Unreal Engine by Epic Games

HUBERT Guillaume

BARBERIS Rudy

May 30, 2018

Contents

Chapter 1

Introduction

1.1 Presentation of the group

We are two 3rd year students - *Guillaume HUBERT* and *Rudy BARBERIS* - from the ESME Sudria in France, and we have chosen to do our Erasmus IT project about the Unreal Engine.

Even if we have never done such a project before, we wanted to explore some new aspects of programming. This Unreal Engine project allows us indeed to work and discover what is the Augmented Reality precisely and how it works. This is also an opportunity to discover the Unreal Development Kit which is a complete interactive tool to develop games and applications, such as Fortnite or PUBG.

Figure 1.1: Unreal

1.2 Presentation of the project

Our project is based on the using of Unreal Engine a game engine software. In this software, many interfaces permit to create your own universe by using only your imagination and a lot of tutorials. Because Unreal engine is so complete than it is a hard software to manage.

An other point that make the program accessible for all is that codes are written in C++ and because it is available very easily, this software is used by most of game developers around the world.

Today, the fourth version of the Unreal Engine is released and is now designed for Microsoft Windows, macOS, Linux, SteamOS, HTML5, iOS, Android, Nintendo Switch, PlayStation 4, Xbox One, and virtual reality.

For our project, we have to, with Unreal Engine, put some particles on objects we placed earlier on a plan.

Chapter 2

Unreal Engine

2.1 What is the Unreal Engine

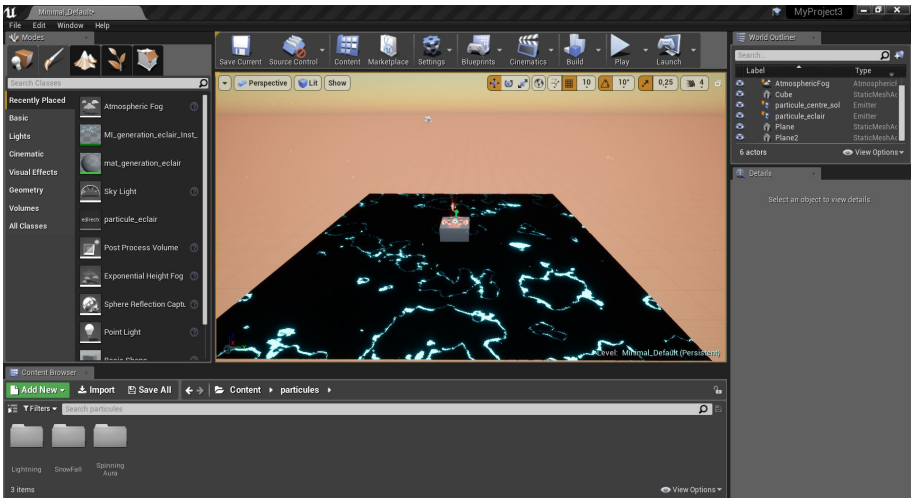

Figure 2.1: Unreal Engine 4

The Unreal Engine is a game engine software which permit to create a new world. The one we use is the fourth one, released on 2012 but became free on 2015, after 9 years of development and is used

in most of video games, including VR ones, or design platforms. One of the best improvement is a technique use to eliminate some lightning : voxel cone tracing. Moreover, UE4 became the first version of the game engine which allows to modify using C++ while engine is running.

2.2 How it works

In our case, we are using Unreal Engine in order to add particles to object placed on a plan before. The interface we use includes many parameters we can change to make anything we want. That's why we try to make fire and smoke. Thank to tutorials, it was easier for us to find the way we had to change data.

Here is how we do it if we, for example, want to make some fire :

After creating a new files on the work desk of UE4, we have to create a new material because we need it to make our particles upon it. Then we click on the material to edit it and because we wanted to make some fire, the particles we need have to be translucent. This could be easily changed in one of the window of the work desk.

Then, on the material plan, after right clicked on it and search for "RadialGradientExponentional" in order to make a radial shading for colors. We could also add an other parameter called "Particle Color"

to control all aspects of our particles' color. By link those two parameters together, we could obtain the opacity and the emissive color. Our material is finally ready. It's time to create the particles system.

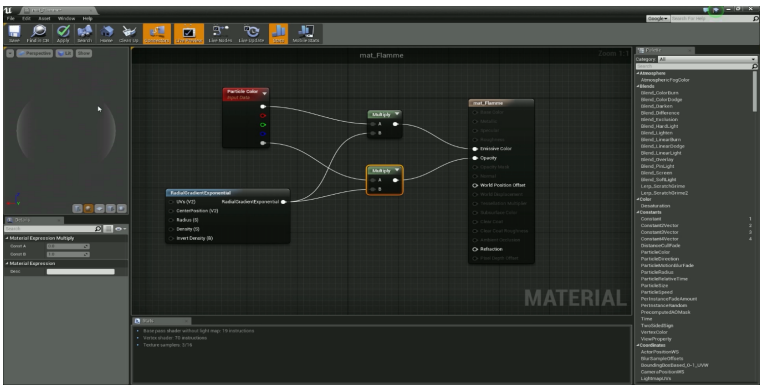

Figure 2.2: Material ready!

The second part begins with the same way : add "Particle System" in the content browser and by clicking on it we arrive on this interface

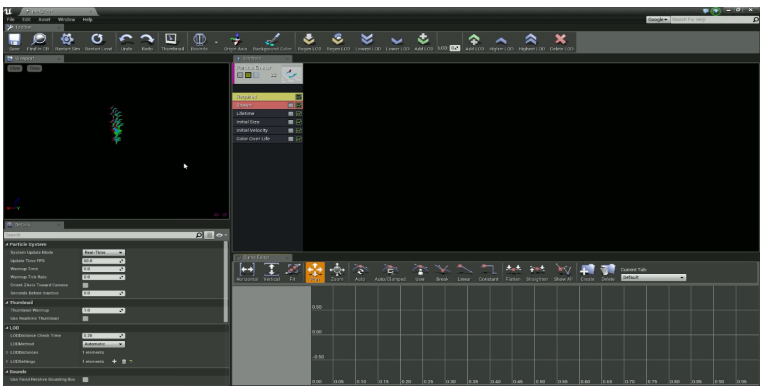

Figure 2.3: Particle creation

Now, we search the material we created before.

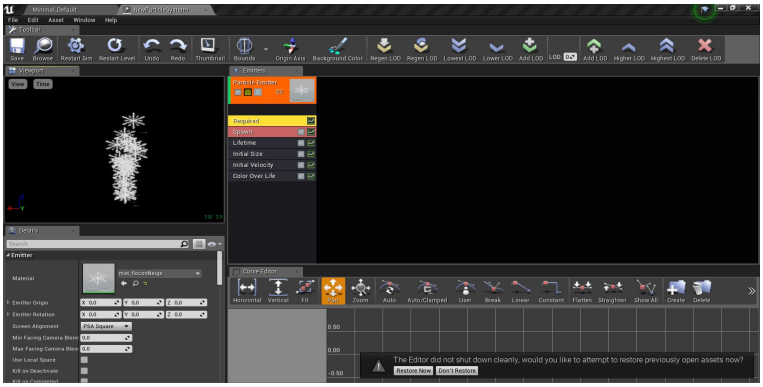

Figure 2.4: particle with material

To make it more real, we changed the options of the particle such as the size, the color, where the particle spawns, and so on.

The software's complexity is a reason why Unreal Engine is so used by many developers, even if it's hard to use it.

List of Figures

Sources

https://www.youtube.com/watch?v=W02Aa4tYRJQ

https://www.youtube.com/watch?v=Q9NoEFd8lu0

https://www.youtube.com/watch?v=CmRvve709Dk

You can also contact us by email at these addresses :

- **rudy.gerald.barberis.st@vsb.cz**
- **guillaume.dimas.louis.hubert.st@vsb.cz**