

# ArcGIS Reality for ArcGIS Pro FAQ

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## Overview

### 1. *What is Reality mapping?*

Reality mapping is the process of creating accurate digital depictions of the physical world using images, lidar, or both.

When using ArcGIS Reality for ArcGIS Pro, the workspace area within ArcGIS Pro is called a Reality mapping workspace.

### 2. *What is ArcGIS Reality?*

ArcGIS Reality is a family of products for site, city, and countrywide Reality mapping supporting input imagery from drones to full frame multi-camera arrays mounted on survey airplanes or satellites – all using the ArcGIS Reality engine:

- **ArcGIS Reality for ArcGIS Pro**—an extension to ArcGIS Pro, allowing users to input images from drones or crewed aircraft to generate 3D outputs for reality mapping.
- **ArcGIS Reality Studio**—a focused application for reality mapping from aerial images for entire cities and countries. A map-centric intuitive interface enables high production efficiency to deliver survey-grade representations of reality.
- **Site Scan for ArcGIS**— Esri's online cloud-based end-to-end reality mapping software for drone imagery, designed to simplify drone program management, imagery data collection, processing, and analysis.
- **ArcGIS Drone2Map**—an intuitive desktop application focused on reality mapping from drone imagery, enabling offline processing and in-the-field rapid mapping.

### 3. *Who is the target User Community for ArcGIS Reality?*

ArcGIS Reality provides processing, modeling, tools, and capabilities for mapping professionals who focus on the following areas:

- Photogrammetric processing of overlapping image collections acquired from drone and aerial platforms.
- Creation of 2D and 3D products from drone and aerial imagery, including:
  - Digital Surface Models (DSMs)
  - True Ortho mosaics
  - Point clouds
  - 2D and 3D Meshes

- Photogrammetric processing of satellite imagery and scanned aerial photographs
- Advanced feature interpretation and measurements from imagery
- Advanced image and spatial data analysis workflows for machine learning and feature extraction

ArcGIS Reality is designed for photogrammetric mapping and product generation in operational environments.

#### **4. What is included in ArcGIS Reality Desktop?**

ArcGIS Reality includes:

- The *ArcGIS Reality Studio* standalone app. No other ArcGIS products are required to use ArcGIS Reality Studio.
- The *ArcGIS Reality for ArcGIS Pro* extension. The extension requires a Standard *ArcGIS Pro* license.

#### **5. What is ArcGIS Reality for ArcGIS Pro?**

ArcGIS Reality for ArcGIS Pro is an extension that complements ArcGIS Pro's ortho mapping capability with high-fidelity 2D and 3D product generation. With the ArcGIS Reality for ArcGIS Pro extension enabled, you will be able to generate source resolution DSMs, true orthos, 2.5D DSM meshes, high-density point clouds, and realistic 3D meshes from drone and digital aerial imagery.

## Licensing

#### **6. What is required to use ArcGIS Reality for ArcGIS Pro?**

You will need an ArcGIS Reality Desktop license and a Standard or Advanced ArcGIS Pro license to use ArcGIS Reality for ArcGIS Pro.

An ArcGIS Reality Desktop license provides access to both ArcGIS Reality for ArcGIS Pro and ArcGIS Reality Studio.

To license ArcGIS Reality for ArcGIS Pro, you will need to do the following:

1. Install and license ArcGIS Reality Studio.
2. Install ArcGIS Reality for ArcGIS Pro.

Ask your system administrator for assistance with installing, setting up, and administering ArcGIS Reality Desktop.

### **7. Which ArcGIS Pro license types are supported by ArcGIS Reality for ArcGIS Pro?**

The following license types are supported by ArcGIS Reality for ArcGIS Pro:

1. Single Use license
2. Concurrent Use license
3. Named User license

### **8. Is ArcGIS Reality Studio required for machines with the ArcGIS Reality for ArcGIS Pro extension?**

You need to install *ArcGIS Reality Studio* before installing the *ArcGIS Reality for ArcGIS Pro* extension. After installation of both *ArcGIS Reality Studio* and *ArcGIS Reality for ArcGIS Pro* is complete, *ArcGIS Reality Studio* can be removed, if desired, and ArcGIS reality for ArcGIS Pro will remain enabled.

## System Requirements and Setup

### **9. What are the system requirements for ArcGIS Reality for ArcGIS Pro?**

A high-performance dual-core computer with 64 GB of RAM (at minimum) and solid-state storage is recommended to run ArcGIS Reality for ArcGIS Pro. Please refer to the [system requirements](#) in the reference help for more information.

A GPU is not required but strongly recommended.

### **10. Do both ArcGIS Reality Studio and ArcGIS Reality for ArcGIS Pro need to be installed on the same machine?**

Yes, ArcGIS Reality Studio needs to be installed first in order to license and activate ArcGIS Reality for ArcGIS Pro.

After the installation process is completed, the ArcGIS Reality Studio app can be removed, if desired.

## How does Pro Reality work with ArcGIS Pro and Ortho mapping?

### **11. Will ArcGIS Reality for ArcGIS Pro work with Pro 3.0 and earlier?**

No. ArcGIS Reality for ArcGIS Pro is compatible with Pro 3.1 and later.

### **12. How do Reality mapping and Ortho mapping work together?**

Reality mapping and Ortho mapping are compatible in ArcGIS Pro. Both capabilities share functionality such as block adjustment, have similar workflows, and have a common interface and user experience. Existing Ortho mapping drone and aerial image workspaces can be [converted](#) to Reality mapping workspaces, and vice versa. Projects are handled similarly in the

ArcGIS Pro environment, where all the pertinent imagery and adjustment data, generated products, and other meta-information associated with the project are organized and managed.

Differences between Reality mapping and Ortho mapping are mostly in the supported types of imagery and the types of products generated. Review the comparison table below:

Options		Platform		
		Ortho Mapping (OM)	Reality Mapping (RM)	Reality Studio (RS)
Sensor Data Supported	Drone	✓	✓	
	Aerial Digital	✓	✓	✓
	Aerial Scanned	✓		
	Satellite	✓		
Image Alignment	Measure Fiducials	✓		
	Block Adjustment	✓	✓	✓
Derived Products	DSM (OM tech)	✓		
	DSM (RM tech)		✓	
	DTM	✓		
	Traditional Ortho	✓		
	True Ortho		✓	✓
	DSM Mesh		✓	✓
	3D Point Cloud		✓	✓
	3D Mesh		✓	✓

**13. Can I convert a satellite or aerial scanned Ortho Mapping workspace to a Reality Mapping workspace?**

No. In Pro 3.1, only conventional drone and aerial digital Ortho Mapping workspace types can be converted to Reality Mapping workspaces to create Reality products.

**14. Will I still have access to my previously created Ortho mapping projects after enabling ArcGIS Reality for ArcGIS Pro?**

Yes. Ortho mapping and Reality mapping are compatible.

**15. I have a digital aerial Ortho mapping project that I would like to convert to a Reality mapping project. Will my previously created Ortho mapping products be carried over during the conversion process?**

No. Reality mapping and Ortho mapping use different underlying methodologies to generate products and manage the associated meta-information. Reality mapping and Ortho mapping products are not synonymous, both types of products have unique characteristics to support

their mapping and customer requirements. Because of this, each suite of products needs to be generated from their specific Reality mapping or Ortho mapping workspace.

**16. Can I import a project from ArcGIS Reality Studio into ArcGIS Reality for ArcGIS Pro or vice versa?**

Not at this time.

As addressed above, Reality mapping and Ortho mapping products are processed and managed differently within projects. The respective projects need to be maintained in order to update and maintain products, which are used to update landbase layers and GIS layers.

An Ortho Mapping workspace can be converted to a Reality Mapping workspace, which establishes a Reality mapping or Ortho mapping project.

**17. When do I use ArcGIS Reality for ArcGIS Pro versus ArcGIS Reality Studio?**

Use *ArcGIS Reality for ArcGIS Pro* when you already have ArcGIS, or are planning to use ArcGIS in conjunction with Reality mapping, such as updating existing landbase layers (roads, development, etc.). This approach may provide a more integrated experience for your entire project.

Use *ArcGIS Reality Studio* if you are only doing photogrammetric processing and do not intend to use GIS. *Reality Mapping Studio* is optimized for production environments in photogrammetric mapping organizations that produce base products—such as true orthos, 3D meshes, etc. These products are shared with other agencies, like local, state/provincial, and national government organizations.

**18. Is ArcGIS Reality for ArcGIS Pro the same as Ortho mapping?**

No. *ArcGIS Reality for ArcGIS Pro* includes Ortho mapping. Ortho mapping also processes satellite imagery and scanned aerial data.

## Technical and How-to

**19. Which sensor data types does ArcGIS Reality for ArcGIS Pro support?**

ArcGIS Reality for ArcGIS Pro includes Ortho mapping and Reality mapping. Using Reality Mapping, only drone and aerial digital imagery types are supported in this release. Using Ortho mapping, drone, aerial digital, aerial scanned, and satellite images are supported.

**20. What data types are supported by ArcGIS Reality for ArcGIS Pro?**

All the common imagery data types supported by ArcGIS Pro are supported, such as TIFF and GeoTIFF, MrSID, JPG, Erdas Imagine, etc.

**21. How do the Shared Advanced Settings affect the quality and processing time to produce various Reality mapping products?**

The tables below show the potential impact of various Quality and Scenario options on creating derived products, at different resolutions, for different types of sensors. See reference help for more details.

**Digital Aerial Processing**

		Scenario	Default			
		Quality	Ultra	High	Medium	Low
<b>Digital Aerial Data</b>	<b>2D Products</b>	DSM	1 x source resolution	2 x source resolution	4x source resolution	8x source resolution
		True Ortho	1 x source resolution	2 x source resolution	4x source resolution	8x source resolution
		DSM Mesh	Very high levels of detail	High level of detail	Medium level of detail	Low level of detail
	<b>3D Products</b>	Point Cloud	Maximum point Density	Approximately 66% reduction in point density	Approximately 91% reduction in point density	Approximately 98% reduction in point density
		3D Mesh	Maximum level of detail	High level of detail	Medium level of detail	Low level of detail
	<b>Processing Duration</b>		<b>Max processing time</b>	<b>~79% less processing time</b>	<b>~92% less processing time</b>	<b>~98% less processing time</b>

**Drone Processing**

		Scenario	Default			
		Quality	Ultra	High	Medium	Low
<b>Drone Data</b>	<b>2D Products</b>	DSM	1 x source resolution	1 x source resolution	4 x source resolution	8 x source resolution
		True Ortho	1 x source resolution	1 x source resolution	4 x source resolution	8 x source resolution
		DSM Mesh	Very high level of detail	Very high level of detail	Medium level of detail	Low level of detail
	<b>3D Products</b>	Point Cloud	Maximum point density	Approximately 50% reduction in point density	Approximately 90% reduction in point density	Approximately 97% reduction in point density
		3D Mesh	Maximum level of detail	~30% less level of detail	~30% less level of detail	~60% less level of detail
	<b>Processing Duration</b>		<b>Max processing time</b>	<b>~50% less processing time</b>	<b>~87% less processing time</b>	<b>~92% less processing time</b>

## 22. Does Esri provide Reality mapping sample data to use for testing and training?

Yes, sample data supporting Reality mapping product generation tutorials is provided.

- [Sample drone data for ArcGIS Reality](#)
- [Sample aerial data for ArcGIS Reality 2D Product Generation](#)
- [Sample aerial data for ArcGIS Reality 3D Product Generation](#)

## 23. Do I need to use a third-party aerial triangulation package for block adjustment?

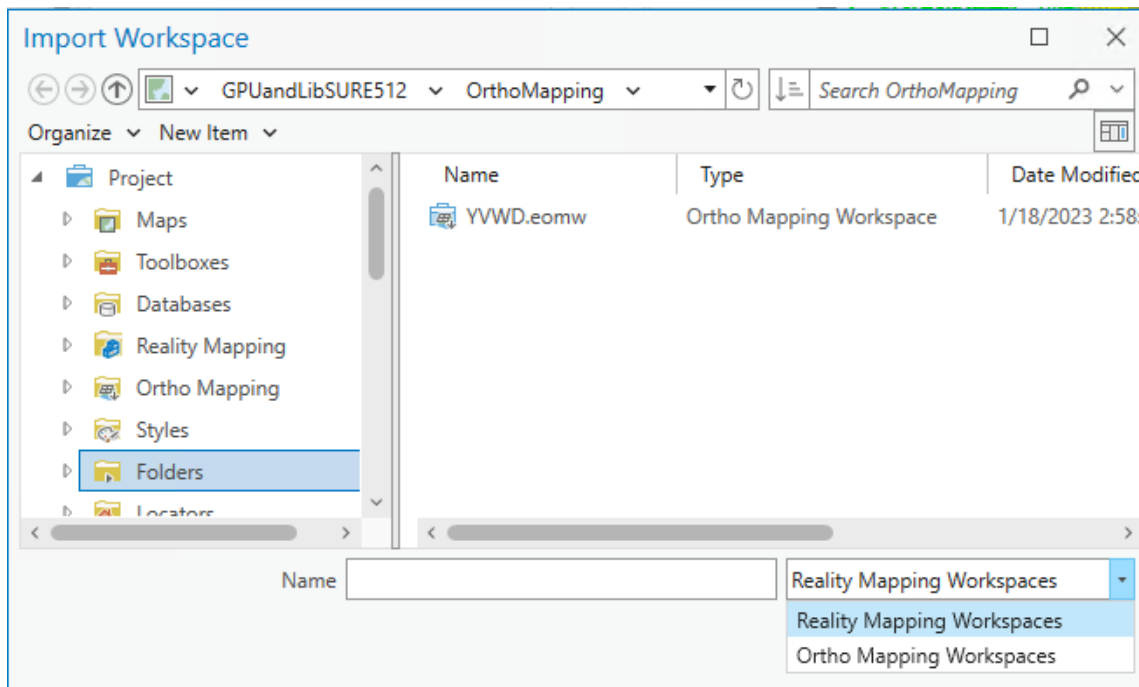
No. One of the key benefits of ArcGIS Reality is that a complete end-to-end mapping workflow is provided.

## 24. Why are some icons within the Products group greyed out after block adjustment?

When creating a Reality Mapping workspace, the **Scenario type** is directly tied to a **Product category**. For example, if the **Scenario type** is set to **Oblique**, the DSM, True Ortho, and DSM Mesh will be greyed out. This is because ArcGIS Pro assumes only 3D products are desired based on the selection of the Oblique **Scenario type**.

## 25. Why can't I select my workspace when using Import Workspace/Add Workspace from the Imagery tab in the ArcGIS Pro ribbon?

Make sure the workspace type (bottom right corner) matches the workspace you select.



**26. Why do I get the error “the surface reconstruction SDK is not installed or cannot be found”?**

To run ArcGIS Reality for ArcGIS Pro, the ArcGIS Pro Reality Extension setup file needs to be downloaded and installed to support processing. You will see this error if the setup file is not installed. Ask the relevant personnel within your organization for access to this installer if it is not readily available.

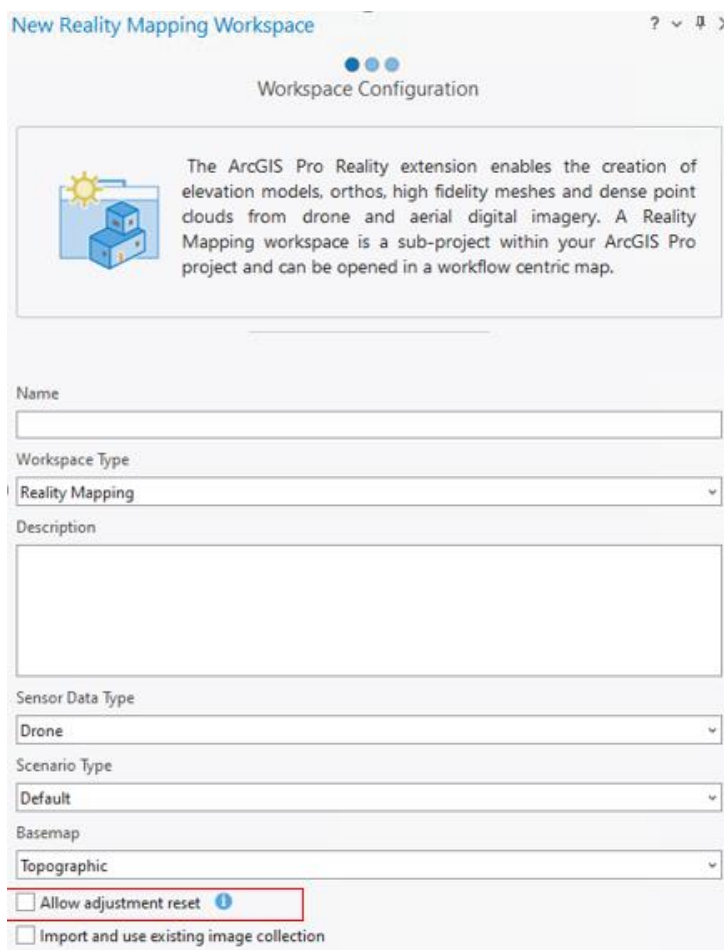
**27. Are relative paths to the imagery data supported?**

Not at this time. The absolute paths to the imagery are required.

**28. Why is the Reset button in the Adjust group always greyed out in a Reality Mapping workspace?**

The workspace you created does not support adjustment reset. You need to create a workspace that allows Reset in order to use this function.

**Note:** the processing will take longer if you create a workspace with Reset capability.



**New Reality Mapping Workspace** ? v f x

Workspace Configuration

The ArcGIS Pro Reality extension enables the creation of elevation models, orthos, high fidelity meshes and dense point clouds from drone and aerial digital imagery. A Reality Mapping workspace is a sub-project within your ArcGIS Pro project and can be opened in a workflow centric map.

Name

Workspace Type  
Reality Mapping

Description

Sensor Data Type  
Drone

Scenario Type  
Default

Basemap  
Topographic

Allow adjustment reset ⓘ

Import and use existing image collection



**29. Why are my paths broken after renaming my Reality Mapping workspace?**

This is an expected behavior. You can go to Maps container in Catalog pane and delete the map with the original name. Opening the workspace will now fix the path issue.

Optionally, you can right click on the group in the TOC, choose Synchronize.

**30. Where do I find the generated 2D Products I selected in the Advanced Product Settings?**

The 2D Products are located in Catalog pane > Folders > RealityMapping > Workspace\_name.ermw > Products.

**31. What are the suggested spatial reference settings to optimize 3D mesh products?**

Add a local XY and Z coordinate system when creating the Reality Mapping workspace.

**32. What is the process to share 3D meshes online?**

You can use your usual [workflows](#) to [share products online](#). All products are compatible with ArcGIS and ready to be shared with ArcGIS Image Online, and ArcGIS Image Server (ArcGIS Enterprise).

**33. Will Oriented Imagery tools be officially supported in Pro?**

Oriented Imagery is currently community supported. At this time, we are working to integrate Oriented Imagery into a core ArcGIS product.