Decentraland

Decentraland is made up of *parcels* of LAND, each 16 meters by 16 meters. A *scene* is an experience that is built on one or several parcels.

Scenes are displayed one next to the other and players can freely walk from one to the other. Each scene is its own contained little world, items from one scene can’t extend out into another scene, and the code for each scene is sandboxed from all others.

There are two tools you can use for creating interactive Decentraland scenes:

* **The Builder**: a simple *drag and drop* editor. No coding required, everything is visual and many default items are at your disposal to use.
* **The Decentraland SDK**: write code to create your scene. This gives you much greater freedom and is a lot more powerful.

# Builder

The Builder is a simple visual editor tool that lets you create and publish Decentraland scenes.

The Builder is an on-line tool. It runs on the browser, you don’t need to install anything, simply visit [builder.decentraland.org](https://builder.decentraland.org/).

## Scene size

Scenes in Decentraland occupy one or several adjacent LAND parcels. Each LAND parcel measures 16x16 meters. In our application we have used screen size of 5X5.

**Note**: The Builder currently can only create rectangular-shaped scenes. To create an irregularly-shaped scene, you must use the SDK.

You can edit the size of an existing scene by clicking the *pencil icon* next to the scene name and then changing the number or rows and columns.

## Set the ground

The scene’s ground can use various different textures. You can find these in the different themed asset packs in the item menu. Search You can select the item according to your requirement.

## Add items

Navigate the themed asset pack categories on the menu on the right to find different items that you can place on your scene. You can search with the name to filter. Along with inbuilt items you can add your own custom models into builder by creating own asset pack follow steps from link [create custom asset packs](https://docs.decentraland.org/builder/import-items/)

To place an item:

* Click and drag the item to a specific location in the scene.
* Click on the item in the menu, it will appear in a random location in the scene.

## Position items

Click and drag a selected item to move it freely around the scene at ground level.

To move an item with more precision, use the *Move tool*, on the top menu. Each arrow lets you move the item in a single axis at a time. With this tool you can also position things above the ground level.

To rotate an item, select the *Rotate tool* on the top menu. A gizmo appears on the selected item, and you can use each of the hoops to rotate the item on one axis at a time.

To make an item larger or smaller, select the *scale* item on the top menu, then click on the center of the gizmo and drag in or out. This tool also lets you stretch an item in a single axis to change its proportions, to do this click on one of the axes of the gizmo and drag it.

Tip: To have greater precision while moving, rotating or scaling an item, press and hold the *Shift* key while making adjustments.

To delete an item from the scene, select it and click the *Delete* tool.

To duplicate an item, select it and click the *Duplicate* tool. The new item will be perfectly overlapping the original.

To select multiple items at the same time, press and hold the *Control* key while selecting them. You can then move, rotate, scale, duplicate or delete all of them in a single action.

# SDK

The Decentraland SDK is a powerful tool that lets you create scenes by writing code.

## Install the CLI

To get started, install the Command Line Interface (CLI).

Install Node.js(version 14 or above) before installing cli. To install the CLI, run the following command in your command line tool of choice:

**npm install –g decentraland**

## Create your first scene

Create a new scene by going to an *empty folder* and running the following command line command:

**dcl start**

The dcl init command will prompt you about what kind of project to create. Select Scene.

Preview the 3D scene in your browser by running the following command in that same folder:

**dcl start**

## Edit the scene

Open the src/game.ts file from your scene folder with the source code editor of your choice.

Create a new folder under your scene’s directory named /models. Extract the downloaded file and place all of its contents in that folder. Note that there are several files that make up the 3D model, all of them must be in the same path.

To add new entity to your scene

**let** newEntity**=** **new** Entity() // Create an entity

newEntity.addComponent(**new** GLTFShape("models/avocado.gltf")) // add component to the entity by attaching your downloaded model

newEntity.addComponent( **new** Transform({

position: **new** Vector3(3, 1, 3),

scale: **new** Vector3(10, 10, 10)

}) ) // use vector properties to adjust the entity position

engine.addEntity(newEntity) // add your just created entity to the engine

Here are a few tips to get great 3D models that you can use in a Decentraland scene:

* Build a scene in the Decentraland [Builder](https://builder.decentraland.org/) and export it, together with all its assets, to keep working on it with the SDK.
* Download all the 3D assets available in the Builder from [this repo](https://github.com/decentraland/builder-assets/tree/master/assets)
  + [SketchFab](https://sketchfab.com/)
  + [Clara.io](https://clara.io/)
  + [Archive3D](https://archive3d.net/)
  + [SketchUp 3D Warehouse](https://3dwarehouse.sketchup.com/)

Entity Position

You can set the *position*, *rotation* and *scale* of an entity by using the Transform component. This can be used on any entity, which can also a primitive shape component (cube, sphere, plane, etc) or a 3D model component (GLTFShape). Use link [Set Entity positions | Decentraland](https://docs.decentraland.org/development-guide/entity-positioning/) to learn more about positioning entity.

# Sounds

Sound is a great way to provide feedback to player actions and events, background sounds can also give your scene more context and improve the player’s immersion into it.

Supported sound formats vary depending on the browser, but it’s recommended to use *.mp3*.

*.wav* files are also supported but not generally recommended as they are significantly larger.

Basically we are using sound feature on door open and close events. Use link to know more about adding sounds [Sounds | Decentraland.](https://docs.decentraland.org/development-guide/sounds/)

# Move entities

To move, rotate or resize an entity in your scene, change the *position*, *rotation* and *scale* values stored in an entity’s Transform component incrementally, frame by frame. This can be used on primitive shapes (cubes, spheres, planes, etc) as well as on 3D models (glTF).

In our application we are moving entities on door open and close by transforming the rotation values of entities. Refer [Move entities | Decentraland](https://docs.decentraland.org/development-guide/move-entities/) documentation to learn more about moving entities.

# Play Videos

There are two different ways you can show a video in a scene. One is to stream the video from an external source, the other is to pack the video file with the scene and play it from there. Refer [Play Videos | Decentraland](https://docs.decentraland.org/development-guide/video-playing/) to know about adding video to an existing scene.

# Upload a preview

We can preview our scene using Heroku, by linking our Decentraland project to your Heroku application. Refer below link to more about deploying a scene into Heroku. [Upload a preview | Decentraland](https://docs.decentraland.org/development-guide/deploy-to-now/)