JAR Design X-Life

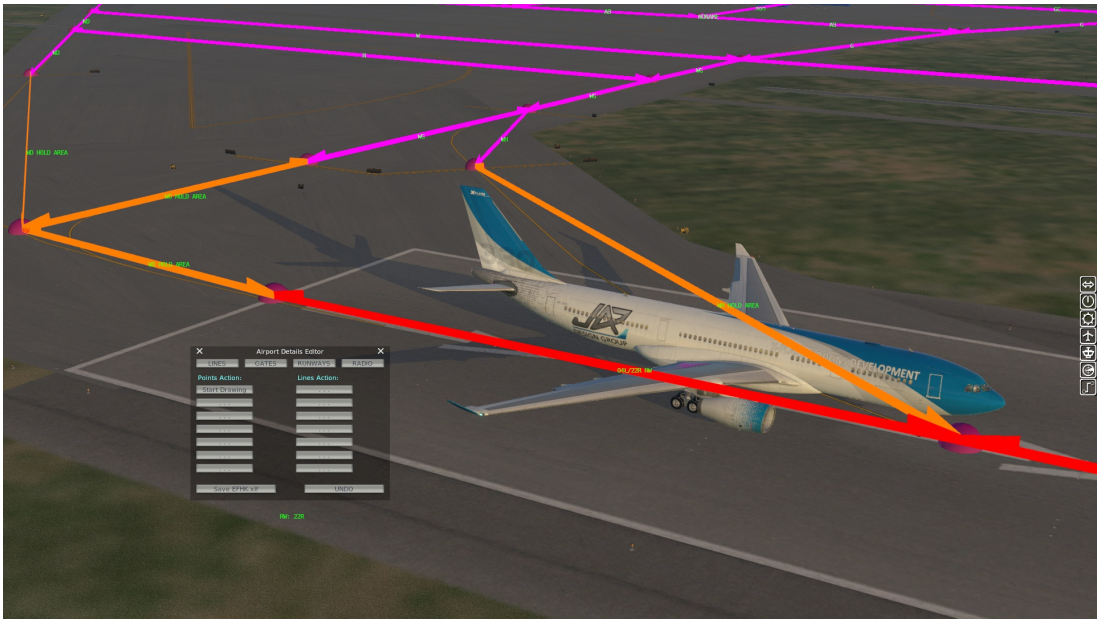
Airport Editor Instructions

(Author: pwalchester)

Features

An incorporated, easy to use airport editor which removes the need to learn the complicated WED program, enabling the X-Life user to:-

- Use Runways TAB to place Runway ends in correct place and alignment, set Departure/Arrival Info.
- Use Lines TAB to Draw taxiway network with true names
- Mark taxiways that lie on Runway as "runway"
- Mark taxiways that lie between hold points and runways as "hold area"
- Place / name / set parameters for gates and stands
- Use Radio TAB to set radio FREQ for ATC
- Save new format ***.xlf*** files (fix issues "?" if they exist)



Contents

	Page
Features	1
Starting Airport Editor	3
Edit Existing Airport File	4
Lines Menu	4
Drawing lines	4
Inserting new lines	5
Line direction	6
Line types	7
Deleting lines and points	7
Uniting points	8
Gates Menu	9
Placing gates	9
Editing gates	9
Stand conventions	10
Runways Menu	11
Editing runways	11
Radio Menu	11
Save button	12
Create New Airport File	13
Best Practices	14
Amendments	16

 ©pwalchester

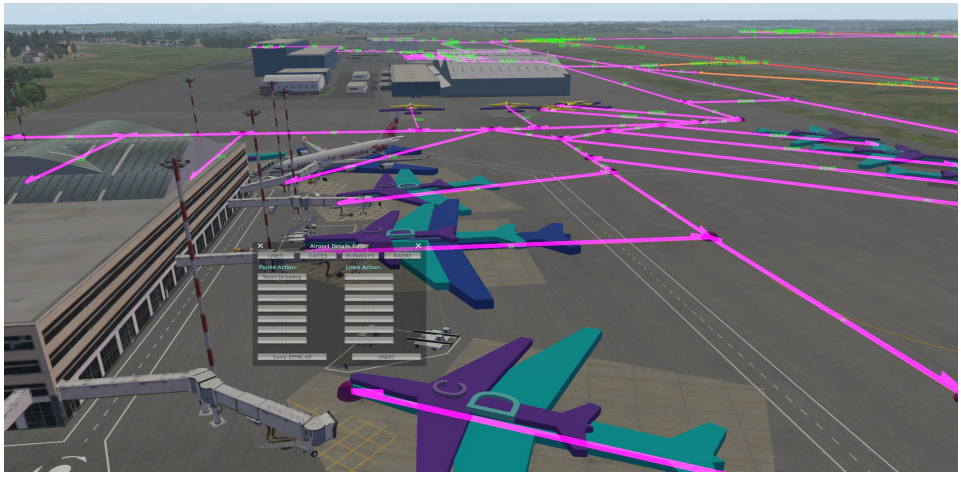
Starting Airport Editor

Start X-Plane with any aircraft at desired airport, in this case EFHK using ***.xlf*** file supplied by JARDesign. If an airport being edited has only original format ????***.txt*** & ????***.dat*** files in the X-Life/Airports folder these are used initially – see 'Save button' section. Airport scenery loaded for the purpose of this manual is EFHK by tdg which can be downloaded from X-plane.org here http://forums.x-plane.org/index.php?/files/file/23410-efhk-helsinki-airport-finland/

This has been used because most of the layout of the airport and JAR supplied ***.xlf*** file agree but there are differences which are useful for editing examples, and is a good starting point for you to practice editing an existing airport file. Any other version of scenery for this airport can be used if you already have it installed.

There is no need to start X-Life traffic, move out of aircraft using 'C' key and orient view so you have small elevation and can see part of airport.

Start the X-life airport editor and ***.xlf*** file information will be overlayed on the airport and the menu box appears, before editing it is best to further increase elevation and orient view to give best view of editing area. Use keyboard ',' & '.' keys and arrow keys to move around airport, using mouse scroll wheel to zoom in X-Plane greatly reduces panning speed.



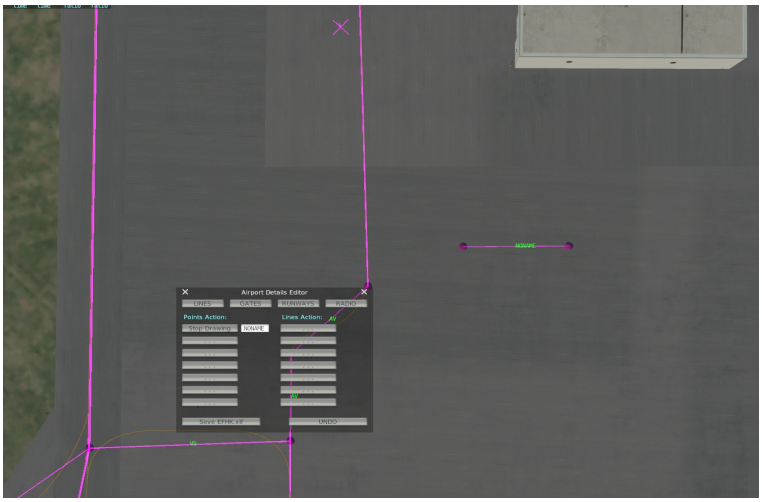
The Menu box can be dragged anywhere in X-Plane by clicking and holding the title bar. Close the editor by clicking the X at either end of the title bar, if you have not saved any editing work before closing then the work is lost. The box is transparent enabling viewing of structures and markings behind it, lines and points within the boundary of the box cannot be selected.

Edit Existing Airport File

LINES Menu

Drawing Lines

On 'Points Action:' sub-menu click 'Start Drawing', a text box appears and option changes to 'Stop Drawing'. Enter a line name in box if you wish, default text is NONAME. Move mouse pointer to a blank area of the apron and click, a purple point appears, move mouse pointer and click again. Another point appears along with a purple line joining the two points and the line name from the text box. You can carry on adding points and lines to quickly create large taxiways, when finished click 'Stop Drawing'. Lines which cross other lines must be connected by points (nodes).



Now click on the UNDO button two times (see Note 2), all your hard work is deleted.

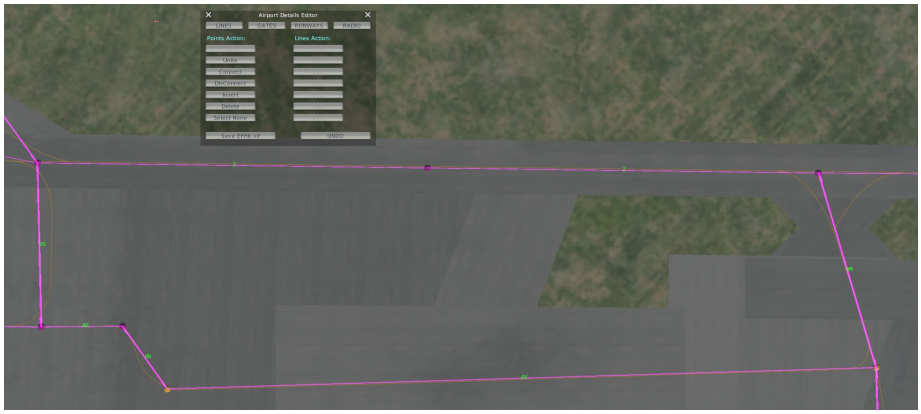
Note 1. When adding a string of points, each line between the points can be named differently via the text box.

Note 2. Use of the UNDO function deletes the whole of the current action, i.e. all points, lines and names from that action. In addition, selecting a 'Start Drawing' or 'Stop Drawing' function is also treated by the UNDO function as an action, but this is not reflected on the menu button, so if the 'Stop Drawing' button has been clicked, clicking on UNDO once appears to do nothing, a second click then removes the previous action.

Inserting New Lines

There will be times when editing an existing ***.xlf*** file that you need to insert a new point on a line, or new lines between existing lines.

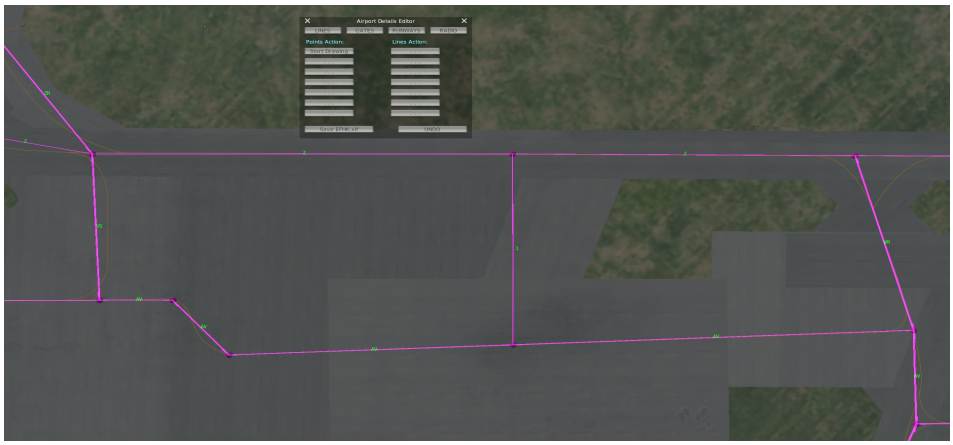
Click on the points at each end of the required line, when hovering over a point or line-name a cross-hair with a small vertical line appears signifying it is ready for selection. When a point is selected it turns to orange and the menu options change, when a second point is selected the 'Points Action:' menu presents additional options. Click the 'Insert' button and a new point is added midway along the line, the original points are deselected and the original line name is applied to the two new lines. The 'Insert' action is not available if more than two points are selected. The diagram below shows this procedure already applied to line Z and the points at either end of the long AV line selected ready for the 'Insert' action.



Once the new point has been added to line AV the two new points can be joined by a line. Select the two new midway points and click the 'Connect' button to add a line with the default name. Both of the new points can now be dragged to the required position.

Moving points and their attached lines is achieved by clicking on the point with the cross-hair visible, holding the mouse button down, and dragging the point to the required position. Releasing the mouse button sets the point and any attached lines to that position. Sometimes exact positioning can be difficult, depending on the zoom level and angle of point of view, the point can jump to a nearby position past the exact required position. In this case hold the mouse steady and tap keyboard ',' & '.' keys to move the view slightly then fine tune point position with mouse.

Finally if the new line needs to be renamed, click the name on the line, select the default name in the menu text box, type the new name and click 'Rename Line' button.



Note that when drawing a line between existing points it is sometimes necessary to zoom in with mouse scroll wheel to be able to see the mouse cross-hair snap-to the required point, then zoom back out.

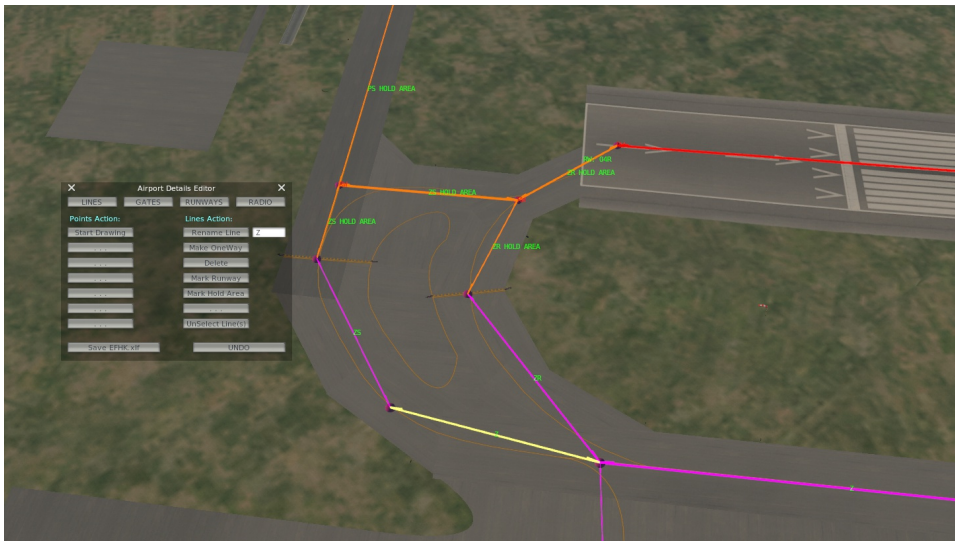
Line Direction

The direction of lines is signified by arrows at each end, or at one end for one way lines. If, with a line or multiple lines selected, the 'Make OneWay' button is clicked then the button changes to 'Make TwoWay' and the 'DIR' button appears enabling the direction of the selected line(s) to be changed.

Changing the line direction can be applied to multiple lines but after applying the effect check the results, some of the lines may default to the opposite direction than that intended.

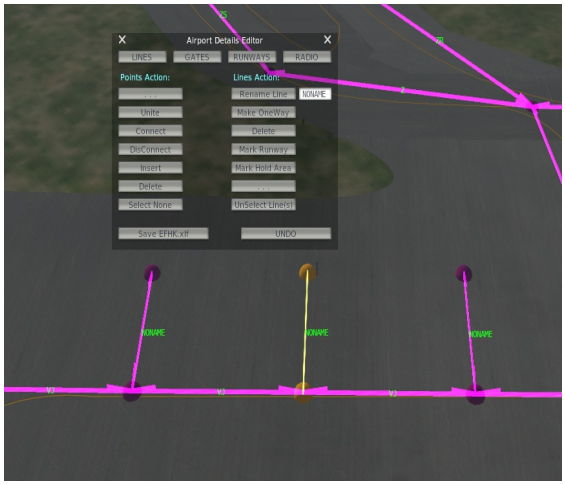
Line Types

There are three line types, Taxiway, Hold Area and Runway. Hold Area and Runway lines have additional text appended to their names to further signify the type of line. With any one line type selected buttons are available to change to either of the other two types. The diagram below shows one of each line type, with a taxiway line selected, in yellow, 'Mark Runway' and Mark Hold Area' buttons are available. With any number of a single line type selected the option to change to one of the other types is available. Note that the Lines Action sub-menu retains the format of the first selected line e.g. if a Hold Area line were to be selected next, the 'Mark Hold Area' button is not blanked. The menu options change once different line types are de-selected and only lines of one type remain, or click 'UnSelect Line(s)' button.



Deleting Lines and Points

In the left hand diagram below the centre line has been selected, in addition its endpoints have been selected. Clicking the Lines Action: sub-menu 'Delete' button would delete the line and its unconnected end point, leaving all other points and lines intact. Clicking the Points Action: sub-menu 'Delete' button will delete the line, the two selected points and in addition any other connected lines, see right hand diagram. A line between two selected points can also be deleted while leaving the points intact by clicking 'DisConnect' on the 'Points Action:' sub-menu.



On the 'Points Action:' sub-menu, anytime a point is selected the 'Select None' button is available, useful when multiple points are selected or if you have scrolled to another area of the airport. Similarly on the 'Lines Action:' sub-menu, anytime a line is selected an 'UnSelect Line(s)' action is available. Any selected line or point can also be Unselected by clicking on the line or point a second time.

Uniting Points

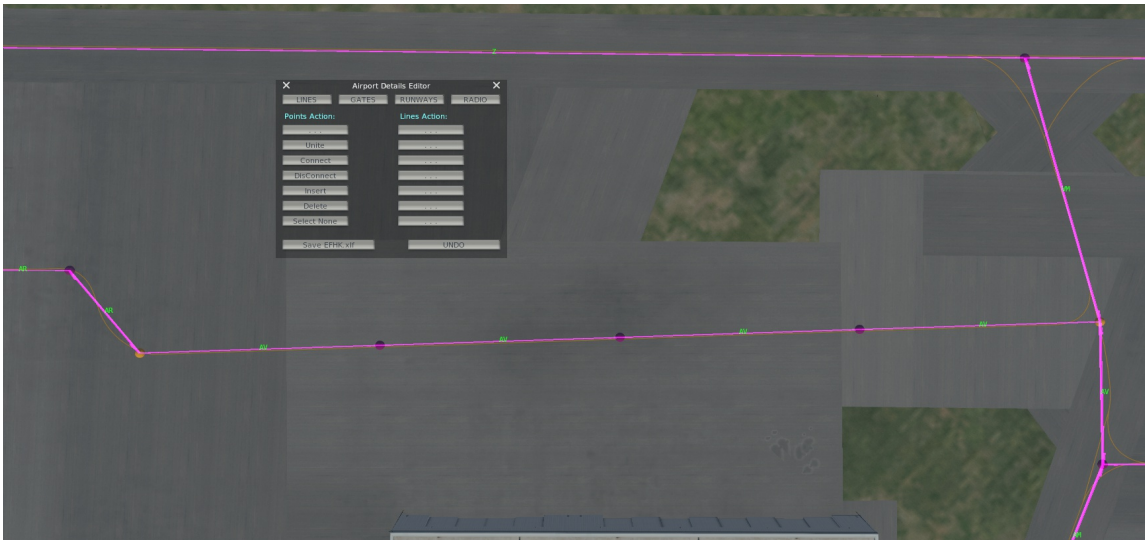
The 'Unite' action button adds the facility to connect points together, the function is easiest to use on adjacent points. The diagram below in the SW corner of the example airport shows two points already selected, the first point selected is always the “anchor” or “target” point. When the 'Unite' button is clicked the second point is deleted, the path to the anchor point moves to the next available point along any previously connected line. Be aware that selecting two points on a straight line with existing intervening points adds a new line on top of existing lines.

This action is also available if you select more than two points. First point that is selected will be "target" point and all other selected points will be "United" with the target point. With more than two points selected the 'Points Action:' sub-menu 'Connect', 'DisConnect' and 'Insert' options are removed.

As an exercise try this, or a similar, layout yourself. The 'expected' results are:-

With the right hand point selected first, the left hand point is deleted along with adjoining line AR and the leftmost AV line, a new line is inserted between the anchor point and the remaining point on the AR line with the label AR. The three right hand AV line segments remain along with another AV line from the leftmost remaining AV point to the anchor point.

With the left hand point selected first the right hand point is deleted along with line VM and the two connected AV lines, two new lines are inserted between the anchor point and the remaining points. The new upper line is labelled VM and the new lower line is labelled AV. The three left hand AV line segments remain along with another AV line from the rightmost remaining AV point to the anchor point.



Take care when using the Unite function, always check the results carefully after use.

GATES Menu

Placing gates

Gates are added and edited via the GATES menu. With the GATES menu active line-names and direction arrows are blanked. Initially only the 'Add One Gate' and 'Add Gates' buttons are available. Clicking either adds a text window with the next available gate number automatically entered and changes the button option to cancel. The obvious difference being the first one adds a gate and automatically reverts to the original menu once the gate is placed, the 'Add Gates' function can be used any number of times, with the gate number increasing automatically, and has to be manually cancelled. A gate can be placed anywhere but is usually on an available point at the end of a taxi line. Existing gates are marked with their type, number and heading in whole degrees.

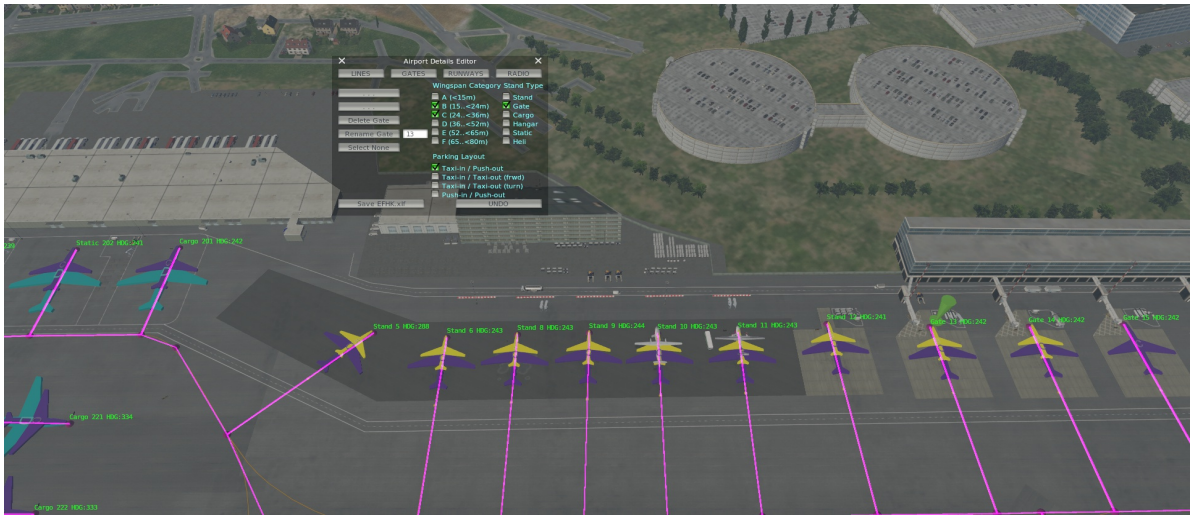
To place a gate click the required 'Add' button, change the text box number if required and move the mouse pointer close to the required point until the cross-hair appears, click to place the gate. This places the gate and Wingspan Category plane symbols for category A and B on the point, along with a label showing the gate type, text from the text box and heading. If the gate is clicked and held for a short time (less than a second), on releasing the mouse button the plane symbols snap to the line heading. During any editing session switching to LINES menu to edit lines and then back to GATES menu retains the last selected options.

Be aware that when editing an existing airport file there will usually be gates and stands numbered in groups, e.g. 1-12, 100-122, 200-207. If using either 'Add Gates' function the next lowest available number is displayed in the text box, in this case 13. Placing another gate with the text box manually changed to 208 increments the next automatically available number to 15, not 14 as would be expected.

Editing gates

Gates and stands are visually signified by the coloured symbol of a plane, the nose of which is placed at the gate position, different colours signify the Wingspan Category. A selected gate is signified by an inverted green double cone at the nose of the plane symbol. Selecting a gate is done by quick-clicking near the nose of the plane once the mouse cross-hair has appeared, a second quick-click de-selects the gate. When a gate is selected the GATES menu changes displaying a number of button options and tick box options, see diagram below. You can now edit the required wingspan options, stand type and parking layout.

Click, hold and move the mouse to change the bearing of the gate. Beware of moving the mouse pointer over another gate while changing the bearing, the mouse will grab the second gate and move it away from its line end point. If this happens just drag the unintentionally moved gate back to its line end point and release the mouse button, then re-attempt the bearing change on the intended gate.



A gate can cater for any number of Wingspan Category sizes, with the obvious restriction of where the gate is placed and its surroundings. Ensure adjacent wingspans do not overlap, observe correct clearances for taxiways and apron roads. Stand Type and Parking Layout categories can only have one of the available options selected.

With a gate selected the available button options are to Delete, Rename or Select None. Multiple gates can be selected and editing the Wingspan Category, Stand Type and Parking Layout tick boxes will apply that option to all selected gates. All selected gates can be deleted by clicking 'Delete Gate'. When more than one gate is selected the 'Rename Gate' option and its text box are removed, if there are differences between the options selected for the gates the tick boxes are blanked until all options for the selected gates are the same.

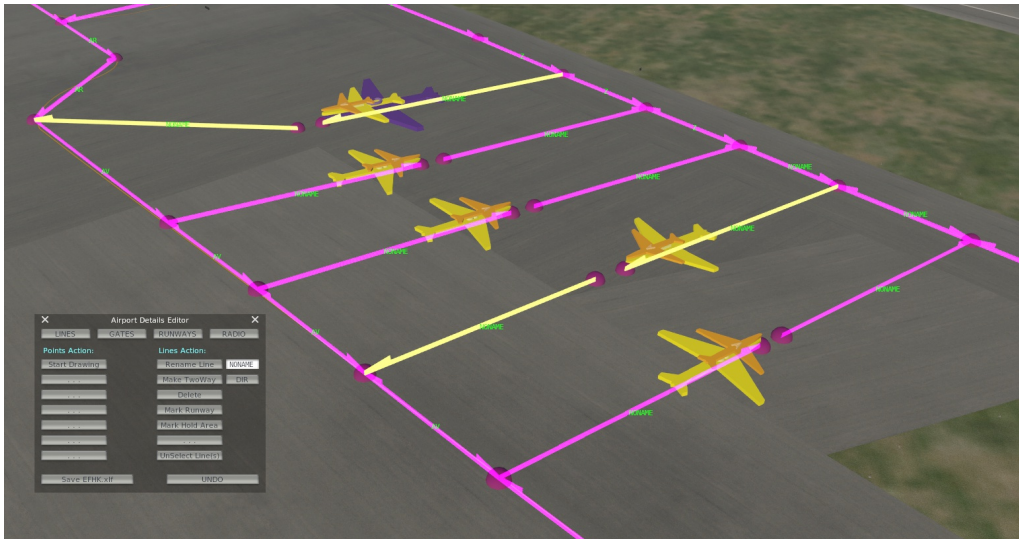
Moving gates, stands etc. Ensure the gate is de-selected, with the cross-hair visible click and hold, drag the gate to the required line end-point. Releasing the mouse button sets the gates to that position and the plane symbols snap to the line heading.

Stand conventions

If a stand has either of the Taxi-in / Taxi-out parking layouts the then the normal conventions are:-

1. The stand should be placed on a point at the end of a line
2. There should be an exit line to the main taxi way, gap between entry and exit points should be 2-3m.
3. Entry and exit lines should be one way

Diagram below demonstrates these conventions applied with the left facing taxiways still selected.

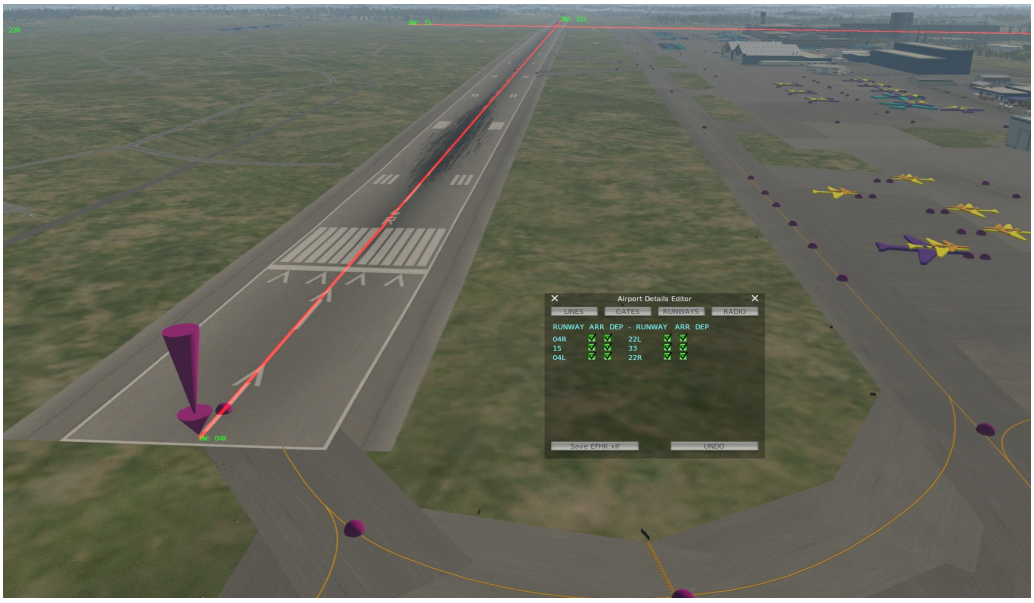


RUNWAYS Menu

When the RUNWAYS menu is selected all other taxiway lines and labels, hold area lines and labels and stand labels are blanked out leaving only runway lines and their labels. All points and gate plane symbols remain but cannot be edited. Ends of red runway lines are marked with a purple double inverted cone and a label showing RW, runway number, or number with L,R or C denoting left, right or centre.

Editing Runways

Runway endpoint positions can be moved by clicking, holding and dragging. Options of runway status for arrival only, departure only, or both can be selected for each direction by ticking/unticking relevant boxes. Runway lines and endpoint markers cannot be deleted and the labels cannot be edited, all this information is taken from the ***apt.dat*** file in the /Custom Scenery/(airport)/Earth nav data/ folder. The 'UNDO' button is non-functional.



RADIO Menu

The Radio menu is used to edit the radio frequencies. Frequency values can be selected and overwritten or edited in the text boxes. Changes can be reverted with the 'UNDO' button. Correct frequency values are readily available on charts by carrying out a quick web search. Be aware that some airports have multiple frequencies for the same function so you need to check the correct frequency is used for the simulator.

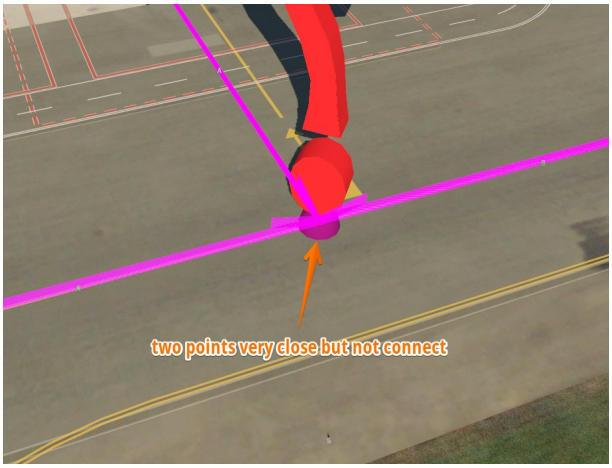
Save Button

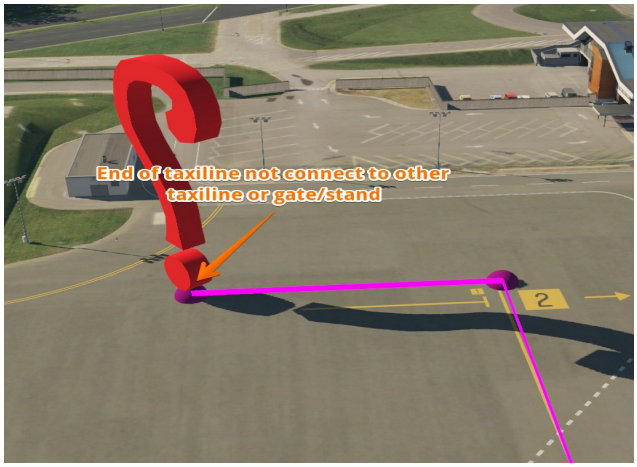
The save button is marked with the text Save, ICAO-code of airport being edited and the ***.xlf*** file extension.

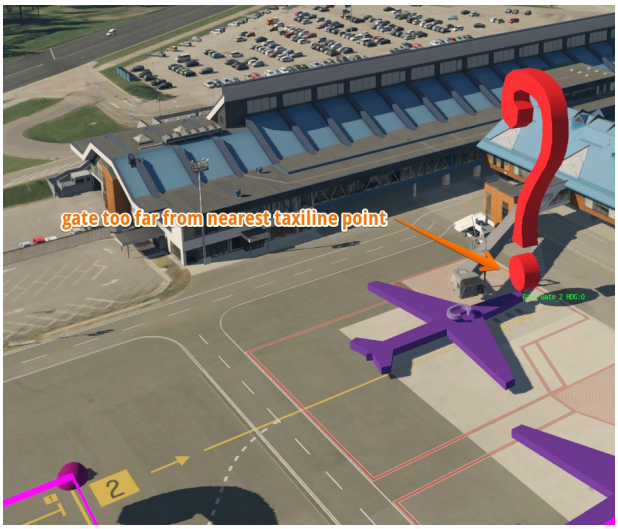
Click the Save ????***.xlf*** button to save your file, simple – but not always straightforward. If there are any discontinuities then a red text message 'Error! Please follow ? symbols to find issues.' is displayed. This occurs because your editing has left errors which have been detected by the editor. These issues are easy to find, just go to each large red rotating question mark and deal with the issue.

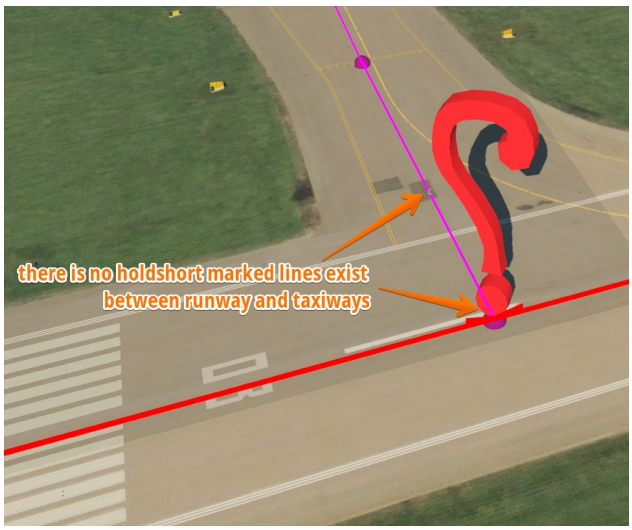
Possible issues include:

- two points close together but not connected
- open ended taxi-line has no gate/stand
- gate is too far from nearest taxi-line point, ensure gate snaps-to point
- no holdshort marked lines exist between runway and taxiways
- gate entry and exit points are too close or too far apart (should be 2-3m apart, see stand conventions).









The next time you save the text should be gone, along with all successfully dealt with issues. Note that if the error message is displayed the file is still saved, but it is best to deal with issues immediately.

It is good practice to save your work often, but be aware that the working file in the /X-Life/Airports/ folder is the only copy. Making backup copies is done manually using Windows File Explorer or OS X Finder.

If the airport you are editing has only ***.txt*** & ***.dat*** files in the /X-Life/Airports/ folder then the initial Save creates the ***.xlf*** file. Subsequent edit sessions load in the ***.xlf*** file by default making the ***.txt*** & ***.dat*** files redundant, but if you delete these each time it is run X-Life will automatically re-download them to the X-Life/Airports folder.

Create New Airport file

X-Life Airport Editor can be used to create new format airport ***.xlf*** files but the following rules must be adhered to:-

1. Airport scenery you are creating the ***.xlf*** file for must exist in your Custom Scenery folder.
2. The scenery folder name must include the ICAO-code of the airport being edited.
3. An ***apt.dat*** file for the airport must exist in /Custom Scenery/(*airport*)/Earth nav dat/ folder, this file will be used to import the initial runway data.
4. If there are pre-existing ????***.txt*** & ????***.dat*** files with ICAO-code of the airport being edited in /X-Life/Airports/ folder then their information will be loaded into the editor and you won't be starting with a clean file. There may be useful data there you can edit, or start with a clean slate by removing them from the /X-Life/Airports/ folder before starting the editor.

A map of approved X-Life/FMCar ready airports can be found on the jardesign.org/x-life website or here:- https://www.google.com/maps/d/edit?mid=zwHEuxPiUqXs.kTecn3NB3GZ8

Start X-Plane with any aircraft at the required airport and open Plugins → X-Life → Tools → Airport Editor

Switch to the RUNWAY menu and the runway lines imported from the ***apt.dat*** file are displayed, re-position the runways and end points if required. Unwanted stands can sometimes be imported from the ***apt.dat*** file, it is best to delete these before adding lines and stands of your own to the airport.

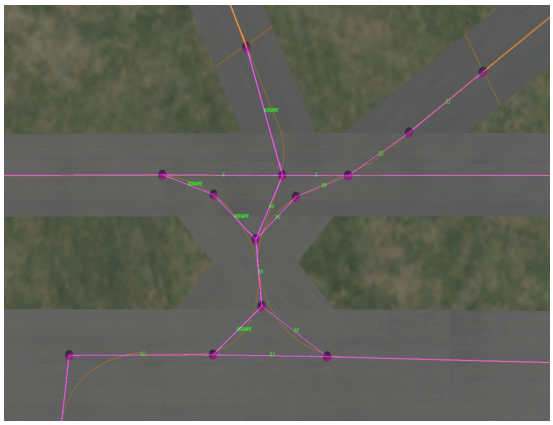
The airport can now be edited adding lines and gates, refer to the Edit Existing File section if required. Start by adding runways and the required points for taxiway junctions, then add hold short points and lines, then taxiways and finally stands. Although all this data can be added in any order, using a fixed format can help eliminate problems later on. Try to correctly name lines and gates as they are added, this helps to minimise mistakes.

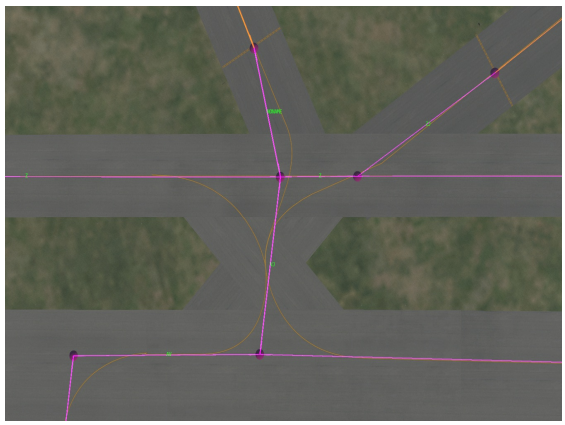
Save the file being edited by clicking SAVE ????***.xlf*** button, the next time the editor is run at this airport this file will be loaded automatically.

Best Practices

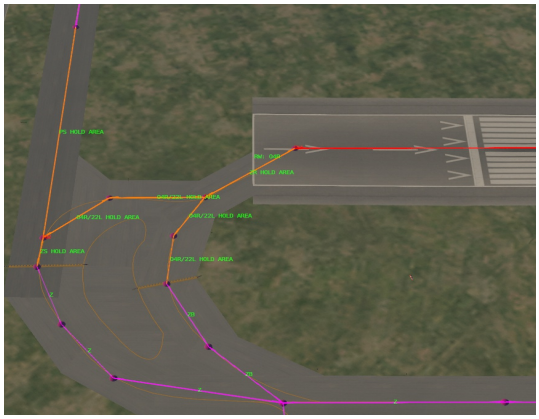
1. Don't place a taxiway which leads nowhere i.e. an open endpoint. If there are any on an airport you are editing then just delete them.

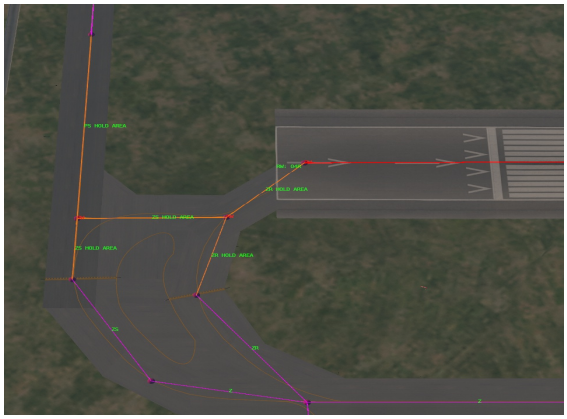
2. Be economical with points on taxiways, especially at complicated junctions. Consider where you need to put points and lines, the right hand diagram demonstrates a saving of 7 points and 8 lines over the left hand diagram, all of which impact on file size.



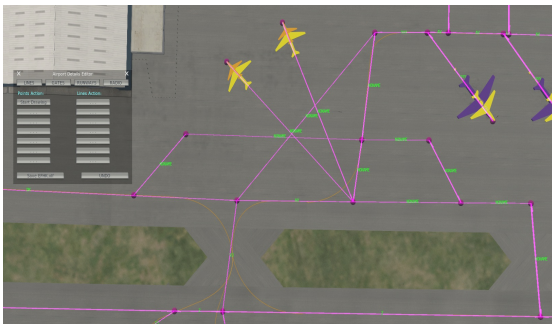


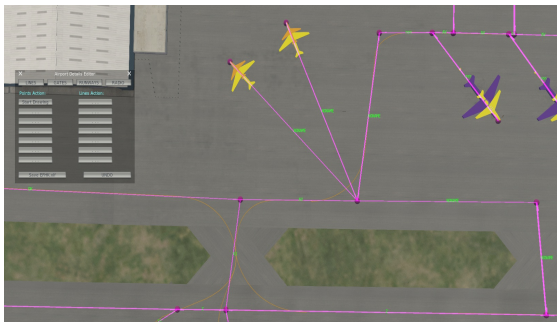
3. The same principal has been applied to this example. It is acceptable to use more than one Hold Short line to the runway, but try to keep to a maximum of two lines. These diagrams show a less common scenario with a taxiway close to the end of a runway forcing the use of three sequential Hold Short lines.



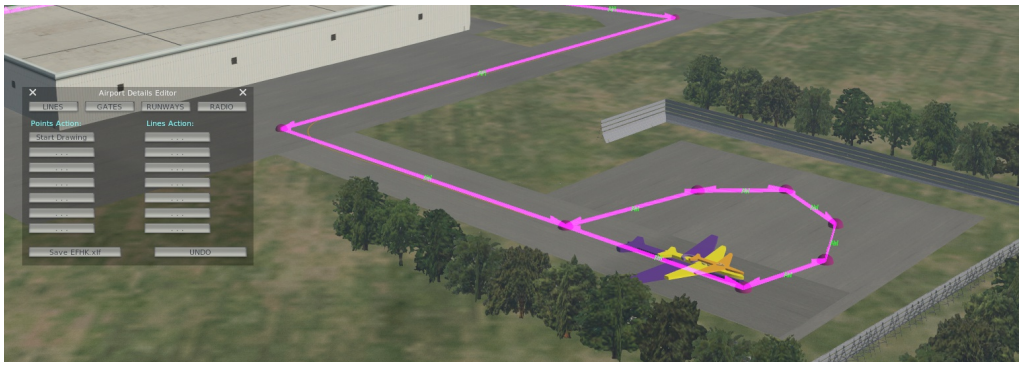


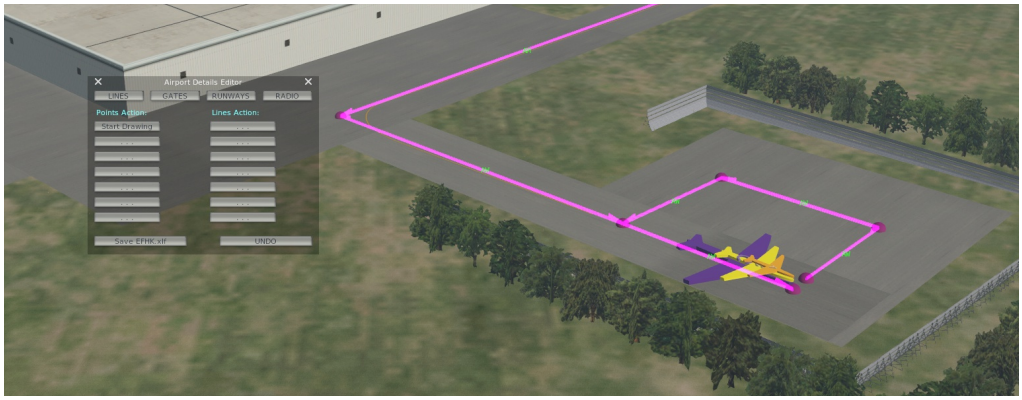
4. Do not use multiple crossed lines, all crossing lines must have a connecting point (node).





5. The upper diagram demonstrates several features which are considered incorrect. Bottom diagram shows less lines, one-way lines in appropriate places and a break in the line after the stand position, which is a Taxi-in / Taxi-out (turn) type.





6. High speed runway exit taxiways should be marked one way.

7. Runways with an end turning pad which are not served by a taxiway should be marked with one way runway lines, maintain clearances. Terminate on the runway centre line with an open ended runway line, which will not be flagged as an error on saving the file.

8. Taxi-in / Push-out gates should have two way taxi lines.

9. Once you are happy with your airport layout start X-Life, find an appropriate vantage point, and watch the airport traffic. Use the Tower View panel display to monitor traffic flow and runway operation states. Use the settings panel to adjust Air traffic Density, number of gates busy and runway operation interval which may need reducing at larger high density airports, any changes will require an X-Life restart. If the airport creator has included wind rules try customising the X-Plane weather option and manually adjusting low level wind direction to see the effect on traffic. This will give you an insight as to whether your edited airport is working correctly and point to areas which may need further attention.

Amendments

Ed. 1.0 26/7/17 Original version

Ed. 2.1 15/1/18 Ed. Number aligned with X-Life version number
P.1 Added screenshot
P.4 & P.14 crossing line text
P.7 New line type screenshot
P.13 Point 4 text amended, naming lines/gates text added
P.14 Point 3 Changes to Hold Area marking rules, new screenshots
P.15 Point 9 added

 ©pwalchester