RoomPlan for Unity Kit Documentation

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Plugins

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Overview

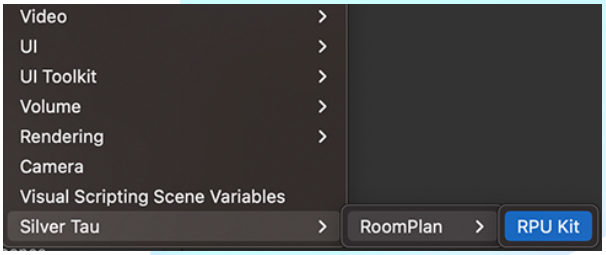
Features

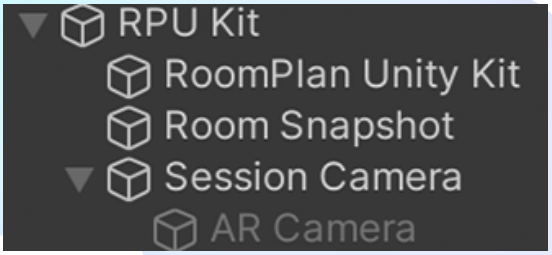
Feature	Description
RoomPlan Unity Kit	The main component that creates the connection between the Unity engine and the RoomPlan framework.
Session Camera	A component that communicates with the framework and enables the camera to navigate in real space.
Captured Room Snapshot	A component that interacts with the framework and builds scanned 3D objects in real time.
Room Builder	A component that allows you to build a room from the specified parameters.
RoomPlan Object	A component that has the main characteristics of the scanned object.
RoomPlan Unity Kit Settings	Sctiptable object that has characteristics for configuring RoomPlan for Unity Engine.

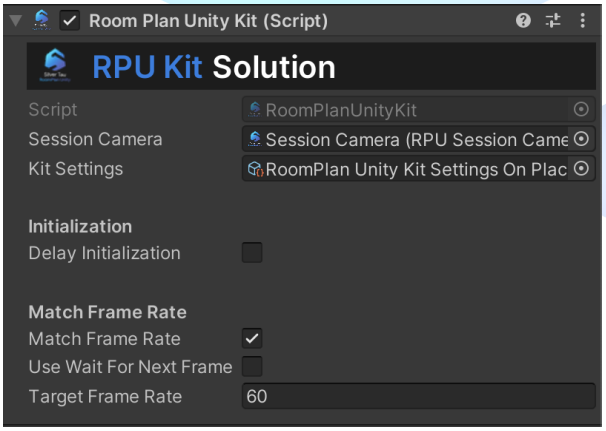
Adding a RPU (RoomPlan Unity Kit)

To add a basic module to a scene, you need to do the following:

1. In the scene hierarchy, add a component from the quick menu (or manually).
2. In the Component inspector, add the basic elements.







Features

RoomPlan Unity Kit

The main component that creates the connection between the Unity engine and the RoomPlan framework.

The RoomPlan Unity Kit framework uses the RoomPlan API, device sensors, trained ML models, and RealityKit rendering capabilities to render the physical environment of an indoor room in the Unity Engine. For example, the framework checks the device's camera image and LiDAR data to identify walls, windows, openings, and doors. The framework also receives functionality from RoomPlan, which recognizes room features, furniture, and appliances, such as a fireplace, bed, or refrigerator, and provides this information to the app.

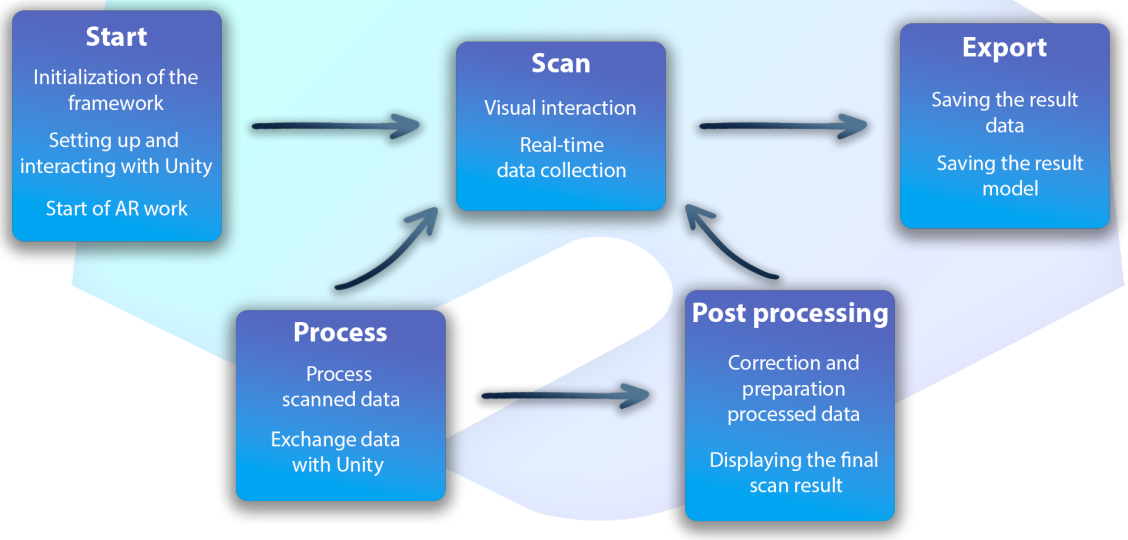
To start the capture, the app presents a view (RoomCaptureView) through which the user can see their room in augmented reality. The view displays virtual cues as the user moves around the room:

- Real-time graphical overlays are displayed on top of physical structures in the room to show the progress of the scan.
- If the framework requires a certain type of device movement or perspective to complete the scan, instructions are displayed in the interface to explain how to position the device.

When the program determines that the current scan is complete, a smaller version of the scanned room is displayed in the window for user approval.

Architecture

The following diagram shows framework architecture.



This diagram illustrates how the framework you use provides you or your development clients with an integrated and consistent development experience for building applications and experiences.

Next, we will describe the functionality and its purpose.

Actions

Use this to create some dynamic functionality in your scripts. Unity Actions allow you to dynamically call multiple functions.

Property	Description
didStart	An action called when the framework is initialized. With this action, you can track the status of the framework initialization.
didEnd	An action that is called when a framework is disposed of. With this action, you can track the status of the disposed of framework and you can given it additional actions.
captureSessionDidStart	Called when the scanning session starts.
captureSessionDidEnd	Called when the scan session ends.
captureSessionInstruction	Provides scan session instructions for the user. **Determining a coaching recommendation:** **normal** - An instruction that indicates scanning proceeds normally and the user needs no coaching. **moveCloseToWall** - An instruction that requests the user move closer to the wall. **moveAwayFromWall** - An instruction that requests the user move further from the wall. **turnOnLight** - An instruction that requests the user increase the amount of light in the room. **slowDown** - An instruction that requests that the user move slower. **lowTexture** - An instruction that indicates the framework doesn't detect distinguishable room features.
roomSnapshot<**String**>	Called when a session sends a snapshot to the Unity Engine. <**String**> - A data snapshot that is sent in JSON format. **The data snapshot has the following structure:** `{ "surfaces": [ { "id": string, "lang": new bool [4], "confidence": enum, "transform": Matrix4x4, "category": enum, "scale": Vector3 } ], "objects": [ { "id": string, "confidence": enum, "transform": Matrix4x4, "category": enum, "scale": Vector3 } ] }`
captureStatus<**CaptureStatus**>	Called when the session status is changed.

	<**CaptureStatus**> is an enum of the session status.
	
	`enum CaptureStatus`
	`{`
	`None = 0,`
	`Processing = 1,`
	`Paused = 2,`
	`Scanning = 4,`
	`}`

NOTE: The component has more actions, but some are still under development and will be available in future versions.

Properties

Property	Description
delayInitialization	If the parameter is enabled, initialization will occur only when you initialize the framework manually.
matchFrameRate	This helps to optimize the performance of the application and the framework, as well as to set the desired frame rate.
CurrentCaptureStatus	A parameter that informs about the current status of the session.
CurrentSessionCamera	An option that lets you set or get the current session camera.
CurrentRoomPlanUnityKitSettings	An option that allows you to set or get the current settings of the framework.
ApplicationTargetFrameRate	Value that sets the target frame rate in real time. *If you use useWaitForNextFrame.*
RPUSupport	Values to check for RoomPlan support.
RPUActive	An option that allows you to set or get the current status of the session, whether it is active.
RPUCaptureSessionActive	An option that allows you to set or get the current scanning status of the session, whether it is active.

Functions

Property	Description
Initialize	A method that initializes a framework.
Dispose	A method that disposes of a framework.
UpdateRPUKitSettings	A method that updates the main RoomPlan settings in real time. By updating **RoomPlan Unity Kit Settings**, all settings will be applied
StartCaptureSession	A method that starts a RoomPlan scanning session.

StopCaptureSession	A method that stops a RoomPlan scanning session.
ResumeCaptureSessionScanning	A method that resumes a RoomPlan scanning session. After using this method, the process of transferring snapshot data and creating objects in augmented reality continues.
PauseCaptureSessionScanning	A method that paused a RoomPlan scanning session. After using this method, the process of transferring snapshot data and creating objects in augmented reality is suspended.
SaveRoomPlanExperience	A method that allows you to preserve the scanning experience. To save the data, the last snapshot of the experience in augmented reality is taken. <param name="**scanName**">Scan name.</param> <param name="**directoryName**">The name of the directory. The main directory for saving files.</param>
TrySaveRoomPlanExperience	A method that allows you to save the scanning experience and returns a Boolean value for the success of the operation. To save the data, the last snapshot of the experience in augmented reality is taken. <param name="**scanName**">Scan name.</param> <param name="**directoryName**">The name of the directory. The main directory for saving files.</param>
Screenshot	A method that allows you to take a screenshot of an experience in augmented reality. **Example of use:** `RoomPlanUnityKit.Screenshot();`
ScreenshotShare	A method that allows you to share a screenshot. The last screenshot taken will be used for the share method. **Example of use:** `RoomPlanUnityKit.ScreenshotShare();`
StartScreenRecorder	A method that allows you to start recording a video screen. The recording process takes place using RPScreenRecorder specially customized for the RoomPlan for Unity Kit. **Example of use:** `RoomPlanUnityKit.StartScreenRecorder();`
StopScreenRecorder	A method that allows you to stop recording a video screen. **Example of use:** `RoomPlanUnityKit.StopScreenRecorder();`

Session Camera

Device cameras and their configuration are an essential function of most AR apps. A component that communicates with the framework and enables the camera to navigate in real space.

The Session Camera is fully synchronized with the ARKit camera and transmits real-time positions, projection, and all additional settings for a complete immersion in augmented reality.

Properties

Property	Description
ARCamera	The current session camera.
CurrentARCamera	Customize the current session camera.
angle	An additional option that allows you to adjust the camera angle.
scale	An additional option that allows you to adjust the camera scale.
shearingX	An additional option that allows you to adjust the camera shearing along the X-axis.
shearingY	An additional option that allows you to adjust the camera shearing along the Y-axis.
translationX	An additional option that allows you to adjust the camera translation along the X-axis.
translationY	An additional option that allows you to adjust the camera translation along the Y-axis.

Functions

Property	Description
SetNewCamera	An additional way to install a new camera. This method helps you change the main camera of a session to another one if you need it.
UpdateCameraTRS	A method that updates the position, rotation, and scale of the camera in real time. The main purpose of the method is to stabilize and parallelize the camera's broadcast data frame by frame.

Captured Room Snapshot

This class is used only when creating an augmented reality session. A component that interacts with the framework and builds scanned 3D objects in real time. With the help of additional methods, the process of creating objects that are rendered in Unity is implemented and allows you to take separate data for each object during the experience.

This structure represents the processed-post-processed result of the room-scanning process.

Your app receives an instance of this structure through:

- With the room details, an app can provide custom features, such as rendering the room and enabling the user to modify the position of its objects.

Properties

Property	Description
container	Place the parent object where the scanned objects will be added.
prefabCapturedRoomObject	Prefab Captured Room Object. This object is used to create scanning objects in augmented reality.
ObjectContainer	Place, the parent object to which the scanned components of the object type are added.
SurfaceContainer	Place, the parent object to which the scanned components of the surface type are added.
GetRoomObjects	Get a list of components of type object. This is a list of objects that were scanned during the session.
GetRoomSurfaces	Get a list of components of type surface. This is a list of surfaces that were scanned during the session.
createFloor	Enable or disable the variable to automatically create a floor. The floor is created by finding a point cloud and triangulating it.
RoomBounds	A variable that returns the bounds of the room. Only during the experience, a session in augmented reality.
GetRaycastPlane	A variable that returns the raycast of the room. Only during the experience, a session in augmented reality.

Functions

Property	Description
RoomSnapshot	A method that creates objects from a real-time snapshot. Only during the experience, a session in augmented reality.
EditorRoomSnapshot	A method that creates objects from a snapshot in the Unity Engine editor.
Dispose	A method that disposes of a Captured Room Snapshot.

Room Builder

This class can be used at any time, except during an augmented reality session (experience). A component that allows you to build a room from the specified parameters. With the help of additional methods, it implements the process of creating objects that are visualized in Unity and allows you to take separate data for each object during the experience.

Your app generates a detailed captured room object on the raw data. Your app can then inspect or modify this data before exporting the scanned room to a USDZ file or JSON snapshot.

Properties

Property	Description
container	Place the parent object where the scanned objects will be added.
prefabRoomPlanObject	Prefab RoomPlan Object. This object is used to create scanning objects.
ObjectContainer	Place, the parent object to which the scanned components of the object type are added.
SurfaceContainer	Place, the parent object to which the scanned components of the surface type are added.
GetRoomObjects	Get a list of components of type object. This is a list of objects that were loaded from the input snapshot.
GetRoomSurfaces	Get a list of components of type surface. This is a list of surfaces that were loaded from the input snapshot.
createFloor	Enable or disable the variable to automatically create a floor. The floor is created by finding a point cloud and triangulating it.

Functions

Property	Description
CreateRoomFromSnapshot	A method that creates objects from a real-time snapshot. The creation process will take place from the uploaded input snapshot.
Dispose	A method that disposes of a Captured Room Snapshot.

RoomPlan Object

A component that has the main characteristics of the scanned object.

This abstract class is used to serve and create your own objects. A component that has the main characteristics of the scanned object.

The structure of the object:

RoomPlanObject:
— id;
— confidence:
  - unknown;
  - low;
  - medium;
  - high;
— type:
  - Unknown;
  - Object;
  - Surface;
— category:
  - unknown;
  - bathtub;
  - bed;
  - chair;
  - dishwasher;
  - fireplace;
  - oven;
  - refrigerator;
  - sink;
  - sofa;
  - stairs;
  - storage;
  - stove;
  - table;
  - television;
  - toilet;
  - washerDryer;
  - window;
  - wall;
  - opening;
  - door;
  - doorOpen;
  - doorClose;
  - floor;
  - ceiling;
— size;
— InitObject(Vector3, Quaternion, Vector3);
— UpdateObject(Vector3, Quaternion, Vector3);
— RemoveObject();

Properties

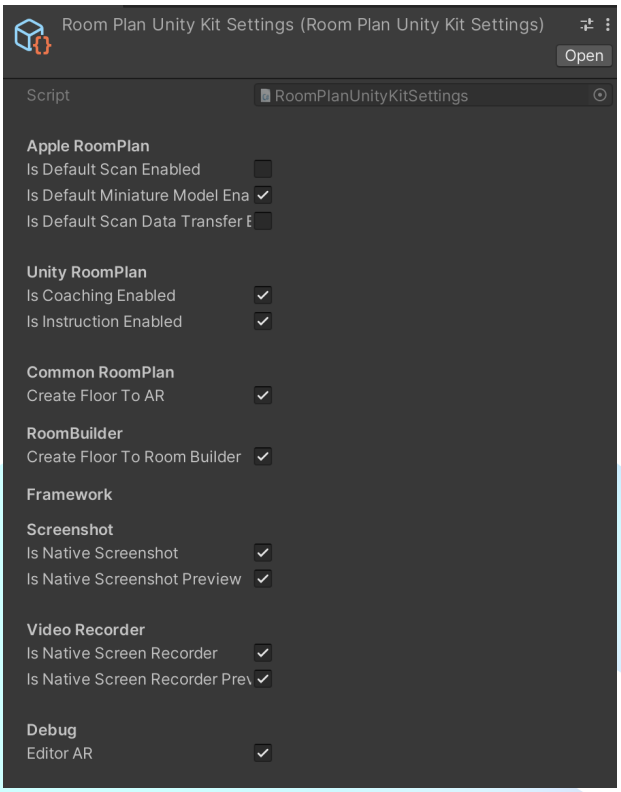
Property	Description
id	A unique object identifier.
confidence	The state of the scanned object.
type	Type of the scanned object.
category	The category of the scanned object.
size	The actual size of the scanned object.

Functions

Property	Description
InitObject	An abstract method that is executed when an object is initialized and passes certain data.
UpdateObject	An abstract method that is executed when an object is updated and passes certain data.
RemoveObject	An abstract method that is executed when an object is removed and passes certain data.

RoomPlan Unity Kit Settings

Scriptable object that has characteristics for configuring RoomPlan for Unity Engine.



Properties

Property	Description
isDefaultScanEnabled	Enable or disable the standard RoomPlan API solution.
isDefaultMiniatureModelEnabled	Turn on or off the 3D mini-model for the default scan view.
isDefaultScanDataTransferEnabled	Enables/disables the transmission of scan data in the default mode.
isCoachingEnabled	Turn the coaching on or off for a view session.
isInstructionEnabled	Turn the instructions on or off for a view session.
createFloorToAR	Enable or disable the variable to automatically create a floor during an AR session.
createFloorToRoomBuilder	Enable or disable the variable to automatically create a floor when RoomBulder is running (outside of an AR session).
isNativeScreenshot	Turn the screenshot feature on or off.
isNativeScreenshotPreview	Turn the screenshot preview feature on or off.
isNativeScreenRecorder	Turn the screen recorder feature on or off.
isNativeScreenRecorderPreview	Turn the screen recorder preview feature on or off.
editorAR	Turn on or off the ability to edit a scan in the Unity Engine Editor.