

Animated Flags for Microsoft Flight Simulator X SP1/2

Version 1.0



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1. Introduction

This package provides a little collection of animated flags for scenery designers and FS users who do understand the handling of folders and files for FSX. The animated flag models have been developed with GMAX. Along with the textures the package includes the model (mdl) and bgl files. The XML files for the individual placement of a flag into a FSX scenery are included as well. The documentation contains a step by step description on how to place the flag into the FSX scenery, on a position of your choice. In order to paint your own individual animated flag, the Appendix B of the documentation describes in detail on how to do it. However, a basic experience on how to work with graphical tools like Photoshop, GIMP, Paint Shop Pro etc. is required to paint the textures/colors for a new flag.

The package has been developed for FSX Flight Simulator SP1 or SP2. It has also been tested with Microsoft Acceleration, but compatibility is not guaranteed by the author.

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CREDIT goes out to: Bob Familton for his review of the documentation and testing the scenery package.

2. The Flag Objects Folder and Files

The folder **Animated Flags** includes the sub-folders **Documentation**, **Flags** and **Image_Tool**.

The folder **Flags** contains all flags of the package.

This folder includes 14 flag sub-folders namely :

Australia
Germany
Base
Canada
Denmark
France
Italy
Japan
Texas
United Kingdom
United States
US_Air_Force
US_Coast_Guard
US_Navy

Each of the folders above contains two other sub-folders which include the individual flag object files. The folder **Flag_Files** contains the source files. The folder **Australian_Flag** for example contains the Scenery folder and the Texture folder for the individual flag.

Example:

The file hierarchy below shows the structure for the files/folders of the package.

```
> Animated Flags
  > Flags
    > Australia
      > Australian_Flag
        > Scenery
          > bgl file
        > Texture
          > texture/bitmap files
    > Flag_Files
      > source files (BGL,MDL,XML,Compiler)
```

The folder **Australian_Flag** for example contains all the files which are required to place the Australian flag onto a position of your choice in the FSX scenery. The same is valid for all the other folders/files.

How to put a flag into the FSX scenery, will be described in detail in

Appendix A of this document.

To develop your own individual flag colors and on how to put it into FSX will be described in detail in **Appendix B**.

3. General Object Placement in FSX

In order to place an object into a scenery of FSX you need:

- The object itself which is included in a .mdl file.

- An XML file which is the source for a new compilation.

- An bgl file which is the result of a new compilation.

- The bgl compiler which makes the bgl file.

The XML file, the mdl file and the compiler are included in the **Flag_Files** folder. The bgl file will be generated after the compile process (see **Appendix A**). The mdl file contains the model/object for the flag.

All models/objects in FSX do have a unique number called GUID (Globally Unique Identifier)

Example: {e8636294-4492-4047-8c1c-acf0023f8cbd}.

Each flag model does have this kind of number which is included in the XML file and makes it unique in FSX.

The XML File

The most important file for you is the XML element which allows you to put your flag object onto the right place of your FSX scenery. It is a very small element and very easy to understand. The Element looks like this:

```
<?xml version="1.0" encoding="UTF-8"?>
<FSData version="9.0">
<!-- Object AM_US_Flag -->
<SceneryObject
lat="N48 20.41"
lon="E11 45.08"
alt="0.0"
pitch="0"
bank="0"
heading="90"
altitudelsAgl="TRUE"
imageComplexity="SPARSE">
<LibraryObject name="{ca0c4628-c688-4823-be34-d75abab8fe32}"
scale="2.8" />
</SceneryObject>

<ModelData
sourceFile="AM_US_Flag.MDL" />
</FSData>
```

Description of the XML File entries:

```
<?xml version="1.0" encoding="UTF-8"?>
```

```
<FSData version="9.0">
```

This is the XML header. **Do not do any changes on this!**

```
<!-- Object AM_US_Flag -->
```

Free text lines. The text must be between <!-- xxxxxxxxxxxxxx -->

```
lat="N48 20.41"
```

```
lon="E11 45.08"
```

The LAT/LON position of your object you want to place.

The LAT/LON format in this case is standard FSX.

The following decimal format for example can be used as well:

```
lat="48.34025081"
```

```
lon="11.75141593"
```

Where to get LAT/LON information is shown in **Appendix A**

```
alt="0"
```

```
pitch="0"
```

```
bank="0"
```

```
heading="90.0"
```

alt : Is the altitude above ground level in meters. If you like to have it in feet put a "F" after the number. 30F for example.

Pitch: Position in degrees. Should be 0° for a vertical flag position.

Bank : Position in degrees. Should be 0° for a vertical flag position.

Heading : The HDG position of the flag in degrees. The pole points always to the HDG value.

```
imageComplexity="SPARSE"
```

This parameter is related to your scenery setting slider in FSX. If you always want to see your object SPARSE should be used.

Options are :NORMAL, DENSE, VERY DENSE, and EXTREMELY DENSE.

```
altitudeIsAgl="TRUE">
```

Setting of the parameter "Above ground level"

```
<LibraryObject name="{ca0c4628-c688-4823-be34-d75abab8fe32}"
```

```
scale="2.8" />
```

The setting of the GUID for the object and the SCALE parameter. Setting scale=2.8 means the object will show up 2.8 times bigger in the scenery.

```
<ModelData
```

```
sourceFile="AM_US_Flag.MDL" />
```

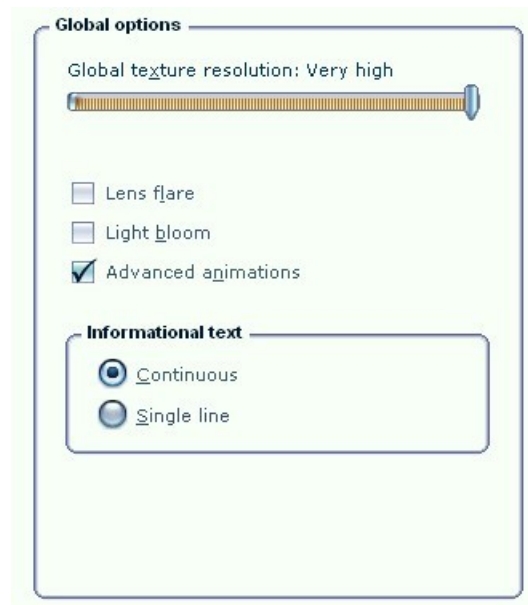
```
</FSData>
```

Here you see the name of your mdl file. That's all for the XML file. With this file you are now be able to generate the BGL file for the flag.

Appendix A

Important Note:

1) In order to see the flag in FSX moving, you must have the "Advanced Animation" option checked. The flag will be static, if this option is unchecked. The global texture does not have to be very high.

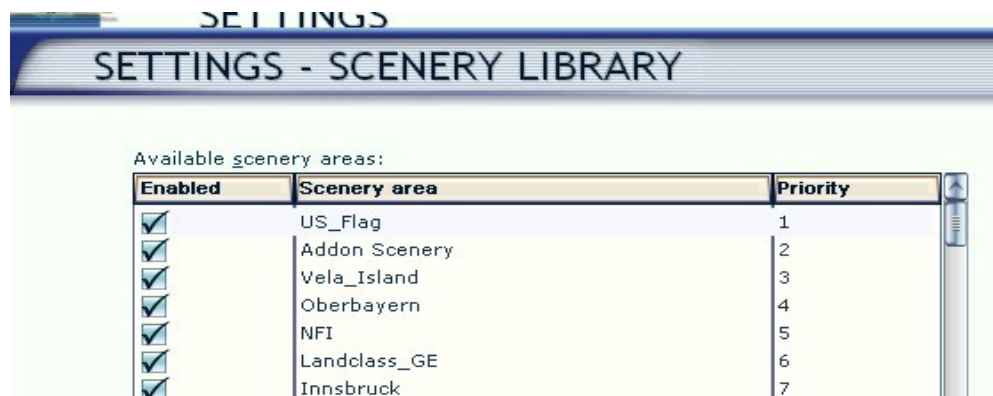


2) In order to see a new scenery or a scenery update you must close FSX first and then perform a new FSX start, or do a FSX scenery refresh.

Initial Test

As a first test we want to see the waving US_Flag (example) in the FSX scenery. In order to see the flag, do this:

1. Open the folder United States.
2. Copy the folder US_Flag into your FSX **Addon Scenery** folder.
3. You have now a new scenery in your FSX. Activate this new scenery via the standard procedure in your FSX Scenery Library. You should see this:



OK, now open FSX , select an aircraft of your choice, select EDDM as your airport, and start FSX.

You will see the US_Flag at the right side on the beginning of the runway 8R.

If your aircraft has been placed by FSX on a different runway, just go in

Slew_Mode and move your aircraft to the runway 8R.

You now must see the waving US_Flag as shown below:



It is up to you to test any other flag out of the package. Follow the same procedure as described above. If you want to see the UK flag for example, open the United Kingdom folder, and copy the UK_Flag folder into your FSX Addon Scenery folder.

You should know, that all flags out of the package are by default placed always on the right/left side of runway 8R at EDDM.

If you have the US_Flag installed and you want to test the UK flag, or any other flag from the pack, just add it as another new scenery into FSX and you will see it at EDDM runway 8R also and close to the flag you may have installed before.

How to install a flag on a position of your choice in the FSX scenery ?

Let us take again the US flag for this exercise.
Go now through the following steps:

1. Open the United States folder.
2. Open the sub-folder Flag_files.
3. Here you will see 4 files:
 - a) The **AM_US_flag.MDL** file
 - b) The **AM_US_Flag.XML** file
 - c) The **BglComp.exe** file
 - d) The **bglcomp.xsd** file
4. Now open the the AM_US_Flag.XML file by a mouse double click and you will see a simple text element which looks like this:

```
<?xml version="1.0" encoding="UTF-8"?>
<FSDData version="9.0">

<!-- Object AM_US_Flag -->

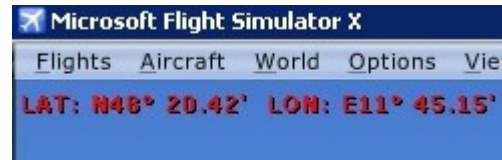
<SceneryObject
  lat="N48 20.42"
  lon="E11 45.15"
  alt="0.0"
  pitch="0"
  bank="0"
  heading="90"
  altitudelsAgl="TRUE"
  imageComplexity="SPARSE">
<LibraryObject name="{ca0c4628-c688-4823-be34-d75abab8fe32}"
  scale="2.8" />
</SceneryObject>

<ModelData
  sourceFile="AM_US_Flag.MDL" />
</FSDData>
```

5. All that you need is, to replace the lat/lon coordinates by coordinates of your choice. Move your aircraft to the exact location where you want to place the flag.

Where do you get the coordinates from?

Very simple! FSX will show you the coordinates from the position of your aircraft. The key Shift+Z will display the value on the top left of your panel display. The standard FSX installation will show you this format:



So, the value in the XML file will look like this:

lat="N48 20.42"
lon="E11 45.15"

In order to get the coordinates shown in FSX in the decimal format you have to insert two new entries in your FSX.cfg under the section **[Main]**. The two new entries are this:

LatLonFormat=Degrees
FractionalLatLonDigits=8

The first entry turns on the decimal display in FSX, the second entry defines the number of digits after the decimal point. Looks like this:



Both formats pointing to the same location in the FSX scenery. The value in the XML file for this format looks like this:

lat="48.340326"
lon="11.752501"

6. Let's now place the Stars and Stripes in front of the White House, so we need the coordinates first. Open FSX, select the Ultralight-Plane, select the airport **KDCA** which is close to the White House. Start FSX, go in SLEW mode and move your plane in front of the White House. This should be close to these coordinates, for example:

N38 53.84 or the decimal number depending on your method of display
W77 02.19 or the decimal number depending on your method of display.

(values are from the FSX, Shift+Z display)

Replace the current coordinates in your XML element by the coordinates above. Your XML code should now look like this:

```
<?xml version="1.0" encoding="UTF-8"?>
<FSDData version="9.0">

<!-- Object AM_US_Flag -->

<SceneryObject
  lat="N38 53.84"
  lon="W77 02.19"
  alt="0.0"
  pitch="0"
  bank="0"
  heading="90"
  altitudelsAgl="TRUE"
  imageComplexity="SPARSE">
  <LibraryObject name="{ca0c4628-c688-4823-be34-d75abab8fe32}"
    scale="2.8" />
</SceneryObject>

<ModelData
  sourceFile="AM_US_Flag.MDL" />
</FSDData>
```

7. That's it ! Do not do any other changes at this stage, and keep exactly the format as shown above. Save the XML file with the changes you just made.

8. Now we need to do the compilation. It is a very easy thing to do. Along with your XML file with the name AM_US_Flag.xml you see the AM_US_Flag.MDL file and the BglComp.exe file which is your compiler. We are ready to do the compile. Do this:

Left click with the mouse on the XML file. Keep the button down and drag the XML file over the BglComp.exe file, and release the button.

Now in less than one second the bgl file is generated with the same name as the XML file. Compilation: **Done !!**

Copy this new bgl file into the still existing FSX addon US_Flag/Scenery folder. Allow it to re-place the existing one in the folder.

9. In our initial test we have seen the US flag close to RWY 8R at EDDM. With the current replacement of the previous bgl file we should now see the nice waving flag in front of the White House. So close FSX (if not already done).

10. Start FSX, select airport **KDCA**, go in Slew mode and move your aircraft again in front of the White House. You should see this:



Well, it seems the flag is a little too big for the White House. Let's make it about half the size and let's change the heading position also in order to have a better view if we are in front of the White House.

Just open again your XML file and change the number in the scale entry (`scale="2.8" />`) from 2.8 to 2.0 and change the heading parameter from 90° to 10° for example.

OK, make the changes, save the XML file and do a new compile as described above. Update your bgl file in FSX again. Close FSX and re-start FSX and move your aircraft again in front of the White House. Now, it looks like this:



Looks much better with this size !!

11. To place the flag, for example, on top of the White House do this:

a) Open/Start FSX to find the new coordinates. Follow the procedure as described under point **6.** above.

b) The coordinates **LAT N38 53.85** and **LON W77 2.19** should be OK. (over the roof of the White House)

c) Now you need the altitude above ground level.

d) Insert in the XML entry alt="60.0F" which is the estimated height. The letter "F" indicates that the value is in feet. If the "F" is not defined, the value is in meters.

Be aware that the altitude is above ground level !!! In front of the White House the altitude level is about 50 ft, so if you set 60 ft in your XML entry, the flag will be at a height of about 110 ft. With the new value for the altitude inserted in the XML element, save it. Do a new compile and copy the new generated bgl file again into the existing FSX US_Flag scenery file. Close FSX and re-start FSX again in order to check the new position of the flag at the White House. You should see the flag on this position. Note: if the 60 ft entry is not correct due to the exact position selected either increase or decrease the altitude value to suit yourself.

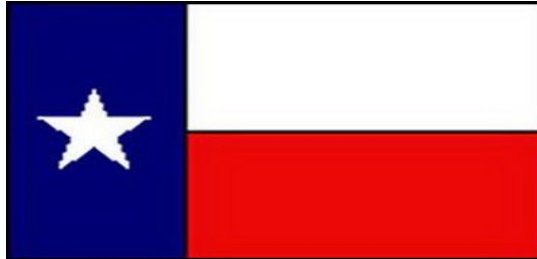


So far the procedure to install a flag out of the package on a position in the FSX scenery of your choice.

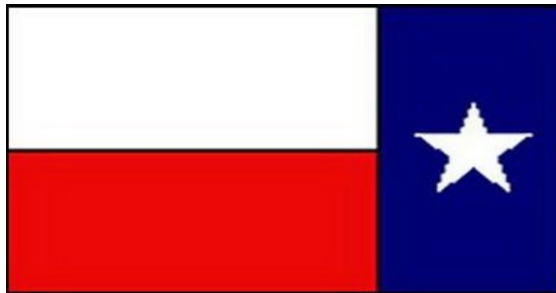
Follow the same procedure for any other flag. Make always sure to close FSX first and to re-start FSX afterwards or do an FSX scenery refresh, in order to see the new scenery change in effect in FSX. Thats it !

Appendix B

Here we will learn how to paint a flag with new colors which may not be part of the package. Let's make the flag of Texas as an example. The front side of the flag looks like this:



The back side of the flag looks like this.



As you can see, the star of this flag must look always towards the direction of the pole.

All what we need, to make our own animated flag, is to have some experience with graphical tools like Photoshop, GIMP or any tool like this. We do not need at this stage any programming skills. Only graphical/color manipulations are required. For the final texture conversion we will use MS Imagetool which is part of the Flightsimulator SDK. A copy of the tool is included in the folder **"Image_Tool"** of this pack.

Here we go !!

1. Remove the existing flags scenery from FSX **Addon Scenery** and also deactivate it in FSX.
2. Open the folder **Animated Flags\Flags** and open the sub-folder **Base**. Now copy the folder **Base_Flag** into your FSX Addon Scenery folder and activate this new scenery in FSX.
3. Start FSX and move your aircraft to EDDM runway 8R (same procedure as under Appendix A) and you should see the base flag waving on the left side of RWY 8R.



4. Under the folder **Base** you will see the sub-folder **Work_Folder**. This folder is empty and shall be our work folder for the new Texas flag. To do so, copy the **Base_Flag** folder and the **Flag_Files** folder into the **Work_Folder**. We are now ready to do all the required changes in order to make the Texas flag.
5. At first we will re-name the **Base_Flag** folder in our **Work_Folder** to **Texas_Flag**. OK, that's easy.
6. Open your new **Texas_Flag** folder and you will see again the two folders **Scenery** and **Texture**. Do not change that !!
7. Open the Scenery folder and delete the existing file : **AM_Base_Flag.bgl** .

8. Now comes the graphical part. Open the **Texture** folder and you will see the following texture:



Don't worry about the gold/mast textures. What we need is to replace the current textures for Front_Flag, Front_Flag_Night_LM, Back_Flag, and Back_Flag_Night_LM by the colors of the Texas flag.

Note: Do never change the file names of the textures above !!

All textures are in 8 bit format and have the size of 256x256 pixel. Do never change the size of this files. The colored part of the texture is 256x128 pixel and must be kept unchanged in size also.

9. The following description depends very much on the graphical tool being used. Here the freeware GIMP tool is being used to perform the process for the new flag colors.

10. Get the corresponding Texas flag colors from the Internet, open the front side color into your graphic tool, adjust the size to 256x128 pixels and save it as a 24 bit bmp file. Keep it open in your graphic tool.

11. Open the Front_Flag.bmp file into your graphic tool also. It is in a 8 bit 256 colors format, so change it into 24 bit RGB format and keep it open also.

12. Switch to your Texas flag bmp file which you have adjusted to 256x128 pixels in step 10 above, copy it, and insert it into your Front_Flag.bmp file. Overwrite the old front color now with the new Texas colors, and adjust it accordingly. It must cover exactly the old base colors. Save it as a 24 bit bmp file. Now swap in your graphic tool the Texas colors horizontal so that the star points into the opposite direction. Save this under the file name Back_Flag also in a 24 bit bmp format. Your front/back side should look like this:

Front



Back



13. You can now make your two new Texas textures as night textures. In order to see the flag colors at night not too bright, just make the colors of the flag texture darker (can be up to 80 % darker or more). You may add some light effects, if you like, too. Do this for the front side and for the back side and save the files as a 24 bit bmp file under the corresponding file name. **Keep the file names (Front_Flag_Night_LM and Back_Flag_Night_LM). Do not make any change on that name!!**

Finally the two night textures should look like this:

Front



Back



14. You are still not ready with the texture work. All the pics are saved as 24 bit bmps.

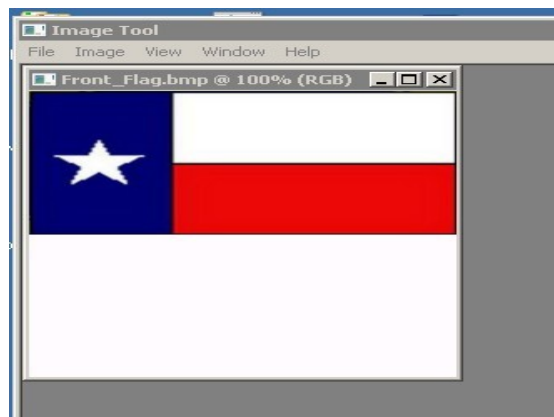
However, FSX does not support this format, so we need to convert them into an 8 bit bmp format and adding the mip map function also.

This is very easy by using the image tool.

Open the folder **Image_Tool**. It is a sub-folder from the folder **Animated Flags**.

Open the tool by double clicking on it. Click on the file menu and navigate to your Texas_Flag Texture folder and open at first the Front_Flag.bmp file.

You should see this:



Next click on **Image** on the menu bar, and on the pull down menu

Create Mipmaps. Imagetool creates the mipmaps for you now.

Click again on **Image**, click on **Format** and select 8 bit. Imagetool does the conversion now. Select now Files/Save and Imagetool will save the new format under the same name. The front side is now ready.

Do the same procedure also for the remaining Texas textures. That's it ! Your new flag colors are ready to use in FSX.

15. You are now ready with the textures, however the flag is still not ready to use in FSX with the new Texas colors.
We must go back into our XML file to make the corresponding re-naming.
So, open the Work_Folder and the sub-folder Flag_Files.

Now we are re-naming the:

AM_Base_Flag.MDL into AM_Texas_Flag.MDL and
AM_Base_Flag.XML into AM_Texas_Flag.XML .

16. Open the XML file now and we see this:

```
<?xml version="1.0" encoding="UTF-8"?>
<FSDData version="9.0">

<!-- Object AM_Base_Flag -->

<SceneryObject
  lat="N48 20.42"
  lon="E11 45.08"
  alt="0.0"
  pitch="0"
  bank="0"
  heading="90"
  altitudeIsAgl="TRUE"
  imageComplexity="SPARSE">

<LibraryObject name="{0cc402f9-91eb-40a3-8eb0-81c33a9ea782}"
  scale="2.8" />
</SceneryObject>

<ModelData
  sourceFile="AM_Base_Flag.MDL" />

</FSDData>
```

We just need to do two little changes. On the text entry above we re-place the name from:

<!-- Object AM_Base_Flag --> to <!-- Object AM_Texas_Flag -->

and on the entry:

sourceFile="AM_Base_Flag.MDL" /> to sourceFile="AM_Texas_Flag.MDL" />

After the change save your XML file.

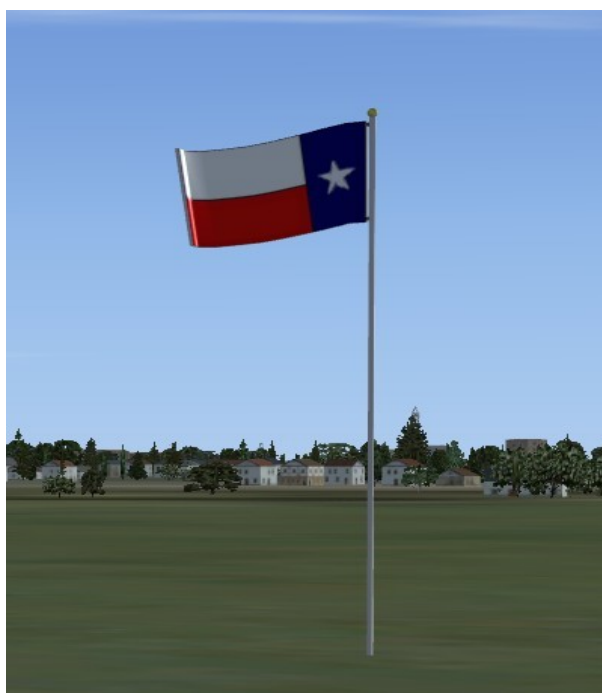
Once more: Keep the format exactly!

17. You are now ready for a new compile with the new name. Do the compile as described under **Appendix A** point **8**.

The new bgl file is now: **AM_Texas_Flag.BGL**.
Copy this file into the Texas_Flag/Scenery folder.

18. You are ready to see our new flag waving in FSX. Because we have not done any changes for the coordinates, we will see the flag again at runway 8R at EDDM.

So, now copy the complete folder **Texas_Flag** into the Addon Scenery folder of FSX and do not forget to activate it in FSX too. Open/Start FSX select EDDM and move your aircraft to RWY 8R, and this is what you should see:



Well, you are now ready to make any nice waving flag in the world you want to see in a FSX scenery. OK, EDDM is not the right place for a Texas flag. For sure, a location in Texas would look better. I leave it now up to you to find a new location for it. Find the corresponding coordinates, insert the new values into your Texas XML file, do the compile, copy it into FSX (follow the procedure as described under **Appendix A**) and enjoy.

Important Remarks

The following flags out of the pack do have the same filenames for the textures:

- Base Flag
- France Flag
- Italy Flag
- Japan Flag
- Texas Flag
- US Navy Flag

All of the flags above are candidates for a repaint of flag colors.

All of the flags above, however do have different model GUIDs and being seen in FSX as different models whereby all of them follow the same animation pattern. This allows you to repaint all of the above flags with new colors by replacing the previous colors and renaming the files/folders as described in Appendix B.

Note: You cannot just change the GUID with the tool Model Converter X and save it under a new name in order to get more flags for your repaint work as the above. The Model Converter X tool does not support the bone animation for the flag and you will loose the flag animation.

The folder Base/Flag_files contains the GMAX file for the base flag also. This will allow users which are familiar with GMAX to add more animated flag objects for private use.