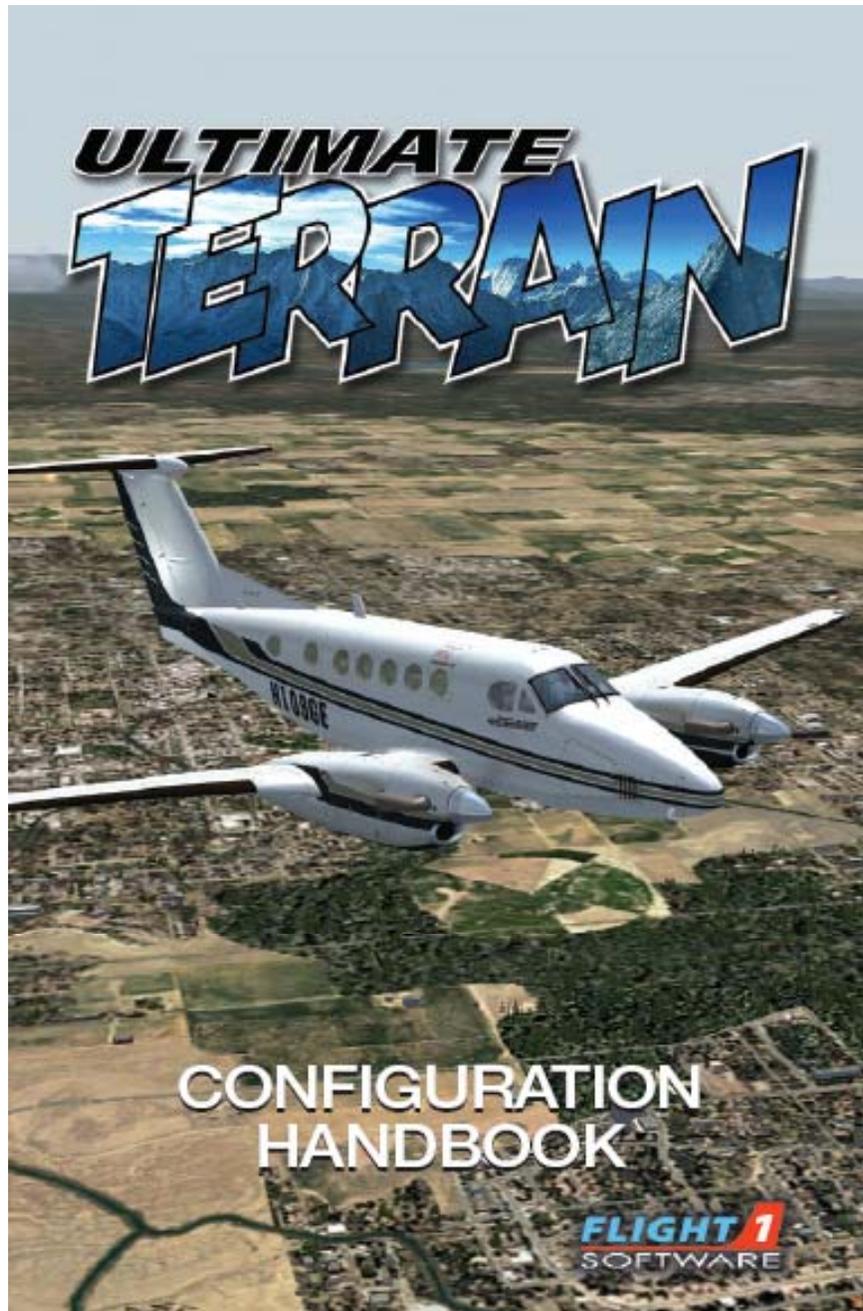# Ultimate Terrain - Europe
For Microsoft Flight Simulator 2004

Ultimate Terrain for Microsoft Flight Simulator

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Flight One Software, Inc. and Scenery Solutions - Ultimate Terrain For MSFS for Microsoft Flight Simulator

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About Source Data Used In Ultimate Terrain

Our goal at Scenery Solutions is to create superior terrain products for MSFS, utilizing the absolute best data in the industry.

In order to produce the best flight simulator environment, a scenery product must have good source data. With USA Roads, Scenery Solutions was the first MSFS terrain scenery developer to use commercially licensed source data in their product.

Ultimate Terrain Europe is based on the TeleAtlas MultiNet database, which we believe is the most precise GPS quality data currently available for Europe.   In addition, Scenery Solutions had added over 10,000 water features to the base TeleAtlas database, plus many custom drawn coastline areas.   The combination of TeleAtlas, plus the custom water features, should provide you with what is the most precise mapped-terrain environment available. It is one that should exceed even the most detailed maps of Europe.

About TeleAtlas

Tele Atlas is a leading provider of digital maps for a variety of navigation products and enterprise and consumer solutions. Our database is the most accurate reproduction of today's street network, enabling turn-by-turn route guidance on virtually all European and North American roads. Singapore, Hong Kong and large parts of Australia are covered as well. Our compatibility with all major navigation systems and our open system design have placed us at the heart of both consumer and business-to-business applications across the world.

Feature Overview – Product Highlights

Product Highlights:

- ❖ Adds every available road from the commercial TeleAtlas Multinet database for Europe. Each road is accurately placed in FS2004 to match its real world location.

- ❖ Adds greatly enhanced railroads.

- ❖ Adds a new night lighting environment unlike anything else on the market. This feature will add actual points of light, to simulate street lights and automobiles. Previously, this functionality has only been seen in many professional flight simulators.

- ❖ Adds extremely detailed oceanic coastlines, islands, lakes, rivers and even streams (drawn in their natural form, not as textured lines).

- ❖ Adds much more accurate urban landclass, which allows even very small towns and villages to appear in FS2004.

- ❖ Adds detailed land polygons for things like parks, golf courses, industrial harbors, beaches and commercial areas. The polygons will align with the road boundaries, just like you see them on high quality mapping services and GPS units.

- ❖ Scenery files are created based on native FS2004 scenery boundaries, to provide you with a seamless flying environment when flying in and out of Ultimate Terrain scenery areas.

- ❖ Ultimate Terrain is a highly configurable product, so that you can fine-tune features to meet your individual preferences.

- ❖ Scenery Solutions is working hard with existing 3rd party addon developers, to provide compatibility patches where necessary for Ultimate Terrain Europe.

Product Coverage Area

Included with Ultimate Terrain Europe, you will find a PDF documentation file named UTEuropeCoverage.PDF. This document describes the Ultimate Terrain Europe coverage area and details related to the coverage area.

Product Support

The flight simulator addon market is unique, in that the target audience for products like Ultimate Terrain is much smaller than most commercial software products.   As a result, developers and publishers in this market cannot really afford to provide personal phone or email support.

However, forums are a terrific support venue.   They allow all users to share information that would normally be private with an email support base.   Both Flight One and Scenery Solutions maintain a presence in the Ultimate Terrain forum below, and would be happy to help you with any further assistance you need at that location.

www.simforums.com/forums	This site contains the "Ultimate Terrain" forum hosted by Flight One Software. It is a very active forum and usually has the latest bookmarked information regarding Ultimate Terrain.
scenerysolutions.com/Compatibility/	If you are having issues with scenery compatibilities between Ultimate Terrain Europe and other 3rd party addon products, you might visit this page. This site contains helpful hints for dealing with scenery compatibility issues, and links to patches if necessary.
www.scenerysolutions.com	Website maintained by Scenery Solutions, who is the creator of the Ultimate Terrain series.

Ultimate Terrain – Quick Startup

To make use of the features in *Ultimate Terrain For MSFS*, you need to:

1. Run the Ultimate Terrain "Setup And Configuration Tool" (also called the Setup Utility) to configure the desired options. This utility will start automatically following installation. It can also be executed at any time later on.   The UT Setup And ConfigurationTool comes preset with the most popular configuration.   If this looks fine to you, you can jump right into FS2004 and start enjoying your new flight environment. However, to get the most out of the Ultimate Terrain software, we strongly recommend that you read the remainder of this document.

2. Start FS2004.   Make sure that the Scenery Complexity slider in FS2004 is set to at least Normal if you plan on using the Ultimate Terrain enhanced lighting feature.

Ultimate Terrain– Setup Utility Details

Immediately following the installation process, the "*Ultimate Terrain- Europe – Setup U*tility" will be started.

You should see something similar to the window in figure 1-1.

Figure 1-1
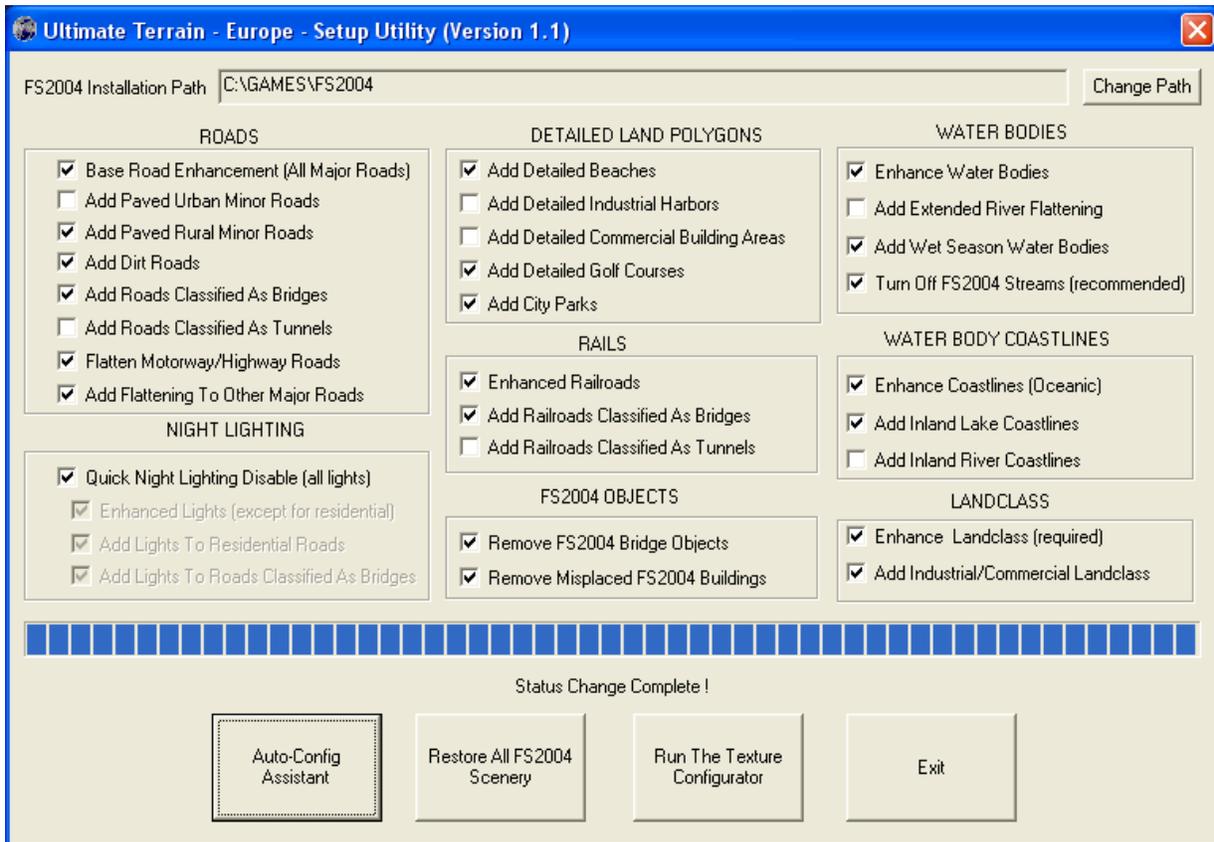
Ultimate Terrain comes preconfigured with the most popular features enhanced. The night lighting is initially disabled. This will be discussed shortly.
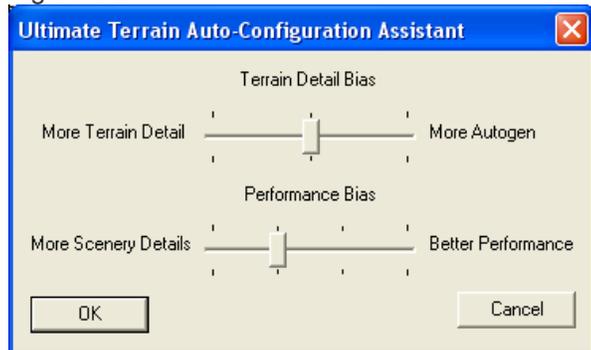
We will now discuss the Auto-Config Assistant, followed by a discussion of each available Ultimate Terrain feature.

Auto-Config Assistant

New with Ultimate Terrain Europe is the Auto-Config Assistant function.   The Auto-Config Assistant selects the appropriate Ultimate Terrain features based on general user preferences.

Press the Auto-Config Assistant button to see the window displayed in figure 1-2.

Figure 1-2

Any time you execute the Auto-Config Assistant, you will see the default slider settings above.   To change the settings, move the individual sliders and press the OK button.

Before continuing, we need to discuss terrain enhancements and their effect on FS2004 autogen

Autogen Primer

Autogen in FS2004 consists of 3D objects that are semi-randomly placed on top of the terrain.   The placement of autogen depends on the type of landclass texture that is displayed beneath it.

Technical Note: What is landclass ?
The terrain "surface" in Microsoft's newest flight simulators are broken down into rectangles that are roughly 1.2 km x 1.2 km in size (MSFS scenery designers know these as LOD13 cells).

Each one of these "cells" has a unique classification value attached to it.   For example, a value 121 will display a texture containing hi-rise buildings, whereas a value of 107 will show more of a suburban setting.   FS2004 will blend adjoining textures to present a more eye-appealing look, and to avoid an environment that looks like square blocks of textures that are tiled together.

The landclass system designed by Microsoft, provides a very efficient way of depicting the appropriate terrain textures on a global scale.   However, because these landclass cells are 1.2 km x 1.2 km in size, they may not be exactly precise.   For example, city boundaries can be shifted by as much as 1.2 km off of their natural locations In FS2004.

Landclass building placement is dynamic.   That is, the positions of the buildings and other objects are not known when FS2004 is started.

Other objects in FS2004 are static and not dynamic.   These objects are stored in a preset location. As a result, the same object will be displayed every time at the same location.   Landmark buildings and objects are always created as static objects in FS2004.

This discussion is important, because FS2004 will NOT display autogen objects, which would cause them to appear on top of another object in FS2004.

So, if the landscape is covered by roads, railroads, water features and static objects , FS2004 may have trouble finding locations to place autogen objects.

Back To The Auto-Config Assistant

Now that you know about autogen, we can discuss the Auto-Config Assistant functionality.

The "Terrain Detail Bias" slider allows you to select between adding more terrain detail (Ultimate Terrain features) or having more autogen buildings.

Moving the "Terrain Detail Bias" slider all the way to the left activates all UT Europe features.   This will give you a very detailed terrain, but will reduce autogen because of all the roads and other UT Features that are placed on the terrain.

Moving the "Terrain Detail Bias" slider all the way to the right activates a minimal amount of UT Europe features. This will give you some UT Features, without reducing the amount of autogen.

Moving the slider in the middle position is the default setting.   This will give you all the roads, except residential roads in the cities.   Residential roads are very numerous, and can take up a large part of the urban areas.   By having so many residential roads, there is not much room for autogen.   Night lighting is also disabled with this "middle setting".   We will discuss night lighting and it's effect on autogen later on.

The middle slider setting is probably our most popular configuration.

The "Performance Bias" slider activates Ultimate Terrain features based on their general impact on system performance.   The default setting (2nd tic from the left) activates all UT Europe features, except for residential roads. This position also removes the drawing of coastline borders around rivers and streams (coastlines are still drawn around ocean water bodies and inland lakes).

While the Auto-Config Assistant can help speed up the UT configuration process, it is not necessary.   Advanced users will want to play with the various settings, to find their perfect simming environment.

We will now describe the individual UT features, that can be turned on and off with the Ultimate Terrain Europe Setup And Configuration Utility.

ROADS (8 options)

This setting will control which types of roads are displayed in FS2004 (i.e. highways/motorways, residential roads, dirt roads, etc).

Here is a description of each road feature.   These buttons will change the types of road classifications that can be displayed in FS2004. You can also select different road textures using the Ultimate Terrain Texture Configuration utility that has also been installed (TEXTCFG.EXE).   This utility is discussed later on in the document.

Base Road Enhancements (All Major Roads)

This option will turn on most Ultimate Terrain road features.   It will add highways, primary roads, and access ramps to the cities.   It is recommended that you always keep this feature activated.

Add Paved Urban Minor Roads

This option will turn on minor roads in urban areas.   These roads consist mostly of residential streets.   Many users will prefer to keep this feature turned off for two reasons:

1. The minor urban roads are usually densely clustered, which can reduce building autogen in cities.
2. The minor urban roads are often hard to see anyway, because they are most often drawn on top of city landclass textures, which have a road-like look to them already.

Add Paved Rural Minor Roads

This option will turn on minor roads in rural areas.   Most users will probably prefer to keep this feature activated.

Add Dirt Roads

This option will turn on dirt roads.   Most users will probably prefer to keep this feature activated.

Add Roads Classified As Bridges

This option will turn on roads that are classified as bridges.   These are not actual 3D bridge objects, but flat roads that are drawn on top of the water (or other areas where bridges are necessary).   Keeping this option on, will display the bridge roads in their correct position as they cross water   You may consider turning this option off if you have a 3rd party software package installed that draws 3D bridge objects in their real-world location.

Add Roads Classified As Tunnels

This option will turn on roads that are classified as tunnels.   With this option activated, roads will be drawn over the tops of mountains where a tunnel is present.   If this feature is turned off, then roads will stop and start at the tunnel entrance and exit.   Most users will prefer to keep this feature turned off.

Flatten Motorway/Highway Roads

Flattening roads gives a better visual affect in very hilly or mountainous areas.   This occurs because the terrain is "flattened horizontally", which prevents roads from looking like they are tilted while climbing hills and mountains.

Most users will probably want to keep this setting turned on.

Add Flattening To Other Major Roads

This option will flatten all major roads (other than motorways/highways).   Most users will probably enjoy this feature. However, you might want to turn this option off for performance reasons. You may also want to turn this option off if you find that you are getting too much flattening in the mountain areas.   Too much flattening can give the mountains/hills a terraced look.   Minor roads are not flattened in UT Europe because the flattening tends to become excessive.

NIGHT LIGHTING

Activating the night lighting feature will completely change your night flying experience in FS2004.   Instead of flat textures painted on the terrain, actual points of light will be displayed as objects above the terrain.   Using this effect, we have been able to simulate street lights and automobile traffic to a degree not seen before in PC based flight simulations.

Once you have seen the enhanced lighting, you won't be able to fly without it !

Technical Note: Night Lighting And Autogen
Activating the night lighting feature will decrease building autogen in the cities. This is due to the extreme number of lights that occupy space on the terrain (see the previous technical note regarding autogen).   Unfortunately, FS2004 does not take the time-of-day into account when displaying autogen. As a result, the night lights will effect autogen placement in both daytime and nighttime, even though you will not see the lights during the day.

Quick Night Lighting Disable (all lights)

This button allows you to turn the UT night lighting feature on and off, and get you back into FS2004 as quickly as possible. By turning the features on and off with this button, FS2004 will avoid having to generate it's scenery file indexes when starting FS2004, which can be a big time saver.   This button is the recommended way of toggling the night lights on and off.

Technical Note: FS2004 Generating Scenery File Indexes
Whenever FS2004 starts, it checks to see if any of the scenery files have changed.   This occurs whenever you install a new scenery product. It also can occur when you make changes to most of the features using the UT Setup utility. FS2004 will display the message "Completing Setup: Generating Scenery File Indexes" when this task is being performed. This additional step can take FS2004 only a few seconds, or up to several minutes. There are many things that factor into the time it takes FS2004 to perform this task, including disk fragmentation levels.   The "Quick Night Lighting Disable" feature will allow you to change the night light settings, without causing FS2004 to generate the scenery file indexes on startup.

Enhanced Lights (Except For Residential)

This option will turn on lights for all major roads and highways.   It will not activate residential roads in the cities. By not activating lights in the residential areas, there will be more space for autogen buildings to appear.

Add Lights To Residential Roads

This option will add the full night lighting effect, by adding lights to residential streets.   By adding lighting to the residential street areas, the number of autogen buildings may be significantly reduced in the heavy residential areas of cities.   Most users that fly at night will find the additional lights well worth it.

Add Lights To Roads Classified As Bridges

This option will turn on the lights for roads that are classified as bridges.   The lights will follow the roads provided by UT Europe. *They will not cross over FS2004 bridge objects (the 3D objects).*

RAILS

Enhance Railroads

Selecting this feature will turn on the railroads provided with Ultimate Terrain Europe.   The updated rail packages will show multi-track railroad yards, where they actually exist.   The base FS2004 railroad data contains no multi-track railroad yards and is not accurately positioned.

Add Railroads Classified As Bridges

This option will turn on railroads that are classified as bridges.   These are not actual 3D bridge objects, but flat railroads that are drawn on top of the water (or other areas where bridges are necessary).   Keeping this option on, will display the railroad bridge crossings in their correct position as they cross water.   You may consider turning this option off if you have a 3rd party software package installed that draws 3D bridge objects in their real-world locations.

Add Railroads Classified As Tunnels

This option will turn on railroads that are classified as tunnels.   With this option activated, railroads will be drawn over the tops of mountains where a tunnel is present.   If this feature is turned off, then railroads will stop and start at the tunnel entrance and exit.   Most users will prefer to keep this feature turned off

DETAILED LAND POLYGONS

We had previously discussed landclass and it's use to draw the terrain in FS2004. One of the drawbacks to landclass, is that the type of texture that is chosen may not be drawn correctly in it's exact world location.   This is because the FS2004 landclass terrain is drawn using 1.2km x 1.2km squares, with each square being assigned a unique type of texture to represent the type of terrain within the cell areas.   Also, the landclass textures will most likely not be the correct size and shape.

For example, when a golf course landclass texture is used in FS2004, every golf course is drawn as a single 1.2km x 1.2km square or as multiple squares tiled together. The edges are rounded off to make things appear better visually. But, the precision is not accurate.

Ultimate Terrain Europe contains several features that can be drawn as detailed land polygons (called VTP polygons in the FS2004 SDK).   This functionality can be used to draw features that are the same size, shape and location as their real-world counterparts.   Because generic textures are used, the detailed land polygons will not necessarily look the same as they would in a photographic scenery.

Here are some facts about detailed land polygons versus landclass.

❖ Detailed land polygons are drawn in a much more accurate size, shape and location.
❖ Detailed land polygons will not allow autogen to be displayed on them.
❖ Detailed land polygons use generic textures for similar features, which is very similar to landclass textures.

Here is a description of each Ultimate Terrain feature that is drawn as one of these detailed land polygons.

Add Detailed Beaches

This feature is new to Ultimate Terrain Europe and is very popular.   Turning this feature on causes FS2004 to draw sandy beach textures that are very accurately sized and positioned.

Add Detailed Industrial Harbors (not landclass related)

This feature will draw an industrial harbor texture in it's real-world location.   Industrial harbors in UT add an element that is currently not found in other scenery packages.

You should probably activate either the "Add Detailed Industrial Harbors" button or the "Add Industrial/Commercial Landclass" button, but not both.

❖   Selecting the "Add Industrial/Commercial Landclass" button will draw industrial harbor textures with autogen.
❖   Selecting the "Add Detailed Industrial Harbors" button will draw industrial harbor textures that are more accurately sized and positioned, but without autogen.

During testing, most users preferred using the "Add Industrial/Commercial Landclass" feature instead of this one. As a result, the "Add Detailed Industrial Harbors" feature is turned off by default.

Add Detailed Commercial Building Areas (not landclass related)

This feature will draw an industrial and/or commercial buildings textures as detailed land polygons. The textures will be sized and shaped accurately according to the commercial districts in their real-world location.

You should probably activate either the "Add Detailed Commercial Building Areas" button or the "Add Industrial/Commercial Landclass" button, but not both.

❖   Selecting the "Add Industrial/Commercial Landclass" button will also draw commercial building textures with autogen.
❖   Selecting the "Add Detailed Commercial Building Areas" button will draw commercial building textures that are more accurately sized and positioned, but without autogen.

During testing, most users preferred using the "Add Industrial/Commercial Landclass" feature instead of this one. As a result, the "Add Detailed Commercial Building Areas" feature is turned off by default.

Add Detailed Golf Courses

You can turn on this feature to draw golf course textures in FS2004 that are more accurately sized and positioned, according to their real-world locations.   Generic golf course textures are used, so unnatural splicing of the texture may occur.

Add City Parks

You can turn on this feature to draw city park textures in FS2004 that are more accurately sized and positioned, according to their real-world locations.   Generic city park textures are used, so you should not expect to see photo quality images of actual city parks.

FS2004 Objects

Remove FS2004 Bridge Objects

The FS2004 autogen bridges, and static bridge objects, are positioned based on the roads that come with FS2004. Since these roads are generally incorrect, the bridges will also be incorrect.

As a result, the bridges will usually not line up with the accurate roads in Ultimate Terrain. Also, many of the bridges will be in misplaced in the water, due to the increased water accuracy in Ultimate Terrain.

Selecting this feature will turn off the bridges, so they do not clash with the Ultimate Terrain road and water locations.

In the future, we have plans on addressing this issue by releasing a more accurate 3D object package including better building, bridge, and landmark locations. This task is currently beyond the scope of Ultimate Terrain.

Remove Misplaced FS2004 Buildings

Many building objects in FS2004 are badly misplaced and will appear in the water with Ultimate Terrain.

Selecting this feature will turn off building landmarks that we have found to be in the water. It will not turn off all building objects, only those that appear in Ultimate Terrain's water.

WATER BODIES

Enhance Water Bodies

Activating this feature will provide you with a terrific set of water data for FS2004. Oceans, lakes, rivers and even streams will be sized and positioned very accurately.

Technical Note:
All rivers and streams in UT Europe are drawn in their actual size and shape (they are drawn as polygons). They are not drawn as textured lines, which is the way that FS2004 usually depicts streams and rivers without Ultimate Terrain.

Add Extended River Flattening

This option gives you an alternate set of water data. It is mostly designed for users that are using the base terrain mesh that comes with FS2004.

Normally, rivers and streams in FS2004 will be drawn hugging the terrain, as opposed to being "flattened" at a specific elevation in the same manner as lakes or oceans.

Unfortunately, the base mesh data that comes with FS9 is not very precise. As a result, rivers and streams that hug the terrain in mountain areas may be seen either climbing or running along the sides of the mountain.

This optional set of water data will periodically flatten the terrain along rivers. It will cut away parts of the mountains and reduce the amount of climbing water. However, it can also cause a cascading water effect in some places.

Users with more precise mesh products for FS2004 installed will probably not want to use this feature.

Add Wet Season Water Bodies

The water source data used in Ultimate Terrain Europe contains an amazing number of very detailed water features.   However, it does not distinguish between rivers and streams that are perennial or intermittent.

Many regions surrounding the Mediterranean Sea are part of an ecosystem called Mediterranean Scublands.   In this area, you can often find many intermittent streams and even rivers that may be partially dry.

Turning this feature off will deactivate many of these rivers and streams that we "think" are intermittent.   The number of streams and rivers are far too numerous to classify by hand. So, turning off this feature will remove many of the very thin rivers and streams that are found in the Mediterranean region.   Thinner rivers and streams are most often the ones that are dry or intermittent.

Turn Off FS2004 Streams

All streams (and most rivers) in FS2004 are drawn as textured lines.   Rivers and streams in Ultimate Terrain are drawn as textured water polygons.

Polygons allow the rivers to be displayed in their natural shape, while textured lines do not.

Not only is the stream data used in FS2004 inaccurately placed, it can also clash with the water features in UT Europe.

We recommend turning off FS2004 streams.

WATER BODY COASTLINES

Water in FS2004 is drawn by cutting a hole in the terrain, which lets the underlying water textures show through. In addition, the shorelines of the water features can be improved by drawing an appropriate shoreline/coastline texture around the edges of the water features.

Adding coastlines are especially beneficial for very large water features.   For oceans, beach-like coastline textures with heavy wave effects can be added to create an even more realistic looking environment.

With Ultimate Terrain Europe, we have pushed the use of coastlines to a new level. Beach areas will now get wider coastlines with heavy wave effects, while harbor areas will use a thinner concrete coastline texture and will not have wave effects.   Coastlines can also be added to lakes and rivers.

Enhance Coastlines (Oceanic)
Selecting this option will cause coastlines to be drawn along all oceanfront property.   Appropriate coastline textures will be used in different areas.   Oceanfront rocky and beach areas will usually have animated ocean wave effects. Harbors and bay areas will not have wave effects.   This feature is highly recommended.

Add Inland Lake Coastlines
Selecting this option will normally add coastlines to inland lakes.   The coastline widths are typically sized according to the overall lake area. Large lakes will usually have wider coastlines.

Add Inland River Coastlines
Selecting this option will normally add thin coastlines to rivers and streams.   Because these features can be very small and detailed, adding coastlines can often overwhelm the river/stream water bodies. The use of coastlines for these features can also expose a coastline precision problem in FS2004, which causes the coastline to be drawn too far inland, or expose small puddles of water areas that pop up between the land and the coastline itself.

Most users prefer to disable this feature. However, we give you the option of making your own decision.

Because of the extreme river detail in UT Europe, activating this feature can also reduce overall FS2004 performance in some cases.

LANDCLASS

* See the technical note earlier for a description of landclass.

The urban landclass in FS2004 does not do a very good job of representing the cities.

Only larger cities are displayed in FS2004.   These cities are always drawn using a circular pattern, with larger buildings in the middle, and more suburban textures used towards the outside areas.

The Ultimate Terrain landclass will greatly improve the accuracy of cities and towns. You will get much better definition of city boundaries and better use of urban landclass textures.

Even small villages and towns, often left out of FS2004, will be displayed with Ultimate Terrain.

In addition, Ultimate Terrain Europe includes new textures for commercial building areas and for industrial harbor areas.

<u>Enhance City Town Landclass</u>

Activating this feature will cause FS2004 to use the Ultimate Terrain landclass for cities, towns and villages.   It is highly recommended.

<u>Add Industrial/Commercial Landclass</u>

Activating this feature will use new Ultimate Terrain textures to depict urban areas with commercial/industrial activity. It will also use custom industrial harbor landclass textures where appropriate.   Landclass will be drawn with autogen for these landclass features.

Technical Note: Layering The UT Europe industrial/commercial landclass is installed in it's own layer, within the FS2004 scenery library. When UT Europe is installed, the UT installer will make sure that this layer is installed above other Ultimate Terrain scenery layers.   The landclass layer is identified as "Ultimate Terrain – Europe LC" in the FS2004 scenery library.

Change Your Settings Anytime

You can change the settings above any time by re-running the "Ultimate Terrain Setup Utility".

Before Starting FS2004 !!!   Anytime you install a new product, FS2004 has to build its scenery data base and generate its scenery file indexes. This step could take a long time, even minutes. However, it is a one time operation after installing Ultimate Terrain. Smaller delays can occur every time you make changes with the Ultimate Terrain Setup utility. This is just something to be aware of.   If your system hangs while FS2004 is generating the database or indexes, it is not dead, just busy ☺

Texture Configuration Utility

Ultimate Terrain For MSFS gives you a highly configurable set of night and day textures using the *Texture Configuration* application.

There are over 100 combinations of night lighting textures that can be used with the *Ultimate Terrain* series. These configurable night lighting elements include:
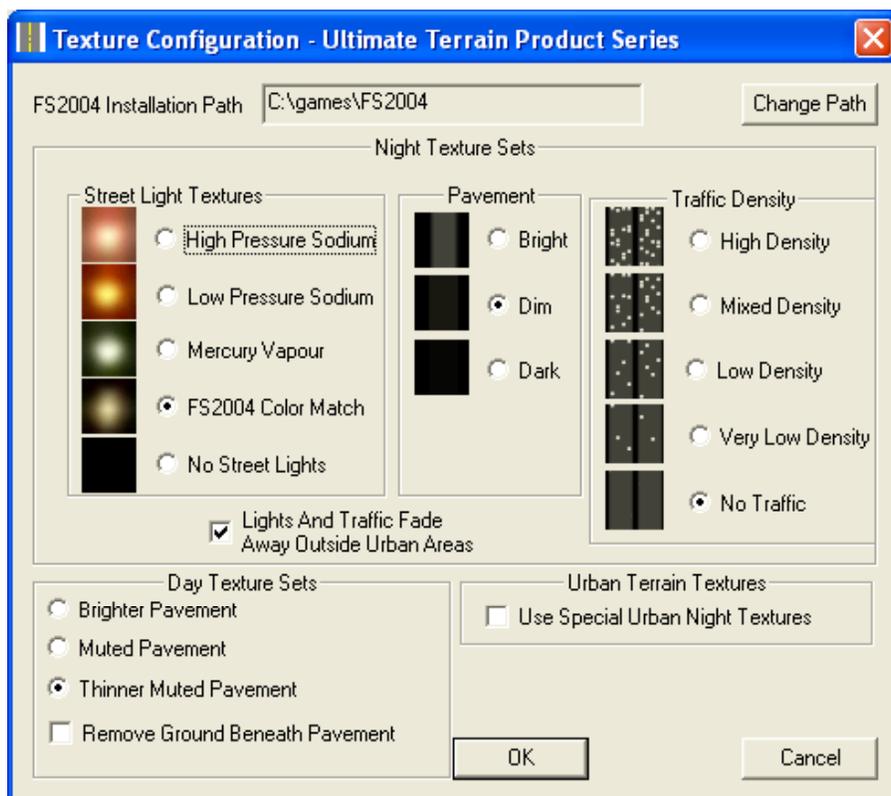
- ❖ The type of lighting (high pressure sodium, low pressure sodium, mercury vapour, FS2004 color match, or no lighting).
- ❖ The pavement reflectivity (bright, dim, or dark).
- ❖ The road traffic density (high, mixed, low, very low, or none).

The night textures provide for more accurate looking street-light effects. Also, the street lights taper away as you leave metropolitan areas and isolated cities (this feature can be turned on/off by the user).

In addition to the night textures, you are given the choice of three different day textures (a wider road texture with brighter pavement, a wider texture with darker pavement, and a thinner muted texture).   The thinner muted texture is most often preferred, because it creates a less "map-like" environment.

Figure 1-3 shows the *Texture Configuration* application for the *Ultimate Terrain* product series.

Figure 1-3

> **Important Note**: The *Texture Configuration* application configures road textures for all Ultimate Terrain products, including North America and Europe.

Night Texture Sets

Different users seem to have different tastes regarding night lighting in Flight Simulations.   Because of this, Ultimate Terrain For MSFS includes over 100 different combinations of night lighting textures.

The configurable night lighting elements include:

- ❖ The type of lighting (high pressure sodium, low pressure sodium, mercury vapour, FS2004 color match, or no lighting).
- ❖ The pavement reflectivity (bright, dim, or dark)
- ❖ The simulated road traffic density (high, mixed, low, very low, or none).

The new night textures provide for more accurate looking street-light effects. Also, the street lights taper away as you leave metropolitan areas and isolated cities (this feature can be turned on/off by the user).

When you first install this product, the default settings are those that we feel is best for use with the enhanced night lighting. You can experiment and change them as you like.

Select Installed Night Texture Set – 5 options

This setting will control the type of lights displayed in the Ultimate Terrain For MSFS night textures. There are 5 options.

A sample of each type of light is displayed in the setup window.

High Pressure Sodium

High pressure sodium lighting has a warm golden appearance and although not as efficient as low pressure sodium, it enables a range of colours to be seen comfortably. It is most likely to be seen in town centers and conservation areas. It is also more widely used for new lighting schemes, where it is appropriate and energy efficiency is not compromised.

Low Pressure Sodium

The low pressure sodium lamp is the most efficient light source and provides good lumen output with a low energy consumption. But, this type of light has the disadvantage of being monochromatic and emits only yellow light.

Mercury Vapour

This type produces a white light (with a slight green/blue tint). These lamps are inefficient and are generally being phased out in favor of low and high pressure sodium lamps.

FS2004 Color match

This setting causes the street lights in FS2004 to match the color of the rest of the night textures in FS2004.   It is not really an accurate lighting mechanism, but will allow the roads to better match the existing textures in FS2004

No Street Lights

This setting will install night textures that have no street light glow build into them. This option might be preferable given the new night lighting environment in Ultimate Terrain For MSFS.

Pavement

<u>Bright</u>

The bright setting causes the roads to be easily seen from the air, regardless of the traffic density effects. This option has brighter, more condensed street lights. The pavement is also brighter.   Most people would probably consider this option less realistic, but it provides a more striking rendition of the landscape.

<u>Dim</u>

The dim setting would probably be considered a more realistic night-lighting option.   The street lights are dimmer in general, but have a more realistic glow to them.   The pavement reflection is also not as bright.

<u>Dark</u>

The dark setting provides a very dark pavement reflection (almost invisible), which might be more preferable for some.

Traffic Density – 5 options

This option simulates auto traffic in the ground textures. This makes the terrain appear to have an additional glow from automobile headlights or taillights.

<u>High Density</u>

This setting gives the appearance of heavy road traffic at night.

<u>Mixed Density</u>

This setting gives a more mixed amount of road traffic at night.   High traffic in the urban areas, and low traffic outside urban areas.

<u>Low Density</u>

This setting gives the appearance of lighter road traffic at night.

<u>Very Low Density</u>

This setting gives the appearance of very light road traffic at night.

<u>No Traffic</u>

No traffic at night. Might be preferable due to the enhanced 3D night lighting effects now available.

Lights And Traffic Fade Away Outside Urban Areas – On/Off

If this box is checked, then the street lights will begin to fade away at a given distance from urban areas.   Traffic and pavement reflection will still be visible.

If this box is not checked, then street lights will appear on all Ultimate Terrain For MSFS.

Note: this setting affects the simulated 2D street lights embedded in the ground textures. It is not related to the new 3D enhanced lighting feature

Day Texture Sets

Brighter Pavement

Selecting this option gives you the brighter road pavement textures that were distributed with the original USA Roads for FS2004 package.

Muted Pavement

Based on user requests, this option will darken the road textures somewhat. This way the will blend in better with the terrain and give less of a map-like look.

Thinner Muted Pavement

This is now the setting of choice for most users.   It creates very thin roads for all minor roads.   Major roads and motorways are still displayed using the wider road format.   Many users feel that using wider pavement textures can create an environment that looks very map-like (and unrealistic).

Urban Terrain Textures

Use Special Urban Night Textures

If you turn on this option, Ultimate Terrain will replace the city landclass textures at night, with custom versions. The special textures use mip-mapping techniques that make the cities appear brighter in the distance, and dimmer up close.   These textures generally look better with the enhanced night lighting functionality of Ultimate Terrain.

The Mip-Mapped textures may not be for everyone. If you see a slow flashing of the textures, or other visual anomalies, then you should disable this option.

Things To Be Aware Of !

To avoid confusion, here are some things that you need to be aware of:

Shared Textures

The Ultimate Terrain series products will include the USA, Canada, Europe, and eventually other areas.   Each one of these products will share the same set of ground textures in FS2004.   Therefore, changes made using the *Texture Configuration* utility, which is included with *Ultimate Terrain For MSFS,* will also affect the set of textures shared by all regional Ultimate Terrain products.

Using The Scenery Complexity Slider For Enhanced Night Lighting

The scenery complexity slider in FS2004 controls the quantity of scenery objects that are displayed in FS2004.

You can display the scenery complexity slider in F2004 by selecting the following menus: Options -> Settings -> Display.
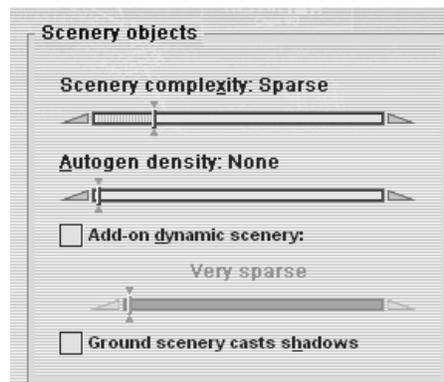
The enhanced night lighting in *Ultimate Terrain For MSFS* has been programmed to display when the FS2004 scenery complexity slider is set to at least the "Sparse" setting.   This setting will add enhanced night lighting to cities only.

If you do not see any enhanced night lights, check this setting.   The Scenery complexity slider can be changed in FS2004 during flight.

Enhancement Requests And Error Reporting

We think our quality control is some of the best in the business, and that you will be very happy with your purchase.

However, we are constantly working to improve our products.   We highly encourage our users to report any major visual anomalies, errors, or request future product enhancements.

To make this process easier and more efficient, we use a web-based, commercial-grade issue tracking system by Elementool.

User's can track issues online, and even run reports to review previously reported issues. It's very flexible and user friendly.

The Elementool tracking system is not a support tool !

The issues reported in Elementool are not addressed on a regular basis. We use this system to keep a list of items that need to be improved in future versions.

If you are undecided about whether or not to report an issue, please first visit the "Ultimate Terrain" forums discussed in the Product Support section of this document.   We will be happy to help you with your support problem, and determine whether or not it is something that should be addressed in future versions (by logging it in the Elementool tracker).

Using Elementool

Before posting an issue in the Elementool tracking system, you will need to capture the aircrafts latitude and longitude from the FS2004 screen, for the problem area in question.

To capture the FS2004 latitude and longitude showing the issue, first switch to the top-down view in FS2004 and center the aircraft over the visual anomaly in question. Then, press Shift+Z from within FS2004. The lat/long will be displayed then in the upper left part of the FS2004 screen. You should probably write it down before exiting FS2004.
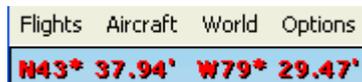
At this point, you are ready to enter in your issue report using Elementool.

First, access the Elementool login page at:

http://www.elementool.com/services/loginPage/login.aspx

Enter the account name as "Ultimate Terrain", the user as "Guest" and the password as "fs2004" as shown below:

You will now be taken to the welcome screen.   From the welcome screen, select the "New Issue" tab.
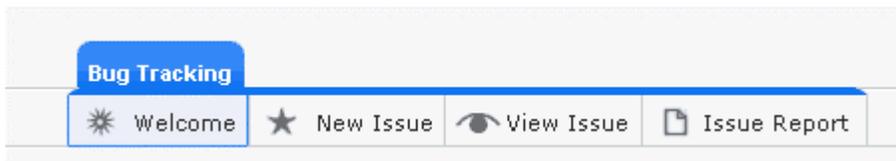
You will then see the New Issue form as shown below.

Your title should be something that other users can key on, to reduce duplicate issue postings.   Before posting your issue, you can run reports to see if your issue has already been reported (select "Issue Report").

Your name will be helpful, as will your email address, if we need to contact you further for more information (but the Email is not required).

What is required is the Latitude and longitude (taken previously from FS2004).   This must be entered in the exact format.   The "New Issue" form below will give you a template to work from.

The importance of the lat/long is that reports will be generated, and passed to other automated applications, which will help us track problems faster.

You should also select the appropriate product region (USA, Canada/AK, Europe), and the current product version number. The version number can be retrieved by running the UT Europe "Setup And Confiugration Utility".

Here is a sample New Issue Request

We research and respond to all issues reported (in the remarks field).   Do not be discouraged if you don't see an immediate response.   We address all items at once prior to working on new versions of our software. As a result, several months could go by without addressing the reported issues.

However, your issue is important to us, and we will eventually get to it.

The FS2004 Scenery Library

FS2004 uses a priority layering system to display scenery.   This layering can become important when multiple installed products occupy the same region.

When multiple scenery products occupy the same region, some parts of the scenery may overlap, whereas other parts of the scenery are displayed based on their priority in the FS2004 Scenery Library.

Scenery Product Type	Impact Of FS2004 Scenery Library Ordering
Landclass Products	Highest priority landclass product is displayed. Transparent portions will be displayed using the next highest priority landclass available (if any).
Raster Graphics Products (photoscenery)	Will override vector based products. Will override other raster products placed at a lower priority.
Vector Graphics Products (roads, railroads, water, etc)	Will conflict with other vector graphics objects occupying the same area. Scenery Solutions is working on Ultimate Terrain patches for many popular European addon's to prevent these conflicts.
Terrain Mesh Products	FS2004 scenery library priority is not really important. Mesh with the highest resolution will be used by FS2004.
Products Containing 3D Objects	Layering priority is not important. Objects from multiple products covering the same region will be shown together.

Ultimate Terrain Europe contains landclass, vector-based graphics features (roads, rails, water, ground polys) and 3D objects (night lighting).

The scenery layers are defined in the FS2004 SCENERY.CFG file.   These layers can be edited within FS2004 using the Scenery Library feature.

If you select the "Scenery Library" from the FS2004 "Settings" menu item, you will see something similar to the following.
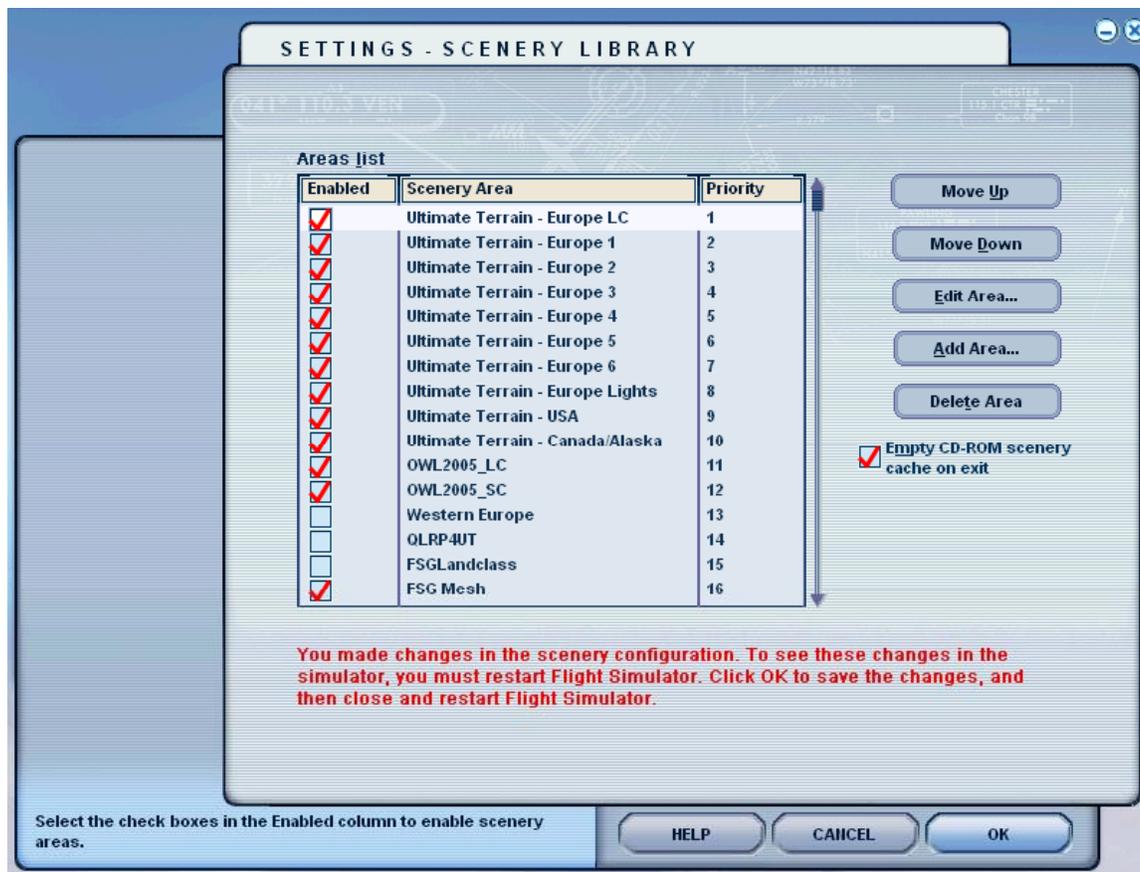
There is no guarantee that UT Europe will appear at the top after installation   If you have any photoscenery products that you want displayed in areas covered by UT Europe, then you should move those products higher up in the scenery library.   The same is true for any other landclass products you may have.

UT Europe contains 8 different scenery layers in the FS2004 Scenery Library. Here is a description of each.

Scenery Area	Description
Ultimate Terrain – Europe LC	Contains landclass for custom commercial and industrial landclass textures. This layer must be positioned above other UT Europe scenery areas.
Ultimate Terrain – Europe Lights	Night lighting objects. Layering priority is not at all important.
Ultimate Terrain – Europe 1	Regional UT Europe features, including base landclass for that region.
Ultimate Terrain – Europe 2	Regional UT Europe features, including base landclass for that region.
Ultimate Terrain – Europe 3	Regional UT Europe features, including base landclass for that region.
Ultimate Terrain – Europe 4	Regional UT Europe features, including base landclass for that region.
Ultimate Terrain – Europe 5	Regional UT Europe features, including base landclass for that region.
Ultimate Terrain – Europe 6	Regional UT Europe features, including base landclass for that region.

The map below will give you a breakdown on the regional boundaries for the 6 different regional scenery areas discussed above.
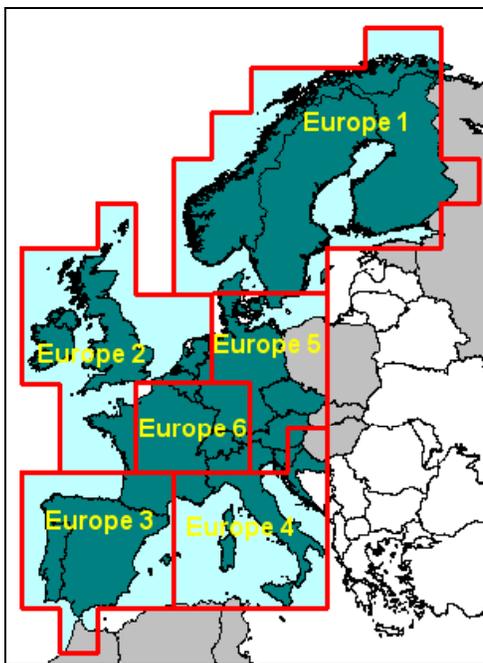
If you have a scenery product that is not being displayed in FS2004, try moving it above the other areas in the FS2004 Scenery Library.   This is especially true for landclass and photoscenery products.

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Scenery Solutions would like to thank the following groups and individuals, for their assistance in making this product the best it can be.

❖ **Flight One Software** – In our opinion, the best publisher in the Flight Simulator business.   They back their products 100% and offer terrific customer support.

❖ All of the talented **freeware developers** that give their time to make the Flight Simulation hobby what it is today.

❖ The many commercial developers that have offered their products and services, so that we can better maintain a compatible FS environment for everyone.

❖ TeleAtlas for their quality data for Europe, and for allowing us to put together a quality software product at a price that most people can afford.

❖ Our **customers** for their constructive feedback and understanding.   We hope you continue to find our products a great value.

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