

OpusFSX

Flight Simulator Interface for FSX & Prepar3D

The OpusFSX Live Camera Interface



June 9, 2014

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Overview

Live Camera is a standard feature within the **OpusFSX** Flight Simulator Interface for the Microsoft's Flight Simulator X and Lockheed Martin Prepar3D simulators. **Live Camera** provides you with a user-friendly interface for creating, controlling and managing any number of virtual cockpit, 2D cockpit and external aircraft views for your flight simulator system.

Live Camera enables you to create many useful views that are not included as standard in your sim and also control the transition speed between these different views.

You are not limited to VC cockpit views, you can create superb external aircraft views, even sweeping panoramic views with the use of multiple monitors or even networked PCs.

You may assign a group of views with the same key (or joystick button) then use the key/button to cycle between them using your configured transition speed to slowly and smoothly fly from one view to another. You can create walk around sequences and nice fly around sequences.

This can be coupled with **Live Camera Control** and a dedicated 6-axis GamePad controller to wander or float around the cockpit or exterior to your heart's content.

Dynamic Head Movement (DHM) of course is a big plus as you can enable it for certain cameras and not others. For instance you can enable it for the Captains and First Officers views but disable it for a close up view of the MCP, Overhead panel, pedestal, or throttle quadrant.

Your standard hat switch will work fine since it alters PBY and does not interfere with XYZ, so DHM will not be affected.

Finally of course, you can assign joystick buttons to each view so you can switch from one view to another very efficiently and a far lot easier than using the default sim view cycling. You can jump from Captains view to Overhead and back again, or directly to the pedestal etc.

In short, the options are endless and infinitely more flexible than the default views which seem quite limited after you get used to using and switching between your own specified cockpit and external views. The sim is infinitely better after you get it configured up with a good selection of cameras and can efficiently switch between them, or just sit off the wing tip for fun.

Camera views are displayed either automatically when an aircraft is loaded by configuring the view as 'default', or they can be displayed in flight with a keyboard key or joystick button which you have pre-configured. A camera view may be associated with a single aircraft, group of aircraft, or all aircraft.

To experience turbulence effects you must either

- enable **General DHM Options** in the Server's Configure dialog or
- enable **Live Camera** and create and display a camera view.

General DHM (Dynamic Head Movement) Options include DHM and aircraft turbulence for VC, 2D and opus custom external view modes. Each view mode has its own configurable DHM and Bump Aircraft settings that can be adjusted by you and are relevant to all aircraft.

Live Camera DHM is associated with VC camera views. **Dynamic Aircraft Movement** is associated with 2D scenic views.

Although you will experience some level of turbulence with other weather engines enabled, for optimum effect enable the OpusFSX weather engine. The Opus turbulence is intelligently controlled by the LWE which knows all the meteorological conditions surrounding your aircraft, can even take into account atmospheric effects and gradients and can take into account additional site effects etc.

In addition to the standard non-windowed views **Live Camera** allows you to create multiple **Windowed Views** on your server and client systems. Windowed views are ideally suited to computer systems equipped with either multiple screens or single large screens. Windowed views cannot be associated with joystick buttons or keyboard keys, they are automatically opened when the aircraft is loaded. DHM cannot be specified for windowed view types.

Camera views can greatly enhance your flight simulator experience on both standalone and networked systems by providing easy view control with the press of a joystick button or the use of an assigned keyboard key sequence. The same joystick button or keyboard input can be assigned to multiple camera views. In such cases, repeated use of the assigned button or key will cycle through the assigned camera views. The cycle will apply to the aircraft associated with the camera view, which may be a single aircraft, a group, or all aircraft according to what you have configured. In addition you can use the shortcut control button/key assignments to restrict the cycle views forward and backward between identical view modes, that is, between the same virtual cockpit, 2D cockpit, or External Aircraft camera views for the currently selected aircraft.

On networked systems **Live Camera** provides you with the means to create a multitude of display options including wide sweeping panoramic views of the outside world. Joystick buttons and keyboard sequences can be assigned to individual views or multiple camera views spanning the networked system. Duplicated button or key assignments permit simple and fast coordinated changes to your multi-screened display with a single button press or key stroke.

All camera views are created, controlled and managed from the main 'flying' server system, with live view adjustment for each of your client system camera views. Each camera view may be a

associated with either a single aircraft, a group, or all aircraft according to what you have configured.

Live Camera features a Dynamic Head Movement (DHM) or 'camera shake' option utilizing actual real-life captured 3D accelerometer for the taxiing, takeoff, and landing phases of flight. The DHM is configured within and associated with each camera view. In order to produce the most realistic head movement, all DHMs are based on actual **real-life 3D accelerometer data**, captured on Boeing 737-800 airliners and a Europa XS Tri-Gear light aircraft. Special low pass filters have been developed to remove all traces of engine vibration. We have conducted extensive taxiing trials, multiple takeoffs and landings on hard surfaced runways to prepare the accelerometer data. Data comparisons between heavy and light aircraft have also allowed us to mimic the speed dependencies and subtle changes in the natural frequency within the captured data. The end result is an ultra-realistic flight simulator experience.

- **Live Camera** provides a user-friendly interface for creating, controlling and managing any number of virtual cockpit, 2D cockpit and external aircraft views.
- **Live Camera** provides a user-friendly interface for creating, controlling and managing multiple windowed views providing greater flexibility and support to cockpit builders and all systems equipped with multi-screened computers.
- **Live Camera** stores separate sizes and positions for all docked and undocked Windowed views, allowing the user to save different preferred window position and sizes.
- **Live Camera** creates, controls and manages all views from the 'flying' server system, with live view adjustment for each of your client system cameras.
- **Live Camera** allows joystick buttons and keyboard key sequences to be assigned to individual or multiple views. Live Camera does not require you to make any changes to the control assignments.
- **Live Camera** enables default views to be specified facilitating the use of multiple screens or the creation of panoramic views over networked systems.
- **Live Camera** provides both coarse and fine zoom control for all camera view types.
- **Live Camera** gives full control over Dynamic Head Movements all based on real-life 3D accelerometer readings.
- **Live Camera** supports Automatic Head Movements to assist the pilot whilst taxiing and banking in a turn (disabled when using TrackIR).
- Camera Import and Export options are included. User Camera Definition Files (CDFs) are available on our Downloads page for import.

In addition to the above features, the OpusFSX server and client programs provide **Save Win, Restore Win, Open Win, and Close Win** button options to assist you in controlling your windowed views, both docked and undocked.

With the exception to the Save Win button, these options are duplicated within the simulator's **OpusFSX Menu** as **Restore Windowed Views, Open Windowed Views, and Close Windowed Views** options, press ALT if the menu is not displayed.

FSX Add-on Menu

The add-on menu has one entry for **Live Camera Control** which is described in the OpusFSX User Guide.

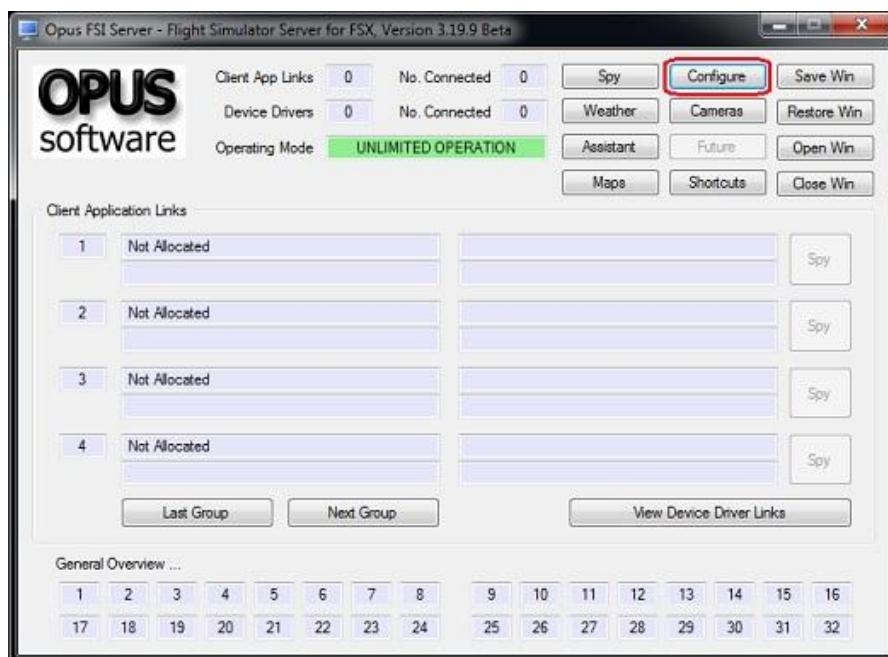
Creating a Camera View

If you have previously used a 3rd party add-on for camera views then ensure your camera views are restored to the FSX default, for EZCA run the configuration utility and select the "Restore" function otherwise EZCA camera definitions are not removed from the aircraft config files.

Ensure you have selected and loaded an appropriate aircraft within the FSX or Prepar3D simulator

To see the main form of the server program you must be running FSX or Prepar3D in windowed mode.

Click on the server's **Configure** button to display the Configuration dialog.





1. If the **Enable Live Camera** checkbox is unticked then tick it now and restart the server program in order to configure your aircraft camera files.

N.B. If you subsequently untick the **Enable Live Camera** checkbox then the Opus camera definitions will be removed from the aircraft camera files when the server program is shutdown.

1a. Tick the **Play Sound on View Change** if required. This is a standard windows 'ding' sound.

2. The **Enable Live Camera Control** option can be used to enable or disable the **Live Camera Control (LCC)** feature which is used to adjust the eye point within VC, 2D, and custom external camera views. This is independent of **Live Camera** and is described in the *OpusFSX User Guide*.

3. Tick **Enable TrackIR** if required.

4. The **Run TrackIR High Priority** option will affect the priority of the Opus FSXTRACKIR program as well as any active Natural Point TrackIR4 or TrackIR5 programs. Enable this option if you have problems with TrackIR smoothness after tuning the TrackIR scan speed option.

5. The TrackIR scan speed can be altered from 6ms to 60ms. The default is 12ms, try this setting first, and if TrackIR is jerky then adjust this setting (try 25-30) in conjunction with your TIR device Speed and Smoothness settings to reach an optimum effect. If you set the scan rate too high it stutters, if you set it too low it jumps.

TrackIR Settings

Please refer to the **Getting Started guide for Single PCs** guide for TrackIR setup instructions.

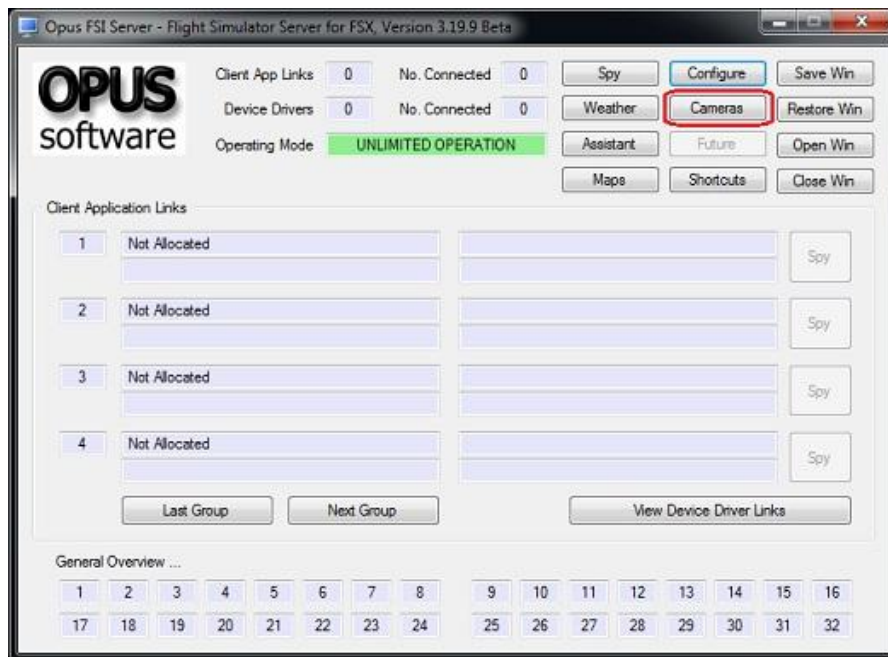
Please minimize the TrackIR program when not in use to improve FSX performance.

6. & 7. The XYZ raw data scaling (0.5 to 2.0, default 1), and PBY raw data scaling (0.5 to 2.0, default 0.75) can be adjusted on the fly from within the Configuration dialog.

The PBY setting should be adjusted in conjunction with the TIR device speed setting to determine the range of head movement and how far you can see behind you.

Options **8** to **13** are general DHM options, an alternative to Live Camera, and apply to all aircraft. If Live Camera is enabled these general DHM options are automatically disabled.

A simple dialog is used to manage the camera views. The software provides 'live' adjustment of all server and client views through the dialog's camera control buttons. The Camera Control dialog is displayed by clicking on the **Cameras** button on the FSXSERVER's main form.





Opus FSX Server's Camera Control Dialog

The Camera dialog will automatically hide the FSXSERVER program's main form before being displayed in its last known screen position. The dialog can also be minimised down to the taskbar to assist those with limited screen space.

The basic steps involved in creating a camera are,

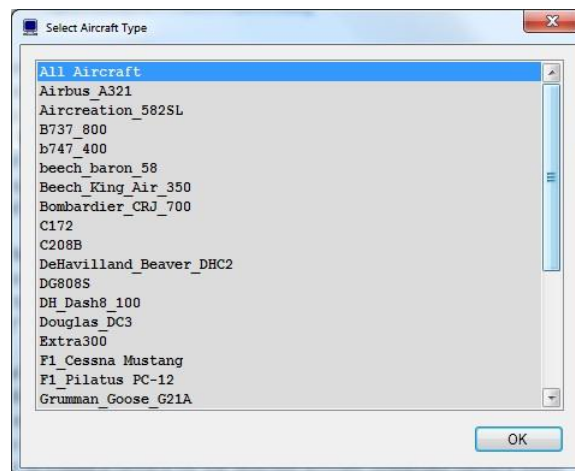
- Add or Clone a Camera
- Assign Aircraft Types To Your Camera View
- Make adjustments
- Save Cameras.

Here is the process described in detail,

1. The **Select Computer System** option is not applicable to standalone systems and is used on networked systems to select client systems and edit their cameras. This option will only be enabled if you have one or more client systems connected when you first open the server's Camera Configuration dialog. Therefore if the option is grayed out you will be editing the server cameras by default. Use the **Select Computer System** button or click in its associated text box to select the required system of interest. All client systems will be identified using their configured computer name, the server system will be identified either as FSXSERVER or P3DSERVER depending on the configured simulator type.

2. Use the **Restrict the Camera Views You Wish To Edit** button (2a) or click in its associated text box (2b) to restrict the listed camera views to either a specific aircraft, group, or all aircraft. This option is used to restrict the number of camera views listed for your aircraft selection when you press the Select Camera View button, it just saves you having to search for a specific view you wish

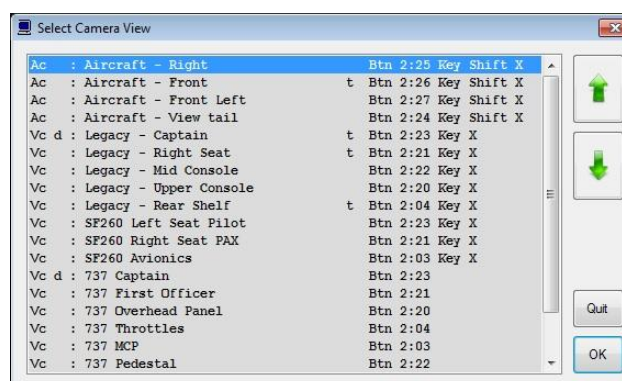
to edit. This feature is only needed on systems that have many camera views configured and assigned to a large number of different aircraft.



Click with the mouse to select an aircraft from the list, use <CTRL><left_mouse_click> to select multiple items from the list, use the standard windows method to select a consecutive group (click on the first item then <SHIFT>< left_mouse_click> on the last item). Each entry you select will turn the selected line blue.

If you only have "All aircraft types" to choose from in the camera dialog then set the "C:\OpusFSX\FSXSERVER.EXE" file properties (compatibility tab) to "Run as Administrator".

3. If you have created a similar view to the one you want to create now then select it using the **Select Your Camera View** button. **d** denotes a default view, **w** denotes a windowed view, **t** denotes TrackIR limits have been set for the view. The views in this list may have been restricted by a selected aircraft type of interest. If no camera views are available then the **Select Your Camera View** button and its associated camera view text box will be disabled (grayed out).



4. Click on the **Add or Clone a Camera** button to create a camera for the selected aircraft. The previous camera view is now fully cloned and ready for editing.

5. Optionally enter an appropriate name for the view in the edit box provided. Initially the view will be called something like 'Camera View X'. It is best to adopt a standard naming convention

such as 'Global <description>' for global views, and '<aircraft> <description>' for aircraft specific views (e.g. '737 Left Side View').

6. Select the view type either Virtual cockpit, 2D (scenic) or Aircraft (external). There are no facilities within FSX that gives us the 6DOF control over other view types.

It is pointless creating virtual cockpit views on a client system since you can only monitor and control the flight from the main server PC. DHMs will be most effective when used in conjunction with Virtual cockpit views.

Dynamic Aircraft Movements (DAM) has been implemented for the server's 2D 'scenic' views where the aircraft is shaken instead of the pilot's head. Please refer to the *2D Panels* section.

7. Camera views can be associated with all aircraft, a group of aircraft or a single selected aircraft by using the **Assign Aircraft Types To Your Camera View** button (**7a**) or you can select the option by clicking in the associated text box (**7b**).

You will be prompted as to whether you wish to reassign multiple camera views. If you select Yes then a list is displayed for you to select multiple views from. Next a list of aircraft types is displayed for you to assign the view (or multiple views) to.

Select the 'All Aircraft' entry to make the view global, alternatively highlight all the associated aircraft types. Use <CTRL>< left_mouse_click> to select multiple items from the list, use the standard windows method to select a consecutive group (click on the first item then <SHIFT> <left_mouse_click> on the last item). Click **OK**. The box to the right (**7c**) displays the number of aircraft types selected. The Aircraft Types of multiple camera views may be re-assigned.

N.B If you are editing a view on a client and the client FSX is using a dummy or simple aircraft (recommended for performance reasons when you are viewing scenery only and not external views of the aircraft) then ensure your assigned aircraft types are set to **All Aircraft**.

8. The **Camera Transition Time** value allows smooth transitions between virtual cockpit (VC to VC) and 2D scenic views (2D to 2D). A value of 0 is used for instant camera transitions, otherwise the speed can be set between 1 (fastest) to 255 (slowest). All Transition Speed settings greater than 100 are scaled to provide a wide range of camera transition times. A 'slowest speed' limit is imposed on the actual transition speeds to provide more consistency in the transitions. Different aircraft can have different VC panning rates.

Stuttering camera transitions

If you have set large transition times (for a slower transition) then your sim will have to process many more eye point adjustments. If your sim does not have enough time to handle these it will ignore many of them and you could end up with less than smooth motion. If so then you must set much lower transition times. Also check TrackIR and other eye point adjusting software, none of which will be compatible unless it is interfaced to OpusFSX. Switching Vertical Sync (Nvidia Inspector) to 1/2 refresh may fix the problem, if V.Sync is off or on it can cause stutter.

9. Tick the **Default View** checkbox if you wish to create (or assign) a default view that will be displayed on startup. You should only have one default view per aircraft but if you have

inadvertently created multiple default views then OpusFSX will just pick the first one in the list. Windowed views cannot be assigned as default views since a default view is always displayed within the simulator's main window.

10. Tick the **Windowed View** checkbox if you want a windowed instead of full screen display. Windowed views are ideally suited to computer systems equipped with either multiple screens or single large screens.

Windowed views cannot be associated with joystick buttons or keyboard keys, they are automatically opened when the aircraft is loaded. DHM cannot be specified for windowed views. Windowed views cannot be assigned as default views.

Windowed views are displayed as new views within the simulator, these views can be left docked or undocked manually before being positioned and sized, either manually or automatically using the server program's **Restore Win** button.

All camera view types (including windowed) are edited using the simulator's main window since this is the only window that allows control over the camera's eye position. Windowed views can either be global or associated with specific aircraft groups. Up to nine windowed views can be associated with each aircraft type on each of the server and client computer systems, this gives a maximum of ten views displayable at any one time on each system; typically far more than the simulator can cope with.

With the exception to zoom adjustment, after making changes to any windowed views you must force the simulator on the modified system to reload its aircraft.cfg file. This can be achieved by first loading a different aircraft type (not the same aircraft with a different livery) then reloading your original aircraft. The simulator loads its aircraft configuration file only on start up or after selecting a different type of aircraft.

The **Display Window View** button (**10a**) enables you to display an existing windowed view in order to align the view you are currently creating. A list of windowed views will be displayed, select one from the list with your mouse.

Refer to the *Windowed Views* section below for further details.

11. Tick **Disable TrackIR** if you have enabled TrackIR (in the Config menu) but just want it disabled for this particular camera view.

The **Toggle TrackIR On/Off** button (**12**) will disable/enable TrackIR just whilst editing the camera view.

13. If required alter the speed slider to modify the speed of the green arrow controls for altering the XYZ and PBY co-ordinates. You can also switch between Continuous and Stepped motion (**14**) for the arrow controls.

15. Change the eye point for the view using the **X, Y, Z, Pitch, Bank, and Yaw** camera control buttons or by entering values directly into the coordinate text boxes (**16**). The X axis moves the eye point left and right, the Y axis up and down, the Z axis forward and back, and the Pitch, Bank, and Yaw movements are as expected.

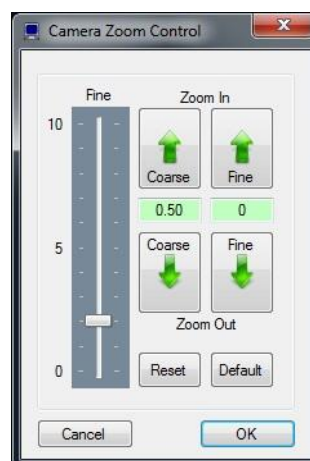
The example dialog below shows arrow movements as seen from the pilot's seat.



The arrows (15) operate in either continuous or stepped mode (14). In continuous mode clicking on any of the red buttons will stop the motion. They are spread over the dialog to allow mouse selection without too much hand movement, or hand-eye coordination. Also clicking more than once on a green arrow button will speed up the movement in the chosen direction, or slow down any motion in the opposite direction.

To enter a value into a text box (16), first click on the box, its content will turn red indicating it is accepting a new entry, enter the new value, then either press the <return> key or click for a second time in the box. All distances are in meters and all angles in degrees. Use the **Reset** button (15a) if you want to return the camera to its original (last saved) position.

17. If required use the **Zoom** button (17a) to adjust the camera view's zoom settings.



This dialog provides both coarse and fine zoom control over the selected view.

Zoom control is a two stage process within the simulator, the Coarse control sets the actual base zoom level which can range from 0.3 (fully zoomed out) to 512 (fully zoomed in), the fine zoom control makes fine adjustments to this zoom level by either 'fine zooming' in a number of steps (positive) or 'fine zooming' out a number of steps (negative).

To make efficient use of the zoom control, first set the required base zoom level using the Coarse zoom controls, the current zoom level is displayed in the green text box and temporarily on the displayed view. After you have set the Coarse zoom level finely adjust the zoom either in or out, the current fine zoom step count (positive for fine zooming in, negative for fine zooming out) is displayed in the green text box. The fine zoom rate (number of steps per click) can be adjusted from 0 to 10 with the slider control.

Each time you adjust the Coarse zoom level the fine zoom adjustment will be reset to zero.

Use the **Reset** button to reset the zoom adjustment to its original settings.

Use the **Default** button to reset the zoom to its displayed default setting. The software assumes a standard FSX or Prepar3D set up which uses a Coarse zoom of 0.7 for virtual cockpit view modes, 1.0 for 2D cockpit view modes, and 0.8 for all external views.

Once you have completed the zoom adjustment click on the **OK** button to accept the settings or **Cancel** to abort the changes. The current zoom settings are displayed within the Camera Control dialog in a text box (**17b**). The displayed zoom setting shows the actual Coarse zoom level with either a '+' or '-' symbol indicating any fine zoom adjustment.

18. Use the **DHM** checkbox to enable or disable DHM effects, disabling DHM will not change any configured settings within the DHM dialog.

If required use the **DHM** button (**18a**) to specify any associated Dynamic Head Movement. Refer to the *Adjusting the Camera DHM* section of this document.

19. Windowed views cannot be associated with a joystick button or keyboard key. Default views don't need to be associated with buttons or keys if you don't have any other views. If you wish to associate the camera view with a joystick button or keyboard key then click within the button or key command text boxes to specify the required assignment. When you click within the text box, the box will empty and turn red indicating it is waiting for your entry. You can now either click a second time to clear the entry, or press your desired joystick button or keyboard assignment.

OpusFSX will accept buttons 1 through to 32 of Joysticks 1 through to 8. All button and registered key events are displayed within the Spy window when the button or key is pressed. If they are not displayed then the joystick or button is invalid, either not registered within FSX, already assigned elsewhere (i.e. FSX, 3rd party add-on etc), or just an illegal entry.

Joystick buttons and keyboard key sequences can be assigned to views on the server and multiple client systems, thereby allowing simple and fast coordinated changes to the multi-screen displays.

Refer to the *Assigning Joystick Buttons and Keyboard Keystrokes* section of this document for further details.

20. Finally, click on the **Save Cameras** button to save your changes. After your changes have been saved the software will automatically update the system and as a result you may notice the default camera view, if any, will be displayed. If you have selected one of your client systems then the new camera configuration file will be transferred onto your client system prior to reconfiguring all of the client system's aircraft.cfg files.

The **OK** button saves any changes and exits the dialog. To exit without saving any changes click on the red X top right of the dialog.

If required use the **TIR Limits** button (**21**) to create and specify any associated TrackIR head movement limits.

Refer to the *TrackIR Head Movement Limits* section of this document.

The **Disable View** option (**22**) can be used to disable or enable a camera view for selection and display. Changing this field for Windowed View types will force the Camera Definitions within all aircraft.cfg files to be updated.

Up and Down camera view selection arrows (**25**) at the side of the dialog allow you to select the last and next camera views respectively.

Aircraft Walk Around

As an alternative to using LCC with a dedicated 6-axis game pad controller to perform an aircraft walk around or a fly around in flight you can create a set of camera views to pan around the aircraft.

1. Create a series of external aircraft views, each view taking you around the aircraft on a walk or fly around.
2. You can use the up/down arrow keys in the **Select Camera View** list to reorder the views and keep them together as a group in your camera list. Name them all appropriately as an aid memoir, such as NGX Aircraft View 1 etc.
3. Assign a joystick button to the first view, and the exact same key sequence (e.g. shift X) to each of the aircraft views, including the first. The joystick button will then select the first view in the sequence. After which the assigned key can be used to cycle through each view in turn.
4. Assign a high (very slow) **Transition Speed** parameter to all the aircraft views in this sequence.
5. **Save Cameras.**

Now you can press the button to commence the walk around and press the shared key (e.g. Shift X) to cycle the views, resulting in a slow walk around the aircraft.

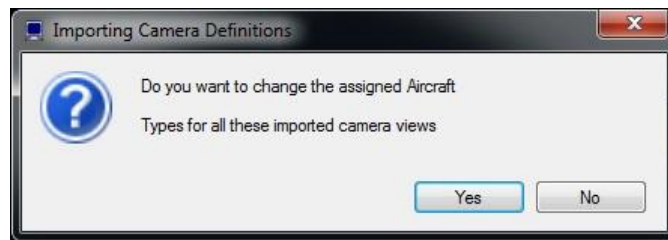
If you order the aircraft views carefully then you could simply assign the same button or key to all

of the views, the first view in the list will be selected first. Remember you can reuse the same button or key sequence over and over again since all view cycling is aircraft specific. So shift X for example could be used for all walk around sequences on all aircraft.

Camera Import and Export

Camera **Import** (23) and **Export** (24) options allow you to save and load groups of camera definitions stored in named .CDF (Camera Definition Files). Two Opus CDFs are supplied in the OpusFSX folder (*Opus_PMDG_737NGX.CDF* and *Opus_RealAir_Legacy.CDF*) containing camera definitions for the PMDG 737NGX and RealAir Lancair Legacy aircraft respectively. A selection of CDFs are also available on our Downloads page for import but CDFs cannot be imported if they were saved on newer versions of OpusFSX.

When you Import you are prompted as to whether you wish to assign the imported views to multiple aircraft types,



This is so that you can import cameras for use on a range of a similar aircraft type(s). For example you could import the Lancair Legacy cameras for use on the Maul etc.

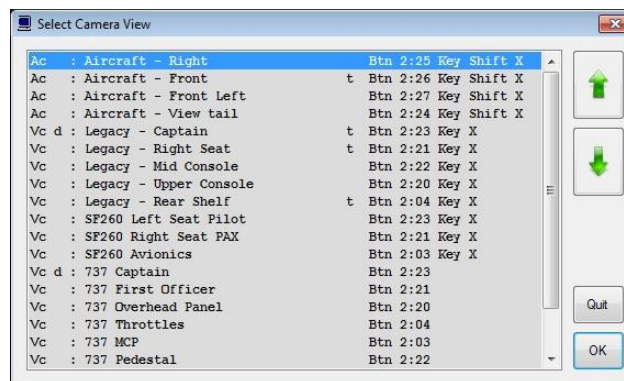
If you select Yes in the dialog then a list of aircraft types is displayed for your selection. Click with the mouse to select an aircraft from the list, use <CTRL><left_mouse_click> to select multiple items from the list, use the standard windows method to select a consecutive group (click on the first item then <SHIFT>< left_mouse_click> on the last item). Each entry you select will turn the selected line blue. All re-assigned imported views will have a suffix of '(R)' appended to their names.

Any existing camera views with matching names are not deleted. After importing edit the camera view to change the key/button assignments for the views if required.

All your camera definitions for your main server system are stored in the FSXSERVER.CAM file (or P3DSERVER.CAM for P3D). Importing from a Camera Definition File (CDF) will automatically save your current camera views and backup your current CAM file into the <system>_UNDO.CAM file. For example, when importing into your main system's camera views on an FSX system your current definitions will be saved in FSXSERVER_UNDO.CAM. To undo the camera import just delete your FSXSERVER.CAM file and rename FSXSERVER_UNDO.CAM to FSXSERVER.CAM. You may notice CAM files with additional date stamps, these are copies of your CAM file automatically saved by the software to provide roll back options.

To export just click on the **Export** button and select the appropriate views from your list. Use the mouse to click on the first view and shift click (or ctrl click) to select a group of views. When prompted enter an appropriate filename for your CDF.

Reordering Camera Views



Click on the **Select Your Camera View** button in the Camera Control dialog. You can reorder your camera views here by clicking on an entry and then selecting the appropriate arrow button to move the entry up or down in the list.

Deleting Camera Views

Unwanted individual camera views can be removed using the **Delete this Camera View** button. A list of views is displayed so that you can select either a single view or multiple views to be deleted. You can use the standard Windows mouse control to select individual items in the list with the mouse (click and control key), or select consecutive items in the list (click on first item then click and shift key on last item).

When you delete a camera view these changes will not be noticeable until you either restart FSX, or reload a completely different aircraft type forcing FSX to reload the modified cfg file.

All the camera views for your main flying server system, or standalone single PC system, are stored in the \OpusFSX\FSXSERVER.CAM file (or P3DSERVER.CAM for P3D). You can delete all camera views and start afresh simply by renaming or deleting this file prior to running the FSXSERVER program.

You will have a backup if you mistakenly delete a view and wish to restore it, see the Camera Views Backup section below.

Camera Views Backup

You have a backup of your current CAM file in the \OpusFSX\FSXSERVER_UNDO.CAM file (or P3DSERVER_UNDO.CAM for P3D) so if you delete something by mistake then just delete your FSXSERVER.CAM file and rename FSXSERVER_UNDO.CAM to FSXSERVER.CAM (or P3DSERVER_UNDO.CAM to P3DSERVER.CAM for P3D).

The camera definitions are also backed up into a date stamped file (e.g.FSXSERVER_28072013.CAM) each time the camera views are saved via the Camera dialog's **Save Cameras** or **OK** buttons.

Adjusting the Camera Dynamic Head Movement (DHM)

Disable the turbulence effects within 3rd party packages since they may conflict with OpusFSX. The turbulence strength and frequency is determined by the LWE based on considering many factors and the meteorological conditions surrounding your aircraft. These parameters effect both the captured high and low frequency accelerometer data. At low levels wind speed and gusts become a factor, one considering the likelihood of rotor type turbulence, the other extending slightly to higher elevations. But many factors are considered, temperature gradients, cloud bases and depths, proximity of CBs and TCUs, etc. Clear Air Turbulence comes into effect above FL200 when the GRIB option is enabled, note that FSX does not show wing flex for Clear Air Turbulence.

To see wing flex you must set advanced animations which is set via the FSX menu option - Options, Settings, Display. Select the Graphics tab. To see changes to the VSI etc enable the options for turbulence and thermal effects on the aircraft in FSX (which is set via the FSX menu option - Options, Settings, Display. Select the Weather tab.

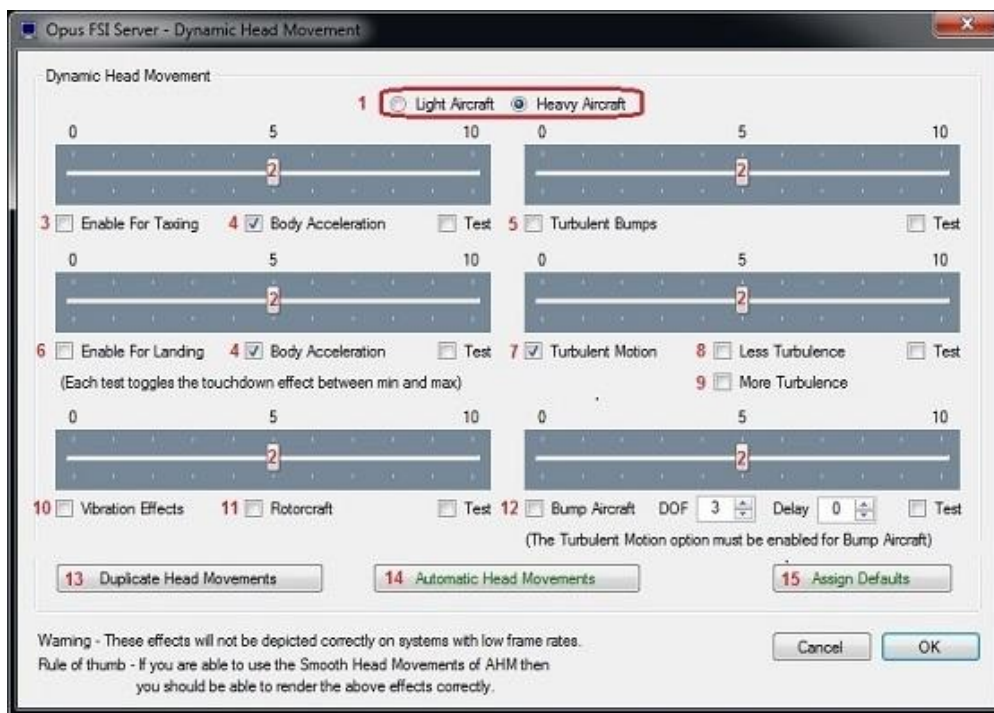
Live Camera Dynamic Aircraft Movements (DAM) for 2D Views

Dynamic Aircraft Movements (DAM) has been implemented for the server's 2D 'scenic' views only. To configure the effect, enable DHM on your 2D view and edit the DHM taxiing and landing parameters to your own preferences. The head acceleration effects do not use the accelerometer data and may not be noticeable in the 2D views. The current version is scaled with a 2D view offset by 1 metre in the y-axis. If necessary we will adjust the effect to suit the view's configured y-axis offset.

Live Camera Dynamic Head Movement (DHM) for Virtual Cockpit Views

Even though we allow DHM to be specified for all 'non-windowed' view types (Virtual, 2D, or Aircraft), the DHMs will be most effective when used in conjunction with Virtual cockpit views. To enable Dynamic Head Movement for a specific camera view, first tick the **DHM checkbox** within the Camera Control dialog, then specify the required DHM options within the **Dynamic Head Movement Options** dialog. This dialog is displayed using the **DHM** button. This dialog provides options and fine adjustment for both the camera view's **Dynamic Head Movement** or virtual cockpit camera shake, and the **Automatic Head Movement** which can be used to automatically look into the turn when the activation bank angle is reached. N.B. **Automatic Head Movement** is automatically disabled when you are using TrackIR.

You can use the DHM checkbox to enable or disable DHMs for a camera view without affecting the current DHM parameters. You can also use the OpusFSI **Enable DHM** and **Disable DHM** add-on menu options or OpusFSX Shortcut Controls to temporarily enable and disable all dynamic head movements.



Dynamic Head Movement Dialog

1. Light or Heavy Aircraft

Select the appropriate aircraft type using the Light Aircraft or Heavy Aircraft radio buttons. The aircraft type will affect both the natural frequency and the relationship between ground speed and scaling of the accelerometer data. The aircraft type also has an effect on the head movements related to the current body acceleration data.

If you want a Rotorcraft effect with increased vibration effects then select either Light or Heavy and also tick the Rotorcraft checkbox (11).

Strength Sliders

DHM is determined by the current met conditions. You can alter the strength or severity of the DHM using the sliders (2). A setting of zero effectively disables the DHM (scaling of zero), a setting of 10 results in maximum scaling.

Enable DHM for Taxiing/ Landing Checkboxes

Tick the appropriate Enable checkboxes to enable DHMs for the specified phase of flight, Taxiing (3) and/or Landing (6). If you enable DHM for Taxiing (3) then you will enable for all ground movements including the takeoff phase. Ground vibration effects depict vibrations when power is applied against the brakes and during the initial roll out.

Body Acceleration

Tick the Body Acceleration checkbox (4) to enable additional DHM effects resulting from the current body acceleration data. For example, slight head movements forward and aft to reflect the current acceleration and deceleration in the Z-axis.

Turbulent Bumps

Tick the Turbulent Bumps checkbox (5) to enable occasional extra bumps as appropriate to METAR conditions e.g. in cloud.

Turbulent Motion

Tick the Turbulent Motion checkbox (7) to enable constant turbulence as appropriate to METAR conditions. You can decrease (8) or increase (9) the effect.

Vibration Effects

Tick the Vibration Effects checkbox (10) to enable aircraft vibration. The vibration effect is magnified when Rotorcraft (11) is selected.

Bump Aircraft in Turbulence

Tick the Bump Aircraft in Turbulence checkbox (12) to enable turbulence on the aircraft itself. When airborne the aircraft will bump in unison with the turbulent motions. Either the Turbulent Motion or Turbulent Bump options must be enabled for the effect to be seen. The sliders for Turbulent Motion, Turbulent Bump, Less Turbulence and More Turbulence all effect the Bump Aircraft severity.

The Degrees Of Freedom DOF option can be set to 1,2, or 3 as required. These settings are equivalent to turbulent jolts in Bank, Pitch + Bank, and Pitch + Bank + Yaw respectively. You should set an appropriate DOF to suit your preference and capabilities of the aircraft sim. Set the lower value options if your aircraft sim has trouble maintaining a heading.

Set a Delay value if you have problems with jerkiness or the auto pilot in aircraft sims such as the Dash 8. The Delay factor (0..4 = Fastest to Slowest, default 0) adjusts the Bump Aircraft frequency.

Test Checkboxes

You can tick one of the Test checkboxes to get some idea of the effects of the DHM. This will not be identical to the actual DHM which has other dependencies, such as ground speed, body acceleration, severity of landing etc.

Duplicate Head Movements

The Duplicate Head Movement (13) button allows the DHM and AHM settings for the current view to be duplicated into a number of other camera views selected from the displayed list box. Only selected views that currently have DHM Enabled will be effected by the 'Duplicate Head Movements' action.

Automatic Head Movement (AHM)

Automatic Head Movement (14) is described in the following section.

Assign Defaults

Assign Defaults (15) sets all checkboxes and sliders back to their default settings.

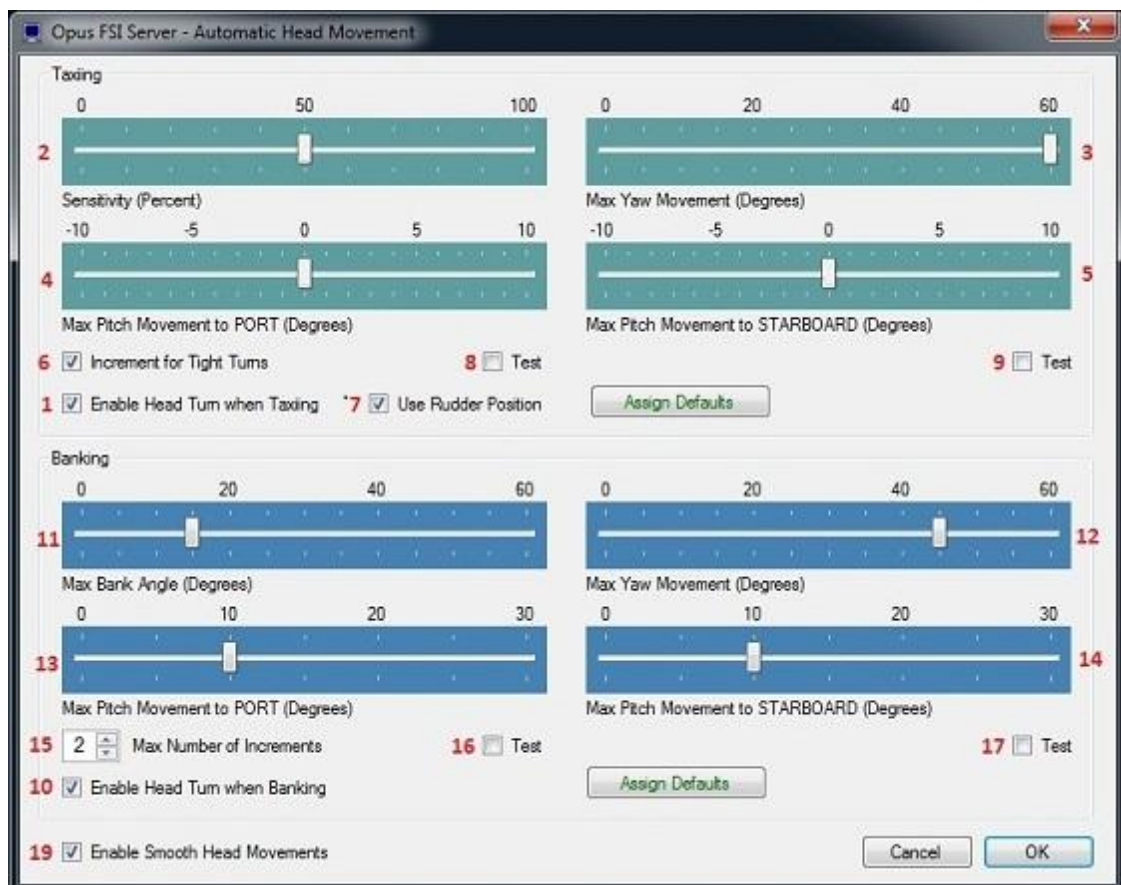
The DHM effects will not be displayed correctly on systems with low frame rates. If you are able to use the Smooth Head Movements of AHM then you should be able to render the above effects correctly.

N.B. If you can't see the DHM effect on your aircraft then set the "C:\OpusFSX\FSXSERVER.EXE" file properties (compatibility tab) to "Run as Administrator". This can be done by right clicking on the program in Windows Explorer or right clicking on the desktop shortcut.

Adjusting the Camera Automatic Head Movement (AHM)

When AHM is enabled the view will automatically change to look into the turn. You can configure the view to change either in increments or in a continuous smooth movement.

N.B. Automatic Head Movement is automatically disabled when you are using TrackIR.



1. Enable Head Turn when Taxiing

Enable to set AHM Taxiing effects.

2 - 5. Taxiing Sliders

For AHM when taxiing you can alter the sensitivity for the calculated turn radius. You can alter the sensitivity (2) in percent, maximum yaw movement (3) in degrees, maximum pitch movement to the left (port) in degrees (4), and maximum pitch movement to right (starboard) in degrees (5).

Adjust these sliders to set your desired parameters for the initial automated head movement. All incremented movements are calculated from this base level by increasing the specified angles and sensitivity. If in doubt then click on the Assign Defaults button to set the recommended defaults.

6. Increment for Tight Turns

Enable to set another level of increment for the AHM Taxiing effects.

7. Use Rudder Position

Uses the current rudder deflection for the AHM Taxiing effects as opposed to the simulator's 'delta heading' variable. The heading variable can be a little erratic and so requires both hysteresis and a small reset delay. If the 'Use Rudder Position' option is selected the AHM taxiing effects are disabled whenever the aircraft's ground speed and throttle position are greater than or equal to 30kts or 75 percent respectively.

8 - 9. Test Checkboxes

You can tick one of the Test checkboxes to get some idea of the effects of the AHM whilst taxiing to the left (port) and right (starboard).

Assign Defaults

The Assign Defaults button can be used to reset all sliders back to their default settings.

10. Enable Head Turn when Banking

Enable to set AHM Banking effects.

11 - 14. Banking Sliders

You can alter the AHM maximum bank angle (11), the amount of head rotation in yaw (12) and pitch for turns to the left (port 13) and right (starboard 14). Adjust these sliders to set your desired parameters for the initial automated head movement. All incremented movements are calculated from this base level by increasing the specified angles and sensitivity. If in doubt then click on the Assign Defaults button to set the recommended defaults.

15. Max Number of Increments

Set the maximum number of increments for the AHM Banking effects. The maximum number of increments can range from 1 to 4, the recommended setting is 2.

16 - 17. Test Checkboxes

You can tick one of the Test checkboxes to get some idea of the effects of the AHM whilst banking to the left (port) and right (starboard).

Assign Defaults

The Assign Defaults button can be used to reset all sliders back to their default settings.

19. Enable Smooth Head Movements

Tick the checkbox to select smooth head movements as opposed to stepped 'snap to' increments. Note, the smooth movement option is intended for the higher performance systems. All head movements are performed in such a way as to have minimal impact on your simulator's frame rates. if you experience any FSX/P3D DOF Errors reported in the main Spy window, or your head movement appears very jerky then you should immediately disable the smooth movement option and use the default 'snap to' movements.

User Note

The AHM effects are enabled the first time the camera view is displayed. If the camera view has been assigned to a keyboard key or joystick button then you can use that same input to toggle the AHM effects on and off. When toggled off, the AHM effects will automatically toggle back on as soon you recover from the turn whilst taxiing or level the wings after a banked turn.

Reselect the camera view to toggle any active AHM effects on and off.

FSX Add-on Menu and Shortcut Controls

DHM and AHM can be enabled and disabled from the FSX Add-on menu and also via Shortcut Controls. Refer to the description of Shortcut Controls in the OpusFSX User Guide.



Assigning Joystick Buttons and Keyboard Keystrokes

All button and registered key events are displayed within the Spy window when the button or key is pressed. Keyboard events do not appear in Spy whilst editing cameras, only after they have been saved and edit mode is exited. If they are not displayed then the button or key is invalid, either not enabled or registered within FSX, already assigned elsewhere (i.e. FSX, 3rd party add-on etc), or just an illegal entry.

The same joystick button or keyboard input can be assigned to multiple camera views. In such cases, repeated use of the assigned button or key will cycle through the assigned camera views. The cycle will apply to the aircraft associated with the camera view, which may be a single aircraft, a group, or all aircraft according to what you have configured.

Alternatively you can assign a button and/or key to the same view type for each aircraft type/group, e.g. the Captain's view is the same key/button for all aircraft. We normally assign the same key combos to external views so we can just cycle through them.

Joysticks and Game Controllers

The OpusFSX software will accommodate up to eight joysticks or game controllers connected to the FSXSERVER system, with up to 32 buttons on each, and up to 32 keyboard assignments. The program will automatically reconfigure the views and control assignments whenever the input device order changes i.e. when you either unplug or add a new device. Remember to restart FSX when removing or adding an input device.

The Hat Switch and Panning

The Hat switch is not a button and cannot be assigned in the usual manner since FSX uses it for panning. The Hat switch can be used to pan the view when the TrackIR device is paused (F9). If you have disabled your controllers in FSX and are using FSUIPC then you can enable mouse wheel button panning and that also re-enables the hat switch on the joystick. Alternatively you can use FSUIPC to convert the hat switch data to keystrokes. ctrl+shift+0 through to ctrl+shift+8 are unassigned in FSX and you can use some of those as the keystrokes to trigger Live Camera views.

Keyboard

Each keyboard assignment may consist of a combination of up to two modifier keys (Alt, Ctrl, or Shift) with a normal keyboard key. The entry is not case sensitive. The numeric pad keys 0 to 9 can be used but they must be assigned with the Num Lock ON (for recognition), and used with the Num Lock OFF within FSX/P3D. This is a quirk of the simulator and not the OpusFSX software.

N.B. The Insert, Delete, Home, End, Page Up, Page Down, Left, Right, Up, and Down keys cannot be assigned to camera views.

If you assign numeric keys and have the Local Weather Report window displayed then FSX will interpret the numeric keys for the weather report window which in effect means you have to press the key twice, the first time the weather report window will close and the second time the camera view will change.

Shortcut Controls

You can assign shortcut control keys to cycle the camera views forward (next) and cycle the camera views backward (last) between identical view modes (virtual cockpit, 2D cockpit, or External Aircraft camera views for the currently selected aircraft). Refer to the description of Shortcut Controls in the OpusFSX User Guide.

Creating Panel (Flight Control) Windows

Firstly, panel windows, or any window used to control the aircraft's flight, must be displayed on the main 'flying' server system. All client systems are used purely as view controllers, offloading much of the display workload from the main 'flying' server.

If you wish to create a separate panel view on your server then follow the above instructions to create a new Windowed View and associate it with your aircraft. Select the required Virtual or 2D camera type depending on the cockpit you are using, then adjust the camera's coordinates and zoom settings to create a close up view of the instrument panel or panels. You may find it helpful to undock the main simulator's view during this process, this will allow you to adjust the shape of the window to match the panel(s) and your intended screen layout. You may also find it helpful to use the 'stepped' camera control to make fine adjustments to the camera's eye position.

When finished, make sure you save your new camera configuration using the **Save Cameras** button and re-dock your simulator's main view.

2D Panel

It is not possible to determine in software whether you have the 2D panel enabled or disabled within the simulator. This problem mostly affects the OpusFSX server system since all client systems normally have the 2D panel transparency set to 100%. If you have set up a scenic view intended to be displayed with the 2D panel disabled and display the view with the 2D panel enabled, the eye position will not be as expected. In such cases use the Shift-1 key sequence to toggle the 2D panel OFF.

On the main 'flying' OpusFSX server system, toggle the 2D panel on and off display using the Shift-1 key sequence. Normally it will be off for all 'scenic' views and only enabled if you specifically want to fly with the 2D panel.

Warning, do NOT set the 2D panel transparency on your main OpusFSX server to 100% as this may result in making the aircraft's docked panels invisible.

Incorrect Eye Position for 2D 'Scenic' Views

Refer to the above *2D Panel* section. For scenic views the eye position will be incorrect if you have the 2D panel enabled. Use the Shift-1 key sequence to toggle the 2D panel OFF on your server system's display.

Creating a Virtual Cockpit Camera View

A few words before you begin ...

Run the simulator in windowed mode

You will be needing to open and access the Camera dialog within your main OpusFSX server program, or simply your OpusFSX program if you don't have a networked system. In each case, I

am referring to the FSXSERVER program installed in your c:\OpusFSX folder. It is therefore essential to set the simulator into windowed as opposed to full screen mode so that you can see and access the server program's form.

Select your aircraft in the sim before you start

You will be creating a camera view for a specific aircraft's virtual cockpit so it is best to load that aircraft into the simulator before you get started. The OpusFSX camera editing software will not do this for you.

Selecting the computer system

If you just have a standalone PC you can ignore this step.

However, if you have a networked system then you should make sure you have selected the FSXSERVER computer system when you open the OpusFSX Camera Control dialog. Note, it is rather pointless creating virtual cockpit views on a client system since you can only monitor and control the flight from the main server PC. The OpusFSX camera editing software will remember what computer system you have selected and always assumes you wish to continue editing the cameras on the same system, so you will probably only need to select the FSXSERVER computer system once. It is also the default selection when you activate the server program.

Restrict Listed Cameras

This feature is only needed on systems that have many camera views configured and assigned to a large number of different aircraft. This option is used to restrict the number of camera views listed for your selection when you press the **Select a Camera to Edit or Clone** button, it just saves you having to search for a specific view you wish to edit. For this exercise just make sure this reads **All Aircraft Types**. If it doesn't then open the list and select the first option **All Aircraft Types**.

Select an existing camera of similar type to edit

This can be a very useful procedure. For example, if you have already created a view for the captain's position, then selecting this camera view prior to clicking on the **Add or Clone a Camera** button will mean you only have to slide the camera over to the other seat to create the first officer's camera.

One final note ...

We will be concentrating here on creating a new virtual cockpit view for the main display so you will not be setting the Windowed View option nor will you have any need to display a Windowed View to assist in the camera's alignment.

Creating a Virtual Cockpit Camera View

I will take you through creating a VC camera view in six easy stages. Stages four and five are optional, stage four (zooming) is not usually required in VCs since it is best to use the default zoom level for all VC views, on the other hand, stage five (head movement effects) is intended specifically for VC use.

At any stage during the process you can click on the **Save Cameras** button to save your current state of affairs in the CAM file.

Stage One - Create and name the new camera view.

Stage Two - Assign the Aircraft Types.

Stage Three - Move the camera into position.

Stage Four - Adjust the camera zoom.

Stage Five - Add head movement effects.

Stage Six - Assign a joystick button or key to the view.

Stage One - Create and name the new camera view

If you already have created a similar camera view in the past and just wish to copy it then simply select the view using the **Select a Camera to Edit or Clone** button before you start.

Select the camera type **Virtual Cockpit**.

Click on the **Add or Clone a Camera** button, a new camera view will be created and you will see a name of the form 'Camera View X' appear in the name window. Click in the name window and rename the view to something more appropriate (for example, B737 Captain).

Stage Two - Assign the Aircraft Types

Click on the **Assign Aircraft Types to the Camera** button and select (highlight) the aircraft types you wish to assign to the view from the displayed list. You can use the standard Windows selection procedures to highlight your chosen aircraft types. Hold down the CTRL key to add/remove items, hold down the Shift key to select a group of items. Click OK when done.

Since this is the first view to be created for the selected aircraft group, click on the **Default View** option to indicate it is the default view, to be automatically displayed when the aircraft is selected.

Stage Three - Move the camera into position

The camera's eye point is adjusted using the green arrow buttons. The six available degrees of freedom (6DOF) or XYZ PBW axes are all controlled about the aircraft's central axis looking forward. The X axis moves the eye point left and right, the Y axis up and down, the Z axis forward and back, and the Pitch, Bank, and Yaw movements are as expected.

The Speed of movement, or step size, is controlled using the **Speed of Movement** slider. The camera's motion can be either **Continuous** or **Stepped** by selecting the appropriate mode radio button. In continuous mode, any of the red stop buttons can be used to stop the current motion. Also clicking more than once on a green arrow button will speed up the movement in the chosen direction, or slow down any motion in the opposite direction.

If you wish, you can also assign the coordinates manually using the current XYZ PBY coordinate edit boxes.

At any stage you can press the **Reset** button to reset the eye point back to its initial, last saved, position.

Remember you can click on the **Save Cameras** at any stage in the proceedings.

Stage Four - Adjust the camera zoom

This stage is optional and my advice is to not use anything other than the default zoom level unless you absolutely have to, for example when adjusting the view to show a specific area of the instrument panel. If you do need to adjust the zoom for any view always try to minimise the number of fine zoom steps, that is always use the nearest coarse zoom setting before making any fine adjustments. When the software displays the camera view it must follow your exact steps to recreate the same zoom setting, setting zoom level x1, then adjusting the coarse zoom, then issuing the fine zoom steps.

Stage Five - Add head movement effects

Dynamic and Automatic Head Movements (DHM and AHM) are intended for use in virtual cockpits and are usually always set for the pilot and co-pilot cameras. These effects are usually disabled for virtual cockpit views that are specific to instrument panels, engine controls, communications panels etc.. In other words, do not use these effects if you want your view to be completely stable in order to control a panel switch or button etc. Having said that it is fairly simple to operate buttons and switches with the mouse even when the DHM effects are enabled.

For this exercise click on the **Enable DHM** checkbox, open the DHM dialog using the **DHM Options** button and enable all the DHM options, open the AHM dialog and enable all the AHM options then close the AHM and DHM dialogs. N.B. AHM effects are automatically disabled when using TrackIR.

Stage Six - Assign a joystick button or key to the view

Click in the upper **Button / Key** box to assign a joystick button, click in the lower box to assign a key command. Any assigned key command must not be used elsewhere (FSX, FSUIPC etc.), if it is then FSX will refuse to relay the key press event to the OpusFSX interface. The OpusFSX interface will accept buttons 1 through to 32 of Joysticks 1 through to 8. All button and registered key events are displayed within the Spy window when the button or key is pressed. If they are not displayed then the joystick or button is invalid, not registered within FSX, already assigned elsewhere, or just an illegal entry.

Finally don't forget to click on the **Save Cameras** before closing the Cameras dialog. Your default virtual cockpit view should now be defined and saved within the FSXSERVER.CAM file.

You can repeat this exercise and move the eye point across to the right hand seat position to create the non-default First Officer's position.

Windowed Views

Windowed views are ideally suited to computer systems equipped with either multiple screens or single large screens. DHM cannot be specified for windowed view types. Windowed views cannot be associated with joystick buttons or keyboard keys, they are automatically opened when the aircraft is loaded and then must be manually undocked (if required) prior to using the Restore Win option to restore their sizes and positions.

Editing

It is not possible to alter the camera's eye point in windowed views so they must be edited in the main window. The settings for the view are specified entirely within the FSX or Prepar3D aircraft.cfg files. Separate sizes and positions are stored for your docked and undocked views, allowing you to save different preferred window position and sizes.

The aircraft.cfg files on the **OpusFSX** server and all **OpusFSX** clients are updated each time you click on the **Save Cameras** button within the **OpusFSX** Camera Configuration dialog.

If you make changes to an aircraft's windowed views, other than a zoom adjustment, you must force FSX or Prepar3D to reload the modified aircraft.cfg file. This can only be achieved by either restarting the simulator, or by first selecting a different aircraft type then reloading your original aircraft.

*Undocked windowed views must be undocked manually before their size and positions can be saved or restored using the **Save Win** and **Restore Win** button options, or the **Save Windowed Views** and **Restore Windowed Views** options within the simulator's OpusFSX menu.*

After you have moved and resized all the windowed views use the server or client program's **Save Win** button option to save the layout of your system. This option saves the position and sizes of all your docked and undocked windowed views on the server or client system, this gives you the option of restoring the screen layout in the future with the **Restore Win** button (or simulator's **OpusFSX** menu).

Displaying

There are three steps involved in displaying windowed views,

- Open the windowed view
- Undock if required
- Restore the size and position

Opening the Windowed View

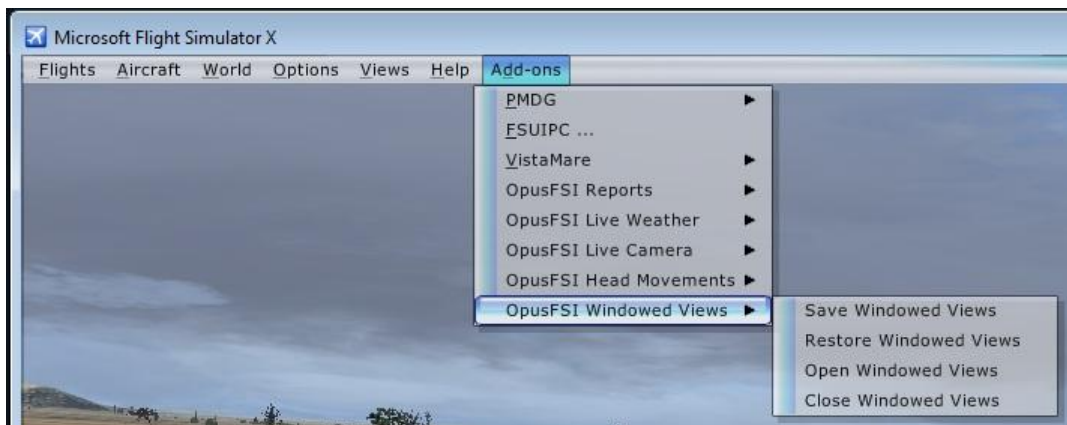
Windowed views cannot be associated with joystick button or key commands. Windowed views are displayed automatically each time you change the aircraft selection or load a flight. You can also control the windowed view display using either the **Open Win** (and **Close Win**) buttons on the server and client program forms, or via the **Open Windowed Views** and **Close Windowed Views** options within the simulator's **OpusFSX** add-on menu.

Undocking Windowed Views

Windowed views are displayed in an identical manner to the simulator's 'Views - New View' menu option, they appear as docked new view windows within the simulator's main display. You can undock the windowed view if you wish but windowed views cannot be undocked automatically within FSX or Prepar3D, therefore, *all windowed views must be undocked manually by the user.* Manually undock them by right-clicking in the window area and selecting the **Undock Window** option.

Restoring the Window Views

Finally, if you have previously saved the windowed views position and sizes using the **Save Win** button then use the **Restore Win** button to restore the previously saved position and sizes of each of your docked and undocked windows. These button options are provided on the server and each of the client programs. These options are also available via the simulator's **OpusFSX** add-on menu.



The **Save Win** and **Restore Win** options reduce the process of preparing for a flight to the following three simple steps,

1. Load the aircraft and flight into the simulator
2. Either leave the windowed views docked, or undock them as required.
3. Either click on the server or client program's **Restore Win** button, or select the **Restore Windowed Views** menu option within the simulator.

This procedure has to be repeated on each system displaying windowed views.

Warning - the Restore process will not work if you have a TH2Go device, the device changes the window sizes and positions making them unknown to other software.



Windowed Views

Tips for Creating Windowed Views

The software only works with views you create using Live Camera, in other words its own camera views and not views you open using the FSX menus.

1. Windowed views can only be created by the software editing your aircraft.cfg files in the simulator's SimObjects folders, located in <FSX>\SimObjects\Airplanes and <FSX>\SimObjects\Rotorcraft. If you look in these folders you will find an aircraft.cfg file. You can open these files using Notepad, if you go to the bottom of the aircraft.cfg file you will find our camera definition for the custom External Views.

```
[CameraDefinition.899]
Title = "OpusFSX Aircraft View"
Guid = {01021987-E220-6507-1024-462840738899}
Description = OpusFSX Aircraft View
...
```

If you have successfully created a Windowed view you will also see that view appended here ...
For example,

```
[CameraDefinition.990]
Title = "OpusFSX Windowed View 1"
Guid = {01021987-E220-6507-1024-462840738990}
Description = OpusFSX Customized External View
...
```

If CameraDefinition.899 is missing then you either have the Live Camera feature disabled or the LC software cannot access your aircraft.cfg files. The aircraft.cfg files are amended each time OpusFSX server program is run and when you click on **Save Cameras**, which you must do to save your camera views.

The Getting Started guide for Single PCs (and Networked PCs) has sections describing how to set the sharing and permissions on drives and individual folders. If you have the above CameraDefinition.899 missing then you most likely will have to make sure the relevant drives and folders are shared. First alter the drive containing FSX, then share the FSX installation folder itself. It is quite a simple process.

2. After OpusFSX has made changes to the cfg files you must load an entirely different aircraft type and reload the original aircraft to force FSX to reload the cfg data, including the modified CameraDefinitions contained within.

3. Windowed views cannot be Undocked by the software, there is no facility in FSX that allows this. So when Windowed views are displayed, if you want them Undocked then you must do it manually by right-clicking in the window.

4. Windowed views should not be assigned with any button or key commands. They are displayed automatically when you select the aircraft and when you click on the Open Views button.

5. To assist you, when the view is displayed you should Undock the view, reposition and resize it, then click on the **Save Win** button. Next time the view is displayed and Undocked (by you), you can then click on **Restore Win** and the software will attempt to reposition and size the window for you.

Warning - this process will not work if you have a TH2Go device, the device messes with the window sizes and positions making them unknown to other software.

6. Another useful test to check you have a correct view setup is to load your flight then use the S key to cycle through your view types. You should see (in the top right-hand corner) the following view types ...

Virtual Cockpit -> Outside View -> Tower View -> Aircraft View -> Custom View OpusFSX
External View
before it then cycles back to the VC view.

Windowed Views and Frame Rates

Windowed views are ideally suited for use on the 'non-flying' client systems. On these systems, by their very nature, the use of multiple windowed views will have far less of an impact on the displayed frame rates than say on the main 'flying' server system.

In fact, the use of multiple windowed views on the main 'flying' server may result in considerable reduction in frame rates, especially if you are using a complex aircraft such as the PMDG 737NGX, or you are operating close to an airport with complex scenery (e.g. during the takeoff and landing phases of the flight). However, there will be far less impact on the frame rates during the cruising or decent phases of flight.

Windowed views will always have a considerable effect on the frame rates within the Lockheed Martin Prepar3D simulator, on both server and client systems.

The **Open Win** and **Close Win** buttons on the server and client program forms, and the **Open Windowed Views** and **Close Windowed Views** options within the simulator's OpusFSX menu, can be used to remove and re-display all windowed views whilst flying.

These options give you control over the display of the configured windowed views, most useful on the main 'flying' server system. For example, you can close all windowed views during certain high-demand phases of flight, and re-open them during the less demanding phases.

For your convenience, the restore, close, and open view options have been duplicated as **Restore Windowed Views**, **Close Windowed Views**, and **Open Windowed Views** options within the FSX and Prepar3D simulator's OpusFSX Menu.

Creating Panoramic Views

2D cockpit views are generally used on the client systems to create panoramic (scenic) views. On the client systems this is achieved by setting the 2D panel transparency to 100% (making the panel invisible) and then setting up the client views via the server's Camera Control dialog. On the main 'flying' server system it is up to the user to press **Shift-1** to disable the 2D panel display. Note, the eye position will be different with the 2D panel enabled so you should always disable the panel when displaying scenic views on the server.

Please refer to the **OpusFSX Getting Started Networked PCs** guide for detailed instructions on setting up your client systems.

The **field of view** (FOV) of all displayed windows in the simulator is affected by the shape of the window. You must take this into account when creating or editing any camera view. If the FOV is important, for instance when view is part of a panoramic vista, you should undock the simulator's main viewing window and adjust its size and shape before adjusting its eye position and zoom level.

Any 2D cockpit view that is panned more than 45 degrees either side will reveal the virtual cockpit walls. The cockpit walls can all be eliminated by simply moving the 2D cockpit views forward a few meters. For example, setting the Z-axis to 2.0 will move the eye position forward by 2 meters and usually fix your eye point outside the invisible 2D cockpit. You will need to experiment with your selected aircraft cockpit by adjusting the Z-axis and panning the Yaw-axis around to cover the full extent of your intended panoramic vista.

If you are using windowed view to create a panoramic vista, you can use the **Display Windowed View** button to display one or more windowed views to assist you in creating and aligning the current view. You may also find it helpful to undock the simulator's main view during this process, this will allow you to adjust the shape, position, and size of the main window aligning it with the other displayed windowed views. You may also find it helpful to use the **Stepped** camera control to make fine adjustments to the camera's eye position.

If you create a panoramic vista without using windowed views (i.e. on systems not using multi-screened PCs) then not only will you achieve the optimum system performance but you will be able to change the displayed vista with a single button or key press. To achieve this simply assign the same button or key press to the required set of views on your server and client systems. Each set of views would be configured with a different eye position or perspective. For example, you could recreate the same panoramic vista using external aircraft views with the eye point moved 50 meters behind the aircraft.

Out of Sync - OpusFSX External Views

It is not possible for OpusFSX to determine the current view sub-mode selected within the simulator's main window. If you display an external view within the main viewing area and get the wrong external view then please use the A or Shift-A keys to cycle back to the OpusFSX External View, after that everything will be back in sync.

Spy Messages

We have left some of the Spy messages in the software. These messages can be seen by clicking on the top right-hand **Spy** button on the server's main form. These messages will indicate when the mode changes occur within the software; the mode will change between TAXIING, AIRBORNE, and LANDING and are indicated with the following messages.

```
SIM TAXIING  
SIM AIRBORNE  
SIM LANDING , Accel xxxx , Factor x.xxx
```

Where on landing, the vertical acceleration (in units of 100 x feet per second squared) is displayed as 'Accel xxxx', and the resulting severity factor (< 1.0 for smoother landings, 1.0 for normal landings, and > 1.0 for heavier landings) is displayed as 'Factor x.xxx'. At present, normal landings have an assumed acceleration of 8 feet per second squared. The Spy window automatically closes after two minutes.

TrackIR Head Movement Limits



TrackIR limits can be set and named via the TrackIR Limits button in the Camera dialog. A camera view can reference a named TIR Limit. The same named limit can be assigned to multiple camera views, and therefore multiple aircraft types.

The Live Camera option must be enabled (ticked) to assign these limits. You do not need to enable the TIR device to assign the head movement limits.

1. First either select the **Create New** button or to edit an existing entry click on the **Select the TrackIR Limits to Edit** button. You can also set the entry to None by selecting the **None** option from the displayed list of named limits.
The number of named limits will be displayed in the box labelled **Total**.
If you wish to change the limit name then modify the entry in the yellow name box.
2. Use the green arrow keys to set the limits. Clicking on the same arrow again will speed up the camera movement.
The red (and **Set**) buttons will stop movement when in **Continuous** mode. In **Stepped** mode click on the green arrow to move in increments, the increment size is determined by the **Speed** slider bar.
3. Click on each **Set** button to fix the limits. The appropriate limit settings will be displayed in the corresponding box. Limits can be entered or modified manually if desired by clicking on the boxes (the box will be highlighted in red) and typing in a value.
4. Click on the **Save** button to save the limits for the selected aircraft types.

The **Goto** buttons can be used to move to the existing limit. The **Centre** button centres the cockpit image. You can use the **Delete** button to delete the currently selected named limit. The **OK** button saves the limits and exits the dialog. To exit without saving your changes click on the red X at the top right of the dialog.

Example 1 - Quick Guide to Setting up a Default View on the Server

First ensure you have selected and loaded an appropriate aircraft within the FSX or Prepar3D simulator on both the server and client PC.

To see the main form of the server program you must be running FSX or Prepar3D in windowed mode.

Click on the **Configure** button to display the Configuration dialog and tick the **Enable Live Camera** checkbox. Restart the server program if prompted to do so.

The Camera Control dialog is displayed by clicking on the **Cameras** button on the FSXSERVER's main form.

If you have created a similar view to the one you want to create now then select it using the **Select A Camera to Edit or Clone** button.

In the camera dialog select **Add or Clone a Camera**.

Select the associated aircraft using the **Assign Aircraft Types to the Camera** button. Select the **All Aircraft Types** entry to make the view global, alternatively highlight all the associated aircraft types and click **OK**.

To create your forward (or other) view change the eye point for the view using the **X, Y, Z, Pitch, Bank, and Yaw** camera control buttons or by entering values directly into the coordinate text boxes.

Tick the **Default View** checkbox. If required **Disable TrackIR**, set the **Transition Time** and enable **DHM**.

Use the **Zoom** and **DHM Options** buttons to adjust the camera view's zoom settings and specify any associated Dynamic Head Movement respectively.

Optionally modify the view name by clicking in the text edit box under the Select a Camera to Edit or Clone button.

Finally, click on the **OK + Save** button to save your changes.

When you start up you should have your default view on the server.

Example 2 - Quick Guide to Setting up a Forward and Windowed Side Views on a Server PC with three monitors

Forward View

Set up a forward view on the server in accordance with the example above - *Quick Guide to Setting up a Default View on the Server*. Of course it's optional whether you make it the default view.

Left Windowed View

It is not possible to alter the camera's eye point in windowed views so they must be edited in the main window.

In the camera dialog select **Add or Clone a Camera**.

Select the associated aircraft using the **Assign Aircraft Types to the Camera** button. Select the **All Aircraft Types** entry to make the view global, alternatively highlight all the associated aircraft types and click **OK**.

Tick the **Windowed View** checkbox. Make sure **Default View** is unchecked.

To create your left side view change the **Yaw** to -90 by entering the value directly into the coordinate text box. Click in the Yaw field (it will turn red), type in -90 (note the minus sign; you want the camera to turn left), then hit the enter key. The camera view will rotate to 90 degrees left.

Set the zoom as you like; a zoom factor between 0.8 and 1.0 seems to work well for a right or left view.

Enter a name for the view (in the box below the Select a Camera to Edit or Clone button).

Windowed views cannot be associated with joystick buttons or keyboard keys, they are automatically opened when the aircraft is loaded. DHM cannot be specified for windowed views.

Click the **OK + Save** button and exit the dialog.

You must now force FSX or Prepar3D to reload the modified aircraft.cfg file. This can only be achieved by either restarting the simulator, or by first selecting a different aircraft type then reloading your original aircraft.

Undock the window manually by right clicking on it and selecting the undock option. Move the window to the left monitor and resize the windowed view.

Use the Server dialog's **Save Win** button option to save the layout of your system. This option saves the position and sizes of all your docked and undocked windowed views and gives you the

option of restoring the screen layout in the future with the **Restore Win** button (or add-on menu option).

Right Windowed View

In the camera dialog select **Add or Clone a Camera**.

Select the associated aircraft using the **Assign Aircraft Types to the Camera** button. Select the **All Aircraft Types** entry to make the view global, alternatively highlight all the associated aircraft types and click **OK**.

Tick the **Windowed View** checkbox. Make sure **Default View** is unchecked.

This time to create your right side view change the **Yaw** to 90 by entering the value directly into the coordinate text box. Click in the Yaw field (it will turn red), type in 90, then hit the enter key. The camera view will rotate to 90 degrees right.

Set the zoom to match the left camera view.

Enter a name for the view (in the box below the Select a Camera to Edit or Clone button).

Click the **OK + Save** button and exit the dialog.

You must now force FSX or Prepar3D to reload the modified aircraft.cfg file. This can only be achieved by either restarting the simulator, or by first selecting a different aircraft type then reloading your original aircraft.

Undock the right window manually by right clicking on it and selecting the undock option.

Move the window to the right monitor and resize the windowed view.

Undock the left window manually by right clicking on it and selecting the undock option.

Move the window to the left monitor and resize the windowed view.

Use the Server dialog's **Save Win** button option to save the layout of your system. This option saves the position and sizes of all your docked and undocked windowed views and gives you the option of restoring the screen layout in the future with the **Restore Win** button (or add-on menu option).

You've now got your server set up for your forward view (with a virtual cockpit if you like that), and your two side monitors set up for left and right. You must manually undock the right and left views by right clicking on them selecting the undock option. Finally use the **Restore Win** button (or add-on menu option) which will position and resize the views.

Warning - the Restore process will not work if you have a TH2Go device, the device changes the window sizes and positions making them unknown to other software.

You can also control the windowed view display using either the **Open Win** (and **Close Win**) buttons on the server dialog, or via the **Open Windowed Views** and **Close Windowed Views** options within the simulator's **OpusFSX** add-on menu.

If you wish to amend your views then remember you must repeat the process of,

- reloading the modified aircraft.cfg file by first selecting a different aircraft type then reloading your original aircraft
- undocking and repositioning the windows
- using Save Win to save the positions
- to display the views manually undock the windowed views and then use Restore Win to restore the window positions

If you wish to create a separate panel view on your server then follow the above instructions to create a new Windowed View and associate it with your aircraft. Select the required Virtual or 2D camera type depending on the cockpit you are using, then adjust the camera's coordinates and zoom settings to create a close up view of the instrument panel or panels. You may find it helpful to undock the main simulator's view during this process, this will allow you to adjust the shape of the window to match the panel(s) and your intended screen layout. You may also find it helpful to use the Stepped camera control to make fine adjustments to the camera's eye position.

If you have more than three monitors then the **Display Window View** button enables you to display an existing windowed view in order to align the view you are currently creating. A list of windowed views will be displayed, select one from the list with your mouse.

Example 3 - Quick Guide to Setting up a Default Scenic View on a Client

First ensure you have selected and loaded an appropriate aircraft within the FSX or Prepar3D simulator on both the server and client PC.

To see the main form of the server program you must be running FSX or Prepar3D in windowed mode.

On your client PC

Configure the **FSX Server Network ID** to the server PC name or IP address.

In FSX set 2D panel transparency to 100%. Only do this on the client not the server.

Click on the **Configure** button to display the Configuration dialog and tick the **Enable Live Camera** checkbox. Restart the client program if prompted to do so.

On your server PC

Click on the **Configure** button to display the Configuration dialog and tick the **Enable Live Camera** checkbox.

Set the **Number of Client Computers** to one (or as appropriate).

The Camera Control dialog is displayed by clicking on the **Cameras** button on the FSXSERVER's main form.

Use the **Select Computer System** button or click in its associated text box to select the client PC. All client systems will be identified using their configured computer name. If no client computers are connected to the server when you open the dialog then this option will be disabled (grayed out).

In the camera dialog select **Add or Clone a Camera**.

Select the associated aircraft using the **Assign Aircraft Types to the Camera** button. Select the **All Aircraft Types** entry to make the view global, alternatively highlight all the associated aircraft types and click **OK**. N.B If the client FSX is using a dummy or simple aircraft (recommended for performance reasons when you are viewing scenery only and not external views of the aircraft) then ensure your assigned aircraft types are set to **All Aircraft Types**.

Tick the **Default View** checkbox.

Tick the **2D** checkbox.

To create your side (or other) view change the eye point for the view using the **X, Y, Z, Pitch, Bank,** and **Yaw** camera control buttons or by entering values directly into the coordinate text boxes. Use the **Zoom** button to adjust the camera view's zoom settings.

Finally, click on the **OK + Save** button to save your changes.

The new camera configuration file will be transferred onto your client system prior to reconfiguring all of the client system's aircraft.cfg files. You must have the file permissions and sharing set correctly so that the file can be transferred.

When you start up you should have your default view on the client.

N.B. If you have set up a scenic view intended to be displayed with the 2D panel disabled and display the view with the 2D panel enabled, the eye position will not be as expected. In such cases use the Shift-1 key sequence to toggle the 2D panel OFF.

Example 4 - Quick Guide to Setting up a Default Forward View on the Server and Side Views on separate Client PCs

First ensure you have selected and loaded an appropriate aircraft within the FSX or Prepar3D simulator on both the server and client PC.

To see the main form of the server program you must be running FSX or Prepar3D in windowed mode.

On your client PC

Configure the **FSX Server Network ID** to the server PC name or IP address.

In FSX set 2D panel transparency to 100%. Only do this on the client not the server.

Click on the **Configure** button to display the Configuration dialog and tick the **Enable Live Camera** checkbox. Restart the client program if prompted to do so._

On your server PC

Click on the **Configure** button to display the Configuration dialog and tick the **Enable Live Camera** checkbox.

Set the **Number of Client Computers** to two (or as appropriate).

The Camera Control dialog is displayed by clicking on the **Cameras** button on the FSXSERVER's main form.

Set up the Default Forward view on the server as per the instructions in Example 1...

If you have created a similar view to the one you want to create now then select it using the **Select A Camera to Edit or Clone** button.

In the camera dialog select **Add or Clone a Camera**.

Select the associated aircraft using the **Assign Aircraft Types to the Camera** button. Select the **All Aircraft Types** entry to make the view global, alternatively highlight all the associated aircraft types and click **OK**.

To create your forward (or other) view change the eye point for the view using the **X, Y, Z, Pitch, Bank, and Yaw** camera control buttons or by entering values directly into the coordinate text boxes.

Tick the **Default View** checkbox. If required **Disable TrackIR**, set the **Transition Time** and enable **DHM**.

Use the **Zoom** and **DHM Options** buttons to adjust the camera view's zoom settings and specify any associated Dynamic Head Movement respectively.

Optionally modify the view name by clicking in the text edit box under the Select a Camera to Edit or Clone button.

Finally, click on the **OK + Save** button to save your changes.

Set up the left side view on the left client ...

Use the **Select Computer System** button or click in its associated text box to select the left client PC. All client systems will be identified using their configured computer name. If no client computers are connected to the server when you open the dialog then this option will be disabled (grayed out).

In the camera dialog select **Add or Clone a Camera**.

Select the associated aircraft using the **Assign Aircraft Types to the Camera** button. Select the **All Aircraft Types** entry to make the view global, alternatively highlight all the associated aircraft types and click **OK**. N.B If the client FSX is using a dummy or simple aircraft (recommended for performance reasons when you are viewing scenery only and not external views of the aircraft) then ensure your assigned aircraft types are set to **All Aircraft Types**.

Tick the **Default View** checkbox.

Tick the **2D** checkbox.

To create your left side view change the **Yaw** to -90 by entering the value directly into the coordinate text box. Click in the Yaw field (it will turn red), type in -90 (note the minus sign; you want the camera to turn left), then hit the enter key. The camera view will rotate to 90 degrees left.

Use the **Zoom** button to adjust the camera view's zoom settings.

Finally, click on the **OK + Save** button to save your changes.

Set up the right side view on the right client ...

Use the **Select Computer System** button or click in its associated text box to select the right client PC. All client systems will be identified using their configured computer name. If no client computers are connected to the server when you open the dialog then this option will be disabled (grayed out).

In the camera dialog select **Add or Clone a Camera**.

Select the associated aircraft using the **Assign Aircraft Types to the Camera** button. Select the **All Aircraft Types** entry to make the view global, alternatively highlight all the associated aircraft types and click **OK**. N.B If the client FSX is using a dummy or simple aircraft (recommended for performance reasons when you are viewing scenery only and not external views of the aircraft) then ensure your assigned aircraft types are set to **All Aircraft Types**.

Tick the **Default View** checkbox.

Tick the **2D** checkbox.

To create your right side view change the **Yaw** to 90 by entering the value directly into the coordinate text box. Click in the Yaw field (it will turn red), type in 90, then hit the enter key. The camera view will rotate to 90 degrees right.

Use the **Zoom** button to adjust the camera view's zoom settings.

Finally, click on the **OK + Save** button to save your changes.

The new camera configuration file will be transferred onto your client system prior to reconfiguring all of the client system's aircraft.cfg files. You must have the file permissions and sharing set correctly so that the file can be transferred.

When you start up you should have your default views on the server and clients.

N.B. If you have set up a scenic view intended to be displayed with the 2D panel disabled and display the view with the 2D panel enabled, the eye position will not be as expected. In such cases use the Shift-1 key sequence to toggle the 2D panel OFF.

Removing OpusFSX Custom Views and Restoring the aircraft.cfg Files

If you wish to disable Live Camera and remove the Opus custom views from your aircraft.cfg files then disable Live Camera in the Configuration dialog. A message box informs you that Live Camera is removing the Camera Definitions from all aircraft.cfg files for you. These changes will NOT be noticeable until you either restart FSX, or reload a completely different aircraft type forcing FSX to reload the modified cfg file.

FAQ

How do I pan around?

At present you can use either Live Camera Control (using a game controller, or the arrow keys on the LCC dialog, or assigned shortcut keys), the standard hat switch, FSX Mouse Look or TrackIR.

FSX uses the hat switch as standard for panning views around, this panning is fully compatible with our camera control and effects. If you have disabled your controllers in FSX and are using FSUIPC then you can enable mouse wheel button panning and that also re-enables the hat switch on the joystick.

FSX Mouse Look conflicts with TrackIR so you need to disable TrackIR (F9) prior to using Mouse Look. To use Mouse Look try the following methods;

- press the space bar whilst holding down the left mouse button
- hold down the middle wheel button whilst moving the mouse around

- press shift-O then move whilst holding down the left mouse button, press shift-O again to exit mouse look
- program the wheel button to shift-O in your mouse driver.

I don't have any turbulence

When using **Live Camera** our DHM effects are associated with camera views so you must configure a camera view with DHM effects and set it as either the default view, assign it with a keyboard key or joystick button, or configure it as a windowed view. When you then subsequently display the camera view in flight (by default or by pressing the assigned key/button) you will see the DHM effects.

For turbulence on the aircraft itself select both the **Bump Aircraft** and Turbulence Effects options (**Turbulent Motion** and/or **Turbulent Bump**) within DHM. Unless you want to see wing flex disable FSX turbulence (which is set via the FSX menu option - Options, Settings, Display. Select the Weather tab, there is an option for turbulence and thermal effects on the aircraft).

If you can't see the DHM effect on your aircraft then set the "\\OpusFSX\\FSXSERVER.EXE" file properties (compatibility tab) to "Run as Administrator". This can be done by right clicking on the program in Windows Explorer or right clicking on the desktop shortcut.

TrackIR doesn't work or DHM is jerky

You must follow the TrackIR setup instructions in the Getting Started guide. Try enabling the **Run TrackIR High Priority** option in the Server Configuration dialog.

TrackIR can become very jerky if 'precision' is disabled, its default key assignment is F7 so it's possible to inadvertently change its setting if you use F7 to increase flaps.

I don't have any wing flex

To see wing flex you must select advanced animations which is set via the FSX menu option - Options, Settings, Display. Select the Graphics tab. To see changes to the VSI enable the options for turbulence and thermal effects on the aircraft in FSX which is set via the FSX menu option - Options, Settings, Display. Select the Weather tab.

The camera dialog only lists "All aircraft types" or DHM doesn't work

Either right click on the your OpusFSX SERVER desktop shortcut icon, or the file C:\\OpusFSX\\FSXSERVER.EXE in Windows Explorer, and select Properties, select the Compatibility tab, tick the checkbox to "Run as Administrator". Also set this option for FSXCLIENT.EXE on your optional client PCs.

The camera dialog doesn't list all my aircraft

Ensure your aircraft.cfg file is not corrupted and the file attribute is not 'read only'.

My aircraft disappeared from the FSX list

When you open/edit an aircraft.cfg file in Notepad, select **File - Save As ...**

You will see the Encoding type in the bottom right-hand corner of the dialog. This should be set to **ANSI**.

Missing aircraft textures - skeleton view

OpusFSX v3.49.3 onwards will accept a program argument to specify the number of view modes on your system which should overcome this problem (but also refer to the information below regarding SP2 and 3rd party camera packages). Refer to the Creating Shortcuts section of the Getting Started Guide for Single PCs.

Basically the skeleton aircraft results from positioning the eye point for an external view but with a cockpit (VC) view selected on the display. We cannot actually determine what view is displayed, the software is forced to just select 2D then count in steps from there.

For OpusFSX versions prior to v3.49.3 for correct operation your views should cycle (S key) between, VC - Spot - Tower - Aircraft - External. You should also make sure you have not hidden any of these views by setting their CycleHidden field to Yes. For correct operation each of these view types must be set as CycleHidden=No.

Missing aircraft textures can also be caused by a corrupt FSX Service Pack 2 or Acceleration Expansion Pack.

Before disabling 3rd party camera packages their configuration utility must be run and the "Restore" function selected to restore all camera views to FSX default, otherwise 3rd party camera definitions are not removed from the aircraft config files and can cause problems.

I've lost the F12 top down view

This problem is corrected in OpusFSX Beta Version 3.18.1 onwards.

N.B If you are using TrackIR then by default it re-assigns the F12 key to its center view function, other 3rd party packages may reassign keys too.

My key/button assignments to change views don't work

All button and registered key events are displayed within the Spy window when the button or key is pressed. Keyboard events do not appear in Spy whilst editing cameras, only after they have been saved and edit mode is exited. If they are not displayed then the joystick or button is invalid, either not registered within FSX, already assigned elsewhere (i.e. FSX, 3rd party add-on etc), or just an illegal entry.

A joystick must be enabled in FSX for it to be recognised and its button press events to be forwarded on to OpusFSX.

The numeric pad keys 0 to 9 can be used but they must be assigned with the Num Lock ON (for

recognition), and used with the Num Lock OFF within FSX/P3D. This is a quirk of the simulator and not the OpusFSX software.

Make sure you are assigning the key/button assignments in the correct camera dialog box. Button assignments go in the top box and key assignments in the bottom box in the camera dialog.

When you create camera views you can assign them either to a particular aircraft, or group of aircraft, or "all aircraft", if the views are assigned to specific aircraft then one of those aircraft must be loaded in FSX/P3D.

Your FSX main window must have focus before using the key.

Camera transitions are not smooth and stutter

If you have set large transition times (for a slower transition) then your sim will have to process many more eye point adjustments. If your sim does not have enough time to handle these it will ignore many of them and you could end up with less than smooth motion. If so then you must set much lower transition times. Also check TrackIR and other eye point adjusting software, none of which will be compatible unless it is interfaced to OpusFSX. Switching Vertical Sync (Nvidia Inspector) to 1/2 refresh may fix the problem, if V.Sync is off or on it can cause stutter.

"Unable to transfer camera configuration data across to system <client_name>" message

You must set up your drive sharing, security, permissions etc. as described in the Getting Started guide so that the server and client systems can access each other BOTH ways. You will find your configured camera definition files for your client systems stored in the c:\OpusFSX installation folder on your server system, they are named < CLIENTNAME>.CAM

What views can I see on the server and client computers ?

You can display any interior (cockpit), exterior (scenic), or external (aircraft) views on the main 'flying' server system. You can only display exterior (scenic), or external (aircraft) views on the secondary client systems. You cannot control the aircraft by displaying panels such as CDUs or GPS on the client systems - these are non flying slaves.

On networked systems, the main 'flying' server PC operates the same as it would on a standalone (single PC) system providing the same assortment of interior (cockpit), exterior (scenic), and external (aircraft) views; and hence it provides the means to monitor and control the aircraft and its systems. In addition, the Live View and Live Camera networked links with the secondary client systems (PCs or Laptops) allows a variety of exterior (scenic) and external (aircraft) client system views to be created and controlled. If desired, a number of exterior views can be used on your networked multi-screened system to create a panoramic vista. All views are created and controlled centrally from the server system.

On networked systems, the Live View connections automatically synchronize the aircraft's current position, attitude, flaps, rudder, ailerons, gear and lighting configuration, and simulator's date/time, along with either your chosen weather theme or the full METAR weather for the surrounding area.

OpusFSX supports Windowed Views on the server and all client systems. These additional views are ideal for multi-screened PCs as well as single large screen displays. All windowed views can be positioned and sized automatically.

Can I create an Instrument Panel view ?

Yes, but the controls only work on the main 'flying' server machine.

First create a windowed view associated with the aircraft type on your main 'flying' server.

Select virtual or 2d cockpit view.

Tick the Windowed View checkbox.

Adjust the viewpoint (x, y, z, pitch and yaw) to centre the view on the required instrument panel.

You can adjust the z axis to move the eye point in as close as you want.

Save the camera views and reload the aircraft type to force FSX to reload the aircraft.cfg file.

Your new windowed view should be on display, you can now position your window. Click on the **Save Win** button to save the position and size of your window.

Can I use 3rd party packages with OpusFSX?

All Opus DHM effects are camera shake effects with the exception of the Bump Aircraft option in the DHM dialog. Setting this option results in bumping the aircraft's motion synchronously with the DHM low frequency turbulence effect.

If you are using Accu-Feel then turn off their global turbulence, chop, gusts, and clear air turbulence in order to prevent conflict with OpusFSX.

Can I use Live Camera with another weather engine?

You can but of course the DHM and Bump Aircraft turbulence effects are not going to be as good as when you use the Opus LWE, which we believe is by far the best, since it is the LWE that supervises all intelligent and RW turbulence effects, both the DHM and the Bump Aircraft turbulence. Its only the LWE that can possibly provide such real time supervision because its the LWE that knows the exact meteorological conditions surrounding your aircraft. Hence, for maximum realism in the simulator, which is what OpusFSX is all about, it's is by far best to couple both the OpusFSX Live Weather Engine with the Live Camera views and their associated real world DHM and Bump Aircraft.