Creating a virtual scene using a Photographic Quality Renderings
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This tutorial shows ways to create a virtual scene using a photographic quality rendering.

Although the virtual camera remains static, virtual characters can be animated inside the scene. Please note the characters are interactive inside the virtual scene.

You can choose a method according to the needs of your project and the media available to you.
Part 1 is using a scene processed from a digital photograph.
Part 2 is using a virtual landscape from a digital image. A canyon is recreated in Maya.
Part 3 is using renderings created with Maya Paint3D effects.
Part 4 shows how to setup the scene in Virtools with a digital actor.

1- Recreating a scene processed from a digital photograph
Let’s take images from the real world in order to create a virtual scene. Selecting background images and turning them into virtual 3D scene is quite easy if you have a perspective view and a top view of the same scene in the real world. The only drawback is a certain lack of precision in the camera location. In this example, you need a Top view and a Perspective view of the scene. Please note that the perspective view is used as a background image in the final scene. The top view is only used for objects placement.
are used to trace perspective lines in order to locate the camera. For example, 5 objects are used to triangulate the location of one camera.

Top view ... blue lines traced between visual clues help to locate the camera.

2- Let's create an Image Planes for the Top camera in Maya

Step 1- In Maya, go to Windows > Rendering Editors > Hypershade, create an image plane for the Top view Camera. In Hypershade, go to Cameras, MMB click and drag the Top Camera icon in the Work Area.

Step 2- Go to Create Maya Nodes, select Image Plane, MMB click and drag in the Work Area. In the Work Area, MMB click and drag the Image Plane icon on the Top Camera icon, select default in the contextual menu. In Work Space, double-click on the Image Plane icon, go to the attribute editor and load the top image.
In the Top view window, create a plane, this will be the floor for your virtual scene.
Please note that you can select semi transparent for the plane’s shader in order to see through the floor.

Step 3- In the Top view window, create several objects that are significant visual cues for the perspective view. The simple 3D objects created on top of the visual clues are shown in red.

**MOVE THE OBJECTS** in order to place them in their respective locations on the Top View image.

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**3- Let’s create a new camera to be used in the perspective view**

Go to Create > Camera, go to the perspective window, select Panels > Perspective > Camera 1

This camera will be saved and exported later to Virtools.

Please keep in mind to ONLY MOVE THE CAMERA in order to align the objects with the background image. In the perspective view, repeat the same steps in order to load the perspective view Image Map in the perspective window.
Step 1, move the camera –LMB+ALT key and MMB+ALT key – in order to align the green floor plane with the edges of the picture. Dolly the camera –roll MMB – in order to align the visual keys inside the scene.
Step 2- Note the position of the camera in top and side view. Now you can add more objects and more details to the scene.
I suggest to create shaders for each class of objects, for example Walls in RED, obstacles in GREEN, floor in LIGHT GREEN. Please note that the floor is 100% transparent in the following illustration.

You can increase the detail of the 3D objects as long as it provides more information for collision detection and for moving around the objects.

Step 3- save your scene. You are now ready to export to Virtools. Export the scene as a 3D Entity.

Part 2- Creating a virtual landscape from a digital image.

Recreating a virtual scene is a more accurate method because you can redesign some of the content of the scene and also create the camera in the Maya scene. Recreating the scene allows you to add props, trees, lighting.

In this example, a canyon scene is recreated from a picture in Maya and exported in Virtools.
Rendering of the canyon scene. This image is a composite made of a background image with several textured 3D objects. The composite is rendered in Maya before exporting the scene to Virtools.
The floor is a polygonal plane textured with the area of the floor found in the background image. The end of the canyon is a plane textured with the most distant area found in the background image.
The background plane and floor. Please note that a 3D tree is added to the scene.

4 walls are added on the sides of the canyon
Wireframe view of the 3D objects inside the canyon. The following illustration shows various views of the scene with the camera placed at the entrance of the canyon. The location and position of the camera will be exported to Virtools.
A rendered frame from the camera’s perspective view is saved as jpeg image and exported to Virtools where it will be used as a background image.

**Part 3 - Creating a scene with renderings and polygonal objects from Maya Paint3D effects**

This process offers the maximum control and accuracy. I suggest to pay special attention to semi transparent 3D pant objects such as smoke, feathers. The illusion may be broken when characters walk around an obstacles made of smoke and the block of smoke remain opaque.

Please check the 3DPaint tutorial for more information at
Step 1- In Maya, create a polygonal plane, select the plane.
Step 2- Go to Rendering > Paint Effects Tool > Make Paintable,
Go to Rendering > Paint Effects Tool > 3D Paint Effects
Step 3- Go to windows > General Editors > Visor, choose a paint effects. For example clouds, paint clouds on the plane.
Step 4- Rendering of paint effects brush strokes. The rendering will be used as a background image for the virtual scene. The rendered image is saved as a jpeg image.

Step 5- Go to Windows > Outliner. Select each brush stroke, go to Modify > Convert > 3D Paint to Polygons. The brush strokes are converted into polygonal tubes.
Step 6 - You may have too many polygons, go to Modeling > Polygons > Reduce.

Let’s load the rendered image as an image plane attached to the perspective camera in Maya.
Step 7 - Before exporting the scene as 3D Entities to Virtools,

- Make sure that all 3D paint effects are converted to Polygons.
- Delete left over brush strokes.
- Reduce the number of polygons.
- Combine some objects together.

Part 4 - how to setup the scene in Virtools with a digital actor
Go to the Virtools Resource folder created for this project, go the 3D Entity folder, LMB+drag the 3D object, go to the Texture folder, LMB+drag the background image.

Let’s display the background image.  
Go to Level > LMB+choose set up in the pull down menu.

In the Set up window, click on Attributes > Add Attribute, choose FX > Z buffer > OK. Note that the 3D object is now invisible in the 3D Layout window.
Repeat the same set up for each object of the scene. Let’s create a floor. In Level Manager > 3D Entity, select the object floor, LMB+choose set up in the pull down menu. In the Set up window, click on Attributes > Add Attribute, choose Floor Manager > Floor

Let’s create a group of obstacles. In Level Manager > 3D Entity, SHIFT+select the vertical objects – all objects except the Floor. Click on the group icon, rename the group “obstacles”
Let's bring an animated character
You can test the characters using the arrow keys
1- The character becomes very small as it moves away from us following the accidents of the floor
2- The character can detect collisions with the canyon’s walls
3- The character can disappear between the canyon’s walls
4- The character can walk around some objects

Save your Virtools file. Hit play and enjoy the scene.

**The following example shows how to set up a character on a curve:**
The Maya scene is exported to Virtools following the steps described in part 1.
Step 1- Create a curve for the character. Please note that the curve goes behind the mug.
Step 2- Set up the character on the curve.
The following illustration shows the character walking following a curve in the scene.