LuciadFusion.

## Crawl and serve ECW data as ECWP

The ECW<sup>2</sup> imagery format provides exceptional compression while retaining the image's full visual quality. LuciadFusion has supported the ECW file format for many years. To serve these files, you could use the OGC WMS or WMTS service types. While this offers the desired visual quality and the benefit of interoperability, it does not feature the same exceptional compression and low storage requirement.

Therefore, LuciadFusion now also supports serving ECW data via the ECW Protocol (ECWP), as ECWP service type. You can find this capability in the Advanced Raster Connectors component, an option within the LuciadFusion Advanced Tier and included in the Pro Tier.

### Sample code to get you started

The new ECWP service type is illustrated via the integration into LuciadFusion studio. The LuciadFusion Studio end user guide has been updated and now explains how to use this service type.

The documentation on the LuciadFusion services and service types has been restructured and updated to reflect the changes.

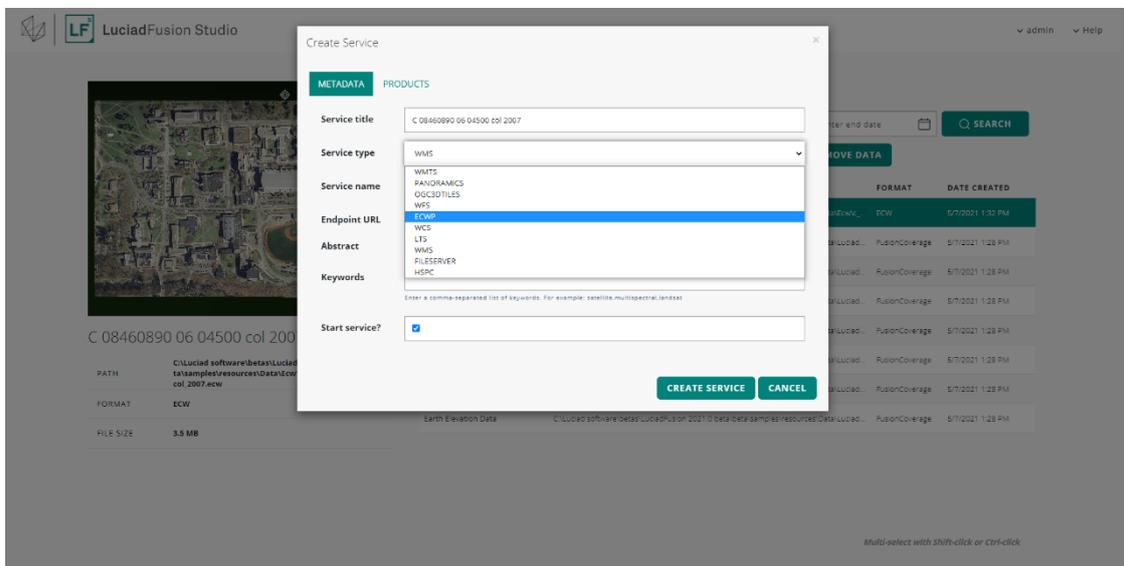


Figure 5: The new ECWP service type is available as an option when creating a new service in LuciadFusion.

## Add your own custom service type

LuciadFusion ships with built-in service types for serving geospatial data and support a wide range of clients. These service types include OGC service standards as well as Hexagon standards, like the abovementioned newly added HSPC and ECWP service types.

To provide even more flexibility in serving geospatial data, you can now also add your own service types to LuciadFusion. This feature allows you to use a custom protocol for serving geospatial data managed in LuciadFusion Studio. As a result, you now have unlimited options for getting your data to clients.

For example, you may want to combine some of the available analysis capabilities of LuciadFusion into a custom processing chain and offer that as a processing service. An example is the sample service that offers terrain analysis capabilities based on elevation data and returns the result as a map layer.

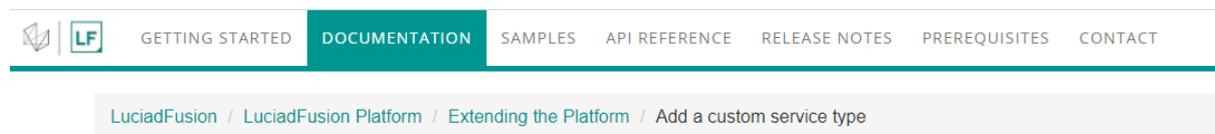
<sup>2</sup> <https://www.hexagongeospatial.com/products/power-portfolio/compression>

Or you may need to create a completely custom processing service, important for your application domain, based off some of the data sets that are managed via LuciadFusion. The return type of such a service is not limited to geospatial data or maps.

Once you have added your own service type to the platform using the new service configuration API, it is fully supported and integrated. LuciadFusion Studio users can set up custom services based on any data or products that are appropriate. Afterwards, the services can be monitored within the LuciadFusion Studio Services overview.

### Sample code to get you started

The implementation of the LuciadFusion TEA service sample offers an illustration of the new API for defining and adding custom service types. Furthermore, a how-to guide has been created explaining the addition of custom processing services: “Add a custom service type.”



## Add a custom service type

### Introduction

LuciadFusion ships with a multitude of built-in service types for serving geospatial data, supporting a wide range of clients. These service types include OGC standards such as WMS, WFS, OGC 3D Tiles, as well as Hexagon designed standards such as Luciad Panoramics and ERDAS APOLLO ECWP.

To provide even more flexibility in serving geospatial data, LuciadFusion offers the ability to add your own custom service types. This makes it possible to serve geospatial data managed in LuciadFusion Studio using a custom protocol, offering unlimited ways to get your data to clients.

In this tutorial we'll be looking at the required steps to add a custom service type to LuciadFusion. We'll also look at how these steps have been implemented in the SHP Quiz service sample, which illustrates how to add custom service types. This tutorial requires some basic understanding of the [Spring](#) framework.

### SHP Quiz service type

LuciadFusion ships with a sample that demonstrates how to add a custom service type. Since this tutorial uses the sample as an example, this section contains some background information on what this service type offers to users.

The SHP Quiz service type provides, as the name suggests, quizzes created from SHP files.

In LuciadFusion Studio you can create a SHP Quiz service that contains SHP data. When a user navigates to the endpoint of the service they will be presented with a list of quizzes, one quiz for every SHP file in the service.



Figure 6: A how-to guide explains step-by-step how to integrate your custom service type into the LuciadFusion Platform.

## Support for the Normaal Amsterdams Peil vertical datum

Amsterdam Ordnance Datum, or Normaal Amsterdams Peil (NAP)<sup>3</sup>, is a vertical datum. It was originally created for use in the Netherlands, but it is now used in large parts of Western Europe.

LuciadFusion now supports this vertical datum, as well as the associated EPSG reference EPSG:74154. As a LuciadFusion user, this just works for you. You can open, visualize, and use data in this reference or referring to this vertical datum.



Figure 7: One of the landmarks used for the NAP vertical datum is the church tower in Amersfoort (building data by 3dbag.nl).

## MrSID format update

LuciadFusion's support for imagery in the MrSID format has been updated to support generation 4 data files. In addition to the upgrade, the MrSID decoder now also includes support for multispectral imagery. This integrates seamlessly with the existing support for multi-band and multi-spectral images and image operators.

You can find this capability in the Advanced Raster Connectors component, which is an option within the LuciadFusion Advanced Tier and included in LuciadFusion Pro.

Note that MrSID is a proprietary format, and the third-party software component needed to decode the imagery no longer supports 32-bit Linux. As a result of an update to this library, LuciadFusion 2021.0 can no longer support decoding MrSID data on 32-bit Linux. Please contact us if you are deploying a LuciadFusion-based application or service on 32-bit Linux that uses MrSID data.

<sup>3</sup> [https://en.wikipedia.org/wiki/Amsterdam\\_Ordnance\\_Datum](https://en.wikipedia.org/wiki/Amsterdam_Ordnance_Datum)

<sup>4</sup> <https://www.spatialreference.org/ref/epsg/7415/>

## Other improvements

- Support for data in the NITF format has been improved. Nested elements are better supported in this release. You can find this capability in the Defense Standards component, an option within the LuciadFusion Pro Tier.
- When creating a new service, LuciadFusion Studio will automatically pre-select the most likely service type.
- The LuciadFusion OGC WMTS services now support the GetFeatureInfo operation. This operation can be used to retrieve attribute information about features included within the WMTS result. Note that the LuciadLightspeed WMTS client also supports this operation. Moreover, it is integrated by default into Lucy.
- LuciadFusion now supports PostgreSQL13. You can find this capability in the Database Connectors component, which is an option within the LuciadFusion Advanced Tier and included within the Pro Tier.
- The documentation on LuciadFusion services and service types has been restructured. There is now a dedicated documentation category where each LuciadFusion service is explained in a separate section.

## LuciadFusion Services

<p><b>CSW</b></p> <p>Query the data and services available in LuciadFusion.</p>	<p><b>ECWP</b> <small>NEW IN 2021.0</small></p> <p>Use an ECWP service to serve ECW and JPEG2000 data.</p>	<p><b>File Server</b></p> <p>HTTP File Server for geospatial data.</p>
<p><b>HSPC</b> <small>NEW IN 2021.0</small></p> <p>Use an HSPC service to serve Hexagon Smart Point Cloud data.</p>	<p><b>LTS</b></p> <p>Use an LTS service to serve elevation and LuciadFusion Coverage data.</p>	<p><b>OGC 3D Tiles</b></p> <p>Use an OGC 3D Tiles service to stream 3D geospatial content.</p>
<p><b>Panoramics</b></p> <p>Use a Panoramics service to serve panoramic image data.</p>	<p><b>WCS</b></p> <p>Use a WCS service to serve coverages.</p>	<p><b>WFS</b></p> <p>Use a WFS service to serve vector data.</p>
<p><b>WMS</b></p> <p>Use a WMS service to serve map images.</p>	<p><b>WMTS</b></p> <p>Use a WMTS service to serve map tiles.</p>	

## LuciadFusion Platform

<p><b>Extending the Platform</b></p> <p>Extend Platform functionality through configuration and development.</p>	<p><b>Deployment</b></p> <p>Deploy your LuciadFusion application.</p>	<p><b>Maven</b> <small>NEW IN 2021.0</small></p> <p>Use LuciadFusion with Maven.</p>
<p><b>Multi-node</b></p> <p>Combine and run several LuciadFusion instances.</p>		

*Figure 8: The structure of the LuciadFusion documentation has been improved. A dedicated section on LuciadFusion services and service types has been added.*



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