DRG Modding Guide

By Rauliken, edited for U36 by Buckminsterfullerene

(Red color means important, blue is a link inside the document, green is an external link)

(You can click blue text to go to that part, there's also blue links through the guide)

(You can also go back to the index by clicking "Back to Index" on the right when you see it)

1. Introduction and tools

1.1 The Basic Knowledge

There's still a lot of things to do in DRG even if you have all the cosmetics and promoted all characters to the max level. Welcome to DRG modding, you are going to like this game even more after learning how to mod it. If you find it too difficult just try the current mods that the modders have released and have some fun. I'm at 1k hours myself and I would have stopped playing if it wasn't for the amazing mods.

Some VERY IMPORTANT THINGS before starting:

1. Make sure you've read the official info about DRG's mod support in the links below. I'm not going to go into details here so make sure you read them to understand the basics.

    This is the main post:
    https://steamcommunity.com/games/DeepRockGalactic/announcements/detail/2953787944888179529

    This is the FAQ with some additional info:

    https://www.deeprockgalactic.com/modding-support-faq

    And I will link 2 more when we get to the part that talks about uploading your mods.

2. Mods are hosted here https://drg.mod.io/. Use the modding menu inside the game to create an account automatically so you can upload your mods.

3. Your vanilla or modded save files are safe because mods will not corrupt/mess with it unless you use the tools maliciously. If you are concerned about this use the save clone and backup feature that the game provides in the menu.

4. This guide only covers the bare minimum so if you want to learn more make sure you check all the other guides in the #guides-and-tools channel in the drg modding discord.

First you are gonna need some tools to start modding. You can get a .zip with the basic files in the discord. IYou can always use the blue hyperlinks through the guide and in the index to quickly find what you need but I highly recommend reading 1. and 2. from top to bottom if it's your first time.

1.2 The Basic Tools

1. FSD-WindowsNoEditor.pak

-> This is the main file of the game, which contains all the rest of the files. It's "paked" with Unreal Engine so we need to extract the files if we want to modify them.

-> You can find it in "…\Program Files (x86)\Steam\steamapps\common\Deep Rock Galactic\FSD\Content\Paks". You obviously need the game installed and NEVER DELETE THIS FILE, just copy it if you need it later. If you don't know how to access this folder go to Steam, right click DRG > Properties > Local Files > Browse Local Files. If you want to make a lot of mods it is recommended to make a backup of the extracted files inside it when we get to that point.

-> The mods that you create and WANT TO TEST need to have a certain name to be loaded by the game which should be the name that you want followed by "_P". Mods uploaded to mod.io don't have this restriction so they don't need the "_P", more about this in 2.4.2 Mod installation and uploading.

2. DRGPacker

-> This tool will allow us to extract the files from FSD-WindowsNoEditor.pak and will also let us pack our own files. The files that you extract will have the extensions .uexp and .uasset which are Unreal Engine files. More on this on 2.1 Unpacking the game's files.
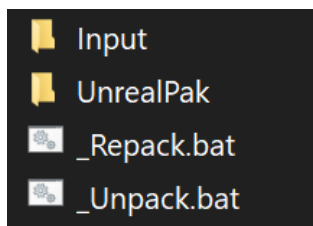
For older users of the guide: You don't need UEE anymore with the new version of the packer if you just want to make hex mods.

3. UAssetGUI

-> This is used to see the contents of the files and change values. You are going to need it if you want to make mods that change a value/s inside the game files. There will be an example in 3.1 Hex mods. adolescent#9927 is the developer of UAssetGUI and is in our discord so ask him any questions. If the tools don't work then download .NET Runtime: https://dotnet.microsoft.com/download

4. EmptyContentHierarchy

-> These are all the folders inside an extracted [FSD-WindowsNoEditor.pak](#) but empty, just the folders. This will be useful later to pack files and for UEE in other guides. Each major update will have a different one, so make sure you get the one from the most recent version of the DRG Modding tools ZIP.

_ModBPs	AI	Analytics	Art
Audio	Character	CharacterStructure	Cinematics
Collections	Critters	Developers	Enemies
Game	GameElements	Landscape	LevelElements
Localization	Maps	Movies	PersonalFolders
Rumble	StarterContent	TempContent	UI
WeaponsNTools			

5. UModel

-> This tool will allow you to extract the audio files, textures, 3d models… This is different from [DRG Packer](#) because that one just extracts the .uexp and .uasset files but if you want to dive deeper and get the sounds, icons, 3d models… you are going to need this. You can find it here https://www.gildor.org/en/projects/umodel.

6. FModel

-> This tool will give you readable files from a pair of .uexp and .uasset files. (Readable means not in hexadecimal). UAssetGUI already parses the files but they may have problems and in my opinion it's easier to search for that value you want to change in FModel before you edit it.

7. Unreal Engine Editor (UEE)

-> If you want to make mods to replace audio and textures you need this. You can also create your own Unreal Engine blueprints (which are way more complex than hex editing mods or audio mods but can do more stuff).

-> You can find it here https://www.unrealengine.com/en-US/ . Unfortunately you need to download the Epic Games Store even though we just want Unreal Engine and not the games but there's also a github with a quick google search that tells you how to download it without the store.

-> VERY IMPORTANT: You are going to need the version that DRG is made with, which is version 4.27. This might change in the future. For now, get the latest subversion so 4.27.X, X being whatever is the max in there.

Go to the Library, add a new version with the + symbol -> click the arrow next to install -> and the version. You only need the basic installation so you can configure it and remove everything but the basic stuff so the installation takes only like 13 GB of storage instead of +30 GB.
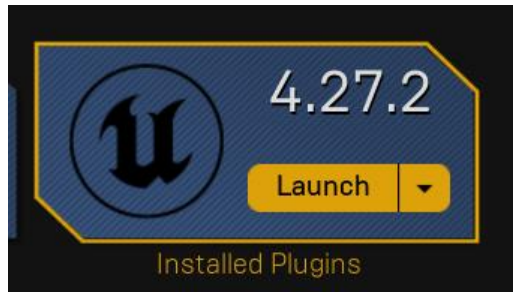

8. Other tools

-> Those are the main tools you need but there's way more in the guides channel in the modding discord (tools for specific types of mods, console unlocker, research tools…).

2. Things to learn before modding

2.1 Introduction to DRG Packer

First you are going to need to download the basic tools zip in our discord. This is our fresh DRG Packer folder after extraction, it's pretty easy to use.
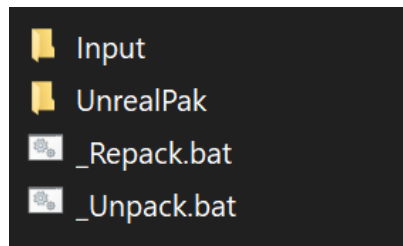

To pack files you will drag and drop the input folder into _Repack, to unpack the main FSD from the game you just drag and drop into _Unpack. Let's see a more detailed step by step guide now.

2.2 Unpacking the game's files

First of all we want to extract all the files from FSD-WindowsNoEditor.pak Start by going to your DRG Packer folder and your FSD folder (Check above if you forgot how to). Put them side by side and drag and drop FSD-WindowsNoEditor.pak into _Unpack.
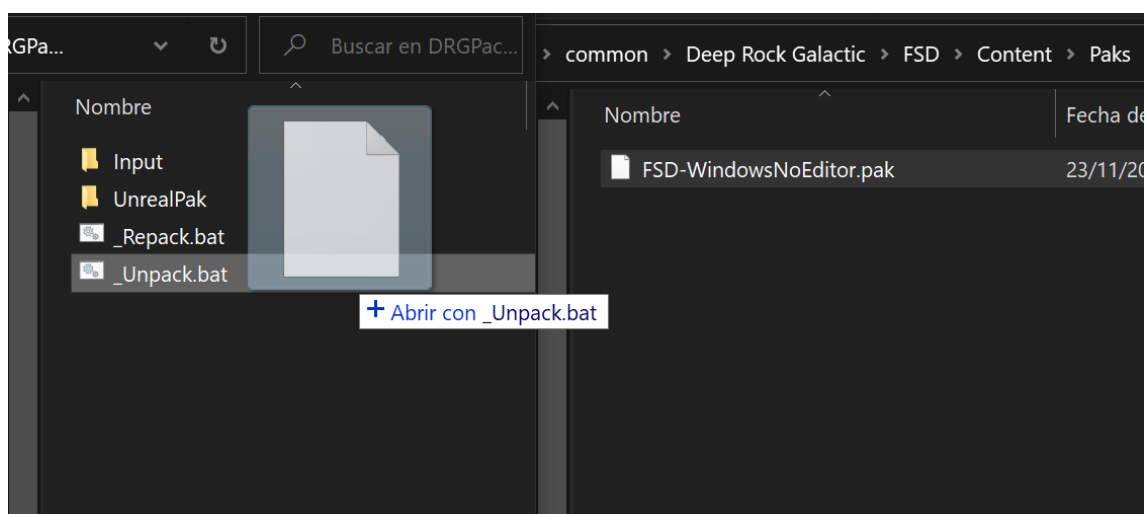
Now wait for the extraction to complete. The command line window will say "Press any key to continue…" when it's done you will see a new folder called "FSD-WindowsNoEditor". The files of the game are inside it.

We are not going to use the contents of the "Engine" subfolder and the other folders inside "FSD" that are not "Content". Just remove everything but the FSD->Content folder and you are set.

You should probably make a backup of FSD with all the extracted files and don't forget that you need to extract the files again for each update the game receives.

2.3 Checking the content of the files

If you go to the "FSD" folder and then inside "Content" you will find the extracted folders. All of these contain the pairs of .uexp and .uasset files that we are going to need.
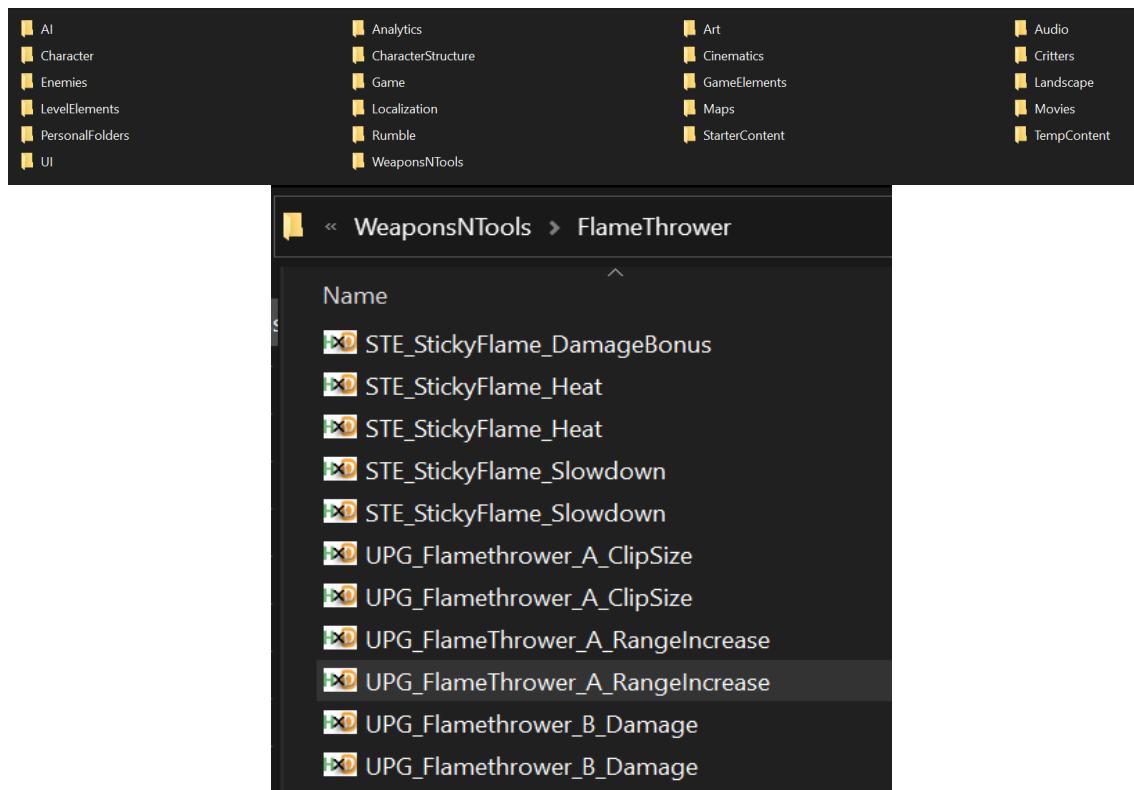

For example, if we go to "FSD\Content\WeaponsNTools\FlameThrower" we can see all the files for the flamethrower weapon. For editing values like upgrades or base stats we can open some of the .uexp files using a software like FModel or the asset editors to have more readable text.

We are going to be working on this file later in 3.1 Hex mods to learn how to change the values and search for them.

If you want to extract other things like sounds or textures you will need to use UModel and extract the desired file/s. For example, we open it to get one of Molly's sound files. You can select FSD-WindowsNoEditor.pak in your game folder or select the directory (my choice here) where you just extracted the .pak with DRG Packer, and we select these settings and OK:
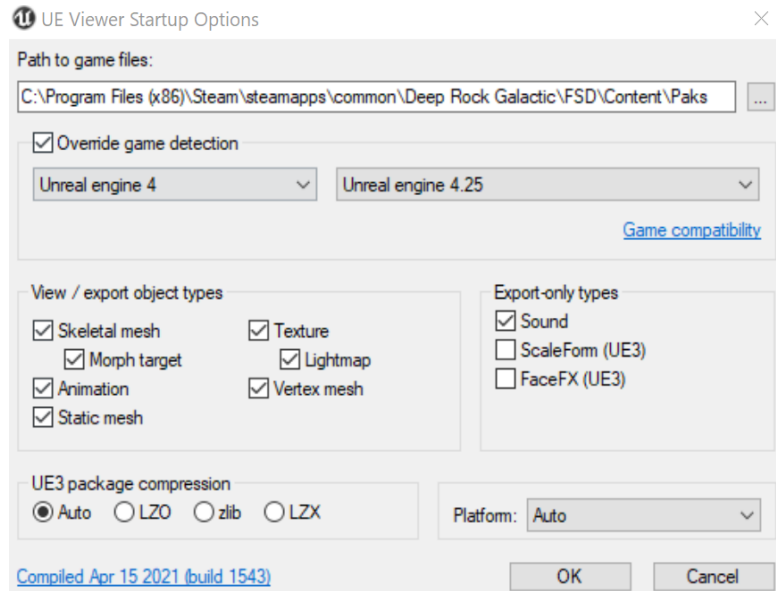
We navigate the folder tree until we find our file or a folder with all the files we need (you can extract the whole Audio folder for example if you want all the sounds in the game), and after selecting extract we select an output folder:
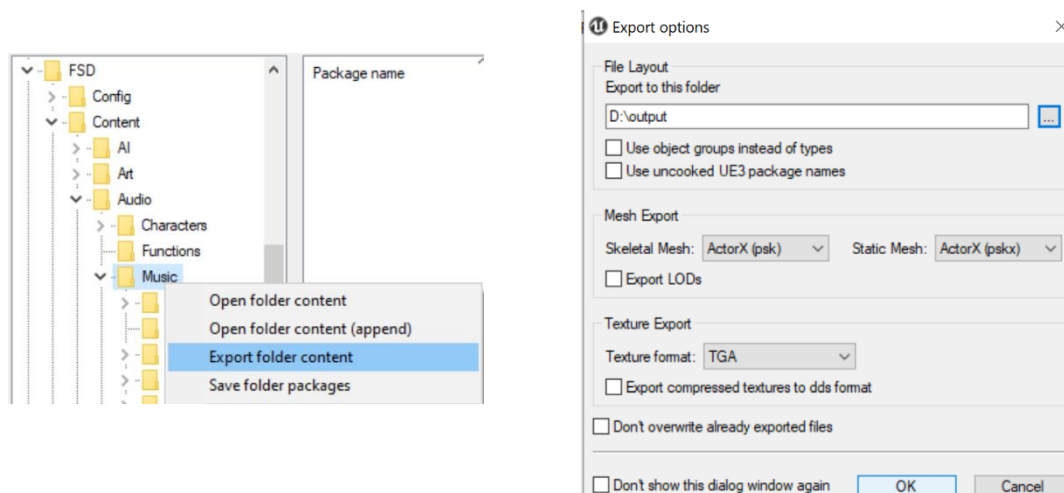
If it's a sound, 3d model, texture file... you will get a few files in the extraction folder.

2.4 Packing your mod files

Using the same DRG Packer we used to unpack the main file, we are going to learn how to pack the files that we changed/added into a new .pak file for the game to load.

2.4.1 File packing method

I'm going to use the example from the flamethrower file before (imagine we already edited it even though that comes later in the tutorial). You should probably read about Empty Content Hierarchy if you haven't already.

In the flamethrower example, the file is UPG_FlameThrower_A_RangeIncrease which is inside FSD\Content\WeaponsNTools\FlameThrower. To pack mods correctly we are going to need to replicate the same folder structure that we got on the output folder (unpacked FSD-WindowsNoEditor.pak) but inside the "Input" folder.

You can just open the .zip from Empty Content Hierarchy (which has all the folders from the game but empty) and drop the "Content" folder in it inside "Input" and replace the placeholder one there.
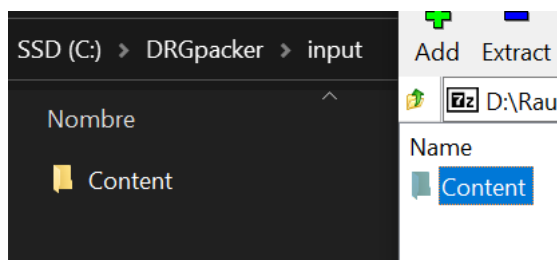

In this case we just want to work with 1 weapon so you don't need to have the rest of the folders. You can just drop the "WeaponsNTools" folder inside input -> Content.

You can also delete everything but the FlameThrower folder too. I recommend having a backup of each folder structure for each mod you make, for easier packing, instead of just having all of the empty folders and having to search where you put the files.
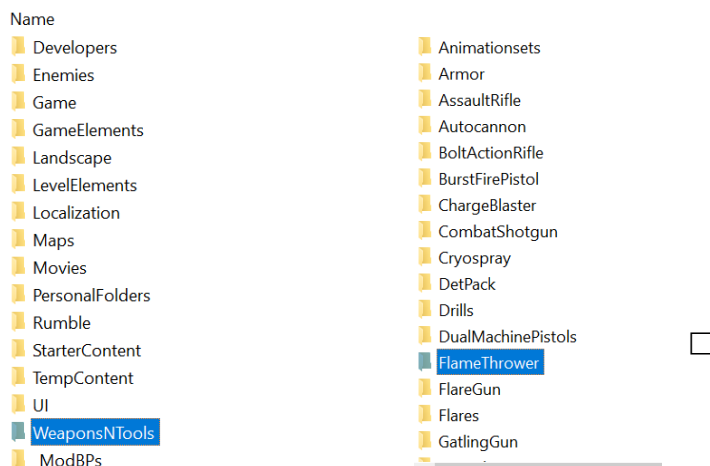
This will be the final path of the flamethrower files.
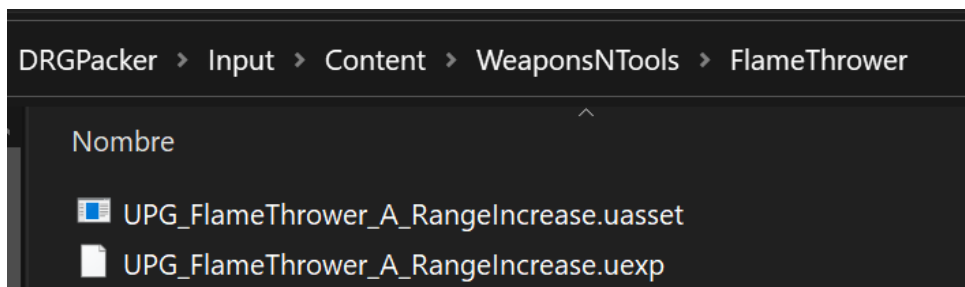
You can do the process before for any number of files that you modded.

Be careful when leaving folders in Input -> Content after packing because maybe you'll start making a new mod and forget you still had the old mod files in there.

Now just drag and drop the Input folder into _Repack. (FSD here is just the extracted files from before, I recommend renaming them to the update where they are from).
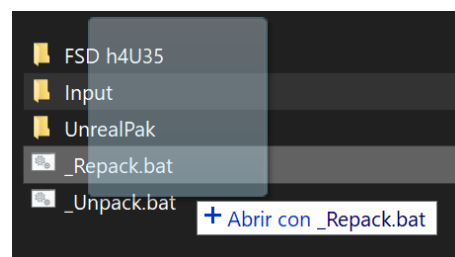
Check the "Added x files" line. If you have for example 2 files in the mod check that the number is correct so it says "Added 2 files". If there's less than what you expect you forgot to put some files in the input folder, if it's more than expected then you forgot to remove files from a previously packed mod.

So, the summary of packing is that we only need to add or remove files inside the EmptyContentHierarchy (FSD and subfolders) with the correct folder structure compared to the vanilla files. It can get pretty messy if you forget to add/remove files when making new mods so (again) I recommend having a backup of each folder structure for each mod you make, for better organization and future updating.
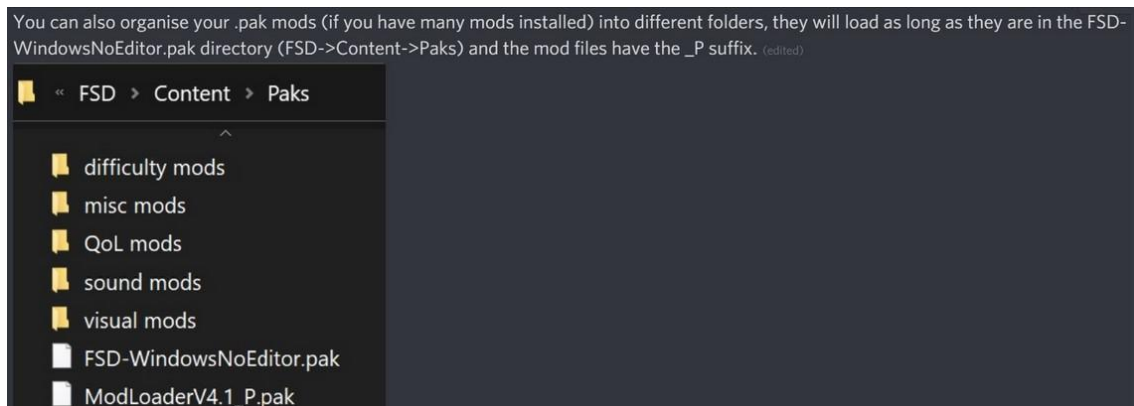
2.4.2 Mod installation and uploading

To install a mod FOR YOUR OWN TESTING PURPOSES (BEFORE UPLOADING), simply move the .pak than you made in the previous step to:
"…\Steam\steamapps\common\Deep Rock Galactic\FSD\Content\Paks"

If you don't know how to open the game's folder follow this guide:
https://steamcommunity.com/sharedfiles/filedetails/?id=760447682

(Yes, installing the mod to test it is just moving your .pak in there. Unreal Engine automatically replaces the original file in FSD-WindowsNoEditor.pak when the game loads, with the file that you modified in your .pak).

To install a mod FOR PLAYING after it has been uploaded to https://drg.mod.io/ you just browse mod.io or enter from inside the game in the modding menu, and click the big red eye button.
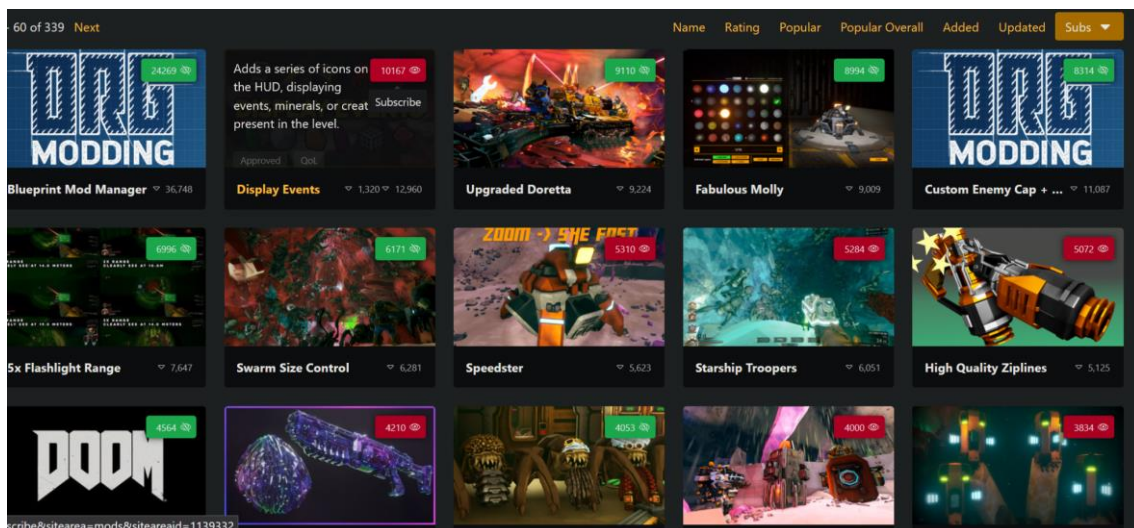
It will auto install and don't forget to click APPLY CHANGES after that at the bottom, the space rig will restart and your mod will be installed.

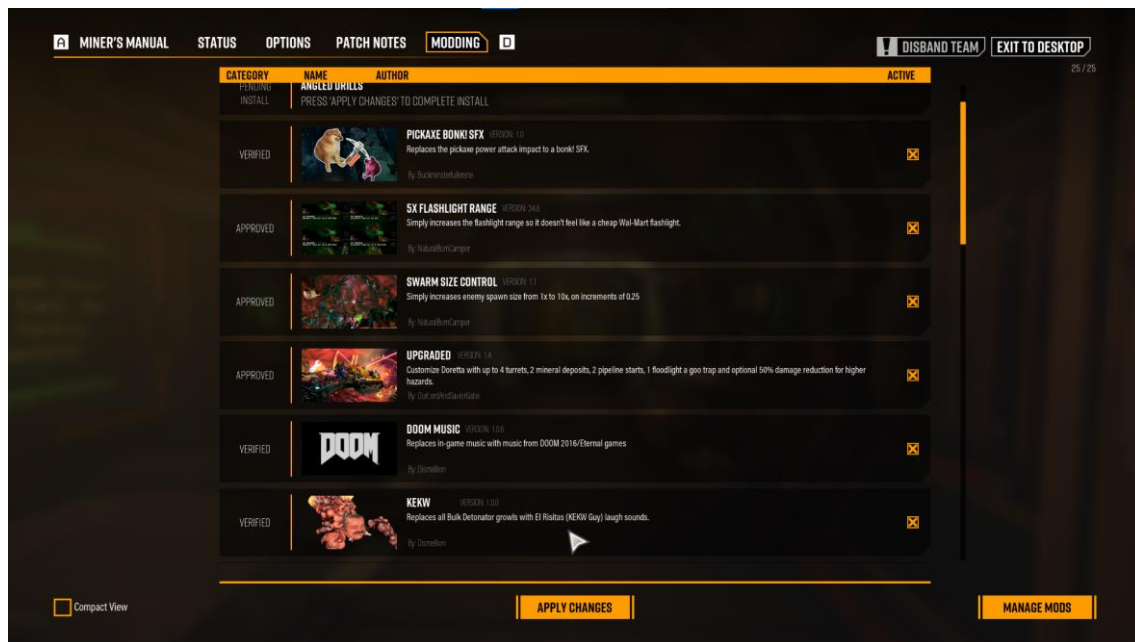TO UPLOAD A MOD (making it public) after testing your *modname*_P.pak, first remove the "_P" and then read the following guidelines.

About mod categories:

https://drg.mod.io/guides/mod-guidelines-and-status-categories

And this other one to learn what you need to do before uploading a mod:

https://drg.mod.io/guides/approval-process-and-checklist-for-upload

After that make sure you have your description, name, category, thumbnail and .pak file ready and click on the + button on mod.io and follow the simple steps.
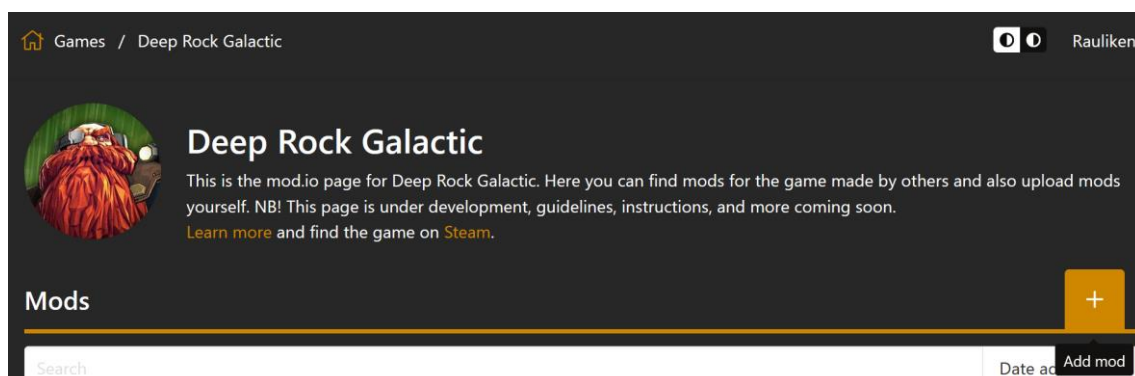
3. How to mod

There's different types of mods that you can make for DRG. Hex mods (touch values and are easy to make if you know what you are looking for, there's also mods that change audio, textures… and blueprint mods to create Unreal Engine blueprint files with more complex behaviour.

In this guide I'll be explaining the basic hex mods. At the end I'll mention a few of the other guides to get you started with more complex mods. As always you can find everything #guides-and-tools in our modding discord

3.1 Hex mods

We have the hex mods, which edit values inside the .uasset and .uexp files (all files are in pairs of these types) and replace the original files with your new ones when the game loads. These values can be integers, text, booleans, floats… Most of the values should be easy to find just by using the armory inside DRG but you need to keep a few things in mind.

We need to know the value that we are going to change but also the file where it is located. You can check the File Prefix List made by @Elythnwaen.

I'm gonna be working with the file that I used in the packing example before, in 2.4.1 File packing method. In this case our mod is going to have only one file which is called "UPG_FlameThrower_A_RangeIncrease.uexp" and as you can tell by the prefix "UPG" this is the file that controls the range upgrade for driller's flamethrower.

I'm going to be using UAssetGUI. If you want to learn more about how .uexp and .uasset files work download the DAUM guide made by @Drillboy Jenkins. Open the .uasset and explore a bit, to change a value go one of the categories:
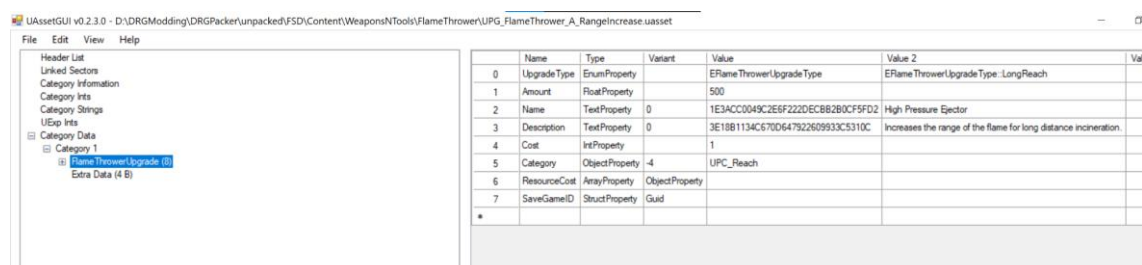
Right there in the "Amount" field is the value we are looking for. It's 500 because the upgrade of +5 in game is measured in meters and it's centimeters in the files. Some values can be more obvious than this. We'll change it to 2000 so it becomes a 20 meter range upgrade.

If you can't find the value try using FModel. Open the main .pak from the game, navigate to the folder, go to the Assets tab on the top right and open the file. Use CTRL+F to search stuff. This is pretty useful in other files that have a lot of stuff but isn't really needed for this small change.
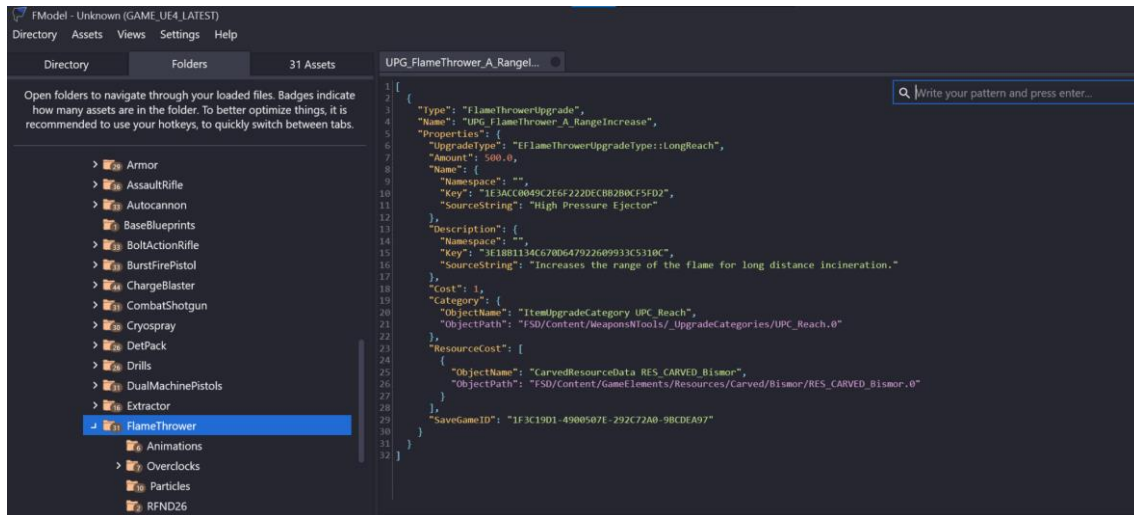
Finally, we just save the file in UAssetGUI or AssetEditor with CTRL+S or File -> Save and we are ready to pack our mod. You will get 2 new files and the tools might make a backup (.bak) of the original ones.

You should know how to pack that pair of files (.uasset and .uexp) with one of the methods that I showed you earlier in 2.4 Packing your mod files. I used these exact files in both examples to make it easier to understand the whole process.

After packing, just follow 2.4.2 Mod installation and you are ready to test your new flamethrower upgrade that will add +20 meters instead of +5. As you can see in the armory when I hover over the range upgrade it now gives us 20 extra range. You can try the range overclock too for some insane flame reach :P

Here's a quick guide of all the steps for HEX MODS:

1. Extract .pak files with DRG Packer by dragging the .pak into "unpack".

2. (Optional) Read the files with FModel if you want more info about the value you want to change.

3. Open the .uexp file you want to change with a UAssetGUI and edit the values you want.

4. Now to turn it back into .pak again follow these steps: (an example for the barrel kick force mod that modifies only PST_BarrelKicking.uexp):

>   4.1 Create the same folder structure inside DRGpacker -> input -> Content as the original extracted files had and add the modified files, so:
>
>   ……/GameElements/PawnStats/PST_BarrelKicking.uexp
>
>   4.2 Drag and drop the .txt to "pack" and check that there are no errors.

5. Put the generated new_P.pak file in to test it:

>   …\Steam\steamapps\common\DeepRockGalactic\FSD\Content\Paks

6. After testing it to make sure it works, rename it to *InsertNameHere*.pak, you don't need the "_P" anymore.

7. Upload to mod.io (Please read the guidelines, write proper descriptions and choose the correct category, you should have no issue if you read the info links)

And there's a few important things about hex mods:

1. If your game crashes, don't send the crash report to the devs. You probably changed the wrong value or changed file size without a proper tool like DAUM.

2. Most but not all mods made this way are client side, the meaning of this is that unless the host has the mod, or you are the host, it won't work. It's also like this for other mods like the difficulty mods (haz 6 etc) and blueprint mods. Audio mods are always client side.

3. As I explained in the packing tutorial, you can have more than 1 file in a mod. You don't need to make 10 .pak files if you modify 10 files, just make a single one by adding more files with the correct paths to the input->Content folder.

4. You can change a lot of things with hex editing, not only the weapon's stats. If for example you change a perk, you will need to try the changes inside a mission to make sure they work because those don't show up in the armory.

5. This type of modding is the most basic but It will complement the others. For complex hex mods like adding overclocks, changing character inventories… you could try doing it with the asset editors but I highly recommend using DAUM.

3.2 Other mods

Now that you know the basics you are free to check all the other guides and tools.

For audio and blueprint mods the user @Buckminsterfullerene#6666 has made some great ones.

For model and texture replacement @Pacagma is your guy.

There's many more like the more complex hex mods with the DAUM guide, string replacement… Explore a bit in our discord and use the search bar in #guides-and-tools.

This marks the end of the basic guide but you should keep reading for some final tips and encouragement.

4. Conclusion

I hope you found the guide simple enough to understand and that you make many great mods. It's been a long time, we started this community with 2-3 modders and a small private discord and now we have members in the thousands, the developers added official mod support and with this guide we have a new modder to welcome :)

If you ever feel frustrated when making mods don't forget that there's always someone willing to help, it's a very wholesome community. You can find a ton of info in the #mod-chat channel in our discord and there's even a channel where people stream themselves making mods so you can all learn together.

If you ever want to check some old mods for inspiration, extracting the files to see which ones they changed etc, this is the github where the old Update 33 mods were before the modding support update: https://github.com/ArcticEcho/DRG-Mods

See you in discord and in the mines, ROCK AND STONE!

5. DRG Modding Discord

This is where we have our modding community. We post mods, previews, guides, chat about the game and have a good time.

Here's the invite link: https://discord.com/invite/drg-modding