

MAKE A GAME WITH UNITY FOR WII U

SETUP AND PRESENTATION

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1. PRÉSENTATION OF CAT-DEV / CAT-R

Normally, in order to develop a game for the **Wii U**, you must already have a **Nintendo Developers** account. Then you have to get an official development kit: a **CAT-DEV** or a **CAT-R**. These kits are quite expensive (around 10.000€ with CAT-DEV, CAT-R, cables and GamePads...). But here is a small presentation of this kit. These two machines are quite similar to the final Wii U but have some differences, we'll talk about them later.

CAT-DEV

Here is what this famous CAT-DEV looks like:



This **CAT-DEV** allows you to install games under development for testing. This can be done from the SD card or the network. It has some more advanced features than the **CAT-R** (which we will see later), for example the **CAT-DEV** has a better logging system which allows to debug a game faster.

CAT-R

And now the **CAT-R** :



The **CAT-R** is closer to a "retail" **Wii U** (final console for the general public). It still allows you to test games but can only install them from an SD card (it seems to me). This one on the other hand can burn development games on disks and play them.

2. PRESENTATION OF THE WII U HARDWARE

After talking about the development kits, let's now talk about the "retail" console.



Wii U Black Set « Deluxe » with 32go

This is the one we all knew, in white "Basic" (8gb of storage) and black "Deluxe" (32gb of storage).

It is on this version of the Wii U that we will focus to make our game (I do not think you have a CAT-R or even less a CAT-DEV at home ...)

2.1 ARCHITECTURE

Processor: The Wii U is equipped with an IBM PowerPC multi-core processor running at 1.24 GHz, called "Espresso". The processor is based on a 45nm architecture and has three CPU cores and one core specialized for audio processing. Each core has a 32KB cache for instructions and 32KB for data.

Graphics Processor:

The Wii U features a high-performance AMD Radeon HD graphics processor designed specifically for the Wii U. This graphics processor is based on AMD's Graphics Core Next architecture. It has 32MB of eDRAM cache memory.

Memory:

The Wii U is equipped with 2GB of DDR3 memory. This memory is shared between the main processor and the graphics processor, which allows for fast communication between the two components. The speed of the RAM is 12.8GB/s.

Beware!

Even if the Wii U has 2GB of RAM, they are not fully usable, the console's OS (CafeOS) uses 1GB of the 2 available. Only 1GB is reserved for games

Storage:

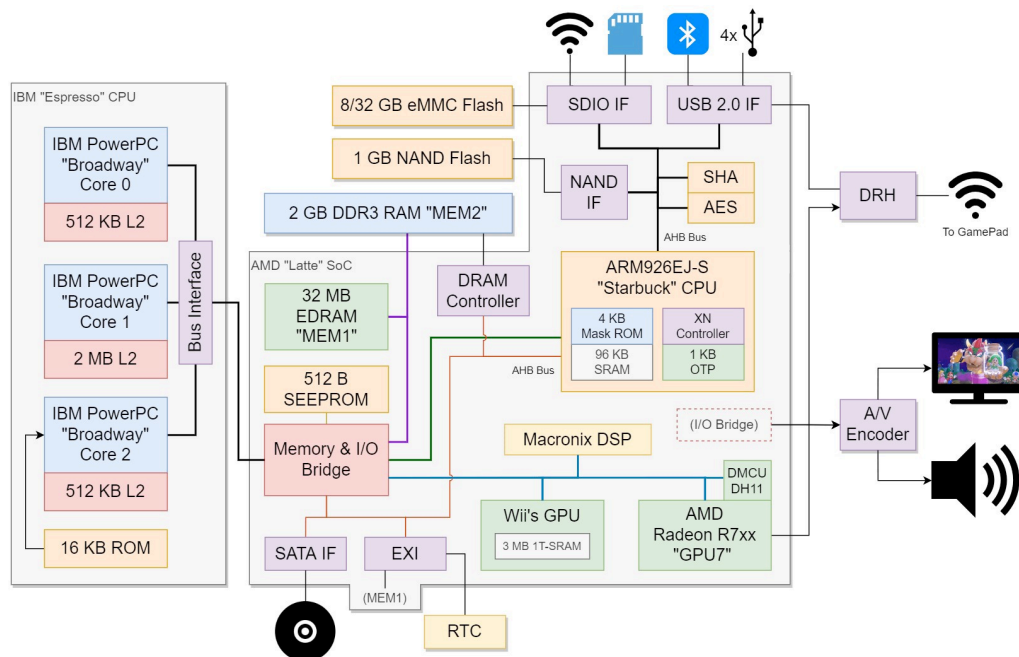
The Wii U is available in two models: a Basic model with 8GB of internal storage and a Deluxe model with 32GB of internal storage. Both models have an SD card reader.

Wii U GamePad Controller:

The Wii U GamePad is a controller with a built-in 6.2-inch touch screen. It allows you to play certain games using the touch screen, as well as control the console remotely. The Wii U GamePad also has a front camera, microphone, gyroscope and accelerometer.

Connectivity:

The Wii U has IEEE 802.11b/g/n Wi-Fi connectivity, as well as an Ethernet port for a wired connection. It also has four USB 2.0 ports for connectivity with external devices (including game storage). It also has an HDMI port for video output, as well as a multi-output AV port like the Wii.



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2.2 RECOMMENDATIONS

Let's go to the recommendation I made about the Wii U to develop a game on it. We will need a hacked console to continue, personally I use Tiramisu



My material, the one I would use for these tutorials

Already a Wii U "Deluxe" in 32GB will be more pleasant to develop, you can test your games by installing them directly on the NAND, which avoids hard disks and other USB keys to plug on it. You can still use a Wii U "Basic" in 8GB. After that, it depends on the game you want to develop, for a single player game I recommend the GamePad and a Pro Controller. If you want to play a multiplayer game, then Wii Motes and Pro Controller will do the trick.

Note:

Also make sure you have the GamePad, the tools I have developed on ONLY usable for the moment with the GamePad

As for the storage on the SD (because the installer of your game will be stored on it). It depends on the size of your game. On my side, I have a 128GB microSD to be safe. You can use any microSD/SD card you want.

Note:

Your SD or microSD card must be formatted in FAT32 and MBR for it to work on your console and hack. For more info, consult your CFW/Hack manual

3. PRESENTATION OF SOFTWARES

3.1 ON THE WII U

On the Wii U side, there is not much. We will just use System Config Tool (SCT) to install/uninstall the game.

On the Wii U side, there is not much. You just need to install System Config Tool (STC) on your console. It is in the attached archive *WiiU_Software.zip*, then use WUP Installer to install it on your console.

3.2 ON THE PC

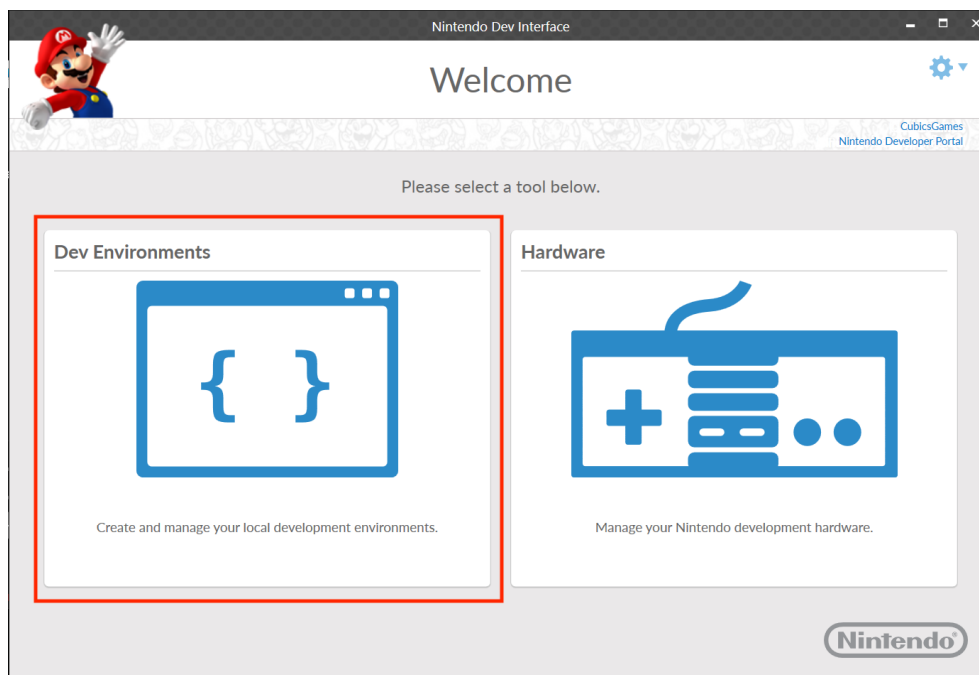
On the PC that you're going to use to develop there's going to be a little bit more software. First there will be Unity + Wii U Build Support, it's with this engine that we will make the game. Then, we will need to compile the game: this is where the CafeSDK shows itself, we will need the Nintendo Developer Interface to install it with the different tools needed.

4. INSTALLATION

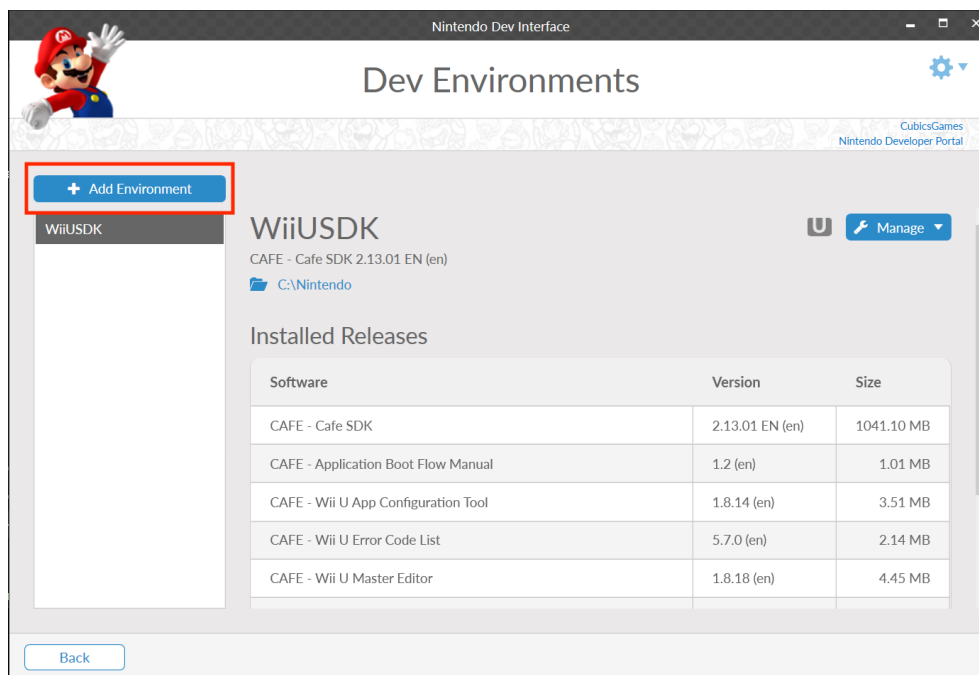
4.1 INSTALLATION OF CAFE SDK FROM NDI

First of all, before installing CafeSDK, you will need a Nintendo developer account. These are pretty easy to get. You can get one at developer.nintendo.com. Then you will need to install the Nintendo Dev Interface via the installer found in the attached archive *NDI_Setup.exe*. Once installed, connect to your developer account.

Then you will arrive on this page. This is the home page of the NDI. This is where you will be able to configure your Development Environments or your Wii U development hardware (the CAT-DEV or CAT-R) but we are not interested in this option. On continue donc sur « Dev Environnements » pour installer notre CafeSDK.



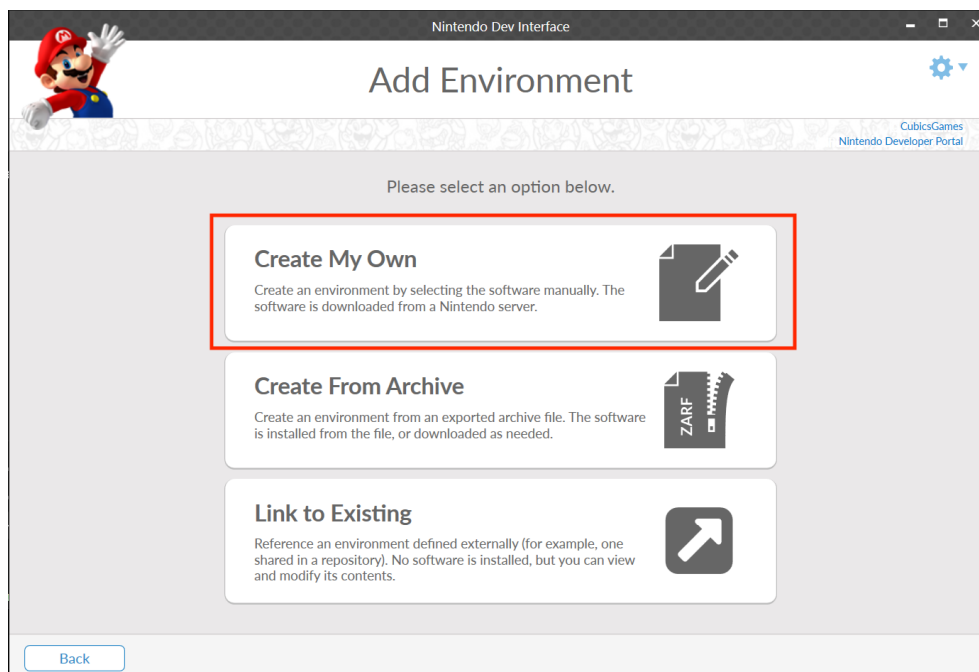
NDI Home page



Wii U Dev Environments

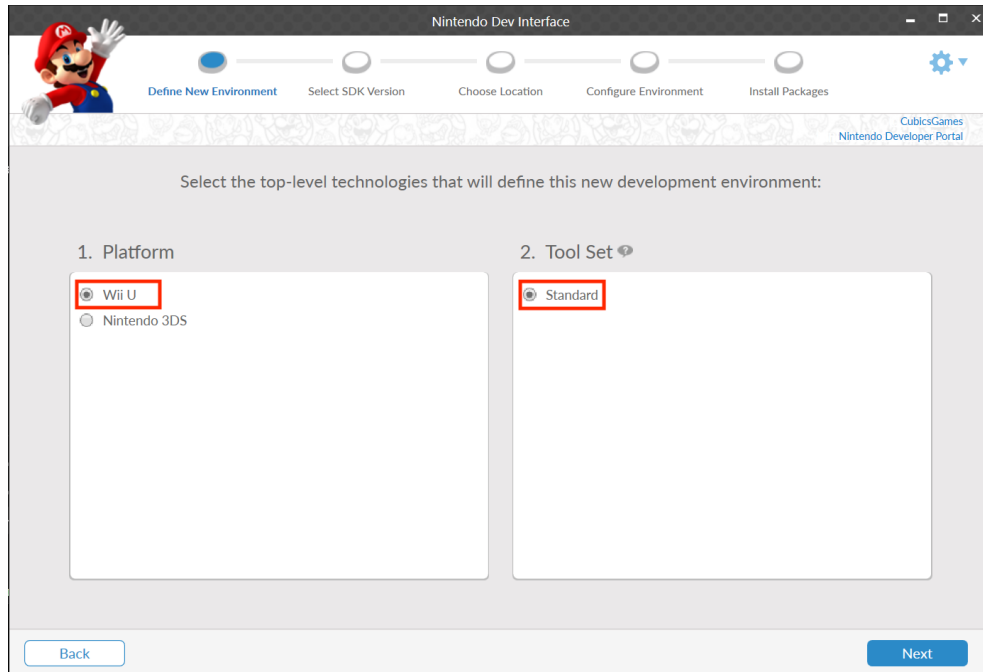
Since I already have my Wii U environment. I will add a new environment. I believe that when we don't have any environments installed you will arrive on the next page.

So we'll install CafeSDK now. We will use the "Create My Own" option. Then we will configure the kit we want to install, for us it is "Wii U" with the toolset "Standard". Then, we will select the version of the SDK we want to install, here the last one (2.13.01

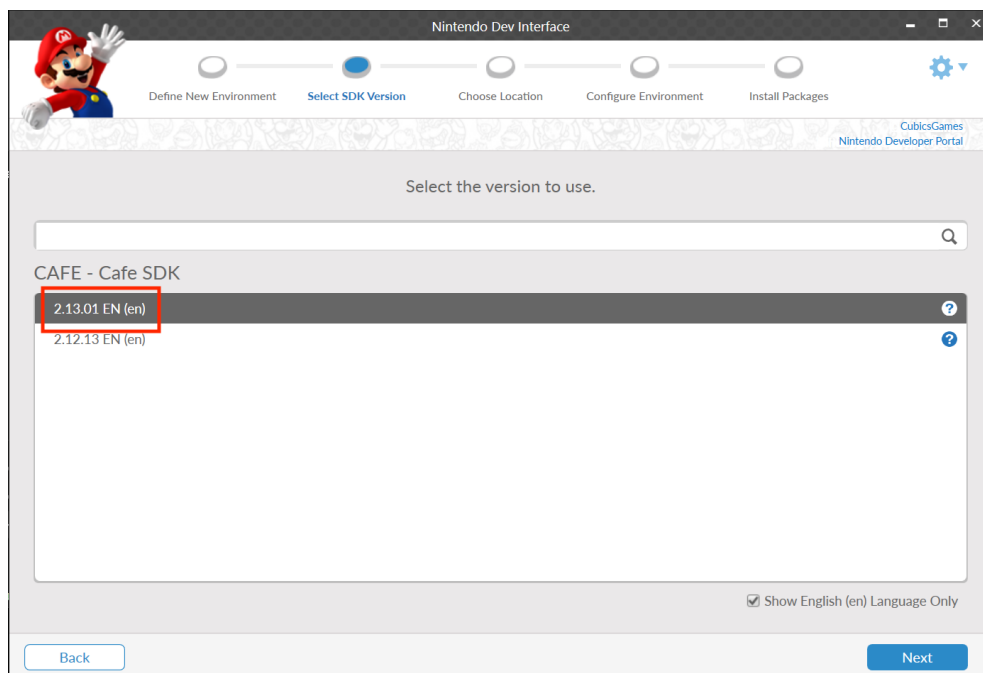


Add new Environment

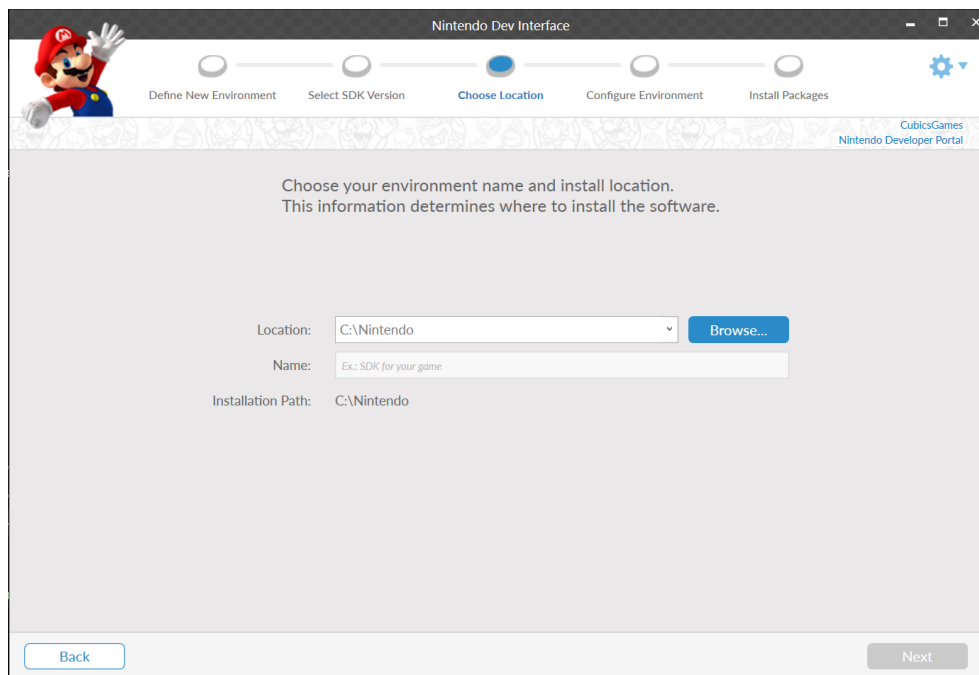
(en))



Setting Up Kit



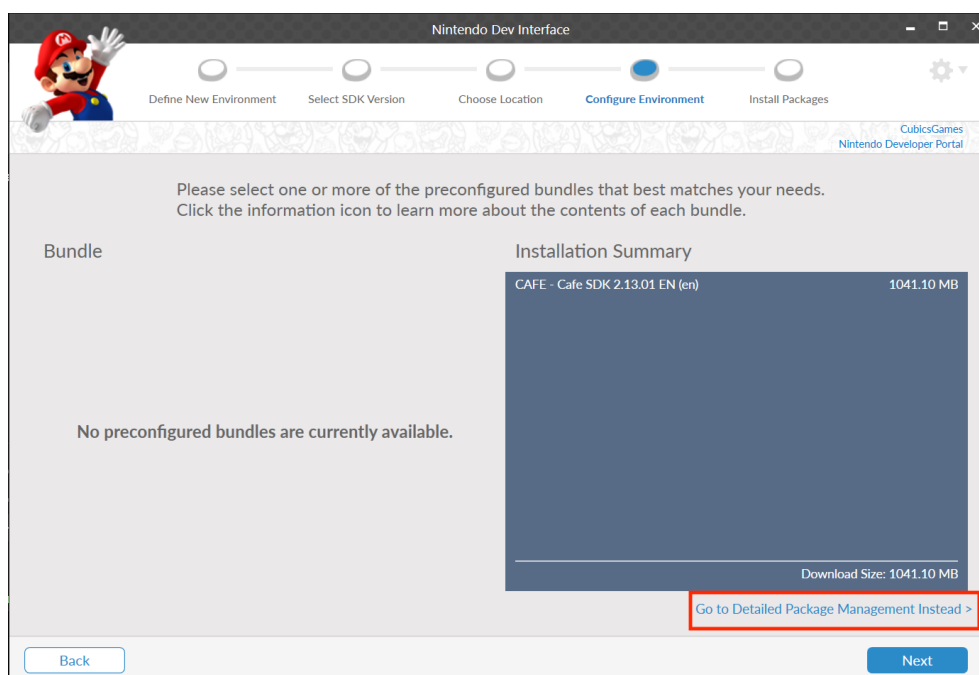
Pick up last version in English



Emplacement d'installation

Now we have to determine where we want to install the kit. I put it in *C:\Nintendo*. We also have to give it a name, so as not to lose it I recommend you to name it "WiiUSDK". After that, the NDI recapitulates what we want to install, but just the CafeSDK alone is not enough, so we will modify the installation with "Go to Detailed Package Management Instead" to add other modules

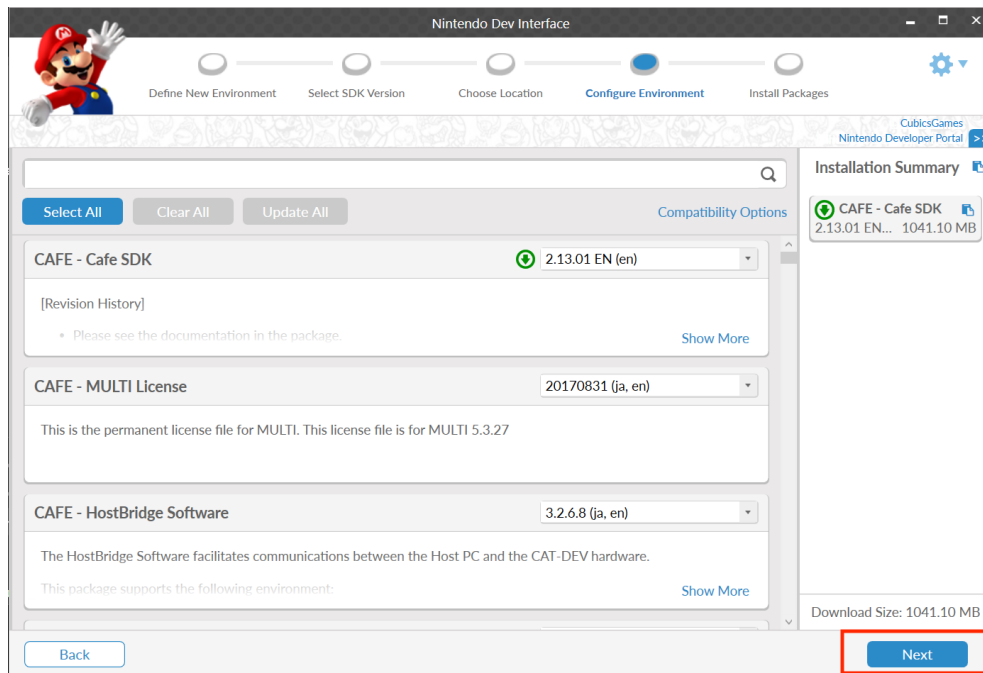
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Summary of the installation

We are going to install the modules we are missing, you will just have to search them to install them. Prefer English modules (en) to Japanese modules (jp). Here is the list :

- CAFE - GHS MULTI
- CAFE - HostBridge Software
- CAFE - MULTI License
- CAFE - Wii U Master Editor
- CAFE - Wii U App Configuration Tool

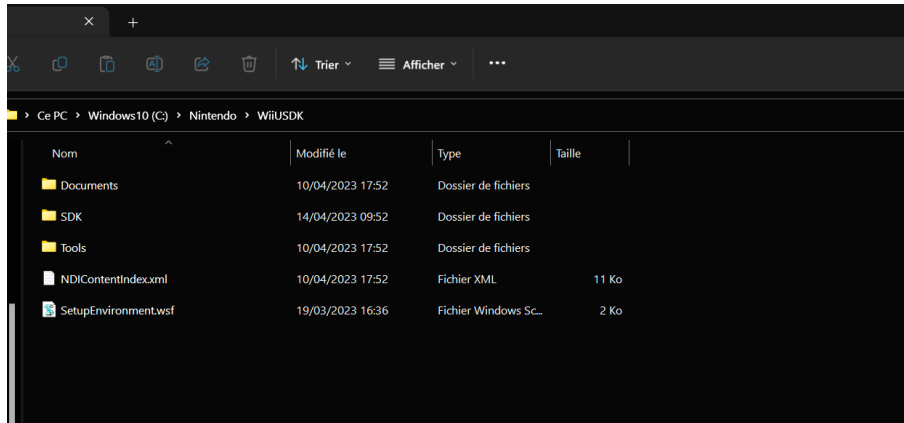


Adding Modules

Once the modules are added, validate with "Next" and the installation will begin. After the installation of the CafeSDK we will check that everything works in the following section

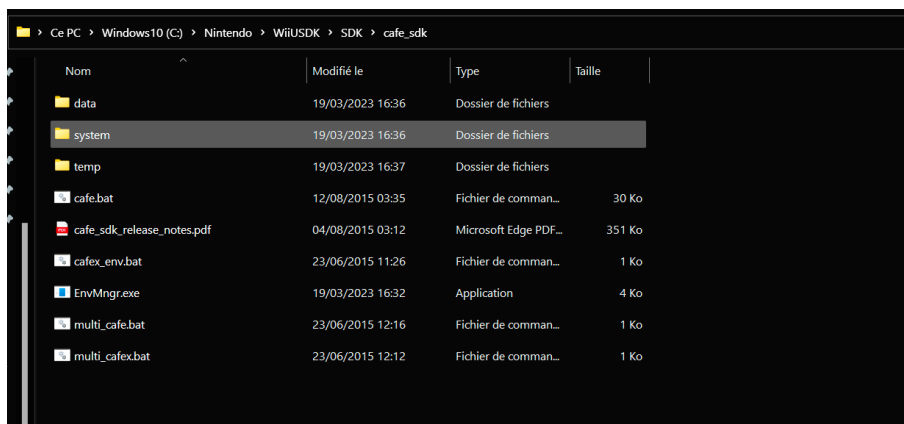
4.2 CHECKING INSTALLATION

Once the Cafe SDK is installed, go to the folder where you installed it. In my case it is `C:\Nintendo\WiiUSDK\`. In this folder you should find the folders "SDK" and "Tools". Execute the file " SetupEnvironment.wsf " to validate the installation then restart your PC.



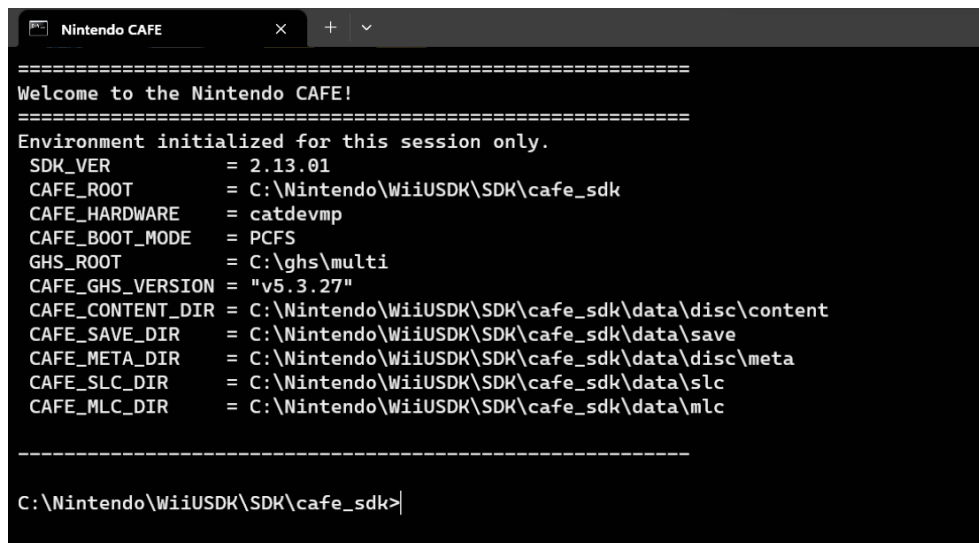
CafeSDK folders and files

After rebooting, run the "cafex_env.bat" file located in the "SDK" folder



Location of the "cafex_env.bat" file

You should have these lines. If you don't have them, go to the next step with the environment variables.



```

=====
Welcome to the Nintendo CAFE!
=====
Environment initialized for this session only.
SDK_VER           = 2.13.01
CAFE_ROOT         = C:\Nintendo\WiiUSDK\SDK\cafe_sdk
CAFE_HARDWARE     = catdevmp
CAFE_BOOT_MODE    = PCFS
GHS_ROOT          = C:\ghs\multi
CAFE_GHS_VERSION  = "v5.3.27"
CAFE_CONTENT_DIR  = C:\Nintendo\WiiUSDK\SDK\cafe_sdk\data\disc\content
CAFE_SAVE_DIR     = C:\Nintendo\WiiUSDK\SDK\cafe_sdk\data\save
CAFE_META_DIR     = C:\Nintendo\WiiUSDK\SDK\cafe_sdk\data\disc\meta
CAFE_SLC_DIR      = C:\Nintendo\WiiUSDK\SDK\cafe_sdk\data\slc
CAFE_MLC_DIR      = C:\Nintendo\WiiUSDK\SDK\cafe_sdk\data\mlc
=====

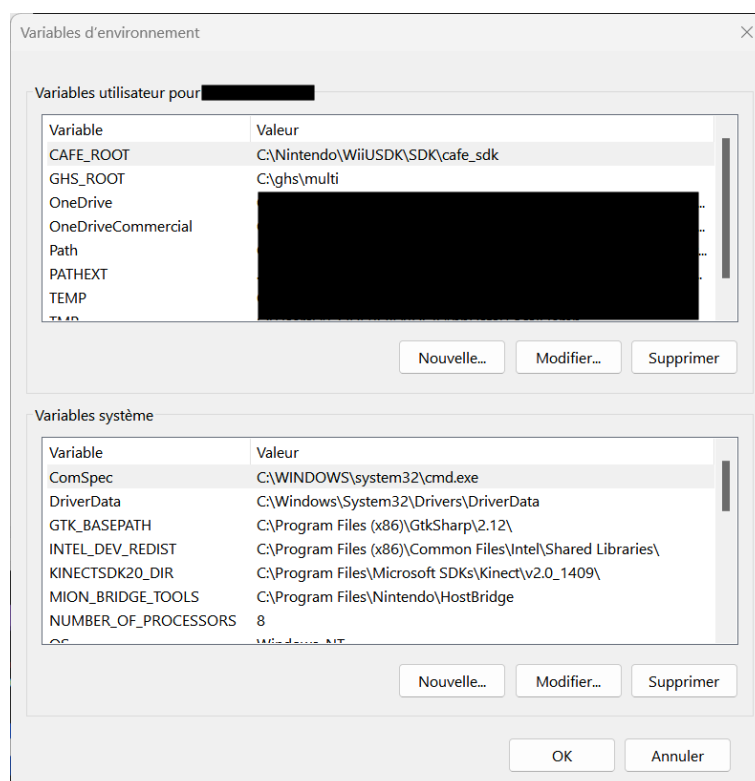
C:\Nintendo\WiiUSDK\SDK\cafe_sdk>

```

We will use this file for manual actions

Now check in the environment variables if the paths are assigned.

If there is no "CAFE_ROOT" or "GHS_ROOT" key add them manually with the "New" button. For "CAFE_ROOT" it must point to the folder where there is the file "cafex_env.bat" and the variable "GHS_ROOT" points to the folder "multi" of the folder "ghs" which is located at the root of the disk C:\



Environment variables of my PC

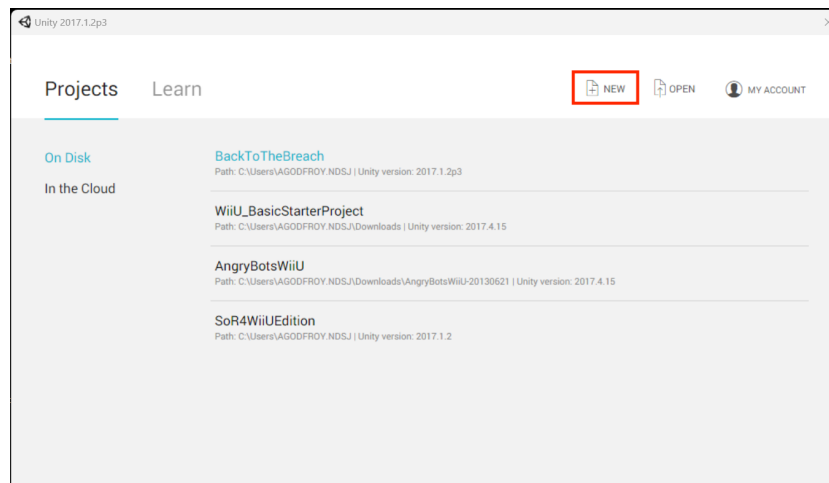
4.3 INSTALLING UNITY

Now we are going to install Unity and the Wii U support to develop the game. Go to the [archive.org](#) page to download Unity Wii U 4.0.1. The file to download is "UnityforWiiU-4_0_1-20171205.zip" (the download from Internet Archive is long, so plan at least one hour). At the end of the download, you have to extract the files from the archive to find 4 files:

- 2 readme files (English and Japanese)
- The Unity installer "UnityforWiiU-4_0_1-20171205.exe"
- The Wii U support installer "UnityforWiiU-4_0_1-WiiUSupport-20171205.exe"

Let's start with Unity, the file "UnityforWiiU-4_0_1-20171205.exe". Once the installation is complete (remember to uncheck the box "Open Unity" or something like that to avoid opening the engine). Then install the Wii U Support "UnityforWiiU-4_0_1-WiiUSupport-20171205.exe".

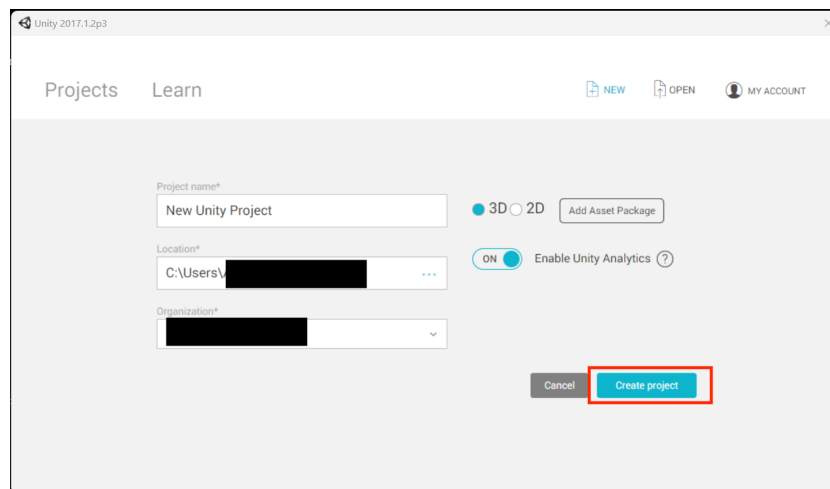
Once both files are installed, open Unity 2017.1.2p3 and connect to your account.



Homescreen of Unity 2017

Now we just have to activate the Unity license.

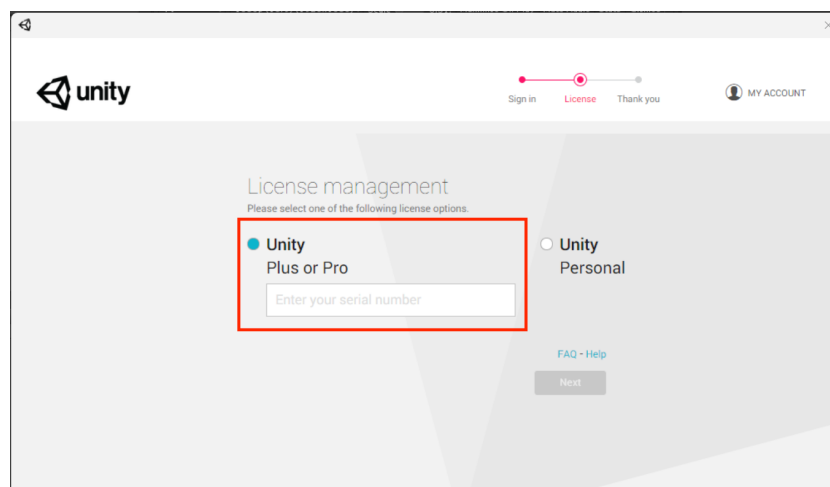
To activate it, you have to create a project after you have logged in. This is the opportunity to create the project of your game. Give it a name (avoid spaces). Once the editor is open, select *Help > Manage licence...*



Création du projet

The license management window will open. Do " Activate New Licence " and then Unity Pro with the following licence:

> I3-K6SY-99ZB-JYFZ-DZQP-E8PH



Activating License

And here is Unity installed, configured and ready to use

Note:

Without the active license, the Wii U module in the Build Settings (File > Build Settings) will not be visible

4.4 INSTALLATING TOOLS ON THE WII U

All that remains is to install the tools on the Wii U before you can start developing your game and testing it. You will need to have a Wii U hacked by the method of your choice. You just need to access the Homebrew Launcher and WUP Installer to install the System Config Tool (STC) whose installation is in the attached archive SCT.zip. An attached PDF will help you to understand this tool better.

Warning:

System Config Tool is a very powerful tool that can brick your console (make it unusable) so be careful with this tool and stick to the functions we will use to preserve your console.

5. WII U CAFE SDK DELUXE

5.1 PRESENTATION

Wii U Cafe SDK Deluxe is a tool that allows you to easily install a Unity build on your Wii U by automating the task. Normally, by default these files are supposed to be used on a CAT-DEV or CAT-R and these files can't be used on a retail Wii U. The Wii U Café SDK Deluxe utility decrypts the files made to be used on an official development kit and then rebuilds the archive for a general public Wii U.

5.2 INSTALLATION

Wii U Cafe SDK Deluxe is installed by simply copying the folder WiiUCafeSDKDeluxe into your Builds folder in your Unity project.

Warning :

Make a shortcut to the file WiiUCafeSDKDeluxe.exe in your build folder will make the tools don't detect your projects builds and files.

That's it, your complete installation of Unity and the Wii U development kit is ready. You just have to develop your game. In the following tutorial, we will see how to make a game for your Wii U and install it.