3D REPO

Virtual Reality User Manual

Version 2.18

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Welcome

3D Repo is an easy-to-use online BIM platform and this user manual is aimed for all users, from hobbyists to professionals.

There are a good many VR headsets on the market today. Some work better with 3D Repo than others; here are our recommendations: http://3drepo.org/recommended-vr-hardware/

For more information on using 3D Repo, see the Support Page.

For information on setting up the VR equipment itself, consult the manual for the VR hardware (if you cannot find a paper copy, an internet search should find it).

This manual is a guide to setting up and using 3D Repo's Virtual Reality software, which can be used to simply view models in VR, to view various stages of a model's development (in 4D Planning), or to replace or supplement an on-site induction or health and safety course.

Setting up

Graphical Settings

When the program opens, you will be prompted to choose your preferred graphical settings. You are prompted with this each time you open the program, so don't worry about this affecting the program's settings permanently.
If you wish to prioritise speed over performance, select a lower quality graphics setting. If you believe your system is powerful enough to run your model well at higher settings, you can pick higher quality graphics settings and change to lower quality graphics if the model does not run well enough.

Login

Once you have chosen your Graphical Settings, the next step is to log into your 3D Repo account. You do this by entering your username and password into the boxes.
If you do not yet have a 3D Repo account, set one up on 3drepo.io and see the Support Page for further assistance.
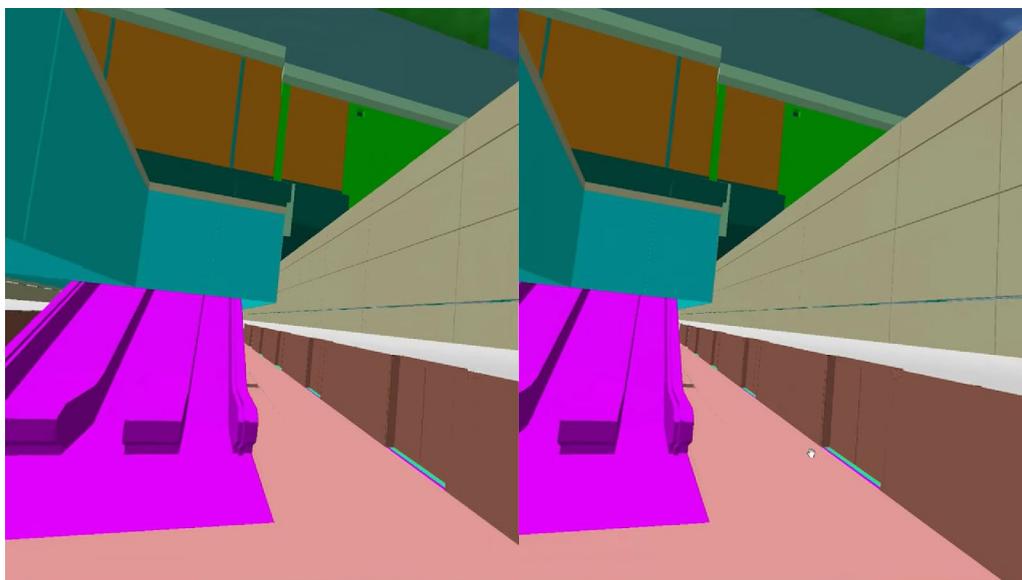
Basic navigation

After selecting a mode you will be prompted to log in, if you do not have an account yet then refer to the 3D Repo user manual to create an account and begin using 3D repo.
In each mode the VR controls are the same: pull trigger to jump to location, circular pad press to view model from "operator" view (named after the viewpoint of the crane operator in Health & Safety mode), then press again to return to previous viewpoint.

Starting position

In each mode the starting position of the VR is set up by creating an issue titled "Start" on the model, the position of the viewer that is saved within that issue will be the starting position of the VR viewer. If you wish to move this VR starting position, simply create another issue titled "Start" and close the old "Start" issue.

Operator position

Set up the "operator" viewpoint by creating an issue with the title "operator" (or "Operator", the capitals do not matter). If you wish to move this VR "operator view" position, simply create another issue titled "Operator" and close the old "Operator" issue.
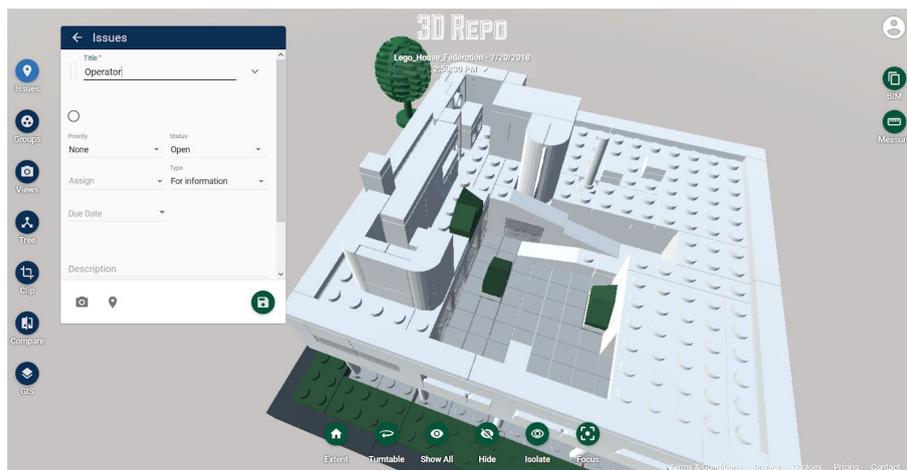
Modes

Health & Safety

3D Repo's VR Health & Safety mode is an ideal replacement for live on-site inductions that involve various costs (of equipment and time). Walk employees through a 3D model of your worksite in Virtual Reality and inform them about points of safety and hazard via 3D Repo's Exclusion Zones.

Operator View

View e.g. cabin controller perspective - see what is and what is not visible from the cabin. This is a good tool for exhibiting the cabin controller's blind spots to users in site inductions.
To set up this operator viewpoint, see the instructions above.
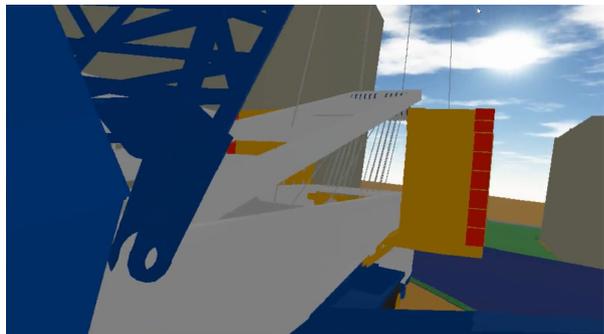
Exclusion Zone

An Exclusion Zone can be set up to let VR users know when they are in a dangerous area via a buzzer sound and colour flashes. Different colour zones can be set up: red, orange, yellow, and green. The VR display will flash yellow while the VR viewer is within the yellow zone, and so on.

You may choose to layer zones (set up smaller zones within bigger ones) such that a VR user is warned with yellow flashes when they approach a danger, orange when they get closer, and red when they reach a very dangerous point. This can be used to inform workers about a site's areas of danger and safety, and can be used in conjunction with the Operator View to help the VR user understand why various areas are and aren't safe to walk through.

To set up a red Exclusion Zone (for example), create a large cuboid or cylinder in your model (using your preferred 3D modelling software e.g. AutoCAD). This object will be the Exclusion

Zone, and will be hidden during VR viewing - so don't worry if it looks as if it covers up the parts of the model located within it, they will be visible to users viewing it in VR.

On 3DRepo.io create an issue within the model, and select the cylinder/cuboid that is to be the exclusion zone. Next, give the issue any of the following titles: "red zone", "orange zone", "yellow zone", "green zone". The software will then understand that this selected object is to be the Exclusion Zone and that the flashes are to be of the colour within the issue name. Note that the only colours that are compatible are red, orange, yellow, and green, and that they must be set up in the way just detailed. "Purple zone" and "redzone" will fail to work.

When a user enters the (invisible) cylinder/cuboid in VR, they are entering the Exclusion Zone. The flashing colour and the sounds will be activated when the user walks through the Zone's boundary (the wall of the cylinder/cuboid). The flashes and sound will stop when they exit the Zone.
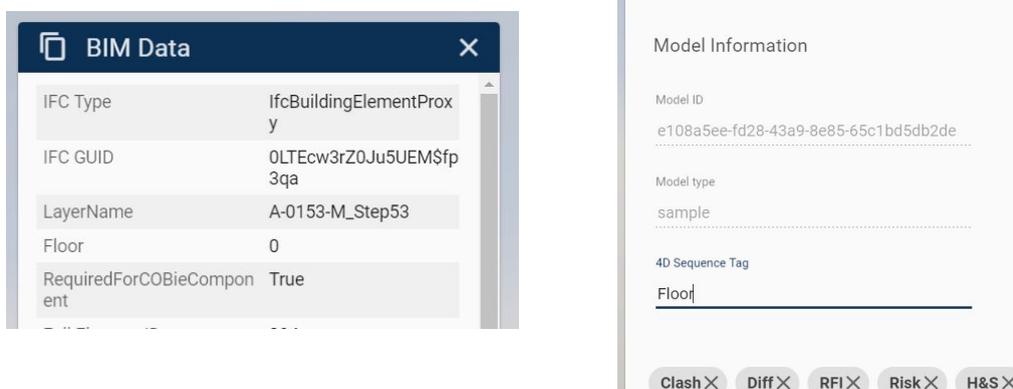
4D Planning

Showcase/investigate stages in a model's evolution/development.

Integrating a fourth dimension to 3D modelling allows users to click between different stages in a model's development.
The 4D element can sequence the model's objects according to any element within the model's BIM Data.
Enter the BIM Data element according to which you would like to sequence the objects into the 4D Sequence Tag text-box within that model's Model Settings. For example, you could sequence the objects in a model according to the floor they exist on, by entering the keyword "Floor" into the 4D Sequence Tag text-box.

When the model is open in 4D Planning mode in VR, pressing the arrow pad will cycle through the objects in order of the BIM element selected in Model Settings.

IMPORTANT NOTE: The sequencing system will only recognise numbers of the form # or #.# or #.#.#, and so on. 1 is a valid number here and will be sequenced before 14, and 2.6 will be

sequenced before 2.7, 1.5.2 before 1.5.8, etc. The BIM Data for models is set up in Revit or other 3D modelling programs; changes should be made within Revit to align a model's BIM Data with requirements of 3D Repo's system.

Custom Sequences can be created from scratch within the original 3D modelling program by adding an extra BIM element to objects, titled e.g. "Sequence Number". The model's objects can then be sequenced accordingly, and VR users will see first the objects with BIM Data "Sequence Number - 1.1.1", and then see added to these the objects with BIM Data "Sequence Number - 1.1.2" when they press the right button on the controller's arrow pad.

Plain VR Viewer

View any model in VR with no complications.

Note that you can still set up an "operator" viewpoint, which can be used to give an eye-in-the-sky view of the model, or indeed a static camera focussed on a particular point of interest on the model. The Operator viewpoint can not be moved by the VR user, and can offer a map-like view to help the user get their bearings on navigating the model.