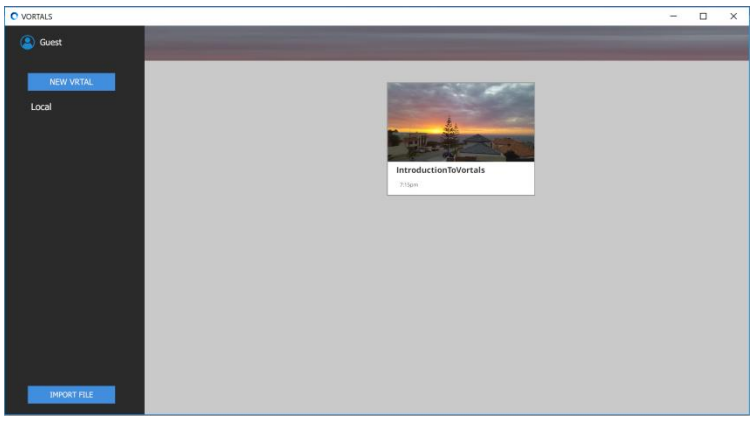
Vortals Manual

Version 1.02

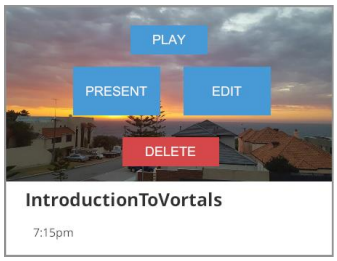
Contents

The Menu System

The first screen you will interact with Vortals is the menu system. Here you can start a new Vortal file, load previous files, import ".vrtl" files and start presentations systems.



If this is your first time using Vortals you should see one file called "IntroductionToVortals". If you put your mouse over the file, a number of buttons will be revealed"

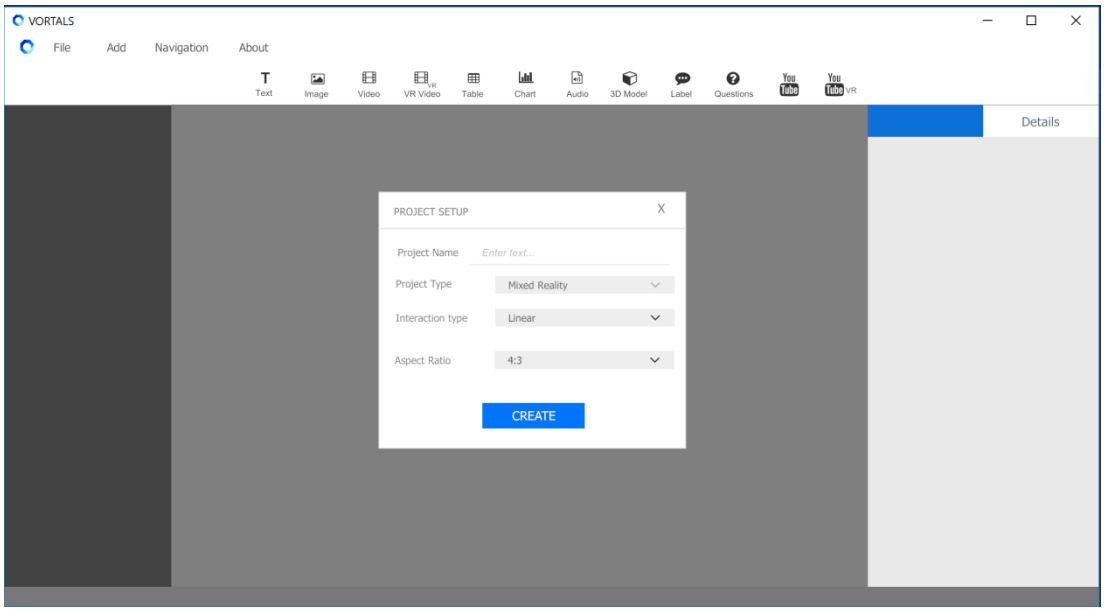


- If you choose edit the file will load for editing in the Vortals editor.
- If you choose present the Vortals presentation mode will activate.
- The Vortals Presentation mode gives you the ability to record a presentation, if you have done this, pressing play will playback that recorded presentation.
- Pressing delete will delete the file. You will be asked to confirm this before deletion. If you confirm, deletion is permanent.

The Editor System

First Page

To enter the Vortals Editor system click “New Vortal”. Once you have done this you will see a screen with Project Setup options



Project Types

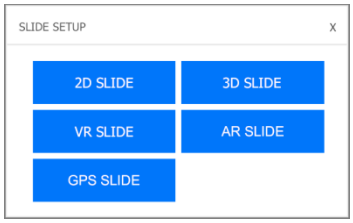
There are two project types – Mixed reality and Adaptive Mixed reality. Mixed reality projects are created like most familiar presentation systems; slides are added and follow a top down order of numbering. Adaptive Mixed Reality presentations are controlled by a node based system.

Interaction Types

There are two types of interaction – most projects will use Linear interaction, this follows a typical presentation style, where each slide is consecutively ordered and the user will move from slide 1 to 2, from 2 to 3 and so on. “Random” projects display a different characteristic when in Augmented reality mode using tracking images. In Random mode, with augmented reality activated, if the users device finds and ‘tracks’ a tracking image, the presentation will automatically change to the slide with the tracked image (assuming the presentation has a slide with the specific tracking image found). See AR Slide.

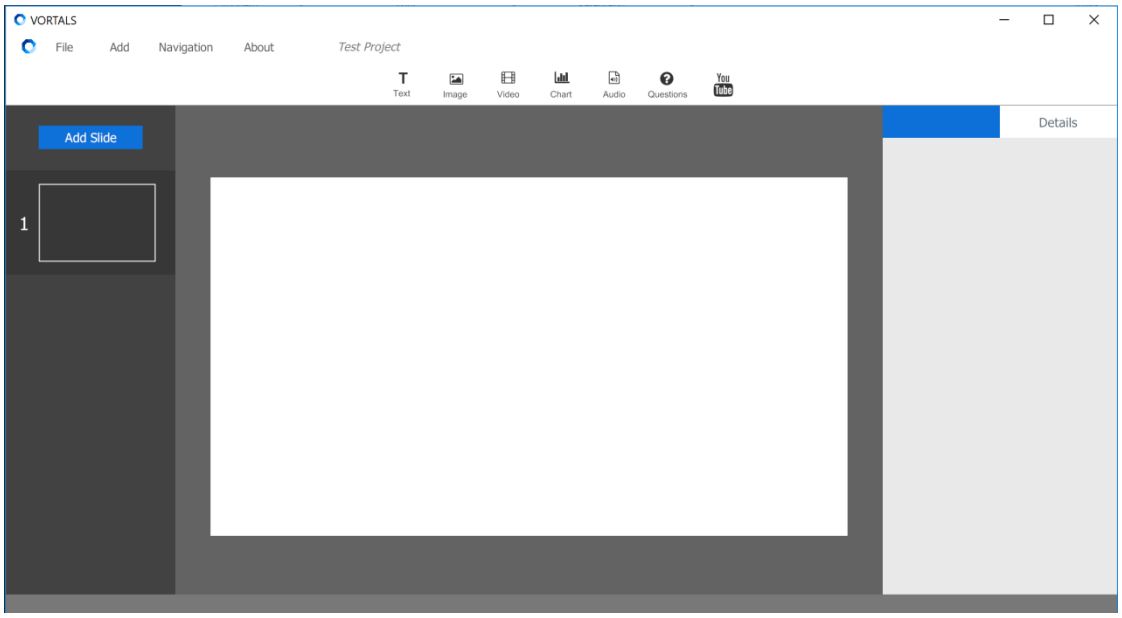
Basic Mixed Reality Slide Options

Once you have entered your project settings and clicked create, if you have chosen ‘Mixed Reality’ project, you will be presented with slide creation options”



2D Slide

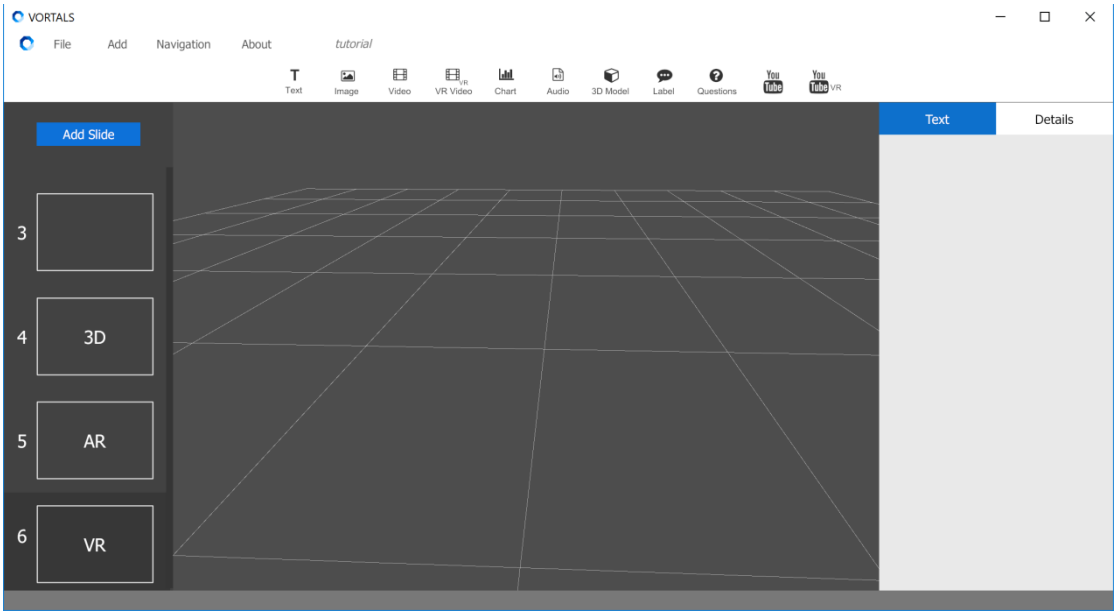
Selecting “2D Slide” will create a white slide with options to create 2D slide elements.



Here you can create or load text, images, videos, charts, audio, question lists, buttons and YouTube Videos.

3D Slide

Selecting 3D slide will take you into a navigable 3D system.



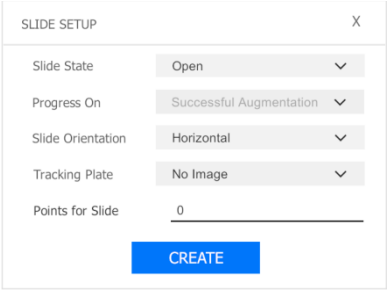
Here you can create or load text, images, videos, VR Videos, charts, audio, 3D models, Labels, question lists, buttons, YouTube and Youtube VR Videos, and TableTop Map systems with navigational pathfinding.

VR Slide

A VR slide presents in much the same way as a 3D or AR slide, it is only in presentation mode that Virtual Reality is activated. In order to test content in a VR Slide the user must click on file-> present and navigate to the slide. When viewing VR in presentation mode Vortals will display a 3D representation of the VR scene on the screen, the users interactions in VR will be shown on that screen.

AR Slide

If you create an augmented reality slide you must first select the slide options.



Slide State

When you create an AR or VR slide you can choose to lock the slide. This will prevent the user from moving forward or back through the slides until a specific operation is completed (such as successfully augmenting, answering a question, or finding a 3d object)

Orientation

Slide orientation is depreciated - do not use

Tracking Plates Options

There are two options for augmented reality tracking, "No Image", which means the augmentation will occur without any tracking plate necessary, in practice this means the augmentation will deploy into any environment without the need for printed images. The other options all exhibit the same behaviours - they link a specific tracking image out of a list of available images to the slide. When the presentation is played on a device with augmented reality, if the device finds the image linked to the slide, content of that slide will display.

Points For Slide

Points for Slide currently has no effect on the system but is part of the gamified system that is being built into Vortals. It will be implemented with the question systems and other mixed reality items - if you find 3d objects or videos or get questions correct, project points will advance.

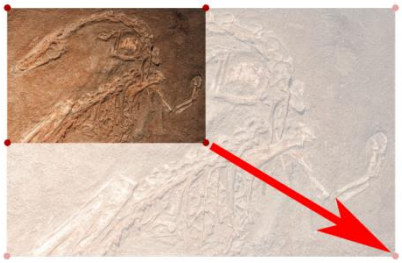
Interaction and Navigation

Moving Objects in 2D

When selecting an added item in a 2D slide, red scaling helpers will appear on each corner of the item. Clicking and dragging the object inside the red dots will move the object.

Scaling Objects in 2D

When selecting an added item in a 2D slide, red scaling helpers will appear on each corner of the item. Clicking and dragging the helpers will scale the object accordingly.

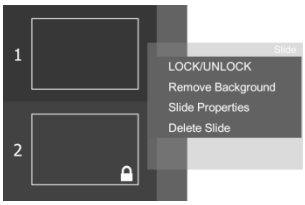


2D Options Menu

Each 2d element exists in a layer, sequenced by order of addition. This can lead to objects obscuring other objects. If this happens, you can right click (control+click for Mac) to bring up an option menu that allows you to push items back in the layer level.

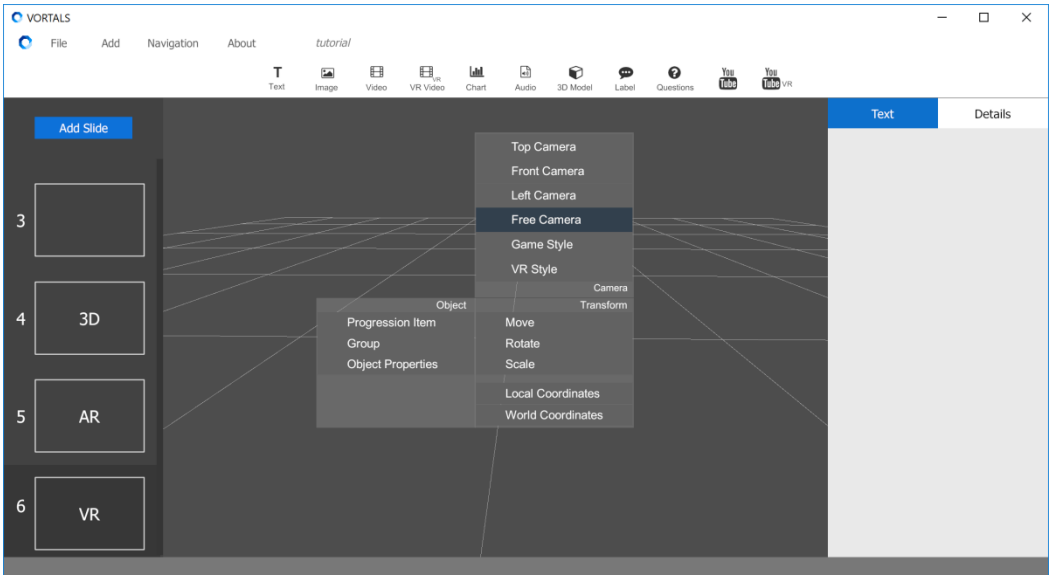
Thumbnail Options Menu

If you right click on a slides thumbnail, you are presented with a number of options. You can lock the slide which prevents user progression during the presentation without achieving a specific task (locked slides present with a lock symbol). You can remove the background image of the slide here. You can access and adjust the general properties of the slide by clicking slide properties, and finally you can delete the slide (this is also achieved by left clicking on the slide thumbnail and pressing the delete button).



Navigating in 3D

3D Slides, VR slides and AR slides all have the same control system. An initial start point is to right click in the main screen area (control + click for mac). You should see a menu pop up.



Moving the Camera

If not already enabled, select Free Camera.

In this mode the camera can be moved by scrolling the mouse wheel backwards and forwards.

If you click the mouse scroll wheel down and hold, you can pan left and right.

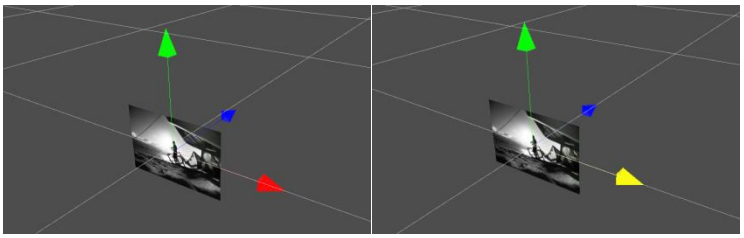
Rotating the Camera

Clicking alt and simultaneously holding the scroll wheel allows you to rotate the camera.

Controls on a mac are slightly different to account for single button mouse. Alt + mouse will allow you to rotate, while option + mouse will pan

Interacting with Objects

Once you load an element into a slide you can interact with it by clicking directly on it. Once you have done this, a “Transform Gizmo” appears:



This initial setting is in move mode, here gizmo gives you the ability to move the object in 3D space. To select multiple objects, pre Control + click the number of objects you wish to transform. Once you have selected your objects you can use the gizmo to transform them. To deselect, simply click off the object.

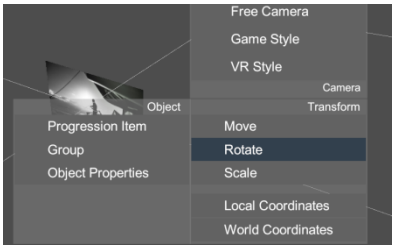
Moving

When you click on an arrow will turn yellow and clicking and dragging will move the object in the arrows direction. In the picture above, selecting the green arrow allows you to move the picture up

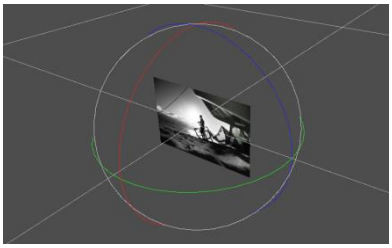
(along the “Y” axis), selecting the red arrow will move the object left or right (the “X” axis) and selecting the blue will move the object backward or forwards (the “Z” axis).

Rotating

In order to rotate an object, the rotation gizmo must first be activated. To do this you must right click (control + click for Mac) and choose rotate from the options menu:



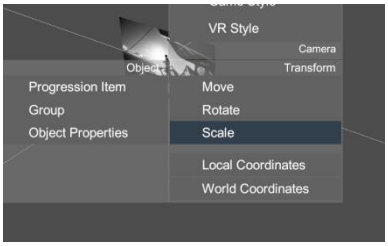
Once chosen, a rotation gizmo should appear



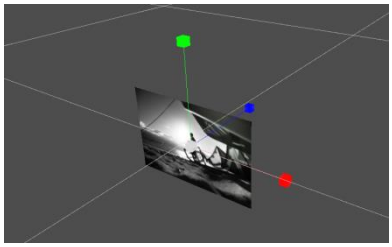
Each line represents the axis the object will be rotated along. Selecting a line will result in that axis turning yellow. Clicking and dragging the line will result in the object being rotated along that axis.

Scaling

In order to rotate an object, the scale gizmo must first be activated. To do this you must right click (control + click for Mac) and choose scale from the options menu:



Once chosen, a scale gizmo should appear



Each line represents the axis the object will be scaled along. Selecting a line will result in that axis turning yellow. Clicking and dragging the line will result in the object being scaled along that axis.

The grey box in centre of the gizmo can be used to scale the object equally along all axes.

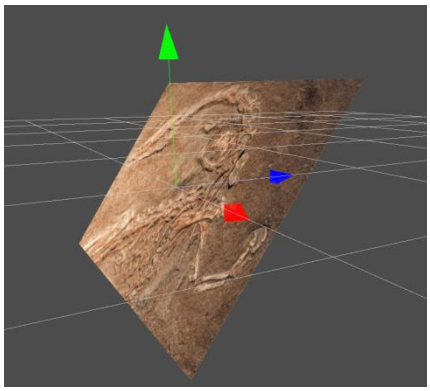
Coordinate Systems

Vortals provides two coordinate systems for the Gizmos and for those new to 3d environments they can be quite confusing.

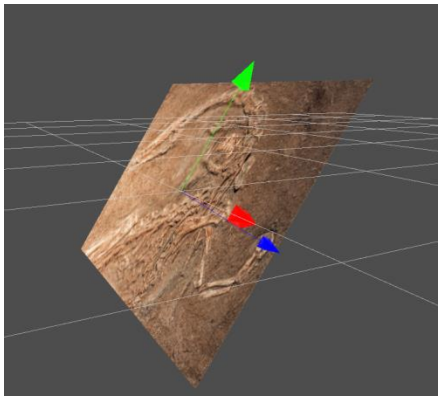
Imagine you are seated on a plane, you have a position and rotation relative to the plane. You are in your seat facing forward (local coordinates). As the plane moves up and down and turns and rolls, your position relative to the world is constantly changing but your local position within the plane has not changed.

Put another way, Local coordinates are defined relative to the object, while the world coordinates are defined relative to the world environment.

This image below has been rotated but with world coordinates activated, the gizmos always align with the worlds coordinates.



When switched to local coordinates, the Gizmo now aligns with the element's coordinate system.



Slide Elements

Text

Vortals text provides both simple functions and a full LaTeX implementation for complex functions (complex LaTeX functionality is limited to 2D slides).

To add text, either go to the Add dropdown menu and choose “text”, or click the text button in the top menu bar.

Once Text is added, double click on the text box to start editing the text. To stop editing, either click outside the text box, or press escape.

When a text object is selected, a contextual menu will appear on the right hand properties panel.

Here you can change the font, the bold, italics, font size, create number and bullet lists, and change the text alignment.

Latex Functionality

Vortals deploys LaTeX implementation in its text system. LaTeX provides the ability to create complex mathematical and physics formula as well as complex text effects. The system looks for specific keywords denoted by a “\”. For example if you enter:

f(x)=\lbrace\nfrac{2x}{3} \nlfrac{\if x into

A Vortals text box, it will identify “\lbrace” and “\nfrac{}{}”and “\nlfrac” as a keywords and output:

$$f(x)=\left\{\begin{array}{ll} 2x & \text{if } x¡0 \\ 3 & \text{otherwise} \end{array}\right.$$

A second example:

\sum^{\infty}_{x=0} x\frac{5}{6}- \frac{10}{x}\Leftrightarrow\prod^5_{x=0}x-7

Produces:

$$\sum^{\infty}_{x=0} x\frac{5}{6}- \frac{10}{x}\Leftrightarrow\prod^5_{x=0}x-7$$

The full list of available LaTeX keywords is outside the scope of this document.

Image

To load an image into 2D or 3D/VR/AR slides, click on the add dropdown and choose “image” or click the image button on the top menu.

You can change the image by clicking on the contextual property menu on the right.

Currently jpg, jpeg and png images are supported.

Video

To load a video into 2D or 3D/VR/AR slides, click on the add dropdown and choose “video” or click the video button on the top menu.

You can test play the video by clicking on the contextual property menu on the right. You can also choose to have the movie play automatically when the slide is activated during a presentation, or wait for user interaction.

Currently mp4 and ogg videos are supported.

Audio

To load audio into 2D or 3D/VR/AR slides, click on the add dropdown and choose “audio” or click the audio button on the top menu.

You can test play the audio by clicking on the contextual property menu on the right. You can also choose to have the audio play automatically when the slide is activated during a presentation, or wait for user interaction.

Currently wav files are supported.

Virtual Reality Video

To load a virtual reality video, the slide must be 3D,VR or AR (note that while you an load a VR video in these slides, only VR slides will allow for correct playback using virtual reality headsets). Click on the add dropdown and choose “360 video” or click the “VR video” button on the top menu.

You can test play the video by clicking on the contextual property menu on the right. You can also choose to have the movie play automatically when the slide is activated during a presentation, or wait for user interaction.

Currently mp4 and ogg videos are supported.

3D Object

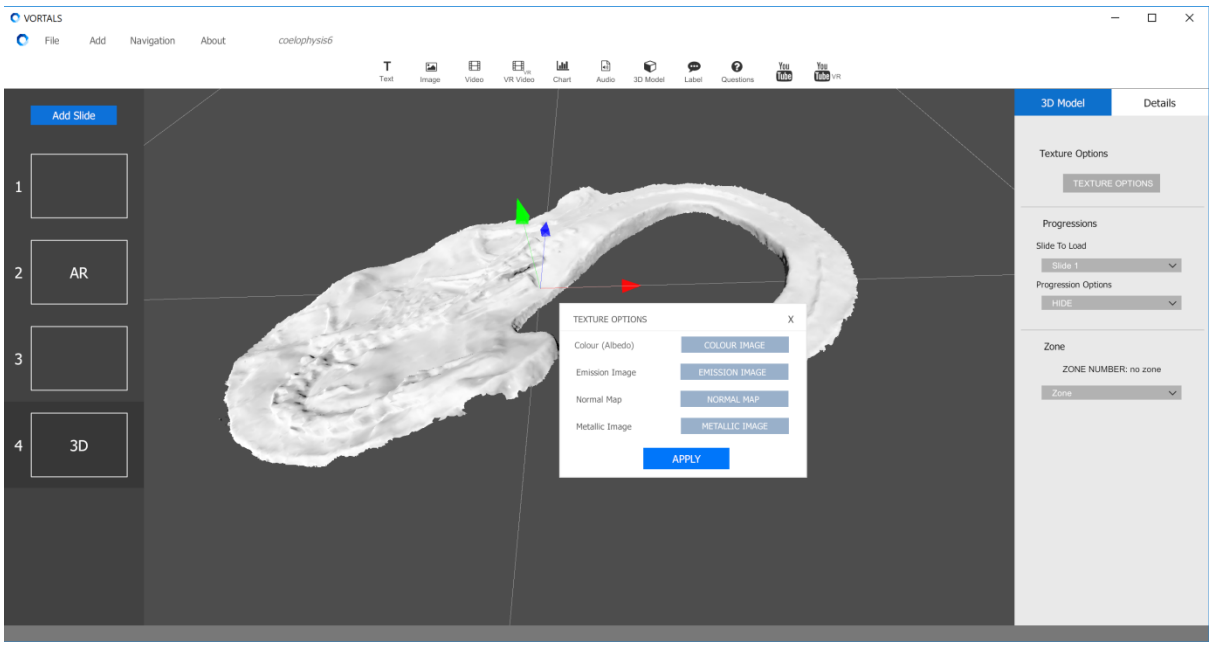
To load a 3D Object, the slide must be 3D, VR or AR. Click on the add dropdown and choose “3d Model” or click the “3D model” button on the top menu.

There are advanced animated model options available for loaded files however this document will deal with only the basic operations.

Vortals supports a large range of 3D formats including (amongst others)

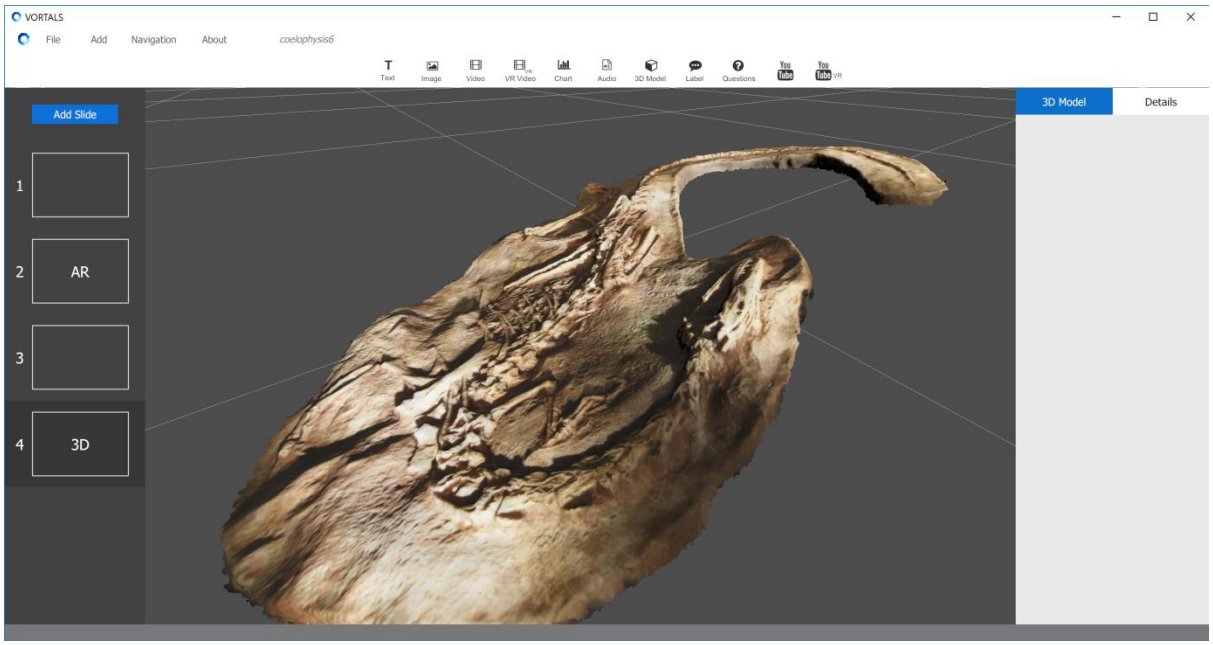
- Fbx(up to 2016)
- Obj
- 3ds
- Blend
- Dae
- glTF
- stl

Vortals provides the ability to colour the models using basic texture functionality. When you select a 3d model a texture options button is reveled in the contextual properties panel. Clicking this options button will reveal a popup with texture options.



Here you can apply a range of different images to affect the appearance of the 3d object. You do not have to apply all four options; you can choose only texture options you have images for.

For users new to 3D, the key image to consider is the colour image; this will have the most dramatic effect on the appearance of the model. It is important to keep in mind the size and number of textures you apply to a model directly impacts the size of the Vortal file and potentially impacts usability on less powerful phone devices. Texture sizes of over 4000x4000 are unlikely to work on lower end phones due to RAM limitations and Vortals does not check these factors for you. The coloured result from the above model:



Button

Buttons provide a way to create complex interaction for the user. Vortals provides a number of different buttons actions to create these interactions.

Slide Button

The slide button allows you to let the user advance to a predefined slide number during the presentation. This lets you create a button to take you to the next slide for example, or alternatively use the first slide as a menu system with numerous buttons that can take you to various slides in the presentation.

Note that if you link slides in a Mixed Reality project and then subsequently delete slides from that presentation, the slides are renumbered and this can potentially result in the button taking you to the now incorrect slide number.

Picture Button

The Picture button gives you the ability to hide a main picture during a presentation – the picture is only revealed when the button is clicked. The picture appears in the editor at all times – it is only hidden during presentation playback.

Video Button

The Video button gives you the ability to hide a main video during a presentation – the video is only revealed when the button is clicked. The video appears in the editor at all times – it is only hidden during presentation playback.

3d Object Button

The 3d Object button gives you the ability to hide an object during a presentation – the object is only revealed when the button is clicked. The object appears in the editor at all times – it is only hidden during presentation playback.

URL button

Links you to a website via a button click

Camera button

Currently deactivated. Allows user to take a picture and display it in 3d AR Space.

Group button

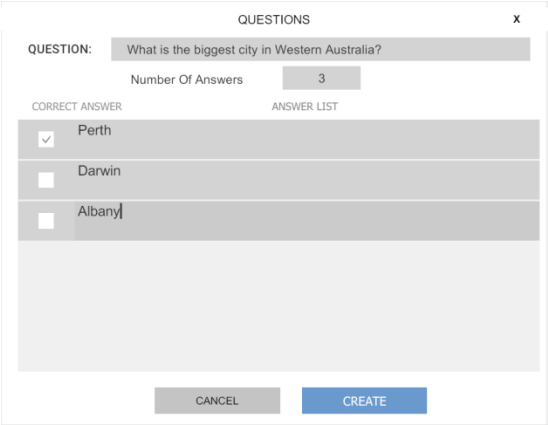
Currently deactivated. Users can group elements together and reveal them collectively via this button.

Question List

Question Lists provide a way to create complex interaction for the user. Vortals provides two options, true/false and multichoice. In a Mixed Reality project questions provide a way of giving feedback to the user during the presentation through a correct or incorrect answer symbol when the answer is chosen. In an adaptive Mixed Reality project, a question list provides a way of branching the learning content displayed depending on the answer given.

To load an question list into 2D or 3D/VR/AR slides, click on the add dropdown and choose “question list” or click the questions button on the top menu bar

A popup menu will appear asking you to state the question and then input the total number of answers. Choosing a number in the “Number of Answers” box will populate the answers section, which can then be filled in.



If you wish you can choose a correct answer, but this is not mandatory. In [Adaptive Mixed Reality]() projects you can ask open ended questions without correct answers that allow you to branch the presentation into different directions.

Once ‘create’ is selected, the question list is created and a context menu appears on the right properties panel. This provides you options to heavily modify the appearance of the question list

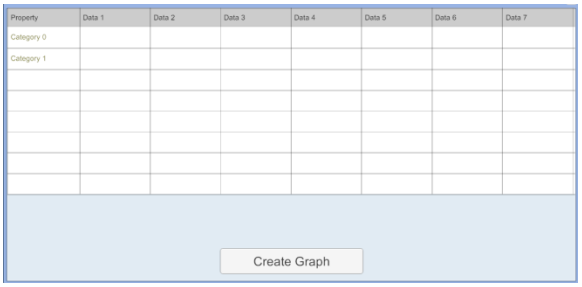
Adjusting these parameters can result in starkly different visual results for the question list

Chart

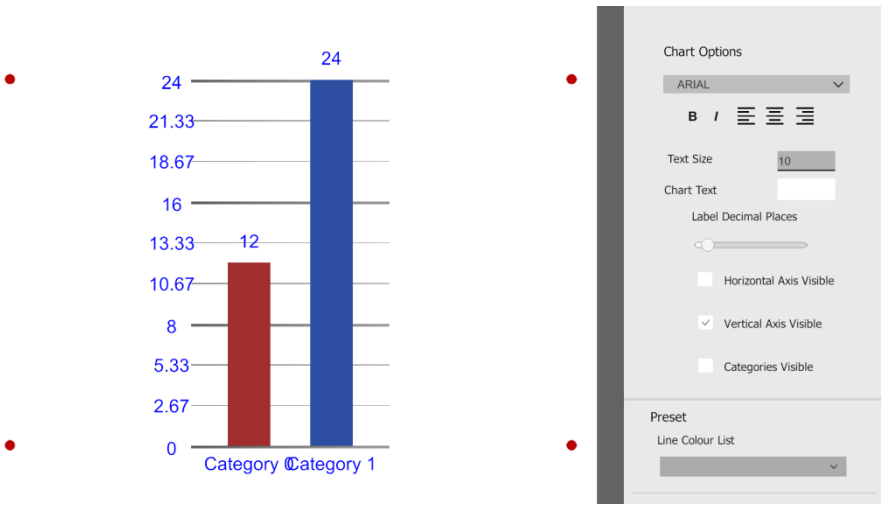
Vortals provides access to three types of charts, Bar, Line and Pie chart. They can be created via the add dropdown menu or by clicking the “chart” button in the top menu bar.

Bar Chart

When you choose bar chart, you will be required to fill in the “Property” and “Data 1” fields. Click in a cells to modify the data. Any data outside of “Property” and “Data 1” will be ignored, likewise, if you fill in “Data 1” cells without an associated property value, the data will be ignored.

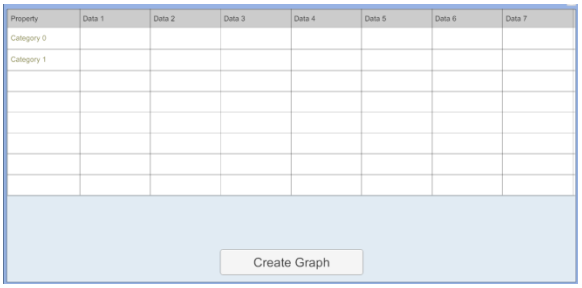


Once create you will have access to a number of options to modify the look of the graph.

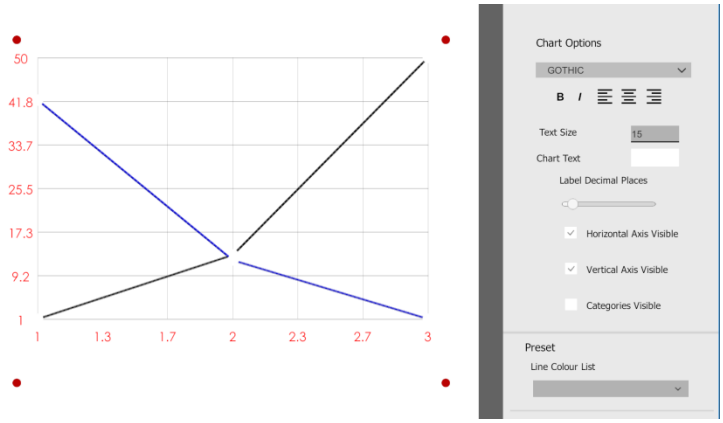


Line Graph

When you choose Line Graph, you will be required to fill in the “Property” an all relevant data fields. Click in a cells to modify the data. If you fill in “Data” cells without an associated property value, the data will be ignored.

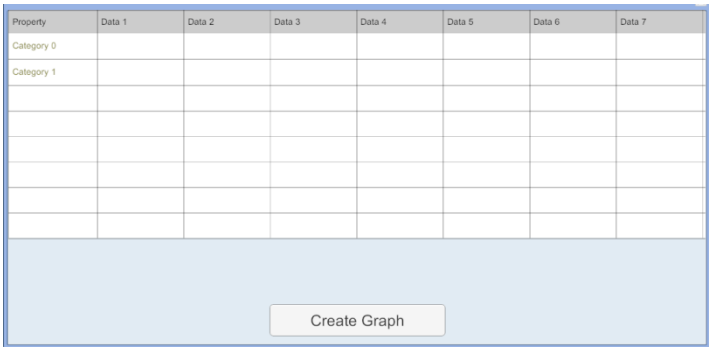


Once create you will have access to a number of options to modify the look of the graph.

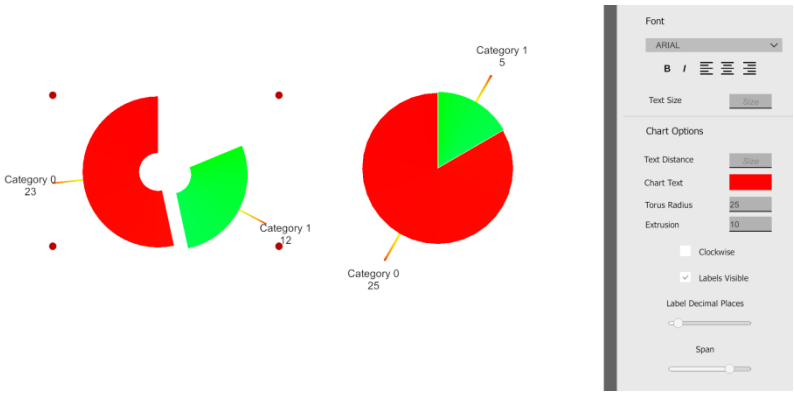


Pie Chart

When you choose pie chart, you will be required to fill in the “Property” and “Data 1” fields. Click in a cells to modify the data. Any data outside of “Property” and “Data 1” will be ignored, likewise, if you fill in “Data 1” cells without an associated property value, the data will be ignored.



Once create you will have access to a number of options to modify the look of the graph.



YouTube Videos

Instead of directly linking to an mp4 you can stream it to a device via YouTube. You can add a YouTube Video via the add dropdown and select “YouTube Video” or click YouTube button in the top menu bar. A popup will display, simply copy and paste the YouTube link into the text box. You can test the video via the contextual properties menu on the right.

Note that this feature requires an internet connection and the video might take time to start playing depending on the speed of the connection.

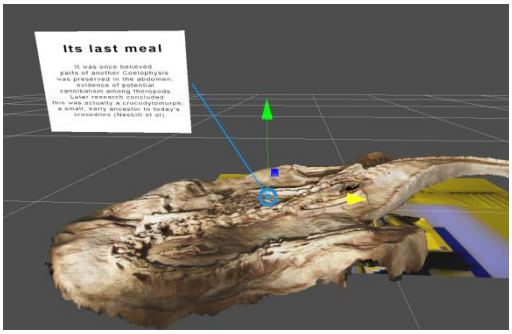
YouTube VR Videos

Instead of directly linking to an mp4 you can stream it to a device via YouTube. You can add a YouTube virtual reality Video via the add dropdown and select “YouTube VR Video” or click YouTube VR button in the top menu bar. A popup will display, simply copy and paste the YouTube link into the text box. You can test the video via the contextual properties menu on the right.

Note that this feature requires an internet connection and the video might take time to start playing depending on the speed of the connection.

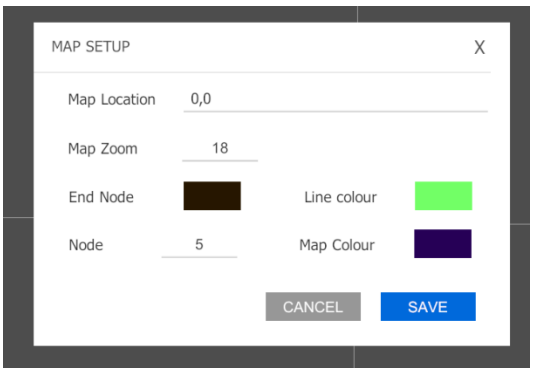
Label

To load a Label, the slide must be 3D, VR or AR. Click on the add dropdown and choose “Label” or click the “Label” button on the top menu. Labels provide the ability to provide information without obscuring 3d information:



TableTop Map

The Tabletop Map functionality is designed primarily for Augmented reality slides, and to create a Tabletop map the slide must be 3D, VR or AR. Click on the Navigation dropdown and choose “Tabletop Map”. This will result in a popup menu:



Tabletop Map GPS Coordinates

The location of the map is designated by GPS coordinates, which must be two coordinate numbers separated by a comma. An Easy method to obtain requisite coordinates is to use google maps to navigate to the desired location and to copy the numbers from the URL e.g

https://www.google.com.au/maps/@-29.0456559,122.3303574,13.95z

In this URL, the -29.0456559,122.3303574 denote the GPS coordinates.

GPS Zoom

The zoom level of the map is defines how much of the surrounding area is covered by the system An Easy method to obtain requisite zoom level is to use google maps to navigate to the desired location and zoom level and then to copy the number from the URL e.g

https://www.google.com.au/maps/@-29.0456559,122.3303574,13.95z

In this URL, the 13.95z denote the zoom level. Vortals uses integers to define zoom level so this number would be rounded to 14.

Pathfinding Navigation System

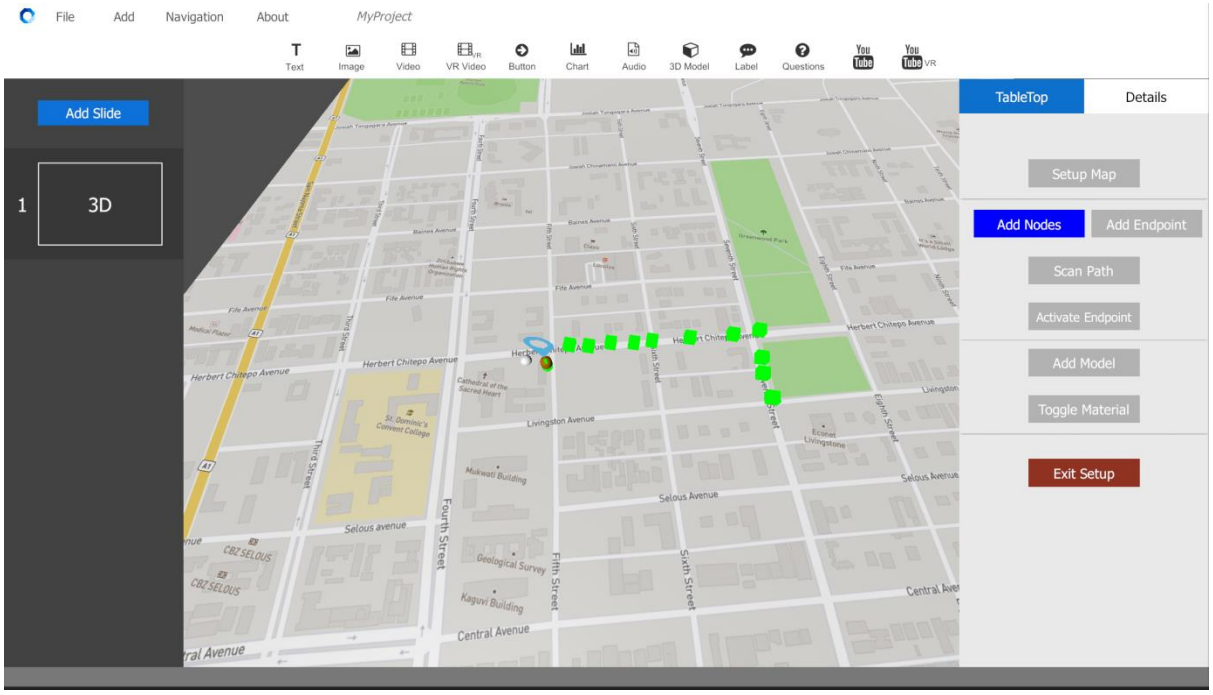
The tabletop map system comes with an inbuilt pathfinding system that allows you to manually create paths for users to travel along. These paths update automatically depending on the users position.

When setting up a tabletop map you are given options relating to how the pathfinding system interacts with the map.

Nodes

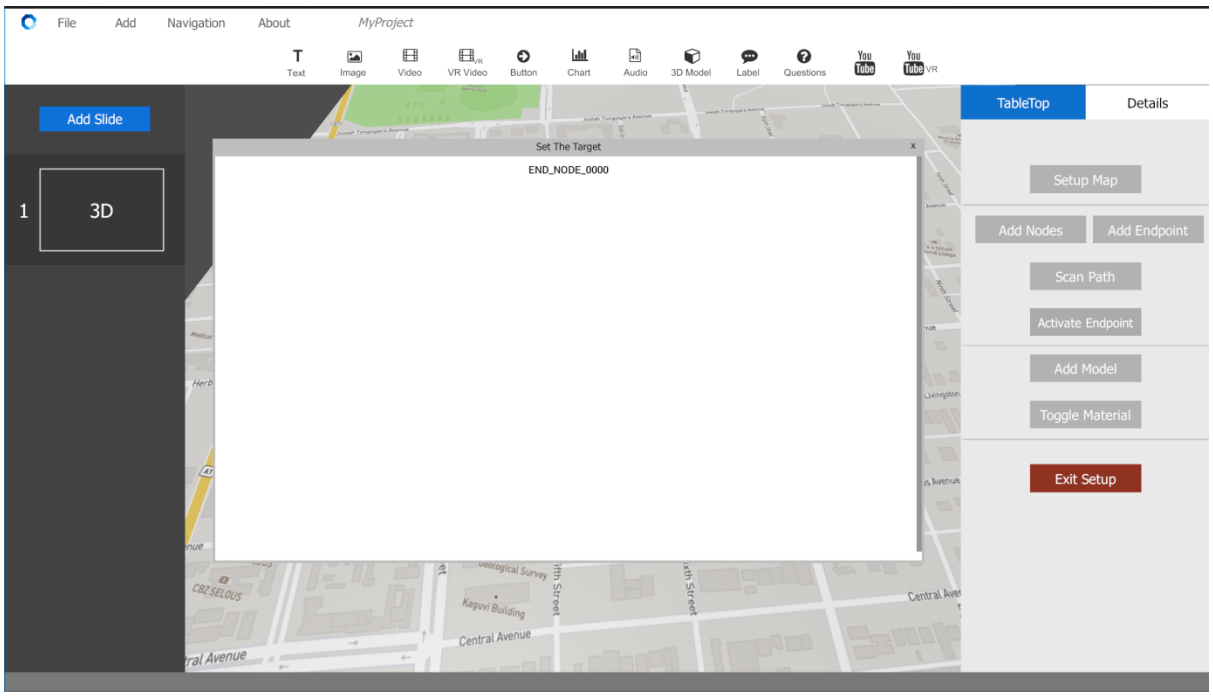
There are two types of nodes in the pathfinding system, a general node and an End node. The end node represents a destination the user will be able to select in the map area, which a general node helps designate the path the user can take.

To add a General node click “Add Node” from the properties panel, the button will turn blue and you can point and click on the map to designate the node locations. Right click to exit node placement mode

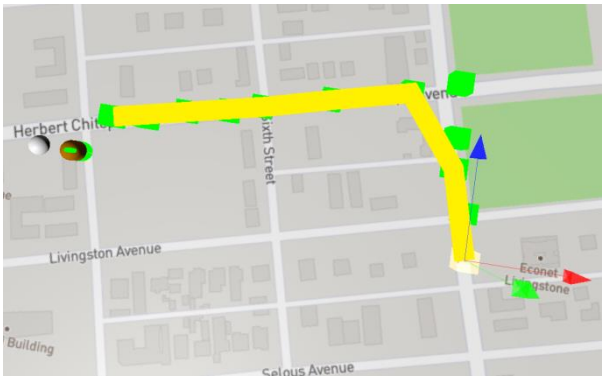


To add end points click on “add endpoint” you may now click on the map to position the endpoint. You must click on add Endpoint each time you wish to add an endpoint.

To activate an endpoint and test the pathing, select “Activate Endpoint”, this will bring up a list of the end nodes you have created. Choose the endpoint you wish to activate by clicking its name, and you should see a path created.



You may not see a path generated for a variety of reasons. Firstly the distance between each general node may be longer than the distance designated in the map setup menu. If you see a partial line that does not extend to the end point, this is likely to be the issue and may be fixed by either creating more nodes between already created nodes, or alternatively, clicking “Setup Map” and adjusting the node distance. If the player icon is too close to the endpoint, you may not see a line.



The line colour can be adjusted via the menu system.

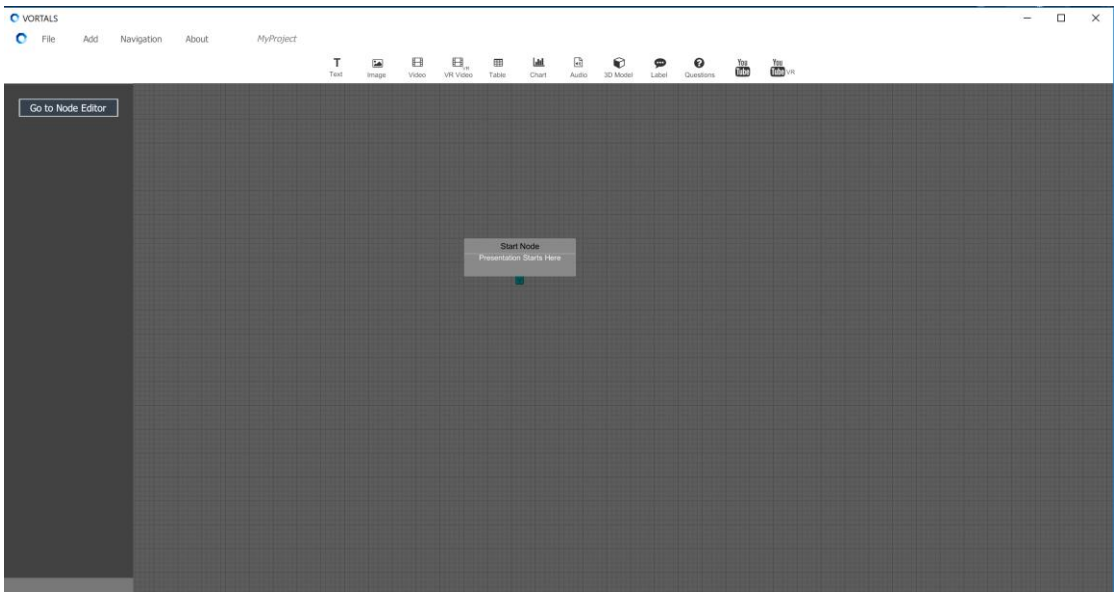
If you have placed the nodes incorrectly and wish to edit the placement, you must click “exit setup” and then individually select the nodes to move them around. Once you have moved them around, you will need to click “scan path” to retest the workability of the pathing..

Adaptive Mixed Reality Project

Adaptive Mixed Reality projects provide a different way of connecting slides in presentations. Instead of sequential slide lists as with the Mixed Reality projects, AMR projects utilize a node based system to control project flow. Although initially the node system may appear visually daunting, it is very simple to use and provides powerful capabilities for adaptive learning.

Start Screen

When you choose create project you will find a screen with a single node active “Start node”. It is from here that the flow of the presentation will begin.



Navigating the Node Editor

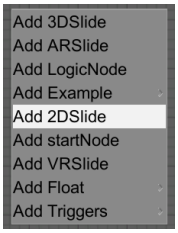
Scrolling the mouse wheel in and out will zoom the camera in and out of the node editor system.

Holding the mouse wheel down and moving will pan the camera around the node editor.

To move a node, click to select it and/or click and hold and move the mouse in order to move the node.

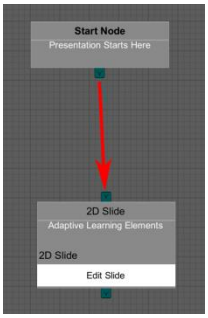
Adding Slides

To add a new slide to the presentation right click (control + click on Mac) and choose add slide from the popup menu



Adding Connections

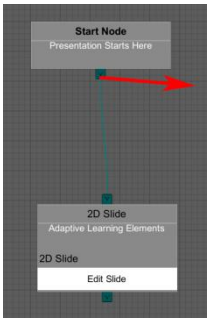
Once you select add slide a new slide node will appear. To set this as the first slide, click the green connector on the bottom of the start node and drag it down to the top connector of the slide node.



This will designate the slide as the starting node. When you enter presentation mode, this will be the first slide that appears. This connection process works for all subsequent slides.

Removing Connections

If you change your mind on a connection you can remove it by clicking the top green connection and dragging the connection line off the node. Once off the slide node, release the mouse button and the connection will be deleted.



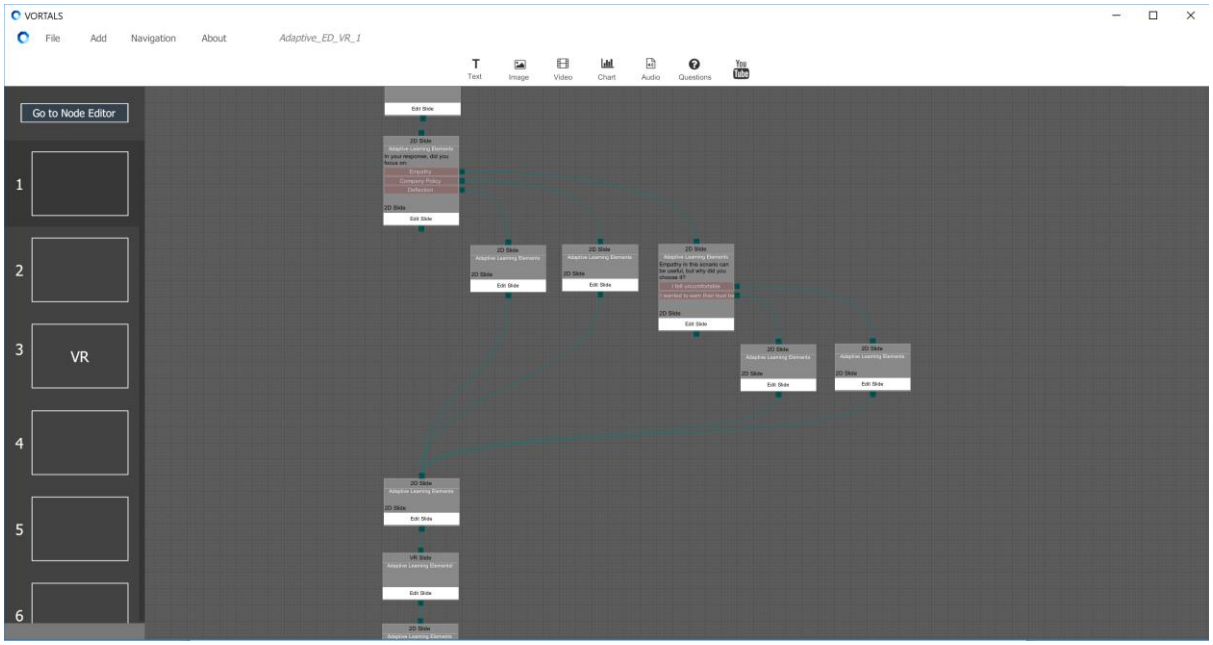
Editing Slides

If you wish to edit a slide select the node and choose the edit button. This will take you to the slide itself and you can add elements to the slide just as with a Mixed Reality project

Creating Adaptive Content

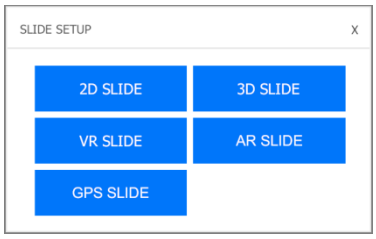
When you add buttons or question lists to an AMR project, you enable the ability to create adaptive content. Adding a question or a button creates new options for the slide in the node editor. These options allow you to create branching paths for a project to take.

Connecting different question answers – or buttons - to different nodes will change the slides that are revealed to the user depending on their choices. These branching scenarios can further diverge and branch again or converge or even return to previous slides, depending on the designer's preference.

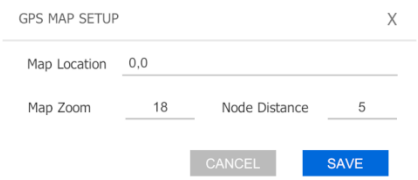


GPS Slide

Vortals provides the ability to link the presentation of specific content to a user's location. It achieves this through the GPS Control Map which is enabled through selecting GPS Slide when adding a new slide. Only one GPS map can be active at any stage.



Once GPS Slide is selected a popup appears where the user is required to enter GPS coordinates, map zoom level and node spacing.



GPS Coordinates

The location of the map is designated by GPS coordinates, which must be two coordinate numbers separated by a comma. An Easy method to obtain requisite coordinates is to use google maps to navigate to the desired location and to copy the numbers from the URL e.g

https://www.google.com.au/maps/@-29.0456559,122.3303574,13.95z

In this URL, the -29.0456559,122.3303574 denote the GPS coordinates.

GPS Zoom

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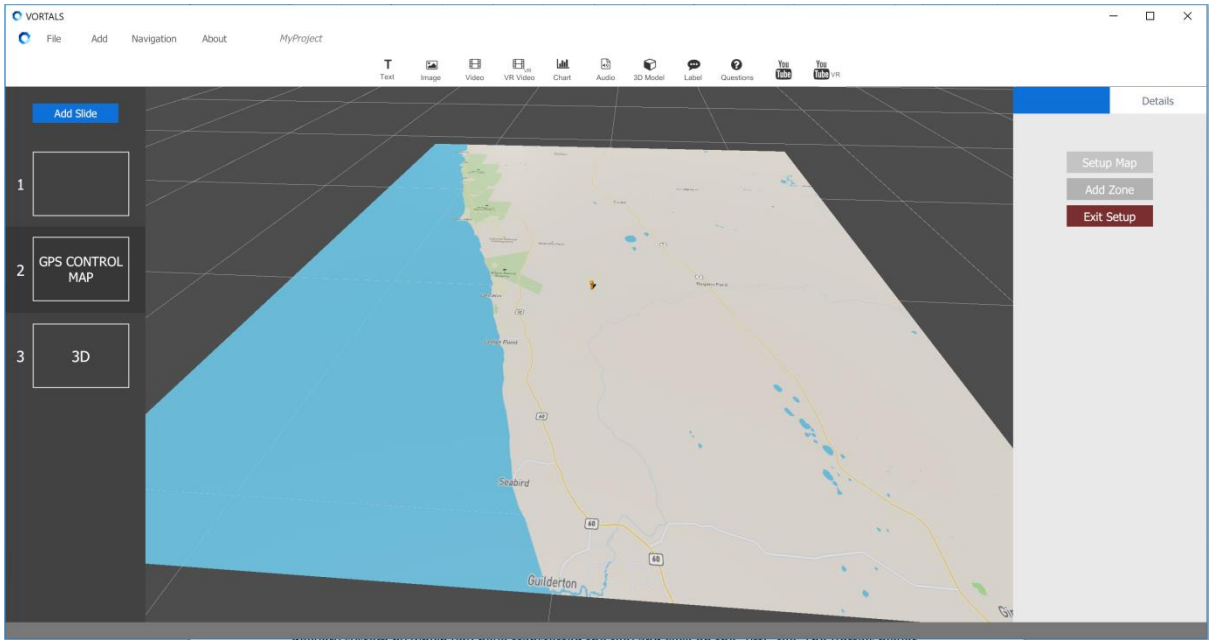
https://www.google.com.au/maps/@-29.0456559,122.3303574,13.95z

In this URL, the 13.95z denote the zoom level. Vortals uses integers to define zoom level so this number would be rounded to 14.

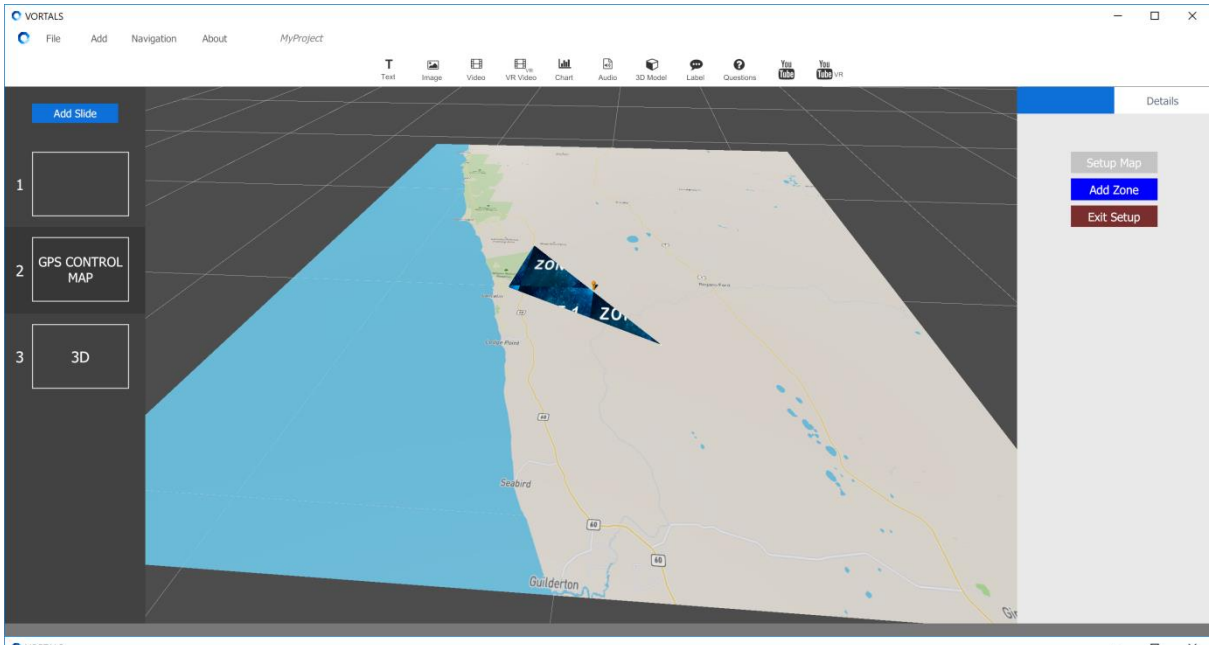
Zone System

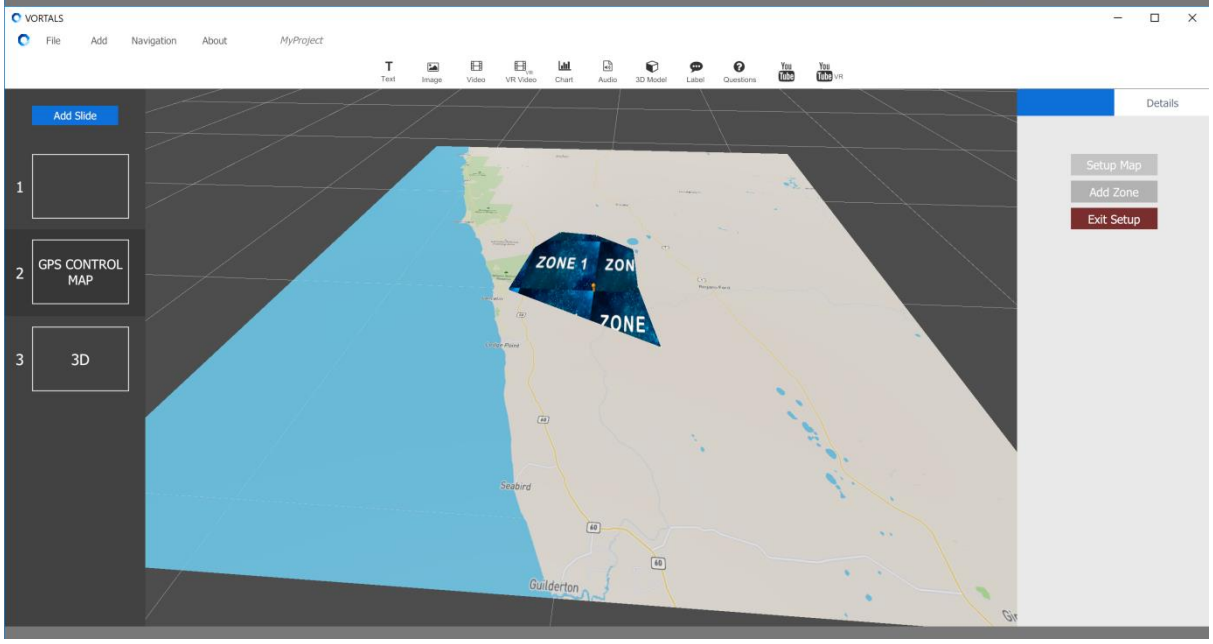
Once the map is activated, a map will deploy into the 3d environment to give a visual reference of the area being controlled.



Zones can be added to this map by selecting “Add Zone” from the contextual properties panel on the right and then left clicking along the boundaries of desired locations points in an anti-clockwise direction. Once three points have been created a plane will appear to show the zone position, however more points can still be added until a right click is registered.

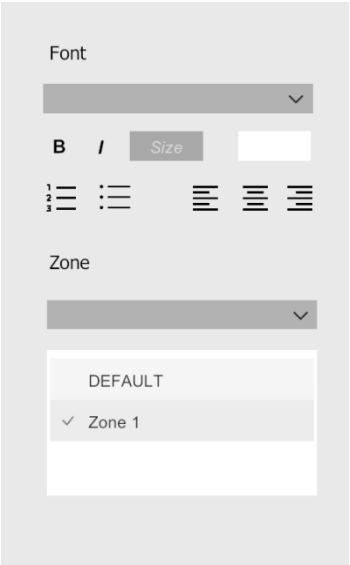
Note that if you create a zone in a clockwise direction the zone will be created however it will be inverted in the viewport- i.e. not visible. From the top, but visible when the camera is below the map.





Linking Elements to GPS Zones

Each slide Element has a GPS property associated with it. The default position is “no Zone” this means that the elements will display regardless of the location. Once a Zone is created in the GPS control Map, it is possible to select that zone and assign the element to it via the contextual properties panel.



Once assigned, this element will only appear when the user enters the designated zone. Bear in mind that GPS accuracy is limited and you may have error margins of up to 30m when designing these zones.

Preparing Presentation for Devices

Once you have completed a presentation, you can export it to a file that will automatically play on a portable device with the Vortals Player installed. First save your project with your chosen name by going to file and then choosing save form the menu dropdown. Once you have saved the file, choose File and then export. Select the folder you wish to export to and a ".vrtl" file will be created. This file can be copied onto your device of choice.

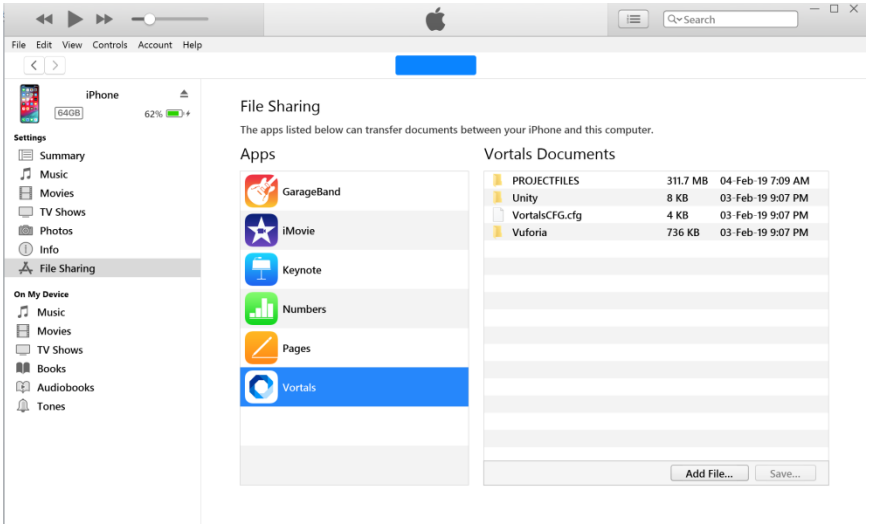
Android

Once the file is on your android phone, navigate to the file using the "My Files" app (or the digital delivery system by which you have transferred the file) and click on the "vrtl" file. The Vortals player system should load to the presentation.

Note that if you have created a large Vortal file, load times may large while the device prepares the content.

iOS

The Vortals iOS player has enabled files sharing for iTunes, which means that you can connect your device and copy the vrtl file via iTunes.



Note that a limitation of this system is that you can only copy one vrtl file per load. Once the vrtl file has been loaded as a presentation you may copy more.

If you have copied a file via iTunes you must start/restart Vortals in order for it to recognize a new file has been copied.

Alternatively if you have uploaded the file to a cloud location, you can download the file, click and hold the downloaded files icon to open the options menu and choose ‘open in Vortals” (or “Copy to Vortals” depending on the app you have downloaded it from

Note that if you have created a large Vortal file, load times may large while the device prepares the content.

Performance Considerations

When creating content for mobile devices you will need to consider their reduced hardware capabilities. Content that works for high-end PC based VR or AR presentations may suffer performance issues or even not work at all on weaker hardware.

When loading 3D content, large polygon/vertex counts and large texture sizes can hit a memory (RAM) limit on phones. As a general rule for mobiles, textures over 4000x4000 will either not load on lower end devices or simply create performance issues on devices that do load. Likewise with vertex counts, trying to keep models below 100,000 (and preferably 30k or less) polygons will ensure smooth performance on all devices.

For the sake of a smooth presentation, Vortals loads all content at the start of a presentation, it does not load and unload content per slide. This means that you may get long load times initially but the presentation will play without interruptions once loaded. This does create other considerations for performance on lower end hardware. Since all textures and 3d models are loaded into memory at once, they remain in memory even if they are not visible. This means you must consider the total RAM usage across the whole presentation, not just for one slide.

When on a PC and using a VR headset, the size of the Vortals player on the PC screen can impact the performance of the VR headset. If you have an intensive scene and are finding the VR performance is slow, reducing the size of the Vortals main window will improve performance in VR.

Vortals Player for Mobile Devices

The Vortals player is available on most Android and iOS devices and can be used for presentations and presentation play back.

Vortals for Android

https://play.google.com/store/apps/details?id=com.Cognetic.VORTALS

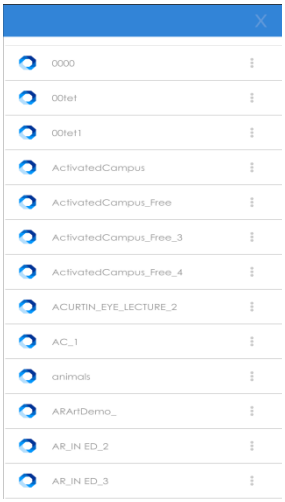
Vortals for iOS

https://itunes.apple.com/WebObjects/MZStore.woa/wa/viewSoftware?id=1450103642&mt=8

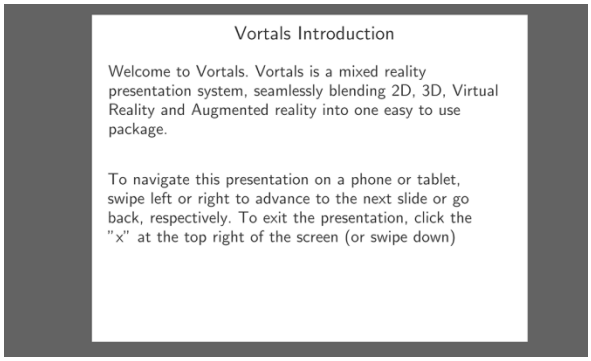
Mobile Device Interaction

The player system has the same controls across all slides except for VR slides, which have different controls depending on the playback headset.

To start a presentation simply click the desired file in the menu list. If this is the first time you have installed Vortals on the device the only file that should be visible is “IntroductionToVortals”. For instruction on how to load a presentation created from the editor, see here. The right hand options button on each file provides options to play back a recorded presentation and delete the file.



Once you have clicked a project a loading screen should appear and then you will be presented with the first slide, e.g.:



To navigate the presentation, swipe left or right to advance to the next slide or go back, respectively. To exit the presentation, click the "x" at the top right of the screen (or swipe down). Swiping up will reveal recording options.

Pressing the red button will start a record session where both your actions and your voice will be recorded. Pressing the red button will stop and save the recording.

To play this recording back return to the main menu and select play from the right hand dropdown options menu.

Video Tutorials

Coming soon

Known Issues and Limitations

Mp3 files will be supported however they are currently not working.

Deleting a slide in AMR node editor will not delete the slide from the list view on the left. Currently slides must be deleted from the actual slide view.

Currently 3d Model Buttons do not have the content hidden in the initial presentation. This will be fixed in an upcoming update.

Random mode projects require only one unique instances of a tracking plate per project; currently there is nothing to stop a user creating multiple slides with the same tracking plate. This will not result in desired behavior.

Currently recorded presentations cannot be exported to a vrtl file. If you record a presentation and then export the file in the editor, all recorded information will be lost.

On some windows versions GPS control Zones may not work. Specifically when gps coordinates are entered, the map will not appear. GPS Control Zones requires Microsoft .NET Framework 3.5 and while most machines will have this installed, some may not. The framework can be installed from the Microsoft Website. https://www.microsoft.com/en-us/download/details.aspx?id=21

Tabletop maps may not spawn the map images when initially deployed in the editor. If this happens, click setup map from the contextual properties menu and choose save in the popup. The map should spawn correctly.

Thank you for using Vortals.

If you encounter any issues, bugs or have any questions please contact

feedback@vrtals.com