SILENT WINGS
SOARING SIMULATOR

FLIGHT MANUAL

Revision 1.05 for Silent Wings 1.07
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Introduction

Welcome to the exciting world of silent flight, and welcome to the Silent Wings soaring experience!

This manual will give you a thorough explanation of the user interface and controls of the simulator software. We will also give a short introduction to the basics of soaring flight, but for those new to the sport of soaring we recommend supplementing with one of the many beginners' texts on soaring.

For the impatient, we recommend starting with the "Quick Start" chapter which will get you started in a minimum amount of time.

Installation and setup

To install Silent Wings you should follow the instructions on the Silent Wings website, but generally the procedure is as follows.

1. Obtain an installation package, either by downloading or by purchasing a CD.
2. Install the Silent Wings simulator package.
3. Install one or more scenery packages.
4. Acquire a license key for the software.

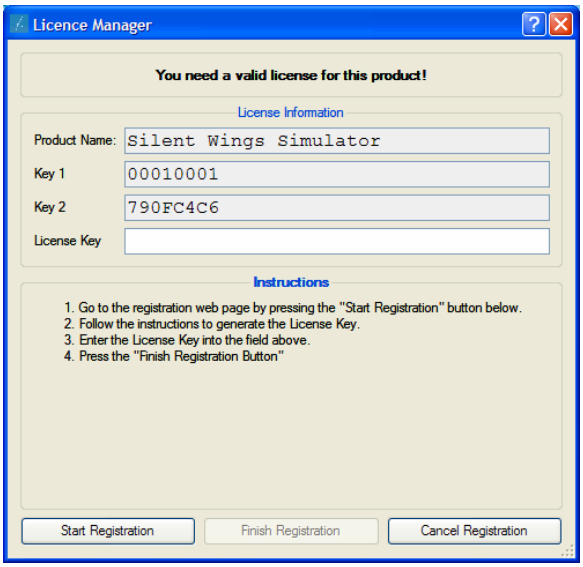
Each of the installation packages are distributed as an .exe-file (Windows) or tar.gz archive (Linux). For the windows version the procedure is self-explanatory, just run the .exe file and follow the instructions.

Scenery packages may be distributed in .zip files. These files must be unzipped to the correct folder, usually:

C:\Program Files\Silent Wings\Silent Wings\data\scenery

License manager

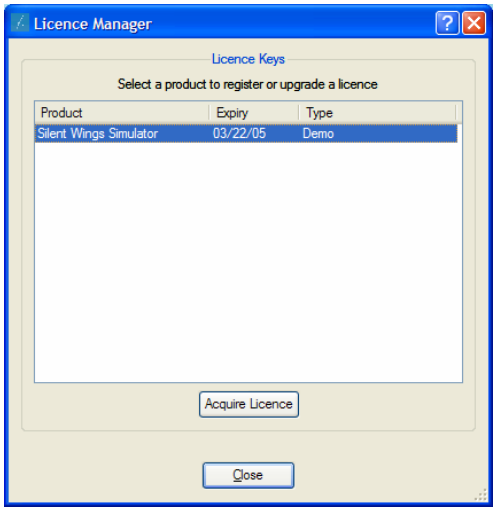
An important step before you can start using Silent Wings is to obtain a License Key for the software. You can either register for a time-limited demo key, or purchase a full license key.



When running the software for the first time, the License Manager will appear automatically. Just follow the instructions given to connect to our registration server and acquire a valid license key.

You can register for a free demo license or purchase a full license. The demo license is limited to 14 days, and only the G-103 Twin II trainer aircraft is available.

The full license can be purchased online with all major credit cards, and has of course no limitations in duration or aircraft selection.



If you want to upgrade a demo license at a later time, or if you install new add-on products such as aircraft or scenery, you can access the license manager through the button on the main user interface screen.

This will open a list of installed products and the associated license keys. If a license key is upgradeable or if you have an unlicensed product, you can select this product key and press the “Acquire License” button. This will open the registration dialog as shown earlier.

License keys are tied to your computer, so if you change computer you need to obtain a new licence key. If you have paid for a full license, this can be transferred to your new computer.

Quick start

This section is intended to get you airborne in the shortest possible time. Assuming the installation went well, and you have started the Silent Wings application, you should be presented with the main screen with a few buttons.

To get into the air in the shortest amount of time:

1. Click the “Flight Planner”.
2. Select a glider, on the “Aircraft” tab, for example the G-103 Twin II trainer
3. Select a scenery on the “Location” tab. Click in the map to place your aircraft.
4. Click “Fly Now”

This will place you in a G-103 Twin II trainer 1000 meters above the location you selected. Before pressing the “Fly Now” button, you should review the following short list of the most important joystick and keyboard commands

Nose Down	Joystick forward, arrow up key
Nose Up	Joystick backwards, arrow down key
Bank Left	Joystick left, arrow left key
Bank Right	Joystick right, arrow right key
Airbrakes Extend	A
Airbrakes Retract	SHIFT+A
Camera Views	F1-F4
Map	M
Camera Panning	Joystick POV Hat, Mouse + Right Button, SHIFT + Arrow Keys
Auto Pilot	CTRL+S (Speed) CTRL+H (Heading) CTRL+B (Bank)
Show Thermals	CTRL+T

The cockpit

The following picture shows the view from the cockpit of the Antares glider. Most of the aircraft have a similar setup. You can look around in the cockpit by using the joystick POV hat, or by pressing the right mouse button and moving the mouse. You can zoom in on different parts of the cockpit by using the mouse wheel or the PgUp/PgDown buttons. Alternatively you can assign the zoom function to two joystick buttons. Another useful camera control is the "Auto Pan" mode (CTRL+P). When this mode is enabled, the camera will look into turns and try to keep the horizon in sight.

In the picture below you can see the instrument console with Altimeter, Airspeed Indicator and Variometer on the top row, and the flight computer instruments below. See the "Instruments" chapter for more details on these. In addition to the 3D instrument panel, you can put individual instruments on the 2D overlay. Double-clicking on an instrument will place it in one of the corners of the screen, and it will be visible both in inside and outside views.

The HUD

The main screen in Silent Wings has a 2D overlay of information, also known as a Heads-Up-Display (HUD), which contains various items of vital information. You can toggle this display with the "I" key. The HUD has three

modes, “Off”, “Flight” and “Competition”. The Competition mode shows info relevant for spectators in a competition such as pilot name, aircraft type, task speed, etc. The flight mode is the default for the player aircraft and is described in more detail here.

On the left of the screen you see the Speed To Fly-indicator (STF) which indicates the optimal speed to fly according the the MacCready theory which is described in most gliding handbooks. This indicator consists of a vertical bar showing if you fly too slow (bar extends below the line) or too fast (bar extends above line). When the bar is in the middle you fly the correct speed for the current MacCready setting. The current MacCready setting is shown to the right of the STF bar. Adjust this setting with the R and SHIFT+R keys. The MacCready value should be set to the expected climb rate of today’s thermals.

Below the MacCready number you can see an altitude indication. This is the arrival altitude for the current waypoint at the current airspeed. If this number is negative, you need to gain altitude to reach your goal.

In the top center of the screen you can see the navigation display. The main part of this indicator is the navigation bar. This bar indicates which direction you need to turn to get on track to the next waypoint. The name of the waypoint is indicated above the bar, and the compass heading towards it is shown below together with the distance to the waypoint.

In the bottom right corner you can see the control indicator. The large square represents the stick movement and current position. Below the stick indicator is a horizontal line with a white dot. This indicates the rudder movement. On the left side you have one or more vertical slider indicators, blue for airbrakes, grey for flaps and black for throttle. How many indicators that are shown, depends on the features of your current aircraft.

Above the Control Indicator, you will find the wind indicator. The yellow arrow shows the direction of the wind relative to the aircraft.

In the corners of the HUD you can see miscellaneous textual information such as altitude, airspeed and position. In addition you can see a frame rate counter in the lower left hand corner of the screen. This indicates the number of frames rendered per second (fps). If this number gets below 10-15fps the aircraft becomes sluggish and difficult to control. You can increase the frame rate by adjusting some of the configuration settings. See the Configuration chapter for details.

The map screen

By pressing the “M” key during flight you will be taken to the map screen. It may be a good idea to enable the autopilot or pause the simulation by pressing the “P” key before doing this, since the simulation continues to run while in map mode.

On the map screen you can see all the aircraft in the airspace around you, task info and turn points. By mousing over a turn point (yellow dots) you get

info on that point. You can zoom in and out by using the mouse wheel or pressing the +/- keys. You can pan around the map by dragging the mouse with the left mouse button pressed. Alternatively you can use the arrow keys. Another useful feature with the map screen is that you can measure distances by pressing the right mouse button and dragging over the map.

All aircraft selection commands, time speedup, pause and a few other key commands also work in map mode.

By pressing the space bar, the map will lock on the currently selected aircraft. By panning the map, this lock will be released.

Soaring basics

The following is a gentle introduction to the basics of soaring flight. This intro refers to the Minden area, and assumes that you have this scenery installed, but the concepts are of course general.

Thermals

In the Minden area the primary form of lift is from thermals due to the hot and dry nature of the area. Thermals are rising columns of air caused by heat sources on the ground. This can be from the sun heating the ground or from artificial sources of heat like power station chimneys.

A dark area such as a field of burnt grass collects a lot of heat from the sun and will be a lot hotter than the ground around it. This causes the air to rise since it is hotter and less dense than the cooler surrounding air. The rising air rises in a column until it cools down enough to stop rising. Normally there will be a cloud sitting at the top of the thermals - cumulus clouds are a good sign of thermal activity.

So to make things short - set the wind to zero in Silent Wings and then fly directly under some clouds. When you see the variometer needle swing upwards and hear a beep-beep-beep tone start circling in the lift and you should start climbing. Setting the wind to zero will ensure that the column of rising air is not bent in the wind and will make it easier.

To make the thermals visible in Silent Wings press CTRL+T. The red lines show the rising columns of hot air (thermals). It takes a bit of practice to center on a thermal properly so if you are really battling, set the thermal size, activity and strength to high under the weather tab.

Note that not all Cumulus clouds will have thermals under them - some might be dying/decaying and may have strong downdrafts under them instead of lift. Also some thermals won't have clouds on top and are sometimes called "blue thermals" because there is just blue sky above them.

Ridge Lift

The second form of lift in Silent Wings is ridge lift. If you set up a strong wind from the East you will be able to soar along the ridge to the West of Lake Tahoe. The air hitting the ridge will be deflected upwards and you can use that as a form of lift.

The third form is wave lift which is not currently modeled in SW. It is a result of ridge lift but is often tricky to find and exploit - you have to know where to look for it but may stumble upon it by accident in real life.

Instruments

The variometer is a total energy meter (which very simply put means that the effect of using the elevator is filtered out, leaving you with pure lift or sink). If the needle points upwards you are in rising air and are climbing. If it points downwards you are in sinking air or are "gliding". When you hear a

constant low tone it means you are sinking at more than 1m/s. When you hear it doing a beep-beep-beep tone you are in rising air and are gaining altitude.

For further reading, we recommend the following links:

- **https://ntc.cap.af.mil/ops/DOT/school/NCPSC/GliderNCPSC/CAPF_5_glider/soaringtechniques.htm**
- **http://www.sac.ca/soar.htm**

Instruments

All aircraft in Silent Wings contain a similar set of instruments. Some of these instruments can be interacted with by using the mouse. This can be done in 3D mode by clicking in the instrument panel, or you can double-click an instrument to put it on the 2D overlay panel for easier operation.

Altimeter

The altimeter is a standard pressure altimeter found in most gliders. The metric version has two needles, hundreds and thousands, while the imperial units version has an extra ten thousand needle.

By right-clicking and dragging the mouse over the altimeter, you can adjust the altimeter setting to a different ground level. Normally, the altimeter is set to 0 on the airfield you started. If you want, you can set it to absolute altitude instead, by setting the altimeter to the airfield elevation before start.

Airspeed Indicator

All aircraft are equipped with a standard airspeed indicator either in km/hour (metric) or knots (imperial). The standard color markings on the ASI indicate the airspeed limitations.

G Meter

The G-103 Twin II is equipped with a G-meter which indicates max, min and current G-load. The L-NAV also contains a digital G-meter.

Variometer

The variometer is a total energy compensated vario with very good response time. Some would argue that the vario is unrealistically good, with very little delay, but we feel that this is fair since you lose the advantage of the “kick in the pants” that you would have in a real aircraft.

You can adjust the variometer scale through the L-NAV flight computer.

Flight Computer and GPS

The flight computer instruments consist of a partial implementation of the Cambridge L-NAV and GPS-NAV instruments. Not all the features from the original instruments are implemented, since most of this

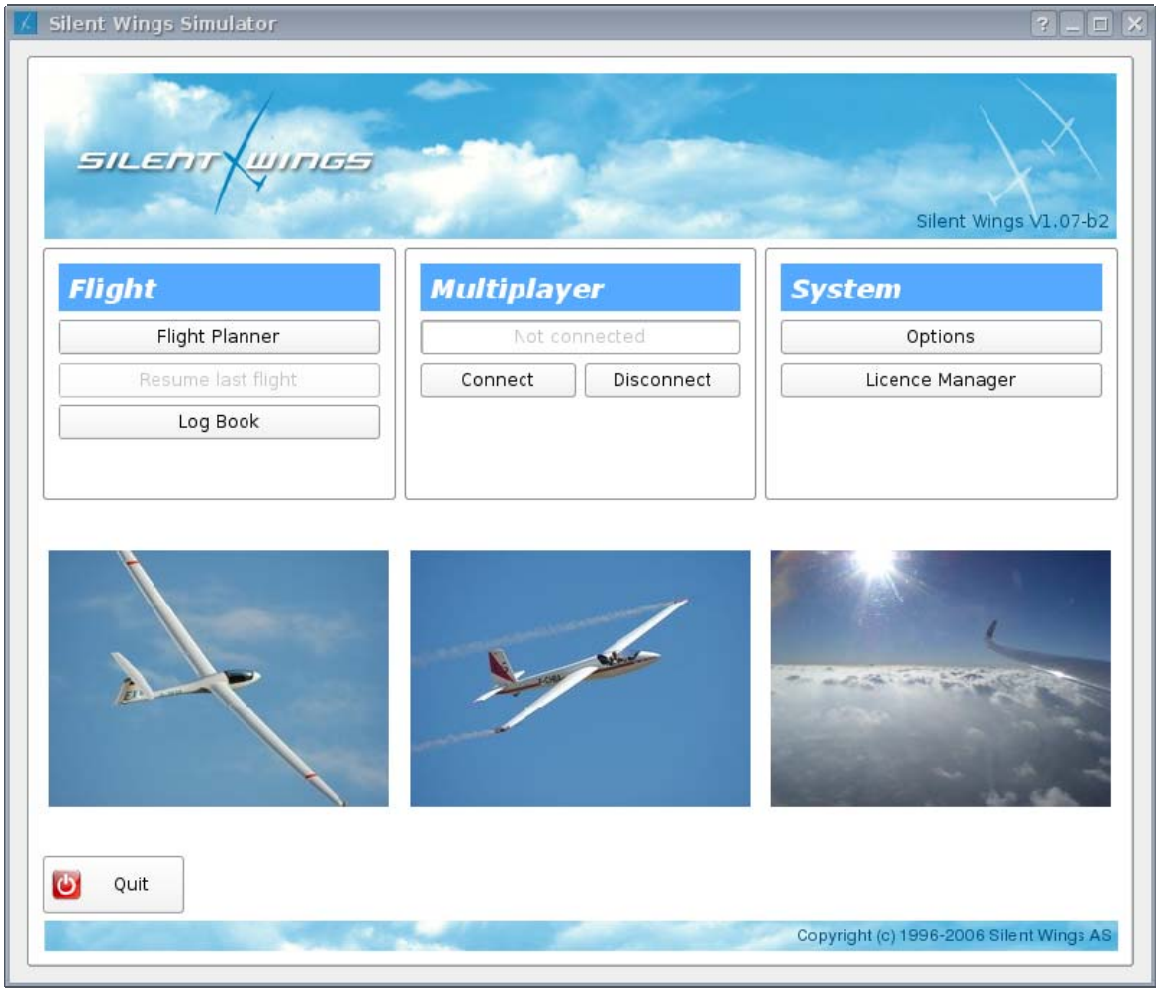
functionality can be found on the HUD or in other parts of the simulator. You can click the buttons of these instruments with your mouse to operate them as you would the original instruments.

We will not go in detail on the operation of these instruments. If you need an instruction manual this can be downloaded from Cambridge Aero Instruments at the web address, http://www.cambridge-aero.com/

The user interface

This chapter will explain the different screens and menus of the main user interface in detail.

Main screen



The main screen contains a set of menu buttons that you can press to access the other parts of the user interface. The functions are ordered in three categories, “Flight”, “Multiplayer” and “System”. Each of these modules will be handled in detail in the following sections.

Also visible in the top banner of the main screen is the version number of your Silent Wings copy. This can be useful when looking for updates on the Silent Wings web pages and when communicating with Silent Wings Support.

In addition there is a slide show of soaring related images that run continuously in the lower part of the screen. This has no other function than to look nice.

Resume last flight: Resume flight where you stopped the last time. If you had to abort the flight for some reason you can use this button to continue where you left off.

Please note that this function is not available in Multiplayer, so if your last flight was a multiplayer flight, this option is disabled.

Flight planner

The flight planner is the main part of the user interface. Here you set up all the aspects of a soaring flight, from what aircraft to fly, where to fly it, in what weather conditions and with whom.

Fly Now: When you have set up the flight as you want it, press this button to start the simulator with the selected settings.

Save Flight: Store the flight parameters to a file for later use. Flight files are stored by default in the “situation” folder of the Silent Wings data directory.

Load Flight: Load a previously saved flight file.

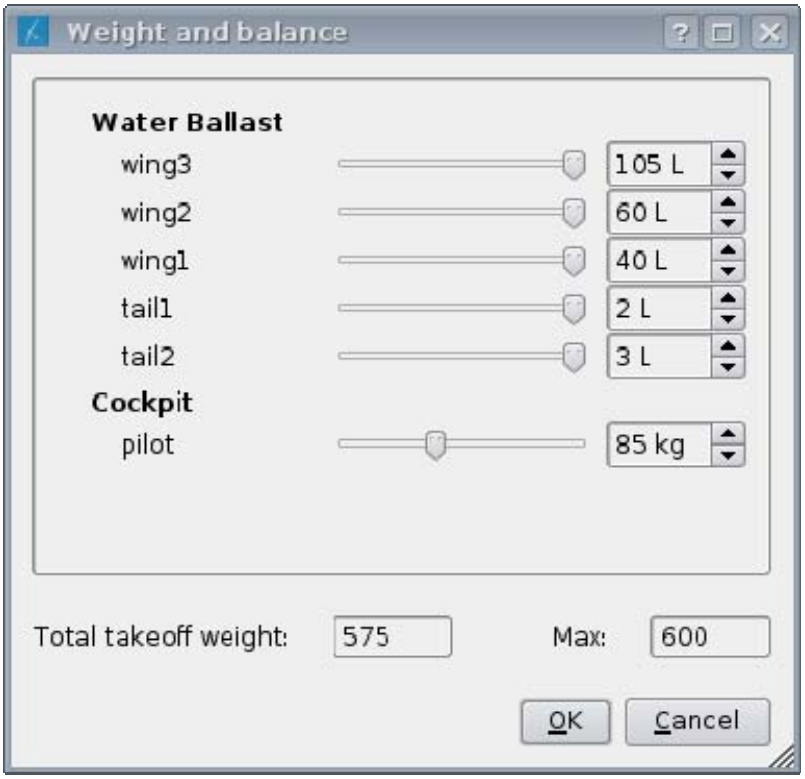
Main Menu: Pressing this button will take you back to the main menu page.

Select aircraft

The first tab of the flight planner is the aircraft selection page. Here you can select one of the installed aircraft. Select aircraft by clicking on the icons below the 3D view. By pressing the mouse buttons and dragging in the 3D window you can rotate and zoom the 3D view.

In the upper right part of the page you can read a bit of info on the selected aircraft, including technical data. This info section also contains links to related web pages.

In the lower right part of the view you can set up weight and water ballast for the aircraft, by clicking the weight and balance button. Here you can also customize the aircraft's registration letters and competition number. These changes are reflected immediately in the 3D view.

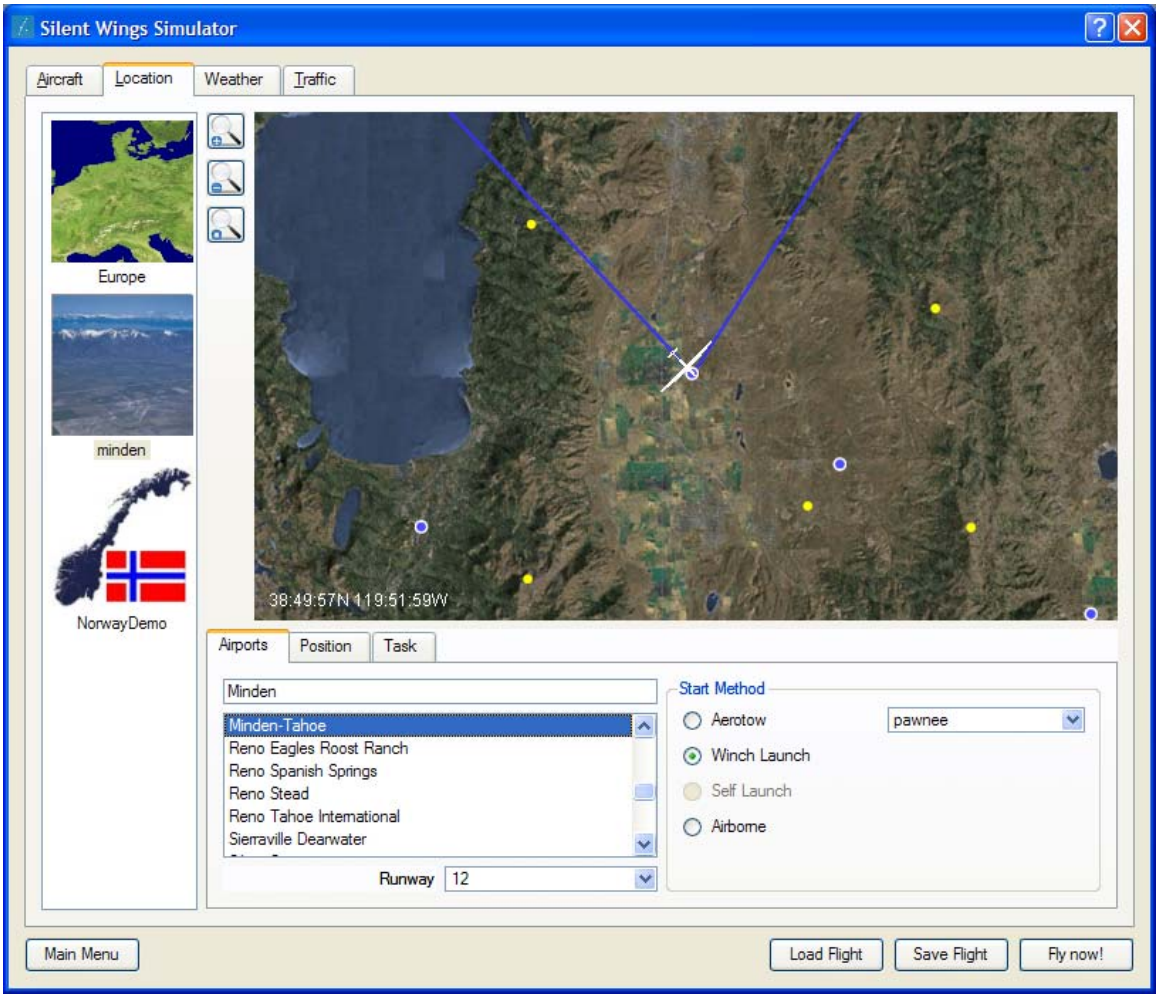


Use the sliders to set the amount of water in the tanks (if any – some gliders do not have water ballast tanks). You can also set the weight of the pilot(s), depending on the aircraft's configuration. This particular weight and balance dialog is taken from the Antares 18S.

Go to www.silentwings.no/download to download free add-on aircraft.

Select scenery

In this page you can select from the installed sceneries by clicking the icons on the left. A map is shown in the middle of the page where you can see your aircraft and its surroundings. You can navigate by clicking near the edges of the map, or by holding down the shift button while dragging the mouse. The magnifying glass buttons are used to zoom in and out.



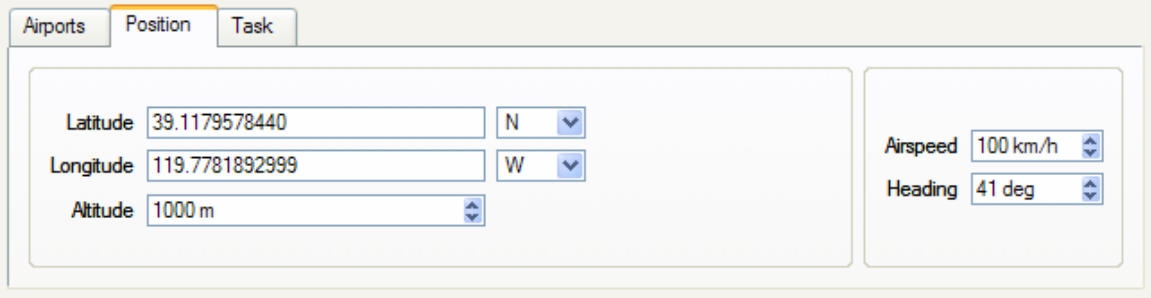
In the map you can see airfields marked with blue and white dots, and turn points are indicated with yellow dots.

Below the map you can find some tabs which control the start location. On the “Airports” tab you can select from a list of airports and runways. You can search in the list by typing in the search field above the list.

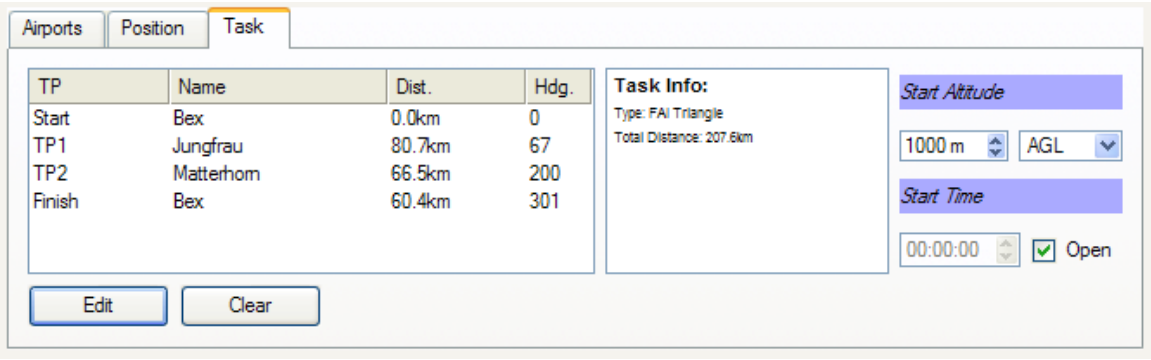
In the right panel you can select your preferred start method. The simplest option is of course to select “Start Airborne” in which case you start 1000m above the point selected on the map. By selecting “Aerotow” you will be placed at the currently selected runway with a towplane ready to pull you aloft. The “Self Launch” option is only available if you have chosen a self-launching glider, for example the Antares. In this case you are placed on the

selected runway ready for take off. To extend the engine, just increase the throttle (+ key); The Antares has a single-handle engine control system.

In the “Location” tab you can set exact position in Lat/Lon coordinates as well as altitude and heading of the aircraft. You may also click in the map to place the aircraft manually.

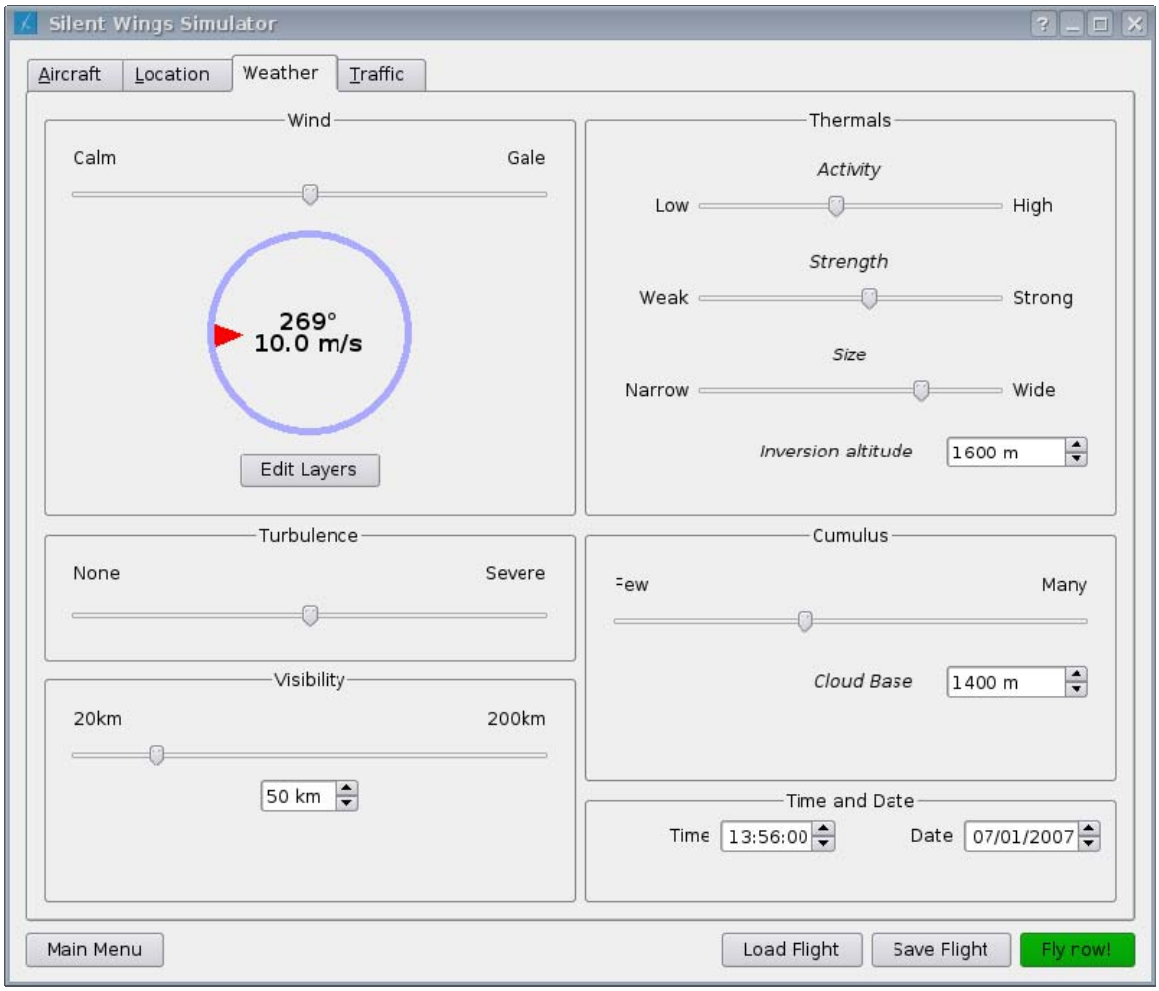


In the “Task” tab you may select a task. Press the “Edit” button to enter the Task Planner and to select or create a task. In this panel you can also set the maximum start altitude for the task. No aircraft may start higher than this altitude. You can also set the start gate open time. No aircraft will start before this time. This time is relative to “Simulator Time” which can be set on the Weather page. In multiplayer, this time is relative to the “Server Time” which is set automatically when connecting to the server. By checking the “Open” option, the start gate will be open all the time.



See the “Task Planner” chapter for more details on setting up the task itself.

Select weather



The weather setup page is where you control the soaring conditions. You can adjust winds and thermal conditions to prepare for a nice and easy flight or a more challenging one

The wind slider is used to set the general wind strength. For easy thermal soaring this should be quite low, below 5m/s. For more challenging flights and for good hang conditions it should be a bit higher. To experience good lee waves, you should set the wind to at least 10 m/s, and ensure that the inversion altitude (see below) is set to an altitude lower than the mountains that will generate the lee waves.

The compass needle is used to set the general wind direction. These controllers affect wind in low altitudes only. Higher up, the wind will increase and change direction. To have complete control of the wind in all altitude layers, click the “Edit Layers” button.

The thermals sliders are used to set parameters for the thermal updrafts. Here you can set up conditions to be as easy or difficult as you want. The inversion altitude defines the altitude where the thermals stop rising, and the lower floor of the waves.

The turbulence slider determines the general strength of turbulence. You will encounter turbulence in connection with wind shear, thermals and behind ridges. By adjusting this slider you can reduce or increase these effects. Turbulence is also dependent on the wind strength in the area, so if you have a very strong wind on a ridge, you will experience heavy turbulence on the lee side even if the turbulence slider value is quite low.

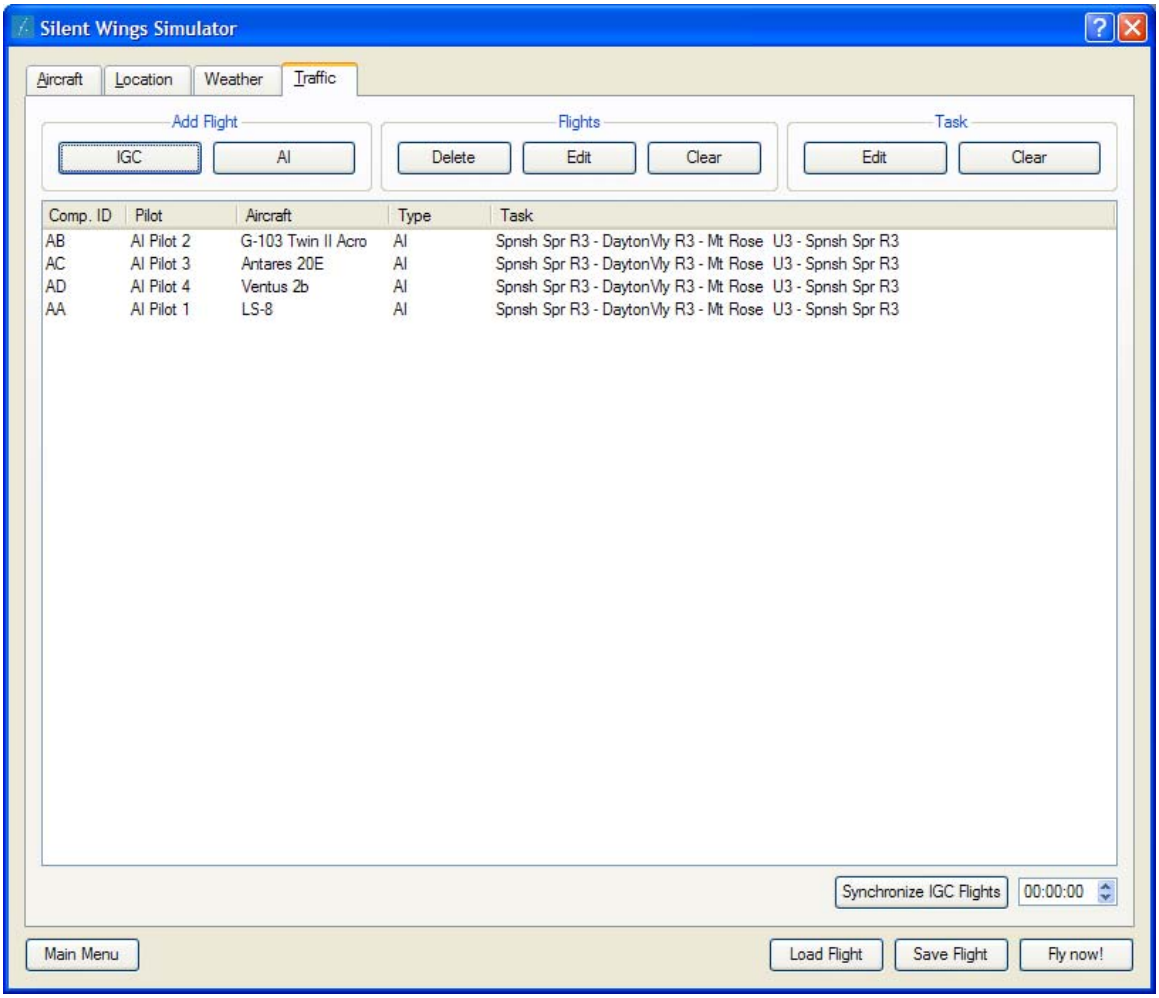
The clouds section controls the development of cumulus clouds. You can adjust the amount of clouds with the slider. If you have few clouds and much thermal activity, many of the thermals will be “dry”, i.e with no cumulus on top. *Tip:* The 3D clouds will affect the rendering speed, so if you have low frame rates, try reducing the amount of clouds.

Cloud Base: This controls the altitude of the cumulus cloud base relative to the ground.

Time and Date: Here you can set the time and date for the simulation (referred to as “Simulator Time”). These settings will influence the lighting and thermal conditions for the flight. Thermals are strongest in the middle of the day and early afternoon. Thermal conditions will change during the day, so if you are planning on a long flight, you should start early in the day to avoid running out of lift in the afternoon.

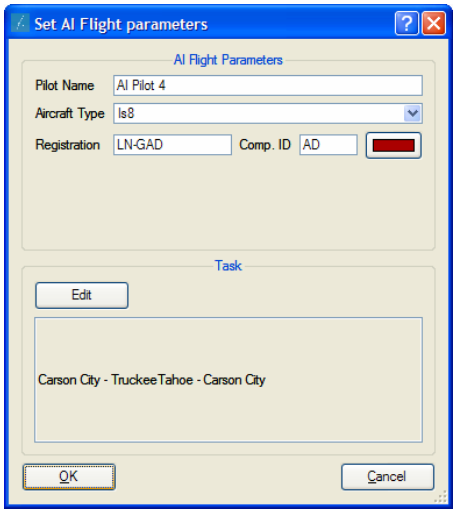
In multiplayer, this field will show “Server Time”. The time of day effects may be disabled on the server, so if you are connected to an MP server and the clock shows night time, you may still have plenty of thermals.

Set up traffic



This page control what other aircraft you may encounter on your flight. Here you can add computer controlled AI aircraft as well as IGC logs.

The buttons along the top of the screen are used to add or remove new flights, and to assign a task to the current group of flights.



In the simulator you move the camera between the different aircraft using the CTRL+F2 (Cycle Aircraft) or Tab (Aircraft Menu) keys.

AI Flights

By pressing the "AI" button a new computer controlled AI (Artificial Intelligence) aircraft is added. These aircraft fly together with you, either just following your aircraft or following an assigned task. AI aircraft can also be good

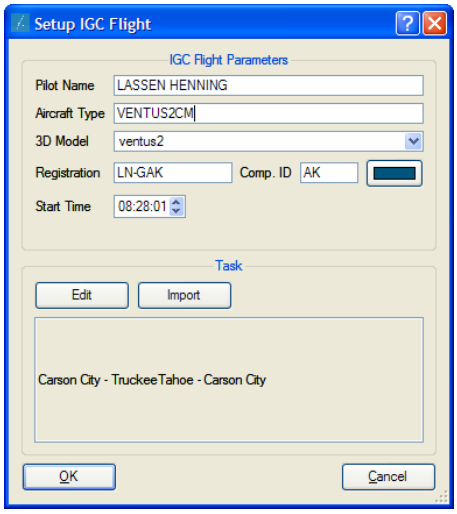
indicators of thermals. Use the aircraft labels (“L” key) to be able to see these aircraft better.

By double-clicking an AI flight, or using the “Edit” button, you can set various parameters related to the AI flight. Here you can set name, registration and competition number. The color button controls the colors of the registration letters.

You can also select what aircraft type to use for this AI flight. All the flyable gliders can be used as AI aircraft.

By pressing the “Edit” button in the task group you will be taken to the task planner where you can assign a task to this flight.

IGC Flights



If you have any IGC logs from an area that is covered in the simulator, you can load these logs and play them back in the simulator. If you don’t have any real IGC flight logs you can use the logs produced by previous flights in Silent Wings. Check www.onlinecontest.org for IGC files, you should be able to find some interesting ones to play back.

These IGC logger aircraft will appear in the airspace as other simulator aircraft.

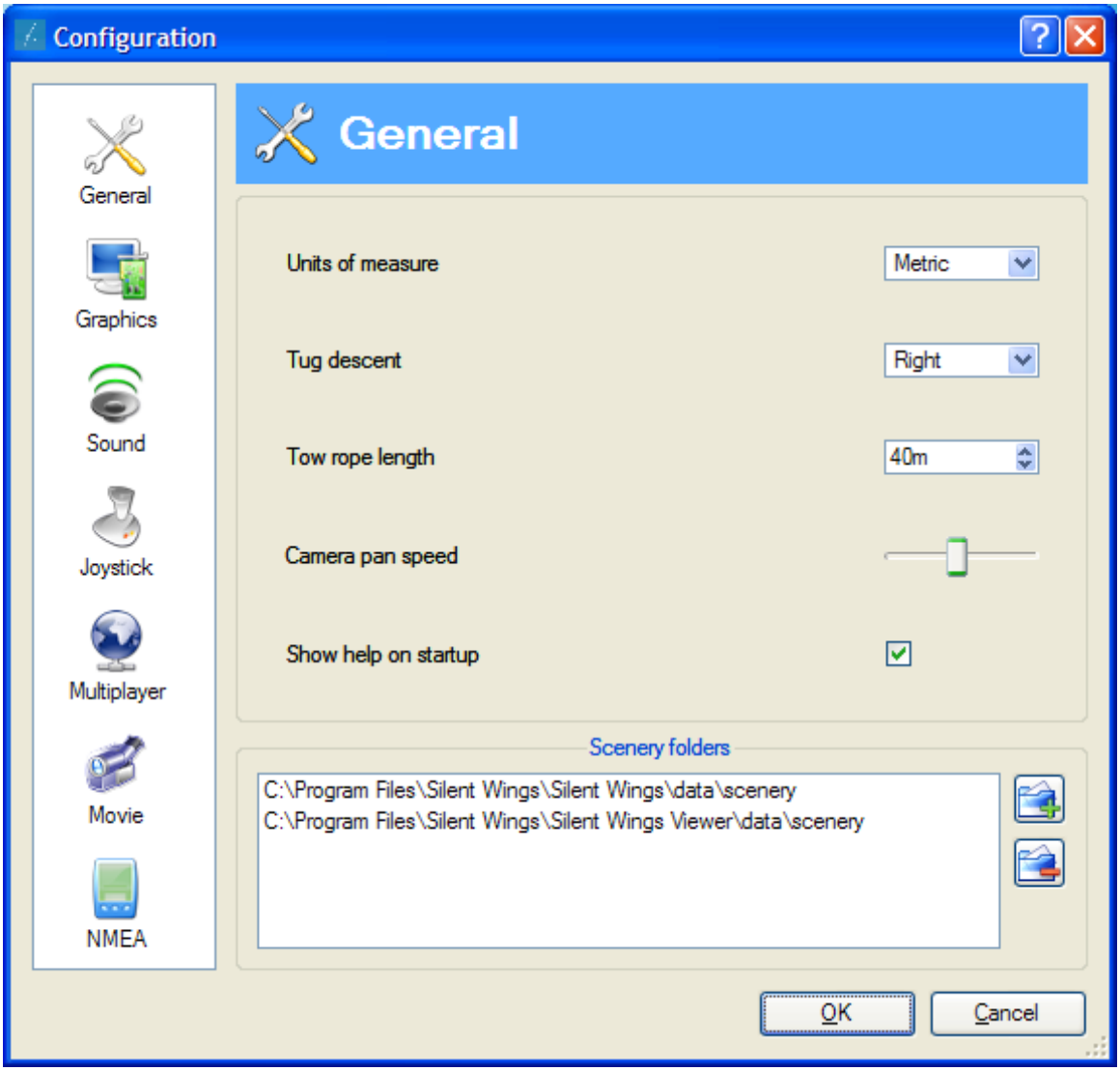
See the “Log Book” chapter for further details on IGC logs produced by Silent Wings.

Below the aircraft list you see a “Synchronize IGC Flights” button and a time field. Here you can synchronize all IGC logs to start at the same time. This must naturally be a time that is common for all the IGC logs. I.e you can not select a time that is after one of the logs ended or before another starts.

Configuration

By pressing the “Options” button in the System category on the main page, you will be taken to the Options screen where you can configure the different options in the simulator.

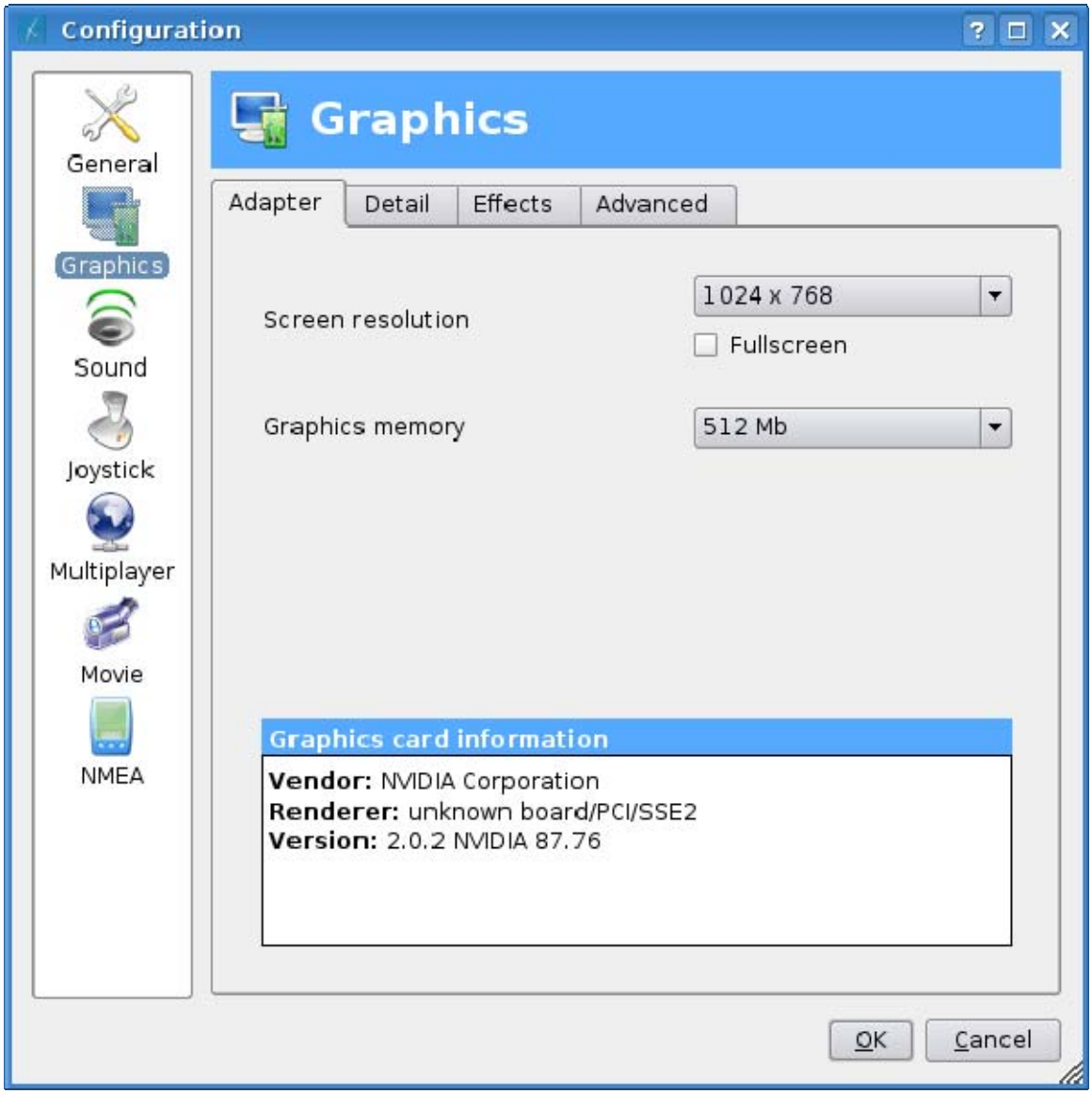
General Options



Units of Measusre / Tug Descent: Here you can select units system, either metric (meters, km/h, etc) or Imperial (feet, knots, etc). Here you can also select which way the tug goes after tow release. In most countries the tug goes left and the glider turns right, but some places it’s the other way round.

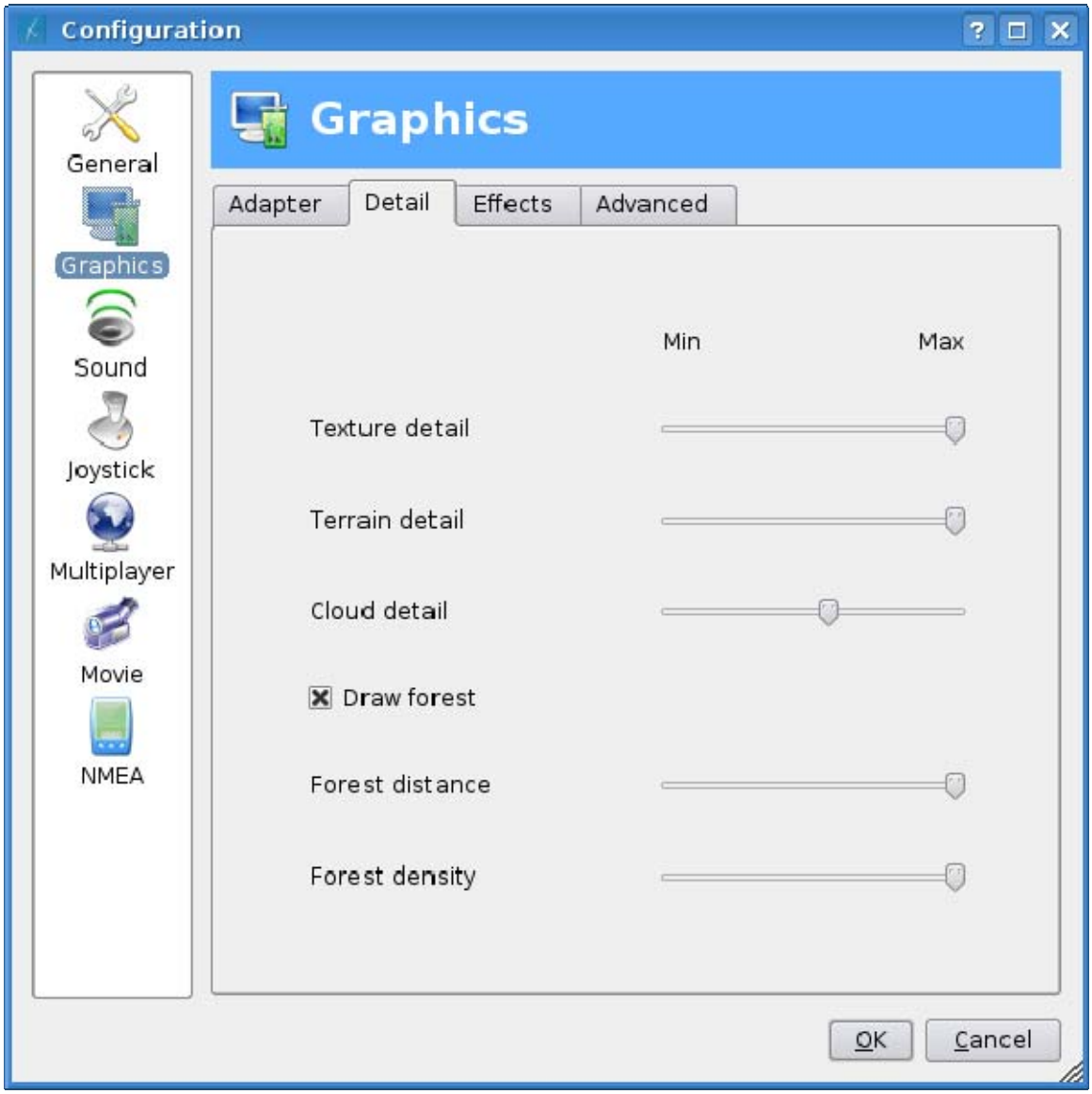
Scenery Folders: If you want to install scenery in other folders than the default, you can set up extra search paths for scenery in this list. All of the folders in the list will be searched for scenery, and all scenery found will appear on the Location bar in the flight planner.

Graphics Options



Screen Resolution: In this section you can select screen resolution and other screen options. By enabling the fullscreen option, the simulator will switch to the selected screen resolution and run in full screen mode. If not, the simulator will run in a regular window on the desktop.

Graphics Card Memory: Set this value to the amount of memory on your graphics card. By setting this value too high or too low, rendering speeds may be slower.



Texture Detail: This slider controls how detailed the ground textures should be. If you experience serious “stuttering” or rendering slowdown after flying for a while, you should try reducing this parameter

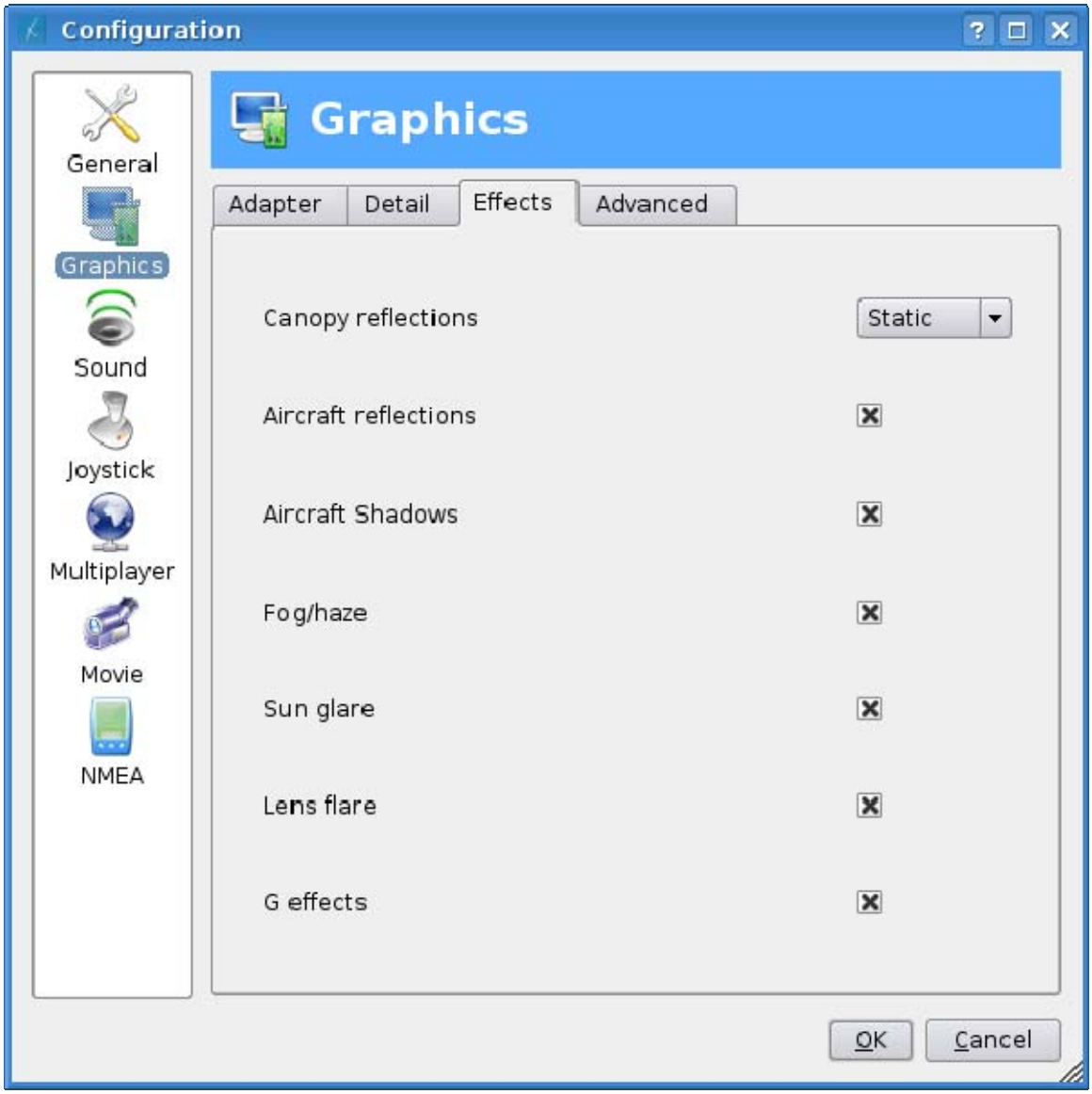
Terrain Detail: This slider controls how detailed the rendering of the terrain surface should be. By reducing detail you can increase rendering speed, especially on older graphics cards.

Cloud Detail: This detail controls how detailed each cloud should be. You can increase rendering speed by reducing this parameter in exchange for lower visual quality on the clouds.

Draw Forest: Enable this to enable forest rendering.

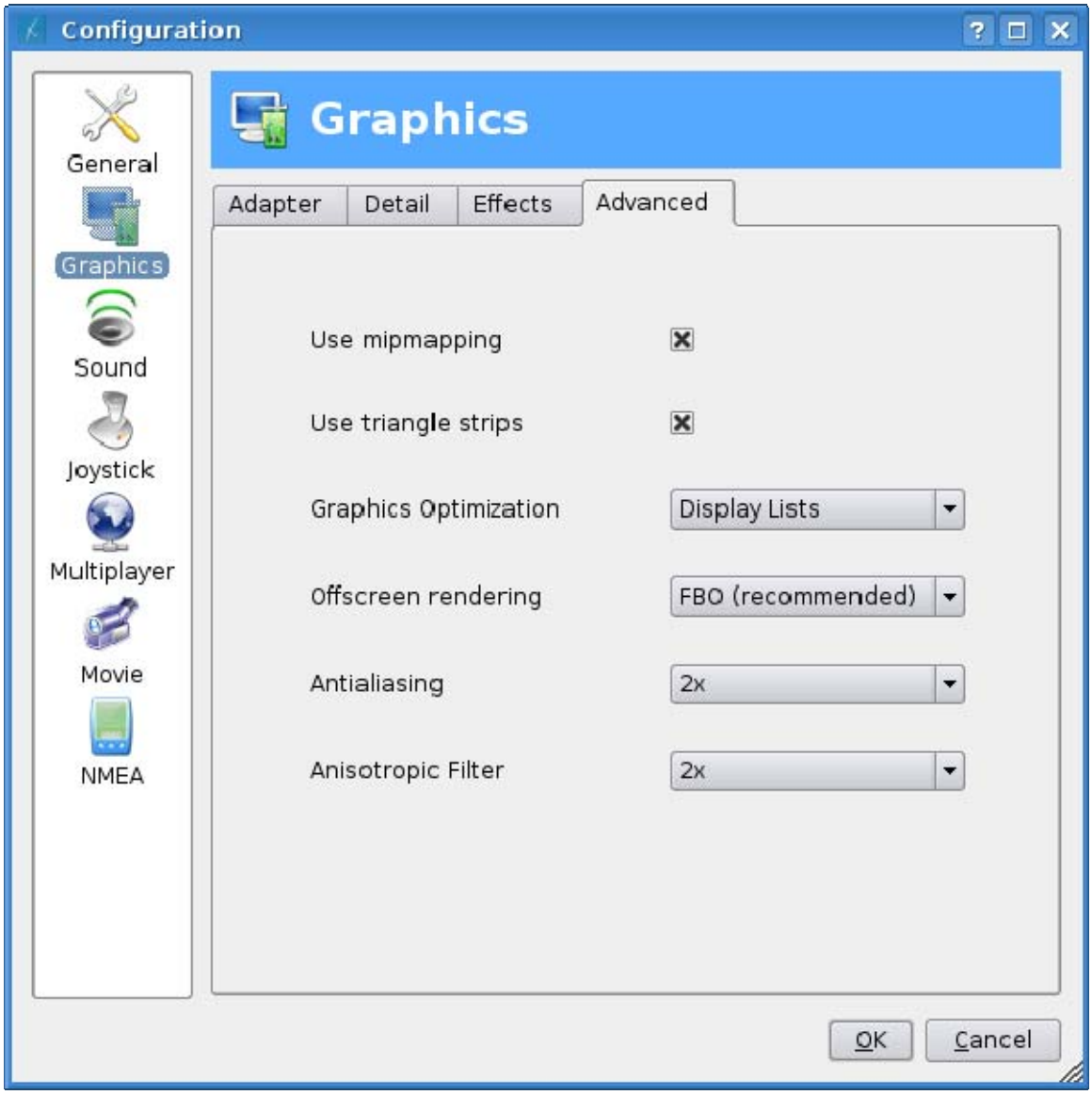
Forest Distance: This slider sets the distance of where the trees in the forest get are inside the visible range.

Forest Density: This slider sets the tree density in the forests.



Effects: By turning off some of these options you can increase rendering speed by sacrificing some of the visual detail.

Canopy reflections: This enables the reflection of the cockpit in the canopy. If set to “Dynamic” you can see the movement of the stick and instruments also in the reflections, but it comes at a penalty of a lower framerate. The “Static” mode gives a static reflection image, which usually causes better performance.



Advanced Options

These options should normally be left as is unless you experience problems with the software, or if you are familiar with the workings of modern graphics cards.

Use Mipmapping: This switch toggles use of “mip-mapping” a technique for smooting the textures to avoid “shimmering” pixels, especially in the horizon. Most users should leave this option enabled.

Use Triangle Strips: This switch toggles use of “triangle strips” which does optimize the rendering of groups of triangles. Most users should leave this option enabled.

Graphics Optimization: This option controls the optimization of the graphics data on the graphics card. These settings are usually determined automatically during initialization, but you may experiment with different

options here. For NVIDIA hardware we recommend using “Display Lists”, while on ATI graphics hardware you may experience better performance with “VBO”.

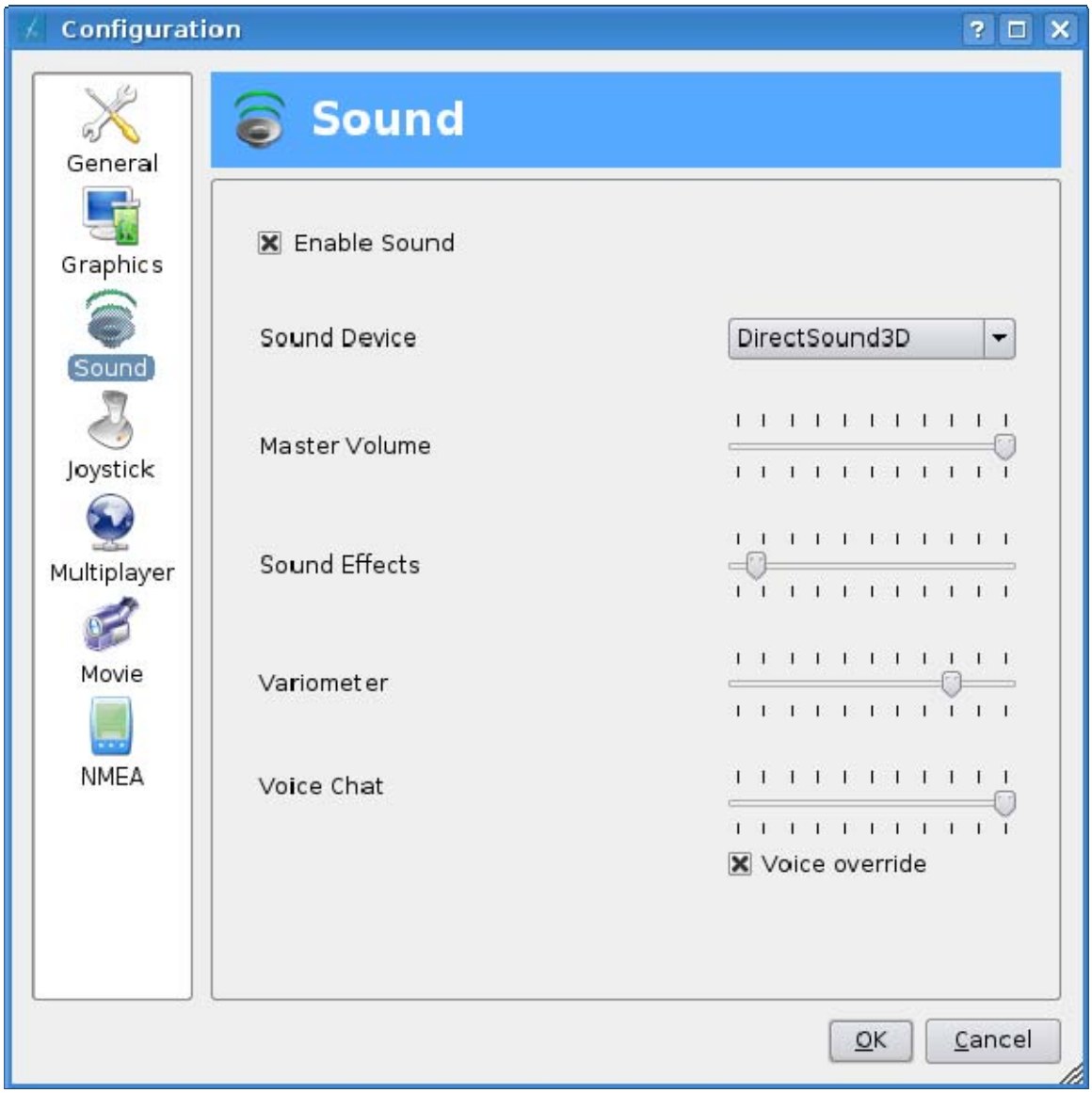
Offscreen Rendering: If you experience “stuttering” in the rendering or graphics errors related to the registration letters, you can try disabling this setting, but you will lose the flight computer instruments on your instrument panel as well as the custom registration letters. The FBO method is recommended, but on some graphic cards/drivers PBuffers work better.

Antialiasing: This option is used to enable full-screen antialiasing. This option will smooth the edges of the graphics to avoid the typical “staircase effect” seen especially in lower screen resolutions. This option will often come at the expense of rendering speed, so don’t use this on older graphics cards.

Anisotropic Filtering: This option is used to enable anisotropic filtering. This improves the visual quality of the textures.

Sound Options

Here you can enable or disable the sounds in the simulator, adjust the master volume, and select which sound device to use. On Windows there will be three available sound devices. Normally, you can leave this setting in its default (Direct Sound 3D), but if you have trouble with the sound, you should try one of the other settings. On Linux this setting has no effect.



The voice override switch will mute the other sound effects when someone is talking on the voice chat radio. This does improve readability of the messages when flying at high speeds with lots of wind noise.

Joystick setup

The primary input method for Silent Wings is of course the joystick. On the joystick tab of the configuration screen you can select which joystick or pedal devices to use and assign functions to the axis of your joystick.

Device: If you have multiple input devices connected to your computer, for example a joystick and a set of pedals, you can select which device you want to set up on the Device drop-down menu.

Axis Assignments: In this table you can assign functions to the various axis of your joystick device. Select a function, for example “Flaps” and assign it to an axis by selecting an axis from the drop-down menu in the right column. Alternatively you can just select a function and click the “Grab Axis” button. This will pop up a small window telling you to move the axis that you want to assign to this function. By moving any axis on your joystick you can now automatically assign that axis to the selected function.

Reverse: By checking the “Reverse” option you can reverse the effect of the selected axis.

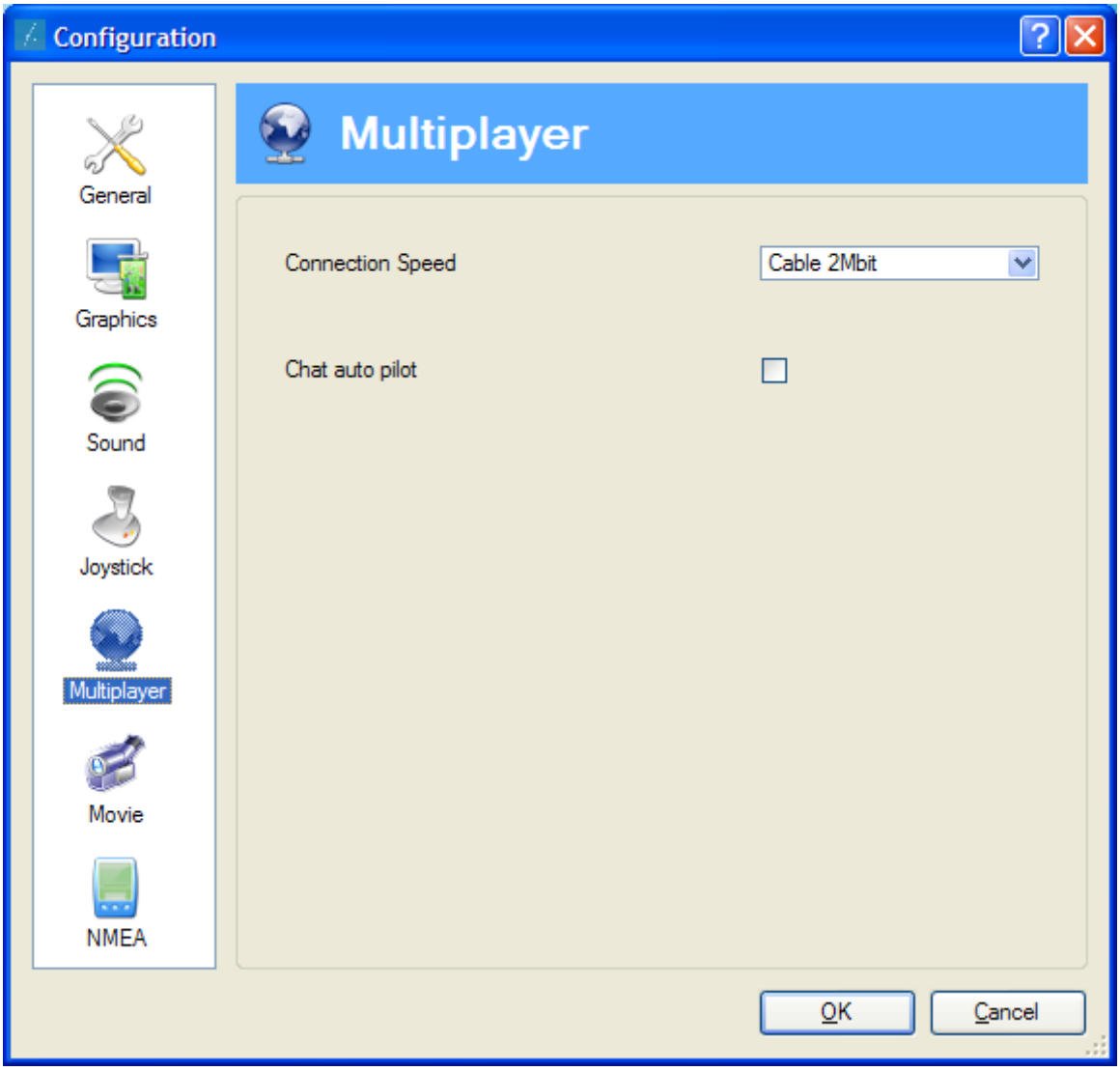
Exponential Response: By enabling the “Exponential Response” option you distribute the effect of the axis so that you get less response near the center of the axis, while the full effect will be applied in a smaller area towards the edges of the axis movement. This is useful for controls that need fine adjustments near the center, for example elevator trim.

Dead Zone: This slider controls the dead zone of the selected axis. This is an area near the center with no effect. Some joysticks can be a bit worn and less accurate, and by using this slider you can filter out noise and small movements near the neutral of the axis.

Button Assignments: In this table you can assign the buttons of your controller to various functions. It works mostly like the axis assignment table, you can assign a function either by selecting a button number from the drop down menu, or assign automatically by selecting the “Grab Button” function.

Multiplayer Options

On the Multiplayer options page you can configure the multiplayer-related functions.



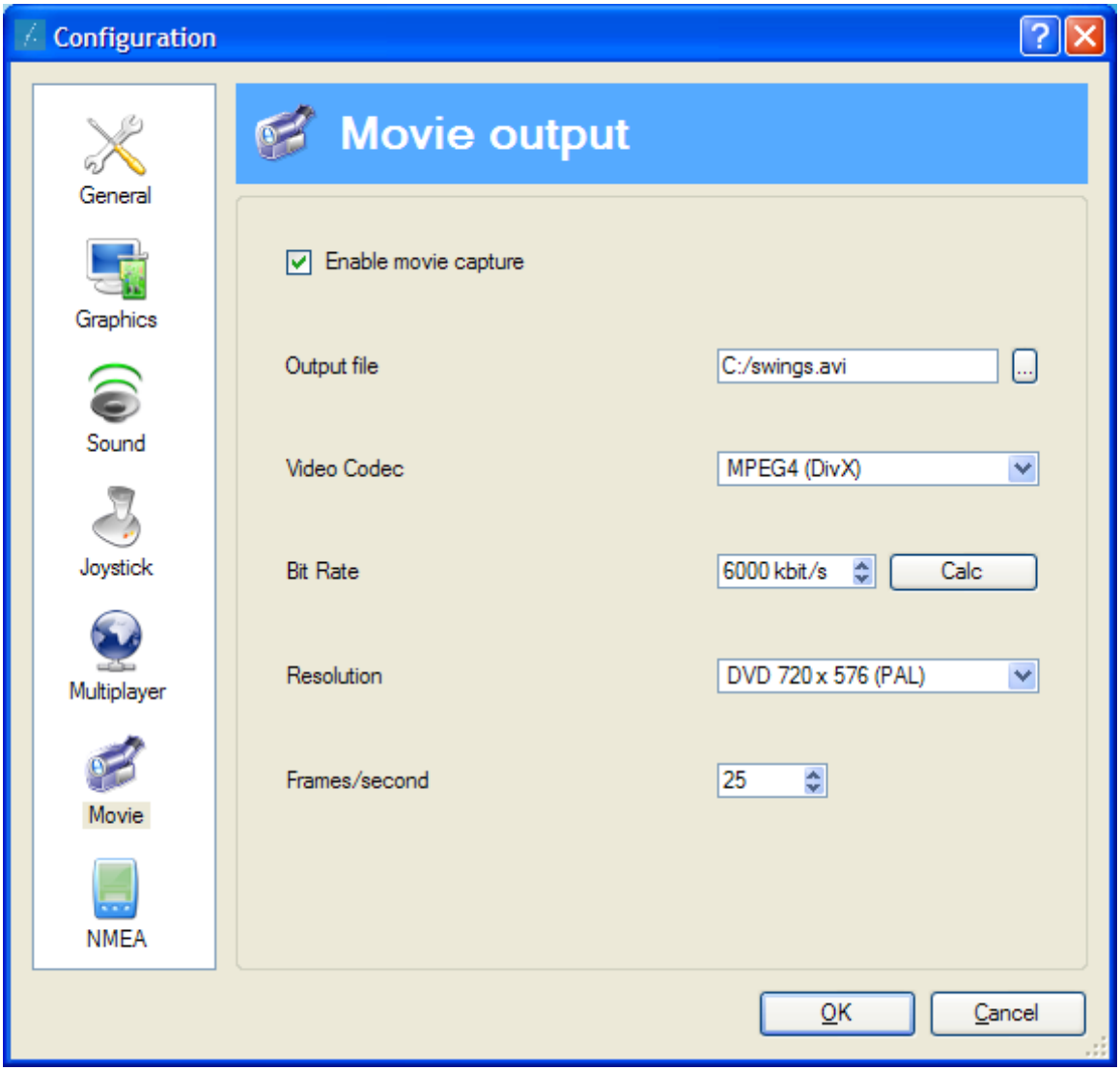
Connection Speed: Here you can select your connection bandwidth. Select one from the list that most closely matches your connection speed. If you have a low bandwidth connection, such as analog modem, you should probably not connect to the most busy servers, but stay on servers with 8 or less players.

Chat Autopilot: This option will enable an autopilot each time you press “Enter” to type in the online chat window. The autopilot will keep the aircraft in the current bank and at the current speed.

Movie Options

In Silent Wings you can record your flying to a standard movie file. Unless you have a very powerful computer, this is going to slow down the simulation, so you may have to fly in “slow motion”.

This is however, still be a fun way to produce small films of your aerobatic exploits or whatever you like. To record movies, you must enable the “Movie capture” option on this page, and press “Alt+R” in the simulator. To stop recording, hit “Alt+R” again.



Output File: Set the name of the output file. If you select MPEG1 or MPEG2 as video Codec, this file should end with “.mpg”. For DivX movies, use “.avi” as file extension.

Video Codec: This option controls which video encoder should be used to produce the movie. You can select from the Following:

- *MPEG1:* Simple codec for maximum compatibility. Use this if you want to share your movie with people who don't have the newest movie player software.
- *MPEG2:* This is the standard format for DVD movies. This requires MPEG2 playback software which usually is bundled with video editing software. Use this codec if you want to edit your movie and make a DVD of it.
- *MPEG4 (DivX):* This format is very efficient in terms of compression, which means that DivX movies usually takes less space than the other formats. Use this if you want to share your movie on the internet. This format requires DivX software to play back.

Bit Rate: This option controls the compression and quality of the movie. Higher bit rates means larger movie files and better image quality. Low bitrate gives smaller files with lower quality. Press the "Calc" button to calculate a suitable value for a given image resolution.

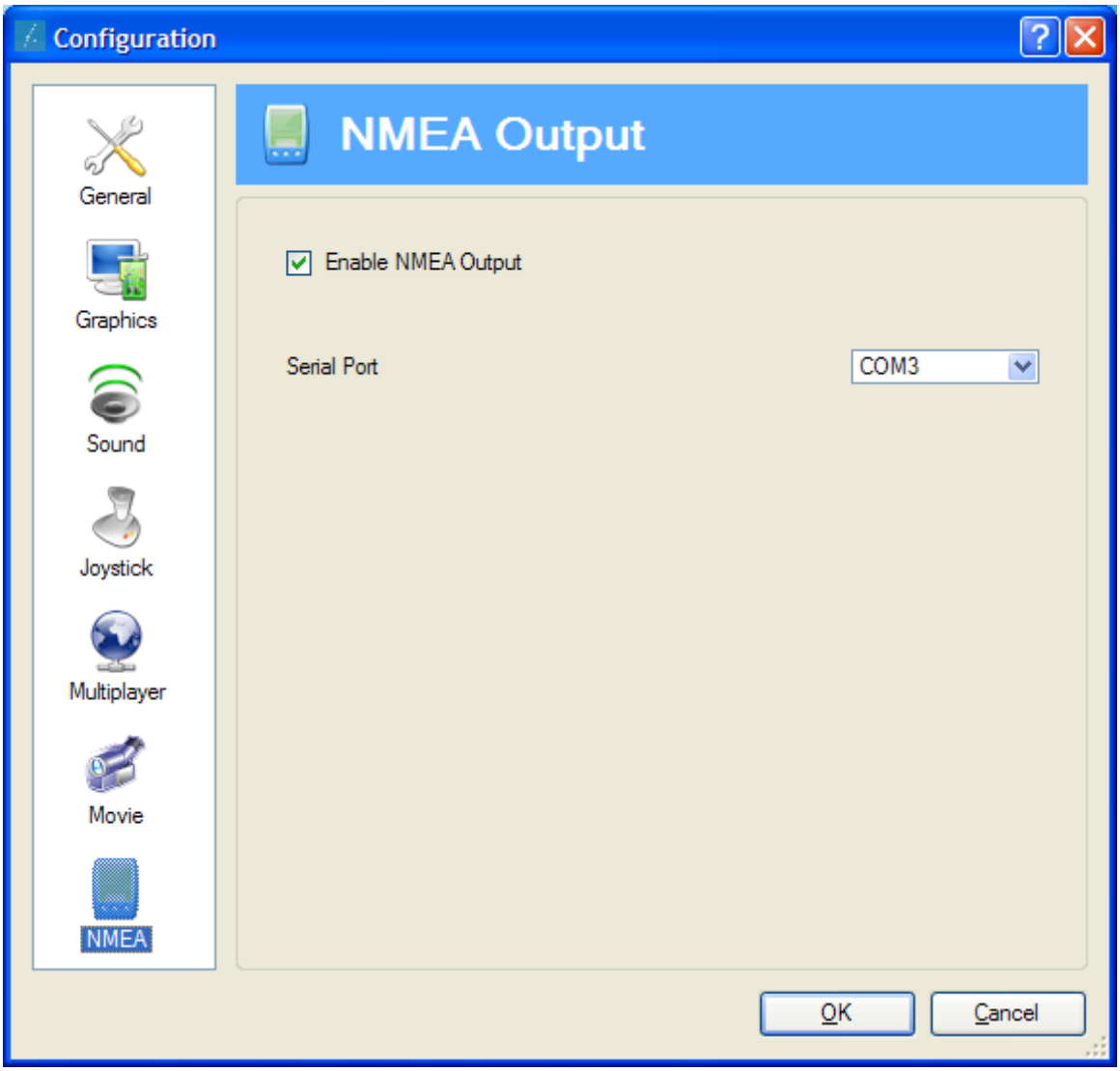
Resolution: Select image resolution here. Large images requires more space to encode, so you should probably not select a resolution higher than DVD quality. For best performance, you should use the same resolution as the window size, to avoid rescaling each frame when encoding it.

Frames/Second: This controls the frame rate of the movie. The European PAL system use 25 frames per second, while the American NTSC standard has 30 fps.

NMEA Options

Silent Wings is able to output a simulated GPS data stream to a peripheral device, such as a PDA running one of the popular soaring software programs such as WinPilot or SeeYou Mobile.

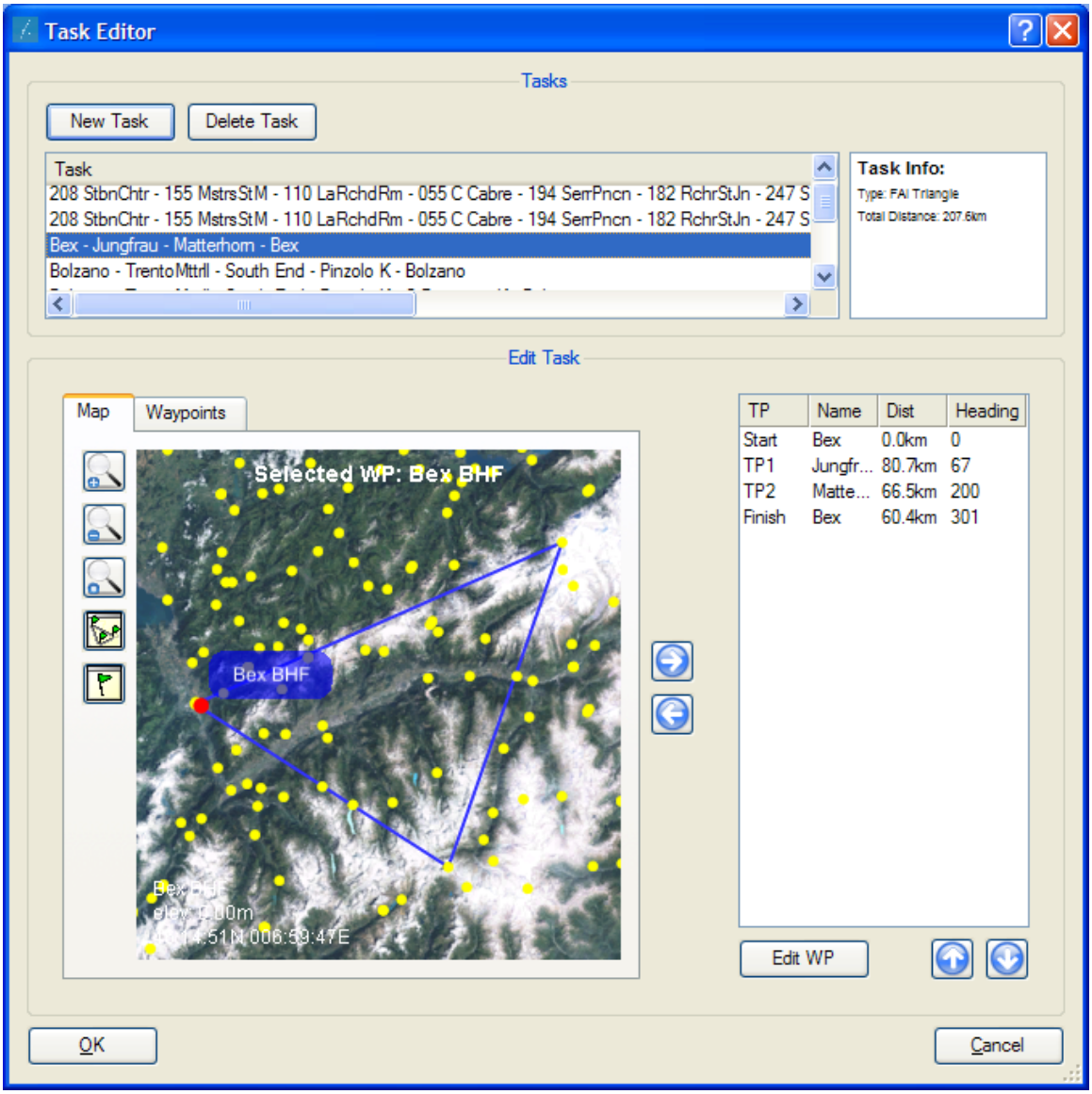
This enables you to use your PDA just as you would in a real glider, and you can practice the use of it and familiarize yourself with the software before using it in actual flight.



Enable NMEA output on the config page, and select the serial port where you have connected your PDA. The rest will happen automatically when you start flying.

Task planner

Many people say that the real thrill of soaring is cross-country soaring. You will be able to fly hundreds of kilometers in Silent Wings without having to worry about who's going to pick you up if you land out.



The task planner is where you set up a cross-country task for yourself or for the AI aircraft. This page is accessible from the Task page under Location, and from the Traffic page in the flight planner.

The task planner consists of three main areas; the task list (top of the screen), the map and waypoint list (left) and the task point list (right).

The task list contains available tasks in the current area. (Each scenery area has its own set of tasks). When selecting a task, some info is selected in the top right corner, and the task is shown in the map. The waypoints of the

selected task are listed in the task point list. To assign a task, simply select it in the task list and press OK.

Creating a new task

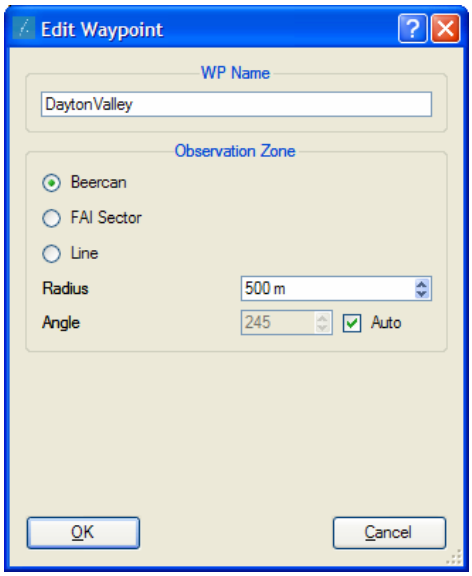
To create a new task, press the “New Task” button. You will now get an empty task. Select a start point, either by clicking a yellow turning point indicator in the map, or by selecting from the list on the “Waypoints” page.

On the “Waypoints” page you can also search in the list of available waypoints. This can be handy if you know the name of the waypoint, but not exactly where it is.

When a waypoint is selected, add it to the task by pressing the right arrow button between the map and the task waypoints list. (This button is only active when a waypoint is selected). Continue by selecting more waypoints and adding them to the list.

To remove a waypoint from the task, select it in the waypoint list and press the left arrow button. To move waypoints up and down in the task, use the arrow up and down buttons below the list.

Waypoint properties



To edit the properties of a task point, select it from the task point list and either double-click it or press the “Edit WP” button. The Edit Waypoint dialog box will appear, where you can set the type of turning point you want.

WP Name: Here you set the name of the waypoint as it will be shown in the HUD and IGC log files.

Observation Zone: Here you can set the type of OZ for the waypoint.

Beercan: A regular cylinder centered on the waypoint.

FAI Sector: A sector of 90 degrees pointing at the waypoint, and directed along the bisection line between the incoming and outgoing task legs.

Line: A line through the waypoint extending to both sides. For start and finish lines, the line is oriented 90 degrees on the incoming or outgoing task leg.

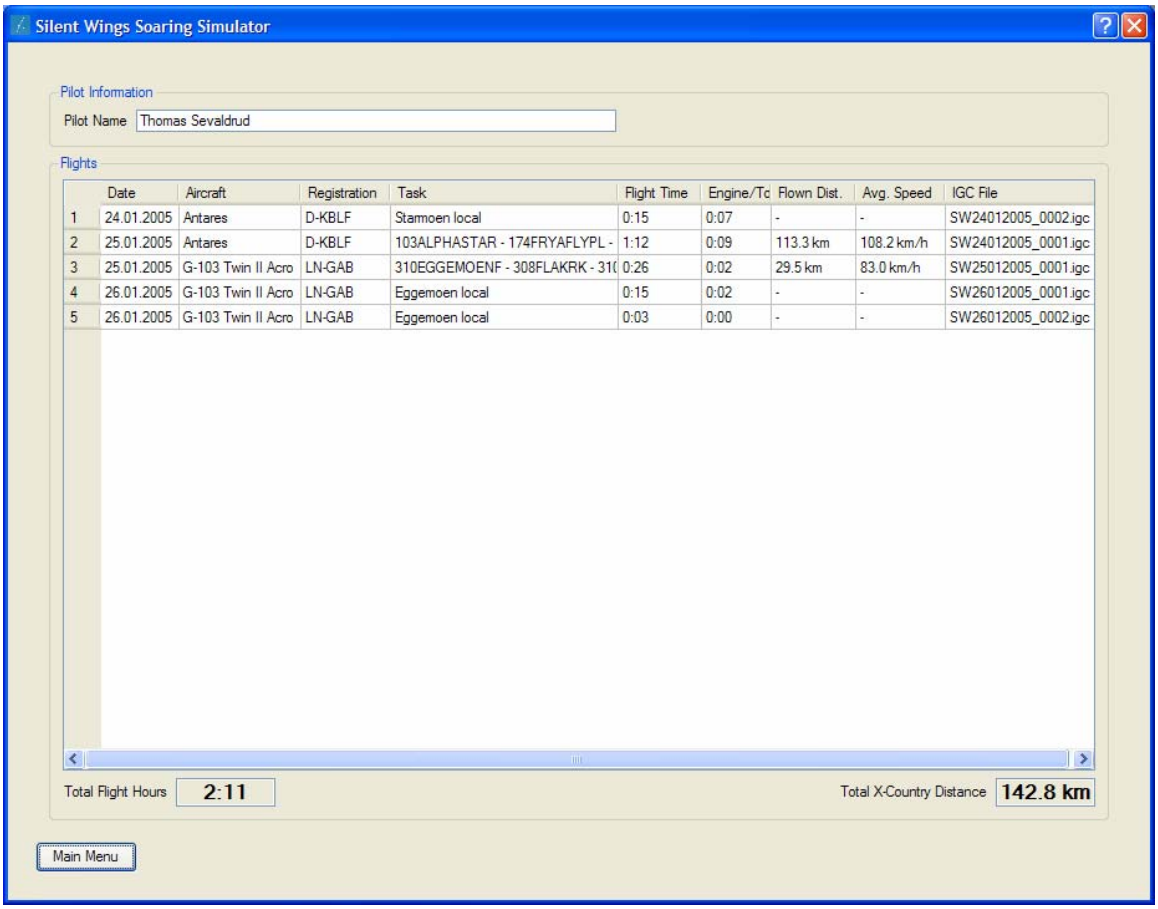
Radius: The radius of the OZ. For lines the radius indicates how long the line extends on both sides of the waypoint.

Angle: The heading angle of FAI sectors or Lines. This can be auto-calculated by enabling the “Auto” checkbox.

The log book

The log book contains all your flights longer than a few minutes. Flights are logged automatically so you don't need to remember that. Flights can be deleted by selecting the line and pressing the "Del" key.

Both time and distance are stored as well as when and where you flew, in what aircraft, etc. By double-clicking a flight entry you can review the flight in the flight analyzer.



	Date	Aircraft	Registration	Task	Flight Time	Engine/Tc	Flown Dist.	Avg. Speed	IGC File
1	24.01.2005	Antares	D-KBLF	Stamoen local	0:15	0:07	-	-	SW24012005_0002.igc
2	25.01.2005	Antares	D-KBLF	103ALPHASTAR - 174FRYAFLYPL -	1:12	0:09	113.3 km	108.2 km/h	SW24012005_0001.igc
3	25.01.2005	G-103 Twin II Acro	LN-GAB	310EGGEMOENF - 308FLAKRK - 31(	0:26	0:02	29.5 km	83.0 km/h	SW25012005_0001.igc
4	26.01.2005	G-103 Twin II Acro	LN-GAB	Eggemoen local	0:15	0:02	-	-	SW26012005_0001.igc
5	26.01.2005	G-103 Twin II Acro	LN-GAB	Eggemoen local	0:03	0:00	-	-	SW26012005_0002.igc

Pilot Information: Here you simply enter your own name. This will appear in the IGC logs, the Competition mode HUD and on the results list.

Date: Date of flight

Aircraft: Aircraft type for the given flight

Registration: Full registration of the aircraft (as set in the Aircraft setup page).

Task: Here is the task for the flight. If no task was given, the flight is taken to be local flight around the nearest airport.

Flight Time: Total flight time

Engine/Tow Time: Engine time for motor gliders or aerotowing time.

Flown Distance: Total distance flown along the given task given in km.

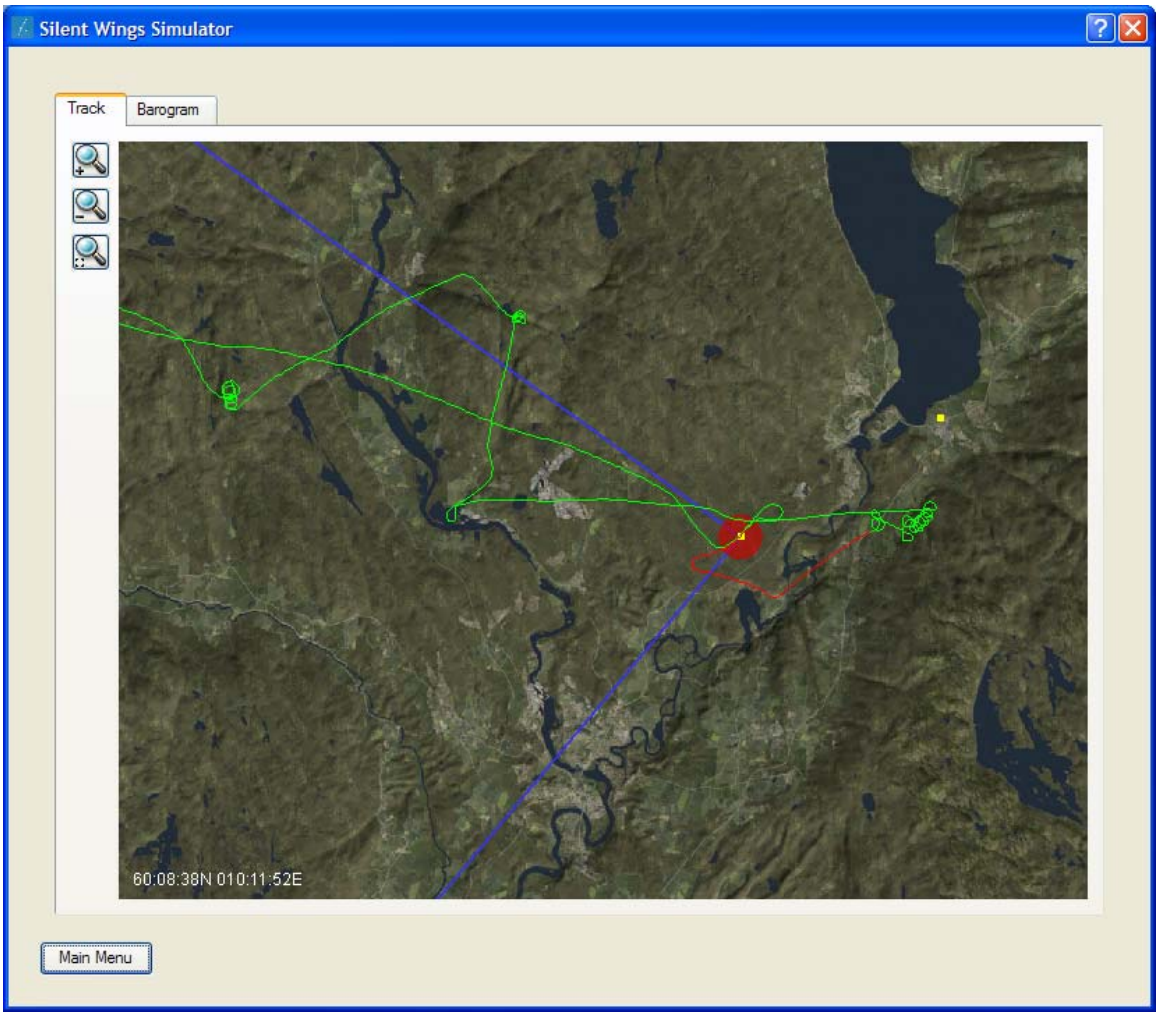
Avg. Speed: Average speed on the flown distance.

IGC File: The file name of the IGC log file found in the “IGC” folder of the Silent Wings installation directory.

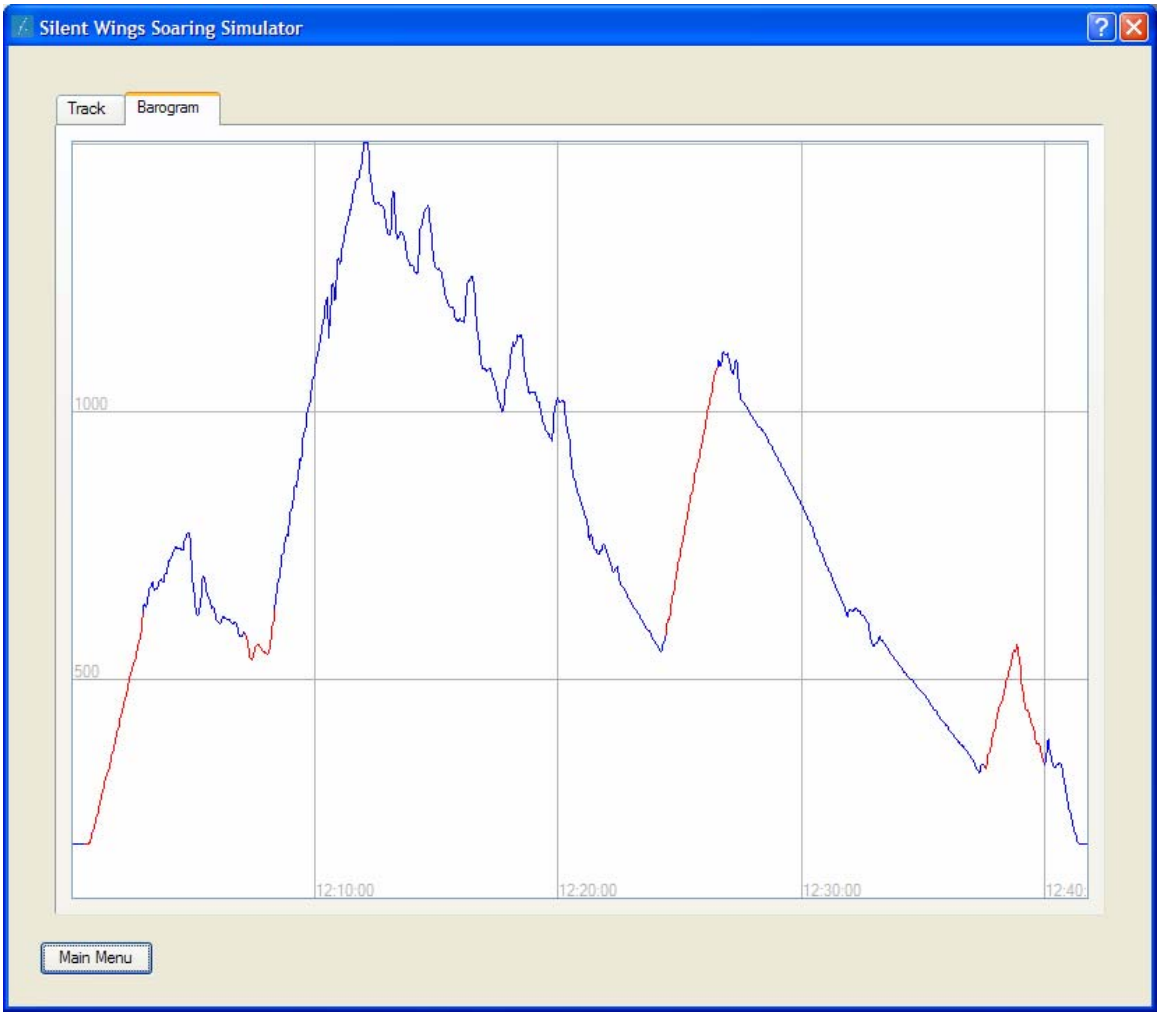
Flight analysis

Silent Wings has a built-in flight analysis module that is launched automatically after each flight. Here you can review your flight on the map, and study your altitude profile on a barogram.

The flight analysis module can also be accessed by double-clicking a flight in the log book.



In the map view the track is shown together with the task. The track is drawn in red where the log shows high ENL (Engine Noise Level). In addition to use of engine, we register high ENL during aerotowing and use of the “thermal cheat” feature (CTRL+T).

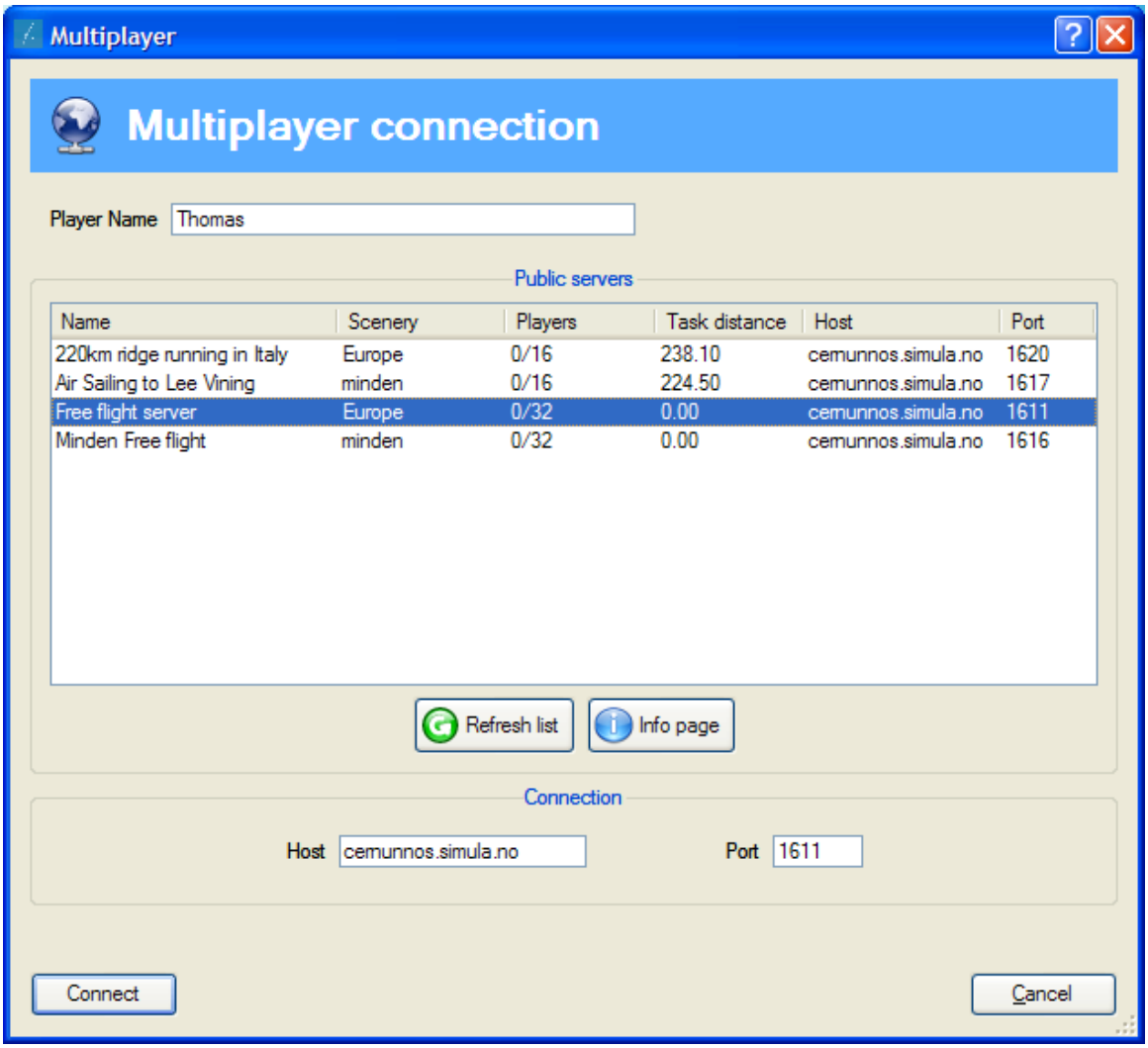


On the Barogram tab you will see an altitude curve with time on the x-axis and altitude (in meters) on the y-axis. Here you will also see the high ENL areas drawn in red.

Online multiplayer

With the multiplayer functionality in Silent Wings, you can fly online with other Silent Wings pilots all over the world. When connected to a multiplayer server you can see all the other players' aircraft, and you will all have the same weather conditions and the same thermals. Some servers may also have competition tasks, and you can race against the other online players.

To connect to a multiplayer, press the "Connect" button in the "Multiplayer" section on the main menu. The following window will appear:



In this window you can see a list of all the currently active servers, how many players are logged in and the task distance (if any).

To see more info on a server, select the server and click the "Info Page" button. Then you will be taken to a web page where you can see more details on the server, its task, and a list of who's online

To connect to one of these servers, select it from the list and press the "Connect" button. This will cause the flight planner to be set up with values

from the multiplayer server. You can review the weather settings, but you will not be able to change anything except cloudiness since it affects the frame rates. This is of course so that everyone on the server flies in the same weather conditions. If you have connected to a competition server, you will also get the current task for this server.

From the flight planner, you can now select aircraft and start method and as usual, and when you are ready to go, press “Fly Now”. Please note that you have to start flying within 10 minutes after connecting to the server, or you will automatically be disconnected.

Flying online

When flying on a multiplayer server, there are certain differences from regular single-player flying.

- You can not pause the simulation, or change the simulation speed. (This would get you out of sync with the other players)
- Thermal indicators may be disallowed on certain servers.
- Track lines from the other players may be disallowed on certain servers.
- Daylight effects may be disabled on certain servers.
- AI Aircraft are disabled when flying multiplayer.

Chatting: You can communicate with the other pilots by using the Chat function. Press “Enter” to bring up the chat window. Here you can type your message and press “Enter” again to send it. This message will be seen by all other connected players.

The chat window can be moved about on the screen by dragging it with the mouse.

If you have trouble flying and typing at the same time, you can enable the “Chat autopilot”. See the Multiplayer Options section for details.

User defined tasks

On the free flight servers you can also define tasks and compete against your friends as long as you all have the same task. Just define a task as you would for a regular single-player session. This task will be transmitted to all the other players so that they will see which task you are flying and the current results on the task. Other players flying the same task will be compared to you and you will be shown on the standings table, sorted according to the current average speed.

Keyboard commands

The following table summarizes all the keyboard commands used in Silent Wings

Flight commands

Ailerons Right	Arrow Right
Ailerons Left	Arrow Left
Elevator up	Arrow down
Elevator down	Arrow up
Rudder Left	Z
Rudder Right	C
Rudder Center	X
Trim Elevator up	Del
Trim Elevator down	Ins
Airbrakes Extend	A
Airbrakes Retract	SHIFT+A
Flaps Extend	F
Flaps Retract	SHIFT+F
Gear Extend/Retract	G
Drop Water Ballast	W
Throttle Increase (Extend engine)	+
Throttle Decrease (Retract engine)	-
Tow Release	Backspace
Auto Rudder	CTRL+R
Auto Ailerons	CTRL+B
Auto Elevator	CTRL+S
Auto Heading	CTRL+H

Multiplayer commands

Enable text chat window	Enter
Push to talk – voice chat button	CTRL+SPACE

View commands

Cockpit View	F1
Outside View 1	F2
Outside View 2 (Fixed to aircraft)	F3
Flyby View	F4
Toggle camera lock on nearest aircraft	F5
Free moving camera	F6
Chase camera	F7
Overview camera	F8
Toggle Map View	M
Cycle visible aircraft	CTRL+F2
Select visible aircraft	F10
Pan Left	SHIFT+Left Arrow
Pan Right	SHIFT+Right Arrow
Pan Up	SHIFT+Up Arrow
Pan Down	SHIFT+Down Arrow
Auto Pan	CTRL + P
Zoom In	Page Up
Zoom Out	Page Down

Misc. commands

Help	H
Cycle HUD Mode	I
Pause	P
Quit	Escape
Grab screen shot	CTRL+P
Toggle movie capture	ALT+R
Toggle Thermal and Wave Display	CTRL+T
Toggle 3D Task Display	T
Toggle altitude vs task distance plot	N
Toggle track ribbons	K
Toggle Speed Command/Final Glide	CTRL+C
Increase MacCready Setting	R
Decrease MacCready Setting	SHIFT+R

Increase Variometer Volume	,
Decrease Variometer Volume	.
Toggle Audio Speed Command/Vario	V
Time Speedup	Home
Time Slow down	End
Toggle Aircraft Labels	L
Waypoint Menu	CTRL+D
Show current competition standings	Tab

Map mode commands

Pan Left/Right/Up/Down	Arrow Keys
Zoom In/Out	+/-

Mouse commands

Cockpit view

Pan camera	Right button + move
Zoom in/out	Mouse wheel
Add instrument to 2D overlay	Double-click instrument

Outside view

Pan camera	Right button + move
Zoom in/out	Mouse wheel

Free-flight mode (F6)

Steer left, right, up, down	Left button + move
Increase/Decrease speed	Right button + move up/down
Stop	Space

Support information

You can find answer to some of the more common support questions on our web pages, www.silentwings.no, in the “Support” section.

Also, we have a very active online forum where both our staff and other users can contribute tips and tricks as well as solutions to common problems.

If you have any questions regarding technical issues with our products, you can send an email to support@silentwings.no. Please remember to specify your hardware setup, the version of the software and other relevant information.

General information requests can be sent to info@silentwings.no

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Special thanks to Simula Innovation, Simula Research laboratory, Lange Flugzeugbau, SINTEF Applied Mathematics, and the Norwegian Air Sports Federation for their support of this project.

Silent Wings web design by Virtual Lena (www.virtualena.com) and Webdesign AS (www.webdesign.no)

Runway textures are kindly donated by the Flightgear project (www.flightgear.org), and are distributed under the GPL license. For details, see www.gnu.org.

Cover photo by Neil Lawson, www.whiteplanes.com

Additional scenery design by Paul Surgeon.

Additional 3D modeling by Andor Holtsmark

Sound samples provided by Marek Rzewuski.

Slide show photos by Jean Paul Lauga. Additional photos by the Silent Wings Team.

We want to thank all our beta testers and all contributors on the Silent Wings forums. Without you we would have considerably fewer of the cool features….