

FSMap

by Thomas Molitor

Add-On for Microsoft Flight Simulator 2002, 2004 and X

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Introduction

During the past couple of years, electronic navigation aids started to revolutionize aviation. Digitized charts, together with high-resolution displays and the ability to define your own position precisely via GPS, are the technological fundament, to have aeronautical information present even in general aviation aircraft.

Now FSMap brings a realistic simulation of one of the leading devices in this area to flight simulation. With FSMap you will get high-resolution digitized VFR charts for Germany, Austria, Switzerland and the Benelux countries. More charts can be added easily by using the integrated chart editor and configurator. A sophisticated layering system ensures that you will always see the appropriate chart for the current flight phase and mode. But FSMap not only displays charts, it also supplies the virtual pilot with a wealth of information about his flight route, flight status, AI- and multiplayer traffic, and environmental conditions. Additionally airport, navaid and city overlays can be added to the displayed map. And while you are taxiing on the ground, FSMap can even display taxiways and parking positions straight out of flight simulator data. A simple VFR flight plan editor allows you to quickly create a FS flight plan.

By using the supplied panel editor, the FSMap gauge may be added to any instrument panel with a few mouse clicks. Besides the supplied gauge, you may also use FSMap as an external application outside Flight Simulator. By using FSUIPC (for FS2004) or SimConnect (for FSX), users may even utilize a second PC in their home network to run the FSMap application.

And now we wish you pleasant hours of flying with FSMap. Keep the blue side up!

The FSMap development team



FSMap Basics

FSMap consists of two major parts: The external application, called „FSMap Application“, and the „FSMap Gauge“, which is to be used from within MS Flight Simulator. Some functions of both overlap, while others don't.

The external „FSMap Application“

One of the core functions of the external applications is to configure and manage your installed set of charts. You will find routines to select, calibrate, and define their use. For further information about chart management, refer to chapter „Chart Management“ later in this manual. Furthermore, the FSMap Application is used to add the FSMap Gauge to instrument panels, add and remove hotspots (hidden click zones) and toggle icons. For this purpose a comfortable panel editor is included in the application. Customers who are familiar with our „FS Flight Keeper“ program may be already used to our panel editor.

Besides its use as a chart and panel editor and configurator, the FSMap application also functions as a full-featured moving map. To connect to MS Flight Simulator, the FSMap application uses either FSUIPC (for Flight Simulator 2004) or SimConnect (for Flight Simulator X). FSMap Application may be run on a separate PC in a local network, thus freeing your Flightsim PC from running FSMap and therefore conserving valuable performance resources.

A few functions in the external FSMap application (such as displaying online ATC presence) are not available in the gauge variant. Also, updating the navigation database requires the use of the external application.

FSMap

The FSMap gauge

The FSMap gauge has to be integrated into flight simulator instrument panels directly. From there it can be opened by clicking on a hotspot, or using a key combination. Depending on your preferences, the FSMap gauge may be opened as an own panel sub window, or integrated into an existing panel view.

The FSMap gauge has some unique features, which are not available in the external application. Among these are the ability to display airport layouts, including taxiways and parking positions. Also, you may configure the FSMap gauge thread to run on a specified core in a multi-core CPU system.

FSMap charts

FSMap supports charts in several different graphics formats. You may use JPG, PNG, TIFF, BMP and GIF files with all possible color depths. The maximum graphics size allowed by the FSMap application is 8.000 x 8.000 pixel, the gauge supports graphics with a maximum of 5.000 x 5.000 pixels. We highly recommend, however, to keep your chart files smaller, or spread them across several individual files. Smaller files will be loaded much faster, and they also reduce the amount of memory used to display them. For the same reason it is recommended to keep the color depth at 8 bit. For aeronautical charts, this is a sufficient quality, and furthermore it also cuts down memory usage.

A map graphic needs to be calibrated before it can be used with FSMap. For this, FSMap needs to know the type of map projection used (either „None“ or „Lambert Conic“) and at last two reference points on the chart, defined by their coordinates. All charts supplied with FSMap are calibrated already, and may be used without any further pre-configuration. Other pre-calibrated charts may be available from download sources in the internet, check our links section at the end of this manual.



Installation

The installation routine will start automatically after the CD has been inserted into the CD/DVD drive. You need to have „Autorun“ activated on your computer for this. Check your Windows documentation for further reference regarding „Autorun“.

FSMap may be installed on the computer running MS Flight Simulator, or on any other computer in your local network. To establish communication with Flight Simulator X over a local network, FSMap uses „SimConnect“, which is included with MS Flight Simulator. Connection with FS2004 is done using „FSUIPC“ and „WideFS“ by Pete Dowson. Both programs need to be bought separately, and are not part of FSMap. You may get them via <http://www.simmarket.com>.

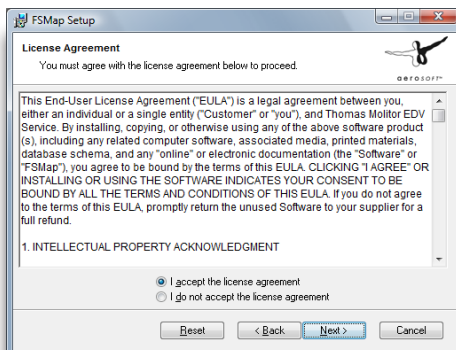
When the installer is started, you are greeted with the following dialog window:



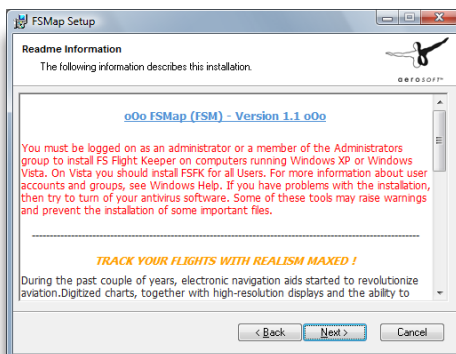
To continue, click on „Next“.

You are now requested to confirm the software license agreement:

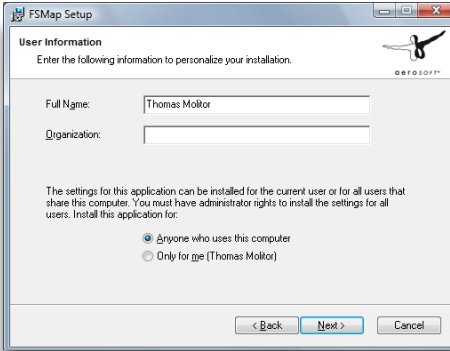
FSMap



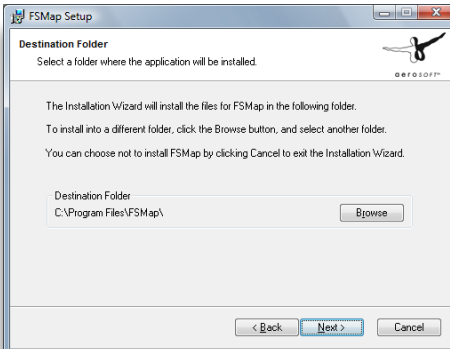
Please note that you will need administrator rights to install FSMap. Please consult your windows documentation about how to get administrator rights on your computer. The FSMap installation routine explicitly reminds you of this fact:



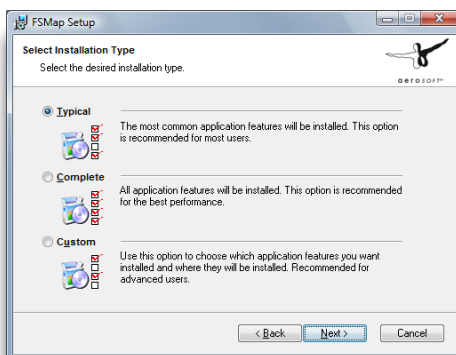
You are now prompted to enter your name and company name. While the name field is mandatory, the company field may be left blank. When installing FSMap on Vista/7, please always install the program for **all users**. Otherwise you may run into troubles with Vista/7's user account control (UAC):



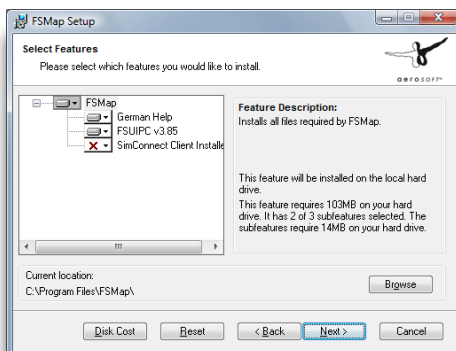
The next dialog presents you with the proposed installation path. We recommend you to keep this path.



This screen configures how FSMap is installed. You may either choose to install all files, a typical file set only, or to define by yourself which parts you want to install. If you want to do the latter, select „Custom“. We highly recommend to fully install FSMap:



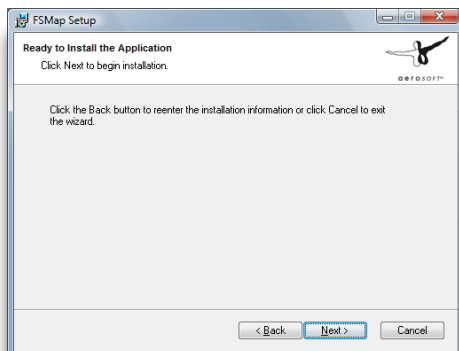
In case you have selected a custom installation, you will now be prompted with the following dialog:



The installation of "SimConnect" is only needed if you install FSMap on a separate computer in your local network, and when you want to connect to FSX. For connections to FS2004, you will need to install FSUIPC. Also, you may redefine your installation path, if needed, here.



To finish your selection, click on „Next“. If you want to start over again with the installation process, click on „Back“. When all settings are correct, click on „continue“ again:



The installer now copies files onto your hard disk. This may take a few minutes.



The following screen tells you that FSMap has been installed successfully. To finish the installation, click on „Finish“.

Installing and configuring SimConnect

FSMap may be installed and used on a second PC in a local network (called “network PC” from now”). It will then access FSX on your flightsim PC (called “FSX PC” from now) using Microsoft’s data interface “SimConnect”. This chapter will describe the necessary steps to install and configure SimConnect.

Before installing SimConnect, check that all necessary prerequisites are met:

- FSX service pack 1 or newer is installed
- Both computers (network PC and FSX PC) are configured correctly to use the TCP/IP network protocol
- Both PCs should use a fixed IP address
- Your firewall software needs to be configured to allow data on the networking port you will specify to pass through
- FS Map is completely installed and up to date on the network PC
- FSX may be upgraded with service pack 2 or Acceleration. These packages are not necessarily required. We recommend you to install service pack 2 anyway, as it will correct some other bugs introduced by Microsoft.

First step is to install the SimConnect client software on the network PC. The version of the client you need to install varies with the Flight Simulator revision you’re using. For your convenience we have included all SimConnect variants in the folder \ *SimConnect* inside the FSMap main program folder (usually located at *C:\Program Files\FSMap*). The sub-folder names will translate as followed: RTM = original release version, SP1 = Service Pack 1, SP2 = Service Pack 2 or Acceleration. Launch the respective .msi file on the network PC by double-clicking on it. The installation will happen automatically.

Next step is to copy and modify a file called SimConnect.XML. A template for this file is included in *C:\Program Files\FSMap\SimConnect*. The file needs to be copied to the following folder on the FSX PC:



Windows XP: *C:\Documents and Settings\<Your Windows Username>\AppData\Microsoft\FSX*

Windows Vista/7: *C:\Documents and Settings\<Your Windows Username>\AppData\Roaming\Microsoft\FSX*

SimConnect.XML is a normal text file, which may be edited using any text editor available (such as Windows Notepad). For each networking protocol this file includes a section `<SimConnect.comm> „global“` and `<SimConnect.comm> „local“`. It will be determined by the entry `<Scope>global</Scope>` or `<Scope>local</Scope>`.

In most cases, you will use the IPv4 protocol, therefore we need to modify the appropriate sections. The section “global” uses several parameters, which need to be defined as followed:

Protocol: IPv4 (example: `<Protocol>IPv4</Protocol>`)

Address: Enter the fixed IP address of your FSX PC here (example: `<Address>192.168.1.100</Address>`)

Port: We recommend you to use port 500 (example: `<Port>500</Port>`)

A complete global section for the IPv4 protocol may read as followed:

```
<SimConnect.Comm>
  <Disabled>False</Disabled>
  <Protocol>IPv4</Protocol>
  <Scope>global</Scope>
  <Address>192.168.1.100</Address>
  <MaxClients>64</MaxClients>
  <Port>500</Port>
  <MaxRecvSize>4096</MaxRecvSize>
  <DisableNagle>False</DisableNagle>
</SimConnect.Comm>
```

FSMap

The section "local" should look like this:

```
<SimConnect.Comm>
  <Disabled>False</Disabled>
  <Protocol>IPv4</Protocol>
  <Scope>local</Scope>
  <MaxClients>64</MaxClients>
  <Address>127.0.0.1</Address>
  <Port>500</Port>
</SimConnect.Comm>
```

In a final step the file SimConnect.CFG needs to be copied from the network PC from the folder C:\Program Files\FSMap\SimConnect into the main program directory of FSMap on the network PC. In addition, you need to modify the file according to the setting your made in the SimConnect.XML file earlier.

The file SimConnect.CFG contains multiple sections, with each section title covered by braces. For our purposes, we just need to modify the section titled [SimConnect], other sections may be deleted. The parameters should look like this:

```
[SimConnect]
Protocol=IPv4
Address=192.168.1.100
Port=500
MaxReceiveSize=4096
DisableNagle=0
```

Copying the SimConnect.CFG file finishes the configuration of SimConnect. You may now launch the FSMap application on the network PC and connect it to a running FSX on your FSX PC.



Installing and using WideFS

The product "WideFS" is made up of two primary elements: A flight simulator module called "WideServer", and an external application called "WideClient". You will receive both components together in one ZIP-Archive from the Author, or via download from several flight simulation file archives on the Internet. Before WideFS may be used, it has to be registered using the serial number provided with the purchase. This is done from a dialog window of FSUIPC. In order to use WideFS you need to own a registered version of FSUIPC. Both products are available for a combined purchase at a reduced price.

WideFS uses the TCP/IP protocol for communication. Please ensure that both computers (network PC and FSX PC) are configured correctly to use the TCP/IP network protocol. For details consult your Windows documentation.

WideFS installation for FS2004

From the WideFS ZIP archive, copy the two files named WIDESERVER.DLL and WIDESERVER.INI to your MODULES directory, located directly below the main FS2004 directory. Thereafter, create a folder named "WideClient" on your network PC in the "Program Files" folder. Copy the two files named WIDECLIENT.EXE and WIDECLIENT.INI from the WideFS ZIP archive to this new folder.

WideFS installation for FSX

WideServer is integrated into FSUIPC version 4, and need to be activated through FSUIPC. Register WideFS first (see above), then restart FSX. Thereafter, create a folder named "WideClient" on your network PC in the "Program Files" folder. Copy the two files named WIDECLIENT.EXE and WIDECLIENT.INI from the WideFS ZIP archive to this new folder.

FSMap

Using WideFS

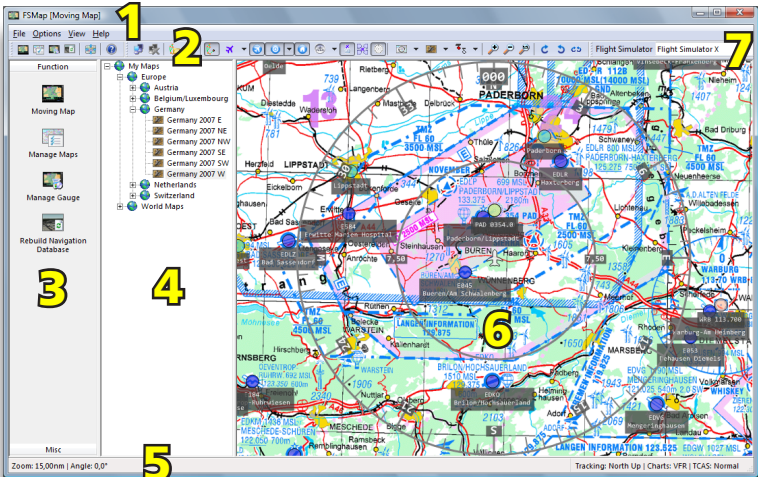
To connect FSMap to your flight simulator through WideFS, first launch Flight Simulator itself, then start the WIDECLIENT.EXE application on the network PC. Thereafter, launch FSMap. Usually there is no further configuration work necessary.

WideFS may be configured to work with a wide variety of different networking configurations and options. For details about how to set these options please consult the WideFS documentation contained in the WideFS ZIP file.



Overview - FSMap application

The external FSMap application is a standard windows program. It looks as follows:



1. Menu bar

2. Icon bar

Depending on which function is selected via the side bar, the icon bar will look slightly different.

3. Side bar

The side bar contains icons for the main functions of FSMap. Currently, it is divided into 2 sections. Section „Function” consists of FSMap’s core functions. „Misc” has some links for various support functions.

4. Entry bar

The entry bar will contain menu trees for your installed charts, or the aircraft and panels installed in your flight simulator. What is displayed depends on the function chosen via the side bar.

FSMap

5. Status bar

The status bar will show current program parameters.

6. Display area

The display area is the part of the program where the moving map is displayed. In mode „Manage Maps“ it also shows the currently active map. In mode „Manage Gauge“ you will see the currently selected instrument panel.

7. Simulator selection

This drop-down menu defines the currently selected flight simulator version.

The Icon bars

Depending on which function is selected via the side bar, the icon bar will look slightly different:

1. Function „Moving Map“ (F3)
2. Function „Manage Maps“ (F4)
3. Function „Manage Gauge“
4. Rebuild navigation database
5. Toggle full-screen display (F11)
6. Help (F1)

The icon bar „Moving Map“



7. Connect to Flight Simulator (F5)
8. Disconnect from Flight Simulator (F6)
9. Load Flight Plan (CTRL-O)
10. Unload Flight Plan
11. Toggle Flight Plan display (CTRL-F)



12. Toggle AI-Traffic display (CTRL-T)

This icon contains a drop-down menu with the following options:

- Show Ground Traffic (CTRL-SHIFT+G)
- Show Airborne Traffic (CTRL-SHIFT+A)

13. Toggle Airport (CTRL-A), Navaid (CTRL-N) and City (CTRL-C) overlay display

14. Toggle Online Traffic display (CTRL-SHIFT+V)

This icon contains a drop-down menu with the following options:

- Show Ground Traffic (CTRL-SHIFT+G)
- Show Airborne Traffic (CTRL-SHIFT+A)
- Show Controller (CTRL-SHIFT+C)
- Show FIR Boundaries (CTRL-SHIFT+F)
- Show active Zones (CTRL-SHIFT+O)

15. Toggle Aircraft Label display (CTRL-L)

16. Toggle Aircraft Status display (CTRL-S)

17. Toggle Compass Rose display (CTRL-K)

18. Tracking Mode (SHIFT-F8 / F8)

19. Chart Type (SHIFT-F9 / F9)

This icon contains a drop-down menu with the following options:

- All
- IFR
- VFR

20. TCAS Mode (SHIFT-F10 / F10)

This icon contains a drop-down menu with the following options:

- Above
- Normal
- Below
- Unrestricted
- Off

21. Zoom in or out (Plus / Minus), or reset Zoom (CTRL-SHIFT+Z)

22. Rotate Right or Left (Right / Left), or Reset Rotation (CTRL-R)

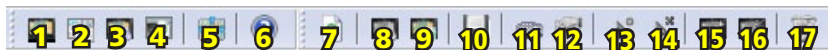
FSMap

The icon bar „Manage Maps“



7. Add Map (CTRL-N)
8. Import Map(s) (CTRL-I)
9. Export Regions/Maps (CTRL-E)
10. Delete Region/Map (DELETE)
11. Undo changes (CTRL-U)
12. Save changes (CTRL-S)
13. Toggle Map Coverage Display (CTRL-O)
 - This icon contains a drop-down menu with the following options:
 - Display Map Name
 - Show Inactive
 - Chart Type (General, IFR Chart, VFR Chart, Airport Chart)
 - Minimum Priority
 - Maximum Priority
14. Add or Delete Calibration Point
15. Zoom in or out (Plus / Minus), or Reset Zoom (CTRL-SHIFT+Z)
16. Rotate Right or Left (Right / Left), or Reset Rotation (CTRL-R)

The icon bar „Manage Gauge“



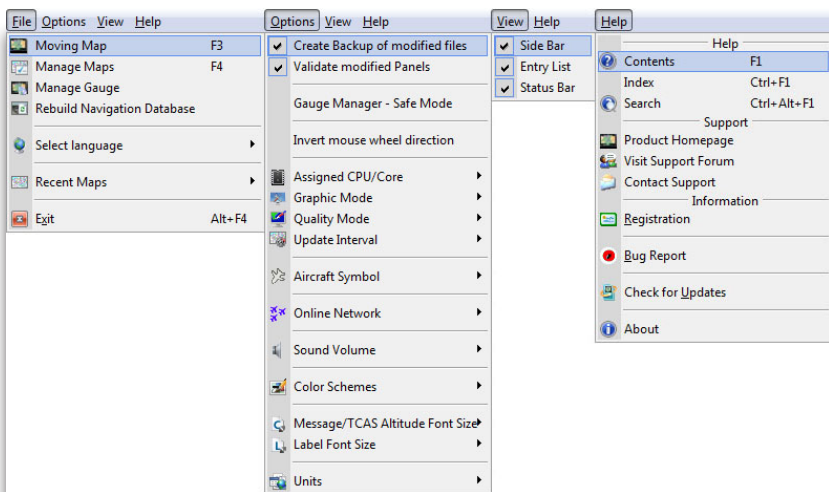
7. Refresh Aircraft list (F5)
8. Install/Update FSMap Gauge
9. Uninstall FSMap Gauge
10. Save all Aircraft Modifications (CTRL-S)
11. Edit the Gauge Hotkey (CTRL-K)
12. Edit Properties (ENTER)



13. Adds a Hotspot to the selected Panel
14. Removes the selected Hotspot (DELETE)
16. Adds the FSMap to the selected panel
16. Removes the selected FSMap
17. Remove any FSMap and Hotspots installed on the selected panel

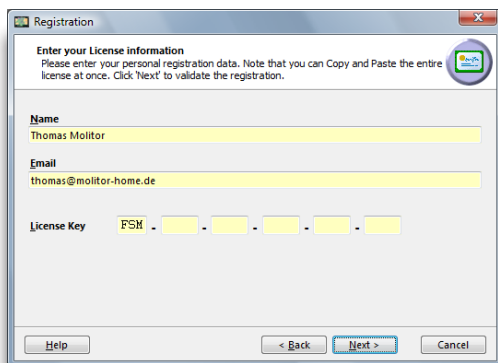
FSMap Menu Structure

The FSMap application has four major pull-down menus. The first one, "File", has entries to call the major functions of the program ("Moving Map", "Manage Maps", "Manage Gauge" and "Rebuild Navigation Database"). You may also define what language the application should use here (English or German). Please note that the application will restart when the language is changed. The entry "Recent Maps" allows you to access maps you used before quickly. For this, key combinations from ALT-1 to ALT-0 are also provided.



FSMap

The menu "Option" is used to define basic parameters for the application. There's an entry for an option to create backup files, and to check modified panels for the most obvious configuration errors. The option "safe mode" should be used when the FSMap application has crashed upon loading a panel. Some aircraft addons have been developed for use inside Flight Simulator only, and may therefore act strange when the panel is called outside the simulator. In this mode, some panel graphics may not display correctly, therefore this mode should be deactivated when editing the specific panel has been completed. "Assigned CPU/Core" allows you to explicitly assign a CPU core to be used by the program. The graphic mode allows you to enable full hardware support (mode Direct2D - requires a compatible graphics card); otherwise GDI+ or GDI. If you get an error when loading a map in Direct2D mode, then select either GDI+ or GDI. Please note that Direct2D is not available on all systems. Other options will allow you to define the online network to be used (VATSIM or IVAO), map display quality, map refresh rate, the aircraft symbol and editing of colors used by FSMap. These entries are self-explanatory. The "View" menu configures the main program look. You may turn the side bar, the entry list and the status bar on or off from here. The "Help" menu contains various entries which are in some way related to the program support.



"Registration" is where your program licence data has to be entered. You may try



out FSMap for a limited time by obtaining a trial license. After you bought the program, just copy the whole data (name, email and key), and paste it anywhere inside the entry fields. The software will automatically recognize the data, and fill out the form in the correct way. Alternatively you may of course enter your registration data manually.

Finally, to report a program bug, choose the "Bug Report" option, and provide the necessary details via the dialog window.

Quick Start guide

This quick start guide should help you to get started with the program instantly. Please note that this guide doesn't replace a mandatory reading of the full documentation.

1. Launch FSMap via the FSMap program icon in the Windows Start Menu
2. Choose the correct Flight Simulator version from the drop-down menu right to the icon bar.
3. Update the navigation database by clicking on the respective icon in the icon bar.
4. Add the FSMap gauge to a panel by using the Manage Gauge function. Add hotspots at your convenience to launch the gauge from the panel. You may now close the FSMap application.
5. Start MS Flight Simulator, and select an aircraft to which FSMap was installed in step 4.
6. Start from an airport which is covered by the maps currently installed.
7. From your instrument panel, launch the FSMap gauge by either clicking on an installed hot, or by typing the FSMap hotkey. After a few seconds, you will see the initialization screen.
8. Click on „FN“ until „MAP“ is displayed in the lower display area. Then click on the button below the map label. You will now see a chart of your area. Your own position is represented by an aircraft symbol, centred in the middle of the screen.



Manage Maps

In order to use maps within FSMap, you first need to integrate and calibrate them using the FSMap application. By calibrating the map you are telling FSMap the geographical boundaries of your map. In order to be calibrated correctly, at least two reference points need to be defined using their exact geographical coordinates. To assist you in this process, the Flight Simulator database of navigation aids may be used as a reference.

FSMap accepts graphic files within the following limitations:

- Size 8.000 x 8.000 pixel for the external FSMap application
- Size 5.000 x 5.000 pixel for the FSMap gauge
- Graphics formats JPG, PNG, TIFF, BMP or GIF
- All color depths

We highly recommend you to stay away from using the maximum values. Smaller charts will be loaded and displayed much quicker. As Flight Simulator (including all components) has to be run within a single 2GB memory space, large charts may eat up and block huge amounts of memory, and may slow down Flight Simulator significantly.

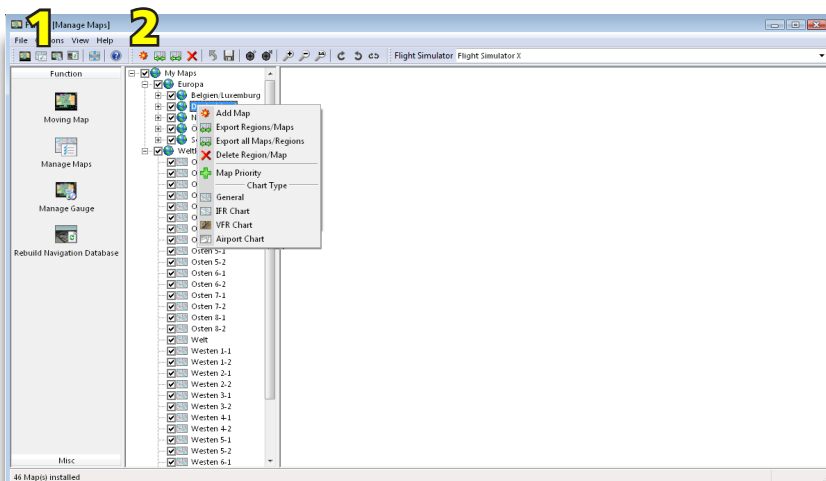
The following hints will help you to conserve memory:

- Use maps with 8 bit color depth instead of 32 bit files
- Use smaller chart files. A resolution of 2.500 x 2.500 pixel is sufficient in most cases.

You should seriously think about expanding your main memory to 2GB. The minimum necessary amount of main memory is 1GB.

Add new maps

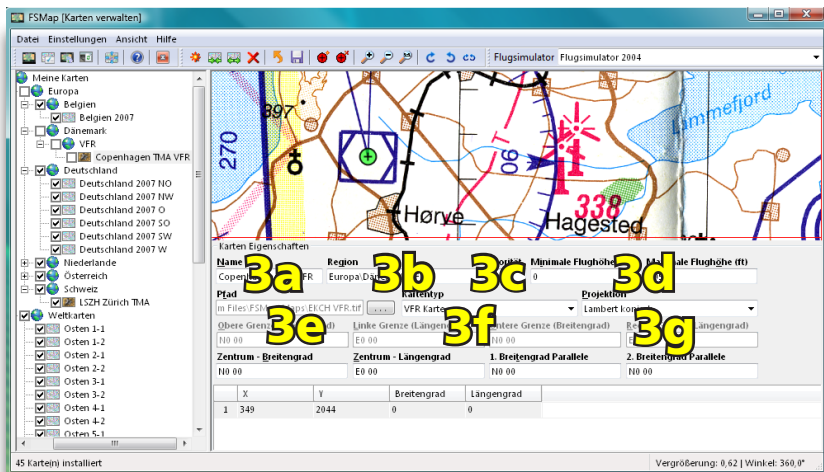
1. Start the „Manage Maps“ function within the external FSMap application by clicking on the icon in the icon bar, or press F4.
2. Click on „Add Map“ in the icon bar, or press CTRL-N. You may also right-click at the position you want the map to be added in the chart menu tree in the entry bar. Select „Add Map“ from the pop-up menu there. In this case the field „region“ is already filled for you (see below).



3. Pick the map file from the selection window. The map will be displayed, and in the lower right area you will see a couple of entry fields. Fill them as followed:
 - a. Name: You may freely choose a name for the map.
 - b. Region: This entry defines where inside the chart tree your new chart will be placed. The backlash „\“ character will be used as a hierarchy separator. As an example, „Europe\Denmark\VFR“ will create a new map entry with the respective hierarchy levels.



- c. Priority: The priority value will be defined automatically, and does not need to be corrected manually. Priorities start with 0 at the lowest, and do not have an upper limit. Automatic priority assignment takes the geographical size of the respective maps into account. Maps with smaller size will receive higher priority values than maps with larger size in the same area.
- d. Altitude: There are two fields which allow you to define a lower and upper altitude limit for the map. Enter the respective values here. As an example, this option may be used to restrict the usage of a High-Level Enroute IFR chart to the upper airspace above FL245 only.
- e. Path: The full path to the map graphics. If you click on the selection button to the right of the field, a selector window will open which allows you to pick up the file.



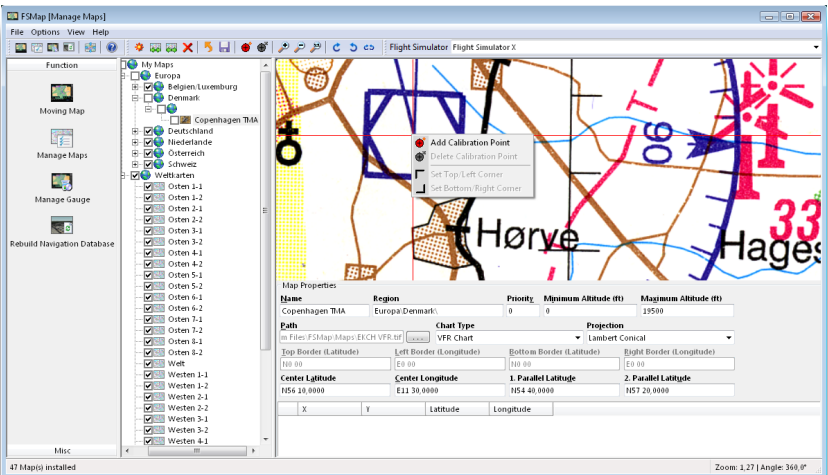
- f. Chart Type: You may choose between IFR, VFR, general and airport charts. Airport charts are restricted to a small area around an airport. General charts are always used. For charts marked as IFR or VFR, the flight plan type from a loaded flight defines which charts will be displayed.

- g. Projection: You need to define which kind of map projection your chart uses. Possible selections are „None“ or „Lambert Conical“. Usually, the projection used is stated on the respective charts, mostly near the legend.

The next steps will differ slightly, depending on the projection method used by the respective map:

For maps with projection type „None“:

Start with the calibration process by adding a calibration point. For a successful calibration you will need at least two calibration points. They should be located at map edges, as far away from each other as possible. You need to know the exact geographical coordinates for these points. We recommend you to use navigation aids like VORs, NDBs or intersections. Those navigation aids are usually listed in the national AIP (Aeronautical Information Publication), and often they are also listed on the map itself.



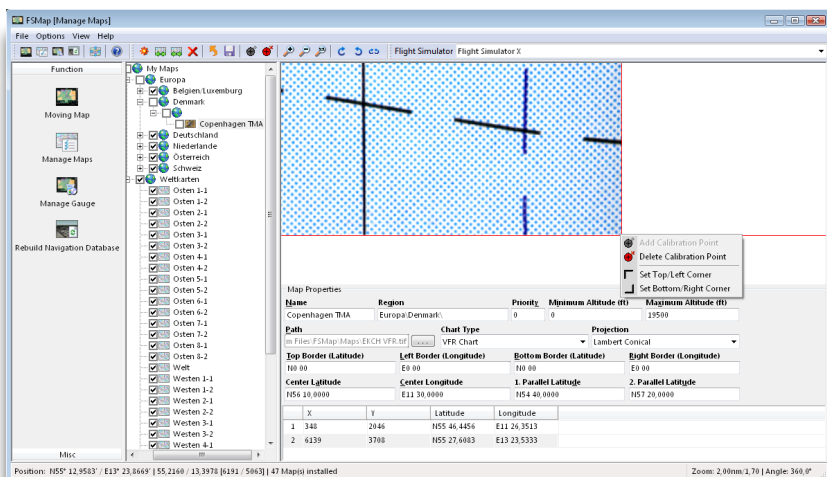


To define a calibration point, right-click onto the map display where you want the point to be placed, or select „Add Calibration Point“ from the popup-menu. A red crosshair will help you in correct placement. By keeping the left mouse key pressed, the whole map may be moved. Turning your mouse wheel will zoom the map in or out. For this the cursor changes into a hand symbol. The currently selected calibration point is displayed in green color, other calibration points are marked red.

The selected calibration point will now be added to a table of points, just below the data entry area. You will see him with his relative position (in pixels) inside your map. The fields for the geographical coordinates are still empty. You may now enter these directly, or indicate the position to be a navaid. In our case, our calibration point is located at the position of the TNO (Trano) VOR in Denmark.

In case you don't know the exact coordinates of your calibration point, you may use the Flight Simulator navigation database as a reference. If you enter the code for the navaid in either the latitude or longitude field, FSMap will retrieve the correct coordinates, and use them. Please note that these coordinates may differ from the exact position on the chart, as the database may contain errors. In case you've selected a code which exists in the database more than once, a selection dialog will appear to allow you to select the right navigation aid.

As soon as a second calibration point is added, four more entry field become active. They will define the borders of your map area. You don't need to fill the coordinates manually. Instead, two simple mouse clicks will do the job. Zoom into the upper left corner, right-click with your mouse, and select „Set Top/Left Corner“ from the popup menu. In the same way, select the lower right border by choosing „Set Bottom/Right Corner“ at the appropriate map position.



You may add more than two calibration points before defining the map borders. However, 2-3 points should be sufficient to ensure a precise map calibration.

To finish the map calibration process, click onto the disc symbol in the icon bar, or press CTRL-S to save your changes.

For charts using the „Lambert Conical“ projection:

For charts using the „Lambert Conical“ projection method, a map center and two standard parallel latitudes must be indicated. These standard parallel latitudes are usually depicted on a map right together with the projection method itself (see sample scan on the next page). Unfortunately, the map center coordinates are often missing. As a first approach, select the middle of the whole map you are using as the map center, even if your file will only depict a fraction of the whole map.



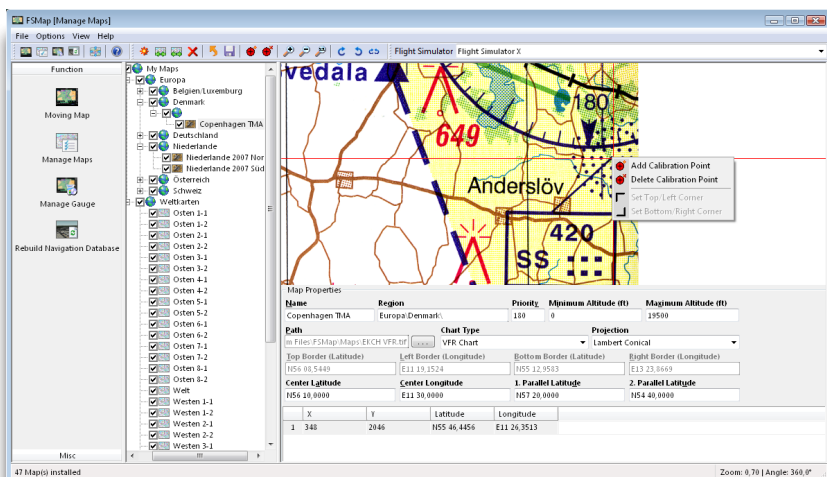
World Geodetic System - 1984 (WGS-84), WGS-84 Spheroid.
Lambert Conformal Conic projection.
Standard Parallels 54° 40' and 57° 20' N

NAUTICAL CHART - ICAO 1 : 500 000 DENMARK

Next, start adding calibration points. For a successful calibration you will need at least two calibration points. They should be located at map edges, as far away from each other as possible. You need to know the exact geographical coordinates for these points. We recommend you to use navigation aids like VORs, NDBs or intersections. Those navigation aids are usually listed in the national AIP (Aeronautical Information Publication), and often they are also listed on the map itself.

To define a calibration point, right-click onto the map display where you want the point to be placed, or select „Add Calibration Point“ from the popup-menu. A red crosshair will help you in correct placement. By keeping the left mouse key pressed, the whole map may be moved. Turning your mouse wheel will zoom the map in or out. For this the cursor changes into a hand symbol. The currently selected calibration point is displayed in green color, other calibration points are marked red.

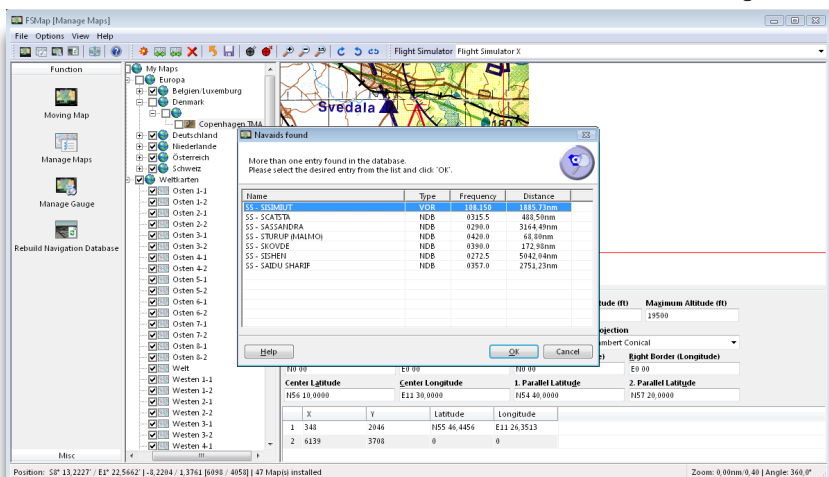
The selected calibration point will now be added to a table of points, just below the data entry area. You will see him with his relative position (in pixels) inside your map. The fields for the geographical coordinates are still empty. You may now enter these directly, or indicate the position to be a navaid. In our case, our calibration point is located at the position of the SS (Sturup) NDB in Sweden, near Malmoe.



In case you don't know the exact coordinates of your calibration point, you may use the Flight Simulator navigation database as a reference. If you enter the code for the navaid in either the latitude or longitude field, FSMap will retrieve the correct coordinates, and use them. Please note that these coordinates may differ from the exact position on the chart, as the database may contain errors. In case you've selected a code which exists in the database more than once, a selection dialog will appear to allow you to select the right navigation aid.

Now define the upper left and lower right corners. Zoom into the upper left corner, right-click with your mouse, and select „Set Top/Left Corner“ from the popup menu. In the same way, select the lower right border by choosing „Set Bottom/Right Corner“ at the appropriate map position.

The next screen shot above shows the navaid selection dialog mentioned:



To finish the map calibration you need to set at least 2 calibration points, define the projection data (map center, 2 parallel latitudes) and identify the map edges. To save your map data, click on the disc icon in the icon bar, or press CTRL-S to save.

Import Map

FSMap allows to import maps which are already calibrated. Those maps may origin from other FSMap users, or from users of other „GIS Software“. The frees you from having to do the calibration by yourself. Supported file types are FSMovingMap INI-files, Sim Systems XML-files JGW-, TFW- or GFW-files. We would like to take the opportunity to recommend a full set of US sectional charts for VFR use, which have been pre-calibrated. You may obtain them from the AVSIM file library. Check our links section at the end of this manual for details.

To import a map, click on the corresponding icon in the icon bar, press CTRL-I, or right-click at the appropriate place in the „My Maps“ tree. A file selection dialog

FSMap

window will open, allowing you to select the correct file to import. Please note that a small drop-down menu in the lower right corner allows you to specify the exact file type you are looking for.

When the file has been imported, you will be asked whether you want to save the map in your personal map space. We recommend you to confirm this. Your personal map space is a separate folder, which will keep imported maps separated from those we deliver together with FSMap. Your personal map space is located at "`C:\USERS\<YOUR WINDOWS USERNAME>\Documents\FSMap\Maps`" (Windows Vista/7). When the import process is complete, you can change parameters like priority, chart name or others.

FS Map allows you to export full map hierarchy tree branches. In such cases the export will result in a couple of graphics files, and a single calibration file. By importing such a calibration file you may import a couple of files at once. Charts need to be activated after they have been imported. To set them active, place a checkmark in the chart tree just left of the new chart entry. To finish the import process, and to save your changes, click on the disc symbol in the icon bar, or press CTRL-S.

Export maps

You may export maps to make them available to other users. When exporting maps, FSMap will always create at least two files: The graphics file (the map itself), and a file with the calibration data. Those files are exported using the *.FSM* file extension. To export maps, first select the map from the „My Maps“ tree, then either click on the appropriate icon in the icon bar, press CTRL-E, or right-click on the map entry you want to export in the „My Maps“ hierarchy tree. By using the right-click method you may export a full tree branch containing several individual maps. A file save dialog window will open, prompting you for the correct export location. Select the correct folder, and click on „Save“. FSMap will now save the graphics and the *.FSM* file there.



FS Map allows you to export full map hierarchy tree branches. In such cases the export will result in a couple of graphics files, and a single calibration file. By importing such a calibration file you may import a couple of files at once

Check map arrangement and priorities

FSMap provides an easy and convenient method to check your installed maps for proper arrangement and priorities. To do this, select the “Toggle Map Coverage Display” button from the icon bar, or press the CTRL-O key combination. In order to use this option effectively, you should zoom out your map view to get the area surrounding your map in sight as well. FSMap will now show all adjacent maps which will touch or overlap your map area as a shaded surface with its borders marked. When selecting the option “Display map name” from the drop down menu, FSMap will also show the map name, its map type and its priority level. Of course you can still access all other functions available in the “Manage Maps” section.

The screenshot shows the FSMap (Manage Maps) interface. On the left is a tree view of map categories: My Maps, Europe, Belgium/Luxemburg, Denmark, Deutschland, Deutschland 2007 HO, Deutschland 2007 HW, Deutschland 2007 O, Deutschland 2007 SO, Deutschland 2007 SW, Deutschland 2007 W, Niederlande, Österreich, Schweiz, and Weltkarten. The main map area displays a grid of map tiles with labels like 'Deutschland 2007 HO', 'Niederlande 2007 HO', etc. On the right, the 'Map Properties' table is visible.

Name	Region	Priority	Minimum Altitude (ft)	Maximum Altitude
Deutschland 2007 W	Europe/Deutschland	71	0	0

Path		Chart Type	Projection
[Select Map] Germany 2007 - W 90		VFR Chart	Lambert Conformal

Top Border (Latitude)		Bottom Border (Latitude)	
52 04.9983	E6 00	1649 22.9989	E10 54.0000

Center Latitude		Center Longitude		1. Parallel Latitude		2. Parallel Latitude	
151 00	151 00	151 00	151 00	1647 00	1647 00	1647 00	1647 00

X	Y	Latitude	Longitude
1	205	425	N52 00 E6 00
2	4640	3993	N49 30.0000 E10 40.0020

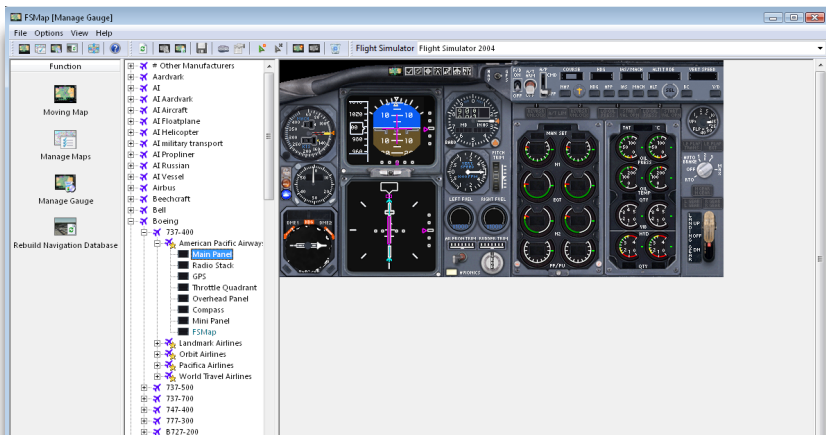
Position: N52° 08.0002' / E10° 57.9071' [52.1468 / 10.9651] [4900 / 10] [47 Maps] installed
Zoom: 433.46mm [0.02] Angle: 368.0°

Other drop down menu options will allow you to filter your map display for certain map types or priority level boundaries. Lets say you want to check your VFR maps for proper alignment and priority levels. In this case you would just select this map type from the drop down menu, and leave the priority options at “none”.

Manage Gauge

This function allows you to integrate the FSMap gauge into instrument panels in MS Flight Simulator. The FSMap gauge may be used as part of an existing panel view (i.e. filling a spot inside the panel), or it may be opened as an independent panel window. Furthermore, you can add a hotspot (a hidden click area to open the instrument) to your panel windows.

When selecting the function „Manage Gauge“, FSMap will automatically recognize all aircraft installed in the selected Flight Simulator version, and arrange them in a sorted tree in the entry bar. The tree is sorted by manufacturers, aircraft model, and variant. When you select a certain variant, all panel views are listed below it with their respective names.



Clicking on a panel view will open the panel in the display area of the FSMap application. The screenshot above shows the B737-400 main panel view. Usually, all gauges used by the panel will also be shown. Please note that there might be some panels where gauges may not display correctly. This is due to some technical limita-



tions, and gauge manufacturers protecting their gauges. The panel window bitmap itself however, should always be displayed, allowing you to add the gauge and/or the hotspot without troubles.

The FSMap gauge may be installed as an independent panel view (i.e. as a panel window), or as a part of an existing panel window. Usually you may want to use it as an independent panel window. In this case you can open and hide it just as required. When opened, it may be also moved around the screen, or resized. In this case, the panel window may overlap some parts of the regular panel.

Some panels are offering specific spots to add instruments like a GPS or a moving map device like FSMap. In such cases you may want to place the FSMap gauge directly into that area. This is the most realistic-looking variant. If the FSMap instrument is too small for your taste, you may additionally create a separate FSMap panel window. In these cases, the FSMap instrument which has been placed inside your panel, acts like a hotspot. Clicking on it will open or close the larger separate panel window.

All these installation or deinstallation actions related to the FSMap gauge are done by clicking on the appropriate icon in the FSMap icon bar.

Adding or updating the FSMap gauge file

Before adding the FSMap instrument to a panel you need to install the "FSMap-Device.gau" file in MS Flight Simulator. To install the file, first check that you have selected the correct flight simulator version via the drop-down menu, then click on the icon labelled „Install/Update FSMap Gauge“ in the icon bar. This symbol is greyed out when the .GAU file is already installed and up to date. The icon may become active when the file is installed, but a newer version is available from your program folder. Usually the FSMap application will detect such cases and prompt you to update the FSMap gauge file to the latest version.

Remove FSMap gauge from Flight Simulator

To remove the FSMap gauge from Flight Simulator, click on the appropriate icon in the icon bar. The FSMap application will ask you if you want to remove all panel modifications from all aircraft as well. You may answer “no” here to remove the gauge file only. Please note that some panels may not work correctly after doing this. In this case you should remove such panel modifications manually.

Add a hotspot to a panel

To add a hotspot for FSMap to a panel, first select the aircraft and livery from the aircraft tree in the entry bar. Click on the panel view where you want the hotspot to be added, and place the hotspot by either clicking on the appropriate icon in the icon bar, or by selecting “add hotspot” from the options menu accessible with a right-click. Your new hotspot will appear in the upper left corner. The hotspot has “grip handles” allowing you to resize and move the object with your mouse as required. You may also use the keyboard instead of the mouse: The hotspot can be moved using the arrow keys, SHIFT-arrows will change the hotspot’s size. When keeping the CTRL-Key depressed, all keyboard actions will happen accelerated. The currently selected hotspot may be deleted by pressing the DELETE key. There is an appropriate icon in the icon bar available as well.

A hotspot doesn’t necessarily need to be visible. FSMap allows you to place an invisible hotspot as well. To make a hotspot invisible, select the hotspot, then right-click on it and choose “Edit Properties” from the pop-up menu. A dialog window will appear. To turn the hotspot invisible, sign the check box labeled “Invisible hotspot”.



Adding and removing the FSMap instrument to/from a panel

To add a hotspot for FSMap to a panel, first select the aircraft and livery from the aircraft tree in the entry bar. Click on the panel view where you want the hotspot to be added, then click on the appropriate icon in the icon bar. FSMap will ask you to if you want to install the instrument in a separate panel window. If you choose “yes”, the FSMap instrument will be added in a new panel window.

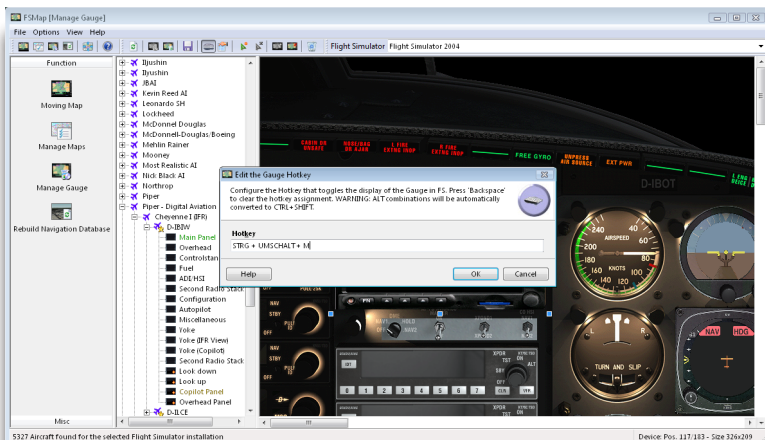
If you answer “No”, the FSMap instrument will be placed on the panel view you selected earlier. Grip handles will appear on each side, allowing you to resize the instrument, or move it around on the panel window. Place the instrument at the appropriate place, and ensure that no other gauges are covered.



You may also use the keyboard instead of the mouse: The hotspot can be moved using the arrow keys, SHIFT-arrows will change the hotspot’s size. When keeping the CTRL-Key depressed, all keyboard actions will happen accelerated. The currently selected hotspot may be deleted by pressing the DELETE key. There is an appropriate icon in the icon bar available as well.

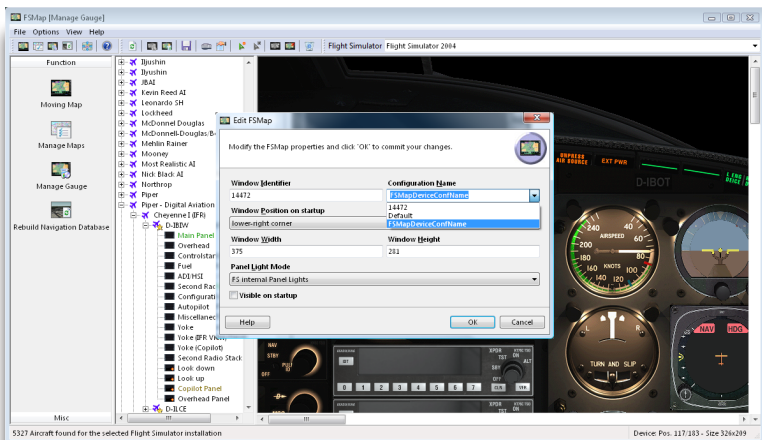
Define the FSMap instrument hotkey

FSMap allows you to assign a global hotkey for opening the FSMap instrument in Flight Simulator. To define the hotkey, click on the appropriate icon in the icon bar, or press the CTRL-K key combination. A dialog window will appear, asking you to enter the key combination. If you keyed in the wrong combination, the backspace key will delete your previous entry. Please note that any combination using the ALT key will have the ALT key automatically converted into CTRL-SHIFT. The FSMap hotkey definition is global, i.e. all instances in all panels are sharing the same hotkey.



Edit the FSMap instrument properties

When the FSMap instrument is selected in a panel window, you may define some advanced parameters for the instrument. To do this, right-click on the instrument, and select "Edit Properties" from the pop-up menu. The parameters will be added to the FSMap gauge entries in the relevant PANEL.CFG file.



The following parameters can be defined:

Window identifier: Assigns a numerical identification number to the FSMap instrument. This number is assigned by the FSMap application by default, and doesn't need to be changed manually. The default value is 14472.

Configuration name: Allows you to assign a specific name for this instrument. All settings made in the FSMap instrument are saved to a single configuration file. Setting an individual name here allows you to save settings specifically for this particular instrument only. The combo box displays all previously saved configurations.

Window position on startup: Defines where the instrument will appear on the screen when called the first time.

Window with/height: The width and height of the FSMap instrument, measured in pixels. Default values are 375 (width) and 281 (height). We recommend you keep the aspect ratio to assure an optimum display quality.

Panel light mode: Allows you to choose from two different methods of instrument night lighting.

Visible on startup: Allows you to define whether or not the panel window should be visible when loading the aircraft.

The FSMap application as a moving map

Connect FSMap to MS Flight Simulator

The FSMap application can be used as a moving map as soon as it is connected to MS Flight Simulator. To establish a connection with Flight Simulator 2004, the FSUIPC data interface is used, while connections with FSX will be made using Microsoft's new interface called "SimConnect". Please note that in order to establish a connection from a networked PC via SimConnect, the SimConnect client has to be installed first. For connections to FS2004 via FSUIPC from a networked PC, the software "WideFS" is needed, which needs to be purchased separately. For details about installing SimConnect, please refer to the chapter "Installation" earlier in this manual.

A connection to MS Flight Simulator will be established by clicking on the correct icon in the icon bar, or by pressing the F5 key. The connection should be terminated before closing MS Flight Simulator. Terminating the connection is achieved by clicking on the appropriate icon in the icon bar, or by pressing the F6 key.

As soon as the connection has been established, a map may be selected from the map tree in the entry bar. The map will then be loaded and displayed in the display area, centered on the middle of the map.

When a map has been loaded, it may be zoomed in or out using the mouse wheel. You may also move the map around by moving the mouse with the left mouse key pressed. Moving the mouse with the left mouse key pressed, and additionally the SHIFT key pressed, will rotate the map. Map navigation may be also done using the the appropriate icons from the icon bar.



Loading a flight plan

A flight plan may be loaded and displayed on the map. Supported flight plan formats include Microsoft's own flight planner format (FS2002/FS2004/FSX) using files with the extension .PLN, flight plans created by PMDG addons (PMDG B737NG and B747) using the extension .RTE, and flight plans using the "PIC 767" format (compatible products are B767 PIC and Level-D Sim B767), also using the .RTE extension. To load a flight plan, click on the appropriate icon in the icon bar, or press the CTRL-O key combination. After loading the flight plan, it will be drawn on the map with a blue line. In case you're not connected to Flight Simulator, the most appropriate VFR chart is also loaded. Waypoints along the route are displayed with an asterisk, and labeled with their waypoint name.

Loading a flight plan in addition triggers the map usage filter. With PMDG or PIC flight plans, the map filter will be set to "IFR", causing only maps marked as IFR maps to be used. When using an FS2002/FS2004/FSX flight plan, the flight mode selected when creating the flight plan determines the map filter. Maps marked as "All" or airport maps are always used. When no flight plan is used, the map filter will work according to the selection in the map filter option in the icon bar.

Create a flight plan

To create a flight plan simply add waypoints by right clicking with your mouse (or use CTRL-SHIFT + left mouse button) on the map. Waypoints can be renamed, moved via drag and drop or by placing it before or after a waypoint via the context menu and of course removed from the plan. When adding a waypoint, one or more of the overlays (airports, nav aids or cities) are activated and the mouse cursor is in the near of an overlay item, FSMap will automatically align the new waypoint with the item. To save a flight plan simply click on the corresponding context menu item and FSMap will save the plan to the default FS flight folder location using the standard FS flight plan format.

FSMap

Measuring tool

To activate the distance, bearing and required aircraft heading (taking wind conditions into account) measuring tool click your middle or CTRL + left mouse button. Drag your mouse to the destination and FSMap will display the distance and bearing between the two points in the status bar. Additionally the required heading will be shown, if FSMap is connected with FS and valid wind data is available.

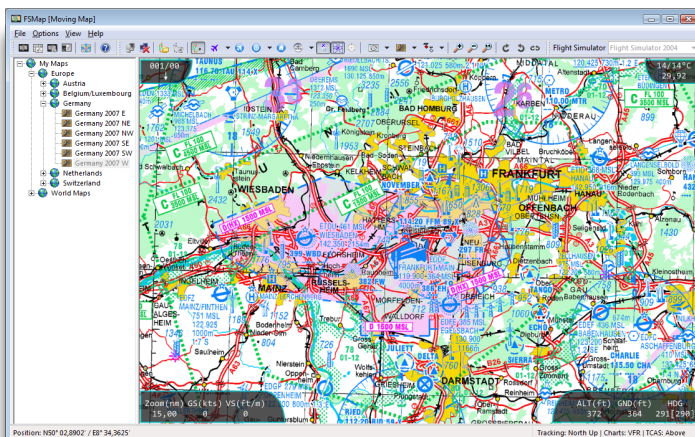
Map display configuration

The map display may be adjusted to the users' needs:

Full screen mode: You may toggle between the normal windows map view, and a full-screen map view.

Compass rose: A 360° compass rose may be displayed, which is originally centered in the middle of the map. To display the compass rose, click on the appropriate icon in the icon bar, or press CTRL-M. The same action will hide the compass rose.

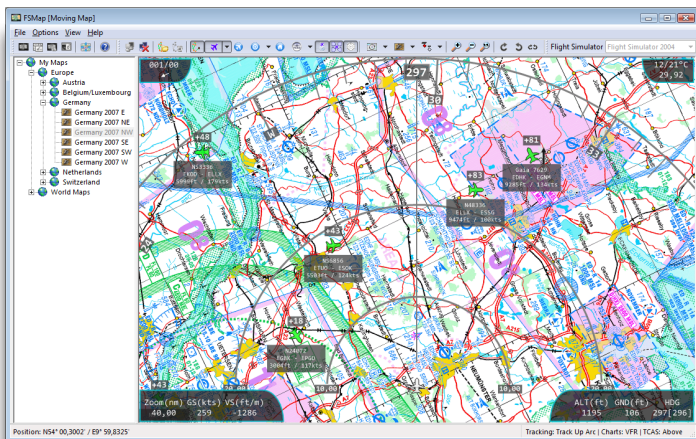
Aircraft Status: Aircraft status data may be displayed in all four map corners in semi-transparent overlay boxes. The upper left box will show current wind speed and direction, the upper right box will display temperature and dew point at the present location. The lower right corner has info about the current elevation, the elevation above sea level, and the current course (true and magnetic). Finally, the lower left box shows the map zoom factor, your ground speed and the climb- or sink rate (vertical speed in feet per minute).



The aircraft status display may be selected via the appropriate symbol from the icon bar, or via the CTRL-S key combination. The symbol has a drop-down menu with the following options in it:

Tracking Mode: This option determines how the map should act when tracking the aircraft's flight path. "Manual" means that the map may be freely moved, resized and rotated.

In "Track Up 360" tracking mode, the map will always rotate to follow the aircraft's current track, i.e. the current track will always point upwards. In "Track Up Arc" mode the map behaves in the same way, however, the aircraft position will move from the map center to the lower middle. When the compass rose is displayed in "Track Up Arc" mode, it will be drawn as a 120° arc only. The display mode resembles the ARC mode which is popular with many EHSI displays (see screen below).



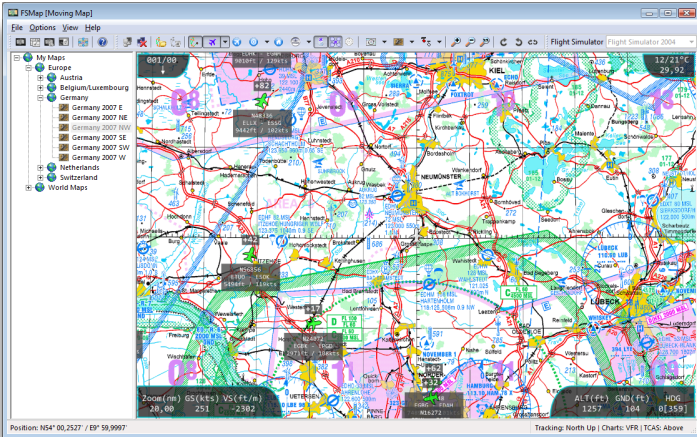
Finally, tracking mode “North Up” means that the map is fixed in a north-up display position. The aircraft’s position displayed in the map center, and the aircraft symbol does change its orientation according to the current aircraft’s track.

By clicking just on the “Tracking Mode” icon in the icon bar, you will be cycling through the different tracking modes. A message reporting the current mode will appear in the middle of the map display.

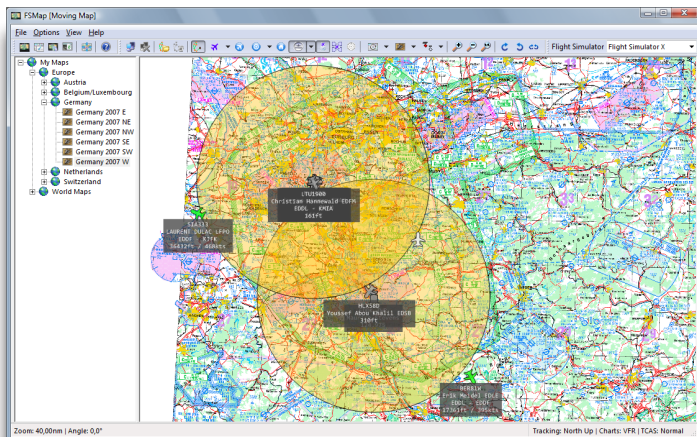
AI-Traffic: Your map display can be configured to show the AI traffic which is currently active. To activate AI-Traffic display, click on the appropriate icon in the icon bar, or press CTRL-T. A drop-down menu integrated into the icon will allow you to choose, which traffic will be displayed exactly. You may separately toggle traffic on the ground or in the air, and cycling through the options by clicking on the icon. Aircraft on the ground will be displayed using a gray symbol, traffic in the air is depicted with a green symbol. Above the symbol you will see the aircraft’s current altitude in reference to your own altitude. The aircraft label displayed below the symbol contains the radio call sign, departure- and destination airport, altitude and airspeed. The label may be toggled separately using the appropriate icon from



the icon bar, or by pressing CTRL-L. The following screenshot shows FSMap with AI traffic enabled. Additionally, the compass rose and the aircraft status displays were enabled. Also, a flight plan from Frankfurt to Brussels was loaded and shown.



Online-Traffic: By clicking on the appropriate icon in the icon bar, you may activate the display of traffic from the online networks VATSIM or IVAO. The network used depends on your selection made via the "options" pull down menu. Alternatively, the key combination CTRL-SHIFT-V may be used to display online traffic. Online traffic will be displayed in the same way like AI-Traffic. In addition, the drop-down menu from the icon bar contains options to display online ATC presence, active control zones, and FIR borders. All active ATC positions will be depicted with a gray tower symbol. To better represent ATC staffing, active center controllers will have their FIR area or control sector shaded gray. Approach and tower controllers are represented with colored circles around their position. Tower controllers are identifiable by yellow ones, approach controllers by green circles. The following sample screenshot shows traffic from the IVAO network:



When online traffic is displayed, the aircraft label looks slightly different. It will now show the call sign, the name of the participant and his home airport, instead of the radio call sign seen with AI-Traffic.



TCAS-System: FSMap comes with a completely integrated TCAS (Traffic Collision and Avoidance System), which will warn the user of close encounters in the air (AI-Traffic only). The TCAS system can be configured by using the icon and the integrated drop-down menu in the icon bar, or by using the F10/SHIFT-F10 key combinations. By toggling the options the systems cycled through modes "Above", "Normal", "Below", "Unrestricted" or "Off". With these modes activated, traffic display will be restricted as followed:

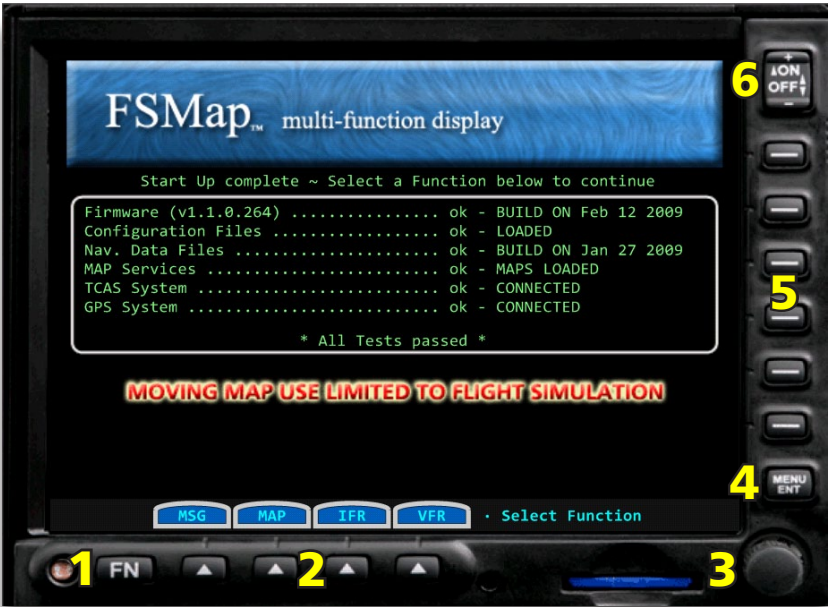
- Above: 9000ft above / 2700ft below
- Normal: 2700ft above / 2700ft below
- Below: 2700ft above / 9000ft below
- Unrestricted: No altitude restrictions apply
- Off: No TCAS warnings are generated, all traffic is displayed

When other traffic closes in below 6nm horizontally and +/- 1200ft, the aircraft symbol starts flashing. This is called a TCAS warning. Should other traffic come close below 25 seconds to a potential collision, and below +/- 700ft in altitude, an audible alert will also be played (TCAS alert). The warnings will end when the other traffic gets out of the respective ranges.

FSMap

The FSMap Instrument / Gauge

This chapter describes the functionality of the FSMap instrument. The FSMap instrument is working in English language only. The following screen shot illustrates its main controls:



1. **FN key:** Toggles the main menu levels, or returns to it from a sub-menu
2. **Smart (Function) Keys (SFK):** Will access the blue menu selections, or the green menu options.
3. **Rotary knob and push button:** The rotary knob complements the action of the SFKs in some menus where arrows will appear indicating the direction to turn the knob. A round push button symbol "o" in a menu option indicates that pressing



the knob will have the same effect. Pressing the knob is achieved by right-click with the mouse on it.

4. Menu/ENT Key: Pressing the Menu/ENT key will show a menu of options to modify the display of the current function. Pressing the Menu/ENT key again will hide the menu. If no action is taken, the menu will automatically extinguish in 20 seconds.

5. Menu Item Keys (MIKs): When a menu is activated by the Menu/ENT key, the MIKs will scroll through all choices when pressed. Some options support multiple choices, such as in Map mode.

6. Power Rocker Switch: The power rocker switch turns the instrument on or off, and controls the display brightness. Pressing the "+" switch with a left click turns it on, further presses on "+" or "-" will control the brightness. Right-clicking on either "+" or "-" will switch the instrument off. Please note that the gauge may not be switched off from the startup screen. Select any other screen first before turning off the instrument.

When installed in a separate panel window, the instrument can be displayed by either clicking on any installed hotspot, by pressing a defined hotkey, or by selecting the instrument from the "Views" menu in Flight Simulator. In case you've integrated the instrument into an existing panel view, you may operate it directly there. In this case the instrument may be zoomed by clicking into its display area. Clicking into the upper right corner of the zoomed FSMap window will always close the FSMap panel window.

The FSMap instrument menu system

When pressing the FN function key, a list of main functions, such as "MAP", "TRAF", "MSG" etc. is displayed. Each time you press the FN key you will step through the list of menu items. After you press one of the function "smart" keys (SFKs) at the bottom of the display, the function keys change to provide options to control the display related to the current menu option, now in green. Change the function keys back to the menu list by pressing the FN key.

FSMap

Menu list 1:

MSG: Displays the message log. An amber MSG flag will flash until the message is reviewed. The MSG flag will remain in view as long as the message log contains messages. New messages will be highlighted in boldface. Use the "UP/DOWN" SFKs to move to additional messages, if more than one page of messages exist. Press "Clear" to remove the stored messages.

MAP: Displays the moving map. The SFK keys will present the functions "In" and "Out" to zoom the map display, "Pan" to pan around the map, and "Info" to display information about nearby airports and nav aids. The pan mode will be covered later in the chapter in greater detail.

IFR: Will load the IFR map with the highest priority related to the current aircraft position.

VFR: Will load the VFR map with the highest priority related to the current aircraft position.

Menu list 2:

TRAF: Activates the traffic display mode. Your own aircraft position will appear in the middle of the screen, represented by a small triangle. Two range rings will represent the current display range, and the halfway distance. The display range may be adjusted using the "In" and "Out" SFKs, or by turning the rotary knob. You may also adjust the range by using the mouse wheel when the mouse cursor is overhead the rotary knob or the appropriate SFKs. The SFK "Vert" will cycle through the different vertical TCAS display modes:

- Above: 9000ft above / 2700ft below
- Normal: 2700ft above / 2700ft below
- Below: 2700ft above / 9000ft below
- Unrestricted: No altitude restrictions apply

The selected vertical mode is indicated in the lower right corner of the display.



PLN: Displays the flight plan information page. The middle upper area will display the next active waypoint. The main area is divided into a left and right area. On the left side, all waypoints in your current flight plan are listed. On the right side, details about the currently active waypoint are shown. The SFKs 1 and 2 will step through the individual waypoints. When the selected waypoint is a navaid, further information about it is displayed on the right half of the screen. When selecting an airport, several pages of information are available, including frequency, runway information, and a graphic showing the airport layout.

Flight plans need to be loaded via the Flight Simulator's Flight Planner feature.

SYS: Displays the FSMap system configuration menu.

The system configuration menu contains core settings for the FSMap instrument. All settings are saved to a single configuration file. In case you assigned a configuration name to the FSMap instrument (check page 37 for details), your settings apply to this specific instrument only.

The system configuration menu offers the following options:

Menu level „Nav“:

Distance Units: Nautical miles (nm) or kilometer (km)

Altitude Units: Feet (ft) or meter (m)

Speed Units: Knots (kt), kilometers per hour (km/h) or miles per hour (mph)

Baro Units: Millibars (European) or In.Hg. (American)

Temperature Units: Celsius or Fahrenheit

TCAS Altitude (ft): The trigger altitude for TCAS warnings. Choose from 500ft to 2500ft. Default value is 1200ft.

TCAS Range (nm): The trigger range for TCAS warnings. Choose from 5.0nm to 12nm. Default value is 6.0nm.

FSMap

Ground Traffic Altitude (ft): The trigger altitude to display ground traffic. Choose from 0ft - 5000ft. Default value is 1000ft.

Ground Traffic Range (nm): The trigger range to display ground traffic. Choose from 0nm - 14nm. Default value is 10nm.

Navaid Range (nm): The trigger range to display navaids. Default value is 200nm.

Initial Enroute Zoom (nm): The initial map zoom when the map display changes from ground to enroute charts.

Initial Ground Zoom (nm): The initial map zoom factor after gauge startup, when the aircraft is on the ground.

Transition Speed (kts): The speed where the FSMap instrument switches from ground charts to enroute charts. The value should ideally match your takeoff speed.

SmartZoom Minimum Scale (nm): Smallest zoom factor for which the SmartZoom function is working. Choose from 0.2nm to 1500nm, with the maximum being the value for „SmartZoom Maximum Scale“ (see below)

SmartZoom Maximum Scale (nm): Largest zoom factor for which the SmartZoom function is working. Choose from 0.1nm to 500nm, with the minimum being the value for „SmartZoom Minimum Scale“ (see above)

Aircraft Symbol: Defines the symbol for your own aircraft in map mode. You may choose between „Jet“, „Prop“ aircraft with one or two engines and „Helicopter“.

Color Scheme: Select the color scheme to use. These can be edited in the FSMap main program.

Menu level „Perf“:

Quality Mode: Defines the display quality for the digitized charts. Valid options are „Performance“, „Quality“ and „High Quality“. Transparent information boxes are available in „High Quality“ mode only. Please note that high quality levels may degenerate system performance.

Assigned CPU/Core: Allows you to assign the operation of the FSMap instrument specifically to a certain core in a multi-core system. We recommend you to assign core 2 in a dual-core system to FSMap. In a quad-core system, choose core 3 or 4. You should try this option even if your PC has a hyper-threading CPU (Pentium 4)



only.

Refresh Rate: Defines the screen refresh rate in steps of 56ms each.

Traffic Refresh Rate: Defines the refresh rate for traffic data in steps of 56ms each.

Menu level „Test“:

Allows you to choose from a set of colored test screens to test the quality of the FSMap display.

The FSMap instrument as a moving map

The moving map mode is activated by pressing the SFK assigned to the “Map” function. To specifically load the most appropriate IFR or VFR map, press the accompanying SFKs from the menu level.



The screenshot above shows the FSMap instrument in Map Mode. A flight plan from Frankfurt (EDDF) to Brussels (EBBR) is loaded and displayed. In addition, traffic is displayed, and the map options menu is opened.

FSMap

After the map is loaded, you may zoom in and out using the SFKs labeled “In” and “Out”. Note that these options feature an arrow sign, indicating that this option may be also invoked with the rotary knob. SFKs features the pan option (also available by pushing the rotary knob), which will cause 4 arrows to appear on the right hand side of the displays. In pan mode, the map may be moved below your aircraft symbol in 4 directions, indicated by the arrows. A green line will be drawn from the current map center back to the own aircraft’s position. Zooming is also available while in pan mode. Pan mode is cancelled by pressing the FN key once.

Options Menu page 1:

Flight Plan: The currently loaded flight plan will be drawn on the map.

Tracking Mode: In “Track Up 360” tracking mode, the map will always rotate to follow the aircraft’s current track, i.e. the current track will always point upwards. In “Track Up Arc” mode the map behaves in the same way, however, the aircraft position will move from the map centre to the lower middle. When the compass rose is displayed in “Track Up Arc” mode, it will be drawn as a 120° arc only. The display mode resembles the ARC mode which is popular with many EHSI displays. Finally, tracking mode “North Up” means that the map is fixed in a north-up display position. The aircraft’s position displayed in the map centre, and the aircraft symbol does change its orientation according to the current aircraft’s track.

Nav Data: This option corresponds with the setting “Aircraft Status” in the external FSMap application. You may cycle through “No Data”, “Nav Data”, “Full Nav Data” and “Weather Data”. When “No Data” is selected, the screen is clear of any information. “Nav Data” shows the next waypoint in the upper left, the course to that waypoint in the upper right, the distance in the lower right, and the map zoom factor in the lower left corner. In “Full Nav Data” mode, the displays are amended to read out the current ground speed (lower right), and altitude and barometric pressure (lower left). When working with the “Weather data” mode, the upper left display box has the wind speed and -direction instead of the next waypoint. The upper left



info box displays the current temperature as TAT and OAT.

Traffic: Activates or deactivates AT-Traffic overlay display. The amount of AI traffic being displayed depends on the chosen TCAS mode (see TCAS configuration earlier in this chapter). Please keep in mind that displaying AI traffic may significantly slow down the performance of the FSMap instrument in Flight Simulator.

Compass Rose: Activates or deactivates the display of the compass rose in either full (360°) or Arc (120°) mode.

Airports: Activates or deactivates **the display of the airport overlay**. Airports are decluttered by the current zoom level and the amount of gates available.

Airport Details: When zooming into a high zoom level, the map reverts to display a detailed airport map with runways, taxiways and parking positions. Taxiways are labeled with their correct identifiers.

Nav aids: Activates or deactivates the display of the navaid (VOR and NDB) overlay.

Cities: Activates or deactivates the display of the city overlay. Cities are decluttered by the current zoom level and the population.

Labels: Toggles the display of waypoint names in map mode, when a flight plan is loaded and displayed.

TCAS: Configures the vertical TCAS mode. The modes are defined as followed:

- Above: 9000ft above / 2700ft below
- Normal: 2700ft above / 2700ft below
- Below: 2700ft above / 9000ft below
- Unrestricted: No altitude restrictions apply

FSMap

TCAS Audio: Toggles audible TCAS alerts

Smart Zoom: When “Smart Zoom” is activated, the FSMap instrument will automatically adjust the maps zoom factor to keep the next waypoint in the flight plan in view. The minimum zoom factor is 2nm. “Smart Zoom” is indicated by an “A” letter to the left of the zoom factor display in map mode.



The FSMap instrument as a TCAS display

Your own aircraft position will appear in the middle of the screen, represented by a small triangle. Two range rings will represent the current display range, and the halfway distance. The display range may be adjusted using the "In" and "Out" SFKs, or by turning the rotary knob. You may also adjust the range by using the mouse wheel when the mouse cursor is overhead the rotary knob or the appropriate SFKs. The SFK "Vert" will cycle through the different vertical TCAS display modes:

- Above: 9000ft above / 2700ft below
- Normal: 2700ft above / 2700ft below
- Below: 2700ft above / 9000ft below
- Unrestricted: No altitude restrictions apply

The selected vertical mode is indicated in the lower right corner of the display. Please note that the vertical mode may also be defined via the TCAS display option menu (see below).



FSMap

For the TCAS display, the Menu/ENT opens an own configuration menu with the following options:

Alert: Allows you to choose how the system should inform about traffic warning and alerts. When "None" is selected, traffic warnings are listed in the message window only. In "Prompt" mode the system will re-configure the system menu bar at the bottom of the screen, allowing you to access the traffic mode with one button/click only. In "Pop-Up" mode a small TCAS display will appear as an overlay in the upper left corner of the screen. "Pop-Up" or "Prompt" will not work in Map Mode when traffic display is activated.

Alt: Switches between altitude readouts relative to own altitude, or absolute data.

TCAS: Configures the vertical TCAS mode. The modes are defined as follows:

- Above: 9000ft above / 2700ft below
- Normal: 2700ft above / 2700ft below
- Below: 2700ft above / 9000ft below
- Unrestricted: No altitude restrictions apply

This function is identical with the "VERT" option available on the traffic display via a smart function key (SFK).

Standby Mode: Toggles the TCAS standby mode. In this mode no warnings or alerts are issued. The display works as a traffic radar only.

Audio: Activates or deactivated audible traffic warnings and alerts.

When other traffic closes in below 6nm horizontally and +/- 1200ft, a warning is issued, and the aircraft symbol changes to a turquoise-filled rhombus. This is called a TCAS warning. Should other traffic come close below 25 seconds to a potential collision, and below +/- 700ft in altitude, an audible alert will also be played (TCAS alert). The warnings will end when the other traffic gets out of the respective rang-



es. Please note that the trigger values for the TCAS warning may be adjusted via the system configuration menu.

The screenshot on the next page shows the instrument in TCAS mode, with the options menu activated. Please note the TCAS warning generated by the aircraft 1800ft above and 100ft below the own position in the middle of the screen. The aircraft's rhombus is filled, and a white box in the upper left corner displays "Traffic alert", indicating that this is a traffic warning:



The next screen shows the TCAS system in TCAS Alert state: The intruder aircraft symbol has changed into an amber point, and the "Traffic Alert" (now colored yellow) flag will flash for 10 seconds.

FSMap



The picture below displays the FSMap instrument in Map Mode, with a traffic alert displayed in Pop-Up mode. Note the overlaid TCAS display in the upper left corner, with the yellow flashing “Traffic Alert” flag just below:



Please note that the “Pop-Up” and “Prompt” alert modes will be active only when the traffic display in the map options menu is turned off.



Credits

Concept, Development and Programming

Thomas Molitor

Documentation

Martin Georg and Thomas Molitor

Additional Control Programming

Dirk Bunar (Tribe Technology)

ICAO VFR Maps

Deutsche Flugsicherung GmbH (DFS)

Skyguide und swisstopo

Global Maps

NASA's Earth Observatory

Special Thanks to

- My wife Katja, my daughters Aurelia and Emily, and my cats Noel and Sylvester for their endless patience during the development time. **MANY THANKS !!!**
- Dirk Bunar and Axel Reddehase (Tribe Technologies)
- Mathijs Kok and Winfried Diekmann for their business support
- The whole Beta Test Team !!!
- Aerosoft for their interest in this product

and the Flight Simulator community for many creative ideas, and their marvellous support.

Chart resources

VFR charts for USA (pre-calibrated):

<http://www.avsim.com>

A free-of-charge registration for the "File Library" is necessary. When searching for files, use the "extended search" option and enter "Matt Fox" for the author, and "Sectional Pack" for the description.

Terminal- and Enroute-Chart for Europe (IFR):

<http://ead.eurocontrol.int>

Free-of-charge registration is required. We recommend to choose the simple HTML menu option. Charts are available from the "PAMS light (AIP) submenu.

Many countries in Europe do charge users for accessing aeronautical charts. Please visit the respective web site of the national authorities for details. In some cases listed below, you may get charts from these pages for free. Please consult the individual web site documentation about how to access charts.

Charts for Bosnia-Herzegovina:

<http://www.bhdca.gov.ba/ais.htm>

Charts are accessible via 4 grey-marked web links in the upper area of the page.

VFR-Charts for Denmark:

<http://www.slv.dk/Dokumenter/dscgi/ds.py/View/Collection-29>

Charts for Norway:

http://www.ippc.no/norway_aip/current/main.html

Charts for Finland:

<https://ais.fi/ais/eaip/en/index.htm>



Charts for France:

http://www.sia.aviation-civile.gouv.fr/html/frameset_aip_uk.htm

Charts for the Czech Republic:

http://lis.rlp.cz/ais_data/www_main_control/frm_en_aip.htm

Charts for Slovenia:

<http://www.sloveniacontrol.si/acrobat/aip/eaip/Operations/history-en-GB.html>

Charts for the United Kingdom:

<http://www.nats-uk.ead-it.com>

Charts for Australia:

<http://www.airservicesaustralia.com/publications/aip.asp>

Charts for New Zealand:

<http://aip.net.nz/>

Charts for North-West Africa:

<http://www.ais-asecna.org/en/index.htm>


Charts for Canada:


<http://atlas.nrcan.gc.ca/site/english/maps/topo/map>


These charts need to be first created with the web tool. Depending on the configured overlay and map options they offer great details for VFR pilots.


Map legend ICAO-Charts


FLUGPLÄTZE/AERODROMES


**HAMBURG**


**LEMWERDER**


**BÜCHEL**


**HOHENFELS**


**BREITSCHIED**


**HETTSTADT**


**SAFFIG**


**BALDENAU**


**BERG**

**CALW**

**AITRACH**

**123.000 650m**

**2.2 E**

**118.450 A/A**

Internationaler Flughafen
International Airport

Flughafen bzw. Landeplatz IFR
Airport resp. Airfield IFR

Militärflugplatz
Military aerodrome

Landeplatz (Zivil/Militär)
Airfield (civil/military)

Landeplatz, Ausrichtung der längsten
befestigten Start- und Landebahn
Airfield, alignment on the longest
hardened runway

Landeplatz, Ausrichtung der längsten
Gras-Start- und Landebahn
Airfield, alignment on the longest
grass runway

Flugplatz, geschlossen
Airfield, closed

Wasserlandeplatz
Water airfield

Hubschrauberlandeplatz Zivil bzw. Militär
Helipoint Civil resp. Military

Hubschrauberlandeplatz für Krankentransporte
Helipoint for ambulances

Segelfluggelände Flugzeugschlepp
bzw. Windschlepp
Glider site aero tow resp. winch launching

Ultraleichtflug- bzw. Hängegleiterlandeplatz
Ultra light flying site resp. Hang glider site

Fallschirmsabprunngelände,
geringe bzw. intensive Aktivitäten
(Betrieb über FIS oder INFO einholen)
Parachute jumping site, low resp. high activities
(Contact FIS or INFO for activity)

Freiballonstartplatz
Free balloon site

Flugplatzleuchtturm
Aerodrome beacon light


Kürzere der verfügbaren Landestrecken der
längsten RWY
The shorter of the available landing dist of the
longest RWY


Verfügbare TWR/INFO Frequenz
(unterstrichen: VDF verfügbar)
Available TWR/INFO frequency
(underlined: VDF available)


Höhe und Lage der Platzrunde
Altitude and position of traffic pattern
(2.2=2200 ft MSL / E=Ost/East)


Bord/Bord Kommunikation (Frankreich)
Air/Air Communications (France)

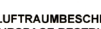
LUFTRAUMSTRUKTUR/AIRSPACE STRUCTURE

**Luftraum C, D**
Airspace C, D

**Kontrollzone**
Control zone

**1000 ft GND**
1000 ft GND

**1700 ft GND**
1700 ft GND

**Luftraum F (HX)**
Airspace F (HX)

Luftraum
Airspace

Luftraum
Airspace

Luftraum
Airspace


Luftraum
Airspace


LUFTRAUMBESCHRÄNKUNGEN/
AIRSPACE RESTRICTIONS

**ED - R 44**
Gebiet mit Flugbeschränkung
Restricted area


**ED - D 44**
Gefahrengebiet
Danger area


WEITERE LUFTRÄUME/OTHER AIRSPACE

**Fluginformationsdienst (FIS)**
Flight information service (FIS)


**250 Fuß-Tieffluggelände**
250 feet low flying area


TRANSPONDERSCHALTUNG/-SETTING


**Dringende Empfehlung**
Strong recommendation
(Erklärung siehe Rückseite/Explanation see reverse)


**TMZ Transponder Mandatory Zone**
Pflicht zur Transponderschaltung
Transponder setting obligatory


VERSCHIEDENES/MISCELLANEOUS


**1° W**
Linien gleicher Missweisung (2002)
Isogonic lines (2002)

**Gebiet hoher elektromagn. Feldstärke mit einem Radius von 600 m und einer Höhe von 2000 ft über dem Hindernis**
High intensity radio transmission area (HIRTA) with a radius of 600 m and a height of 2000 ft above the obstacle


**Pflichtmeldepunkt für VFR-Flüge**
Compulsory reporting point for VFR flights (Ausland)


**Pflichtmeldepunkt für VFR-Strecken (Ausland)**
Comp. rep. point for VFR-Routes (foreign countries)


**VK1**
VFR-Strecken (Ausland)
VFR-Routes (foreign countries)


**Vogelschutzgebiet/Naturschutzgebiet**
Bird reserve/Nature reserve

FUNKNAVIGATIONSANLAGEN/
RADIO NAVIGATION FACILITIES

**VOR**
UKW-Drehfunkfeuer
VHF omnidirectional radio range

**VORTAC**
Örtlich vereint aufgestellte
VOR- und TACAN-Anlagen
Co-located VOR and TACAN facilities

**VOR/DME**
UKW-Drehfunkfeuer mit
Entfernungsmessgerät
VHF omnidirectional radio
range with distance-measuring equipment

**NDB**
Ungeichtetes Funkfeuer
Non-directional radio beacon

BEBAUTE GEBIETE/BUILT-UP AREAS

**BONN**
KIEL
ULM
LAHR
O Neuhaus

Großstadt/City
> 500 000 Einwohner/inhabitants

Großstadt/City 100 000 - 500 000

Stadt/City 50 000 - 100 000

Stadt/City 20 000 - 50 000

Ortschaft/Village 5 000 - 20 000

GRENZEN/BOUNDARIES

**Staatsgrenzen**
Boundaries (International)



GELÄNDEHÖHEN, HINDERNISSE (HÖHEN IN FUSS)/ GROUND HEIGHTS, OBSTACLES (ELEV IN FEET)

• 440

Höhenpunkt über MSL in Fuß
Spot elevation above MSL in feet

• 4777

Höchster Punkt im Kartenblatt N 49°06'49"
Highest elevation on chart E 013°08'15"



Hindernis und Hindernisgruppe (unbefeuert)
Obstacle and group of obstacles (unlighted)



Hindernis und Hindernisgruppe (befeuert)
Obstacle and group of obstacles (lighted)



Hindernis 1000 ft/305 m GND und höher (unbefeuert)
Obstacle 1000 ft/305 m GND and higher (unlighted)



Hindernis 1000 ft/305 m GND und höher (befeuert)
Obstacle 1000 ft/305 m GND and higher (lighted)

MAXIMUM ELEVATION FIGURE

27

= 2700 ft MSL

(Erklärung siehe Rückseite/Explanation see reverse)

EISENBAHNEN/RAILWAYS



Eisenbahn (eingleisig/mehrgleisig) mit Bahnhof
Railway (single/multiple track) with station



Eisenbahn (stillgelegt oder in Bau befindlich)
Railway (abandoned or under construction)



Eisenbahntunnel/-brücke
Railway tunnel/bridge



Seil- oder Schwebebahn
Aerial railway

STRASSEN/ROADS



Autobahn mit Auffahrt, Schnellstraße/in Bau
Dual highway with entry/under construction



Fernverkehrsstraße, wichtige Verbindungsstraße
Primary road, secondary road



Straßenbrücke/-tunnel
Road bridge/tunnel

LANDSCHAFTSMERKMALE/LANDMARKS



Aussichts-/Fernsehturm, Leuchtturm
Lookout-/Television tower, Lighthouse



Schloss, Denkmal
Castle, Monument



Kirche, Kloster
Church, Monastery



Ruine, Festung
Ruin, Fort



Bergwerk, Steinbruch, Fabrik
Mine, Quarry, Factory



Ölfield/Oiltank
Oilfield/Oiltank

GEWÄSSER/HYDROGRAPHY



Küstenlinie
Shore line



Watten
Tidal flats



Buhne, Mole, überspülter Felsen
Groyne, mole, submerged rock



Landungsbrücke, Fähre
Pier, ferry



Sumpf
Swamp



See, Talsperre
Lake, Dam



Fluss, Staudamm
River, Barrage



Schleuse, Schiffshebewerk
Lock, ship hoist



Kanal/stillgelegter Kanal oder in Bau
Canal/abandoned canal or under construction

GELÄNDEARSTELLUNG/TOPOGRAPHY



Wald
Wood



Sanddünen
Sand dunes



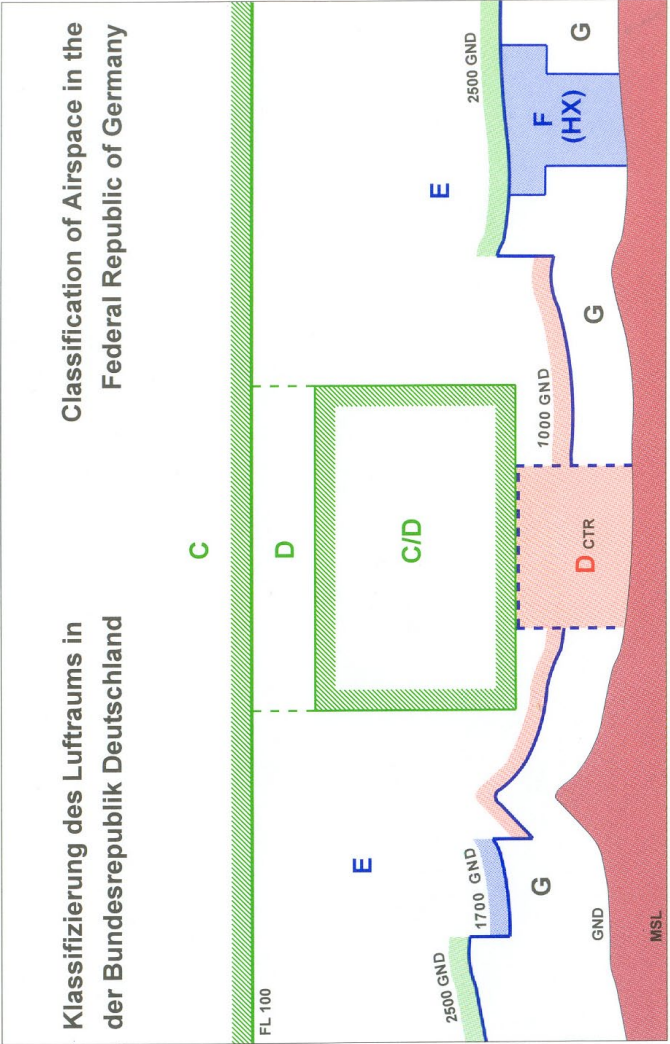
Gletscher
Glaciers



Depressionsgebiet
Depression area



Deich
Dike



Kontrollierter Luftraum Controlled Airspace

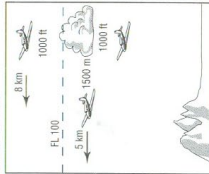
C

Staffelung / Separation:
VFR von IFR / VFR from IFR

Dienst:
Flugverkehrskontrolle,
Verkehrsinformation VFR-Flüge /
VFR-Flüge
(Ausweichempfehlung auf Anfrage)

Service:
Air traffic control,
traffic information VFR flights / VFR
flights (Avoidance advice on request)

VMC Minima



**Geschwindigkeitsbeschränkung /
Speed Limitation:**
250 kt IAS unter / below FL 100

Sprechfunkverkehr:
Dauernde Hörbereitschaft

Radio Communication:
Constant listening watch

Flugverkehrskontrollfreigabe:
Erforderlich

Air Traffic Control Clearance:
Required

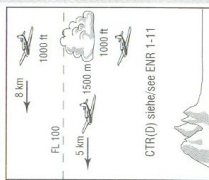
D

Staffelung / Separation:
Entfällt / Not provided

Dienst:
Verkehrsinformation über IFR-Flüge
(Ausweichempfehlung auf Anfrage),
Verkehrsinformation VFR-Flüge / VFR-
Flüge

Service:
Traffic information about IFR flights
(Avoidance advice on request), traffic
information VFR flights / VFR flights

VMC Minima



CTR(D) siehe/see ENR 1-11

**Geschwindigkeitsbeschränkung /
Speed Limitation:**
250 kt IAS unter / below FL 100

Sprechfunkverkehr:
Dauernde Hörbereitschaft

Radio Communication:
Constant listening watch

Flugverkehrskontrollfreigabe:
Erforderlich

Air Traffic Control Clearance:
Required

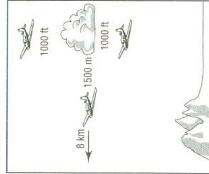
E

Staffelung / Separation:
Entfällt / Not provided

Dienst:
Verkehrsinformation soweit möglich

Service:
Traffic information as far as practi-
cable

VMC Minima



**Geschwindigkeitsbeschränkung /
Speed Limitation:**
250 kt IAS unter / below FL 100

Sprechfunkverkehr:
Nicht erforderlich

Radio Communication:
Not required

Flugverkehrskontrollfreigabe:
Nur für NVFR ausserhalb Flugplatz

Air Traffic Control Clearance:
Only for NVFR outside aerodrome

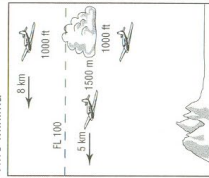
F

Staffelung / Separation:
Entfällt / Not provided

Dienst:
Fluginformationsdienst

Service:
Flight Information Service

VMC Minima



**Geschwindigkeitsbeschränkung /
Speed Limitation:**
250 kt IAS unter / below FL 100

Sprechfunkverkehr:
Nicht erforderlich

Radio Communication:
Not required

Flugverkehrskontrollfreigabe:
Nur für NVFR ausserhalb Flugplatz

Air Traffic Control Clearance:
Only for NVFR outside aerodrome

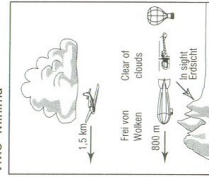
G

Staffelung / Separation:
Entfällt / Not provided

Dienst:
Fluginformationsdienst

Service:
Flight Information Service

VMC Minima



**Geschwindigkeitsbeschränkung /
Speed Limitation:**
250 kt IAS unter / below FL 100

Sprechfunkverkehr:
Nicht erforderlich

Radio Communication:
Not required

Flugverkehrskontrollfreigabe:
Nur für NVFR ausserhalb Flugplatz

Air Traffic Control Clearance:
Only for NVFR outside aerodrome

Luftraumklassifizierung, Flugverkehrsdienste, Flugbedingungen Airspace Classification, Air Traffic Services, Flight Conditions

Unkontrollierter Luftraum Uncontrolled Airspace