FSNavigator 4.7

General

- FSNavigator has been developed for FS98/FS2000/FS2002/FS2004 (hereafter indicated as Flt.Sim) to find the way from one airport to another.
- FSNavigator is a navigational chart, Flight planner and Flight Management System.
- All important navigation objects are taken from Flt.Sim scenery files and shown on a map of the world. Airway- and intersection data are a part of FSNavigator.
- FSNavigator is made as a module of Flt.Sim, so it is not an independent program.
- Within Flt.Sim you can toggle between the windows of Flt.Sim and those of the FSNavigator with the <F9> key. This key is configurable.
- FSNavigator can be used full screen covering Flt.Sim, or it can be integrated with the aircraft cockpit as a freely movable window. The switch key <CTRL+F9> is configurable.

System requirements:
- Flight Simulator 98, 2000, 2002 or 2004.

For FS98 you must have Microsoft(r) **Patch Set 1** for Microsoft Flight Simulator 98(tm) installed.
This patch is available at: http://www.fsnavigator.com/.
If anything fails to work in FS98, re-install this patch again.

The FSNavigator
- can be uninstalled automatically.
- will not modify any Flt.Sim settings.
- adds the file FSNav.dll into the folder ...**\Flt.Sim\Modules** .
- adds the folder ...**\Flt.Sim\Modules\FSNavigator** .

Installation:
Extract all files contained in the zip file into a temporary directory. Start the setup program. The setup program's last dialog box contains further important notes.

The FSNavigator Team:
    Updates   : http://www.fsnavigator.com//
    Support   : support@fsnavigator.com

Quick start

The program is controlled mainly via Drag & Drop and with popup menus, made available by pressing the right mouse button.

Step 1: Create a scenery database
Start the FSNavDBC.exe program using Windows **Start** Menu – **FSNavigator for FSxx** in order to create a FSNavigator scenery database from Flt.Sim scenery data. Press the FSNavDBC's **Create database** button, confirm the following Dialog boxes and wait until the program has finished, which is shown by a separate Dialog box. Exit from FSNavDBC.exe.

Step 2: Start your Flight Simulator
With Flt.Sim running press the <F9> key to switch to FSNavigator. The FSNavigator has 4 main windows. The upper left one is the search window. The upper right window contains the Flight plan. In the bottom left window are the Avionics and Autopilot of the aircraft, and the bottom right area shows the map.

Step 3: Magnifying and shifting the map
To zoom in on a specific map area, move the mouse pointer to the upper left corner of the desired area, press the right mouse button and drag to the desired lower right corner. Hereby a rectangle is drawn. Release the mouse button.

To zoom out (reduce magnification) press the right mouse button and select in the popup menu the appropriate instruction.

To simply zoom out or zoom in on the map as it is, you can also use the + and - buttons in the bar on the right, or use the * (multiply) and / (divide) keys on the numeric keypad

In order to shift the map display to a different area, move the mouse pointer to a new central point and double-click the left mouse button. The selected point will now be the new centre of the displayed area. This facility of centring the map by double-clicking with the left mouse button will also work in the search window and in the Flight plan window.

Step 4: Create a Flight plan
Move the mouse pointer over a runway in the map (the runway you are departing from). As soon as a Popup window appears, press and hold the left mouse button. Now move the mouse pointer to the left-hand side of the Flight plan and release the mouse button. The Runway is now inserted into the Flight plan. Similarly add the flight destination to the Flight plan. Between start and destination further waypoints can be inserted if required, by dropping them between start and destination point or between any other two waypoints. The order of waypoints in the Flight plan can be changed by dragging them up or down with the mouse.

If at the beginning of a Drag & Drop operation the mouse pointer is not positioned over a scenery object in the map, then a Fix-Point will be inserted into the Flight plan. This is a user-defined waypoint.

Step 5: Find a scenery object
A click of the left mouse button on the bar marked **Inputline** (upper left corner) opens the input line. Now enter a name (Munich) and confirm with <Enter>. In the lower part of the search window all corresponding objects are now displayed. These objects can be inserted with Drag & Drop into the Flight plan.

Step 6: Avionics, Autopilot
Avionics and autopilot show the aircraft's current Avionics and AP settings. In this area these settings can be modified and the Flight plan can be set to be flown automatically. All 'depressed' indications can be opened for input with a single click of the left mouse button. All input must be confirmed with <Enter>.

The Scenery Database

FSNavigator uses all information about Runways, VOR's, NDB's, etc. available in the Flt.Sim scenery files. The external program FSNavDBC.exe reads these data from the Flt.Sim scenery files and copies it into a separate database.
After each addition to or modification of the Flt.Sim scenery files the FSNavDBC program must be re-run to add or modify data in the database.
With FSNavDBC.exe for FS2000/FS2002/FS2004 you can also bring new scenery into the Flight Simulator, or change parameters of scenery already present.
Creating the scenery database for the first time will take several minutes. When you install additional scenery or make changes in existing scenery, this will go much faster, as only the actual changes have to be made. Changes and additions are recognised by FSNavDBC by the names and paths of scenery (.BGL) files, the size of the scenery files and the date and time of their creation.
While FSNavDBC is running, Flt.Sim must not be active. This ensures that all scenery files can be read, and increases the speed of database creation.

FSNavDBC - Main window

Database (FS98)
> Normally only FS98 WORLD exists here.

Area list
> Shows all available scenery in order of their priority. The scenery on top has the highest priority, and covers the scenery below. A √ on the left side marks the scenery as active. Only active scenery is read by FSNavDBC. In order to make a partial database, simply deactivate the unwanted scenery with the mouse. This has no influence on the Flt.Sim scenery.

Create database
> This starts building of the database. The progress is shown overhead. On completion a Dialog box appears.

Move up (FS2000/FS2002/FS2004)
> Gives the scenery selected in the window on the left a higher priority.

Move down (FS2000/FS2002/FS2004)
> Gives the scenery selected in the window on the left a lower priority.

Edit area (FS2000/FS2002/FS2004)
> Here all relevant settings of scenery selected in the window on the left can be changed.

Add area (FS2000/FS2002/FS2004)
> Here new scenery can be entered into the database.

Delete area (FS2000/FS2002/FS2004)
> Deletes the scenery selected in the window on the left from the list. This scenery is not deleted from your disk.

Save to FS (FS2000/FS2002/FS2004)
> All changes made in the scenery list will normally only have effect on the FSNavigator scenery database. This means you can experiment all you want without influencing the Flt.Sim scenery. Only after **Save to FS** will these changes also be effected in your Flt.Sim scenery.

FSNavDBC - Edit / Add area (FS2000/FS2002/FS2004)

With this Dialog box you can enter new scenery or edit the properties of existing scenery.
In the upper part you have the directory tree of your computer, where you can select the folder in which the scenery is located. Scenery usually is in three folders, one main folder bearing the name of the scenery, and two subfolders named **Scenery** and **Texture**. Always select the main folder.
In the lower part of the Dialog box is an input line where you can enter the name of the scenery. Use a unique and understandable name.
For scenery located on CD, select the option **Cache this scenery**, and for scenery on HD select **Use this scenery directly**. Normally FSNavDBC will set these options automatically.
Some scenery that is not fully compatible with FS2000/FS2002/FS2004, may require additional switches with the names **Exclude** and **Flatten**. These switches can be entered into the Dialog box on the lower right hand side.

FSNavDBC - Exclude / Flatten (FS2000/FS2002/FS2004)

These parameters are seldom necessary, and they are always provided with the scenery software. FSNavigator will test all entries and mark any errors. Errors are generally clearly vvisibleand already present in the scenery description.

The World map

With the **Map** button depressed a map of the world is at FSNavigator's bottom right area. In this map all objects from Flt.Sim that are important for navigation, are shown. At the right edge of the window there is a bar with buttons for several quick operations. With the right mouse button a popup menu can be activated in the map.

If FSNavigator takes part in a multiplayer connection, the own aircraft and all other participating aircraft are shown as a green dot. The thin line preceding the point indicates the direction of flight, and the thicker tail shows the track. With it appear aircraft ID or registration, Altitude and Speed. The number at the left is Flight Level or Altitude in feet/100, at right is the Groundspeed or IAS/TAS in knots/10 (see **Settings dialog box**).
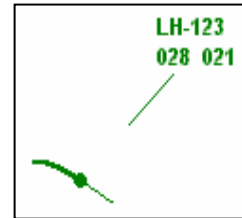
To zoom in on an area of the map, move the mouse pointer to the left upper corner of the desired area, press the right mouse button and drag to the desired right lower corner. This will draw a rectangle, while distance and direction from starting point to end point are shown. After releasing the mouse button the marked area is magnified to fill the map window. The zooming process can be aborted by pressing the left mouse button at the same time, or by using the <ESC> key. Another way to zoom in is to use the <+> button in the right sided bar or the multiplication key on the numeric keypad.

To enlarge the area being displayed on the map, you can zoom out by pressing the right mouse button and select the appropriate instruction in the popup menu. You can also use the <-> key in the right sided bar or the divide key on the numeric keypad.

To display a different area, move the mouse pointer over the desired new central point, and then double-click with the left mouse button.

With the mouse pointer over the centre of an object in the map, a Popup window opens. This Popup window contains the object data. The last line shows the distance and direction from the aircraft's present location towards the object. The correct mouse position for indicating runways or ILS is the end of the runways and over the narrow point of each ILS.

If you left-click near an object on the map that is also part of a Flight plan in the Flight plan window, this entry in the Flight plan will be selected. If necessary the Flight plan will be scrolled up or down to show this entry.

Any object in the map can moved via Drag & Drop to the left side of the Flight plan window using the left mouse button. Only if a popup window containing information on this object was visible, will the object be inserted into the Flight plan. If no popup window was visible, then a Fix-Point will be inserted into the Flight plan instead. This is a user defined waypoint. Once it is on the map, it can be moved around by dragging with the left mouse button depressed.
Parking areas, Markers, ATIS and PCL are not allowed within the Flight plan, and therefore will be ignored with Drag & Drop actions. (PCL = Pilot Controlled runway Lighting; this is found in some add-on scenery. With it the pilot can switch on runway lights by setting COM1 to a special frequency. This frequency is shown on the map as PCL.)

Sometimes you will see an arrow moving over the map. This arrow is only visible during flight, next to the line of the flight plan or ahead. This happens when the autopilot is engaged, and the aircraft is climbing or descending to reach the altitude preset on the autopilot. The arrow points to the spot where the aircraft is expected to reach the preset altitude. This point is calculated using the actual speed of the aircraft, the vertical speed and altitude as set in the autopilot.

Airspace around airfields is shown shaded. Here the shading of different types of airspace can be superimposed. The shading pattern corresponds to the upper and/or lower airspace. In the figure on the right the shading on the left side is for upper **and** lower airspace; the shading on the right is for upper airspace, and center is for lower airspace.
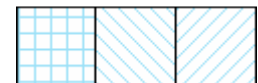
Airways sometimes allow traffic in one direction only. This is indicated by using partly interrupted lines for airway segments. If an airway segment is connected to a waypoint by an uninterrupted line, the airway can be entered and flown from this waypoint. An interrupted line connecting an airway segment to a waypoint means that the airway is closed in that direction, and can not be entered from this waypoint.

Using Drag & Drop the VOR, ILS, NDB, Airport, Parking area, ATIS, PCL and ASCC (Airspace Control Center) frequencies can be set in the avionics panel of FSNavigator. If more than one frequency can be used for Airport, Parking area or ASCC, a dialog box will allow you to choose which frequency to set on COM1. The allocation of scenery objects to the Avionics is as follows:

VOR, ILS	==>	NAV1, NAV2	
NDB	==>	ADF	
Airport, Parking area, ATIS, PCL, ASCC	==>	COM1	

The panel at the right edge of the map has the following functions (read from the top):

- Zoom In
- Zoom Out

- Show Lower Airways and accessory waypoints on/off
- Show Upper Airways and accessory waypoints on/off
- Show Airway ID on/off
- Show all Intersections on/off

- Show NDB on/off
- Show VOR on/off
- Show ILS on/off
- Show ATIS/PCL on/off
- Show Markers on/off
- Show VOR and NDB names on/off
- Show Identifications on/off
- Show Frequencies on/off

- Show Airports and Runways on/off
- Show airspace boundaries around airports on/off
- Show Airport Names on/off
- Show Airport Identification on/off

- Toggle between 'flat' and 'round' world (Cylindrical or Global projection)
- Show labels with flightplan route
- Show only waypoints from the Flight plan on/off (Airports, Runways and ATIS/PCL are always shown)
- Show own aircraft on/off
- Map must follow own aircraft on/off
- Multiplayer aircraft shown on/off

Clicking the right mouse button in the map opens the Popup menu. Here the following functions are available:

Zoom Out
   Increases the area displayed on the map by reducing magnification.
Zoom Normal (1:1)
   Brings the map to default size, displaying the whole world.
To Flight plan
   If this option is selected while a popup window was before present over an object in the map, this object is now added to the Flight plan. If no popup window was present, a Fix point is added.
Holding Pattern
   Defines a Holding Pattern at the position of the mouse cursor. The necessary parameters can be entered into a following dialog box. Only one Holding Pattern can be defined at a time.
Fly to here
   Is available if the aircraft is airborne and has an autopilot. The aircraft will fly to the location represented by the position of the mouse. The autopilot only controls the aircraft heading (direction) to this location.
Move Aircraft to here
   Is available if the aircraft is airborne, or if the aircraft is situated on the ground, and the popup window displays information about a runway, an airport or Parking area. The aircraft is then shifted to the mouse position. If the aircraft, while on the ground, is moved towards a runway or Parking area, it will also be correctly lined up. Parking areas are only available in FS2002/2004.
   Move aircraft to here is **not** available in FS2004 if the aircraft is on the ground.

Set Tower View to here (not available in FS2004)

This moves the Tower View to the indicated spot. If at this spot a runway or airport was shown in the popup window, the tower will be set at a suitable distance and elevation with respect to the runway. For all other locations with no popup window showing, a Dialog box will let you enter the elevation of the tower view. The default in this Dialog box is the actual altitude of the aircraft.

Copy

If this option is selected while a popup window was before present over an object in the map, this object is now copied to the clipboard. If no popup window was present, a Fix point at this location will be put on the clipboard. With the **Paste** command from the Menu this waypoint can later be added to the Flight plan.

Center Map

Centres the Map around the mouse position.

VFR Flights (Author: Enno Laverman)

During VFR flight you can always find your position on the FSNavigator map, and (by dragging with the right mouse-button depressed) measure distance and heading to a nearby airport or landmark.
You can also find what Navaids are nearby, set their frequency on your Nav receivers (simply drag the Navaid info to the Navaid-AP bar on the left), and use the instruments as navigation aids.

For VFR flight near Airports there are official VFR Approach Routes and VFR Departure Routes, but these are described using visual landmarks. As these landmarks (depending on the quality of the scenery) are not always visible and generally less accurately placed then the Navaids, it is not always possible to use them for automatic flight, so FSNavigator does not support use of these VFR routes like it does SID/STARs.

If your scenery is sufficiently detailed to make use of the landmarks in a VFR route, you can of course plan a VFR route on the FSNavigator map. Here are a few tips on how to do this:

If you have a paper map of the area where you can find the geographical position of a landmark (say, a road crossing) you can make a Fix-point in the FSNavigator map, using the geographical pos. shown at the lower edge of the map.
If you have no geographical pos of your landmark, see if you can take a bearing on nearby Navaids (VOR, NDB) using your OBI or ADF. (your altitude must be sufficient!) Then use FSNavigator to make a Fix-point near these Navaids, make those Navaids into Bearing points, and drag your Fix-point to the spot where the bearings and distances are identical with the previous readings on your instruments.

Any landmark with a position that can be measured from a Navaid or Airport or river bend that is recognisable on the FSNavigator map, can be located on this map in the same way (measuring direction and distance by dragging with the right mouse button depressed) and entered into the flight plan as a Fix point.

Want to be able to find that spectacular piece of scenery again later? Pause your flight.; go to the FSNavigator map and make a Fix point at the location of your aircraft, send it **To Flightplan**, and repeat this as often as you like. Then save your flight plan.
Want to see what the mountains look like in Younamit? Go to the nearby airport, take off, open the FSNavigator map, and put your mouse pointer in a spot on the other side of the mountains. Press the right mouse button, and select **Fly to here** in the popup menu. Select a suitable altitude and speed, and enjoy your flight.

VFR flight can be great fun, especially now scenery quality is improving. The FSNavigator Map gives an accurate picture of the location of Navaids with respect to each other and to airports and, (somewhat less accurate) to coastlines, canals, lakes etc. This makes an instrument-assisted VFR flight very easy.
While flying VFR and enjoying the sights, use the FSNavigator map for orientation, and tune your Nav receivers to a VOR or NDB that will bring you close to your destination. Multiplayer flight, where FSNavigator puts the other aircraft with you on the map, is something you should certainly try!

The Flight plan

Id	Location	Freq	Head	IAS	VSpeed	Altitude	Distance	ETE	Fuel [Lbs]
28L	San Francisco Intl - ILS/GS/DME: ...	109.55	-	-	-	10	0.0	00 00' 00"	0.0
NORMM	NORMM		282	250	1300	4146	13.7	00 03' 10"	769.0
SAU	SAUSALITO	116.2	12				9.2		
BEBOP	BEBOP		234	272	1157	28714	121.8	00 21' 14"	5132.0
	End of Climb		236	270	714	32000	32.2	00 04' 36"	1112.3
BAART	BAART		236	270	0	32000	66.1	00 09' 12"	1227.8
BLUFF	BLUFF		234	270	0	32000	140.0	00 19' 29"	2598.3
BAKON	BAKON		233	270	0	32000	299.3	00 41' 40"	5555.6

The Flight plan is situated at the top right of FSNavigator. It can be made up with scenery objects from the Map or from the Search window, usually via Drag & Drop. Clicking the right mouse button in the Flight plan window produces a Popup menu. To process the Flight plan, the **Edit** menu, the popup menu or Drag & Drop can be used. Pressing the <CTRL> key during a Drag & Drop operation copies whole lines within the Flight plan.
A vertical green line at the left of a waypoint marks this waypoint as part of a SID or STAR.

The columns in the Flight plan have the following meaning:

ID	Waypoint Identification or Runway number.
Location	The waypoint's name or position.
Freq	Frequency.
Head	Magnetic heading from previous waypoint to this waypoint.
IAS/TAS	Mean Airspeed from previous waypoint to this waypoint in kts.
VSpeed	Mean Vertical speed from previous waypoint to this waypoint in ft/min.
Altitude	Altitude at this waypoint in ft.
Distance	Distance from the previous waypoint in nautical miles.
ETE	Estimated flying time from previous waypoint to here.
Fuel [...]	Fuel consumption from previous waypoint to here.
	The units are determined from the setting in the **Settings-Flightplan** Dialog box.

Distance, ETE and Fuel consumption can be given as **Waypoint to waypoint**, **Cumulative** or **Inverse Cumulative**. This option can be set in the Dialog box **Settings - Flightplan**.

A Flight plan consists of Waypoints and Bearing points. Waypoints are always flown over. Any VOR, NDB or ILS can be marked in the Flight plan window popup menu as a **Bearing point**. These Bearing points are not flown over, but are used to automatically program their frequencies into the aircraft avionics while the flight plan is being flown. The values for Heading and Distance are measured from the previous waypoint.

Runways and Airports are automatically taken as a landing point. The program will calculate climb and descent according to the data of the in FSNavigator selected aircraft. Intermediate stops can be planned by entering two runways of the same airport (or the same runway twice) into the Flight plan.
Unless otherwise indicated, cruise flight altitude and cruise speed are taken from the aircraft data as present in the FSNavigator Aircraft database. With the **Cruise Altitude/Speed** Dialog box these values can be changed for the Flight plan as a whole. In addition to that it is possible to set altitude and speed for every single waypoint. This can be done for the marked waypoint using the popup menu **Manual Settings**.

The Identification of a Fix-point is generated automatically (Fix01, Fix02, Fix03 etc.) This ID can also be edited. Left-clicking the ID of a fix opens an input line. Up to 5 characters are accepted.

The Flight plan can be flown in automatic, semi-automatic or manual mode. In semi-automatic mode you can select different options to fine-tune this mode to your preferences. The way a flight is handled can be set in the Dialog box **Settings - FMS**. Flying the flight plan is activated in the Autopilot or with the FMS of FSNavigator. Only certain aircraft can perform takeoff and landing automatically.

Using Drag & Drop the VOR, ILS, NDB and Airport frequencies can be set in the avionics panel of FSNavigator. If more than one frequency can be used for Airport, a dialog box will allow you to choose which frequency to set on COM1. The allocation of scenery objects to the Avionics is as follows:

VOR, ILS	==>	NAV1, NAV2
NDB	==>	ADF
Airport	==>	COM1

In the same way with Drag & Drop Heading and Course can be set into the FSNavigator Autopilot.

With a Flight plan all data of the aircraft are also saved. When opening a Flight plan, the name of the aircraft is compared with the list of names in FSNavigator. If the aircraft already exists in the FSNavigator, then the aircraft data of the Flight plan are rejected and the data of the FSNavigator are used. If the aircraft of the Flight plan is new for FSNavigator, then you can store it permanently using the Dialog box **Aircraft**.

The best way to create a Flight plan is as follows:

1. Aircraft
    With the menu item **Plan-Aircraft**, the **Aircraft** Dialog box is opened and the correct aircraft is selected.
2. Altitude and cruising speed
    The menu item **Plan Cruise Altitude/Speed** is used to adjust the flight's cruising altitude and cruising speed.
3. Start
    First, select the starting runway and drag it into the Flight plan.
4. Destination
    Next, drag the landing runway of your destination into the Flight plan.
5. Flight route
    With the menu option **Plan – Calculate auto route** and the following Dialog box the most favourable waypoints between start and destination are automatically inserted. **High altitude Airways** are best used when flying a jet, **Low altitude Airways** when you use a smaller propeller aircraft. If no airways are near, you can fly **from Navaid to Navaid**.
6. Fine Tuning Altitude and Speed
    Above the Flight plan Popup menu use **Manual Settings** to set altitude and airspeed for every waypoint. The values entered here may not exceed what is technically possible given the aircraft properties. Especially climb- and sink rate are limiting factors.

The Popup menu of the Flight plan has the following functions:

Manual Settings
    Opens the Dialog box **Manual Waypoint Settings** for entering altitude and airspeed at the marked waypoint. With Fix-points you can also enter the position in numbers.
Bearing Point
    Is available when the waypoint is a VOR, NDB or ILS. Bearing points are not flown over, they are for radio navigation. An example is given here:

After the intersection AALEN a new course is flown to RIDAR. WLD VOR is in the same direction. In order to use radio navigation after AALEN, WLD is made a Bearing Point.

So a Bearing Point is generally entered into the plan after a waypoint where the course is altered.

At one waypoint two VOR's and one NDB can be made Bearing Points. The first VOR will set NAV1 and the course in the Autopilot, while NAV2 is tuned to the second VOR. Bearing Points do not need to be in the direction of flight.
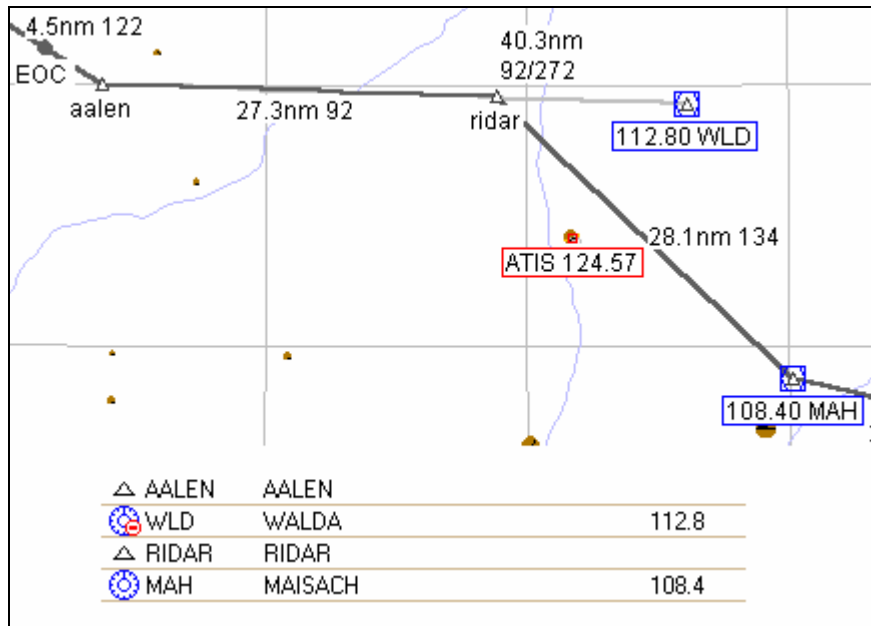
Holding Pattern

Defines a holding pattern at this VOR, NDB, Intersection or Fix point. A Dialog box is provided for entering the necessary parameters. Only one holding pattern can be defined at a time.

Fly Flight plan from here

This option is available if the aircraft has an autopilot. The automatic execution of the Flight plan from this line will be started as soon as the autopilot is engaged. If the autopilot is disengaged, the automatic flight is terminated.

Fly to here

Is enabled if the aircraft is airborne and an autopilot is available. The aircraft will fly to the marked waypoint. The autopilot only controls the flight direction (heading). The automatic flight ends when the target point is reached, the next waypoint does not become the new target.

Move Aircraft to here

Is available if the aircraft is airborne or if the aircraft is situated on the ground, and the waypoint is an runway, airport or Parking area. The aircraft is shifted to the waypoint position. If the aircraft, while on the ground, is moved towards a runway or Parking area, it will also be correctly lined up. Parking areas are available only in FS2002/2004.

Move Aircraft to here is **not** available in FS2004 if the aircraft is on the ground.

Set Tower View to here (not available in FS2004)

This moves the Tower View to the marked waypoint. If the waypoint is a runway or airport, the tower will be set at a suitable distance and elevation with respect to the runway. For all other locations, a Dialog box will let you enter the elevation of the tower view. The default in this Dialog box is the actual altitude of the aircraft.

Cut

Cuts the marked lines and copies them to the clipboard.

Copy

Copies the marked lines to the clipboard.

Paste

Inserts the lines from the clipboard to before the marked line.

Delete

Deletes the marked lines.

Center Map

Centres the Map around the marked waypoint.

Plan + SID/STAR

With the button **Plan** depressed, the lower right area of FSNavigator shows a double window containing the Flight plan and the SID/STARs. Both windows have Popup-windows activated by the right mouse button. Below a small window shows information on a selected SID/STAR (if one is selected).
The left window contains the Flight plan, shown here with limited information. The right window shows either a list of all airports/runways with SID/STARs available (list 1, selected with left button on top), or the SID/STARs of the waypoint selected in the left window (list 2, selected with right button on top).
Note! SID/STARS must be downloaded from internet before you can use them (Menu Options – SID/STAR Download)

What are SID/STARs?
SID or Standard Instrument Departure is a standard route by which an aircraft flying under Instrument Flight Rules (IFR) leaves an airport.
STAR or Standard Terminal Arrival is a standard route by which an aircraft flying under Instrument Flight Rules (IFR) must approach an airport.
Both consist of a number of waypoints. In FSNavigator a SID always begins with a runway, and a STAR always ends with a runway. Also in FSNavigator a STAR must include the complete approach route up to and including the landing runway. This is implemented in FSNavigator in order to make use of this option easier.

So how does this help me?
With the use of SIDs and STARs we can make a flight like a real aircraft would do, and with a single mouse click select a runway and the departure- or approach route for that runway. This is very easy if the controller assigns us to a different runway at the last moment.

How do I use SID/STARs?
If you want to make a new Flight plan using airports with SID/STARs, click the button for **Airports with SID/STARs** in the right window. Choose your airport of departure in the list, and then select your SID runway for departure at this airport. Insert this runway into the Flight plan. Use Drag & Drop or the Popup menu to do this. Then do the same with the destination airport and STAR runway.

Next, let FSNavigator generate the remaining waypoints in the route, including the SID and STAR, by use of **Calculate Auto Route**. The program will select the best SID and STAR and the most favourable Airway connection for you, using the runways you selected before.

Now your Flight plan is finished, but you still have the possibility to later change a runway for start or landing. To do this, mark the runway to be changed in the left window. In the right window (list 2) you can now see all SID/STARs with the appropriate runways that will connect to the same scenery object (generally this means a connection to an airway). Choose one of these SID/STARs, and via Drag & Drop or Popup menu enter it into the Flight plan. The waypoints of the new SID/STAR now replace those of the old one.

Making your own SID/STARS
If you have the necessary maps and descriptions you can make the SIDs and STARs for an airport yourself. Making a SID or STAR is like manually making one half of a flight plan. But don't think it is an easy job to do.
A SID should always begin with a runway, and end with a VOR, NDB, ISEC or Fix point. If it ends with a Fix point, then this Fix should be given a name manually. Important is also that the first waypoint after the departing runway lies in line with it using the runway heading.
A STAR must always begin with a VOR, NDB, ISEC or Fix point, and end with a runway (landing runway). If it starts with a Fix point, this Fix should be given a name manually. The last waypoint before the landing runway should be in line with the landing runway as much as possible.
A SID or STAR must not necessarily end/begin with a waypoint that is connected to an airway.

After creating a SID or STAR you can save it permanently using the menu Plan **– Save as SID/STAR** . Changing a SID/STAR and saving it anew is of course possible. When saving a SID/STAR you can enter your name or e-mail

address. This makes you one of the authors of this SID/STAR. Please always use the same name or address. After saving a SID or STAR the airport will be marked with a red dot in the window **Airports with SID/STARs**. This means that:

- The airport no longer conforms to the data on the central internet server;
- The airport is ready for **SID/STAR Upload**;
- The airport is protected, and will not be overwritten with data from the central internet server when a **SID/STAR Download** is done. This protection also works if the data on the central server have a later date.

SIDS/STARs you made or changed yourself can be uploaded via Internet so other FSNavigator users can use them. Please use the Upload function only for airports with SID/STARs that are created with data from real-world aviation (f.i.: A.I.P., Jeppesen). All other SID/STARs that are not conform reality should be reserved for private use, and not be uploaded.

All SID/STARs of an airport are saved in a file, and will replace, when uploaded, all SID/STARs of that airport if already present. Please be sure to upload only if you have all SID/STARs of an airport complete.
Uploading of airports that are only half finished may result in deletion of these data by the FSNavigator team.

After upload the SID/STARs become a collective property of all FSNavigator users. This also means that other users can complete or update your SID/STARs in order to make them conform to the latest specifications. The FSNavigator team will be active in finding and deleting "destructive" uploads.

If you modify an existing SID/STAR, please do not delete all SID/STARs of that airport, and then make remake all SID/STARs of that airport. This makes it difficult and time-consuming for the FSNavigator team to decide which author created the best SID/STARs. It's better to complete or modify the existing SID/STARs, thereby becoming one of the co-authors.

Popup Menus
The left Flight plan window has the same Popup menu as the Flight plan in the upper window.

The Popup menu in the window **Airports with SID/STARs** has the following functions:

To Flightplan
   The runway is added to the Flight plan.
Delete
   Deletes all SID/STARs of an airport. Use this function if you have altered the SID/STARs of an airport, and want to restore the originals. With every **SID/STAR Download** you get the originals from the internet.
Center Map
   This will center the map on the selected runway or airport.

The Popup menu in the **SID/STAR window** has the following functions:

To Flight plan
   The selected SID or STAR is entered into the Flight plan.
Properties
   Opens the Dialog box **Properties of SID/STAR**
Delete
   Deletes either all SIDs or all STARs of an airport, or only the selected SID or STAR.
Center Map
   This will center the map on the selected runway, airport or waypoint.

Flight Management System

With the button **FMS** depressed you find in the right lower window of FSNavigator the instrument that provides you with information on the actual status of the flight. Here you are supplied with the actual values for time, distance, direction to the next waypoint and to your final destination. Some values are only visible during flight. Pointing the mouse at the data shown produces a small help text window explaining the meaning of these values.

At the upper border there are several buttons which control the Flight Management System:

The buttons **M1** and **M2** will activate one of the two working modes of the FMS. These working modes are pre-defined in the dialog box **Settings – FMS**. There you can also select how the FMS will set values and keys of your Avionics and Autopilot whenever the **Fly Flightplan** button is depressed.

Fly Flightplan makes the aircraft fly the flight plan automatically, but to start this you have to switch on the aircraft's Autopilot also. The standard hotkey for activating the **Fly Flightplan** button is **Shift + F9**

The two buttons on the right of Fly Flightplan let you select the next waypoint your aircraft will fly to; you can choose any waypoint ahead of you, but no waypoint you have already passed.

The **Fly Holding** button can only be used if a holding pattern has previously been defined in the flight plan, on the map, or in the search window.   After activating this button the aircraft will enter the holding pattern upon reaching, and continue to do so until you have clicked the **Fly Holding** button again. You must set values for Speed and Altitude yourself, or set these in the Autopilot. Be careful not to make the speed too high, or the Autopilot won't be able to make the turns of the holding correctly.
Do not deactivate **Fly Flightplan** (if active) before activating **Fly Holding**. **Fly Holding** has a higher priority, and it will deactivate **Fly Flightplan** temporarily. When later **Fly Holding** is deactivated, the aircraft will fly the holding to the exit point, and then resume the flight, with **Fly Flightplan** active again.

The **LT** (Local Time) button switches all time indications in the FMS. With the **LT** button depressed all time indications are aircraft local time; with the button in the up position all times are given as Greenwich 0 meridian time.

The buttons **M1** and **M2** as well as every waypoint in the FMS have a Popup menu with different functions.
If the waypoint has a frequency attached, you can bring this with Drag & Drop to the NAV1/2 or ADF of the FSNavigator Autopilot.
In the same way you can with Drag & Drop enter Heading and Course into the FSNavigator Autopilot.

The Search Window

Top left in FSNavigator the search window is located. With it the database can be searched for names or identifications. No difference is made between upper- or lower case characters.
A click with the left mouse button on the word **Inputline** activates the input line. If text is now entered and acknowledged with <Enter>, then the list below the input line will show the names of all scenery objects found.

If the **Id** switch is not marked, then names will be searched for. The text to be searched for may be at any position within the name.

If the **Id** switch is marked, then the identification characters are searched for. The text to be searched for must begin with the first character of the Id code.
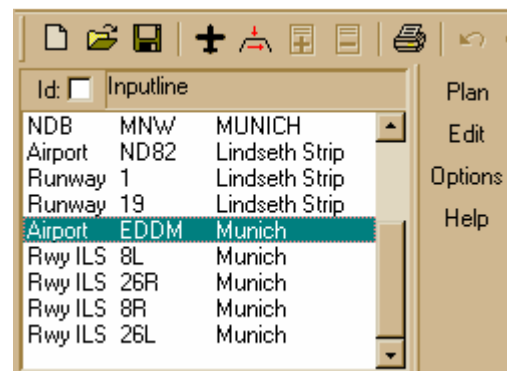
Doubleclicking the left mouse button on one of the waypoints found, or pressing the <Enter> key centres the Map on the marked waypoint.

With Drag & Drop the scenery objects found (except the Parking areas) can be inserted into the Flight plan.
In the same way with Drag & Drop the frequencies of VOR, ILS, NDB, Airport, Parking area, ATIS and ASCC (Airspace Control Centre) can be entered into the FSNavigator Avionics fields. If more than one frequency can be used for Airport, Parking area or ASCC, a dialog box will allow you to choose which frequency to set in COM1. The allocation of scenery objects to the Avionics is as follows:

VOR, ILS	==>	NAV1, NAV2
NDB	==>	ADF
Airport, Parking area, ASCC	==>	COM1

The list in the search window has the following Popup menu, activated with the right mouse button:

To Flightplan
  This will add the indicated scenery object to the end of the Flight plan.
Holding Pattern
  Defines a holding pattern at this VOR, NDB or Intersection. A Dialog box is provided for entering the necessary parameters. Only one holding pattern can be defined at a time.
Fly to here
  Is available if the aircraft is airborne and an autopilot is available. The aircraft will fly to the scenery object selected by the mouse position. The autopilot will only control the direction of the flight.
Move Aircraft to here
  Is available if the aircraft is airborne or if the aircraft is situated on the ground, and the waypoint is a runway, airport or Parking area. The aircraft is shifted to the position of the indicated scenery object. If the aircraft, while on the ground, is moved towards a runway or Parking area, it will also be correctly lined up. Parking areas are only available in FS2002/2004.
  Move Aircraft to here is **not** available in FS2004 if the aircraft is on the ground.
Set Tower View to here (not available in FS2004)
  This moves the Tower View to the indicated scenery object. If the object is a runway or airport, the tower will be set at a suitable distance and elevation with respect to the runway. For all other locations, a Dialog box will let you enter the elevation of the tower view. The default in this Dialog box is the actual altitude of the aircraft.
Copy
  Copies the selected object as Flight plan waypoint to the clipboard. With the **Paste** function in the menu this waypoint can later be inserted into a Flight plan.
Center Map
  Centers the Map on the selected scenery object.

Autopilot, Avionics

The lower left area in FSNavigator is used for the aircraft's avionics and autopilot. There is a version with large characters and one with smaller characters. Use the version you want and close the other one. All depressed fields can be opened for input by clicking the left mouse button there or by hitting the <Enter> key. The input is only transmitted to Flt.Sim after the <Enter> key is used to terminate the input. The TAB key moves the cursor to the next field or switch.

All items correspond to the autopilot and the aircraft's avionics. The only exception is the switch **Fly FP**. This causes the autopilot (when engaged) to automatically fly the entire Flight plan. The standard hotkey for the **Fly FP** button is Shift + F9. An automatic flight is best handled as follows:

- After the aircraft is put in starting position in the Flt.Sim and a suitable Flight plan is loaded, press the key **Fly FP**. If the autopilot was active it is now de-activated. In the Flight plan the next waypoint is marked with a red frame.

- Now change to Flt.Sim and fly the take off by hand. As soon as the undercarriage is up and with the aircraft at a safe altitude, activate the autopilot. When the autopilot is active, it will, set by the automatic flight data, take over control of the aircraft. With some aircraft the engine power settings must be regulated manually.

- The aircraft now flies the entire Flight plan independently, using the Flight plan to set changes in altitude and direction. In the Flight plan a red frame identifies the next target.

- The landing can be performed automatically or manually. For a manual landing switch off the autopilot and fly the last few miles by hand. Reducing speed in time will prepare you for the use of flaps and gear.
  If the runway has an ILS, then an automatic ILS approach is recommended. If the automatic flight brings the aircraft almost to the glide path, switch off the autopilot for just 1 second. When the autopilot is switched back on, the automatic flight is not re-activated. Now the ILS approach can be continued, with a manual touchdown.

The frequencies of COM1, NAV1, NAV2, ADF can be set via Drag & Drop from the search window, Flight plan, map or the FMS. The allocation is as follows:

VOR, ILS	==>	NAV1, NAV2
NDB	==>	ADF
Airport, Parking area, ATIS, PCL, ASCC	==>	COM1

Technical info

Program
The program is found in the **…\Flt.Sim\Modules** directory: **FSNav.dll**. Removing this DLL file before starting Flt.Sim prevents FSNavigator from running.

Program configuration
FSNavigator does not use the Windows Registry. The program configuration and all options set are stored in the file
…\Flt.Sim\Modules\FSNavigator\Bin\Program.cfg
Important is the section [Essential] and there particularly the entry SimVer. SimVer=61 means FS98, SimVer=70 means FS2000, SimVer=80 means FS2002 and SimVer=90 means FS2004. Never remove the section [Essential] with its entries.

Airways, Intersections, Airspace boundaries
FSNavigator has an own database for Airways and Intersections. The corresponding data from Flt.Sim are not used.
Airways and intersections are in the file **…\Flt.Sim\Modules\FSNavigator\Bin\Airway.txt.**
Additional Intersections are in the file **…\Flt.Sim\Modules\FSNavigator\Bin\ISEC.txt.**
The third file in this category is **…\Flt.Sim\Modules\FSNavigator\Bin\TRACK.txt.** This file contains invisible Airway connections that are used in automatic routing over the oceans.
The Airspace boundaries are in the file **\Simulator\Modules\FSNavigator\Bin\Airspace.txt.**

Scenery data
All scenery data, except Airways and Intersections, are taken from Flt.Sim scenery files. For this purpose FSNavigator has a separate program, **…\Flt.Sim\Modules\FSNavigator\Bin\FSNavDBC.exe.** The extracted data are stored in the files **…\Flt.Sim\Modules\FSNavigator*.000** and **…*.001** .
This scenery database must be made anew before the first use of FSNavigator, and after every change in the Flt.Sim scenery.

ICAO
Old scenery files (FS98) have no ICAO designation for airports.
FSNavDBC uses the file **…\Flt.Sim\Modules\FSNavigator\Bin\ICAO.txt** to determine the ICAO code.

World Map
The world map is used to reproduce coastlines, lakes, rivers and mountains. It consists of more than 1,6 million lines, and is stored in the file **…\Flt.Sim\Modules\FSNavigator\Bin\world.map**
Aircraft
For Flight plans to be calculated correctly the correct type of aircraft must be selected. The characteristics of aircraft in the database can be modified, or new aircraft may be added.
Aircraft are stored in the text file **…\Flt.Sim\Modules\FSNavigator\aircraft.ini.**

Aircraft
For Flight plans to be calculated correctly the correct type of aircraft must be selected. The characteristics of aircraft in the database can be modified, or new aircraft may be added.
Aircraft are stored in the text file **…\Flt.Sim\Modules\FSNavigator\aircraft.ini.**

Flight plans
Flight plans can be generated after a scenery database has been created and opened in FSNavigator. The waypoints are transferred by Drag & Drop from the map to the Flight plan. FSNavigator can automatically insert optimal waypoints between start and destination.
Flight plan files (* fsn) are stored in the directory **…\Flt.Sim\Modules\FSNavigator\Plan.**

Flight plan export
The export of Flight plans is done by DLL's in the folder **…\Flt.Sim\Modules\FSNavigator\FlpExport.**
The Export settings for all .DLL's are stored in the file **FlpExport.ini**.

SID/STARs
SID/STARs are stored in the folder **…\Flt.Sim\Modules\FSNavigator\SidStar**. There is one file per Airport. Please do not manually edit these files, or change the filenames. The system is very complicated, and in part protected with CRC's. If your SID/STAR system should get damaged, delete all files in the directory \SidStar, and do a **SID/STAR Download**. FSNavigator uses for SID/STAR up- and download the HTTP and FTP protocols. If you have a firewall installed it should be configured to allow this.

Menu Items

The FSNavigator menu is situated in an unusual spot: between the Search window and the Flight plan window. There you find 4 buttons marked **Plan**, **Edit**, **Options** and **Help**. A click with the left mouse button will open the appropriate menu.
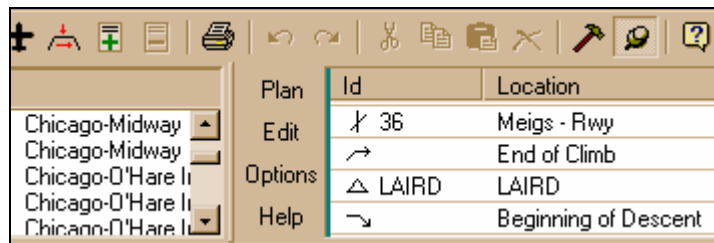
Plan
New
    Create a new Flight plan.
Open
    Open an existing Flight plan.
Open from Remote Computer
    This item is available when FSNavigator is participating in a Multiplayer session, and an other player has made his flight plan available for download.
Save
    Saves the current Flight plan under it's name. If the Flight plan has still no name, then the function **Save As** is executed.
Save As
    Saves the current Flight plan under a new name. A Dialog box opens to enter a new name.

Save as SID/STAR
> If the flight plan meets the criteria for a SID or STAR this option is available. The program opens the Dialog box **Save as SID/STAR**.

Export
> Flight plan export. The program opens the Dialog box **Export** for selection of the export format. After that all depends on the implementation of the exports DLL's.

Aircraft
> Using this menu option an aircraft can be selected for a Flight plan, new aircraft can be created by entering their properties, or existing aircraft can be modified or deleted. The program opens the Dialog box **Aircraft**.

Cruise Altitude/Speed
> Adjusts the cruising altitude and airspeed for the entire Flight plan. The program opens the Dialog box **Cruise Altitude/Speed**.

Calculate auto route
> This function automatically inserts additional waypoints into the Flight plan between start and destination. The program opens the Dialog box **Calculate auto route**.

Remove auto route
> All waypoints inserted by the function **Calculate auto route** are removed from the Flight plan.

Print
> Prints the Flight plan or the map as shown in the map window. The program opens the Dialog box **Print mode** for selection of the mode.

Print Preview
> Gives a preview of the Flight plan or map print. The program opens the Dialog box **Print mode** for selection of the mode.

Print Setup
> Printer selection and adjustment.

1, 2, 3, 4
> List of the last opened Flight plans.

Edit

Undo
> Cancels the last action.

Redo
> Cancels the last undo-action.

Cut
> Cuts and copies the marked object to the clipboard.

Copy
> Copies the marked object to the clipboard.

Paste
> Inserts the object from the clipboard.

Delete
> Deletes the marked objects.

Select All
> Selects all available objects.

Options

Multiplayer connect
> Connects FSNavigator with an existing Multiplayer session in Flt.Sim. The program opens the Dialog box **Multiplayer.**

Multiplayer disconnect
> Disconnects the existing Multiplayer session.

Public Flight plan
> This option is present when FSNavigator participates in a Multiplayer session. It makes the Flight plan available to the other players for downloading.

Multiplayer Host Settings

This Menu option is only active when FSNavigator is participating in a Multiplayer session, if the original Multiplayer Host leaves the session, and FSNavigator happens to become the new Host. In the then following Dialog box you can set the number of Pilots/Observers and other parameters.

SID/STAR Download

With this option you can download the SID/STARs that are available on the Internet to your computer. The program opens the Dialog box **Download SID/STARs.** Downloading is done from a central online database.

SID/STAR Upload

With this function you can upload self-made or altered SID/STARs to the online SID/STAR database. The program opens for that purpose the Dialog box **Upload SID/STARs**. After uploading your SID/STARs will be available to all other FSNavigator users.

Settings

The program opens the **Settings** Dialog box for adjustment of the program's options.

Scenery Open

Selection from the Scenery database. The program opens the Dialog box **Scenery database open.** This option has relevance for FS98 only.

Docked Window

Sets the FSNavigator window Docked / Undocked. Hotkey: CTRL + F9

Toolbar

Show / hide the Toolbar.

Status Bar

Show / hide the Status bar.

Help

Help Topics

Offers you an index to topics on which you can get help.

Payment and Registration

The Dialog box shows you how to keep using the program after the free trial phase have ended.

About FSNavigator

Information on the Program version and the Author.

Dialog box Open from Remote Computer

In the Player List are all the players who participate in a Multiplayer Session, and have made their actual Flight plan available to the other players. If you select one of the other players and close the dialog box with OK, the Flight plan will be transmitted to your FSNavigator and appear in the Flight plan window. This action can take a few seconds.

Dialog box Save as SID/STAR

This function saves the actual Flight plan as SID or STAR. All SIDs and STARs of an airport form a unit and are saved together in a file.

In the listing above all SID or STARs are shown that have the same entry- and ending point.

Entering the **Identification** (ID) is important. Different ID's must produce different SID/STARs. However SID/STARs with different starting points or ending points can have the same ID.

Description is optional, and can contain remarks on the SID/STAR.

With **Global Region** and **Country** you can define the place of the airport in the hierarchy of the window **Airports with SID/STARs**. With **Country** you can only use countries for which a number of airports with SID/STARs already exist. The FSNavigator team will adapt the number of countries available as necessary.

In the field **Author** you can enter your name or e-mail address. Hereby you become one of the authors of the SID/STARs of this airport. A maximum of 10 different authors will be stored with one airport, and shown in the window **Airports**

with SID/STARs. With more than 10 authors the first name in the list is removed. This does not apply to the original author who first uploaded this airport, and whose name will never be removed.

Please note:
You have to make an important decision, especially if you want to upload your newly made ore modified SID/STARs via **SID/STAR Upload** to the central server on the Internet. The problem is, that two users may be working on the same Airport at the same time. This can never be excluded, and it may lead to a later loss of your work.

So what is the best way ?
- Make sure your computer has the right date and time settings.
- Before you start work on new SID/STARs for an Airport, or modify the existing ones, always download the last SID/STARs first.
- Only work on one Airport at a time.
- As soon as the Airport is finished, upload the data via **SID/STAR Upload** to the central Internet Server. Don't send any unfinished Airports, as these will be deleted.
- After uploading your SID/STARs wait for 5 days, and then do an SID/STAR download. You will then be able to see any alterations the FSNavigator team has possibly made.

After saving a SID or STAR, the airport in the window **Airports with SID/STARs** will be marked with a red dot. This means:
- The airport no longer conforms to the data on the central internet server
- The airport is ready for **SID/STAR Upload**
- The airport is now protected, and will not be overwritten when you do a **SID/STAR Download**. This also applies when SID/STARs downloaded from the central internet server should have a later date.

Dialog box Export
This Dialog box is used for the selection of an export format. The following formats are available:

       ACS-GPS
       FlightProject ATOC
       FS2000
       FS2002
       FS2004
       IvAp
       Radar Contact
       SquawkBox
       SquawkBox3 / FSInn
       UniversalText
       WindowsINI

Flight plans with an intermediate landing can not be exported. The first and the last waypoint in the Flight plan must be a runway or airport.

Dialog box Aircraft
Normally this dialog box is used for the selection of an aircraft for the current Flight plan. With **Name** an aircraft can be selected from the list. If the Options **Set Flight plan cruise alt** or **Set Flight plan cruise speed** are active, then the settings made in the dialog box **Cruise Altitude/Speed** will be erased from the Flight plan.

In this dialog box you can also change aircraft data, or add new aircraft.
Changing Aircraft data is simple: Select an aircraft, change the data, save aircraft data again. Alternatively, you can give the changed aircraft a different name, and keep the original aircraft as it was before. Aircraft that are part of FSNavigator can also be changed. If an aircraft has become useless by changing, it should be deleted. Next time Flt.Sim is started, the aircraft will be present again with its original properties.

Creating a new aircraft is laborious and time-consuming. The only way is to try settings, using automatic flight and a special Flight plan. Use a similar aircraft as a starting point. Just rename it in **Name** and save the new model's specifications.

Autopilot without Airspeed Hold
Use this option if the autopilot does not have the Speed Hold function.
Cruise IAS/TAS (kts)
Normal cruising speed.
Cruise Altitude [ft]
Max. flight altitude / 1.25
Climb IAS/TAS [kts]
Average airspeed during climb. Determined best by Flying and Trying. (F&T)
Climb Rate [fpm]
Average value for the rate of climb. This value must be determined by F&T. It is particularly important that the aircraft can actually perform this rate of climb at the airspeed as set by the autopilot. Excessive engine performance should not be necessary.
Touch Down IAS/TAS [kts]
Touch down speed at the runway.
Descent Rate [fpm]
Average value of the rate of descent. This value must be determined by F&T. It is particularly important that the aircraft can follow the sink rate and airspeed that are set by the autopilot, without the pilot having to resort to using flaps and/or undercarriage as brakes at too high speeds.
Fuel flow
First select the unit of measurement and fill out the fuel flow values. These values can be read from the aircraft's instruments or one can ask the maker of the AC model.

Do not forget to save the aircraft!

Dialog box Cruise Altitude/Speed

With **Cruise Altitude** the maximum altitude during a flight is set. The maximum allowed is 1.2 x the value for **Aircraft Cruise Altitude**.

Cruise Speed determines the maximum airspeed. This value must be between **Aircraft Touch down Speed** and **Aircraft Cruise Speed**.

Manual settings at separate waypoints can be cancelled with the two additional options.

Dialog box Calculate auto route

If you don't want to make a flight plan by entering all waypoints by hand, this function gives you the necessary support. Enter your Departing Runway and Landing Runway into the flight plan. Any waypoints you want to make use of enroute should also be entered manually into the flight plan. The program will then automatically calculate the route with all waypoints in between.
Best use **High Altitude Airways** when flying a jet, **Low Altitude Airways** when flying a smaller propeller aircraft, or use **from Navaid to Navaid** if no Airways are near your route.
Part of the Airways are for one-way traffic. The program takes this into account.
If your route starts or ends at an airport with SID/STARs, the program will use these.

Dialog box Print mode

With this dialog box you can print your flight plan or map, or see a print preview.

Dialog box Multiplayer

The Multiplayer function of FSNavigator is fully integrated with the Multiplayer system of Flt.Sim. So it is not necessary that the other participants have FSNavigator running. You will still be able to see all other pilots on your map. A connection with the MSN Gaming Zone is not possible.

In a Multiplayer session FSNavigator acts as an additional pilot. This means that the Host must have allowed a sufficient number of pilots for FSNavigator to join the session.

FSNavigator can not itself act as a Host; you can therefore only connect the program with an existing Multiplayer session.

With Internet connections it can take up to 30 seconds after closure of the dialog box until connection to all other participants has been established. Only then can you see all other aircraft on the map.

Important: If you still have to make an internet connection, first be sure that Flight Simulator on your computer is in Window mode. Use ALT + Enter to switch from Full Screen mode to Window mode if necessary. When the Internet connection has been made, you can switch back to Full Screen mode.

FS2004 dialog box:

Enter the IP address or the name of the Host computer and start the search for a multiplayer session with the **Search** button. If your local simulator is Host, then it can be reached at the IP address 127.0.0.1
If you are in a local network, and no IP address is given, then the entire local network will be searched.
In the window **Sessions** all sessions that have been found are shown. Generally there will be one session only, but if there are more, be sure to select the right one.
For **Player Name** you can best use the same name or ID that was used in the Flt.Sim Multiplayer connection.
This ID will later be shown in the Chat Window, preceded by an asterisk.
Password will only be active if the host has protected the multiplayer session with a password.
If you activate **Public Flightplan**, then all other FSNavigator pilots in the multiplayer session can download their actual FSNavigator flightplan. **Public Flightplan** can also be activated later, using the **Options** menu.
Port FSNavigator is the "house number" of your FSNavigator. It must be different from the setting in your Flt.Sim Client *Settings – Client Port selection – Connect.* Best stick to the *Default* setting.

FS98/FS2000/FS2002 dialog box:

Page 1:
Here you give your player a name, choose the type of connection, and (if you want to) make your flight plan available for download to all other pilots.
As **Player Name** you can best use the same ID or Callsign you use in the Flt.Sim multiplayer connection. It will later be shown in the chat window, preceded by an asterisk.
Connection Type is the computer connection mode. Use the same settings as in your Flt.Sim connection.
If Public **Flight plan** is activated, all other FSNavigator pilots in the multiplayer session can download their actual FSNavigator flight plan. **Public Flightplan** can also be activated/deactivated later, using the **Options** menu**.**

Page 2:
Here all multiplayer sessions as found are shown. With Internet connections it can take a few seconds before Host and multiplayer sessions are found. You can then choose which **Session** you wish to join.
With Internet or Intranet connections you will first be instructed to enter the Host computer's IP address. When your computer is host, you can use 127.0.0.1 or leave this line empty.

Dialog box Multiplayer Host Settings

This dialog box can only be accessed if the Flt.Sim acting as host until then exits from the session, and your FSNavigator happens to become the new host. Here you can remove other pilots from the session, or change the number of other pilots/observers.

Dialog box SID/STAR Download

When you activate **Start Download** a connection is made with the SID/STAR database on the Internet, and your own SID/STAR database is updated. With the first download all data are transmitted and stored in your computer. This process can take up to 20 minutes. With later downloads only new or altered data are transmitted. Therefore download regularly so there won't be too many data to be transmitted at one time.
Airports that have been downloaded are shown in a list.

Technical background:
For this program there exists on the Internet a SID/STAR database. This database is simply a fileserver with two folders for up- and download. In these folders are the SID/STAR files. There is a file for every airport. These files are mainly made by the FSNavigator users, and uploaded with **SID/STAR upload** to the server. Before the files are put in the download folder they are tested and (if necessary) corrected by the FSNavigator team.

If you should change the SID/STAR of an airport and save it, the file will be blocked for updating from the Internet. Only after you upload this file to the Internet server, will this block be removed. If you don't want to do this, as your changes were just an experiment, you can delete all SID/STARs of this airport. This will remove the file from your computer, and with the next download you will get the original file again from the server.

<u>*Important:*</u> If you still have to make an internet connection, first be sure that Flight Simulator is on your computer in Window mode. Use ALT + Enter to switch from Full Screen mode to Window mode if necessary. When the Internet connection has been made, you can switch back to Full Screen mode.

<u>If downloading is not successful this can have one of the following causes:</u>

- Microsoft Internet Explorer has not been installed or is not configured correctly
- You have a Firewall installed that prevents HTTP and FTP from using its ports
- You or your ISP are using a Proxy Server, and this or the MS Internet Explorer are not correctly configured for the HTTP and FTP protocols
- You are an AOL client. This can sometimes be a problem. The FSNavigator team does not have exact information on why this is the case.

Dialog box SID/STAR Upload

As soon you have newly made or changed the SID/STARs for an airport, this airport is ready for upload and is shown on the list. Mark at the left in this list every airport you want to upload to the server. When you activate **Start Upload** a connection with the Internet server is made, and your files are sent. Please only send airports that are completely finished, and for which you can take responsibility towards the other users.

Technical background:
For this program there exists on the Internet a SID/STAR database. This database is simply a fileserver with two folders for up- and download. In these folders are the SID/STAR files. There is a file for every airport. These files are mainly made by the FSNavigator users, and uploaded with **SID/STAR upload** to the server. Before the files are put in the download folder they are tested and (if necessary) corrected by the FSNavigator team. Therefore 5 days after upload make a download to receive the possible modifications made by the FSNavigator team.

<u>*Important:*</u> If you still have to make an internet connection, first be sure that Flight Simulator is on your computer in Window mode. Use ALT + Enter to switch from Full Screen mode to Window mode if necessary. When the Internet connection has been made, you can switch back to Full Screen mode.

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Dialog box Settings

In this dialog box the basic settings for the program functions are made.

Page Global:

Program Switch key (**F9**) is the key by which FSNavigator is made visible/invisible.

Docked Window Switch key (**CTRL + F9**) is the key combination that disconnects the FSNavigator window from Flt.Sim.
In the default setting the Search window, Autopilot and Flight plan are then no longer visible. Only the Map remains.
You can have all four areas in the undocked window by dragging them out of the thin-lined boundaries with the mouse, and reshaping the FSNavigator window according to your wishes.
The size and visibility of the FSNavigator internal windows docked and undocked are stored separately. When using FSNavigator next time in docked or undocked state, you will have the windows in the same size and position you left them before.
The undocked window also is very handy when you have Windows 98/ME with two graphics cards and two monitors. For the second system you could use a simple 2D card; as extra monitor f.i. an old 14"one. Details about the setup of such a system can be found in Windows Help.

Fly Flightplan switch key (Shift + F9) is the key combination that will activate the button **Fly Flightplan** in the **Flight Management System.**

Window Background Color is the background color for all FSNavigator windows. The blue color is not available on all systems.

Activate disabled warnings will activate dialog boxes with additional warnings and instructions that may have been deactivated by the user before. Deactivation of such warnings can be done in the dialog box that shows the warning.

Sound activates the acoustic signals of the program.

Activate **Simulator uses true airspeed** or **Simulator uses indicated airspeed** according to the option as set in Flight Simulator. FSNavigator reads these options from the Flight Simulator's configuration file at startup. You only need to change it after you have changed the same option in Flight Simulator.

Page Flight plan:

Speed limit below 10,000 ft. limits the maximum speed allowed in the FMS. Civil aircraft generally have a speed limit of 250 kts. when flying below 10,000 ft.
The options **Display Distance, Display ETE, Display Fuel** determine the way these values are represented in the flight plan. **Fuel unit of measurement** determines the units used for fuel quantity.

Page Map:

Here additional settings for the map can be made. Among these are settings that are not available in the bar at the right side of the map.
Airspace Boundaries are the boundaries of large airspace areas. With flights in Italy it is recommended to use only one of the two possible types, in order to keep the map uncluttered. If such airspace has been defined differently for upper- and lower airspace, then the indication displayed will be switched according to the altitude set below. The default value is 18000 ft.

Back course ILS are the backwards directed signals of a normal ILS. Only the localizer beam is given, there is no glide path. Also right and left as indicated are switched. To use a Back course ILS the **BC** button of the autopilot must be depressed.

With **Font** you can choose a character type. Good fonts are **Arial 8** and **Small Fonts 7**.

Multiplayer Aircraft Speed determines the way in which the speed of multiplayer aircraft is given on the map. Groundspeed is always correct, but IAS/TAS can be influenced by wind velocity.

Page FMS:

Here optional settings for Automatic flight can be made.

With the button **Fly Flightplan** depressed, the Flight Management System (FMS) can automatically set values and activate buttons in Avionics and Autopilot. How this is done can be laid down in the Option sets **Mode 1** and **Mode 2**. The buttons **M1** and **M2** determine which mode is used. So here you can pre-define 2 different ways to use the FMS and activate them during flight according to your wishes.

Global settings are made with the buttons **Full Automatic**, **Half Automatic**, and **Manual**. These settings can additionally be fine-tuned at the right.

With **Full Automatic** the flight plan is flown automatically, without input by the pilot. **Half Automatic** means that values are set in autopilot and avionics automatically; you have to press the autopilot buttons yourself.

With **Manual** the FMS will only continue flight and indicate the next waypoint in the Flightplan.

Dialog box Scenery database open

Database shows the list of scenery databases. This dialog box has relevance for FS98 only.

Dialog box Manual Waypoint Settings

This dialog box can be reached via the context menu of a waypoint.

Altitude crossing is the altitude at which this point must be flown over. The aircraft will start climb/descend to reach this altitude at an optimal distance. Altitude crossing is mostly used descending.

Altitude after is the altitude the aircraft should reach as quickly as possible after passing over this point. Altitude after is mostly used when climbing.

The **Indicated (or True) Airspeed** is set in the autopilot 3 n.m. before crossing the waypoint, so it will be overflown with this speed.

Altitude crossing, Altitude after and Indicated/True Airspeed will be maintained from the point where they are set until landing or at the end of the flight plan. These settings can however be disabled by **Disable previous Altitude Limits, Disable previous Speed Limits**, or by entering new manual settings at the next waypoint.

Normally a turn will already be initiated by the FMS before the waypoint, so a smooth transition to the next part of the route is given. This function can be disabled for a marked waypoint with **Turn not before Overfly**. In the figure showing an approach flight this option has been activated for Fix02. This ensures that the aircraft will fly the turn from Fix02 to Fix03 fully, and not arrive before the landing runway too high.

With automatically generated flight plans this option will be used by the program if necessary.

If manual waypoint settings are technically impossible for an aircraft, they will be rejected or adapted automatically by the program.

An empty entry line means: No manual settings.
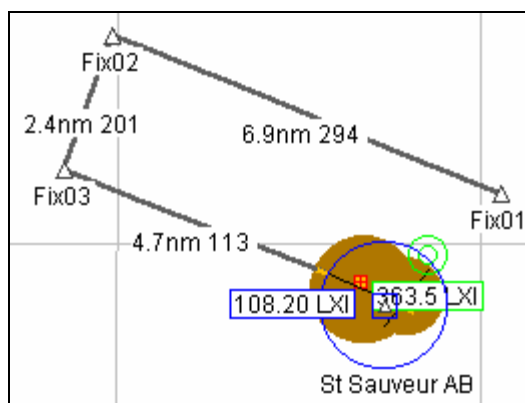
Dialog box Holding Pattern

Only one (1) Holding loop can be defined at a time. Defining a new holding loop will delete the previous one. If you define a holding loop during flight, the heading preset in **Heading** is your present heading. The **Segment length** can be given in minutes or nautical miles. Please take into account that FMS cannot make turns with a diameter of < 3 n.m., or 1.5 minutes. Also the airspeed should be reduced to =<180 knots.

Dialog box Properties of SID/STAR

With this function a marked SID or STAR can be renamed or the global region of an airport can be changed.

In the list above all existing SID/STARs are indicated that have the same starting- and ending point.

Assigning an **Identification** is important. Different ID's mean different SID/STARs. SID/STARs with a different starting point or ending point can have the same ID.

Description is optional, and can contain remarks on the SID/STAR.

With **Global Region** and **Country** you can define the place of the airport in the hierarchy of the window **Airports with SID/STARs**. With **Country** you can only use countries for which a number of airports with SID/STARs already exists. The FSNavigator team will adapt the number of countries available as necessary.

In the field **Author** you can enter your name or e-mail address. Thereby you become one of the authors of the SID/STARs of this airport. A maximum of 10 different authors will be stored with one airport, and shown in the window **Airports with SID/STARs**. When there are more than 10 authors the first name on the list is removed. This does not apply to the original author who first uploaded this airport, whose name will never be removed.

Please note:
You have to make an important decision, especially if you want to upload your newly made ore modified SID/STARs via **SID/STAR Upload** to the central server on the Internet. The problem is, that two users may be working on the same Airport at the same time. This can never be excluded, and it may lead to a later loss of your work.

So what is the best way ?
• Make sure your computer has the right date and time settings.
• Before you start work on new SID/STARs for an Airport, or modify the existing ones, always download the last SID/STARs first.
• Only work on one Airport at a time.
• As soon as the Airport is finished, upload the data via **SID/STAR Upload** to the central Internet Server. Don't send any unfinished Airports, as these will be deleted.
• After uploading your SID/STARs wait for 5 days, and then do an SID/STAR download. You will then be able to see any alterations the FSNavigator team has possibly made.

After changing properties, the airport in the window **Airports with SID/STARs** will be marked with a red dot.
This means that:
• The airport no longer conforms to the data on the central internet server
• The airport is ready for **SID/STAR Upload**
• The airport is now protected, and will not be overwritten when you do a **SID/STAR Download**. This also applies when **SID/STARs** downloaded from the central internet server should have a later date.

Dialog box Tower View (not available in FS2004)

This dialog box is only shown if the aircraft is airborne while the Tower View is set. Here you can enter the elevation of the viewpoint. As a default value the actual altitude of the aircraft is given.

Dialog box Payment and Registration

Until you register, FSNavigator will work in Demo Mode. This means that you will have full functionality but limited to 20 Flt.Sim sessions. To be able to see the map after 20 sessions you will need to buy a Registration Key.

Pay and register this program via our Homepage http://www.fsnavigator.com/. Besides payment by Credit Card also payment in cash (international), by Euro Check (Europe) or via Bank transfer (Germany) is possible.

When you have received your registration information via e-mail, enter these data into the fields **Name**, **Date** and **Key**. If in the dialog box the **OK** button is activated, the data as entered are valid.
After pressing the **OK** button the dialog box is closed, and the program will work without further limitations. If you have to re-install FSNavigator at a later date, you will have to enter the same registration data again. The registration data are independent of hardware, and valid for all your FSNavigator installations.

You can win a free registration key:
On every 30th computer FSNavigator will register itself directly the first time the program is used.
If this is the case, a dialog box will inform you about it at once. In this dialog box you are given a key for unlocking all program functions permanently. Make a note of this key! You may need it again in case you have to re-install your program. You can also find this key in the textfile **...\Flt.Sim\Modules\FSNavigator\Bin\Program.cfg**

    [Essential]
    LicenseKey=xxxxxxx

This free registration key differs from the paid key by the following limitations:

- The registration key will only be valid for this computer.
- After HDD change or after formatting your C: partition, the registration key will no longer be valid.
- You are not entitled to a replacement key in case of loss or if your key becomes invalid.
- There are no guarantees and you are not entitled to support from the FSNavigator Team.

The Statusbar

The status bar at the lower edge of the display shows from left to the right:

Help text or the position of the mouse pointer on the map.
Name of the flight plan in use.
Name of the aircraft in use.
The Zoom factor.