Sketch Up and Lumion 2

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University of Global Village (UGV), Barishal

COURSEINFORMATION			
Course Title	SketchUp and Lumion 2	Lecture ContactHours	5.00

No.	Course Outcomes
CLO1	**Master the Lumion Interface:** Gain a comprehensive understanding of the Lumion user interface, tools, and workflows.
CLO2	**Import 3D Models:** Import 3D models from various software (e.g., SketchUp, Revit, Rhino) into Lumion.
CLO3	**Create Realistic Materials and Textures:** Apply realistic materials and textures to models to enhance visual quality.
CLO4	**Generate High-Quality Renderings:** Render high-quality images and animations for presentations and marketing materials.

SI	Content of Course	Class Time (hr)	CLOs
01	**Introduction to Lumion** ☐ Understanding the Lumion Interface: Navigating the 3D workspace and toolbars. ☐ Basic Scene Setup: Creating a realistic environment with sky, ground, and vegetation. ☐ Basic Lighting and Rendering: Setting up lighting conditions and rendering simple images.	03	CLO1
02	**Importing 3D Models** ☐ Importing SketchUp Models: Transferring models from SketchUp to Lumion.	12	CLO2, CLO3

03	**Materials and Textures** ☐ Applying Materials and Textures: Assigning materials to objects in Lumion.	09	CLO2, CLO3, CLO4
04	**Lighting and Atmosphere** ☐ Advanced Lighting Techniques: Using HDRI lighting and light portals. ☐ Creating Realistic People and Vehicles: Adding life to scenes with realistic characters.	06	CLO2, CLO3, CLO4
05	**Creating Dynamic Scenes** ☐ Keyframing Camera Movements and Object Transformations: Animating camera movements and object transformations. ☐ Adding Audio and Visual Effects: Incorporating sound effects and visual effects to enhance animations. ☐ Exporting Animations: Exporting animations in various formats (e.g., MP4, AVI).	06	CLO2, CLO3, CLO4
06	**Rendering and Exporting** ☐ Photorealistic Rendering: Using advanced materials and textures to create realistic visuals. ☐ Dynamic Atmospheres: Adding weather effects like rain, fog, and snow. ☐ Simulating Time of Day and Seasons: Creating realistic lighting conditions for different times of day and seasons. ☐ Post-Production Techniques: Enhancing renderings with post-processing tools.	06	CLO2, CLO3, CLO4
07	**Advanced Techniques** ☐ Project Planning: Defining project scope and goals. ☐ Importing SketchUp Model: Preparing the model for Lumion. ☐ Scene Setup and Material Application: Creating a realistic environment. ☐ Rendering and Post-Production: Generating high-quality images and animations. ☐ Presentation and Critique: Presenting the final project and receiving feedback.	09	CLO2, CLO3, CLO4

Week	Topic	Teaching Learning Strategy	Assessment Strategy	Corresponding CLOs
01	Introduction to Lumion	Lecture, Oral presentation, Software demonstration	Lab Test	CLO1
02-05	Importing 3D Models	Lecture, Discussion, Software demonstration	Lab Test, Quiz, Report	CLO2, CLO3
06-08	Materials and Textures	Lecture, Discussion, Software demonstration	Lab Test, Quiz, Report	CLO2, CLO3, CLO4
09-10	Lighting and Atmosphere	Lecture, Discussion, Software demonstration	Lab Test, Quiz, Report	CLO2, CLO3, CLO4
11-12	Creating Dynamic Scenes	Lecture, Discussion, Software demonstration	Lab Test, Quiz, Report	CLO2, CLO3, CLO4
13-14	Rendering and Exporting	Lecture, Discussion, Software demonstration	Lab Test, Quiz, Report	CLO2, CLO3, CLO4
15-17	Advanced Techniques	Lecture, Discussion, Software demonstration	Lab Test, Quiz, Report	CLO2, CLO3, CLO4

REFERENCEBOOKS

1. Mastering Lumion 3D: Ciro Cardoso

2. Lumion 3D Cookbook: Ciro Cardoso

Introduction to Lumion

Week-(01)

Introduction to Lumion

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What is Lumion?

Lumion is a powerful, easy, fun-to-use, effective architectural visualization tool that allows anyone to build a 3D environment and then create beautiful images, impressive video presentations, and live walkthroughs. It is the fastest way to pick up your 3D model and create a scene in a matter of minutes. This chapter will help you to know Lumion better and with a quick start you will be using Lumion immediately.

In this chapter we will cover the following topics:

- Why use Lumion?
- What can we get from Lumion?
- Differences between the versions
- Import formats
- Workstation specifications
- Lumion's interface
- Navigation inside Lumion
- Working with Lumion

This chapter is a very general overview of Lumion. I promise to try to not bore you with too much background information, but you will come to know about what the software is supposed to let you do, how it compares to other 3D alternatives, and where everything is.

Lumion background

At first, let's discuss a brief history of Lumion. Act-3D is the company that develops Lumion, and it is possible that you may know them from Quest3D and several other projects that they were involved with. However, Act-3D realized that numerous customers were employing Quest3D to produce architectural visualisations. It was a difficult task since Quest3D is not exactly the best tool for creating such things. In fact, using Quest3D is not a simple task; you almost need to be a *Guru* to create something. Eventually, Act-3D decided to develop a whole new piece of software keeping these customers in mind. And then, Lumion was born with the power of a real-time visualization tool, but at the same time it was accessible to everyone.

Why use Lumion?

The short answer is that Lumion is easy to use and the final product is of a good quality. The long answer is that every construction project needs technical drawings and documents. Although this technical information is fine for a construction crew, usually the client has no idea what a CAD plan means. They can have an idea where the kitchen or the living room will be, but translating that 2D information to 3D is not always easy in the client's mind. This can be an issue if we need to give a presentation or if we are trying to sell something that is not built yet. And truth be told, an image sells more than words. That's where Lumion comes in. Lumion is the fastest way to render high quality still pictures and videos, and it makes it so easy to import our 3D models from any 3D modeling software, such as SketchUp, AutoCAD, Revit, ArchiCAD, and 3ds Max, and create a scene in minutes. So, Lumion 3D is a distinct architectural visualization software not only because it is faster to render, but also because it is very user friendly and intuitive.

Another reason why we can use Lumion to create architectural visualizations is because we can have a great idea of how our project will look in natural surroundings at any time of the day or season, and this in just a few minutes. Now if you are an architect, it is doubtless that you want to enhance your project characteristics in the best way possible. Lumion can help you achieve this in hours instead of the inevitable days and weeks of rendering time.

The following screenshot is an example of what you can get with Lumion in just a few minutes:

However, this tool is not exclusively meant for architects. For example, if you are an interior designer, you may want to present how the textures, furniture, and colors would look at different angles, places, moods, and light conditions. Lumion provides nice interior visualization with furniture, good lighting, and realistic textures.

In conclusion, Lumion is a great tool that improves the process of creating a building, or an art, or an architectural project. The time we need to get those results is less in comparison to other solutions such as using 3ds Max and V-Ray.

What can we get from Lumion?

Asking what Lumion can us is a double-edged question. Looking at the previous screenshots, we can get an idea of the final result. The final quality depends only on your creativity and time. I have seen amazing videos created with Lumion, but then you may need a touch of other software to create eye-catching compositions. Now, the package that we get with Lumion is another thing. You already know that we can easily create beautiful still images and videos, but we need to bear in mind that Lumion is not a tool designed to create photo-realistic renders.

Nevertheless, we can get so much from this application that you will forget photo-realistic renders. Lumion is a powerful and advanced 3D engine that allows us to work with heavier models, and we can make our scene come alive with the click-and-drag technique.

To do this, Lumion comes with a massive library where we can find:

- 2409 models of trees, transports, exterior and interior models, and people
- 103 ambient, people, and machine sounds
- 518 types of materials and textures
- 28 types of landscape

In addition to this extensive collection, there are more features that we can add; we can include realistic water in our scene (oceans, rivers, pools, waterfalls, and fountains), we can sculpt the landscape to adapt to our needs, and we can add rain, snow, fog, wind, and animate objects, and we can add camera effects.

You just need a blank 3D model; import and start working because, as you can see, Lumion is well equipped with almost everything we need to create architectural visualisations.

Differences between the several versions of Lumion

Lumion is available in different editions. Let's start from the most basic, which is **Lumion Free**. This version is just to analyze if Lumion is in fact what we need. Lumion Free is not for commercial use and the final output will have a watermark with the Lumion logo. We will have access to some models and features, but not the entire collection.

To download the latest version of Lumion Free use this link: `http://lumion3d.com/free/`.

If you are a school, college, or educational institution, use **Lumion Educational** or buy **Lumion Pro**. Again, there are some restrictions in what you can get with each version. To learn more about Lumion Educational licenses, visit the following link:

`http://lumion3d.com/educational/`.

Then, we have the paid versions. There are two options: **Lumion** and **Lumion Pro**. Lumion is a standard version with most of the features and content. Lumion PRO is the most ideal version for professional studios as you have access to all the features and content. With Lumion PRO, we can get more than 2000 models, 3D sound effects, and animated characters. If we have a previous version such as Lumion 3D Version 2, the cost of upgrade is lower when compared to other applications—a good point in favor of Lumion over other applications.

Importing our 3D models

The import workflow while using Lumion is excellent. We can import a 3D model along with textures, and our model is ready to render if we want to. Another useful feature is the ability to update a model. We make the changes we need to do, export and save with the same name, that is, we overwrite the model. Then, Lumion handles this situation with a single reload button. So, Lumion will reimport the model and reapply the same materials.

Lumion supports many formats, such as the following:

- 3D formats:
    - **Autodesk RealDWG**: *.dxf
    - **Autodesk RealDWG**: *.dwg
    - **COLLADA file**: *.dae
    - **FBX file**: *.fbx
    - **Max file**: *.max
    - **3ds file**: *.3ds
    - **Obj file**: *.obj
    - **SketchUp file**: *.skp
- 2D formats:
    - **Windows Bitmap**: *.bmp
    - **Joint Photographic Experts Group**: *.jpg
    - **Truevision**: *.tga
    - **DirectDraw Surface**: *.dds
    - **Portable Network Graphics**: *.png
    - **Photoshop**: *.psd
    - **Tagged Image File Format**: *.tiff
    - **High Dynamic Range**: *.hdr

- Video formats:

    ° **MPEG-4 Part 14**: *.mp4

Lumion also allows us to import, move, rotate, and scale animations. The frame rate needs to be set to 25 FPS, and Lumion will work better with an FBX file.

It is not possible to import vertex animations, morph animations, or bone-based animations in Lumion. We can import animations by using FBX files as long as these animations are just on the move, rotate, and scale values. If you use Revit, Act-3D has developed a COLLADA exporter plugin for Revit that you can download for free.

Workstation specifications

We need a good workstation to work with Lumion. There are a few essential requirements but don't be too concerned about this. Why? Let me give you an example: the recommended system memory is 6 GB, but I did a few projects just using 4 GB. Download Lumion Free and see if your workstation can handle it. Lumion brings a few examples with it, which can help you evaluate this.

Lumion recommends the following minimum requirements:

- **OS**: Windows XP, Vista, 7, 8 (32- and 64-bit) and DirectX 9.0c or later
- **System memory**: 3 GB
- **Graphics card**: NVIDIA GeForce GTS 450 or ATI/AMD Radeon HD 4890, with at least 1 GB dedicated memory (not shared system memory)

But the following are required to get the maximum performance:

- **OS**: Windows 7, 8 (64 bit)
- **System memory**: 6 GB
- **Graphics card**: NVIDIA GTX 680 or AMD Radeon HD 7970 or faster, with at least 2 GB dedicated memory (not shared system memory)

Lumion's 3D interface

Now that we know what we can do with Lumion and the content available, we will take some time to explore Lumion and get our hands dirty. In my opinion and experience, it is much easier to learn something if at the same time we apply what we are learning. So, in the next section we are going to explore the Lumion interface with the menus and different settings. But to do that we will use a small tutorial as a quick start. By doing this, we will explore Lumion and at the same time see how easy it is to produce great results. After this chapter, we'll be able to go on and refine our skills and techniques in the subsequent chapters. We will see that Lumion is easier to learn and more accessible than other software.

So go ahead and fire up Lumion and let's have a quick tour before we start working with it. I am going to explain to you what each tab does, to help you see how you can do simple tasks, such as saving and loading a scene, changing the settings, and creating a new scene. Let's start with the first tab that Lumion shows us.

A look into the New tab

On startup, Lumion goes straight to the **New** tab. The **New** tab, as the name indicates, is a good place to start when you want to create a new scene. We can create a new scene based on a few presets or just create an empty scene. We can choose from **Night**, **Sunset**, **Sunny Day**, **Flatlands**, **Island**, **Lake**, **Desert**, **Cold Climate**, and an **Empty** scene.

I found these presets as a quick help to cut some time, because in the end everything we get from these presets, we can create in a few minutes. So, there is nothing special about them. When you start Lumion, this will be the first thing you will see:
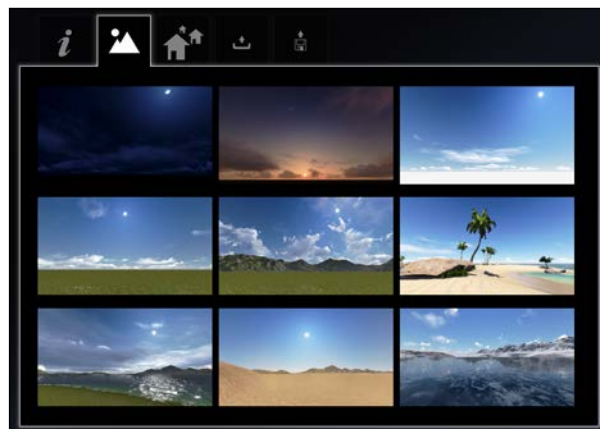
The nine presets you can find on the New tab

Exploring the Home tab

On our left, we have the **Home** tab. It is the one with an italic **i**. Here, we have access to the **Settings** and online content such as **Tutorials**, **Profile**, and **User Forum**. Click on **Settings** to access some quality settings that help us work better with Lumion 3D. Your **Settings** window will look something like the following:
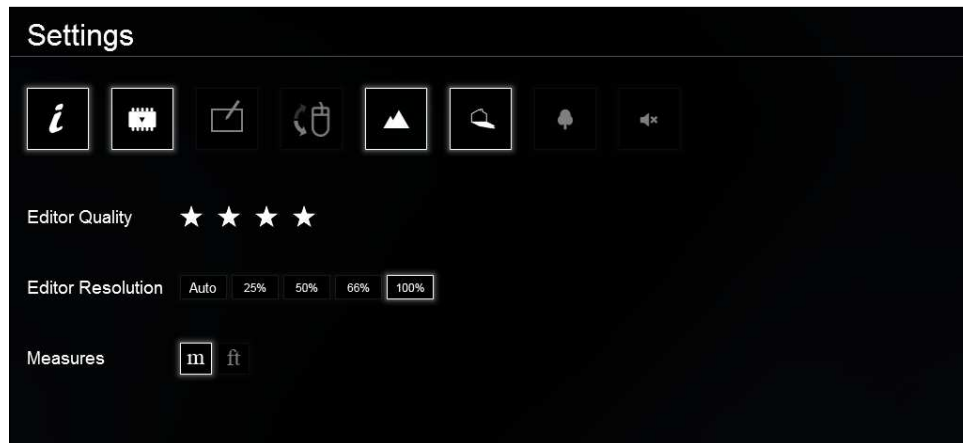
The Settings window

To understand what every button does, place your mouse over a button and a label will appear telling you what they do. For example, by clicking on the first button you can **Enable extra information in build mode**. If, for example, you have one graphic tablet, click on the button to enable it. This is a really handy tool especially if we want to modify the landscape.

Almost everything in this section is related to quality. Even when our workstation is not the best—meaning you don't meet all the specifications—we can still work with Lumion by lowering the quality settings. Don't worry, because in the end the final render or video will have the same quality. The only difference is the quality that we can see in the Build mode. So, go ahead and see what suits you best.

Also, there are shortcuts to access these options while working in the Built mode. The following is a list of shortcuts to help us with the quality settings:

- *F1*: On pressing this, the **Editor Quality** becomes **Low**
- *F2*: On pressing this, the **Editor Quality** becomes **Medium**
- *F3*: On pressing this, the **Editor Quality** becomes **High**

- *F4*: On pressing this, the **Editor Quality** becomes **Very High**
- *F7*: Press this to view the Lumion terrain at the maximum level of detail
- *F9*: If you press this, all trees and plants in the viewport will be rendered at their best level of detail

If you feel that your scene is starting to get slow and you are working with the best quality, press *F3* to lower the level of quality. Let's move to the other tabs.

The Examples tab

Click on the **OK** button to go back to the **Home** tab. The third tab, the one with three houses, is called **Examples**. You can say that it is a useful tab, mainly because you see what you can accomplish with Lumion by looking at how other artists used the materials, set the camera, and used the numerous video and image effects. The material scene is useful because here you can see some examples of materials and test the different 518 materials or your own.

I am sure you wanted to have a go, and opened this scene. Now you must be wondering how to go back. To go back to the main menu, click on the **Files** button (floppy disk icon) in the bottom-right corner. After going back to the main menu, you may notice some changes in the interface. That's right, now you have another two tabs: **Save scene** and **Export full scene**.

The Load scene and Save scene tabs

Next to the **Examples** tab, we have the **Load scene** tab where all of our saved scenes are stored. Not only the saved scenes, but the autosaved scenes are stored too. These files are automatic saves that Lumion does for you just in case something goes wrong, although I recommend that you save several versions of your work. If you want to remove the autosaved files or other scenes, place your mouse over the thumbnail. Then, you have to click twice on the small trash bin icon in the upper-right corner to delete the file.

Now, as I told you, when you create a new scene or open a previously saved scene, Lumion triggers two more tabs. One of them is for us to save our current scene. The way it works is simple; give a name to your scene, add some description if you want, and click on the **OK** button to save it as **Version 0**. Every time you save a scene, Lumion will save it as a different version. I always save the initial scene with the name `Base Scene`. If something goes wrong or if I need a fresh start, I will use this scene. Then I save it again as `Scene_v01`. I start working on this scene. If I am going to do a big change, I save it again as `Scene_v02`. In this way, if something happens to my scene, I can always go back and start from a specific point.

The Import full scene and Export full scene tabs

The last two tabs, **Import full scene** and **Export full scene**, are pretty self explanatory. They are nothing fancy, but they are really handy. We can export our scenes as a Lumion scene file as `.ls3`, and later import them again to our library. This is an easy way to export a scene and then work in another workstation with Lumion. Or if we finished a project and we want to save all the files in a DVD, we can export, burn on a DVD, and import them later if needed.

Quick start

Learning these important aspects is interesting, but reading 100 pages with just "this button does this or that" is boring to death. When I started to learn Maya, I was eager to create something and give wings to my creativity. I am sure that the same thing is happening to you. That's why I choose to explain the Lumion interface and all the commands and buttons to you by using an example, and at the same time allowed you the freedom to apply this knowledge in a model that you want to try. So, now that we already know how to start Lumion, where we can load and save a scene, and change the settings, it is time for action.

So, we are going to follow a small tutorial to understand how you can start using Lumion. Then, after we know where everything is (or at least almost everything), the next chapters will help us refine some techniques and key aspects to create a perfect image or video.

So, let's get started straightaway. The first thing we need is a 3D model, and I am going to use a 3D model of the famous Farnsworth House design by the architect *Ludwig Mies Van der Rohe*. This is just an example, so feel free to use any model you want to try. I modeled this house in SketchUp 8, which is one of the best solutions to do architectural modeling. But as you know already, you can use any 3D application as long as you can export to the format that Lumion supports. The following is the 3D model I am going to use:

Farnsworth House 3D model

So the first thing we need to do is export our model. Using SketchUp follow these steps:

1. Go to the menu and navigate to **File | Export | 3D Model…**.

2. In the window to export the model, choose **COLLADA File (*.dae)** as the export format. Then, click on the **Options…** button and select the following:

   ° The **Triangulate All Faces** option

   ° The **Preserve Component Hierarchies** option

   ° The **Export Texture Maps** option

3. If you are using other 3D software, go to *Chapter 4*, *Working with Lumion*, to get some help.

4. After exporting, start Lumion and select the preset **Sunny Day** on the **New** tab. Lumion will open a scene with this preset. We are now in the Build mode that looks something like the following :
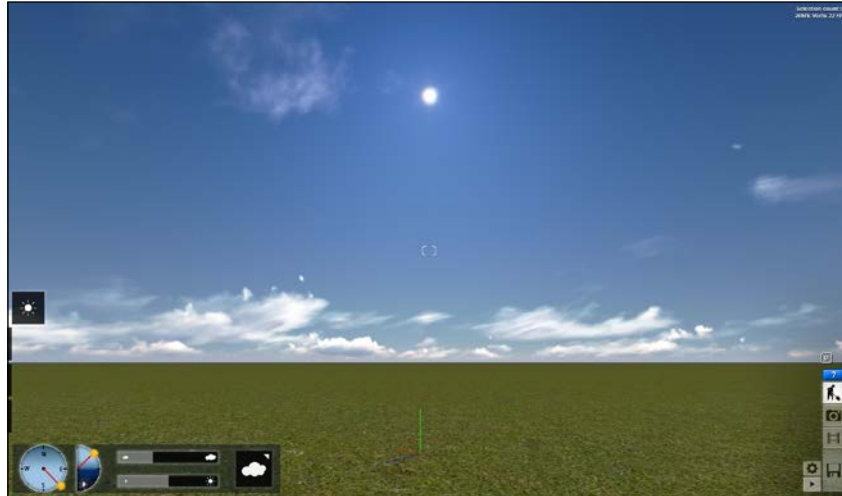
Build mode interface

5. The brackets you see in the middle of the preceding screenshot are the target that the camera moves towards. To navigate inside Lumion, we need to use the following keys:

   ° **The Up arrow key /** *W*: This moves the camera forward
   ° **The Down arrow key /** *S*: This moves the camera backward
   ° **The Left arrow key /** *A*: This moves the camera left
   ° **The Right arrow key /** *D*: This moves the camera right
   ° *Q*: This moves the camera up
   ° *E*: This moves the camera down
   ° *Shift* **+** *W/S/A/D/Q/E*: This doubles the camera speed
   ° **Space bar +** *W/S/A/D/Q/E*: This slows down the camera
   ° *Shift* **+ Space bar +** *W/S/A/D/Q/E*: This makes the speed of the camera very high
   ° **The right mouse button + movement of the mouse**: This helps you look around

- ° **The middle mouse button + movement of the mouse**: Pan around the viewport
- ° **Scrolling up/down using the mouse wheel**: This helps you to move in and out
- ° *Ctrl **+** H*: This resets the camera pitch to the horizontal viewpoint
- ° *O **+ the right mouse button***: This orbits the camera

So, you can see how important it is to have a three-button mouse to help you navigate the camera in the editor. It is really important to learn and memorize these shortcuts to improve your workflow; not only when you are placing content, but also when you need to control the camera in the Photo and Movie modes.

Importing the model

Now that we know how to navigate inside Lumion, let's import a model. How can we do that? On the left-hand side, there is a square with a Sun; move your mouse there and three more squares will appear. The first one is for us to change the weather, the second one is for landscape, the third one is to import our models, and the last one is to add objects using the Lumion library.

If we click on the **Import** button, the menu at the bottom will change as you can see in the following screenshot:
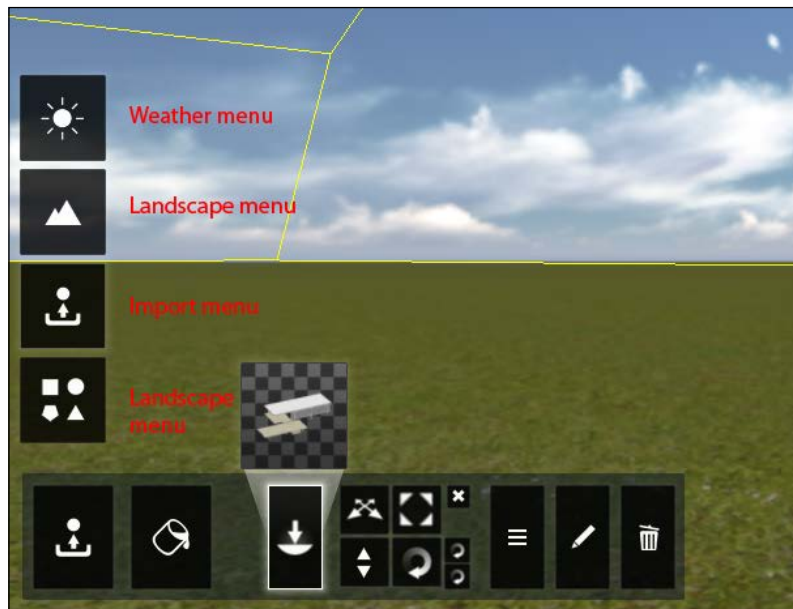
The Import menu

My interface may be different from yours. You may notice that I already have the model selected to import. This happens because Lumion always selects the last model you imported. To erase these files from the Import library, click twice on the thumbnail with the model. This will open a new window where we have all the models that are already imported. To delete the model, move your mouse cursor on top of the thumbnail and click twice on the trash bin icon.

Go back to the Build mode by clicking on the small cross at the top-right corner. Click on the first button to import your model. When starting a Lumion project, it's a good idea to set up your file structure first. Start with a main folder for the project and include subfolders inside. When you transport your project to another workstation, you can grab the whole folder to keep the hierarchy intact.

The model I exported from SketchUp was saved in the Import folder and the SketchUp model was saved in the Assets folder. Select the file that you exported, but first you may need to choose the correct extension so that your model can be made visible. Once you click on **Open**, a small window will appear where we can change the name of our imported model and choose to import animations (if we have some). Click on **OK** to add the 3D model to the library.

When we do this, a yellow bounding box will appear to help us insert our model in the correct place. If you can't see the yellow bounding box, you may need to scroll using the mouse wheel to zoom out a little bit.

> Don't forget to use the *O* key and the right mouse button to orbit the camera.

To place the model, click the left mouse button wherever you want to place it. Congratulations! You just imported your model.
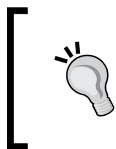
> If you can't see your model after importing and placing it in the scene, try this:
> - Place your model at 0,0,0 before exporting it.
> - Check the scale of your model.

Working with Layers

Maybe you are thinking, "Oh, it would be really nice if I could organize my scene with Layers." Well, you can. At the top-left corner, can you see a number with a tiny eye? If we move our mouse there, the Layers menu will appear. Here is how it works:

- To start a new layer, click on the plus icon
- To set the current layer, click on the number that identifies each layer
- To hide a layer, click on the eye
- For labeling, change the layer name by typing it in the textbox

The Layers menu

It's a really good idea if from the beginning you start to organize your scene using layers. And I speak from experience because sometimes, it can be hard to select something in Lumion when you have your scene full with objects. Things that you can organize inside layers include Trees, Grass, People. It will make a big difference, trust me.

Applying materials

I am not going too deep into the editing materials. When we import a model, if we click on icon that has a bucket with ink, we can add materials to our model. Near our model, there is a white dot that we need to click on in order to select the model. You will know that you selected the model because it will turn green with a bounding box.

After that, we need to click on the plus icon and select something in our model. As soon we do that, a menu with all the materials will appear on the left-hand side. In my case, I will select the floor; and just to show you how it works, I will choose the material **Concrete_025_1024** and see how it looks. The following screenshot shows this material applied on the exterior floor:

At the bottom, you can see the materials applied to your 3D model. and the Add material button is highlighted.

Although adding a material is really simple, Lumion allows a really good control over the materials. You can see this in the following screenshot:

These are the settings you can use to tweak the material in a way that suits your scene best

Click on the first button to change some material properties and the second button to modify the placing of the texture. The third button allows us to change the textures. If, for example, we want to use a material with a different texture, we click on the texture and load a new one. The **Advanced** option allows us to darken the texture or lighten it if needed.

After adding this material, we need to click on the plus icon to add a new material. For now, why don't you try to add some materials? To add a new material, just click on the plus icon and repeat the process. Finally, just click on the OK button to save all the materials:
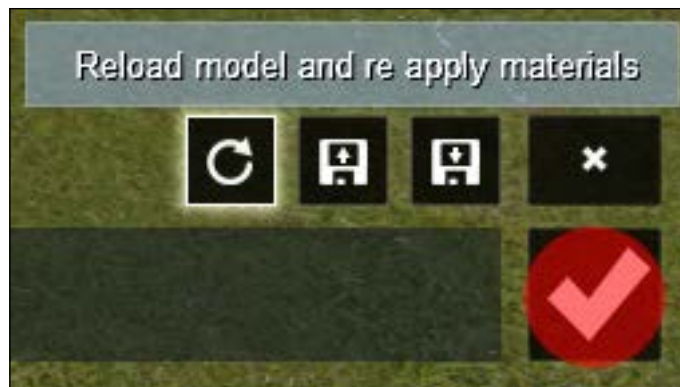
The OK button (highlighted) and a really important button called Reload model and re apply materials

Before moving to the next menu, let's have a look at two useful features. The first one, as we can see in the preceding screenshot, is the option to reload the model, as I mentioned previously.

For example, we imported our model, but we notice that something is wrong, such as the normal face is in the wrong direction. We can change that with our 3D application, and then export our model. But instead of importing and consequently adding the materials again, we just need to click on the **Reload** button. Lumion reimports the model and applies all the changes we made, including the materials. Now, let's have a look at the following screenshot:


The mouse is over the Glass material and you can see that Lumion tells you where this material is applied

Another useful feature is that when we put the mouse over the thumbnail with the material we already applied, Lumion automatically shows where this material is applied. In this case, I selected the Glass material and it is showing me where this material is applied.

Controlling the weather

After applying the materials, we are now going to change some settings on the **Weather** menu. Click on the **Weather** button and explore how you can change the Sun's direction and height. Try to achieve some different moods, such as a sunny day, a sunset, or a beautiful night. The other two settings allow us to change the quantity of clouds in the sky and the Sun's intensity. Finally, the button with a cloud lets us change the type of clouds. The following screenshot shows us these options:
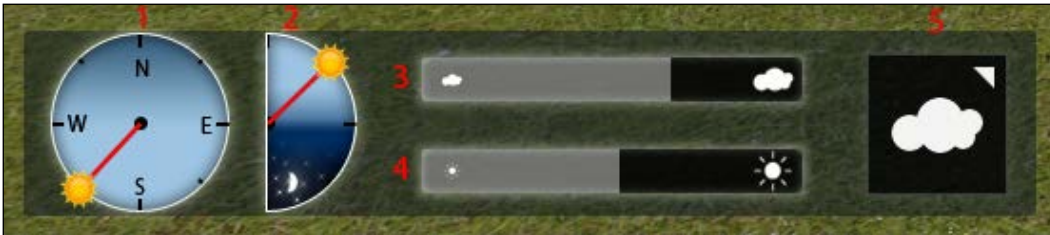
The Weather menu with the different settings: 1 – Sun direction, 2 – Sun Height, 3 – Amount of clouds, 4 – Sun brightness, 5 – Type of clouds

I am going to set the environment for a nice sunny day and add some clouds. We can choose from nine types of beautiful skies.

Changing the landscape

Looking at this example, we see that the terrain needs some work. It is too flat and it wouldn't hurt if you changed the terrain and added some hills. To change that, we select the **Landscape Editor**. We have a set of tools at our disposal that help us to sculpt our terrain easily, as we can see in the following screenshot. We can raise, lower, flatten, jitter, or smoothen our terrain. As you can see in the following screenshot, I have the **Lower** tool selected:
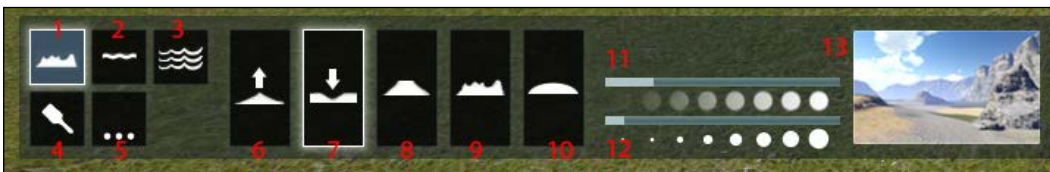
You can find the following options in the Landscape Editor: 1 – Height menu, 2 – Water menu, 3 – Ocean menu, 4 – Color menu, 5 – Terrain menu, 6 – Raise brush, 7 – Lower brush, 8 – Flatten brush, 9 – Jitter brush, 10 – Smooth brush, 11 – Brush speed, 12 – Brush size, 13 – Choose Landscape

Let's use the **Raise** and **Lower** options to add some variety to our scene. On the right-hand side, we can change the brush opacity and size. Actually, Lumion calls the first option speed, but in reality we are changing the opacity. It is the same principle that we find in Photoshop. If you have a graphics tablet, it is easier to sculpt the terrain because you have a better control; but don't worry, most of the times I use the mouse to work.

By the way, did I tell you that you can use a height map to do all this work for you? We are going to learn how to do that later in this book; but yes we can use a height map and Lumion will convert that information to a landscape. Let's turn our attention to the terrain. Using our left mouse button, click where we want to raise or lower the terrain. Lumion also introduces the opportunity to undo our changes. So, just to have some variety, we changed the landscape with a few pushes and pulls.

A useful setting that we have with this menu is the opportunity to change not the entire terrain, but individual elements. So, let's say we are happy with our scene, but we feel that the grass should be greener or there should be a different kind of grass. If you notice, we have a **Color** menu below the **Height** menu. Click on this menu to access the four thumbnails representing each element of our scene, as shown in the following screenshot:

The Color menu

Clicking on each arrow will give you access to 42 different textures. If not, you can also import one of your own textures. Or if you want, change the entire landscape by clicking on the thumbnail with the mountains and select a preset from the 20 available ones.

Now, let's add some water. Next to the **Height** button, we have two more buttons. Click on the **Water** button (the one with a single wave). On the right-hand side, we have a thumbnail that will allow us to choose between six types of water: **Ocean**, **Tropical**, **Pond**, **Mountain**, **Dirt**, and **Ice**.

Select the **Mountain** preset and click wherever you want the water. I have already sculpted a specific area on the left of my house to place this water. We can place the water, but then we need to tweak the height and size. Use the icons at each corner to do this, as shown in the following screenshot:

Adjusting the water using the controls at each corner

Go ahead and try the other presets. To delete something, just click on the trash bin icon and click on the white dot that appears.

Adding objects

Now, we will finally see the **Objects** menu and the following is what this menu looks like:

The Objects menu

Here is where the fun starts. We have at our disposal eight categories of objects and more, such as **Nature**, **Transport**, **Sound**, **Effects**, **Indoor**, **People and Animals**, **Outdoor**, and **Lights and special objects**. Each of these menus has subcategories. If you are working with the Lumion PRO version, you can choose from more than 2000 models. Even if you don't have this version, cheer up! You can still import your own models and textures. You need to follow the same steps that we did to import the house.

It is really simple to add a model. First, we need to select the category we want to use. So in this case, click on the **Nature** button. Now that we have this category selected, click on the thumbnail above the **Place** button and a new window with the Nature library will appear.

We don't have just trees, we have grass, plants, flowers, rocks, and clusters. Now let me show you one trick. Click on the **Grass** tab and select **Rough_Grass1_RT**. Now that we are back to the Build mode, press the *Ctrl* key and click on the ground. We are randomly adding 10 copies of the object, which in this case is really handy. So, after playing a little with Lumion, we can get something like the following screenshot:

Our scene after adding some trees, grass, and animals

Just think, it took me about 30 minutes to create something like this. Now imagine what you can do. Let's save our scene and turn our attention to the right-hand side of the Lumion 3D interface, where we can find the menus as shown in the following screenshot:
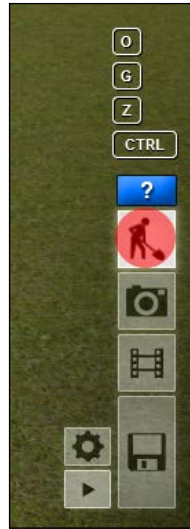
The Build mode button

Starting from the top of the preceding screenshot we can see the blue rectangle with a question mark. If we put our mouse cursor over this rectangle, we can see a quick help guideline for our interface.

The next button informs us that we are in the Build mode and if, for example, you are working in the Photo or Video mode, this button lets you go back to the scene.

The Photo mode

So, if you click on the button with a camera (which is called **Photo**), our interface will change to the **Photo** mode, which in my case is something like the following:

The Photo mode interface: 1 – New effect, 2 – Copy effect, 3 – Build mode with effects

Here, we can render and export our still images. But before that, we can add a lot of effects. We can add some **Depth of Field** and **Vignette**, or perhaps you want to set up a scene with rain or snow. Go ahead and try the different effects. To do that, click on the **Effects** button on the top-left corner.

Another cool feature that Lumion has is the possibility to have our Build mode with the effects applied. So, let's say I want to show my scene with some rain, I add that effect and then click on the **Build with effects** button.

At the top of your screen can you see the 10 thumbnails with a camera on it? In the preceding screenshot, one of these thumbnails is filled with an image. This is another great feature. So, let's say that we are working on our scene, we adjust the camera and we love it—perfect angle and composition. Now, it would be really good if we could save this camera viewpoint. Well, we can save camera viewpoints by pressing *Ctrl + 1*. We may notice a temporary change in the interface, and if your sound is on, you will hear a sound too. This is our camera viewpoint being saved. So, later when we go back to the **Photo** menu, we have this camera viewpoint saved. Go ahead and try more camera angles and save them by using *Ctrl* and any number between 0 and 9, and then try *Shift* and any number between 0 and 9.

Finally, adjust the **Focal length** if you want, and then we can export our image. We have four sizes available, as you can see in the preceding screenshot. The formats available are JPG, BMP, DDS, PNG, and TGA.

The Movie mode

However, the Lumion potential is not only in the **Photo** mode. In reality, the best potential of Lumion is the speed at which we can create stunning videos. So let's move to the **Movie** mode. When you change to this menu, this is the main interface is shown as follows:
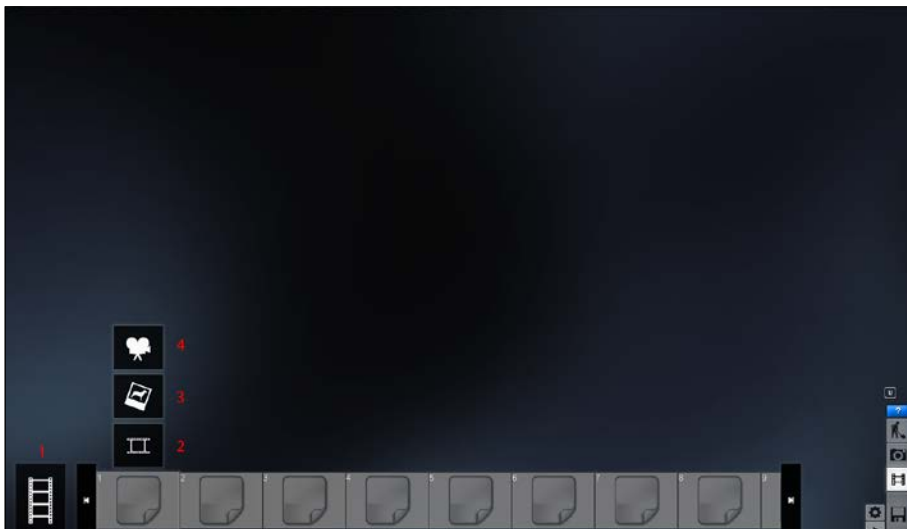
The Movie mode interface: 1 – Entire movie, 2 – Import a movie from file, 3 – Import an image, 4 – Record

Remember when I told you that the Lumion interface is intuitive and friendly? This section is an example of that. You can create a movie in the simplest and easiest way possible.

At the bottom of the preceding screenshot we can see nine clips. Each clip can store a small animation, or if you want, the entire movie. Lumion also gives you the possibility of importing an image or a video. So, perhaps we want to start our video by showing our logo; we don't need to do this in another application. Just import what you need and add it to your movie. To do this, click on the second button to import an image or the third to import a movie. Now, let's start creating an animation. Click on the first button that has a camera icon, as you can see in the following screenshot:

The Record menu: 1 – Play the movie, 2 – Clip speed,
3 – Take a photo, 4 – Go back to the Movie mode

The way it works, as I told you, is really simple. Do you see the button with a camera? Click to start your first shot. Then move the camera slightly to another angle and click again, and repeat until you are satisfied. After that, click on the play button to see how your animation looks:

> Remember that I told you to save a camera viewpoint using the *Ctrl* key plus a number key from 0 to 9? Using the *Shift* key plus a number key from 0 to 9 will load the saved viewpoints. You can use that shortcut in this mode too.

Another useful feature that Lumion allows is speeding up or slowing down your clip. On the left-hand side, you have a slider that allows you to increase or decrease the speed. When you are happy with your animation, click on the **OK** button and that's it. Congratulations, you have created your first animation. Now, the Movie interface changes as shown in the following screenshot!

The Movie menu interface with the clip we just created: 1 – Edit clip, 2 – New effect, 3 – Copy, 4 – Build with effects, 5 – Play, 6 – Save movie

Now, we can edit the clip again if needed. Click on the clip and we have two buttons inside it: one that allows us to go back and edit the clip, and the other to delete it. This is not the only way to do it. If you look at the top-left corner, we have four new buttons:

- **Edit Clip**: It leads you back to the menu where we can edit the clip.
- **New effect**: It adds effects to the clip without affecting the entire movie.
- **Copy**: We need to have an effect applied to the clip so that we can copy this effect and paste it in another clip.
- **Paste**: Yes, I know I said four buttons, but this one only appears if we copy an effect. It allows us to paste the effect in another clip or on the entire movie.
- **Build with effects**: Enable this option to see the effects applied on the build mode.

In this mode, Lumion allows us to add effects to each clip and to the whole movie. This option is useful when we want to add, for example, a **Fade in/out** to a specific clip, or change the **Depth of Field**. I added some **Vignette** and a little **Fog** in the background. In this case, we have nothing to animate, but we can add these effects here by using the advanced features such as animated objects or hiding layers.

Now, to export the movie, click on the **Save movie** button on the right-hand side. It is the one with a movie take. The following options are available for exporting our movie or images:
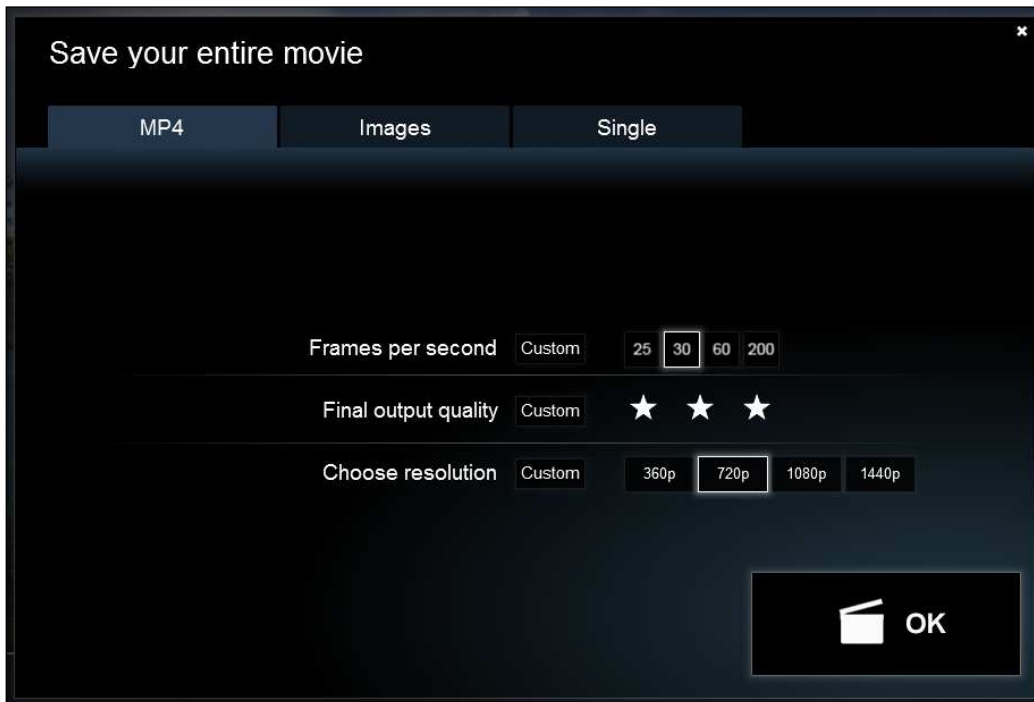

The Save menu

We can export the MP4 format with several options, such as **Quality**, **Frames per second**, and **Resolution**. Another option is to export our movie as a set of images, which is a very useful option. And the third option is to save a single picture like in the Photo menu, but with many more options. These options include the possibility to save several render passes.

Saving your scene

To finish this chapter, we still need to know how we can save our scene. Looking at the image again, we can see the save button (the one with the image of a floppy disk). Click on the Save button and Lumion opens the **Save Scene** tab. Here, we give a name to our scene and a description too if needed. Notice that when you click on the red **OK** button, Lumion informs us on the left-hand side that now we are working on the version number 1. Every time we save, this number will increase. You can see this button in the following screenshot:
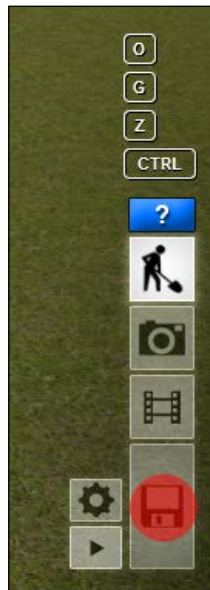
The Save button

Just two more things before we move on to the next chapter. The button with a gear allows us to go back to **Settings** and change the **Quality settings**, if needed, and the last one is the Theater mode. So, if you have Lumion on your laptop, you can do a live walkthrough instead of exporting a movie or an image.

Summary

This chapter was designed to help you start with Lumion, and give you a taste of how easily and quickly you can get great images and videos. In particular, you've learned the basic steps to save and load scenes, import models, add materials, change the terrain and weather, and create photos and videos.

This is the basic workflow for achieving great results in Lumion. Now you're able to apply what you've learned in your own projects immediately. The rest of the chapters in this book will help you to improve your skills and techniques.

Week-(02-05)

Importing 3D Models

2
Preparing the Scene

I am sure that after going through the first chapter, you are now eager to start working with Lumion. We ran through the basics that will certainly help to keep you going, but now is the time to refine our skills and also see where and how we can improve our workflow. This chapter is related to modeling and preparing our scene, but we will be doing more than that. We will identify some common mistakes made by beginners and learn how to avoid them to prevent having problems later with Lumion, and also where you can find models for your scenes, along with a few tips to improve the realism of your image or video.

In this chapter we will learn the following:

- Modeling for visualization
- Working with CAD drawings
- Importance of detailing
- How to use our own models
- Avoiding common mistakes

As we saw in *Chapter 1*, *What is Lumion?*, Lumion is a great tool designed to give anyone the opportunity to create amazing still images and videos. But before we start using Lumion to create such things, we need a 3D model that is ready to be used in Lumion. So, we need to create a model and at the same time take into account a few points not only to help us improve the realism, but also to avoid problems while importing our model to Lumion.

Need help with modeling?

The scope of this book is not to teach you how to model using a 3D application such as 3ds Max, ArchiCAD, or Revit. Maybe this is the first time that you are trying to create your own architectural visualizations and you don't have any experience with modeling.

Don't despair, because SketchUp is the perfect solution for you, and best of all, it is free! Modeling in SketchUp is really easy and the reason behind it is that SketchUp has been developed to cater to people who don't have any experience in using complex 3D applications. So, even if you don't have any experience, SketchUp can help you start making your own visualizations.

> Do you want to try SketchUp? Download it at `http://www.sketchup.com/download`.

Modeling for visualization

Modeling for visualization is not hard; you just need to follow some basic rules to help you start. The first basic rule is to ask: *Will I see this?* This is an important question we have to ask ourselves when we start modeling. If you don't see something or you are not thinking of showing it in the final image or movie, don't waste time modeling it. Besides, by modeling things you don't see, you are making the file size bigger, affecting both your workstation performance and the rendering time.

This question shows the importance of planning. You may wonder what planning has to do with modeling. Well, when we want to create an architectural visualization, we need to create everything from scratch. This freedom may be counterproductive because with so many opportunities and possibilities, we may lose focus and start modeling unnecessary things and details.

So, planning is the key to success, and good planning can save us a lot of time. We need to think about what we want to show. Are you going to do some close-ups or a view of the whole building? Can you see the hinges on a door from an aerial view? I think not, but if you are planning to create a still image at a person's eye level, you may need to include this detailing. Do you see what I mean by planning? The detailing we need in a still image is not the same as that of a movie, and we need to think ahead before starting with modeling.

With a specific end in mind, go ahead, take a pencil, and do some sketches for each still image. If you want a movie, create a storyboard with each moving sequence. This will help you know what you need to model, where you need to add more detailing, and where you need to make some basic shapes.

Preparing CAD drawings

After doing some sketches, we need a CAD drawing. Almost every project starts with a CAD file which has the technical drawings and specifications. These files form the baseline for a 3D model to be created, and it is very important for us to prepare them right from the beginning in order to prevent problems later. These principles apply to every 3D modeling application and not to SketchUp alone.

It doesn't matter if we receive a CAD drawing from a client or have a plan drawn by us, we always need to "clean" these drawings first. What does that mean? Well, there is always a certain amount of unnecessary information in a house or building model. Usually, I save a copy of the drawing as something like `Drawing_Clean.DWG`. Inside the drawing, I have the plan with walls, doors, windows, and elevations. While cleaning the drawing, don't forget to check for external references and bind them or they will not appear when you import the drawing. Check if you have any hidden layers with information, and use the **Zoom Extents** option to check if there is more information than that you can see on screen. Sometimes, drawings might be far away from each other.

So, delete everything that you won't need, including layers, line types, and other CAD stuff. If we remove some of these objects, the file size and complexity of the CAD drawing will decrease and it will be easier to manage things inside our 3D application. The following figure shows a clean and ready-to-go CAD drawing:
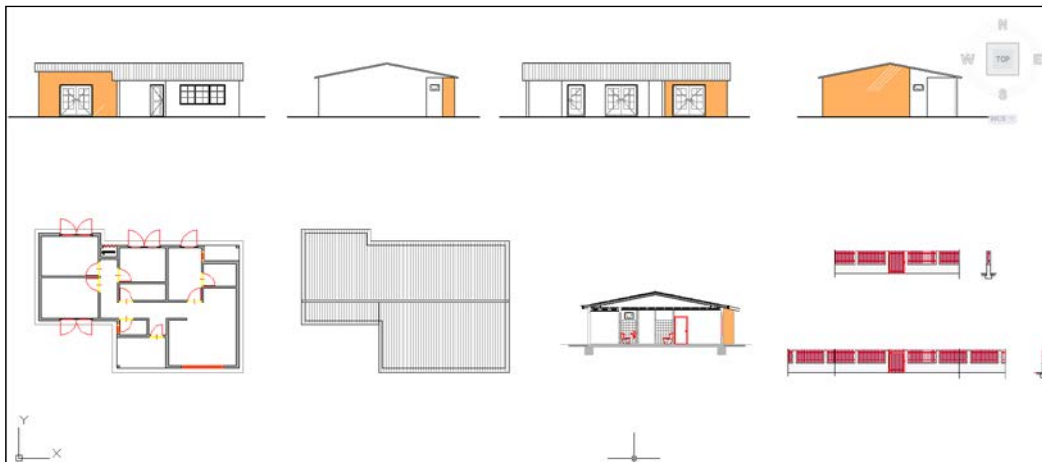
A CAD drawing example with just the information we need

If I need more information, I generally keep the CAD drawing open to have a quick look. One important thing is that, our drawing needs a scale. Otherwise, when we import it to SketchUp or other 3D applications, we may have two basic problems; we won't be able to see our plan, either because it is too tiny and we need to zoom in, or because it is so big that we need to zoom out. And even if you zoom in or out to see the plan and modeling, the problem will still persist when we import our model to Lumion. Our model will either be huge or tiny, and we will need to go back and scale it.

After all these steps, run the `Purge` and `Audit` functions to make sure all the unnecessary information is removed and the errors are fixed. The last thing you need to be sure of is that your drawing is set at the origin location `(0,0,0)`. This is very important because the drawing may not be located at the origin but rather far away from it, and when we import, things might not go well. This is not the end of the world, but you should make a habit of having your drawings close to the origin location. To move your drawing to the origin location, use the command `Move (M)`, enter `'0'`, `'0'`, and then press *Enter*.

Now that we have planned our shots, have a clean drawing, and know what we need to model, let's start modeling.

Modeling with SketchUp, 3ds Max, and Maya

The modeling process itself is relatively straightforward. I built the model of the house after doing some research on it. I gathered all plans and images that I could find online and in books. Since classic designs such as this are well documented; it wasn't difficult to find the information I needed. The modeling part was quite simple as the building does not have any complex shapes, and so, this is polygonal modeling from boxes. Hence in this case, I didn't use any complex CAD drawings; just some references for checking the measures.

This topic is related to modeling, but again, teaching you how to model is out of the scope of this book. Instead, we are going to learn small tips that we can use to prepare our scene in Lumion and prepare our own models, and also how to correct some mistakes that may occur during the modeling process. I am going to focus on three 3D applications that I use the most and have experience with, but everything that you learn here can be applied to any 3D application. They may be different commands, but the end result is the same.

The importance of detailing

The importance of detailing is sometimes underestimated. We tend to think that we need awesome materials and great lighting to create a beautiful image. That is important too, but we can have all those things and our render will still look flat or not so great. Why? This is because we need detailing, detailing, and detailing. So, what I mean is, you need to stop a little bit and start looking around yourself paying attention to all the small detailing. We will look at this later in this book, but just to give you an idea, if we add flowers to our scene in a straight row, how do you think will that look? Fake, because even if you have a perfectionist gardener planting the flowers, you will still have slight variations. Now, since we are talking about modeling a house, how can we add detailing to our model? Well, let's have a look at the next topic and find out.

Adding detailing using bevel edges

A great level of realism is achieved in architectural visualization by adding detailing such as those you find in the following screenshot. The problem with sharp edges is that you will obtain something flat and lifeless, and it will be harder to achieve a good level of realism.

There are almost no sharp edges in real life, and even most man-made objects have a slight roundness. Beveling helps bring out detail, and really sells the realism of your model by allowing edges to properly catch highlights from your lighting solution:
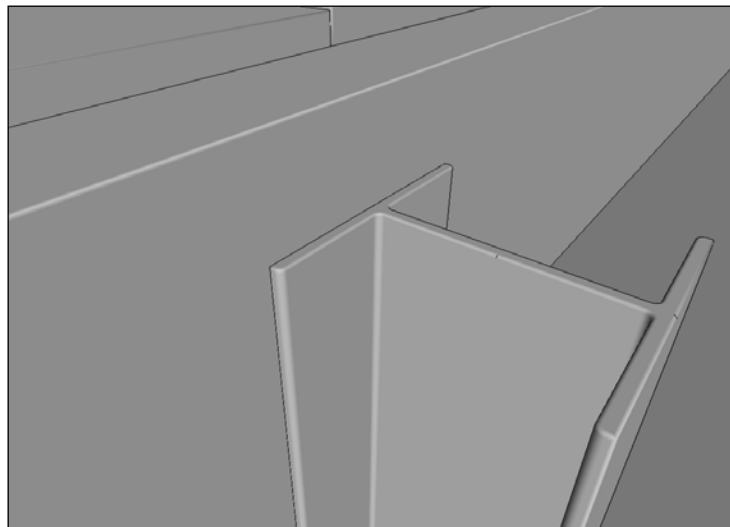

An example of beveling in a 3D model

The following screenshot will help you better understand the difference between using sharp edges and bevel edges. The left-hand side shows the edges without beveling, and on the right-hand side, you can see the edges with beveling:
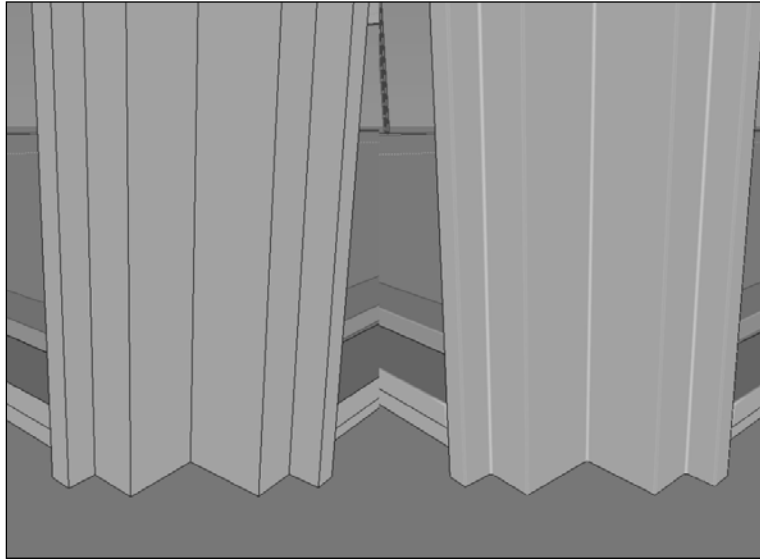

Which one do you think looks better? Look at your model now and see where you can add this kind of detailing, but also have in mind that if you are not thinking about showing those details, don't bother modeling them. Trust me, beveling edges will make a huge difference.

How can we do this in SketchUp? SketchUp doesn't have any specific tool to do this, so you need to download a plugin. I used the RoundCorners plugin from the website for Fredo6. Before we see how it works, a word of advice; in these kinds of operations, it is always a good idea to save first and model later. The reason being, these are plugins, hence they are not a part of the application, and sometimes when we perform this operation, the application can crash and we may end up losing all the work. Working with this plugin is pretty simple, as explained in the following steps:

1. Select the kind of round corners you want. You can choose from round corners, sharp corners, and bevel-edged corners, as shown in the following screenshot:
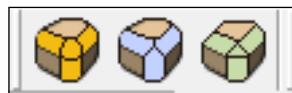
2. Then, select the edges you want to bevel. I found that if you select the entire geometry, the plugin will add the effect just to the edges, as shown in the following screenshot:
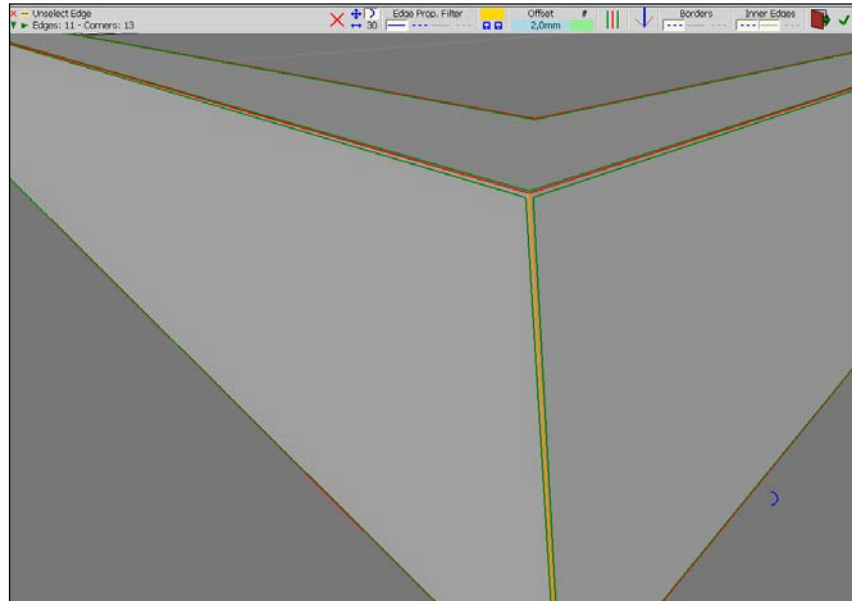

The RoundCorners menu

3. At the top of the screenshot, we can see the menu bar. You just need to insert a value in the **Offset** option; if you are happy with the result, click on an empty space or on the button symbolized with a green tick mark meaning OK.

> You can pick up some useful tips from the training videos available at `http://www.sketchup.com/training/videos.html`.

In case you are using Maya, carry out the following steps:

1. Select the edges that you want to bevel.

2. Press *F3* to select the **Polygons** menu.

3. Select the **Edit Mesh** menu and then click on the **Bevel** option. This will open a window called **Bevel Options**.

4. We can leave the default settings and change only the **Width** value and the number of **Segments**. Then click on **Apply** and not on **Bevel**, because if you want to go back and change the settings, you just need to press *Ctrl + Z*:
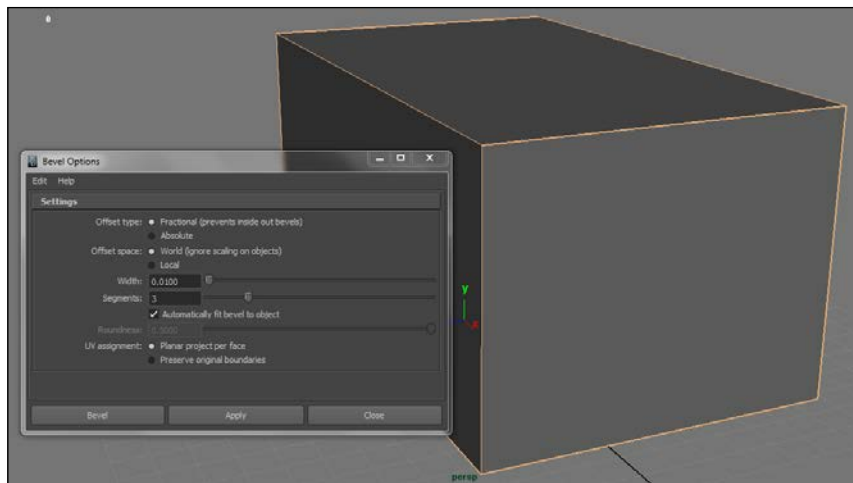
The Bevel Options menu

In 3ds Max, we can use the **Chamfer** option by the following the ensuing steps:

1. First, you need to apply the **Edit Poly** modifier to the object.

2. Select the edges you want to chamfer.

3. In the **Edit Edges** menu, click on the **Chamfer** settings.

4. Here, you just have to be concerned with the **Amount** and **Segments** values. Don't forget to click on the green colored tick mark if you are happy with the result as shown in the following screenshot:
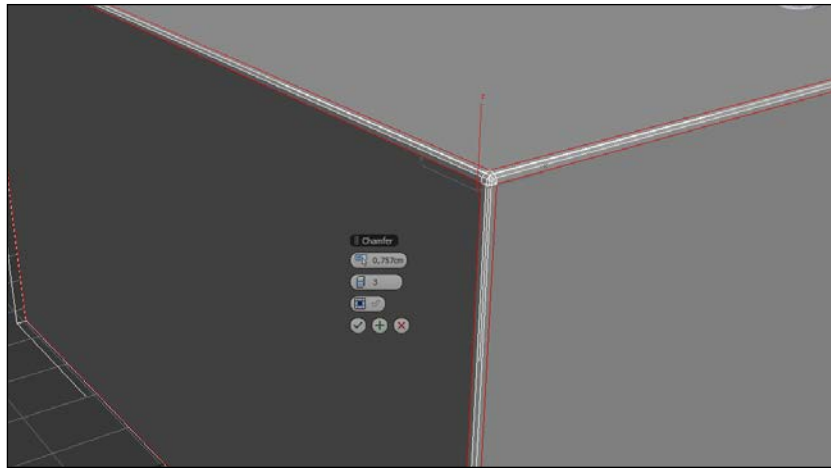
The Chamfer menu

> If you are looking for help in modeling using 3ds Max or Maya, have a look at the videos available at `http://www.evermotion.org/tutorials/show/7979/tipoftheweek-3d-building-modeling-part-1`.

There are also a few scripts that can help while modeling for architectural visualization. The following is a list of useful plugins for SketchUp:

- **JointPushPull**: This helps to perform a push or pull operation on a curved surface
- **RoundCorners**: This is used to bevel edges
- **SubdivideAndSmooth**: This helps in the subdivision of the surface for modeling
- **SketchyFFD**: This is a freeform deformation matrix for your model that makes it malleable
- **FreeScale**: This is an improvement of SketchUp's native `Scale` function
- **OSCoolean**: This helps to create Booleans
- **Shapes**: This is a useful tool for creating complex geometrical shapes
- **Weld**: This helps find gaps in a line that are not visible and automatically welds the broken points

Using 3ds Max, we have the following plugins and scripts that are very useful:

- **Floor Generator**: This provides scripts to help you create floors.
- **Bookmanager 1.0**: This is helpful in placing books directly on actual shelf polygons.
- **MultiTexture and UniqueMaterialID:** MultiTexture is a plugin that loads multiple textures and assigns them randomly, either by the object or by the material ID. UniqueMaterialID is a script to assign unique material IDs to each element inside an object.
- **Rock Generator**: This is a script procedural rock generator for production and real time environments.

For Maya, you can have a look at the following:

- **1 Click Procedural Rock Generator**: This is a procedural rock generator
- **Ninja Dojo (Black Belt) 5.5.0**: This consists of different modeling tools
- **StairsCreator v3.0 3.0.0**: This is used to create stairs
- **ArchiTool 0.8**: This gives a collection of different tools

Adding detailing

If you want to give the images a good level of realism, a big part of this is related to detailing. An example of attention to detailing has been shown in the following screenshot:
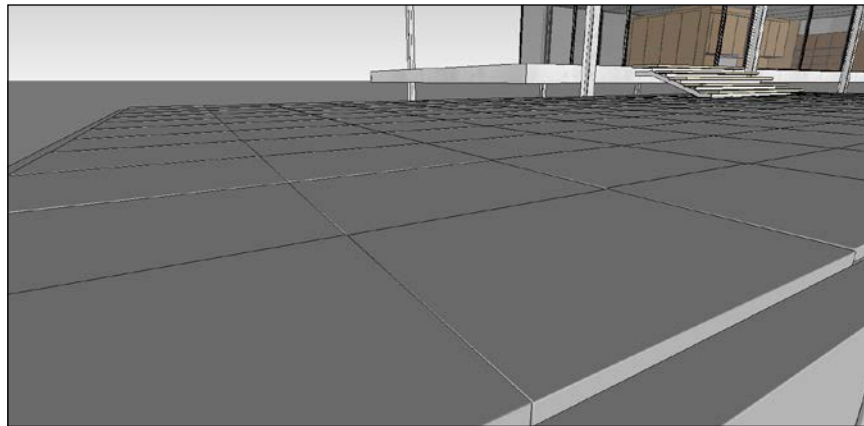
A close-up of some detailing, such as bevel edges and individual tiles with different heights

As you can see, I took time to create individual tiles for this floor and it may be hard to notice, but each tile is different from the other in height; there is a gap between each tile and they are not perfectly aligned. Can you see the difference between using a normal map and modeling the tiles? We can get a really nice result with a normal map, but taking the time to add this kind of detailing can make all the difference. If you are wondering what a normal map is, we will learn about it in *Chapter 3, Creating Materials*.

Using additional models

Another example of adding detailing is by populating the scene with objects. Again, the secret for a good scene is the amount of detailing and objects that it contains. Lumion does a really good job with this, so if you don't have a big library of models, don't worry too much because we can take advantage of the Lumion library. May I remind you that inside Lumion, you can access electronic appliances, food, interior lamps, plumbing, chairs, sofas, cabinets, tables, and many such things.

But again, you have access to all the models only while using Lumion Pro. So, if you don't have Lumion Pro and a good library of models, you still can get some for free. The following is a list of some places where you can find free and paid models:

- **Creative Crash**: This is available at `http://www.creativecrash.com/marketplace/3d-models`
- **3D Cafe**: This can be found at `http://www.3dcafe.com` (but you need to share some models first before you can download any)
- **Archive 3D**: This can be downloaded at `www.archive3d.net`
- **Mr. Cad**: This can be obtained at `www.mr-cad.com`
- **3Delicious**: This is available at `www.3delicious.net`
- **TurboSquid**: This can be found at `www.turbosquid.com`
- **Resources Blogscopia**: This can be obtained at `www.resources.blogscopia.com`
- **SketchUp Warehouse**: This can be downloaded at `http://sketchup.google.com/3dwarehouse/?hl=en`

The following screenshot has some models that I am going to use in my scene:
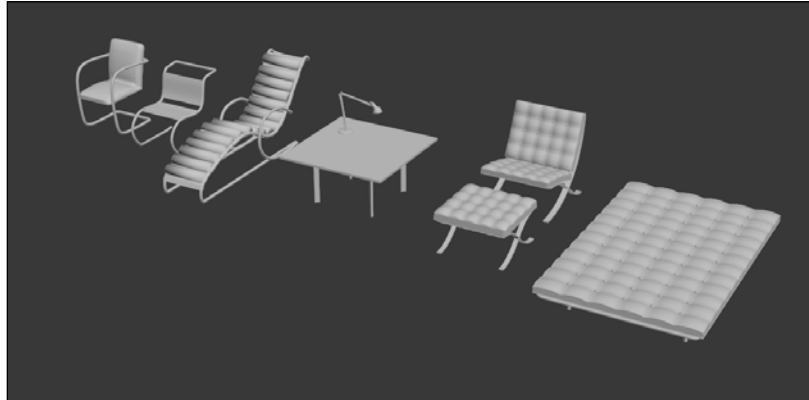
Some of the models include the Barcelona chair and the Barcelona day bed

The importance of materials

Now, you are probably wondering what materials have to do with modeling?
Well, the reason why I introduced this topic here is because Lumion works
using the materials present in your model. Let me explain. You just finished
modeling, added amazing detailing, and everything is ready to go. So you
export the 3D model and import it in Lumion, and since you have already
learned how to add materials in Lumion, you try, but something goes wrong,
as seen in the following screenshot:
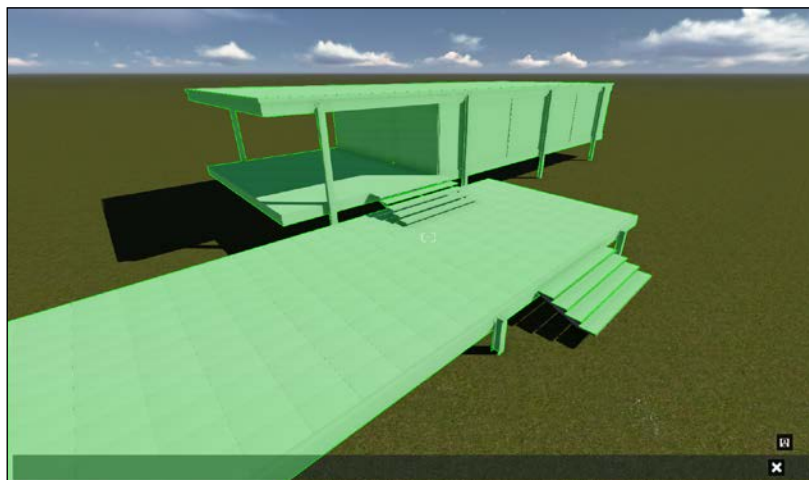
An example of Lumion allowing us to add only one material for the entire model

When you try to add a material, you realize that Lumion will apply the material to the entire model. Why? Well, because when we model in SketchUp or any other 3D application, every time we create something using a default material. In SketchUp, the default material is **Default**, in Maya it is **Lambert**, and in 3ds Max it is **Blinn**.

That's why, while modeling, it is important to group objects that we know will share the same material, and then in the final stage, add a different material to each group. It doesn't have to be something fancy; just use the same material and rename it.

Common issues

There are a few things that can go wrong while modeling. Here, we are going to see the most common problems and the means to solve them.

The first thing that may occur is missing faces. Have a look at the following figure:
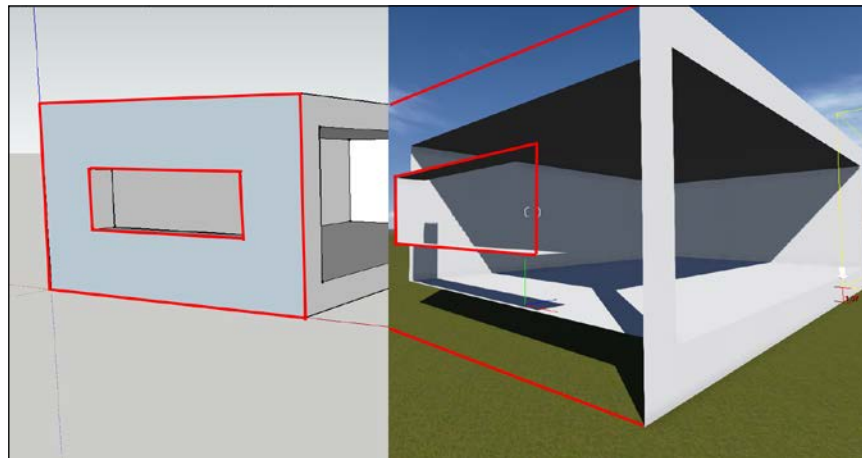
An example of how a reversed face doesn't appear in Lumion

Can you see the difference in the SketchUp model and the Lumion model? I am sure you can easily spot that there is a face missing. The reason this happens is because this face points inside instead of pointing outside, and if you take a look at the SketchUp model, you will notice how the face has a different color. This is SketchUp's way of telling us, *look, this face is pointing towards the wrong direction*. How can we solve this issue?

While using SketchUp, carry out the following steps:

1. Right-click on the face.
2. Select **Reverse Faces**.

While using Maya, carry out the following steps:

1. Press *F3* to select the **Polygons** menu.
2. Click on the **Normals** menu and then on **Reverse** (you may need to select a specific face first).

While using 3ds Max, carry out the following steps:

1. Select the face or faces.
2. From the **Modifier** list, select **Normal** to normalize the face or faces you selected.

The second problem that may occur after importing the model is that you may not be able to see it. To solve this problem, you may need to first check if your model is at the origin axis, and if this doesn't work, check the scale of your model.

Another issue is that you can't assign a Lumion material to individual surfaces. Remember the previous topic? Lumion combines surfaces that use the same material, and if you want to use a Lumion material on a specific surface or surfaces, you need to assign a unique material to that surface before exporting the model.

Finally, if you have problems with COLLADA files, check if you have the latest version of COLLADA. You may face some problems while using the COLLADA plugin for Revit, but usually these problems are solved once you upgrade to the latest version.

Summary

In this chapter you learned how to prepare a CAD drawing in a way that it can be easily imported to any application as the base for modeling. You found out how important it is to add detailing to your model and how this helps to improve realism. You discovered some places where you can find free and paid models, and finally, learned a few common traps in modeling as well as how to avoid them. It is very important to take time to ensure that objects have good geometry and detailing. Of course, each project is different. In large projects, we need to have good management of the geometry so that we do not run the risk of creating a heavy scene. In the next chapter, you will learn how to create materials inside Lumion and your own textures using Photoshop or Gimp.

Week-(06-08)

Materials and Textures

3
Creating Materials

Now that you have your 3D model ready to use in Lumion, it's time to give it some life using materials and textures. This chapter is designed to help you start using materials in Lumion and learn how to configure them by understanding the different settings. Not only this, here you can find some help and tips so that you can create your materials using textures, make the necessary adjustments, and use them inside Lumion.

In this chapter we will learn the following:

- How to use Lumion materials?
- Tweaking Lumion materials
- What is texturing?
- Where to find images for textures?
- What is a seamless texture, alpha channel, and normal map?

It's time to take another important step: creating and adding materials to our 3D model. Materials are a big help and a key aspect to create a stunning image or a great video. When we create a material, we are *telling* Lumion how we want that surface or surfaces to behave with light. So, creating materials is the process of adjusting parameters for defining how the surface would react to light, and adding a texture and other details.

Lumion materials

Lumion helps us with this important step by offering many types of materials: 518 materials that are ready to use. You may need to do some adjustments, but the major hard work was already done for you. The materials the we can assign to our model are as follows:

- **Wood**: 45 materials
- **Wood floor**: 67 materials
- **Brick**: 32 materials
- **Tiles**: 99 materials
- **Ground**: 39 materials
- **Concrete**: 43 materials
- **Carpet**: 20 materials
- **Misc**: 109 materials
- **Asphalt**: 12 materials
- **Metal**: 47 materials

This is one of the reasons why it is so easy to create still images and videos with Lumion. Everything is set up for you, including parameters, details, and textures. However, we may need to do some minor adjustments, and for that, it is important to understand or at least have a basic notion of what each setting does. So, let's have a quick look at how we can configure materials in Lumion.

The Properties menu

Do you still remember how to add a material to your model? On the **Import** menu, click on the **Edit Materials** button, select the object, and click on the plus icon to select a surface.

We are going to look at the most important aspects in the Properties menu to help you understand how you can tweak the material. Let's have a look at the following screenshot:

The Properties menu to edit the material

The properties are as follows:

- **Scale**: It's a really important aspect when configuring the material because we can change the scale of the texture, and everything can have the correct proportion. If we are using our own texture with a specific texture mapping, we need to set this value to **0**.

- **Reflection Colorize**: Use the material color to tint the reflections. In order to understand this setting, take a look at the following screenshot. From the left to the right, there is an increment of **50%** starting from **0%**. Can you spot the difference in the screenshot?

Starting from the left, 0% reflection colorize, 50% in the middle, and 100% on the right side

- **Reflection Falloff**: Also known as the Fresnel effect, it is the amount of reflection that you see on a surface depending on the viewing angle.

- **Brightness**: Change this setting to create a darker or brighter material.

- **Glossiness**: It helps you get some sharp or blurry reflections.

- **Bump**: It helps you add some details using a normal map, as you can see in the following screenshot:

Starting from the left with 0 Bump, in the middle with 0.2 Bump, and right side with 1 Bump

- **Reflectivity**: It controls the amount of reflection on the surface.

- **Saturation**: It is a uniform increase in the intensity of all colors in the material. This can result in over saturation of certain colors, resulting in loss of detail in those areas, leaving them looking too orange and unnatural. If you decrease saturation, you can get a grey-scale texture.

- **Emissiveness**: Use this parameter to create glow effect for things like light bulbs and neon signs.

> If you need to adjust the slider with small increments, press the *Shift* key and adjust the value.

Placing the texture

Now you know how to control the look of the surface. But how can we change things such as the position and angle of the texture in the material? In the **Placing** menu, we can find some settings that can help us configure those things, as you can see in the following screenshot:

The Place texture menu where we can control the texture position

- **Depth Offset**: This slider helps you to correct surfaces flicker or disappear when moving the camera, adjust this setting with small increments until the flickering stops

- **X**, **Y**, and **Z**: Use these sliders to adjust the position of the texture

- **Heading**: It is the option to rotate the texture using the values range from 0 to 360

The Textures and Advanced options menus

Textures is a simple menu where you can change the Diffuse and Bump textures. The Bump texture is the texture used to add the detail that we saw previously. Clicking on these thumbnails will open a window to upload or replace this texture with another one. In the **Advanced options** menu, we can find settings that help us have a tight control over the brightness of the material.

As you can see, Lumion allows a good level of control over the pre-built materials, but we also have the freedom to pick these materials up and use our own textures. Let's say we want to use the material that we used for the floor, but with another texture. There is nothing simpler. Apply the material and in the **Textures** sub-menu, upload the Diffuse and the Bump textures that you created.

The Custom menu

This menu has particular materials that are really useful for our scenes, and here we can find what cannot be fitted in other categories. Inside this menu, we can find, for example, the **Glass** and **Color** materials and others, as you can see in the following screenshot. We can find some cool features too:


The Custom menu where you can find some specific materials

The Invisible material

Use this material to make something invisible in your scene. I found this material useful to hide something inside Lumion. In that way, I don't need to spend time going back, for example, to SketchUp, delete the object, and export and import in Lumion. If I want to hide something, for example, a wall, a window, or an entire model, I can do it by applying this material. It's a time saver.

The Landscape material

The best way to explain this material is by showing you an example. So, let's say that along with the model, you also created a terrain like the one you can see in the following screenshot:
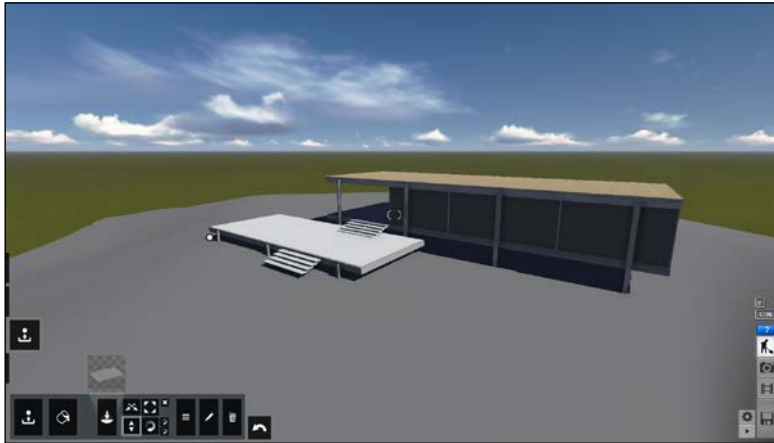
The house along with a terrain model

Import the terrain if needed, and add a new material to this terrain. Go to the **Custom** menu and click on the **Landscape** material. The **Landscape** material allows you to seamlessly blend or merge parts of the model with the landscape. Make sure that the terrain intersects with the ground so that it can be perfectly blended. The following screenshot shows this **Landscape** material applied to my 3D terrain:

The terrain model merged with the landscape

Adding this material not only allows you to use this cool feature, but as you can see in the picture, we can also start painting soil types of the landscape in the imported terrain.

The other two materials that I want to introduce you to are the **Standard** and **Water** materials. The **Standard** material is a simple material without any textures or settings, and we can use this material to start something from scratch. The **Water** material can have several applications, but perhaps, the most common one is, for example, pools. Now, let's have a look at how we can create materials.

Creating materials in Lumion

Knowing that Lumion has so many ready-to-use materials is a big advantage for our project. But the time may come when we cannot find what we need inside Lumion, and that is when we need to create our own materials. While creating a material to use inside Lumion, the most important aspect is the texture or map because all the tweaks with the reflection and bump, for example, are done inside Lumion. We just need to be concerned with creating a diffuse map with alpha channel and a normal map.

But before all these things, we need to find a good image to use as a texture. Where can we find good and free images? The best option is that you create your own library of textures using your camera. Other places where you can find images are as follows:

- Flickr
- Stock.xchg
- IStockphoto
- deviantART
- And the best one for me, CGTextures

Now that we have a nice image to use as texture, we need to use image-editing software, such as Adobe Photoshop or Gimp, to tweak and adjust the image. You don't need to use Adobe Photoshop to create some textures, especially when we can find free software, such as Gimp, that can help in doing the same thing.

Why do we need this software? We need it, for example, to transform the image into a seamless texture. What is a seamless texture? A seamless texture is an image that can be placed side-by-side with itself without creating a noticeable boundary between the two copies. Creating this can take some time, and this is one of the reasons why I use CGTextures so often, because usually we can download tiled textures, which are the same as seamless textures.

> Do you want to create your own seamless textures? Have a look at the tutorials that you can find on CGTextures.com. A few that I recommend are as follows:
>
> - Photoshop Match Color
> - Photoshop tricks and tips
> - Tiling complex patterns
> - Recoloring wood textures

After creating a seamless or tiled texture, we can create an alpha channel to add more detail. This alpha channel is used as a reflection mask in Lumion, blocking areas where we don't want the light to reflect, as you can see in the following screenshot:
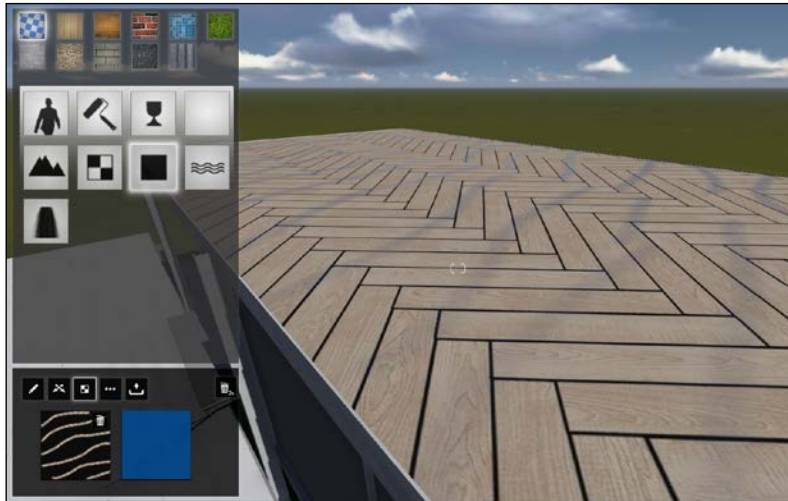
Can you see the lines in the texture?

By the way, in the **Standard** material in the **Properties** sub-menu, there is a slider called **Reflection/Clip**. This allows you to use the alpha channel to clip your model, as seen in the following example. I use a grid where the white lines show the material and the black areas hide the material. And this is the way an alpha channel works; white reveals detail and black hides it. The following screenshot shows an alpha map in use:
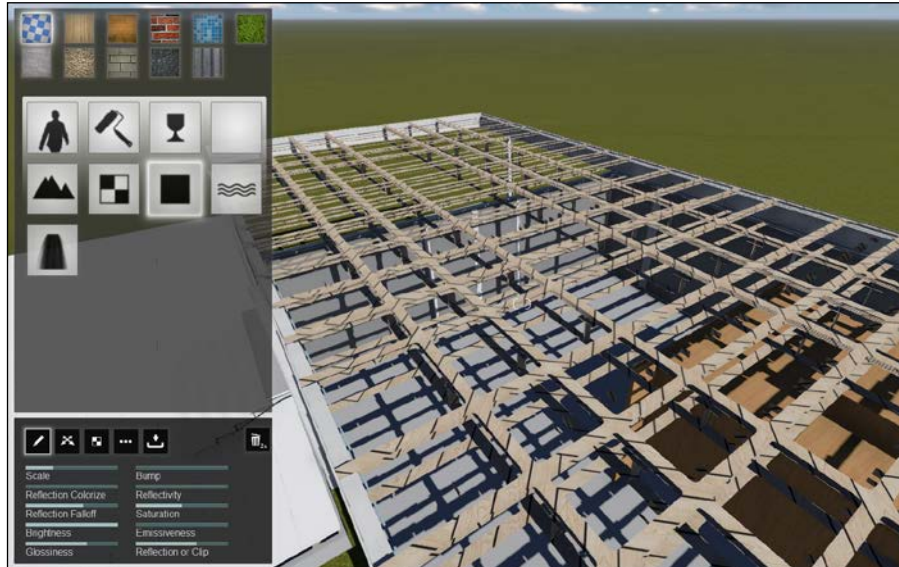
I use an alpha texture to create this grid

The final thing that you need to create is a normal map, so, you can use the **Bump** slider in Lumion to add detail. To create a normal map using Adobe Photoshop or Gimp, we need to install a plugin.

> Want to know how to create a normal map? Have a look at the following URLs:
> - **NVIDIA Texture Tools for Adobe Photoshop**: `https://developer.nvidia.com/nvidia-texture-tools-adobe-photoshop`
> - **Gimp-normalmap**: `https://code.google.com/p/gimp-normalmap/`

Summary

In this chapter you learned how to use and configure the prebuilt materials in Lumion. You found out how to use the **Landscape** material to create a terrain and some useful materials such as the **Invisible** and **Water** materials. In the final section, you discovered some places where you can find free textures and learned what you need to create a seamless **Diffuse** texture, alpha channel, and normal maps. In the next chapter, you will learn how to export your 3D model from a 3D application such as SketchUp and import it without problems in Lumion.

Week-(09-10)

Lighting and Atmosphere

4
Working with Lumion

It's time to start working with Lumion, and this chapter will help you create a bridge between the 3D application of your choice and Lumion. Exporting the 3D model and bringing it into Lumion can cause problems at times. To start on the right foot, we are going to analyze some important aspects before exporting the 3D model. Once the model is exported into Lumion, we will learn how to place and adjust the model. This chapter has been written with the intention of helping you get everything you need so that you can start working in Lumion without any delay.

In this chapter, you will learn the following topics:

- What is COLLADA?
- Exporting from SketchUp
- Exporting from 3ds Max
- Exporting from other 3D software
- Importing the model
- Working with layers
- Placing the model

As you can see from the introduction, this chapter is more technical, but at the same time it is very important as you will learn the right way to export your 3D model here. To get a smooth workflow, you need to pay close attention to this section. To answer the question: what is the best format to use? COLLADA is the perfect answer.

What is COLLADA?

COLLADA is an XML namespace and database schema used to create a bridge between the different 3D tools, making an easy sharing of 3D geometry, shaders, and effects possible. In plain English, it allows you to move 3D files between SketchUp, 3ds Max, Maya, Revit, and Lumion. However, nothing stops you from using other file formats such as the following:

- Autodesk RealDWG - *.dxf
- Autodesk RealDWG - *.dwg
- FBX file - *.fbx
- Max file - *.max
- 3ds file - *.3ds
- Obj file - .obj

The reason behind using COLLADA is that it is a better option compared to the file formats we previously mentioned. As I said, there is nothing that's going to stop you from using those file formats, but they are less reliable and do not always include all the data we want. To get the best results with a low possibility of error, COLLADA is the right choice. COLLADA is not available in all the applications, and in some cases, such as when we are using an older version of 3ds Max or Maya, we need to install a COLLADA plugin called OpenCOLLADA.

> Download OpenCOLLADA at `https://code.google.com/p/opencollada/downloads/list`.

The Lumion team has done a good job of creating a COLLADA plugin called COLLADA exporter for Revit. The downside of this plugin is that it doesn't work with the Revit LT version, and the only versions available are Revit 2012 and 2013.

> Download COLLADA exporter at `http://lumion3d.com/lumion-exporter-for-autodesk-revit`.

There are some workarounds when using other applications such as ArchiCAD. According to the Lumion team, if you are using this software, the best solution is to export your model as a SketchUp file. SketchUp will be used as an intermediary between ArchiCAD and Lumion.

> This ArchiCAD add-on is available for download at `http://www.graphisoft.com/products/archicad/addons/google_earth/`.

I recommend that you use SketchUp as the middleman if your 3D software doesn't have the option to export a COLLADA file. Now that we know what COLLADA is and why it's so important to learn its usage, let's have a look at how we can export a 3D model from various 3D software programs.

Exporting from SketchUp

Lumion 4 allows you to directly import a SketchUp file. However, if you have a previous Lumion version, this is what you need to do. Exporting your model using SketchUp is the simplest thing, and in *Chapter 1*, *What is Lumion?*, we had a quick look at how to do it, but let's use some pictures now to help you understand all the steps better. In SketchUp, select the **File** menu, hover your mouse over the **Export** option, and select **3D model**.

Now, you need to set some options to export the 3D model correctly. Click on the **Options** button and select the following options:

- **Triangulate All Faces**
- **Preserve Component Hierarchies**
- **Export Texture Maps**
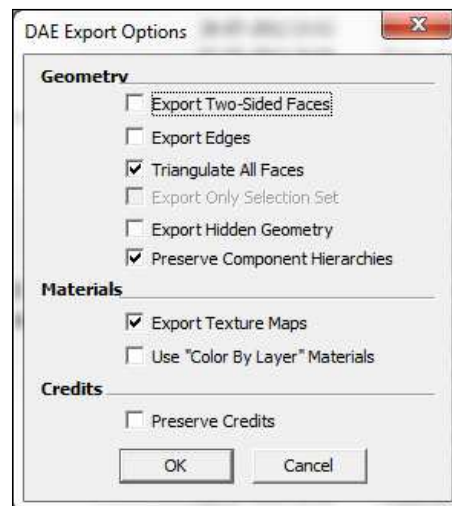
The correct settings to export your model as a COLLADA file

You need to select the **Triangulate All Faces** option to be able to see your 3D model inside Lumion, and the **Export Texture Maps** option will create a folder with all the texture maps in the same folder where you exported the 3D model. Don't forget to assign different materials to each section of your model because the number of materials that you export with your 3D model is equal to the number of materials that you can change inside Lumion. Moving forward, let's see how we can perform the same procedure using 3ds Max.
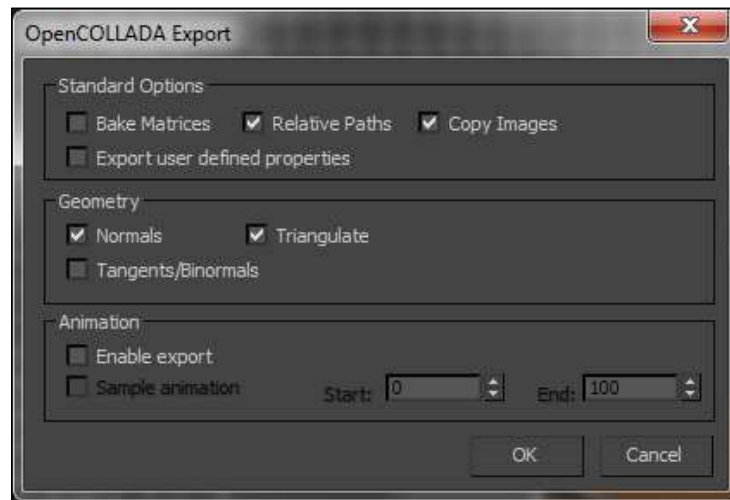
Exporting from 3ds Max

To work with 3ds Max, we need to take into account a few aspects before exporting the 3D model. Don't forget to use real dimensions when modeling with 3ds Max; otherwise, your 3D model will be very tiny or really big once you import it in Lumion. There are a few more things you need to pay more attention to.

Before exporting materials, convert them to standard materials because if you use any other type of material when importing to Lumion, such as V-ray materials, the model will be imported without any textures. Also, when using a standard material, you can use two textures: one in the **Diffuse** slot and the other in the **Self-illumination** slot to use lightmaps or give additional details. Besides these two options, anything that you may have in the material, for example, a specular map or bump map, will not be exported.

Now it's time to export your model. Choose **OpenCollada,** or if you are using a more recent version of 3ds Max, you can choose **Autodesk COLLADA**. If you are using this option, select **Convert Deforming Dummies to Bones** in the **Geometry** tab and **Triangulate** and **Single Matrix** in the **Collada** tab.

You can use this option, but I recommend using OpenCOLLADA especially because this will create a folder with all the textures you use, so you don't need to be afraid of losing something on the way. To export using OpenCOLLADA, follow the same steps, but when it's time to choose the file format, choose OpenCOLLADA and use the settings shown in the following screenshot to export:


OpenCOLLADA export settings

Exporting animations

Remember that you can import animations from 3ds Max inside Lumion. How can you do this? Well first of all, you need to set your frame rate to PAL. Also remember that Lumion can only read objects with keyframes in the move, rotate, and scale values. With this in mind, you need to export the animation using the FBX file format, and don't forget to choose the preset of **AutoDesk Media & Entertainment**.

Exporting from other 3D software

When exporting from other software, such as Autodesk Maya, AutoCAD, and Revit, we basically apply the same principles. For Maya, you will need to install the OpenCOLLADA plugin. In the case of Revit, you will need to download the COLLADA plugin from the Lumion website. Using AutoCAD, you need to export using the FBX file format and use the settings as shown in the following screenshot:
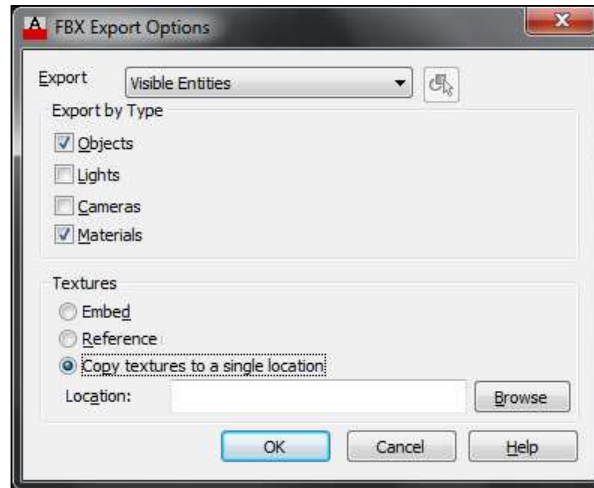
The correct settings to export a FBX file from AutoCAD

Working with Lumion

Now we are going to start working with Lumion. We learned about everything we need: modeling, materials, and textures, exporting our model, and correcting certain things so that when we import our model inside Lumion, everything is perfect. Remember that we also need to do some planning before we start the process so that we already have a goal in mind when we start working with Lumion. This is a key aspect of creating great architectural visualizations.

Let's start working with Lumion and create a scene. I usually start with a sunny day scene because it gives me a good start with a flat terrain and good light.

You already know how to import your model as discussed in *Chapter 1*, *What is Lumion?* but just to remind you, on the left-hand side of your screen, you will find four menus. The third menu is the **Import** menu. Click on it to activate the options at the bottom. Click on the **Add a new model** button and a window will appear where you can select the model you want to import. Double-click on the file or just click on the **Open** button. Another window will appear where you need to add a unique name to the model, and if you have any animations in the FBX file, tick the box next to **Import animations**.

Now that you have imported the model, click the left mouse button anywhere that you want your model. If, by any chance, you are not using a flat terrain, you may find it difficult to place the model in a way that it doesn't intersect the terrain. You may lose some time trying to get the right position, and that is why it is my advice to model your terrain at the base of your building so that you can easily merge with the terrain using the landscape material. Lumion offers several options to move and adjust the model we just imported, but before doing that, it is good practice to organize your scene using layers. You will thank yourself later, when you have 50 trees, 20 people, and 5 cars in your scene, and you need to select or edit your model without any distraction but don't have any way to select and hide these models. So, don't forget to use the **Layers** menu that you can find in the top-left corner.

As I said, when you import your model inside Lumion, you gain access to really useful options to move and adjust the 3D model. Back in the **Import** menu, turn your attention to the last three icons. They have been highlighted in the following screenshot:


The context, edit, and the delete button

The first is the **Context** menu. When we select this option and click on the model, two menus will appear. The first is **Selection**, which we are not going to analyze now. We want the second option, **Transformation**. Click on this and a menu will appear as shown in the following screenshot:

The **Transformation** submenu

Most of them work when you have several objects selected. But why don't you have a try, for example, with the **Place on ground** option? With this option, you can make sure that the model is in contact with the ground. When you finish, you can secure the position by using the **Lock position…**. option Going back to the **Import** menu, next to the **Context** menu, we have the **Edit Properties** menu. As you can see from the following screenshot, this menu allows you to accurately adjust the position not only of your model, but also of every single object inside Lumion. This also lets you know where the objects are positioned.
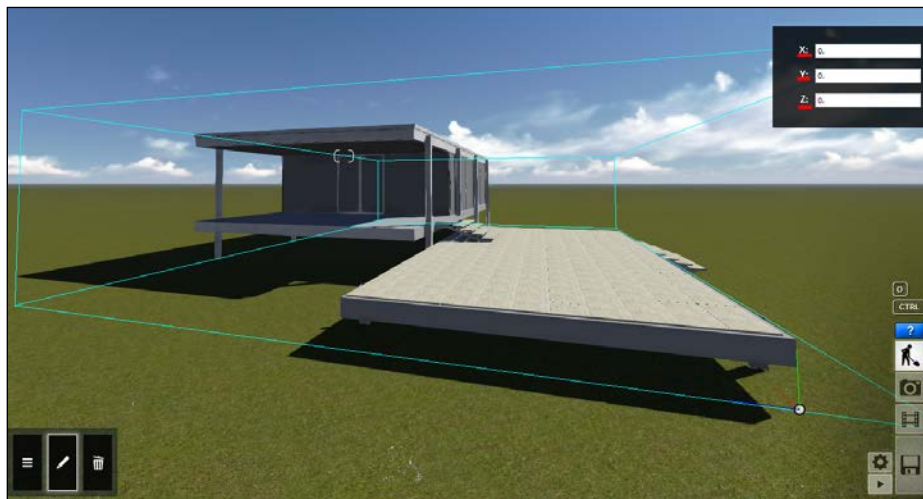
Adjusting the 3D model position using the **Edit Properties** menu

Once again, remember to always start working on your scene by creating layers. They are a key aspect to having a smooth workflow. They will not only help you organize your scene, but also help you to focus your attention on a specific model, hiding unnecessary things, and allowing fluid camera movement. You can even use them to get better performance while editing. Finally, once you decide that a model is in the right position, never forget to lock that object. With that in mind, you can turn your attention to the environment.

Summary

This was a more technical chapter where we learned about important topics that helped give us a good start with Lumion. We learned about COLLADA, its usefulness, and also the key aspects to consider when exporting our model. Finally, with the bridge between our 3D software and Lumion created, we learned not only how to import and use layers to organize our scene, but also to use the **Context** and **Edit Properties** menu to move and place our 3D model.

With our model locked in place and materials assigned, we are ready to move on the next chapter, where we will learn how to modify the terrain and start populating our scene with Lumion models.

Week-(11-12)

Creating Dynamic Scenes

5
Building the Environment

Having a well-built 3D model is the first step for a great architectural visualization using Lumion, but before you can create an image or a video, you need to add details, change the weather and landscape, and populate the scene with models, trees, people, and animals. In conclusion, you will learn how to create your own environment, giving life to your scene by adding these details and making your world more appealing.

In this chapter, we will learn the following:

- Changing the landscape
- Creating heightmaps
- Setting up the weather
- Adding models (trees, people, animals, and so on)
- Working with special FX objects
- Working with sounds

Modeling the landscape

Picking up from where we were in *Chapter 4*, *Working with Lumion*, having a 3D model in a flat terrain is pretty dull. However, if we want to modify the terrain, we have at least three options that are as follows:

- Modeling a terrain using a 3D application
- Sculpting the landscape with tools in Lumion
- Using a heightmap to create the terrain for us in Lumion

With the first option, which is modeling a terrain using a 3D application, it is up to you to do whatever you want and what techniques to use. I always model a small base that I can later use in Lumion, assigning the **Landscape** material to blend or merge it nicely with the landscape. If you don't want something special, this may be the best solution for you.

Sculpting the landscape

The second option is the one we saw right at the beginning of this book. We can change the landscape by creating valleys and hills using the terrain brush tool that Lumion provides. Let's have a deeper look at this option, which has been shown in the following screenshot:

The different brushes that you can use to modify the terrain

If you have a graphic tablet, now is the right time to use it, but if not, we can still achieve almost the same results with a mouse. The icons on the buttons are pretty self-explanatory for what you can do with each one. The most useful tools are probably the **Raise** and **Lower** options in conjunction with the **Flatten** and **Smooth** options. **Jitter** can be useful to add small variations to the landscape, but we need to use a small brush with a low speed for it.

Next to these options, we have key settings to sculpt the landscape. The first option is called **Brush Speed**, and it works in such a way that the lower the value, the longer you have to press the left mouse button to modify the terrain and vice-versa. The second option is even easier to use. Use a big brush to make changes in a big area and a smaller brush to add small details.

Most of the time, I use a terrain that I have already modeled in SketchUp or some other application, but if I have some freedom, I start by raising and lowering the terrain, flattening it a little bit to place the 3D model, and finally applying some smoothness to eliminate the hard edges. In this way, I can create a nice terrain. Lumion offers you the opportunity to go back when you are sculpting, but the **Undo** button is very limited in scope because you can only undo your last action. But, let's say you want to start all over again, how can you do that? The terrain menu can help you with this.
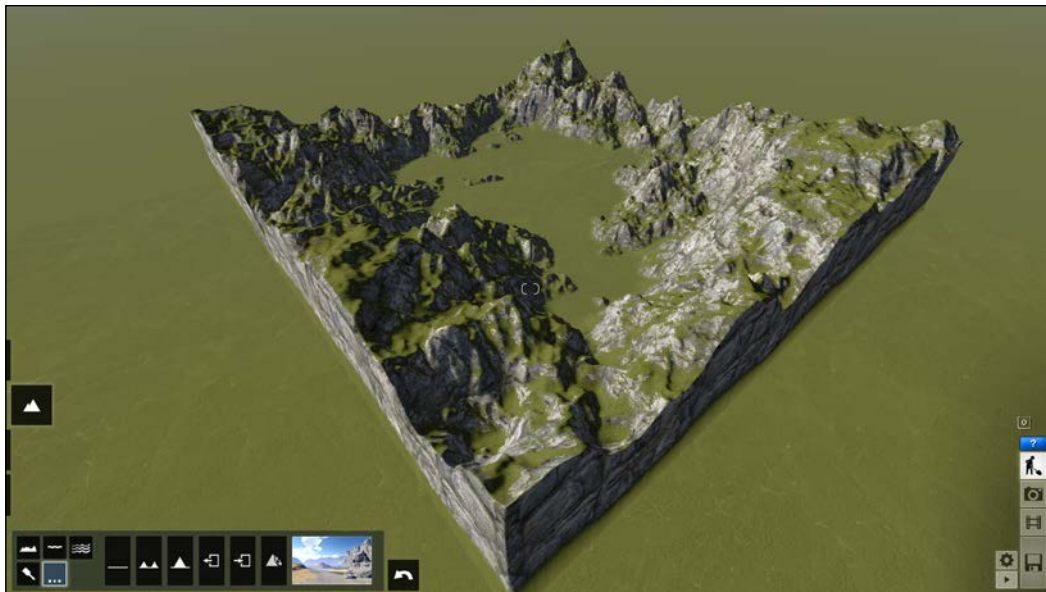
Modifying the terrain

The **Terrain** menu is another menu where we can find some useful tools. Click on this menu to access the window as shown in the following screenshot:
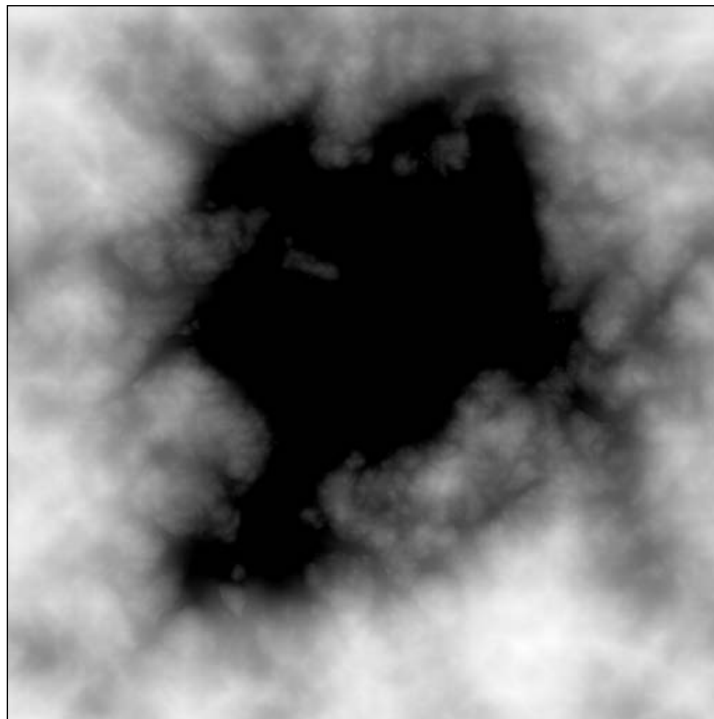

The Terrain menu

We can find three options to modify the terrain. With the leftmost option, you can flatten the entire landscape, create mountains with the middle option, and create one big mountain with the last one. Yes, that's right, one big mountain. Click on the button with the mountain icon to create something similar to that shown in the following screenshot:

Through this button, Lumion gives you a really nice landscape. Using the **Height** and **Terrain** menus, you can create the desired landscape for your building, and you may also find the option to export and import the terrain map quite useful. So, you can create several terrains, export them, and see which one suits you best, or instead of sculpting a similar terrain for another project again, import the one you previously made. But there is another way to create a landscape in Lumion. Why don't you go and see what the last button does?

Creating a heightmap

In *Chapter 1*, *What is Lumion?*, we mentioned that we can use a heightmap texture to do the hard work for us. Lumion can read this heightmap that has information of how we want the landscape to be, and translates this 2D information into a 3D terrain. However, Lumion has some limitations because the editable part of the terrain in Lumion is a square of 2048 x 2048 m. When we create a heightmap, we need to keep in mind that the texture will be stretched to the fullest extent of the square. The following screenshot shows us what a heightmap looks like, but the question is how can we create one?
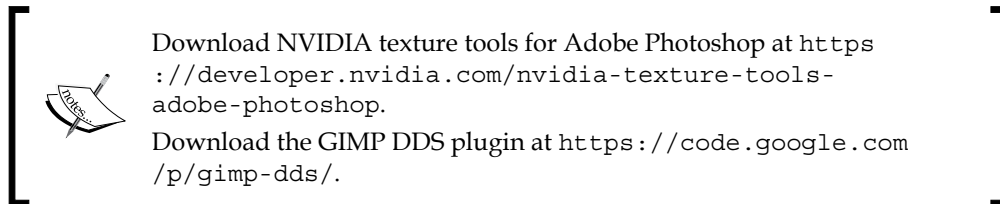

This is a heightmap that Lumion creates when you export the terrain map

Remember the mountains we created previously? Well, the preceding image is the heightmap that created those mountains. We can see that we have 100 percent of black and white and different shades of grey in the middle. 100 percent black is equal to a terrain height of 0 m, and 100 percent white is equal to a terrain height of 200 m. Then, we have 254 scales of grey that can be used to achieve different heights.

We can use the following file formats to create this texture:

- Windows Bitmap: *.bmp
- Joint Photographic Experts Group: *.jpg
- DirectDraw Surface: *.dds
- Portable Network Graphics: *.png

In order to open and edit the texture that Lumion exports, we need to use the `.dds` file format. To be able to open and edit this file format, we need to install a plugin if we are using Adobe Photoshop or Gimp.

> Download NVIDIA texture tools for Adobe Photoshop at `https://developer.nvidia.com/nvidia-texture-tools-adobe-photoshop`.
>
> Download the GIMP DDS plugin at `https://code.google.com/p/gimp-dds/`.

Let's try to create a simple map using Adobe Photoshop or Gimp. Here is a trick to help you see where your model is in the texture map. Using the **Raise** or **Lower** tool (it doesn't really matter), change the ground around your model and then export the heightmap terrain. When you open the texture file, you can see the changes as small white dots. I cannot show you how to do that step-by-step, but here are some guidelines to help you start. Always start with a black texture and then use really small increments of grey. To help give some variety to your terrain, try using different brush types and play with the opacity too. When I create a heightmap, I always use the same level of grey, but what I change is the opacity. Don't forget to always save the texture as a 32-bit DDS heightmap in the 32f format.

Changing the landscape's material

I mentioned before that we have the option to change some elements of the landscape. Perhaps we may want a different type of grass, or instead of rocks, we may want to use dead leaves. To access these options, we need to use the **Color** menu as shown in the following screenshot:

The Color menu where you can play with the textures that you see in the terrain

There are two ways to use this menu. The first way is by changing individual elements. The four thumbnails represent the four elements that are present in your landscape. Initially you may not see them, but once you start sculpting the terrain and raising and lowering it, these elements start to appear. To change these elements, click on the arrow above the thumbnail to select another texture. You have a list of 42 different textures as shown in the following screenshot, but you can also use your own maps:
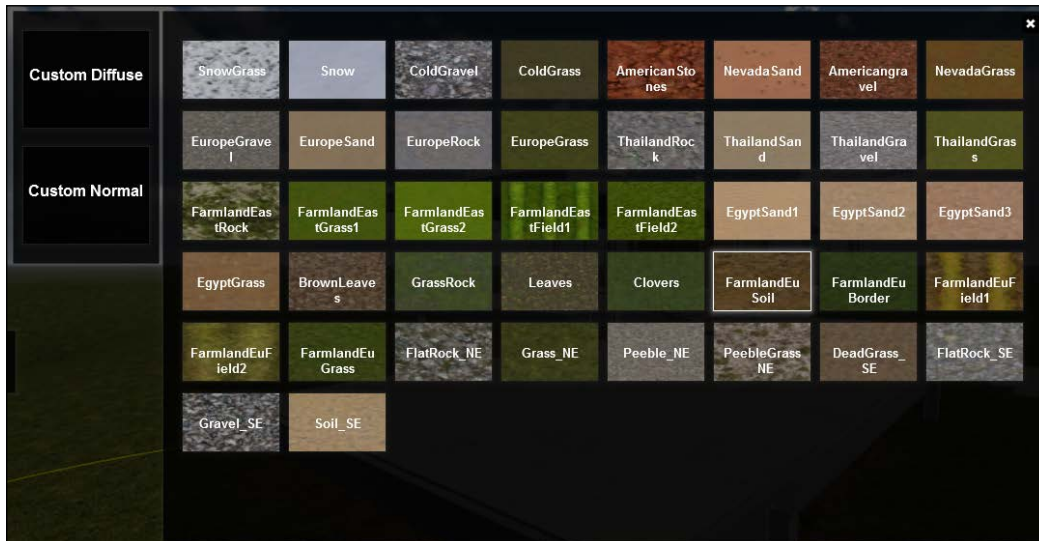
The 42 different textures that you can use

Next to the textures, we can find two big buttons: **Custom Diffuse** and **Custom Normal**. The diffuse texture, let's say, is the texture that gives us the color, and the normal texture is where Lumion gets the information to add irregularities to your terrain. The file formats that we can use are the following:

- Windows Bitmap: *.bmp
- Joint Photographic Experts Group: *.jpg
- Truevision: *.tga
- DirectDraw Surface: *.dds
- Portable Network Graphics: *.png
- Photoshop: *.psd

The second way to work with these elements is by painting them directly on the terrain. To do this , click on the thumbnail with the texture and adjust the sliders for **Brush Speed** and **Size**. There is a third slider to adjust the tile size, or in other words, the size of the texture.

Adding a water plane

In the example I am using for this book, the nearest body of water we have is the Fox river, which is not too far from the house. If you need to create a swimming pool, remember that it is much easier if you use the **Water** material. In this section, Lumion allows you to easily create six types of water as shown in the following screenshot:


The six different types of water

Once you click on the preset you want, click on the scene to place a plane and use the icons on the four vertices to adjust the height and the size. Unfortunately, once you add the water material, you cannot change any setting. The only body of water you can change the look of is that of an ocean.

Creating an ocean

Select the **Ocean** menu and click on the button with the On/Off power switch sign to turn the ocean on or off. Once you turn on this option, we have access to various settings to control the look of the ocean as shown in the following screenshot:
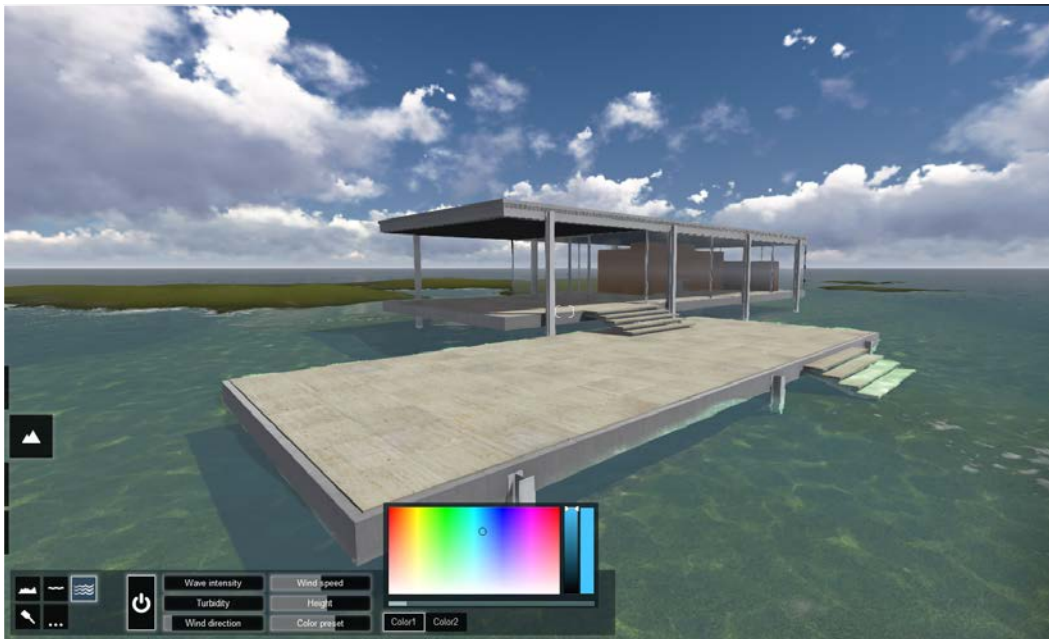

The Ocean menu and its different settings

Like everything else in Lumion, this menu is really intuitive and simple to use. We can change the wave pattern as well as the manner in which the direction of the wind influences the waves. If you want to do accurate slider adjustments, don't forget to use the *Shift* key while adjusting the slider. Why don't you try to see what you can get with the color preset?

Setting up the weather

Once we are happy with the landscape and water, we can start paying attention to details. We can start by using the **Weather** menu. Again, this menu is pretty self-explanatory. We can change the direction of the sun and its height, change the type of clouds from the nine given types, and adjust the slider to create a clear sky or an overcast day, as shown in the following screenshot:
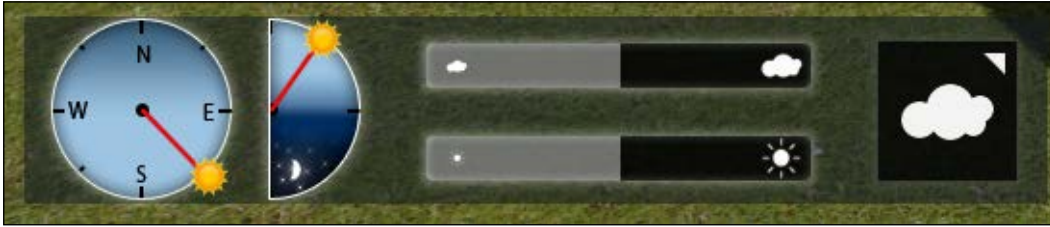
The Weather menu where we can control the sun and the sky

There isn't much we can do in this section, and if we want to add some special weather conditions such as rain and snow, we can do that later in the photo or video mode.

Populating your scene

We have achieved a stage where we have the landscape defined, the weather set up, and the 3D model already having nice and realistic materials. So now, we need to start adding models and small details to our scene in order to create something more interesting and full of life, and Lumion is amazing in this area. Although I am going to use some of my own models, we can find almost everything we need inside the Lumion library. In the next section, we will learn how we can add models, as well as change, manipulate, and organize them.

Adding trees, people, and other models

Let's start with the first option we have in the **Objects** menu — nature, as you can see in the following screenshot:


This menu gives you access to more than 2000 models

Once we click on this submenu, a small thumbnail appears on the right side showing the current model. After a few searches, I came across the various types of trees that we can find near the Farnsworth house. They are **Honey locust**, **Linden**, **Ash**, **Oak**, **Maple**, **Willow**, **Hackberry**, **Redbud**, **Alder**, and **River birch**, and most of them can be found in Lumion.

Again, remember to use layers when you add these details and models. You can add up to 20 layers, so no excuse to not use layers. I also use a layer for the house, and if your building is too heavy, use a low poly version on another layer so that you can easily set up the environment. Let's start by adding some trees. Create a layer for the trees and click on the thumbnail with the figure of a tree. This will give you access to the library. Here, we can find different elements of the nature, and for the trees, we have six tabs where we can find **leaves**, **pine**, and **palms**.

Once we select the tree we want, Lumion returns to build mode, and we can easily see a yellow boundary box. This box represents the tree and can help us to see if we are not placing the tree in a location where it is intersected with something, for example the house. When we are placing the object, Lumion is smart enough to not only recognize the ground but also the faces above the ground, as you can see in the following screenshot:
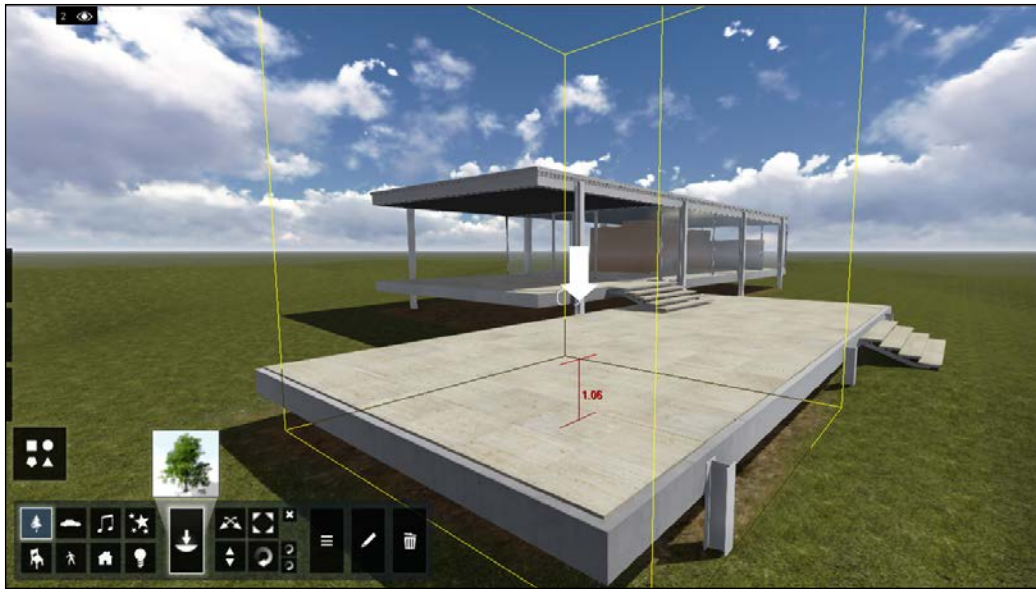
Lumion is telling us that if we place the tree here, it will be 1.06 m above the ground

So, as you can see from the preceding screenshot, a red line with a number will appear as if it's warning you that if you place the tree in that location, it will be 1.06 meters from the ground. If you press *G* and click with the left mouse button to place the object, the object will be placed on the ground even if this means to intersect a face or another object.

One thing that I recommend is pressing *Ctrl* along with any number between 1 and 9 to save a top view as a camera viewport. This will help when we are placing trees and other objects. To place any model after selecting it, we need to click with the left mouse button, but if we are placing objects such as trees, flowers, or grass, it can be really tedious and time consuming to place 20 trees of the same type, one by one. So while placing the model, we can use the following two shortcuts to help us with this work:

- *Z*: This key will change the size every time you place an object
- *Ctrl*: This key places 10 copies of the object selected

The good news is that we can use the combination of *Ctrl + Z* along with the left mouse button to place 10 copies of the object with different sizes. Placing so many objects can have a side effect; your viewport starts to get slow, but with trees and other plants, we don't need to see the full quality of a tree in our viewport. Remember to use *F9* to toggle on or off the full quality, as you can see in the following screenshot:
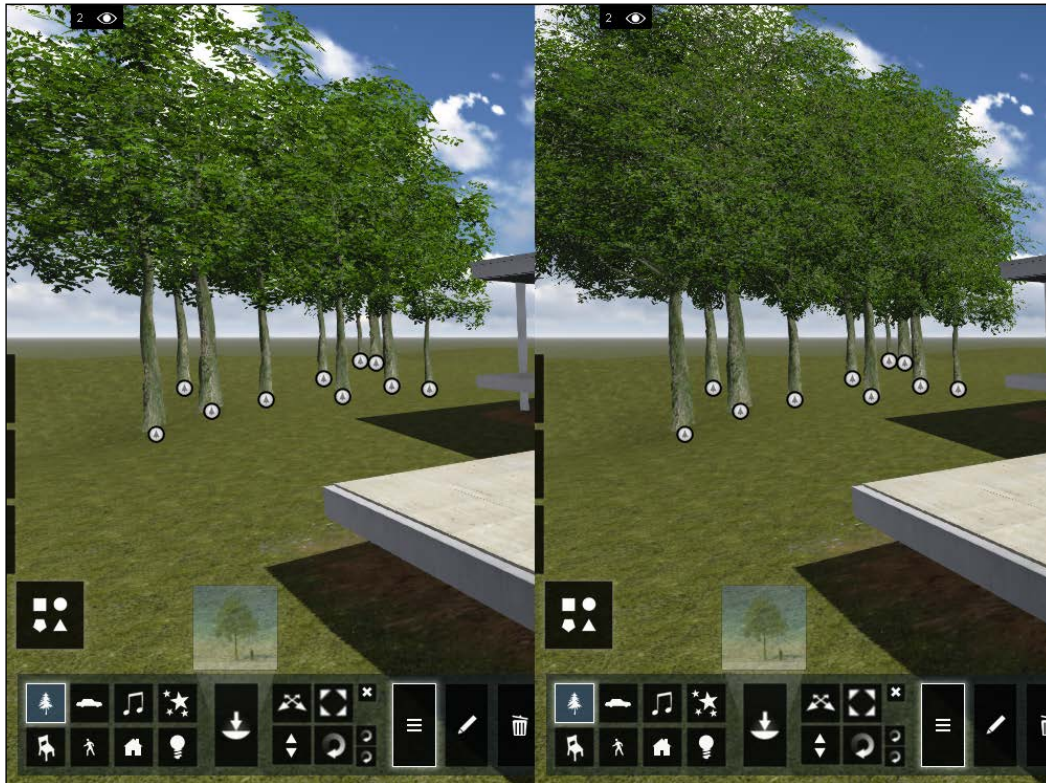
On the left side, we pressed the F9 key to toggle off the quality, and on the right side, we have full quality

The possibility of placing several copies is a great feature, but bear in mind that the more objects you have inside Lumion, the slower the workstation will work because you are consuming more memory and other resources. Several issues can also arise where we need to make some adjustments. Let's say that we create another group of a specific type of trees on the right side and want to move all the trees more to the left. Thanks to the Lumion team, we don't need to move each tree one by one. In this situation, we can take more advantage of the **Context** menu. Once we click on this menu, white dots will appear on each tree, and clicking on the white dot will open two submenus, **Selection** and **Transformation**, which we saw previously when we imported our model.

In this case, we select **Selection**, and new options will be available. Let's explore several situations and how we can use this menu to help us. In the first example, I want to move the trees that are on the right a little more to the left side. Which option do we use? Let's try to click on the **Select All Similar Category** option. This selects every model you have that falls under the category of trees. So, if you have more trees in your scene, like in this example, you will select every single tree, but this is something we don't want to do; we just want to select those specific types of trees. Click on the **Deselect All** option to clear the selection. Let's try the **Select All Similar** option and using this, we just select the trees that fall under a specific type of tree.

Use the keyboard shortcuts to change the position, scale, and orientation of the objects selected. But there are other shortcuts that you can use to not only select objects but also copy and paste and change the height:

- Pressing *Ctrl* and dragging the left mouse button will do a rectangular selection for multiple objects, and on top of the rectangle, Lumion informs you how many objects you have selected so far.
- Pressing *Ctrl* + *Shift* and dragging the left mouse button will make another rectangular selection. Add this selection to another one done previously.
- Pressing *M* + *Alt* will copy and paste the selected object(s).
- Pressing *M* + *F* for the orientation of all objects, except for trees and plants, will adjust the surface angles of other objects accordingly.
- Pressing *M* + *Shift* will move the selected objects horizontally and keep the same height.
- Pressing *R* + *Shift* will turn off the rotation snapping.

There are two other useful features in the **Selection** menu. The first feature is the ability to replace your selection with another element from the library and see which model you are using in the library. The way it works is simple; let's say we want to change the trees we have for another type of tree. The first thing we need to do is go to **Library** and select the model we want. Once we do that, use the **Context** menu to select the trees to be replaced and then select the **Library** option. In this menu, we can find two other options: **Select in Library** and **Replace with library selection**. Click on the second one to replace all the trees or other models you have selected by the current model. The other option, **Select in Library**, is good when we don't know what type of tree or model we are using. So, if we select the model, and using the **Context** menu, select **Library** and then **Select in Library**, we can see that the current selected models in the library have changed.

Now, let's turn our attention to the other menu called **Transformation**. This menu helps to edit the position and other aspects of the models. For example, the **Randomize** menu helps us to add variation to our scene by randomizing the **Position**, **Rotation**, and **Scale** values. Another useful option is **Space** because this allows you to align with a distance in between.

The **Align** option lets you position the objects that you had already selected in such a manner that their pivot points are at the same position, but this will overlap the objects. So if you need to move the objects, place the mouse cursor over the small overlapping object selection icons and use the mouse wheel or the up and down keys to toggle between the objects.

After placing some models in your scene, you realized that you didn't use the correct layer, or worse, didn't use any layer at all. Does that mean you need to redo it all over again? No, because there is a simple way of adding a model to the correct layer. Press *Ctrl* and drag with the left mouse button to select the objects you want to add to the layer, as shown in the following screenshot:
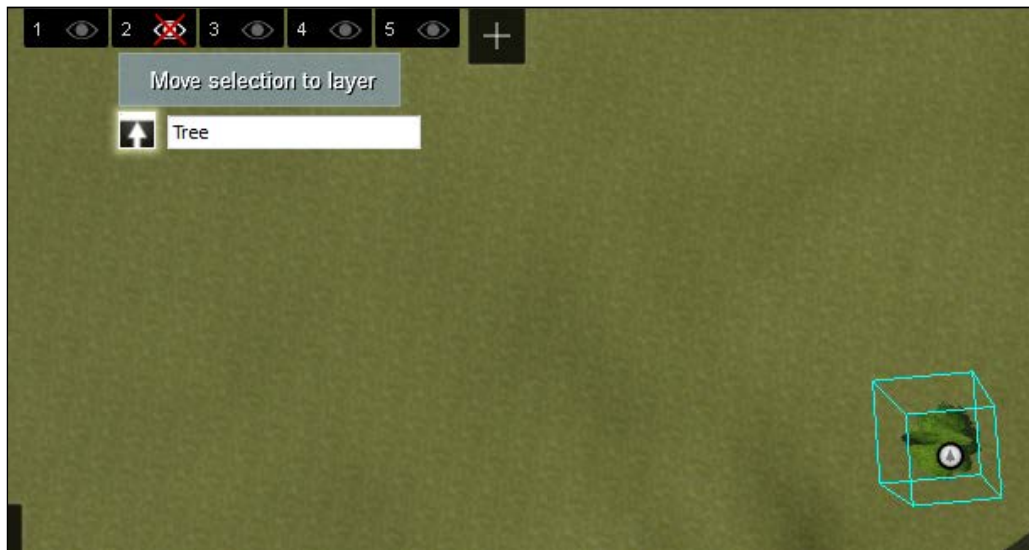
Moving the selection to the correct layer

When you go to the **Layers** menu and select another layer, we can see an up arrow next to the layer's name. Click on this arrow to move the selection to the layer.

Now that you know how to add models and control them and how they look, feel free to explore the other models that we can find in the library, such as **Transport**, **Indoor**, **People**, and **Outdoor**.

Using sounds

There are three more elements that we can add to our scene: **Sound**, **Effects**, and **Lights and special effects**. Let's begin with the **Sound** menu. Inside the library, we can find a range of sounds to use in our scene, from **Locations**, **Nature**, **Things**, and **People**. Select what you want and click with the left mouse button to place the sound.

The way you control this element is simple and intuitive, but for that, you need to select the **Edit Properties** menu, as shown in the following screenshot:

Using the Edit menu to set up the Sound properties

Here we can change the **Volume**, the **Min distance** that is represented by the yellow circle, and the **Max distance** represented by the green circle. Once you start to get closer to the yellow circle in the center, the volume will also increase. You need to have these things in mind if you want to create a movie.

Special effects

In this section, we can find some useful elements to add to our scene, such as **Fountains**, **Fire**, **Smoke**, and **Fog**. These are special effects that we can use only in specific situations. We can have control over each of these elements, so every time you add a **Fire**, **Fountain**, **Smoke**, or **Fog effect**, click on the **Edit Properties** menu to change and modify each element.

Summary

This chapter was designed to help you start placing models in your scene, and how to manipulate them. You saw how easy and quick it is to populate your scene with life and change the landscape. You also learned the basic steps of changing the terrain, creating heightmaps, and working with special FX objects.

In the next chapter, you will learn how you can create and add effects, and export your beautiful still image and video.

Week-(13-14)

Rendering and Exporting

6
Preparing the Render

In the previous chapter, we achieved a stage in production where we were able to see the result of all our efforts by exporting a still image or video from our scene. In this chapter, you will learn exactly how to do that and also how to control the camera, create clips, apply effects, and export different outputs so that you can create eye-catching images and videos. You will also learn something really important to create great architectural visualizations: composition and other important guidelines related to it. At the end of this chapter, you will have everything you need to create a beautiful piece of art.

In this chapter we will learn the following:

- The key aspects of composition
- The importance of framing
- The rule of thirds
- Camera settings
- Video and image output
- How to use the **Photo** and **Video** modes

Finally, all the hard work of the previous chapters will pay off because we are now ready to export our scene as a still image or video. But before that, we need to set the camera and tweak a few settings. Remember when we discussed the importance of planning our shot in *Chapter 2, Preparing the Scene*? Creating a scene with a specific goal in mind is especially helpful when we need to start composing the scene. In the next topic, we will discuss what composition is and how it can help us improve the quality of our work.

The key aspects of composition

What is composition and why is it so important? Composition is the arrangement of elements within a frame which will attract the eye of the viewer. Instead of using the terminology *rules*, let's look at composition using a set of ingredients that can be added or removed to create a great video or image.

The key is to remember that you don't use all the ingredients in every dish you prepare. In the same way, you don't need to use all these ingredients of composition in the making of an image or video.

Let's have a look at some of the key aspects of composition:

- **Pattern**: Life is filled with patterns, and when it comes to capturing repetition, you can either emphasize the patterns or break them
- **Symmetry**: You can create two types of images; one with symmetry and the other with asymmetry
- **Depth of field**: This can isolate a subject from its background and foreground
- **Lines**: You can use diagonal, horizontal, vertical, and converging lines; all of them will impact the images differently
- **Shape and positioning**: Both of these are very important factors for different elements
- **Proportion of contrast**: This gives the partition between the light and the dark

These are just a few aspects to create a good composition. This subject is too complex to discuss in this book, however, these key aspects can help you to start with the right foot.

> Learn photography and you will have half the job done to create a great architectural visualization.

The importance of framing

One important thing in composition is using the concept of framing. What is framing? Framing is when we use certain elements in the scene to focus our viewer's attention to certain aspects of the scene. Have a look at the following screenshot and see, for example, how we have used trees on each side to turn the attention of the viewer to the house:


The trees on both sides create a frame around the house

We can use almost everything in the scene to frame the shot, including the trees, rocks, and other buildings just to mention a few.

The rule of thirds

The rule of thirds is one of the first things we must learn to create well-balanced and interesting images and videos. What is the rule of thirds? It is the rule for breaking the image into thirds, horizontally and vertically, so that we have nine parts. An example has been shown in the following screenshot:
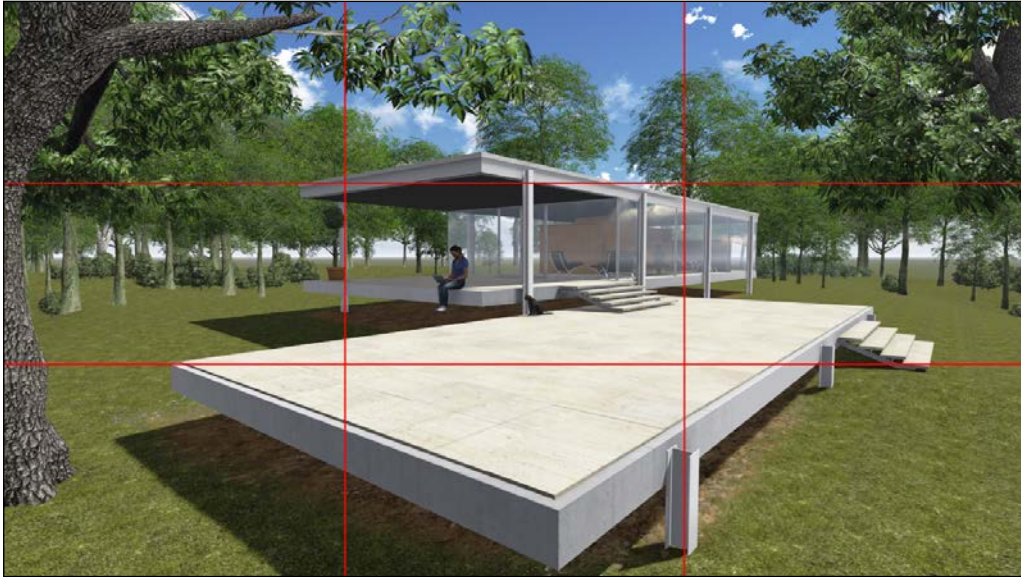
A grid dividing the image into nine equal parts

As you frame your image, this rule identifies four important parts of it that you should consider placing the points of interest in. If you place the points of interest in the intersections or along the lines, your image becomes more balanced. When we look at an image, our eyes usually go to one of the intersection points more naturally than to the center of the image.

With these principles in mind, let's move on to create our image in Lumion. Use the camera controls to place the camera by pressing *Ctrl* along with any number between 1 and 9 to save the viewports you want to use later.

Exporting an image with the Photo mode

Let's move to the **Photo** mode, apply some effects, and then export an image. On the right-hand side of the Lumion screen, click on the **Photo** mode icon, which is the one with the camera icon, as you can see in the following screenshot:

Photo mode enabled with our first still image

As you can see from the preceding screenshot, we have several settings to tweak, so, we will start with the effects. Click on the **New effects** icon at the top left-hand corner of the page characterized by stars and a plus sign to start adding effects. The effects available are the following:

- **World**: **Sun**, **Shadow**, **Contrails**, **Underwater**, **Global Illumination**, and **Reflection**

- **Weather**: **Cloud**, **Fog**, **Rain**, **Snow**, **VolumeClouds**, **Folliage wind**, and **Horizon Cloud**

- **Camera**: **Vignette**, **Depth of Field**, **Lens flare**, **Near Clip Plane**, **Fish eye**, **Handheld Camera**, and **Exposure**

- **Style**: **Bloom**, **Overlay image**, **Noise**, **Sharpness**, **Selective saturation**, **Color correction**, and **Bleach**

- **Artistic**: **God rays**, **Painting**, **Watercolor**, **Sketch**, **Manga**, and **Chromatic Aberrations**

Lumion helps you get an idea of how the effect will look by showing you a thumbnail with the effect applied. The best way to learn what each effect does is by trying each one out. Not only will you have an idea of what you can get, but also easily recognize what your scene needs and how you can solve a particular problem by using an effect.

The effects I most use in my scenes are as follows:

- **Global Illumination**
- **Folliage wind**
- **Depth of Field**
- **Chromatic Aberrations**

There are a few things I would like to add, but only in post-production stages such as **Vignette**, **Color correction**, and **Bloom**. The reason why I do this is because if we apply these effects in Lumion and later if we want to go back and remove the effects, we need to export the image again. If we work with a nondestructive workflow, such as using layers in Photoshop or Gimp, we can easily add or remove these effects. There is also the option of copying the effects and pasting them in another clip, which is really helpful if we want to export several images with the same effects. If the small window that we have in the **Photo** mode is not enough to check the effects that we applied, **Build with effects** is a cool feature that allows you to go back to the **Build** mode with the effects applied.

Finally, you can change the focal length that works like a zoom tool. If you need to move the camera more to the left or the right or change other settings, you don't need to go back to the **Build** mode, adjust the camera, and save a new viewport. You just need to place the mouse over the window and use all the keyboard shortcuts to change the camera position.

Now you are ready to export the final image. Lumion allows you to export four image resolutions using the following formats:

- Windows Bitmap: *.bmp
- Joint Photographic Experts Group: *.jpg
- Truevision: *.tga
- DirectDraw Surface: *.dds
- Portable Network Graphics: *.png

Before exporting the image, always check if everything is ready and whether or not you need to use the *F8* key, to toggle on the spotlight shadow, and the *U* key, to update the reflection or cloud.

Creating a video with the Movie mode

Let's create a movie. Creating a movie in Lumion is really simple and intuitive. Click on the **Movie** icon to start creating a movie; the interface looks as shown in the following screenshot:
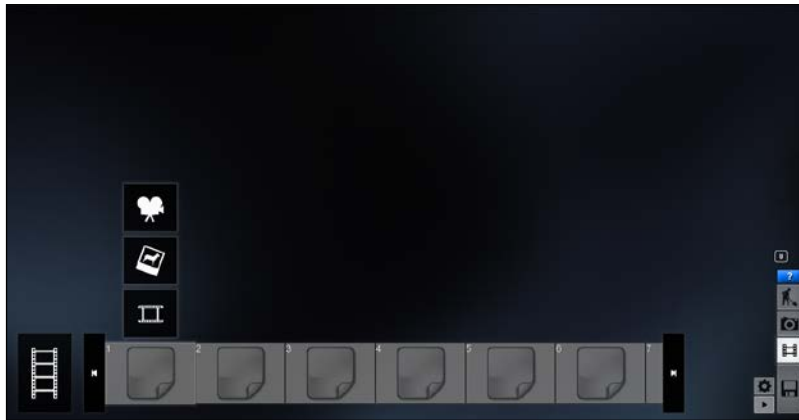
The Movie mode

You can create individual clips of your movie by making use of this feature. There is nothing worse than Lumion starting to render the video and at the last minute, crashing or encountering a problem, resulting in you losing the video file. If you create an entire movie, you need to start all over again, but by using individual clips, you just need to start from the last clip. There are three options you can use to create your video by importing an image or video, but we want to focus our attention only on the first option and start creating an animation for it by clicking on the **Record** icon, as shown in the following screenshot:

Creating an individual clip

Click on the button with the camera icon to start your first shot, then move the camera and click again, and repeat until you are satisfied. After that, click on the **Play** icon to see how your animation looks. You can press *Shift* along with any number between 1 and 9 to load the saved viewports and use those viewports to create your movie.

Another useful feature that Lumion has is the possibility to speed up or slow down your clip. On your left, you have a slider that allows you to increase or decrease the speed. When you are finally happy with your animation, click on the **Ok** button.

Now, we can edit the clip again if needed. Select the clip, and above it we have two buttons, as you can see in the following screenshot:


Selecting the clip to delete or edit it

In the **Movie** mode, Lumion allows us to add effects to each clip and to the whole movie. This option is useful when we want to add, for example, a **Fade In** or **Fade Out** option to a specific clip, or change the **Depth of Field** value in another. I added some **Vignette** and **Fog** effects in the background.

Add an effect to your entire video, instead of a single clip, by clicking on the **Entire Movie** icon, the one at the bottom left-hand corner characterized with the filmstrip. If we click on this icon, we go to another menu where we can edit the entire movie and add effects to the whole movie instead of doing so to individual clips. This is useful especially if you want to add the same effect to all the clips. Now, to export the movie, click on the **Save Movie** icon on the right-hand side; the one characterized with the movie take symbol.

We can export in the **MP4** format, which has several options, such as **Quality**, **Frames per second**, and **Resolution**. But I recommend using the second option, **Images**, as shown in the following screenshot:
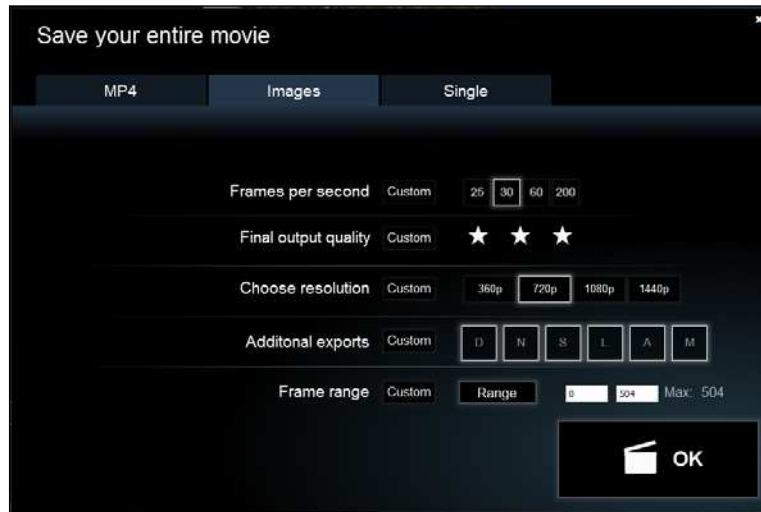
Exporting a set of images instead of an entire movie

As you can see, you have the same options, plus the additional ones that allow you to export the render passes that you can use later in Photoshop or Gimp. I recommend using this option, because you can have more control later while using the video editor. The downside is that you need space to store so many images.

The last option is to export a single image and one render pass. If you want to export just one image, it is best to use the **Frame range** option under the **Images** menu.

Summary

In this chapter, you learned what composition is and how it can help us create a balanced and attractive image or video. You also learned how to use the rule of thirds and the framing concepts for it. Then, you learned more about the **Photo** mode and how to add different effects and tweak them. The final topic was about the movie mode, and in this section you learned how to create movies, add effects, and finally, how to save them using different outputs.

In the next chapter, we will pick the movie or the image we exported and learn how we can improve the quality, make minor changes, and use the render passes exported.

Week-(15-17)

Advanced Techniques

7
Post Production

This chapter has been designed to help you give a final touch to the output that you received from Lumion. It's true that what you can get from Lumion has good quality and can be shown to the client, but you may want to make some adjustments. This chapter will cover some basic tweaks that you can make in still images.

In this chapter you will learn the following:

- Image post production using Photoshop
- Using layer masks
- Using blending modes
- Using adjustment layers
- Basic color correction
- Adding realism to your image

After all the hard work, you may wonder why we need another chapter. After all, the final output from Lumion is pretty good, and that is true. However, there are times when, for example, we need to do some tweaks on a still image or video. Maybe you need to edit the video or perhaps you exported your movie using a set of images instead of creating an entire video file. So, post production is effectively the final step in the making of a video or still image, thus giving it the final touch. I am going to use Photoshop to tweak the images.

Post production

Please bear in mind that this is not a how-to chapter. Every image, video, and project is different, so there isn't any secret formula for great post production. The most important aspect while making some adjustments is the answer to the question, what do I want to achieve?

And then you need to understand what every setting can do for your image. It is important to play, for example, with the curves, hue, saturation, color balance, and see how your image or video changes and if you are happy with that. You will most likely be spending a lot of time moving sliders within these adjustments until you are happy with the outcome. Let's start doing some post production on a still image using Photoshop.

Again, remember that you can use a free image editor such as Gimp. Some menus and tools may have a different name, but you can still get the same final result.

> To download Gimp, use this link: `http://www.gimp.org/downloads/` .

Working with an image

Although we have a **Photo** mode to export our still images, I prefer using the **Movie** mode for two reasons; first, because we can have access to more effects , and secondly, because we can export additional render passes along with the main image. Create a movie by clicking on the **Record** button, but just take one shot; the one you want to export. Then, click to save the movie; select the resolution that you want and click on **Additional Exports**. We can export the following render passes:

- Depthmap
- Normalmap
- Specular reflection map
- Lighting map
- Sky alpha map
- Material ID
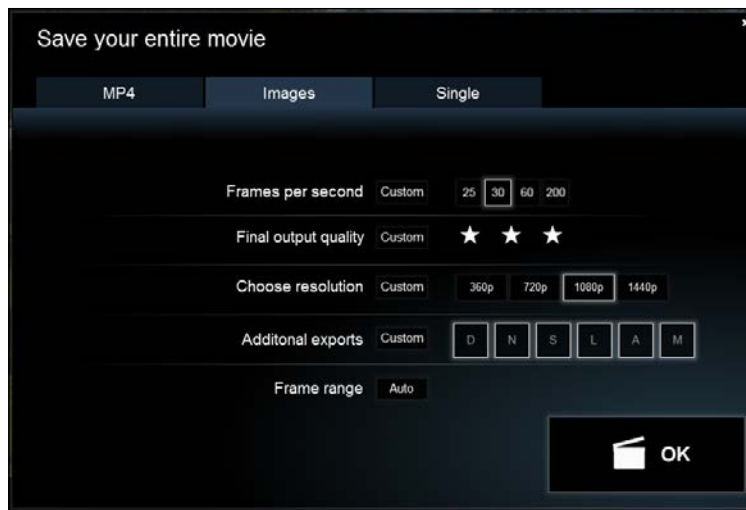
Using the Video mode, we can export some useful render passes

Click on the **OK** button, choose a folder, and save your image. Once you click on **Save**, Lumion will start working and you can see the progress. Lumion will start with the color image and then will export the render passes. If you export all the render passes, you will get seven images; each one is different, shown as follows:
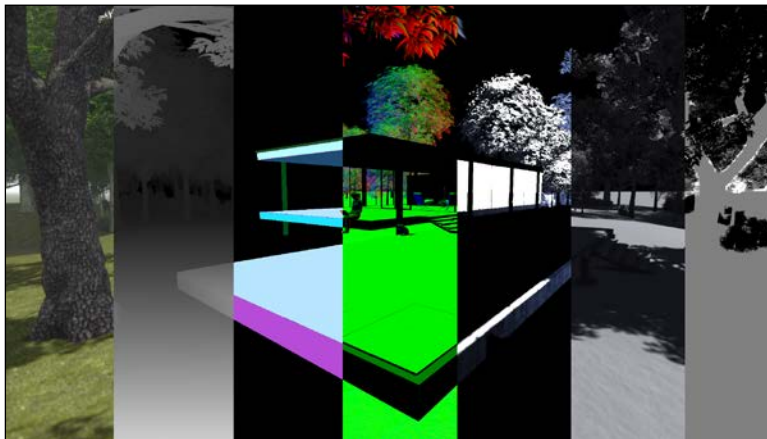
A composition showing the different seven images you get

From left to right, we have the **color image**, **depthmap**, **material ID**, **normalmap**, **specular reflection map**, **lighting map**, and **sky alpha map**. You don't need to export all the render passes, for example, I don't use the normal map and the material ID except on rare occasions. Now, let's use Photoshop to open these images.

Photoshop works with layers, and it is a good idea if we start by adding names to the different layers and then create groups. So, with that in mind, I will create a folder in the **Layer** menu and change the name to `Base`. Drag the colormap to this folder or use the combination of *Ctrl + G* to create a group with the image inside. Save the file in the `.PSD` format so that you can edit the layers later.

Now, right-click on the **Base** group, select **Duplicate Group...**, and rename it to `Render Passes`. Once you do that, we can start importing the render passes, and when you open the images in Photoshop, every image will open as a new tab. So, we need to drag every image to our original PSD file. Go to depthmap and use the combination *Ctrl + A* to select the entire image and *Ctrl + C* to copy that image. Then, go back to the original PSD file, create a new layer, and use the combination of *Ctrl + V* to paste the image. Don't forget to rename the layer every time you create a new one. You should have something like the following:

1 – Create a new group, 2 – Create a new layer

Working with layers

We already saw that Photoshop works with layers; so what does this mean? A layer is simply one image stacked on top of another. That is why, right now, we cannot see our colormap because we have all those layers on top.

One of the most important keys to learning and mastering Photoshop is using layers. And why work on layers at all? Because:

- They do not destroy our original image
- We have more control
- We can use blending modes to change the way layers interact
- We can change the opacity of any effects
- We can add layer masks to work selectively and make adjustments

Using different blending modes

We can use the **Opacity** slider in the **LAYERS** panel to blend the active layer in the following layers by making the active layer translucent. The blend modes in Photoshop allow the same process using different mathematical calculations for each blend mode. Any changes made using blend modes are non-destructive, and we can always go back to the blend mode settings and readjust them as needed without damaging the image. I am using Photoshop CS4 and I have 25 blend modes divided into six blend mode groups, as shown in the following screenshot. If you are using Photoshop CS5, you probably have two more blend modes: **Subtract** and **Divide**.

The 25 different blend modes divided into six blend mode groups

Adding the specular map

The most commonly used blend modes are **Multiply**, **Screen**, **Overlay**, and **Soft Light**. Let's have a look at how we can use these blend modes to adjust our image. Click on the eye next to a layer to hide or show the layer. We are going to hide all the layers except the specular layer. Change the blend mode to **Screen** (you are free to play around with the other blend modes as it is a good thing to learn what each one does) and now we can see the colormap. However, the image is strange even after changing the blend mode and that is because the effect that we applied was too strong. So, we need to use the **Fill** option to decrease the effect, as you can see in the following screenshot:
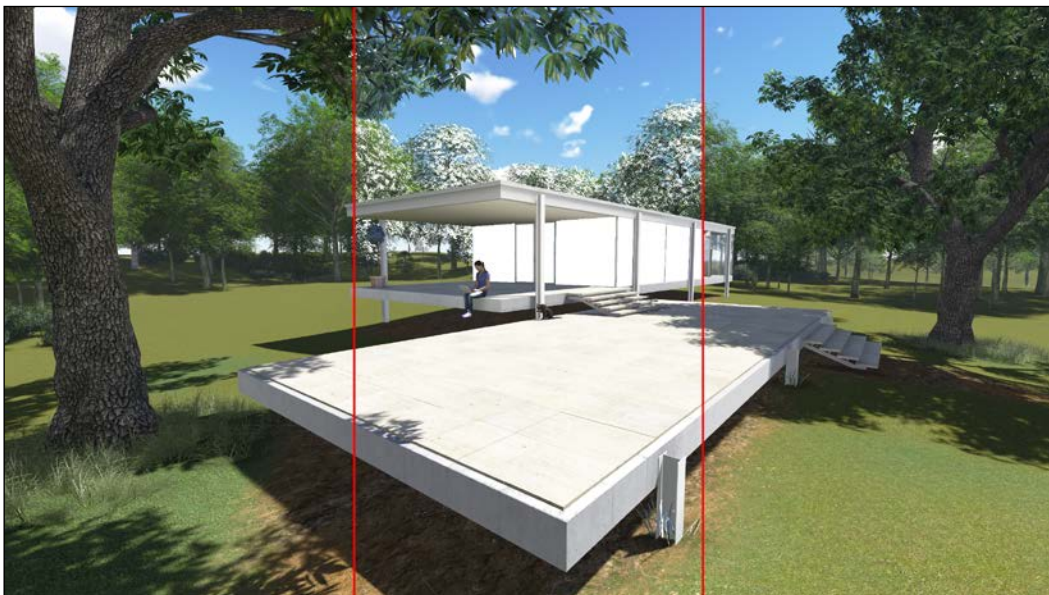
On the left, we have the colormap; in the middle, the specular map; and on the right,
the specular map with a Fill of 11%

In the preceding image, we can see the colormap on the left-hand side, the colormap with the specular map on top with the **Screen** blend mode in the middle, and the same specular map with a **Fill** of **11%** on the right-hand side. In this example, the specular map also changed the glass, and that is something I don't want.

Accurate selection with material ID

Let's use the **material ID** map to remove the specular map effect on the glass along with a layer mask. Let me first explain how layer masks work and how to use them, and for this, you just need to know the difference between black and white.

A layer mask allows you to control a layer's level of transparency. But we can use the **Opacity** option (yes, you can!); the difference is that the **Opacity** option changes the transparency level for the entire layer at once. In this case, I just want to decrease the effect that the specular map has on the glass and not on the entire image. So, what we need is a way to control the transparency of different areas of the layer separately, and that is when we use a layer mask.
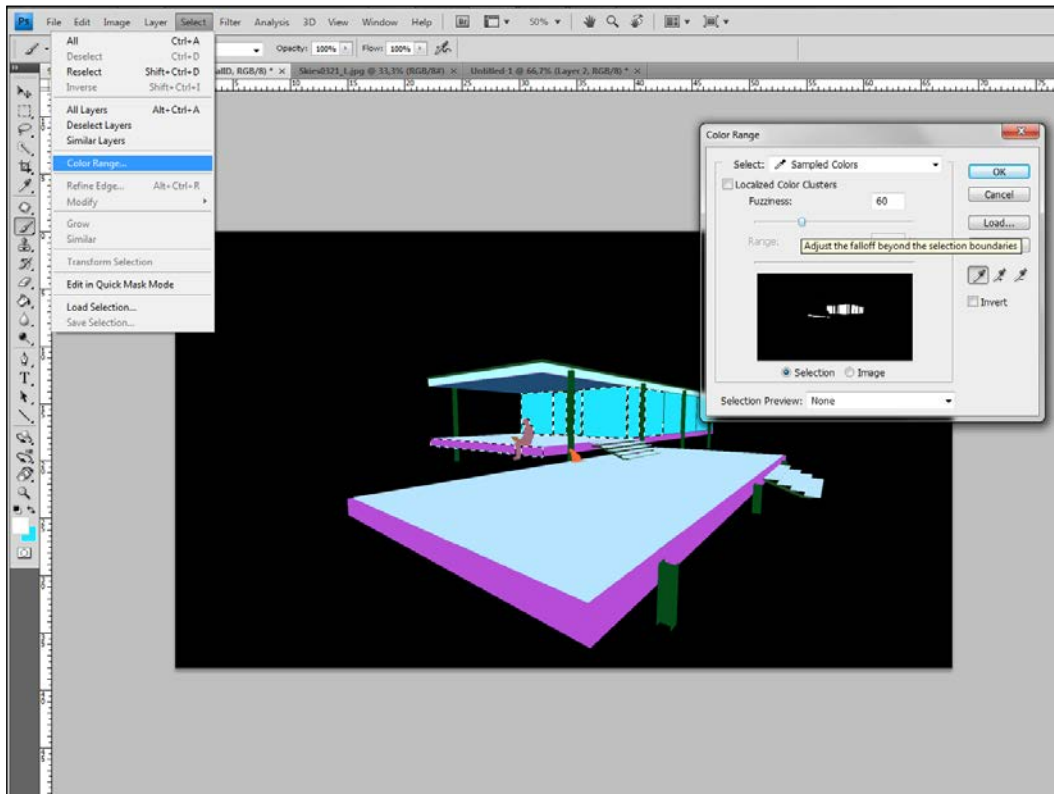
Select the specular layer and go to the **Layer** menu, select the **Layer Mask** option, and choose **Reveal All**. This is one thing you need to memorize; white reveals and black hides. What this means is that we use a white layer mask to reveal everything, and we select the black color with the brush tool to paint and hide.
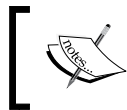
> If you start painting the image, it means that you have not selected the layer mask. Click on the layer mask and use the brush tool; you should see the result on the layer mask thumbnail.

We can start painting around the windows, but it can be a hard task because accidentally, we can hide the effect in other areas where we don't want it. We can use the Lasso tool, but we are going to use the material ID layer to select specific areas accurately. Let me show you how easily we can select only the windows with the glass.

Go to the Material ID and click on the show/hide icon to show this layer. Then, on the **Select** menu, click on the **Color Range...** option. This will open a small window where we can use the Eyedropper tool to select a color. We can use **Fuzziness** to adjust the falloff beyond the selection boundaries, as you can see in the following screenshot:

Using the color range to select only the windows

When we click on the **OK** button, we get the selection around the glass. Now, select the specular layer, and on the **Layer** menu, select the **Layer Mask** option and click on the **Hide Selection** option. We can now see that the mask is white with a small black area that is the glass.

Adding contrast using a lighting map

I did the same thing with the lighting layer. I used the lighting layer to give a little more contrast. I did that by selecting the **Soft Light** blending mode with a **Fill** of **25%**. Then, I applied the same technique to hide the effect on the glass.

The sky alpha map

What we did with the material ID, we can do with the sky alpha map. If you want to change the sky, you can get one from CGTextures, drag the image to the PSD file, and using the color range, select the white area and create a mask as we did before.
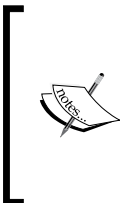
> To get some skies, use the link, `http://cgtextures.com/` to go to the CGTextures website and then select **Skies Partial.**

The importance of adjustment layers

After using the blend modes, we can duplicate the group and merge everything in one layer and call it `Passes`. Then, we create another group called `CC` or `Color Correction`. In this group, we start using adjustment layers. To use them, go to the **Layer** menu, select **New Adjustment Layer** to start adding some adjustments such as **Curves…**, **Hue/Saturation…**, and **Color Balance…**.

There are two big reasons to use adjustment layers. Firstly, the way adjustment layers work is that you make the changes on a transparent layer without actually touching anything; so, they are non-destructive. Secondly, we can even go back and edit these adjustment layers; we can also stack these layers and they accumulate and finally we can use layer masks to isolate the adjustment in a particular area.

Color correction is a complex subject and we can hardly explain how to do it in-depth, mostly because every image is different, and what we use in one image doesn't necessarily suit another. I recommend that you read some *Making of* article, where you can see how other artists color corrected their images.

> You can find some really good articles by visiting the following links:
>
> - `http://www.ronenbekerman.com/category/`
>   `tutorials/making-of/`
> - `http://www.cgarchitect.com/features/category/`
>   `making-of`

Working with Curves

In general, we want to find the brightest and darkest parts of the image, and we will click on those parts with some special Eyedropper tools. We can use the Threshold adjustment layer to check this information, then delete this layer and create a Curves adjustment layer. Right-click on the Curves adjustment layer and select **Create Cliping Mask**. We do this so that the adjustment layer only affects the following layer and not the other layers:
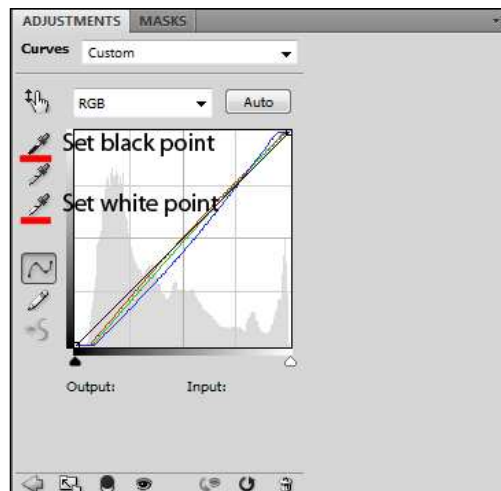

Use eyedroppers to select the black and white point

Pay attention to the three eyedroppers on the left-hand side of the preceding screenshot. With the first one, we are going to click on the darkest area on the image, and with the third one, we click on the brightest point on the image. When we click with the dark eyedropper, it is going to measure the amount of red, green, and blue in that area and adjust it to make it balanced. Then, it is going to darken the area to its maximum extent. With the white eyedropper, avoid a pure white area; otherwise, your image will look a little weird. Sometimes, you may need to use only the black and the gray eyedropper. Finally, we click on the middle eyedropper and look for a shade of gray. You may need to click on several points, until you find the most pleasing color, and it really depends on the image. Try to use the Saturation adjustment layer to reduce the saturation from your image and use the Color Balance adjustment layer to create a warm or cold look.

Applying lens effects

Let's add a little touch of reality, and one way we can do that is by adding a subtle **chromatic aberration** to our image. Chromatic aberration is caused by lens dispersion with different colors of light travelling at different speeds while passing through a lens. So, when you take a photo, the photo can look blurred or colored edges can appear around objects. That's the trick to achieve a realistic look and add imperfections. How can you add chromatic aberration in Photoshop?

Chromatic aberration with Photoshop

Again, create a copy of the CC group, right-click on the group, and select **Merge the group**. Now, we have an image with color correction applied to it, and we can move this layer to a new group called Lens. Make a copy of this layer and go to the **Filter** menu, click on the **Distort** option, and select **Lens Correction**.
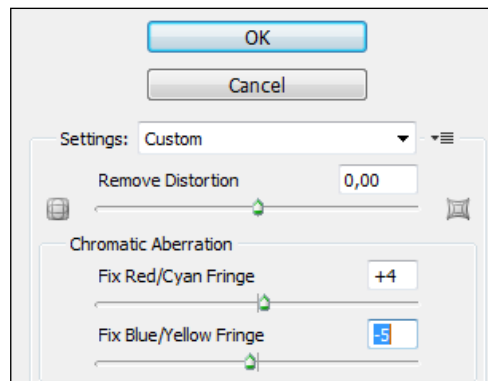
These are the settings that I am using to add some Chromatic Aberration

Adjust the **Fix Red / Cyan Fringe** value, but be really subtle. We don't want the viewer to notice this effect. People are unconsciously used to seeing this kind of a lens error, and a subtle touch helps remove the CG feel and make something appear more realistic. The reason I told you to add this effect on another layer is that you can now adjust the **Fill** slider and see what value makes the image look good.

A little bit of sharpness

Next in line, we add some sharpness to our image. It is the same procedure; create a copy of the group, merge, and you know the rest. This group will be called `Sharpness`. Again, create a copy of the layer, and go to the **Layer** menu, click on the **Sharpen** option, and select the **Sharpen** filter. Now, that's a big change and we don't want that. So, use the **Fill** slider again to adjust how sharp you want your image to be.

Depth of field

Now, we are going to add some depth of field and for that, we need the depthmap exported from Lumion. Create a group with the previously merged group, duplicate that layer, and rename it as `DOF`. The next thing that we need to do is copy the sky alpha map using the combination of *Ctrl + A* to select the entire layer and *Ctrl + C* to copy. Now that we have the sky alpha map in memory, we go back to the DOF layer and add a layer mask. When we do this, the mask preview is created next to the layer, and we can access this layer by pressing the *Alt* key and clicking on it with the left mouse button. Our screen turns white, and we use the combination of *Ctrl + V* to paste the sky alpha map, and *Ctrl + D* to deselect it. After that, click on the DOF layer and select **Lens Blur…** on the **Filter** menu under **Blur**.
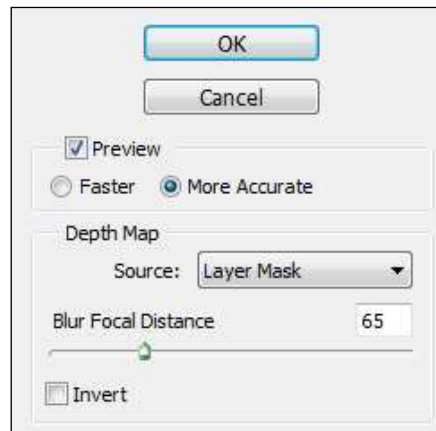

These are the settings that I am using to add some depth of field

Use the **More Accurate** option and in **Depth Map**, select **Layer Mask**. Then, you need to adjust the **Blur Focal Distance** and see which value suits you the most. Click on the **OK** button and right-click on the layer mask and choose **Delete Layer Mask**. Again, we can use the **Fill** slider to adjust the amount of Depth of Field that we want in our image.

Final touch with noise and vignette

After copying and merging the DOF group, we create just one more group called, for example, Final. On top of this last layer, we create an empty layer called noise, and to do that, we can use the combination of *Shift + Ctrl + N*. Select this new layer, press *Shift + F5*, and choose **50%** of **Gray**. Then, go to the **Filter** menu and select **Add Noise** under the **Noise** option. For the **Amount** value, use a really low value such as **2%** or **3%** and click on the **OK** button. Now, we need to set the blending mode for this layer to **Overlay** to have some noise in our image.

Finally, create another layer called Vignette and fill it with white color. Select this layer and go to **Filter** and select **Lens Correction** under the **Distort** menu.
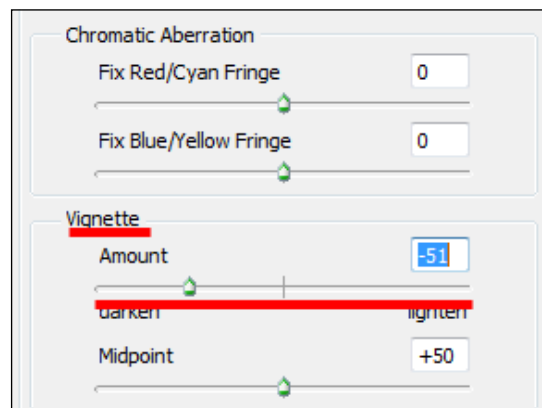
The settings that you need for adding a very subtle vignette

Under the **Vignette** field, change the **Amount** value to negative so that you can get some dark corners. Click on the **OK** button and set the blending mode of this layer to **Multiply**, and see the results, as shown in the following screenshot:

Our final image with all the post production

And finally, our image is ready. After all this hard work, it is easy to spot the difference between the final image and the image without any post production, which is shown as follows:.

Our initial render without any post production

Summary

This was a really fun chapter and you learned so much. You learned how to do some basic post production on your images using the different render passes that Lumion exports along with the main image. After using the specular, material ID, lighting, and sky alpha maps, you learned how to add some lens effects to your final image. However, this is just a really basic how-to chapter, and I really encourage you to learn more; learn different techniques and how you can save time using post production.