Airport Design Editor Home Edition

Airport Design For FSX

User Manual

Version 1.00

Contents

Please note that some screenshots used in this manual may be from a version of ADE other than the one you are using. While different they are still representative of the screen and displays of this program.

Introduction

Acknowledgments

It is difficult to know where to begin. I have had much help from many people both in the information needed to create working airports and with the testing of the program.

I must first acknowledge Lee Swordy for the inspiration of AFCAD. AFCAD has always been the benchmark against which I have measured ADE. I have heard many times just how good the AFCAD documentation is so if you see a similarity in the documentation for ADE with that of AFCAD then it is deliberate.

A special thanks also to Jim Vile who has been unfailingly patient as I have learned my way through the intricacies of airport design and has always supported and encouraged this development.

Thanks also to Graham Jackson for his working on parking specs. ADE uses this information to display airline codes and color parking spots dependent on airline.

The following people (in no particular order!) have given much of their time and knowledge to help with the development of what is still an incomplete program. The more I learn the more I realize there is to learn.

- Reggie Fields
- George Davison
- Tim Arnot
- Martin Gossman
- Ray Smith
- Colin Dietrich
- Don Grovestine
- David Strate
- James Heany
- Martin Couture
- Graham S
- Dan Hansen
- Peter Poulson
- Derrick Miller
- Norman Dean

My thanks to them all for their patience, good humor and invaluable help during the development.

Installing Airport Design Editor

Requirements

- Flight Simulator X deluxe Edition. ADE needs FSX to be present so that it can use SimConnect. Also the SDK is required and that comes only with the deluxe Edition
- Microsoft dotNET Framework version 2.0

New Installation

This version of ADE does not have an installer. Create a new folder and copy the complete contents of the zip file, making sure that you also include any sub directories, into it.

Updates
ADE has an on-line updater. You can run this and download updates to the application as well as any other required items. The notes in the update installer will tell you what you need to do with the files. To check for updates use the Help > Check for Updates Menu.

Un-Installing

Delete the folder that you installed ADE into and all the contents.

What is Airport Design Editor

ADE is a freeware CAD-style program that allows you to modify the facility data and some of the visible scenery, used in Microsoft Flight Simulator X (FSX). The facility data that ADE works with is used by ATC to control user and AI aircraft at airports and to assign parking. It also controls the airport information that you see on the 'map view', GPS screen, flight planner, and start position set-up window in Flight Simulator.

ADE works with both this 'invisible' scenery and visible scenery. The visible scenery that ADE can modify includes runways, taxiways, aprons and all associated markings and lights. More airport scenery elements will be added in subsequent releases.

What You Can Do With This Program

Runways
You can add, delete, move or modify runways. This includes all runway markings, lighting, approach lights, VASI and similar visual landing aids. Although you cannot create your own runway surface textures, you can choose from an array of stock surface types from concrete to water.

Different runways for takeoffs and landings
At airports that have parallel runways, you can change which runways ATC assigns to user and AI aircraft for takeoffs and landings. Note that you cannot make ATC use crossing runways or runways at different angles simultaneously.

Taxiways
You can add, delete, move or modify taxiways. This includes taxiway markings, lighting, surface type and designations (e.g. taxiway "B2"). In addition to the visual appearance and location of taxiways, the routing of taxiways also controls how ATC routes user and AI aircraft around the airport.

Taxi Signs
You can add, modify and delete taxi signs. ADE will automatically exclude signs from the default (stock) airport so signs at a modified airport will always come from those in ADE.

Aprons
You can add, delete, move or modify apron surfaces and apron edge lights. Apron surfaces can be used anywhere extra pieces of pavement are required around airports, not just at terminal buildings.

Parking
You can add parking spots (gate and ramp parking) and modify or delete existing parking spots at airports for your own use or to increase the AI levels at an airport. Parking can be added at airports that do not currently have it. Any number of parking spots can be added. You can also adjust gate parking so that aircraft doors mate with existing boarding bridges (jetways). Parking is required in order for AI to operate at an airport so adding parking will also allow you to program AI to use airports that do not currently have it.

Jetways
You can add, modify and delete FSX Jetways. ADE will only allow a single jetway to be assigned to any parking spot.

Airline Gate Assignments
Microsoft added to FS2004 the capability to assign specific airlines to specific gates. You can also designate classes of aircraft to use certain classes of parking, such as GA aircraft to ramp parking, cargo aircraft to cargo parking and military aircraft to mil parking.

ATC and communications
You can add, delete, and modify communications frequencies. Adding a tower and/or ground control frequency is all that is needed to add ATC to any airport that does not already have it, you do not need an actual control tower scenery object to have ATC operation. Note that FS2002 required ATC to be present at an airport in order for AI to operate there butFS2004 and FSX no longer have that restriction, AI can now operate even at uncontrolled airports.

Navaids
In this version you can see stock navaids but cannot modify them. ADE will display navaids associated with the airport and also navaids within a 25nm radius of the airport (NOTE this is partially implemented in the current version – ADE may not find all navaids if the airport is close to a scenery folder boundary). You can however add some local user navaids including NDBs, Marker Beacons and ILS. You cannot add, delete or modify the Visual Models associated with Navaids in the current version.

Helipads
You can add new helipads, delete or modify existing helipads.

Start Locations
Every airport comes with default start locations for your aircraft at the end of each runway that FSX uses in any stock airport . These can be changed to be at different locations, such as at the taxiway entrance to a runway. You may also add and modify Starts.

Control Tower
The location for the control tower view of your aircraft (selected by pressing the ‘S’ key twice in FS) can be changed. This can be placed at the actual control tower location, if there is a tower, or at any other location or elevation. You can add a visual object for the control tower. Please be aware that in this version the tower viewpoint is fixed at 90ft above the airport irrespective of the type of tower used. This is a bug in FSX and will be addressed in the next version of ADE.

Fences
FSX can display two fence types. Boundary Fences and Blast Fences. You can add, modify and delete both types with ADE.

Moving Airports
ADE currently does not allow the overall shifting of an airport. This is a complex process especially for airports that have approaches. Future versions of ADE may handle this

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Future Versions of Airport Design Editor

ADE is an ongoing development. There are two editions. The Home Field Edition designed to be as friendly as possible to use and the Pro Edition for more complex airport development. This manual describes the Home Field Edition. Home Field Edition is ideal to modify your local airport or create some new airports.

Compatibility With Files Created With Earlier Versions

ADE should be able to read .bgl files from FS9, FSX and XML files provided they comply with the requirements of the FSX BglComp.

Compatibility With Files Created by Other Utilities

There are a number of airport design utilities for FS9 and FSX. They will all generate bgl files that can be installed into FSX. However some utilities use parts of the bgl file to store information that has nothing directly to do with the airport. While there is nothing wrong with this approach it can cause problems if loaded into another utility. Generally if you are opening a bgl file generated by another utility you should make sure that any special information is turned off before compiling a copy to use with ADE. ADE loads XML by compiling it first with BglComp for FSX. If this compile succeeds then chances are that the airport will be fine in ADE. If it does not then you will need to sort out the problems either in the original utility or by modifying the XML yourself if you are comfortable doing so. If a file fails to load and you report it to us be sure to include details of how the file was created.

General Program Usage

Connecting to FSX

ADE uses SimConnect to link with FSX. If FSX is not present or the correct version of Simconnect is not found then the current version of ADE will not work.

Using ADE and FSX Together

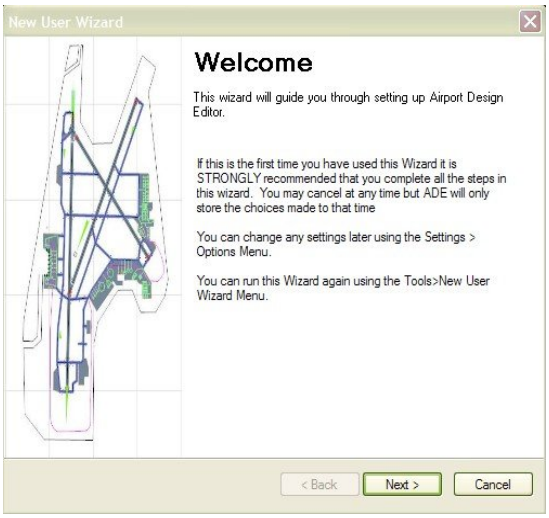
Flipping Windows:
You can start either program first. If you have more than one monitor then you can put FSX on one monitor and ADE on the other. It is recommended that you put FSX in windowed mode when working with ADE. If you don't have enough monitor space to have both the FSX and ADE windows open side-by-side you can have both windows maximized and press the Alt+Tab key to flip back and forth between them.

Eliminating Pauses:
By default FSX will go into pause mode whenever you leave the FSX window. It can be a nuisance un-pausing that window all the time but this can be prevented by changing a Flight Simulator setting. On the FS *Settings / General* window un-check the setting 'Pause on task switch'.

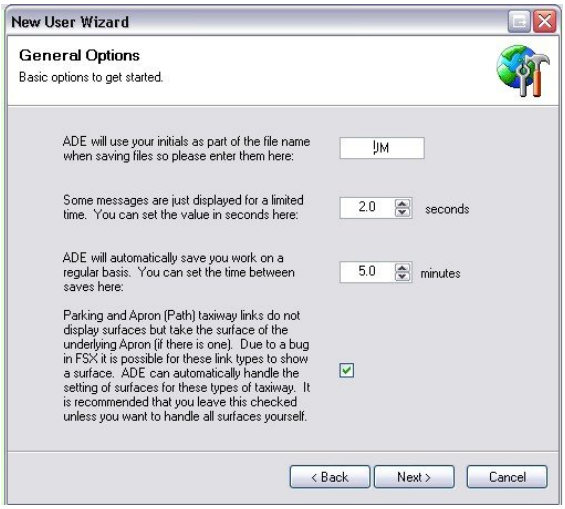
Getting Started

The first time you run ADE you will need to set up some options to make sure it can work properly. Start ADE by double clicking Airport Design Editor.exe. (You might want to make a shortcut). ADE will display a small splash screen showing the version number and start up information. If this is the first time you have run ADE then you will be presented with the New User Wizard. Please make use of this to get everything set up. ADE will not work properly unless the basic things are done correctly. Note that you can access this wizard at any time by selecting the Tools>New User Wizard Menu Item.

It is strongly recommended that you run through this Wizard to the end. You may Cancel at any time but ADE will not have all the information it needs to work correctly. If you do cancel then you can get to the wizard again as described above.



You will be presented first with the welcome screen. This just let's you know what is about to happen. Move to the General Options Screen by clicking Next. You can go back at any time and change or check things by clicking Back.



There are three things to do in this screen:

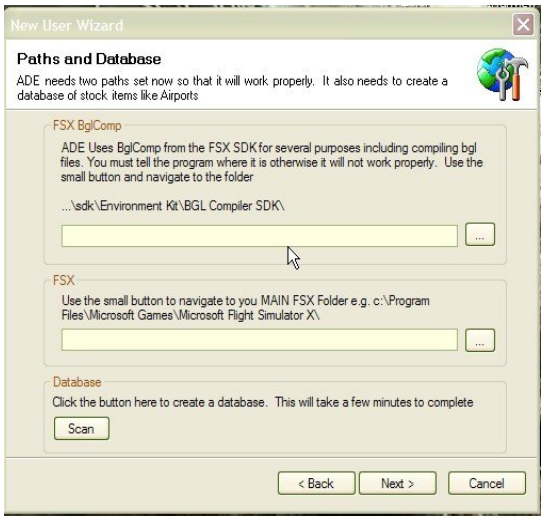
Enter your initials. ADE uses these when making up file names.

Select a time in seconds to display temporary messages. One or two seconds is usually plenty. Messages like File Saved etc. will then display for this time and close without you needing to do anything. You can set any time between one and five seconds in half second intervals

Select a time in minutes as the interval between auto-saves. Five minutes is a good starting point but you can set it to any time between one and 30 minutes in 30 second intervals.

Finally you need to tell ADE whether you want to manage the surfaces of Parking and Apron(Path) Links. FS should not show a surface for these taxiway links but due to a bugin FS it can do this in certain circumstances. Leave this checked and ADE will automatically ensure that the surface type for these links matches the underlying aprons. Unless you really want to handle these surface assignments yourself you should leave this checked.

When you are ready click Next to display the Paths and Database page. This is probably the most important page in the Wizard so please take time to enter the correct data.



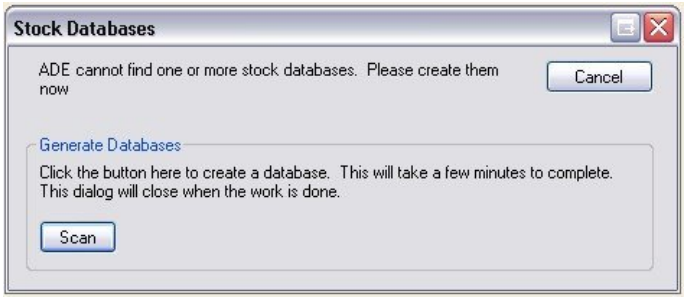
ADE uses BglComp.exe from the FSX SDK. You cannot really use this program if you do not have the SDK. In the top section use the small button to find the correct folder. It will be in the SDK folder on the path …\sdk\Environment Kit\BGL Compiler SDK\. This is what you need to set.

ADE needs to know where your FSX installation is so that it can read information about airports and so on. Use the middle section to get this location. It is the main FSX Folder – do not select any sub folder. C:\Program Files\Microsoft Games\Microsoft flight Simulator X\ is a common location. Future versions of ADE may search the registry for the path but that is not yet implemented.

The program creates a database of all the stock airports in FSX. It does not search Addon Scenery at this time. Future versions will also create a database for stock navaids but this is not yet turned on. NOTE that this can take a while and relies on you having set the FSX Folder correctly. If you do not get any airports (see below on opening stock airports) then you have almost certainly not set the FSX folder correctly. Click the Scan button. After a few moments you should see a progress bar and file names being listed. If this does not happen then please check the FSX Folder setting. Depending on the speed of your PC this can take up to ten minutes to complete but usually only needs to be done once. Make sure that you wait until the Scan button becomes active again before moving on to the next page

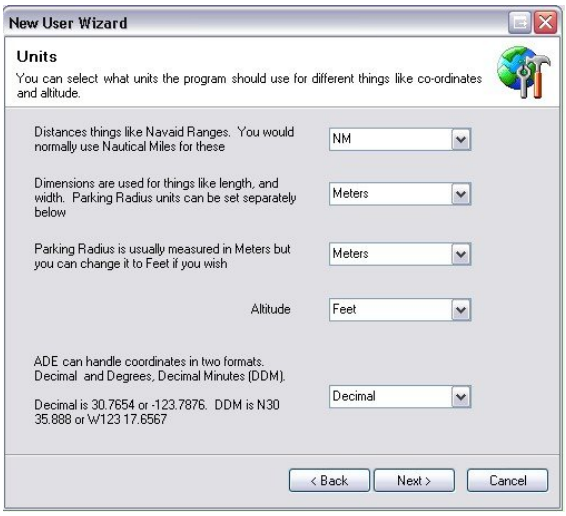
NOTE

ADE will make a check for the stock database files every time it starts. If it cannot find one or more it will stop and ask you to scan them again. A dialog like this will appear:



You should now scan again to recover the data files. This Database scan dialog is also available at any time from the Tools Menu. Tools > Create Databases.

When the job is done you can click Next to get to the Units Page.



ADE can work in different units of measure depending on your preference.

Distance refers to things that may be some way off or large. Navaid Ranges are a good example. The options here are Nautical Miles or Meters. It is recommended that you stick with NM.

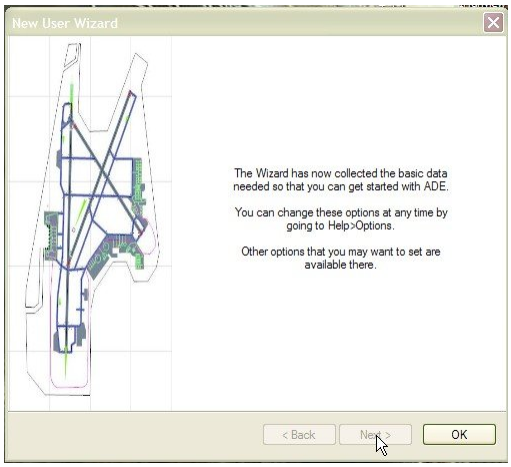
Dimensions refer to smaller measurements like runway lengths and widths, radius of parking spots etc. You may set these to suit your personal preferences.

Parking Radius Units can be set separately. It is common amongst airport designers to use metric parking radius values even if other dimensions are set in feet.

Altitude can be set in meters or feet and is independent of dimensions so you can have altitudes in feet and runway lengths etc. in meters if you wish.

Co-ordinates. There seems to be more ways to describe co-ordinates than just about anything else! At the moment ADE only allows two formats. Decimal and Degrees Decimal Minutes. Select the one that you prefer. Future versions may allow more options.

That just about completes the basic settings for ADE and it should now work properly. There are some other options available but these are more advanced and are discussed in the Options Section. Click next for the finish Screen and then OK.



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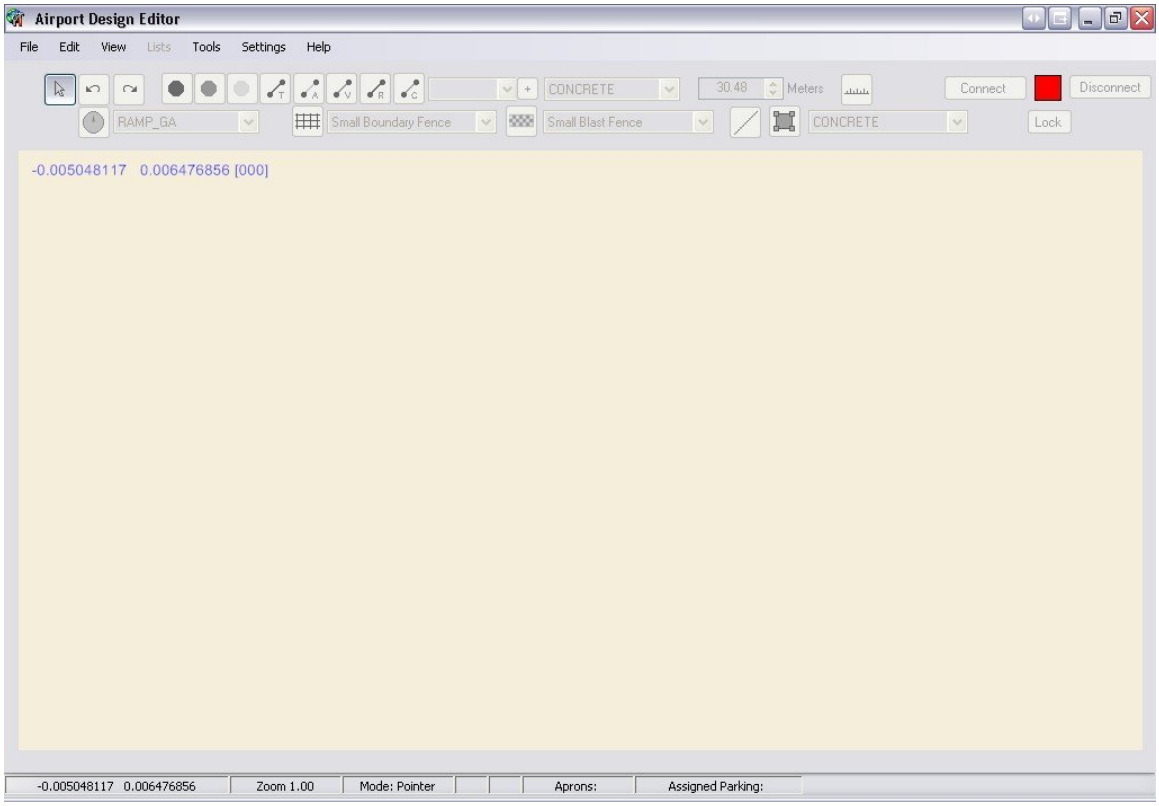


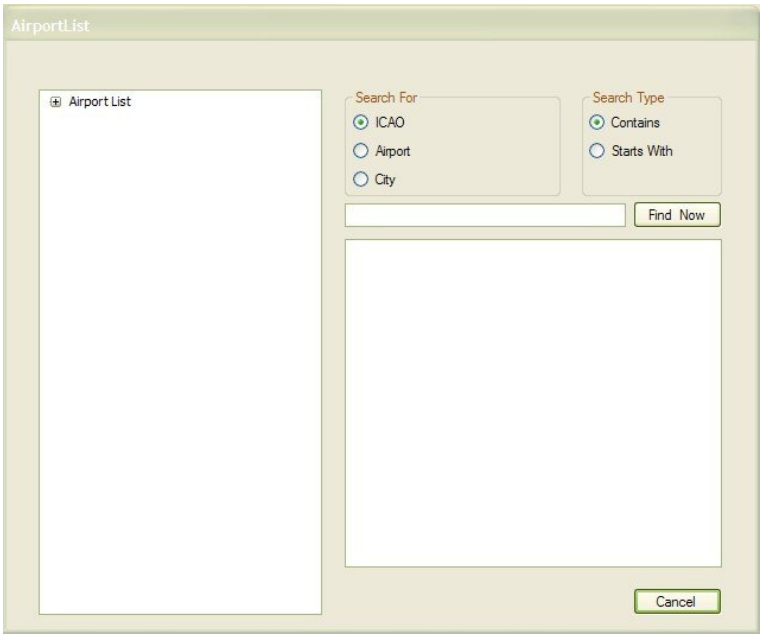
Once the Wizard is complete the main ADE Screen should open.

Opening Your First Airport

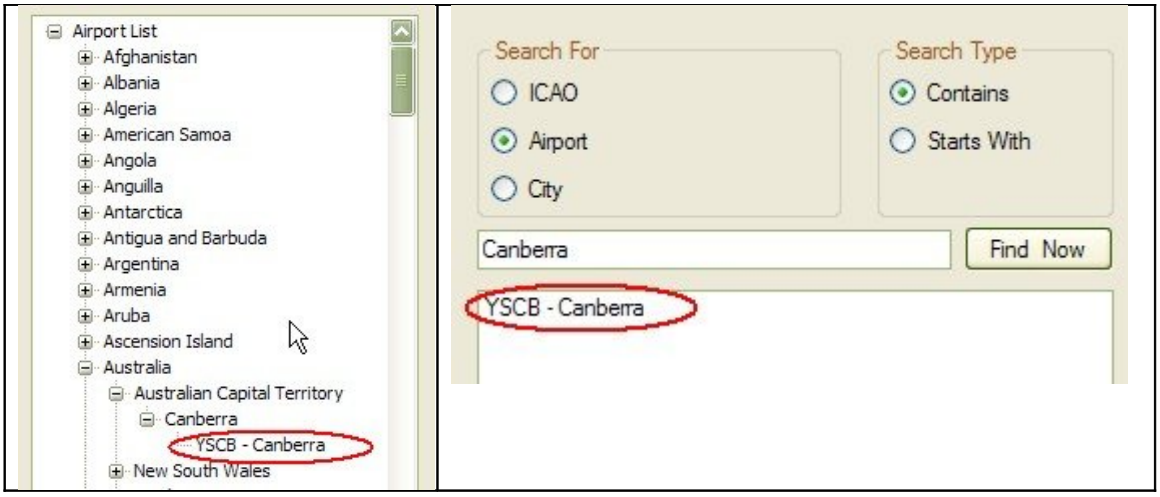
Airport Design Editor can open Airports in a number of different ways:

- From a list of stock airports
- From a scenery Bgl file that contains one or more airports
- From a suitable Xml file that contains one or more airports
- And, once you have saved an airport, from a file saved in .ade Format.

For the first airport let's open one from stock. This will be from the database of airports ADE created during the New User Wizard. So select the File Menu and then Open Stock Airport. You should see the following Window:



This provides a couple of ways to find your airport. Note that first time you open this window the tree to the left will be closed up with a little '+' . If the '+' is not there then you have not managed to create the database yet. Use the tree to find the airport you want to open. I have gone to YSCB – Canberra but you can choose you local airport. The other way to find an airport is to use the find boxes to the right. You can enter part of an ICAO, airport name or city. Hit Enter while in the text box or click the Find Button. A List of found airports will appear. Either select the airport from the tree or from the Found list and open it either with the Enter Key or double-clicking the name.



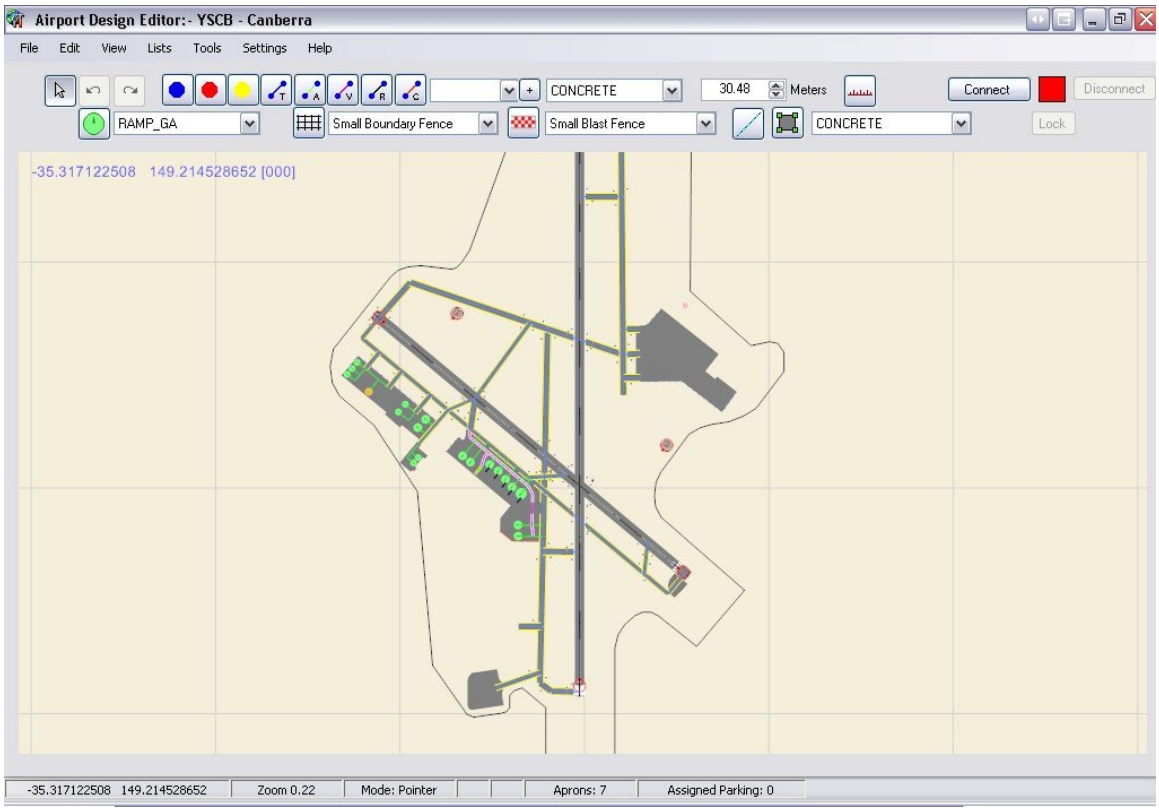
You will notice that the cursor changes and tells you what is happening. Several words may be displayed:

- **Decompiling** – while ADE is decompiling a .bgl format file
- **Loading** – while the airport data is being prepared for display
- **Stock Data** – this will appear any time that you load a file that is not in ADE's own format. ADE will do a search for navaids and airports that are within 25nm of your chosen airport.

(Note that this is not currently 100% reliable and may not find all the stock items if the airport is on a stock file or folder boundary. This will be rectified in a future version). Once saved as an '.ade' file the stock data will be kept and not loaded again.

- **Display** – ADE is building the CAD display
- **Autosave** – ADE will make a first automatic copy of your airport when you open it and thereafter at the time interval you specified above.
- **Validating XML** – You will only see this if you load an .xml file. See the details later.

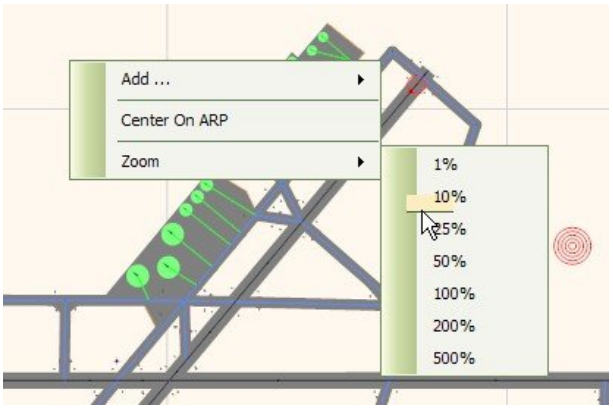
Depending on the complexity of the airport and the speed of your PC it may take a few seconds or more to be loaded and then it should appear in the display:



ADE will automatically scale the airport to about 25%. The current scale can be seen in the second box in the status bar (Zoom 0.22) You don't need to worry too much about the actual scale of things but at 100% (or 1.0) ADE is representing one meter for each pixel. You might want to move around your airport picture and below is a list of the most useful commands to manipulate the display:

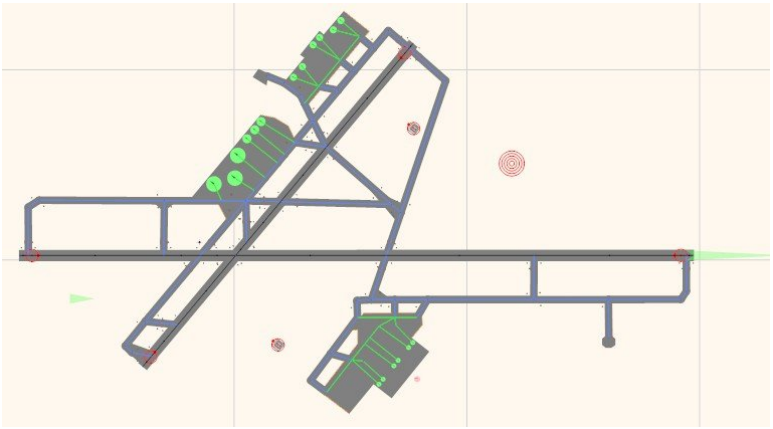
Scaling. If you have a mouse wheel then rotating it will change the view scale. You might want to set a specific scale. To do that right click on the display, select Zoom and then a percentage. This will change the view scale to that.

NOTE
ADE has the maximum zoom limited to 100x. This is equivalent to 1 centimeter per pixel



You may also change the scale using the '+' and '-' keys on your keyboard. NOTE that scaling is done about the mouse location. This means that that point remains in the same place on the display as you scale.

Rotating. The Display will always start with the North at the Top. In some cases it might be helpful to change that. Canberra, for example, has the main runway North/South. If you have a mouse wheel then you may rotate the display by first depressing the Ctrl or Shift keys and then use the wheel. Ctrl gives a coarse turn (five degrees per click) and Shift a fine one (one degree per click). This is the airport turned through 90 degrees. Note that the airport rotates around the Airport Reference Point (ARP)



You can also rotate with Keys. The Page Down Key will rotate the display clockwise and the End key counter clockwise. The Home key or Space Bar should reset the display back to the default

Panning (Or moving around the airport). If you have a middle button or mouse wheel depressing that will change the cursor to a four headed arrow. Drag the display around. The four keyboard arrows can also be used. If you get a bit lost then you can always get the ARP back to the center of the display. Right Click and then select Center on ARP.

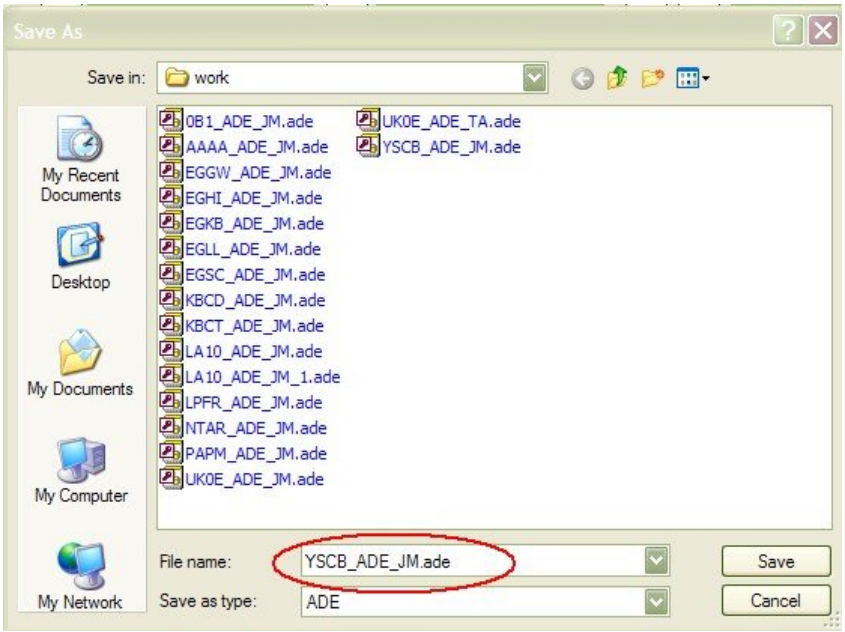
OK so now the important thing is to save the airport…..

Saving an Airport

Any changes you make to an airport are initially done only in memory. As long as you don't do a 'Save' none of the changes you make will affect Flight Simulator. If you want to experiment first before you do any serious work then just don't save the airport you are working on. Saving in ADE is different to compiling the .bgl. ADE has it's own special format with an '.ade' extension. These files will seem quite big compared to a .bgl file. However they can save information about the airport when you are working on it including:

- Background Images
- Locking objects to stop them being accidentally deleted, moved or edited
- Saving information about other things like nearby airports and navaids that will be displayed but not compiled
- Other design time information

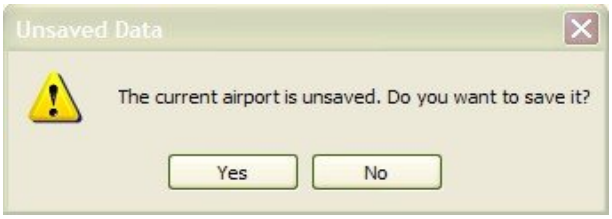
So to save the airport select Save from the File Menu. If the airport you opened is not an '.ade' file then you will be asked to give it a name before saving.



The name is made up using the ICAO of the airport followed by 'ADE' as the design tool and the initials you entered in the New User Wizard. You can change this name as you wish but do not change the extension. Click the Save button and after a few moments you will see a message

confirming the file is saved. Note that first time you do this ADE will offer to save in it's own work folder. You can change this and the program should remember the folder and use that next time.

ADE will remind you if you need to save a file. If you make changes and then try to open another file, or close the application you will be asked it you want to Save the open file first:



If you do not want to save it then just click the No button. Airports that are opened from the .ade format will save without asking for a new file name. To change their name use the Save As… menu option

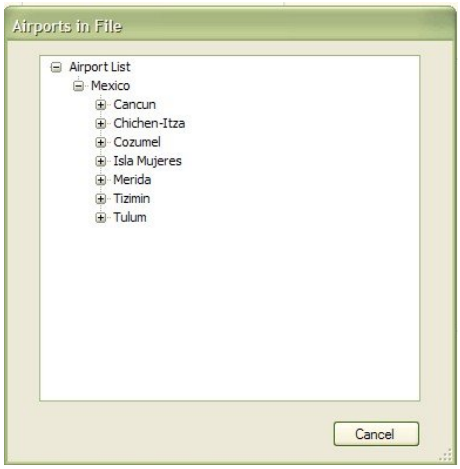
Re-Opening an Airport

For an airport that you have saved there are two ways to open it. Either use the File > Open Airport option and select the file from the File Open Dialog or use one on the Most Recent File List. These are shown at the bottom of the File menu – click one to open it. Note that only .ade format files will be shown.

Opening Other Formats

In addition to opening stock airports and the .ade format the program can also open .bgl and .xml files.

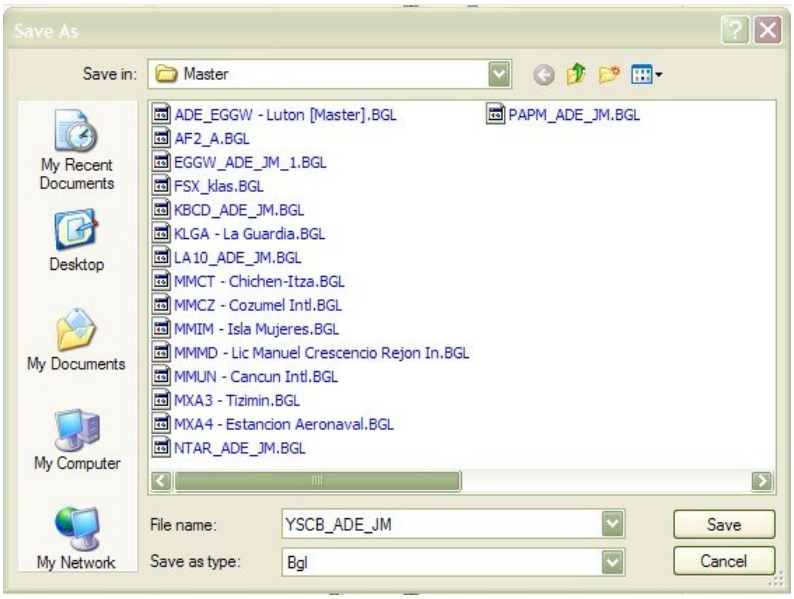
BGL Files
Use the Open from Bgl menu item in the File Menu. Providing there are airports in the file then ADE will open the file. If there is more than one airport then you will be asked to select which one to open. ADE handles only one airport at a time. In this case the window below will open with a tree of the airports found in the file. Select the one to open from here.



XML files
Use the Open Xml menu item in the File Menu. IMPORTANT NOTE: ADE will *only* open an airport from XML provided that it has no errors – that is it needs to compile with BglComp before it will be opened. ADE will make these checks first. If there are errors then you will be shown the error log that BglComp would produce. You will need to correct those errors outside of ADE. If there is more than one airport in the .xml file then you will get the same window as above to select which one to open.

Compiling an Airport and Installing it in FSX

Compiling in ADE is a separate activity from Saving (unlike AFCAD or AFX). To compile the currently open Airport Select File> Compile Airport.



ADE will again offer a name for the file that you can change if you wish. Note also that you can place the compiled file where you like. Usually that will be in the FSX\Addon Scenery\Scenery Folder but ADE should remember the folder you last used to compile to should it differ.

Note also that ADE will automatically over write any existing .bgl file with the same name. Also note that while the program generates an intermediate .xml file and passes that to BglComp, the XML file is not saved.

IMPORTANT NOTE
There is a limitation in FSX related to saving or updating .bgl files that are currently active when the Sim is open. Thus it is easy to be working in ADE with the sim open and then compile a .bgl file. It is quite likely that the new compiled file will not be saved. To overcome this you might want to save your .bgl files in another folder and copy them to the active scenery folder yourself. A later version of ADE may handle this for you.

Undo/Redo

ADE implements a fairly comprehensive Undo/Redo facility. This is of unlimited depth. The following actions should be undo-able and then redo-able.

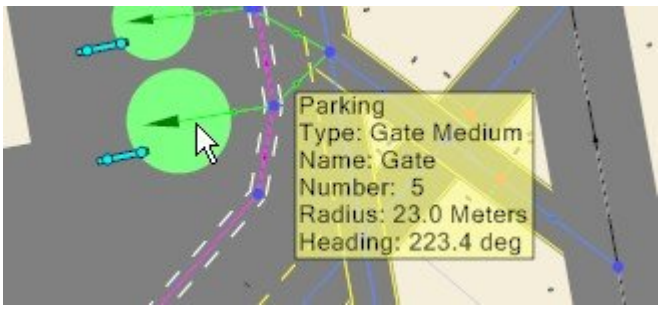
- Adding a new element
- Delete an element
- Editing an element
- Dragging an element

There are some limitations and in this version not all actions may be undone. The main current limitation is actions concerning vertices in aprons, fences and edge lights. These cannot be undone. In any case it is best to ensure that you save regularly (ADE provides an autosave mechanism to protect against losing data in the case of a program crash. You can set the save interval in the settings dialog or New User Wizard). The Undo and Redo functions can be achieved in several ways:

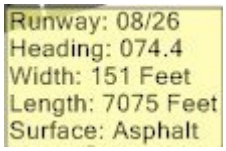
- Via the Edit Menu.
- Using these buttons 
- Using Ctrl-Z and Ctrl-Y

Tool Tips

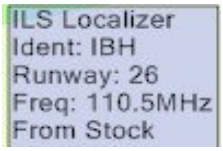
As you navigate around the ADE display you cannot fail to see tool tips.



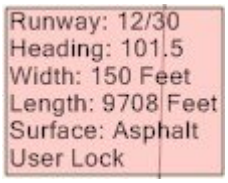
Every object on the ADE map (except for background images). will show some sort of tool tip. ADE displays a tooltip whenever you are over an object . The background color of the tooltip will tell you something about the status of the object



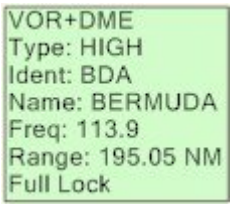
A yellow background indicates an object that is not locked in any way (See object locking). You can move, delete and edit this object as you wish.



A purple background indicates that the object is from stock. It can be edited but not deleted. You will see this most often with ILS Localizers.



A pink background indicates an object that has been locked by the user to stop it being moved or deleted.



A green background indicates an object that is not part of the airport and is shown in ADE for information purposes. Such an object cannot be moved, deleted or edited.

These Tool Tips are useful as a short cut to see the most important properties for an object.

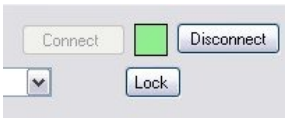
NOTE
A very important function of tool tips is to keep you informed of the current object under the cursor. This is the object that will be selected next if you want to. It is a **Golden Rule of ADE** to make sure that you can see the tooltip of any object that you want to select before you try to select it. If the tool tip is not visible then that object will not get selected.

Working with FSX.

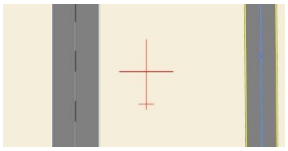
ADE allows you to work in tandem with FSX via SimConnect. You can, of course, design your airport without being connected using techniques like background images but it is often convenient to work with the user aircraft in FSX in Slew Mode. To connect:

- Start FSX and when it is running open the airport you want to work with. This is not strictly necessary – you could open any airport. Once the sim is running ADE can easily move the aircraft in FSX to the location you specify in the ADE display. It is usually easiest to work in top down mode so you see a picture in the sim that matches the map view of ADE
- Once you are all set in slew mode in FSX you will need to initiate the connection. Use the buttons at top right of the screen to manage your communications with FSX:

Click the Connect button. If all goes well the connection indicator should turn green after a few moments and the Disconnect and Lock buttons become active. If this does not happen check that FSX is actually running and you are located at an airport.



We are now connected to FSX. To disconnect simply click the disconnect button. It is a sensible precaution to remember to disconnect before closing FSX. Although ADE is watching for a loss of connection this can sometimes not work and ADE might crash.



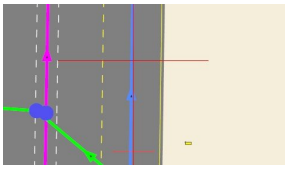
You should now see the aircraft symbol on the display mimicking the location of your user aircraft in FSX. If for some reason you cannot see it there are a couple of things you can do:

First position your cursor where you would like to see the aircraft. Then right click and select Move Aircraft Here. After a moment you should see the aircraft symbol move on the display. At the same time your user aircraft will be moved in the sim.

The other way is to lock the ADE display to the user aircraft in the Sim. This will center the aircraft symbol in the ADE display and orient it in the direction of your user aircraft. In most cases you would want to be working in lock mode. When the Lock button is depressed the aircraft symbol is always centered and the ADE display will follow your aircraft. The top of the display will always be in the direction the aircraft is facing.

When the lock button is not set the user aircraft will move around the map display. It will face in the direction it is looking but you will have to make sure that you pan and zoom to keep it on screen. If you lose it then it is easy to find. Make sure it is not moving in FSX then either use Lock or Move Aircraft Here to get it back.

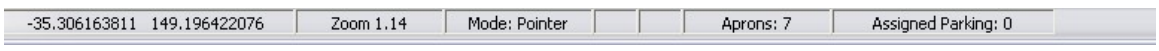
Note that when you set the lock ADE will center the aircraft on the screen. When you unset it the display is centered on the Airport Reference Point. You may need to zoom out to find the aircraft if it is on some other part of the field.



The aircraft symbol is drawn with a thin line. The line thickness should allow you to place things accurately. The line thickness that you see will remain the same over most of the zoom range you are likely to use. The zoom level in the picture at left is 5,5x

Now you can slew around the sim and use the location of the user aircraft to place things in your airport design.

Status Bar



The status bar at the bottom shows(From the Left)

- The co-ordinates of the mouse in your selected co-ordinate units

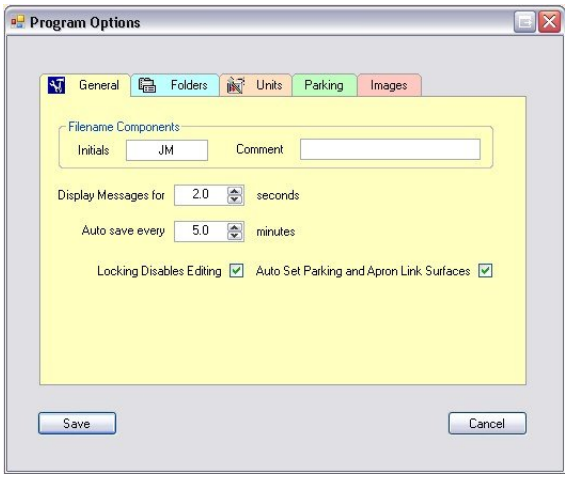
- The current zoom level
- The current mode that ADE is in (See below)
- Whether the Shift and Control Keys are currently held down.
- How many aprons there are in the current design. FSX has a limitation of 254 aprons in an airport. The background color of this indicator will turn yellow if you get near that number and red when you get to it
- Assigned parking is the number of parking spots that have one or more airline codes associated with them. Again there is a limitation of 254 and this indicator will help you keep track. There does not appear to be any limitation for parking spots that have no airlines codes assigned to them.

Settings

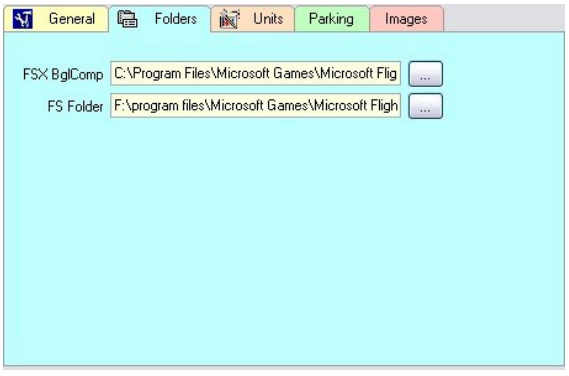
:

You will have set the main options when using the New User Wizard and you can also use that again at any time from the Tool menu. There are two types of user settings available from the Setting Menu. Options and Colors.

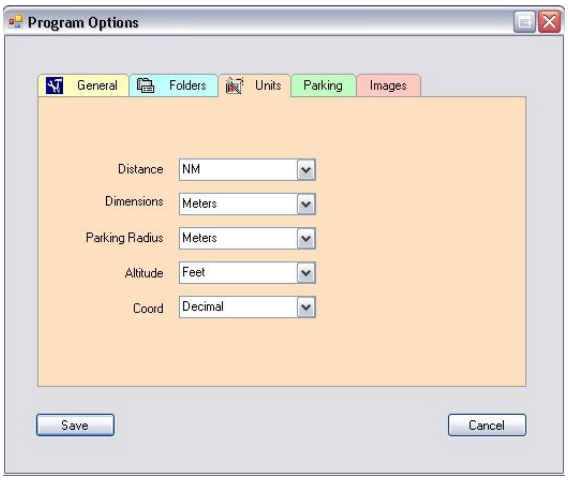
Options



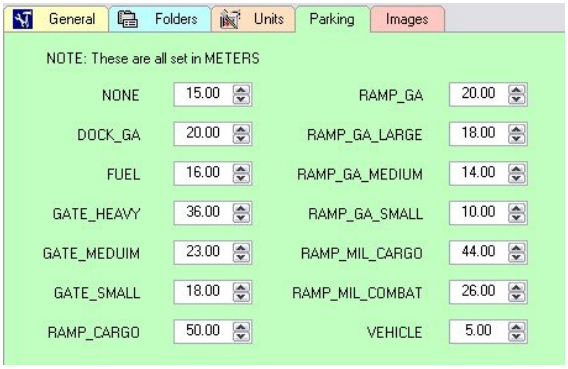
The first page of options is similar to the wizard. The comments field should be left blank. The other fields should be familiar except the Locking Disables Editing check box. If this is checked then you should not be able to edit objects you have locked yourself. Generally this should be unchecked.



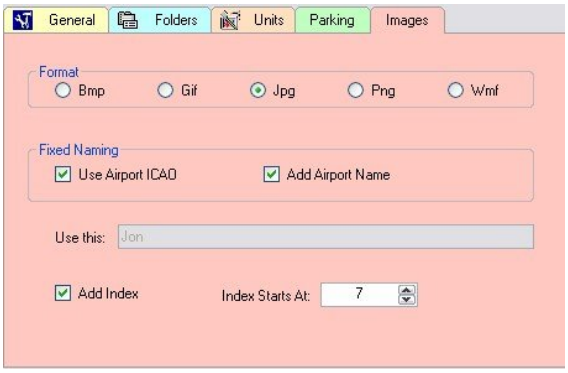
The Folders are those that you set in the New User Wizard. If you want to change these for any reason then you can do so here or by using the New User Wizard again.



The Units tab duplicates Units setting in the New User Wizard.



The Parking Tab allows you to change the values that ADE will use for the radius of parking spots. The defaults given are those defined in FSX so you should leave them unaltered unless you have a good reason to change them.



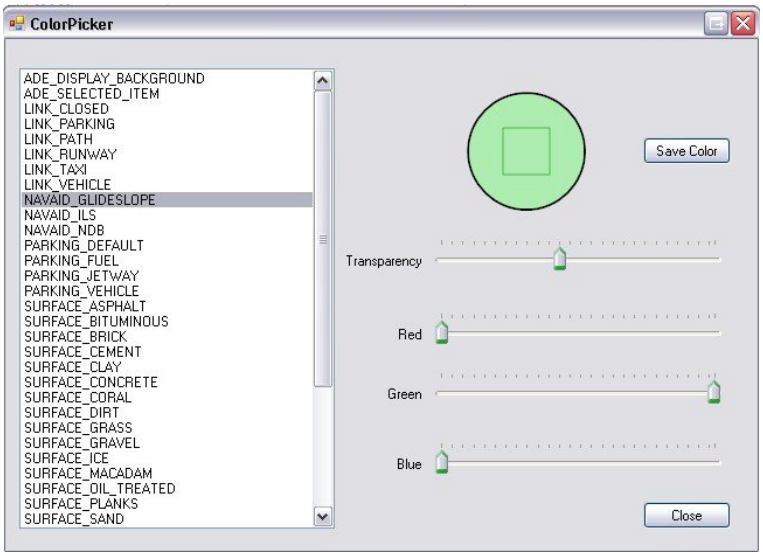
ADE can take screen shots of it's own display Here you can set the format in which you want the shot to be saved and also define how the file names should be constructed. You can either use the airport ICAO with or without the airport name or set you own name.

In both cases you can set whether ADE will add an index at the end of the file name and what starting index to use.

Once you have completed your changes remember to click Save to keep them.

Colors

It is possible to set you own colors for most of the elements that ADE displays. To change these open the Color Dialog from the Settings Menu.



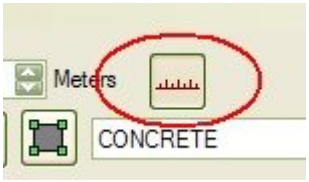
The list of items with user controlled colors is in the box on the left. As you scroll through it the circle at top right will change to reflect the set color as will the sliders. If you set a level of transparency then you will see a black square behind the circle. Use the four sliders to change the color. If you want to save it then you MUST click the Save button otherwise ADE will not remember your changes.

Guidelines and Measurements

Guidelines are ruler lines that can be laid-down anywhere on the ADE screen. This can be useful, for example, when trying to place several objects in a straight line. Guidelines are proper ADE objects and as such can be added, deleted, moved, rotated and edited. Undo/Redo works with them. Guidelines are kept in the .ade file so will be saved between sessions. They are not compiled into the .bgl file.

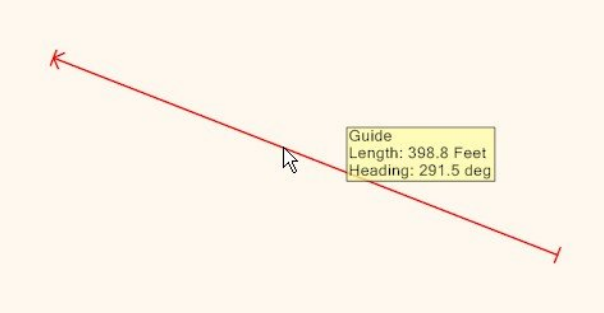
The tool tip for a guideline will tell you the length and heading of the line. The base end (where the guideline reference point is located) has a simple cross line while the far end has an arrow. Heading is from the base end.

Creating Guidelines:
A Guideline can connect markers that have already been drawn or you can run a guideline between any two points and markers will be created at those points if they don't already exist. A guideline will snap to an existing marker if you start or end the line close to a marker.

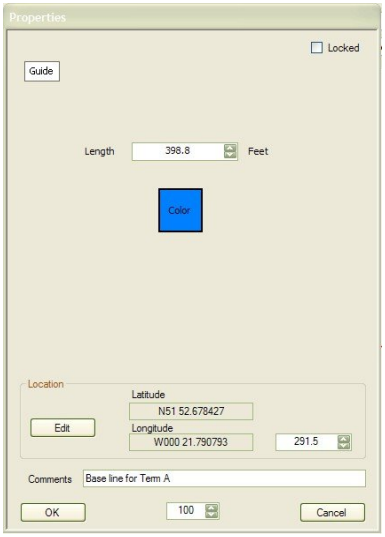


Select the Guideline Tool from the toolbar. The mouse pointer will change to the guideline drawing symbol (a red cross). Put the cross on the location where you want to start the line, press the mouse button and leave it down while you pull the line out to where you want it to end, then release the mouse button.

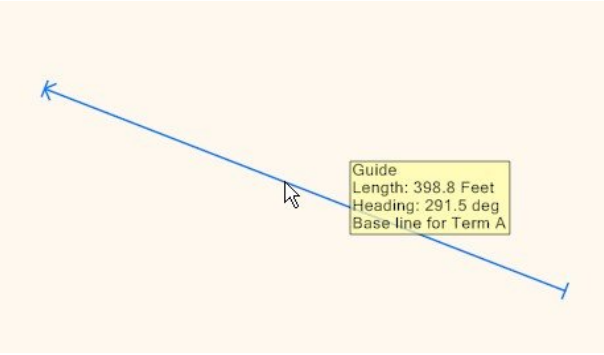
On completion a guideline object will be on the display:



The origin is marked with the cross bar and the terminal end is marked with the small arrow head. The tool tip shows length (in user defined units) and the heading taken from origin to end. The default color is red but this can be changed by the user. A selected guide will have a rotate handle and the arrow end and can be rotated around the origin. The parameters can be edited:



To change the guide color click the Color button. A Comment added to the guide will appear in the tool tip



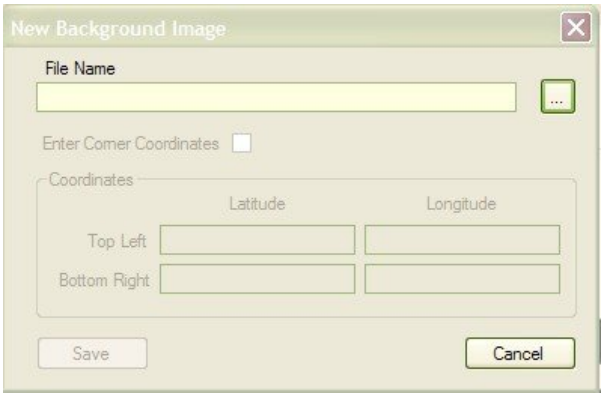
Moving Guidelines:
Like most objects, you can move a guideline by 'grabbing' it with the mouse and dragging it. You must be in Pointer mode to do this -- select the normal pointer from the toolbar. They can also be rotated using the rotate handle.

Deleting Guidelines:
You can delete a guideline by selecting it and pressing the delete key or right click and delete. You can Hide or Show guidelines from the View Menu.

Background Images

ADE can use multiple background images to help with the design of an airport. These do not need to be photo or satellite images but could be airport diagrams or even screen shots from FSX.

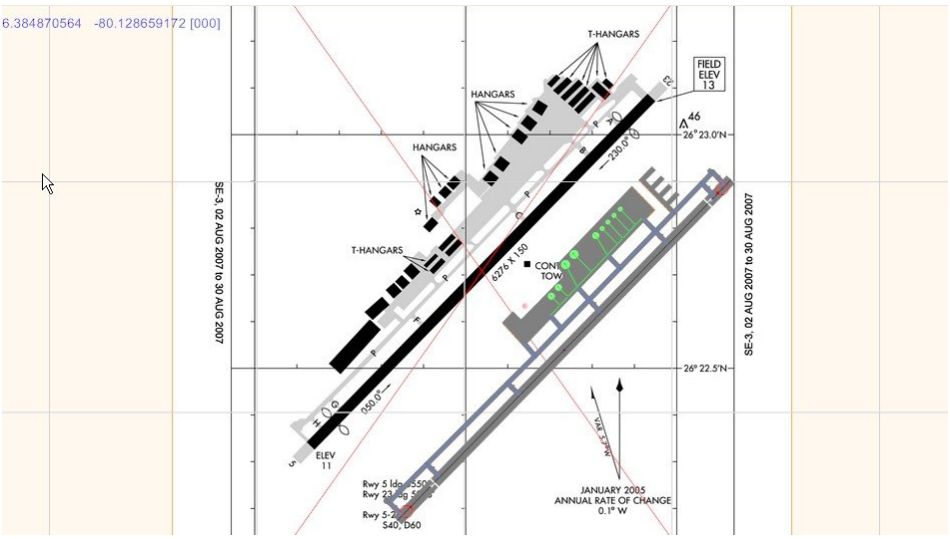
Adding Images
Use the right click menu and select Add> Background Image. This dialog will open.



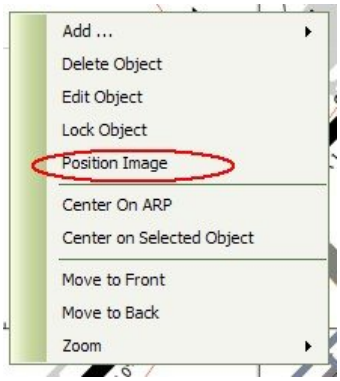
The add image box allows the selection of a file and the possibility to use co-ordinates to place it or not. Once saved the image will either appear based on the corner co-ordinates or centered on the mouse position. Sizes for images placed without co-ordinates are based on the image width and height.

NOTE
ADE does not store the image in the ade file but only a reference to it. There fore you should be careful not to move images in the file structure once they have been associated with an airport design project.

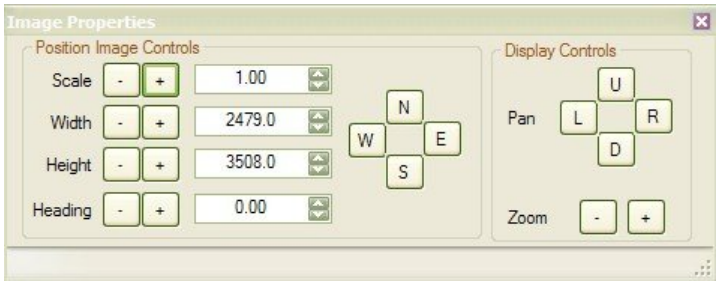
Sizing and Positioning a Background Image
Select the image – a Red diagonal cross will appear on the selected image.



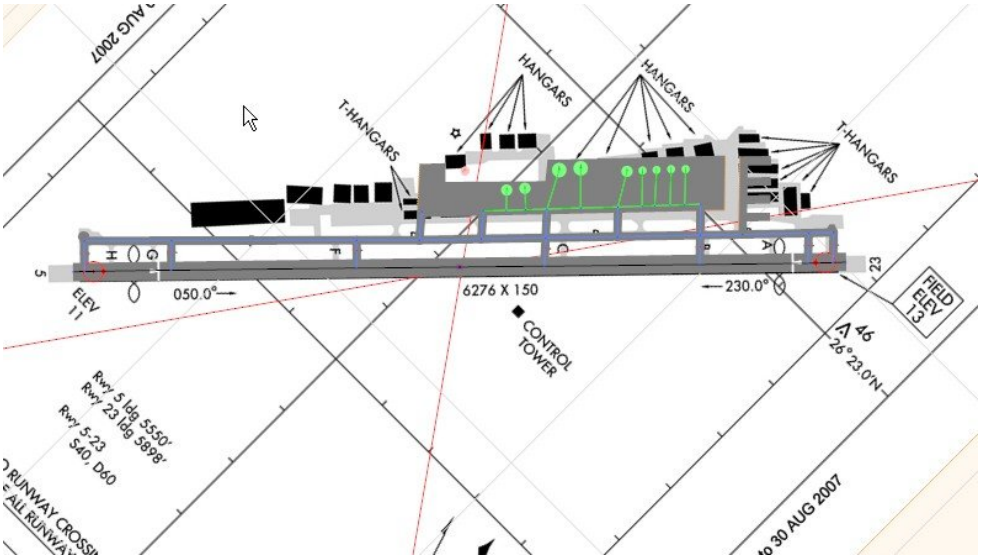
Once selected use the right click menu and select position Image as shown below



This will open the Image Positioning Properties Dialog.

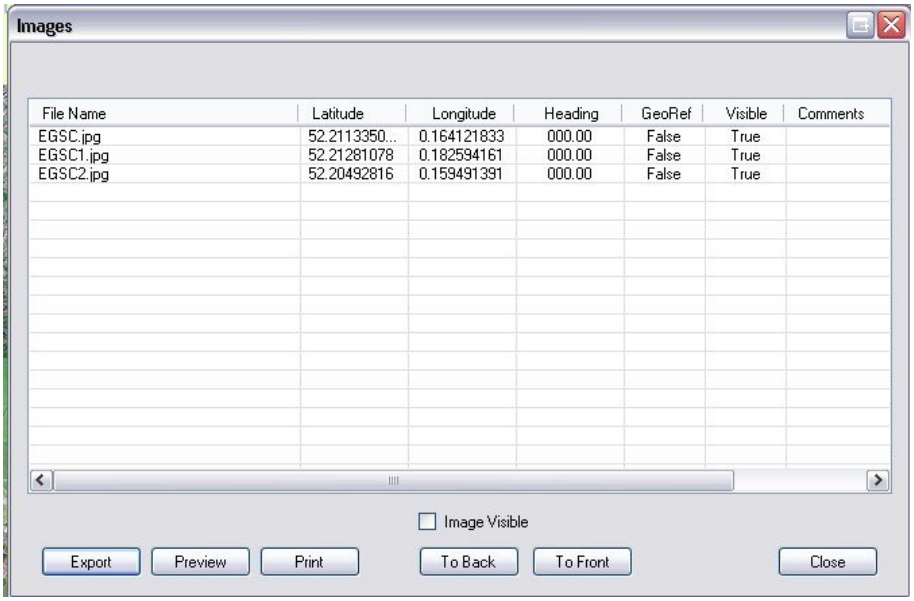


The image position controls can be used to adjust the size and heading of the image against, for example, the main runway. Use the buttons to make small changed. If the Shift Key is held down then changes are increased five-fold and with the Control Key ten-fold. The status bar should indicate if either of these keys is down. The display controls allow the display to be moved about. Again the Control and Shift Keys will magnify changes. This is a pretty much aligned background:



Once it is positioned then you might want to lock it in place (Right Click > Lock) and save your file.

Working with Images
To re-order images or hide them use the Image List from the List Menu.



The images associated with the airport are listed. You can hide or show them in the display. Select and image and check or uncheck the Image Visible box. To bring and image forward or send it back use the To Back and To Front buttons.

NOTE
ADE does not currently remember image order between sessions. This will be added in a future release. Although you may have any number of background images you may find performance issues unless you have a PC with a decent specification.

How ADE Developed Airports Work with FSX

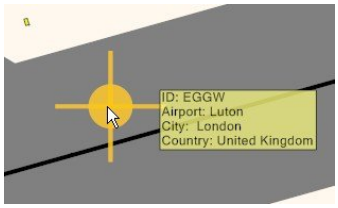
Visible Model and Facility Model
There are two types of data used to model an airport in FSX. There is the visible scenery model and the invisible facility model.

- The visible model contains scenery objects such as runways, taxiways and buildings. It is for the user to 'see' only, FSX knows almost nothing about the airport from the visible model.
- The facility model contains virtually everything that FSX knows about the airport including location name, ICAO code, comm frequencies, runway data, taxiway and parking maps, etc. This information appears in the Map View, GPS, FS Go To Airport window and Flight Planner window. It is also used by ATC and AI to operate at an airport. The facility model contains much of the information found in published airport facility documents.

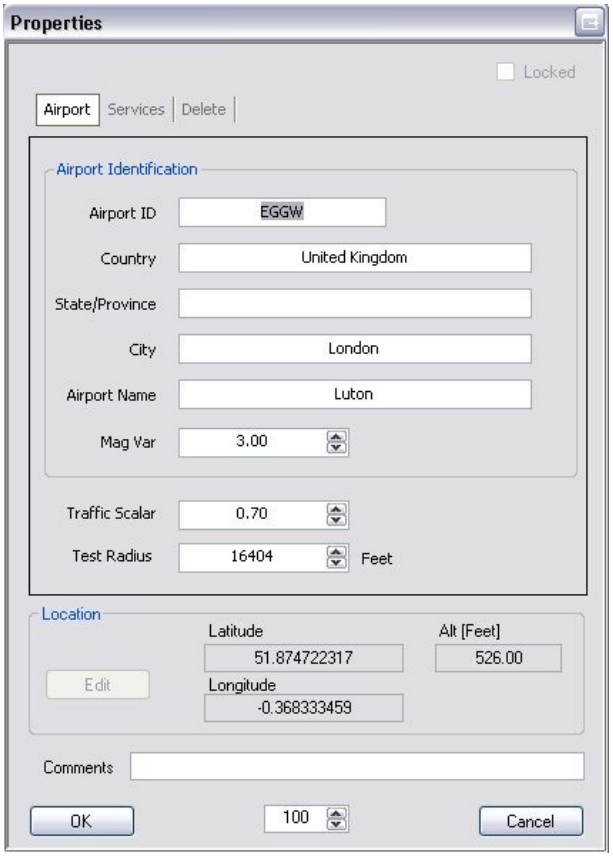
Both types of data are stored in a .bgl file. It is important to understand that making changes to what appears to be the visible model can cause serious problems for the facilities model.

Replacing Stock Airports with ADE files
When you modify an airport with ADE and compile it, it produces a replacement .bgl file for that airport. This file has an exclusion mechanism that causes it to override most of the elements in the stock airport. This will occur for both visual and facility models of that airport. This means that the stock airport is still in FSX unmodified but the ADE airport contains information that tells FSX to ignore what is in the stock airport file and use what is in the ADE file instead.

Airport Properties



The airport reference point is represented by a filled circle and cross (purple in color). If you cannot find it then zoom in and use the right click menu to 'Center on ARP'. This will bring the ARP to center screen. Selecting it will open the common property window and display the airport properties.



Notice that there are three tabs of information: Airport, Services and Delete

Each property is explained below

Latitude
Longitude

This sets the location of the Airport Reference Point. The airport reference point is the approximate center of the airport for navigation purposes. If you are creating a new airport you can usually use the Airport Location from the published charts for the airport. If that is not available then you can use the center point of the runway for single-runway installations. This point does not have to be exact. Some times and airport is in the wrong place so you might want to move it and move the ARP. This can be done but it is not trivial and by moving the visual model it is quite possible to destroy some or all of the facilities model. ADE Home edition does not allow you to change the co-ordinates of the ARP.

Elevation

This sets the elevation for the airport. Note that elevation of an airport is complicated to change. In most cases (as described above) information in the new file will 'replace' that of the old. FSX uses the last source it finds to set a property. This is not true for elevation. FSX will use the first value and this is going to be that in the stock file containing the airport. There are ways of dealing with this but it is somewhat complicated. Note that ADE Home Edition will not allow you to modify the elevation.

Airport ID

This is the ICAO code (e.g. KLAX, EGLL) for larger airports or the regional airport code for others. ADE uses a maximum of four letters and/or

numbers. When you modify a stock airport using ADE and create a new .bgl file for it, FS matches the Airport ID in the modified file with the stock airport and replaces the stock airport features with the features for the new airport. If you change the airport ID then the modified airport will no longer replace the stock airport, but instead it will appear as two airports at the same locations. Therefore, there is no practical way to change the Airport ID of an existing stock airport. You can, however, change the ID for an airport that does not come with the Sim.

Country
State / Province
City

This is the location for an airport that will appear in the Go To Airport window in FSX. If you are creating a new airport you can put in anything you want here but it is best to try to use the same spelling for country, state and city that FS does or you can end up with two entries for a country in the country list, with different spellings, and the same for state and city. For modifications to stock airports FSX will use the country, state and city names it finds in the stock airport file and will ignore the country, state and city found in the modified airport file. This means that there is no practical way to change the place names for an existing stock airport.

Airport Name

This is the name for an airport that will appear in the Go To Airport window in FSX and the Map View and GPS window. If you are creating a new airport you can put in anything you want here up to 48 characters. For modifications to stock airports, FSX will use the airport name it finds in the stock airport file and will ignore the name in the modified airport file. This means that there is no practical way to change the name for an existing stock airport.

Magnetic Variation

The magnetic variation for the airport can be found from published airport or aviation charts. This value is used for runways and navaids at the airport and it will appear on the GPS display and Map View for the airport. It is unknown what additional use FS makes of this parameter but it is unlikely that it is applied to your aircraft compass, as Deviation data for that comes from more a general magnetic map.

Traffic Scalar

The volume of AI traffic that is appropriate for this airport. 1.0 would apply to major airports. By default ADE will use 0.7 and so far as we can tell all stock airports use this value.

Test Radius

This value is only used by the BglComp compiler. If objects associated with the airport (taxi signs etc) are located outside the test radius then the compiler will issue a warning. It does not affect the compilation.

Services (Avgas / Jet Fuel)

These are shown in the Services Tab and indicate what fuel services are shown on the GPS. They do not create an actual fuel trigger at pumps at the airport.

Comment

Each object in ADE can have a comment that you can use for whatever might be helpful

Delete

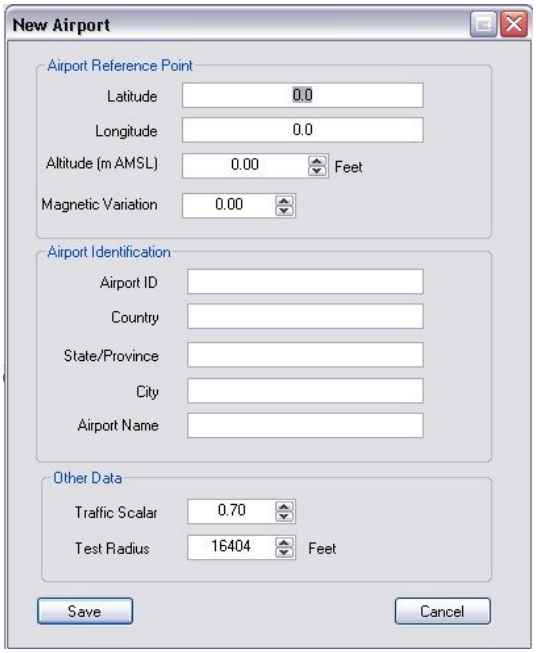
We mentioned that the ADE file contains information to tell FSX what to to use from the stock file and what from the ADE file. The Delete Tab shows you what ADE is going to replace. In the Home Edition you cannot change

this. ADE will tell FSX to replace everything except for Approaches. Approaches are an advanced topic that affect how user and AI planes land and take off from the airport. ADE Home does not allow you to alter Approaches.

Note that if you leave out required information or exceed the allowed lengths for names you will not be able to save your changes.

New Airports

So far we have only talked about modifying existing airports, however, you may wish to create one that is currently not represented in FSX. ADE allows you to create a new airport from scratch. Select File > New Airport and the new airport dialog should open



This allows you to enter the basic airport data as described above. Make sure to set the latitude and longitude of your airport correctly first and then the Altitude and Magnetic Variation. Be careful to get these right as they are difficult to change later. When everything is correct click Save and ADE will generate the basics of your new airport

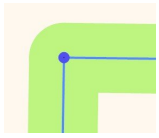
So far not much. An ARP plus a Tower view point located at the ARP. Go ahead and save it before proceeding to develop your new airport.

Working With Airport Objects

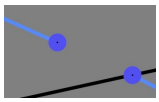
Anatomy of an Airport

An airport consists of a lot of elements and these are briefly described below before we delve into more detail

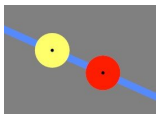
Taxiway Links
These blue, green, red, purple and black lines are like the bone structure of the airport. They are not actually visible in FSX but FS uses this network of links and their associated nodes to auto-generate the taxiway surfaces. The link and node network is what ATC uses to direct aircraft taxiing around the airport and what the AI follow when taxiing.



Taxiway Surface
FSX uses a type of autogen process to 'flesh out' the taxi links with surfaces, curves, junctions, markings and lights. In ADE these surfaces are actually an illusion. When working with taxiways you are really only working with the link and node structure of the taxiway grid. Not all taxiway links show a surface.



Taxiway Nodes
All links connect at nodes. These are different colors depending on the type of node. Ordinary nodes (blue) do not show up in FSX but they form the points that taxiways are connected to.

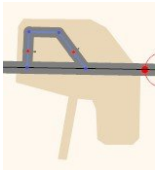


Hold Short Nodes
Hold-short and ILS hold-short nodes are special nodes that cause FSX to draw hold-short markers on the taxiway. The hold-short node is also an essential checkpoint for ATC takeoff clearance.

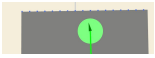
Runway Taxiway
There should always be a taxiway line running down the middle of each runway. This taxiway is made from a special type of taxi link, shown in black by ADE. This runway-taxiway has several differences from a normal taxiway but the most obvious difference is that it is totally invisible.

Runway Surface
The runway surface is a separate object from the runway-taxiway. All runway characteristics (size, markings, lights etc.) are defined by the runway object and not the runway taxiway. ADE will color a runway surface depending on the surface type. You can change these colors to suit your own preferences in the Color Settings Dialog.

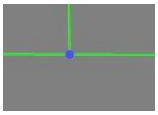
Helipad
Helipads are special locations that can be used by helicopters. Creating a helipad creates a visual element on the airfield. For it to be used you will need to add a Start Location (see below) at the helipad location.



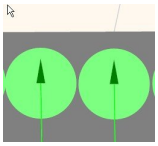
Apron Surfaces
Apron surfaces are polygons of pavement or other textures. Apron surfaces are not just used for aprons. They are used anywhere extra pavement is needed around the airport such as waiting areas on taxiways and turn-around bays on runways.



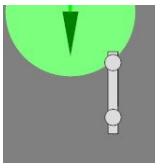
Apron Edge Lights
Airports may have lighting along the edges of aprons. ADE shows these as a line of blue dots.



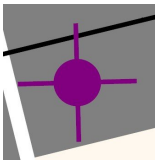
Apron Taxiways
These are made up of a special type of taxi link, shown in green. Apron taxiways have no surface of their own but can have markings and lighting. They are intended to go over apron surfaces.



Parking Spots
Parking spots are actually invisible in FSX except, possibly, for 'T' marks on an apron. There are a number of different types each having a radius. The radius will determine what size planes can use the spot. In FSX there are two additional types – Vehicle and Fuel

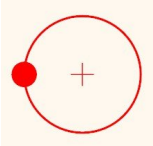


Jetways
FSX allows you to add a jet way to a parking spot. In the real world it would only be GATE types that could have a jetway. ADE does not enforce this requirement. Jetways are shown, in ADE, with the two tower elements and are pretty much in scale with the object in FSX.

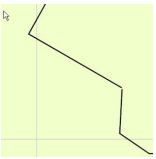


Airport Reference Point
This specifies the location and elevation of the airport for flight planning, GPS navigation, and other purposes. The ARP does not set the visible level of the airport. ADE shows it as a Purple Circle with a cross behind it.

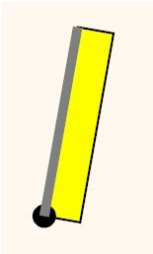
Tower Viewpoint
This specifies the location of the viewpoint from which you see your aircraft when you select Tower View by pressing the 'S' key twice in FS. Note that this usually has nothing to do with where the visible scenery control tower object is located.



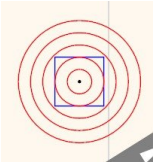
Start Location
This specifies exactly where you will start if you choose to start a flight on a runway. These symbols are only visible if *Show Start Locations* is checked under the *View* menu.



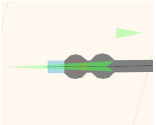
Fences
FSX allows two types of fence – a boundary fence and a blast fence. Boundary Fences are shown in Black and Blast Fences in Brown



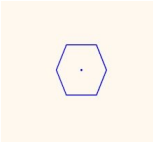
Taxi Signs
Taxi signs are the visual signs that direct aircraft around an airport. ADE automatically excludes the taxi signs in the stock file so that they may be edited and later compiled and FSX will use the signs present in the ADE created scenery file including any which are not altered. Taxi signs are actually very small in comparison to other parts of the airport. ADE shows them approximately to scale.



Navaids
There are several types of Navaid (navigational aid) that can be associated with an airport. FSX also has many navaids defined separately from the airport. It is therefore entirely possible that one or more navaids found at an airport will not be located in the stock or ADE file. ADE will show these as display only. Two navaids are shown in the picture co-located with each other. The concentric red circles are an NDB and the Blue Box is a DME.



This shows a Localizer Beam (the longer arrow) and a glideslope.



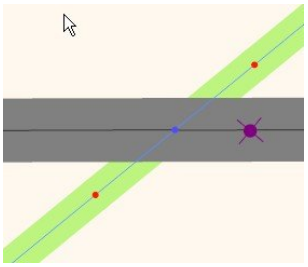
This is a VOR without a DME.

Representation of Airport Elements

ADE vs. FSX
ADE displays airport elements in a schematic way. Future editions will improve the visual representation of elements such as runways and taxiways, especially as far as markings are concerned. However it is very important to realize that FSX has specific ways of drawing what it gets from the stock or ADE file. You should therefore always view your work in FSX on a regular basis to ensure that things are visually as you expect to see them. ADE does not currently do a

good job of drawing junctions in taxiways. We are aware that this is not satisfactory and proper drawing of taxiways and taxiway markings will be in the next version released,

Layering

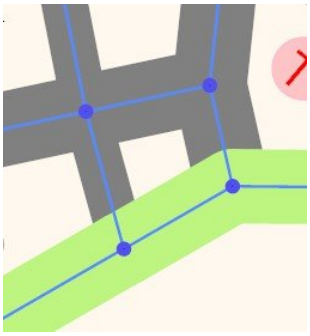


This does not refer to the layering that occurs when separate scenery files overlap each other, but rather the different conceptual layers that scenery elements (runways, taxiways, etc.) occupy in the same file. FS draws scenery objects in the following order and the order cannot be changed:

1. Apron surfaces.
2. Taxiway surfaces.
3. Runway surfaces.
4. All markings and lights.
5. Structures.

This means that if you draw a taxiway that crosses both a runway and an apron surface, the taxiway will appear to go over the apron surface and below the runway. However, the taxiway markings and lights will go on top of the runway.

Junction Surface Type

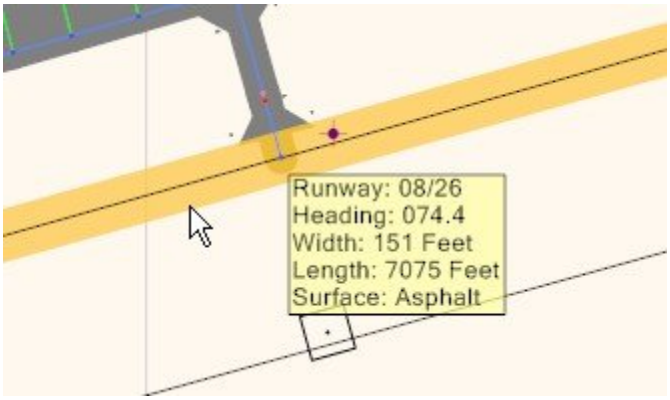


Where two or more links meet, FSX will automatically create a junction with fillets (curved joins) and curved markings. If the links have different surface types then FS will choose the surface type of one of the links to use for the junction surface. FS will take the surface type of the first link clockwise before 270 degrees (true) as the surface type for the junction. This rule is fixed by FSX and it cannot be changed. Note that the current version of ADE cannot represent junctions in this way.

Selecting Objects

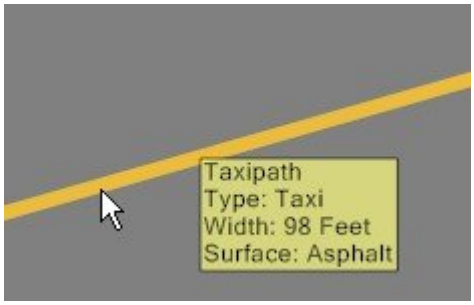
Single Selection

As mentioned above the best way to be sure of selecting the object you want is to position the cursor so that the tooltip is visible and then left click.



The selected object (in this case the runway) will turn orange (or whatever color you set for a selected object – see color settings later). By default they are orange and slightly transparent.

Note that to select a taxi link you need to be on the line and not on the surface.

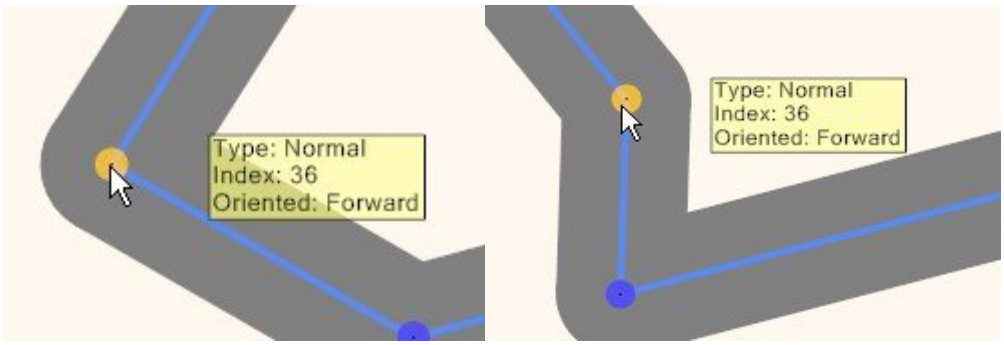


Again the easiest way to make sure is to have the tooltip visible. ADE will always select the object that is currently showing in the tooltip

Group Selection
This version of ADE Home Edition provides limited support for multi or group selection. It works to allow the editing of properties for several objects at a time. You can do this for Taxiway Paths and Parking Spots. The group selection must all be of the same type so if your first selected object is a parking spot then all subsequent selections need to be parking spots as well. ADE will ignore anything you try to select that does not match the first object selected. Future versions will allow a much wider range of group selection and actions available on groups.

Moving Objects

Any object (except those that are locked) can be moved by dragging with the mouse. First select the object and then drag it.



You cannot move a group in the current version.

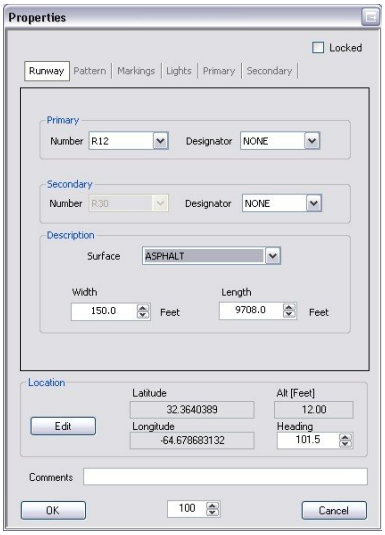
Deleting Objects

An object can be deleted by selecting it with the mouse and pressing the Delete key or selecting Delete Object from the Right Click Menu. If you deleted something you didn't intend to then use Ctrl+Z to undo it. Any object can be deleted except the Airport Reference Point and stock navaids. You cannot delete a group in this version.

Object Properties

Each object shown on the Display has properties. In some cases these are only for display but in most cases you can change the details in the property dialog. ADE uses a 'Common Property Dialog that changes depending on the object selected. Selecting an object for editing can be done in several ways. First you need to select the object by left clicking it when the tool tip is visible

Editing Single Objects



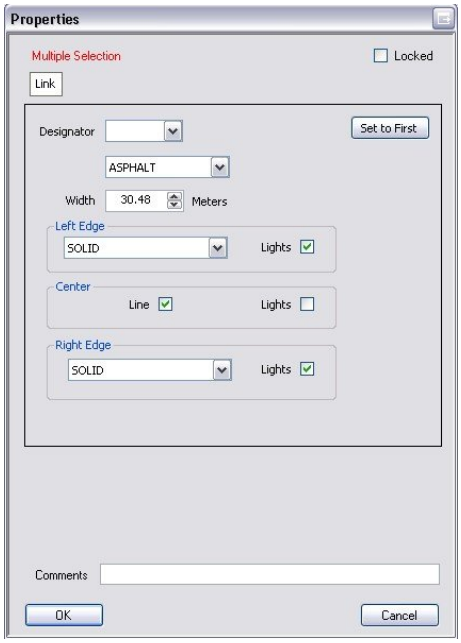
There are three main areas of the common properties dialog. At the very top is a small area that currently only contains a check box indicating whether the object is locked or not. In the center is the main area of properties that are specific to the object being edited. For complex objects like the runway shown here there may be multiple tab pages to handle different information.

As far as possible ADE will not accept or allow values for properties that would cause either the compiler or FSX to fail. This cannot be guaranteed of course.

The bottom section contains Location Information about the object. In most cases that will include the latitude and longitude. Note that these are read only. It is recommended that you re-

locate objects by dragging but if you have precise co-ordinates then you can enter them after first clicking the Edit button to activate the data boxes. In most cases you cannot change the altitude of an object. This is because FSX expects objects to be at the same altitude as the ARP. If altitude has no meaning for the element (e.g. Nodes) then you will not see this box at all. If the object can have a heading then you will see the heading box so you can modify it. Generally objects with headings can have them changed by dragging.

Editing a Group of Objects



In the case of Parking Spots and Taxiway links you may select a group and make changes to their properties as a group. The property dialog indicates that you are editing a multiple selection at the top. The properties that you see are those that it makes sense to set for a group. Each property that has a value indicates that all the objects already match each other for that property. If the property is blank then they have different values at the moment. Each object in the selection will get the value of any properties that you set a value for. They will retain their current unique value for any that are blank. The button at top right called 'Set to First' will set all the property values to the value held by the first object in the selection. No property values will be updated until you click OK.

Object Locking

ADE can lock objects in different ways to stop them being moved, deleted etc. Lock Status is stored in the .ade format and remembered from session to session. It is not stored in a compiled file.

There are several different lock statuses. The background color of the tool tip changes to reflect the lock status of the object

None You can do almost anything with the object including deleting, moving and editing. Objects in this status will always be compiled into the .bgl file. Tool tip background is yellow

User This status is set or cleared via the right click menu when an object is selected. In this state you cannot delete or move the object by dragging and depending on whether the option to Edit on Lock is set or not you may be able to edit. Objects in this status will always be compiled into the .bgl file. Tool tip background is pink

Stock this status is set by ADE and indicates a stock object that cannot be deleted or otherwise removed (e.g. Navaids) but can be edited. Depending on the object type you may be able to Move or Edit the object. Objects with this status will be compiled into the .bgl file. Tool tip background is…

Full This status is set by ADE and indicates a stock item that is there for display only. You cannot delete, move, or edit these and they will not be compiled. These are stored in the .ade file but nowhere else.

There are also some program level locks accessed from the Main Lock Menu. If these are set (ticked) the all items of that type (aprons or runways in the current version) will be locked. This information is not stored in the .ade file as for individual object locks but is remembered from session to session by the program.

Nodes, Links and Parking

These three items are what you will be working with the most when modifying or building an airport so controls for these have been put on the tool bar. Other objects such as runways, start locations, frequencies and navaids can be inserted or managed using menu items or properties windows.

Nodes and links form the framework for the taxiway system at an airport. FSX uses an autogen-like process to expand the nodes and links to fully defined taxiway surfaces.

In addition to defining the visible taxiway layout, the node and link network defines where AI aircraft can go. AI aircraft follow this link network like slot-car toys to get from parking to the runway on departure or from the runway to parking after landing.

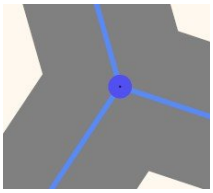
There must also be a path of taxi links running down each runway so the AI can taxi on and off the runway.

The node and link network is also used by ATC to give directions to user and AI aircraft. Each link may have an associated taxiway or runway designator which ATC will read out for taxi clearance, for example "taxi to and hold short of runway 12 using taxiway B C D". The network also provides the ‘pink line’ path that you get if you request Progressive Taxi instructions.

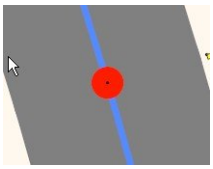
AI aircraft will only go from parking to the runway or the other direction so there must always be parking for AI to work. They cannot be made to go from one part of the airport to another and stop.

Nodes

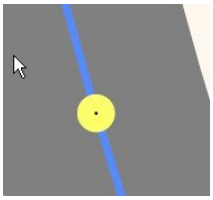
Nodes are the join points for taxiway links. Nodes can exist by themselves although they are useless in that form. Links, however, can only connect between nodes or a parking space so taxi links can’t exist by themselves. There are three types of nodes:



Normal nodes are used for the vast majority of taxiway connections, including those on runways and aprons. Where taxi links join at a node there will be a taxiway junction and FSX will automatically generate the curved fillets between adjacent taxiway surfaces.

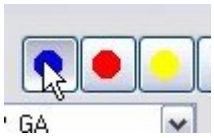


Hold-short nodes create visible hold-short bars on the taxiway. ATC also uses these nodes as checkpoints for takeoff clearance. Note: if hold short nodes are too far from the runway it can cause AI to freeze at the runway, see Hold Short Node Limits.



ILS hold-short nodes also create visible markers. They are placed behind normal hold short markers on some runways to have aircraft hold further back during IMC. It does not appear that ATC or AI use this type of node for anything special.

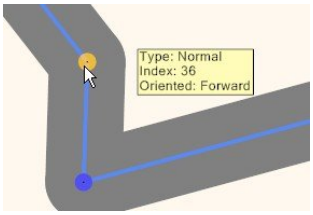
Creating Nodes:



Select the Node Tool for the appropriate node type from the toolbar. The mouse pointer will change to a colored cross with the name of the node type.

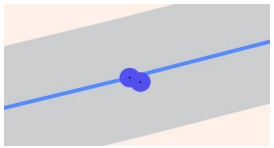
You seldom need to create nodes by themselves, when you use the link tool it will automatically create nodes where needed as you draw links; however, if you do need to draw individual nodes then you can use a couple of methods:
You can place nodes anywhere you want by clicking on the map window while the node tool is active.

Moving Nodes:
Like most objects, you can move a node by 'grabbing' it with the mouse and dragging it. You must be in Pointer mode to do this -- select the normal pointer from the toolbar. Note that any attached links will also be dragged and stretched with the node. Alternatively, you could bring up the properties window and alter the latitude and longitude for the node.



Deleting Nodes:
You can delete a node by selecting it and pressing the delete key or selecting delete from the Right Click Menu. Note that any attached links will also be deleted as links cannot exist by themselves. If you make a mistake then you can undo the delete using the Undo function. This will restore any deleted links as well as the node.

Overlapping Nodes:

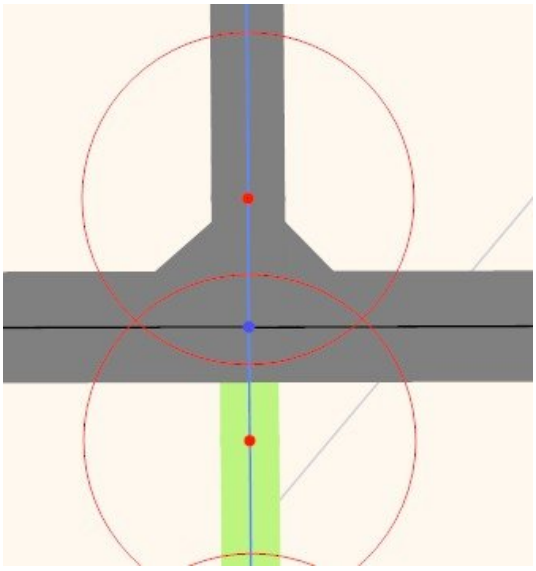


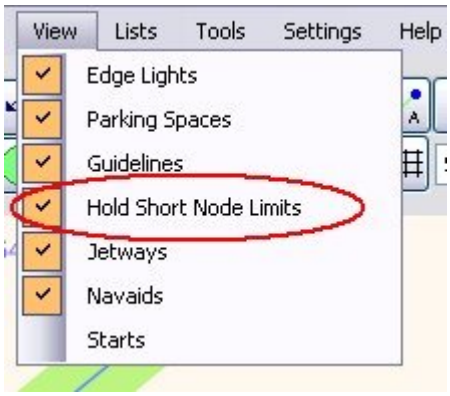
Currently there is nothing to stop overlapping nodes.

Hold-Short Node Limits:
A hold-short node will not work if it is too far from the edge of the runway. That will result in ATC never giving you takeoff clearance and AI aircraft will stop at the hold-short node and get stuck there. The maximum distance seems to be just over 230 feet, but it is best to keep it under 225 feet (68.6 m) to be safe. Note that the maximum distance is from the edge of the runway, not the center line.

The program can display 225 foot radius circles around all the hold-short nodes to show the maximum allowable distance. This can be enabled by checking the *Show Hold Short Limits* item under the *View* menu or by pressing the 'H' key.

Note that hold short distance limits are only crucial where AI aircraft actually enter the active runway for takeoff. AI enter a runway at the taxiway entrances closest to the ends of the runway. Hold-short nodes at other locations along the runway will not normally be used for AI entry. This limit does not apply to ILS hold-short nodes which are apparently not used by AI or ATC. Another problem can occur when two or more aircraft line up at a hold-short node for departure, the aircraft at the front of the line may get clearance and proceed to take off, but the aircraft behind him may become stuck. This problem is more likely to occur with smaller aircraft. This can be prevented by placing a normal (blue) node or an ILS hold-short node just behind the hold short node. Some experimenting has shown this second node should be no more that 70 feet (21.3 m) behind the hold-short node to work with all sizes of aircraft. As a rule of thumb, just place the nodes so they touch or overlap slightly.
To help you avoid problems ADE will show circles around the nodes at the maximum safe distance



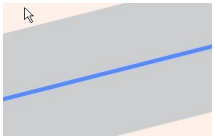


You can toggle these using the Hold Short Node Limits entry in the view menu

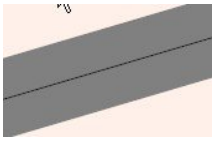
Hold short nodes should only be used where taxiways enter or cross runways and not as ‘stop signs’ around the airport.

Links

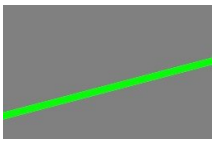
A link connects two nodes together or connects a node to a parking spot. There are six types of links:



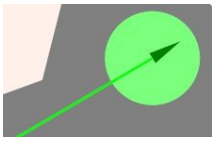
Normal Taxi Links are used for most taxiways. These create taxiway segments with the width, surface (e.g. pavement), markings and lights specified in the Taxi Link Properties window. AI also follow these lines to get from parking to the runway or the other direction.



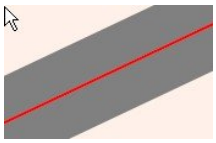
Runway Taxi Links run down the center of runways. A taxi line is needed on a runway to guide the AI while taxiing on or off the runway. ATC will avoid routing user and AI aircraft down black taxi links while moving around the airport unless there is no other available ‘blue’ route. This keeps aircraft from using runways to taxi to position, except where transiting a runway is the only way to get to the destination.



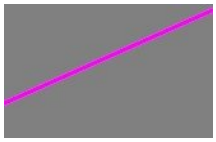
Path (Apron) Taxi Links have no surface texture (e.g. pavement) of their own but can have markings and lights. These are intended to be used over aprons that have their own surface textures, although you can also run normal taxi links over an apron surface if you want a separate pavement texture for the taxiway. It is unknown if apron lines have any special meaning to ATC or AI. It may be that AI avoid cutting-through aprons where they could otherwise use normal taxiways.



Parking Connectors are similar to apron taxi links in that they have no surface texture but can have markings and lights. Parking connectors are also shown in green but you don't need to select that link type when creating them. Any link that connects to a parking spot will automatically become a parking connector. Note that you can’t connect two parking spots together with a single link.



Closed Taxi Links have the same characteristics as normal taxi links.



Vehicle Links are colored in purple and are specifically used by airport traffic. If there are no vehicle links the vehicles will use the normal network and may come into contact with aircraft. Vehicle links are generally narrower than normal links. They are usually connected to a vehicle type parking spot.

Normal and apron taxi links can be assigned designators such as A, B1, C, etc. (see the Designators section). The designators are used by ATC when reading out taxiing instructions.

Parking connectors always have blank designators. Runway taxi links have designators but they are taken from the runways that the taxi links run on (e.g. "Rwy 09/27").

Runway taxi links are actually invisible and will display no marking or lights, as they are only intended to coincide with runways that have their own surface textures, markings and lights; however, runway links do have width.

The runway taxi line should have the same width as the runway that it mates with so that the fillets that are generated where taxiways join will appear to merge onto the runway even though they really merge onto the invisible runway taxi line.

Creating Links:
Links can be drawn between nodes that have already been drawn, or between nodes and existing parking spots. For convenience, if you try to draw a link to or from a point where there is no node ADE will put a node there for you, at both ends if necessary, when you draw the link.

To draw a link, select the Link Drawing Tool for the appropriate link type from the tool bar. The mouse pointer will change to the link drawing symbol, a colored cross with the link type name.

Put the cross on the location where you want to start the link, press the mouse button and leave it down while you pull the link line out to where you want it to end, then release the mouse button.

The characteristics of the link you are creating (surface, width, markings, lights etc) will be taken from the link it connects to, or the default settings if it doesn't connect.

If you want to change the characteristics you can do that from the Link Properties window after the link is created.

Link Snapping:
To ensure links snap to nodes or parking spots make sure that the node or parking spot tool tip is visible.

Automatic Link Splitting:
Links cannot actually have nodes in the middle of the line, nodes (or parking spots) can only be at the ends of a link. For this reason, if you connect a new link to an existing link, ADE will automatically break the existing link into two separate links. Although they will still look like a

single line you can treat the links separately. If the cursor for the start or end of a new link is over an existing link, (tool tip visible for the link), then a new node will be created in the existing link breaking it into two. You new link will now connect to the existing one

Deleting Links:
Select one or more links with the mouse and press the Delete key.

Moving Links:
You cannot move a link in ADE Home Edition. To change the location of a link move the nodes at either end until your link is correctly placed

Changing Links:
You can change some of the properties of links. Bear in mind though that some changes do not make sense and ADE will try to stop those happening. For example changing a Parking Link to anything else is likely to cause your taxi network to become scrambled. As a result ADE will not make certain choices available if they do not make sense.

Click on a link to select it, right click the selected link and select Edit Object or hit the Enter key when an object is selected to bring up the Properties window to examine or modify the following settings:

Designator	This box has a list of all the taxiway and runway designators that are used at the current airport. Runway links can only take designators for existing runways. If the link is of a runway type then you will not be able to set a designator but ADE will show the runway that the link is associated with.
Link Type	You can select the link type from the Tool Bar before creating the link or you can change it afterwards. Any link connecting to a parking spot will always be a parking connector and can't be changed.
Surface	This only applies to normal and closed taxi link types. Runway, apron and parking links do not have a visible surface so this will be ignored.
Width	Specifies the width of the taxiway surface for normal links. For runway links this should match the width of the runway or it can be slightly smaller so there are no gaps where fillets meet the runway. For apron taxi links there is no visible surface but this will set the spacing for the yellow edge lines and lights.
Lines and Lights	All taxi link types except runway links can have lights and yellow lines. *Left* and *Right* means the left or right side of the taxiway segment if you were standing at the node where the link was started from looking in the direction the link was drawn. Rather than try to remember what direction every link was drawn, it is usually easier to draw all the links first then select them all as a group and set the line type or lights for one edge. Then if the line or light settings are on the wrong side for any links just re-select all the ‘wrong’ links and reverse them as a group.

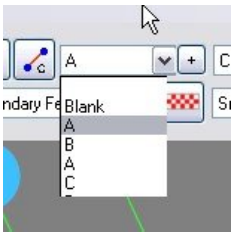
Designators

There are two types of designators:

- Taxiway designators, for example A, B, B2, are used with normal and apron taxiway links (blue and green links).

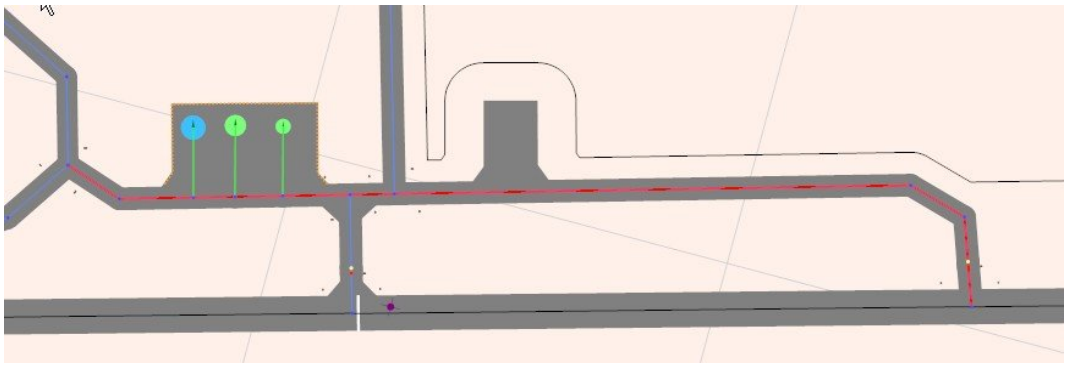
- Runway Designators, for example "Rwy 12/30", "Rwy 26R/8L", are used only with runway taxi links (black lines).

Runway links will always have a runway designator. Taxiway and apron links can have either a taxiway designator or can be left blank. Parking Connector links are always blank.



All designators that have been created for the current airport are shown in the drop-down Designator List on the toolbar You can create a new designator by clicking the small '+' to the right of the box and entering the new designator. This can also be done via the Designator List (See Lists).

Highlighting Designators:
When you select a designator from the drop-down list, all taxi links that have been assigned that designator will be shown in red. For example Taxiway ‘A’ at EGGW Luton is shown highlighted in the the picture below:



You can use this to verify that a taxiway is unbroken, and to verify taxiway routes match the routes in published maps of the airport you are working on.

The first entry in the designator list is always empty and if you leave that empty entry selected then no taxiway designators will be highlighted. The second entry in the list is the word "Blank". When you select that entry all blank designators, including all parking links, will be highlighted.

Note that if a link has an incorrect designator or is blank, that won't prevent AI from using it but ATC may give you strange or incorrect directions when you ask for taxi clearance.

Many of the stock airports have duplicate entries in the designator list, for example there may be three entries for taxiway "B" representing three different sections of taxiway B. ADE allows you to enter multiple designators with the same name. In FSX they are actually identified by an index number.

Scanning designators:
You can flip through the entire list of designators, highlighting each taxiway path, by pressing the 'T' key or flip backward by pressing Shift+T

Changing designators:
The designator can be selected before you start drawing links but if you are making large changes or building a new airport it may be easier to leave them blank as you create them. You can then select all the links that constitute a particular taxiway, holding down the Shift key to select more than one object at a time, then choose the designator to assign to that taxiway from the list. The selected taxiway will be shown highlighted in red after you do this. Note that you don't have to select nodes when you assign designators, nodes don't have designators, but it won't hurt if you do. You can also use this method to change individual links.

Runway designators are automatically assigned when you draw a runway-type taxi link on a runway and you can't set the designator directly in ADE Home Edition

Creating a New Designator:
You can create a new taxi designator either by using the small '+' button next to the designator box or from the Designator List. You just need to type the designator itself, e.g. "B1", you don't need to type the word "Taxi". Designators are usually single letters or letter and number pairs. You can create designators up to seven characters long but ATC will spell them out phonetically. It is unknown if there any actual words that ATC will recognize as a designator. You cannot enter new runway designators; that can only be done by creating new runways**.**

Deleting designators:
In order to delete a designator you must open the *Taxi Designators List* window from the Lists menu. Select the designator you want to delete and click the Delete button. Any links that use that designator will be changed to 'Blank'.

Taxiway Signs

ADE currently provides a basic method to add taxi signs. Use the right click menu to place them. They can be mored and rotated. At this time ADE does not have a taxi sign wizard to help with the creation of the sign but this will be added in a later version. In the SDK the 'Compiling BGL' document provides a list of characters which are used when editing or adding a taxiway sign under the Taxiway Sign section. Reading this section will provide guidance on how to use the characters

Parking

You can place any number of parking spots at an airport. Having lots of parking spots will cause no perceptible performance problems by themselves but if you load up dozens of parking spots with AI aircraft, especially detailed add-on aircraft, you will observe a frame rate drop when you go to that airport.

You can place parking spots anywhere you want,but you must connect them to the taxiway system or it can result in AI operations becoming blocked.

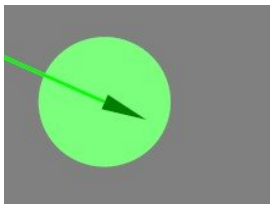
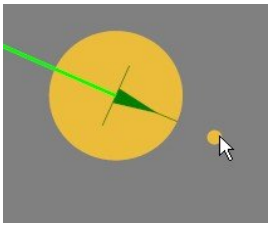
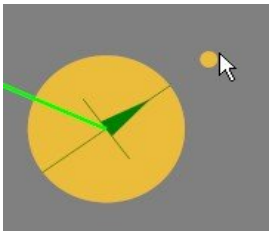
Creating Parking:

Click the Parking Tool button on the toolbar. The pointer will change to a parking tool symbol. You can pre-select the parking type from the drop-down lists beside the Parking Tool button or you can create the parking spots first and set the types and codes later.

You can place a parking spot by just clicking on the window while the parking tool is active or if you need to precisely place parking spots in the visual scenery, at boarding bridges (jetways) for example, you can use the aircraft position on the Flight Simulator window as a reference. Slew the aircraft until it is positioned where you want to put a parking spot and then place the center of the parking tool over the aircraft indicator.

It is usually easier to create all the parking spots first then link them to the taxiway network afterwards. A parking spot must be linked to the taxiway network or it can result in AI operations becoming blocked.

Rotating a Parking Spot:
The aircraft stick-symbol in the parking spot circle points in the direction the AI aircraft will point when it starts there. You can change the direction by selecting the parking spot symbol and grabbing the rotate handle (dot) that appears at the top of the symbol. The symbol will rotate around to follow the mouse pointer until you release the mouse button. Provided you keep the mouse pointer over the rotate handle the current heading of the parking spot will be shown in the tooltip. You can also rotate a parking spot by changing the heading in the Parking Properties window.

If you create parking spots using the mouse-click method then the parking spots will aim to the top of the window initially and you will probably need to rotate them to the final heading. If you use the ‘o’ key method in FS to drop parking spots then they will have the aircraft heading.

Aircraft will start at a parking spot aligned with the heading of the parking circle, however, when an aircraft taxis into a parking spot it will not turn to that heading, but instead will remain at the heading of the parking connector when it stops. If you want the aircraft to both start and stop at the same heading (essential for jetway parking) then ensure the parking connector is in-line with the aircraft symbol. This may require inserting a node close to the parking spot to allow the aircraft to turn to the desired final heading.

Deleting Parking Spots:
Select one or more parking spots with the mouse and press the Delete key.

Changing Parking Types:
To change the parking type choose an entry from the Parking Types drop-down list on the tool bar.

Parking Properties:
Double click a parking spot to bring up the Properties window to examine or modify the following settings:

Heading	This is the direction the aircraft will be pointing when they begin at a parking spot. Note that when an aircraft taxis into a parking spot after landing it will not turn to this heading, it will remain at the heading of the taxi link that brought it to the parking spot.
Name	This is the part of the airport (e.g. NW Parking) or the gate group (e.g. Gate A) for this parking spot. A gate group is usually a separate terminal or concourse. Smaller airports may just have 'Gate'. This parameter, along with the number parameter below, determines how the parking spot will be labelled in the FS Start Positions list.
Number	This designates the individual gate or parking spot. This number goes along with the 'Area' field, for example "Parking 14" or "Gate 12" or "Gate B 5". Note that Flight Simulator does *not* permit letters after the number, for example "Gate 12B".
Tee Offsets	Sets the value for Tee Offsets that are used to position aircraft when they park.
Airlines	This is a lookup table for airlines and other aviation classes. When you select an entry from the list, for example a particular airline, the parking code for that airline will be inserted in the parking codes box. You can repeat this to insert additional codes if needed.
Parking Codes	Parking codes allow you to assign gates to specific airlines or other designated aircraft. This requires matching codes to be entered in the aircraft.cfg file for the aircraft you want parking at those gates. Multiple codes can be entered in this field separated by commas or spaces to specify other airlines that may also use the parking space if it is available. You can type codes directly into this box, if you know them already, or you can use the Selection List to look up a code holder by name and insert the code. It is best to use ICAO airline codes where possible in order to maintain a common standard.
Parking Type	Parking types have labels like "Ramp GA small" and "Gate Medium". These appear in the FS Start Positions list for you own reference but they can also be used to direct classes of AI aircraft to matching classes of parking.
Radius	This determines what size of aircraft can use a parking spot. Every aircraft has a wingspan of which half is used to determine it's radius. An AI aircraft will not park in a spot that has a smaller radius than the aircraft. The measurement units for parking radius can be set to either feet or meters depending on your preference settings.

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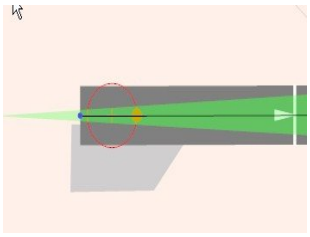
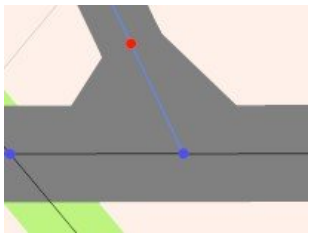
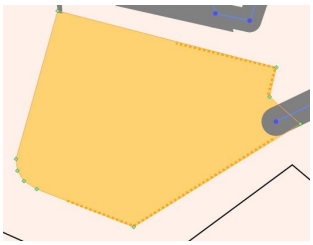
Aprons

Aprons are expanses of concrete or other material that aircraft can park on or taxi over. Apron surfaces are not just used for parking areas, they can be used anywhere at an airport that extra pieces of pavement are needed, such as to widen a taxiway for a waiting area, or turn-around bays on runways, or for enlarging junctions.





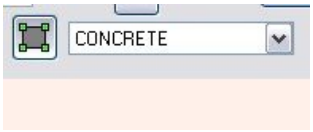
Aprons are made of polygons formed from straight line segments. A polygon must have at least three segments but can have potentially hundreds of segments. Apron polygons will always be drawn underneath taxiways and runways in FSX and there is no way to make them appear on top of such objects. Aprons do not have markings of their own but taxiway markings will appear on top of aprons. Aprons can also have Edge Lights.



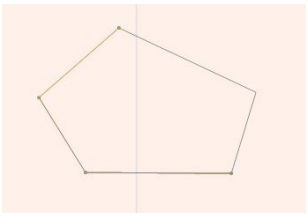
A Polygon can be essentially any shape or complexity as long as it has only one enclosed area.

If any of a polygon's segments cross over each other, thus forming two ore more separate enclosed areas, then only one of the enclosed areas will be filled in and the actual shape of the apron surface will be unpredictable.

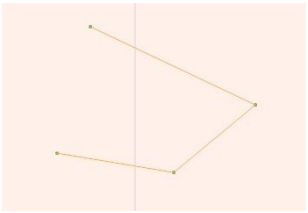
Creating Aprons:



To draw an apron polygon select the Apron Outline drawing tool from the toolbar. The mouse pointer will change to the apron drawing symbol.



Click on the window where you want to create the initial vertex; this will start the polygon drawing mode and a line will follow your mouse pointer. You can either click and drag or...



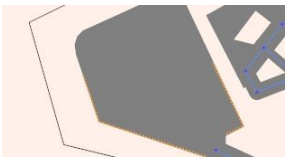
...rr just click and move to the next spot and click again. In the first case, as shown above, ADE will draw an outline of the apron polygon and in the second case will draw lines connecting the points as you click.

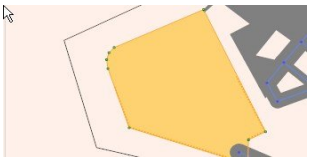
To terminate drawing a polygon you can use one of two methods:

- You can move the cursor over the first node – make sure that the tooltip shows Vertex indicating that you are indeed over the vertex – and then click
- Double click for the last vertex of the apron. In this case you do not need to close the polygon.

My preferred method is to click the vertex positions one at a time without dragging and then double click for the last one. In any case you can adjust individual vertexes by dragging, add new ones or delete old ones at any time after the apron is drawn. Aprons can also be dragged as a whole. Once completed the apron will fill with the color representing the default surface as set in the list to the right of the apron tool

Selecting Whole Aprons:



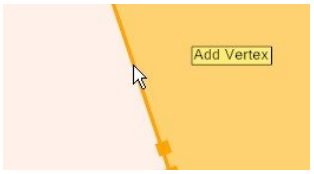


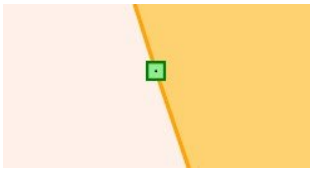
To select a whole apron just click on it's surface

Selecting Vertices:

To select an individual vertex, select the apron and then click the vertex when the tool tip shows Vertex.

Inserting Vertices:





To add a new vertex place the cursor (in Pointer Mode) over the edge where you want the put the new vertex. If is is not quite in the right place then you can select it and drag it later. When you see the tooltip 'Add Vertex' use Ctrl-Click to add.

Deleting Whole Aprons:
Select the apron and then either use the delete key or select Delete Object from the Right Click Menu. If you delete an apron by mistake then use undo to restore it.

Deleting Vertices:
Select a vertex and delete it. The apron edge will heal itself. Note that you cannot undo a vertex delete but you can always add a new one. If you delete a vertex from an apron that contains only three vertices then you will delete the apron since aprons must have at least three vertices. Again you will not be able to undo the lost apron in this case.

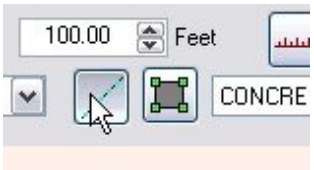
Moving Whole Aprons:
Select the apron, hold the left mouse button down and drag the apron. You can undo the move using undo and redo the move using redo. If you cannot move an apron then check that is is not locked either as an object or that you have the program level lock set for aprons (Lock > Aprons)

Moving Vertices:
Select a vertex, hold down the left mouse button and drag the vertex. The shape of the apron will change as you drag. You cannot undo a vertex drag.

Apron Edge Lights

Apron edge lights are laid-down in strips and unlike the aprons themselves these strips do not have to form enclosed polygons.

Creating Edge Lights:



To draw a light strip select the Light Strip drawing tool from the toolbar. The mouse pointer will change to the light strip drawing symbol.

Use the same technique as for creating an apron except that you will not generally close the lights and you need to double click at the end point to create the lights. They appear as a string of blue dots.

Deleting Light Strips:
Select the lights when the tooltip is visible and then either delete with the Delete key or select Delete Object from the Right Click Menu.

Moving Light Strips:
Select the lights, hold down the left mouse key and drag.

Light Spacing:
FSX BglComp does not allow for the setting of light spacing.

Light Brightness:
FSX BglComp does not allow for the setting of light brightness

Runways

Moving Runways:
You can drag them with the mouse or open the Runway Properties window and change the latitude and longitude.

Rotating a Runway:
This can only be done by opening the Runway Properties window and changing the heading field. The heading is in degrees true. Alternatively when selected the runway will have a small rotating handle just beyond the secondary end of the runway. You can drag this to rotate the runway around it's central point.

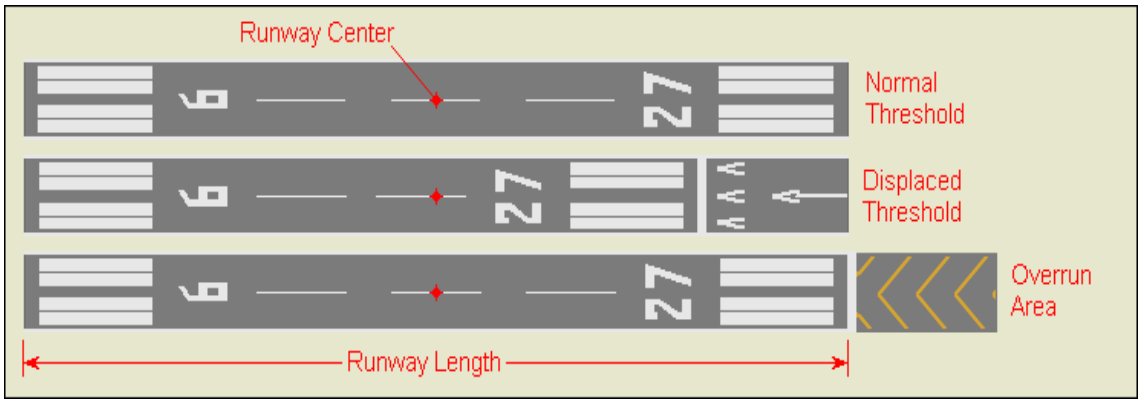
Creating a Runway:
Call up the *Runway* window from the Insert Menu. You must then fill in the properties for the new runway. You will probably want the published data for the airport you are working on to help you with this.

Deleting a Runway:
Select it with the mouse and press the Delete key. A runway may have associated ILS equipment (localizer, glide path and DME) for both ends and if you delete that runway then any associated ILS equipment will also be deleted provided that the ILS is user added.

IMPORTANT NOTE
If you try to delete a runway that has stock localizers attached to it then ADE will give you a warning. Deleting a runway with stock localizers will not delete the navaids. They will remain visible in Map Mode and the GPS Receiver even though the runway is gone. There it is strongly recommended not to delete a runway that has one or more stock localizers.

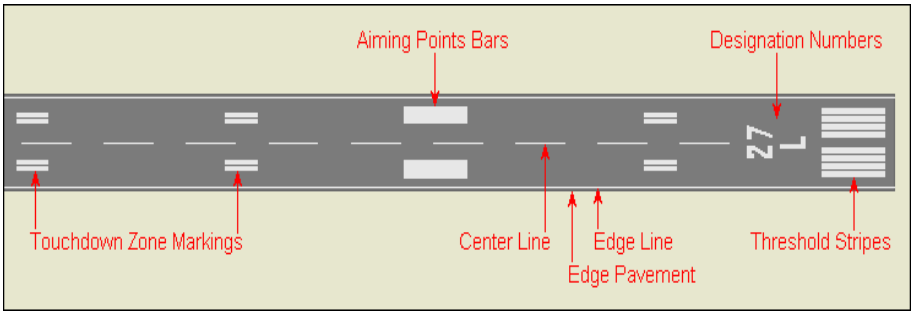
Runway Properties:
Runway properties are on several tabs. The Main tab allows the setting of primary and secondary ends as well as Surface, width and length. The heading of the runway is set in the Heading box at the bottom

Primary and Secondary Ends	The primary runway would be the south end of the runway if it was un-rotated (had a heading of 0 degrees true). If you were at the primary end of an un-rotated runway looking up the runway you would be facing 0 degrees. The *secondary* end is the other end.
Pattern	The pattern tab lets you define the pattern that you want for the runway. ADE will set sensible defaults but you may set you own if you know they are different for the airport you are working on.
Markings	Set the markings that you want to see on the runway. NOTE ADE displays the main markings such as numbers, thresholds, overruns, offset thresholds, lines and aiming bars. Other markings are not displayed in the current version.
Lights	Set up the lights you want to see on your runway including approach lights and the lighting you want for your runway itself.
Primary and Secondary Offsets	There is one tab for each and you can set your Blastpads/Overruns, Vasi and offset threshold arrangements here. Blastpads and Overruns are the mount of extra of pavement will be added beyond the normal end of the runway. This area will be automatically marked with yellow chevrons. Displaced Thresholds mean that the runway threshold will be inset this amount from the normal end of the runway. This area will be automatically marked with white arrows. These are shown visually in the picture below



Runways List Window:
You can call up a list of all runways from the Lists menu. Selecting a runway in the list will select and center it in the airport display.

Runway Markings
Runway markings are set on the *Markings* tab page of the Runway Properties window. Here is a picture describing the markings options:



The Precision Runway setting causes the centerline to be drawn wider and the last 2000 ft of edge lights to be yellow.

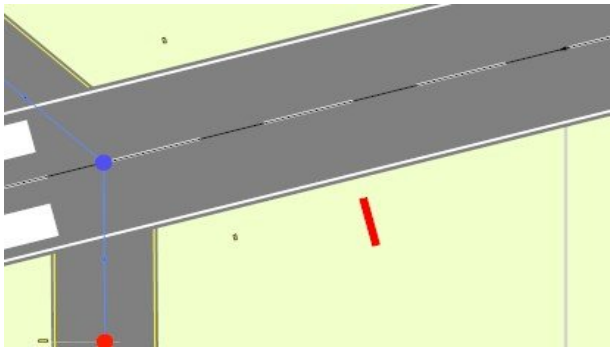
The Closed Mark (X) setting draws an X in place of threshold stripes, but does not actually close the runway to AI. Note that FAA rules state that a runway can't be closed just at one end, it must be closed at both ends, which would require both the base and reciprocal Closed Marks to be checked. This may also apply in other countries.

The STOL Marking draws "STOL" (Short Takeoff and Landing) in place of the threshold stripes.

Some markings are not enabled on very short runways.

Runway Lights
You can set the runway lights arrangement for the runway in the Lights property tab. This includes runway lighting and the approach lighting for each end of the runway.

Vasi
Set the Vasi for each end of the runway separately. These are set in the primary and secondary Tabs. Currently ADE provides a very basic symbol for VASI/PAPI. This is a simple red bar located at the reference point.



This will be upgraded in a future version to show them more correctly and allow them to be adjusted by dragging.

Helipads

Moving Helipads:
You can drag them with the mouse or open the Helipad Properties window and change the latitude and longitude. You will need to drag the helipad by one of it's edges.

Rotating a Helipad:
You can change the direction of a helipad the same way you do with parking spots. This is done by selecting the helipad symbol and grabbing the rotate handle (dot) that appears at the top of the symbol. The symbol will rotate around to follow the mouse pointer until you release the mouse button. You can also change the heading in the Helipad Properties window.

Creating a Helipad:
Choose the *Helipad* item from the Right Click Add Menu. You can then fill in the properties for the new helipad and click on the main window where you want the helipad to go. The properties dialog will then open to allow you to set any properties that you wish.

NOTE
Creating a helipad does not automatically create a Start Location for the helipad. If you want the helipad to appear in the Start Locations list on the **Flight Simulator Go To Airport** window then you must also create a Start Location for it by selecting *Start Location* from the Right Click Add Menu..

Deleting a Helipad:
Select it with the mouse and press the Delete key or select Delete Object from the Right Click Menu.

Helipad Properties:
Double click a helipad to bring up the Helipad Properties window to examine or modify the following settings.

Type	Determines how the helipad appears visually
Heading	This is the direction the helipad is oriented from True North.
Length Width	FSX draws helipad surfaces as rectangles. The length and width should normally be the same to prevent elongation of the markings.
Surface	This sets the visible surface texture. There does not appear to be any provision for custom textures.
Transparent	If this is set then the surface (e.g. pavement) will not be drawn but the markings will be drawn. This could be useful when creating helipads on existing surfaces such as aprons.
Closed	Sets the helipad as closed

Helipad Lights:
Helipads do not come with edge lights but you can create them easily using the Apron Edge Lights tool.

Start Locations

On the Flight Simulator window where you choose the starting airport for a flight, you have a list called 'Runways/Starting Positions'. You can usually start at either end of any runway.

Adding Start Locations:
There are two types of start location that you can add. Runway Starts – those actually on a runway and other starts – for example at helipads. The best way to add a start for a runway is to use the Right Click Menu and select Add > Runway Start.

This simple dialog will open. Select the runway (only those without starts will be listed) and click Add Start. ADE will automatically create the start and place it with the correct heading near the end of the runway it is to serve. If it is not quite in the right place then just drag it until it is

For all other starts place your mouse pointer where you want it created and use the Right Click menu to Add> Other Start.

Moving start locations:
You can drag them anywhere with the mouse, for example, if you want to start at the hold-short marker at the taxiway entrance to the runway.

Rotating a Start Location:
You can change the start heading the same way you do with parking spots. This is done by selecting the start location symbol and grabbing the rotate handle (dot) that appears at the top of the symbol. The symbol will rotate around to follow the mouse pointer until you release the mouse button. You can also change the heading in the Start Location Properties window.

Deleting Start Locations:
Select one with the mouse and press the Delete key or select delete from the Right Click menu

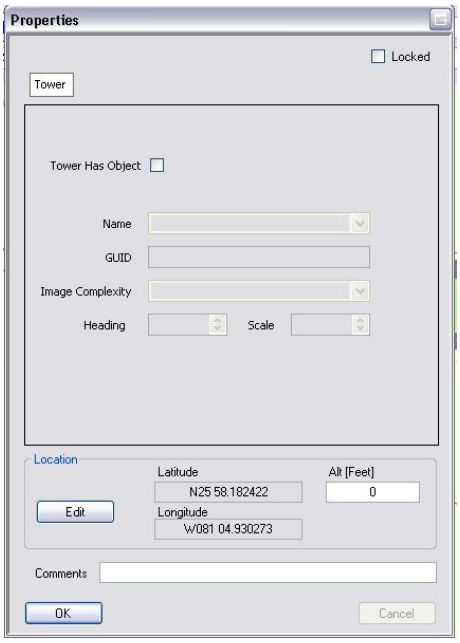
Start Locations Properties
Double-click on a start location to open a Properties window. The parameters are straight-forward.

Start Locations List
You can call up a list of all start locations under the Lists menu.

Tower Viewpoint

Most airports will have a tower viewpoint even if they do not have a physical tower. ADE will always create one when you make a new airport. If there isn't one and you want one then use the right click menu to add a tower. You will only see this option if there isn't already a tower viewpoint present. The properties window will open so you can set some properties.

Edit Tower Viewpoint and Tower Object



FSX allows a tower object (what you see as the tower) to be added to the viewpoint. To add a physical tower just check Tower Has Object,, then select a tower type from the list. You can change the image complexity but generally you would always want a tower object to show up. Also set the heading and scale. You will see that the altitude box is grayed out if you select a tower object.

IMPORTANT NOTE
FSX has a bug that means tower viewpoints will always be at 90 feet AGL when a tower object is present. This is the same whatever tower you use. Without a tower object you can set the altitude of the viewpoint. ADE will have a fix for this bug in a future version.

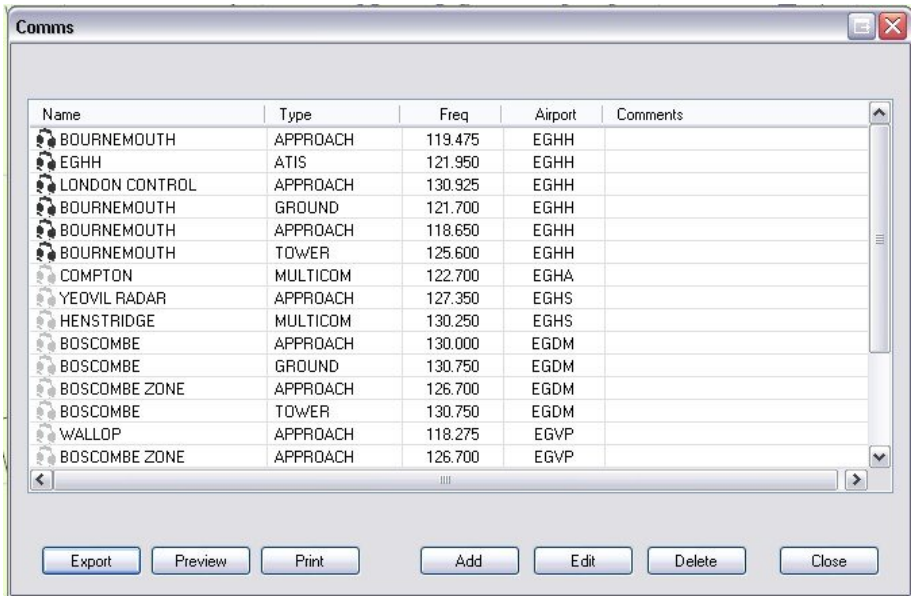
Deleting a Tower Viewpoint
Select and delete

Comm Frequencies & ATC

Communication (comm) frequencies are not visible on the ADE display but you can set up all the radio channels (tower, ground, ATIS, clearance delivery, etc.) for an airport using ADE. These frequencies are shown on the Flight Simulator map view window when you click on an airport to get information for it. They can also be tuned with your aircraft radio stack. Most important of all comm frequencies enable ATC.

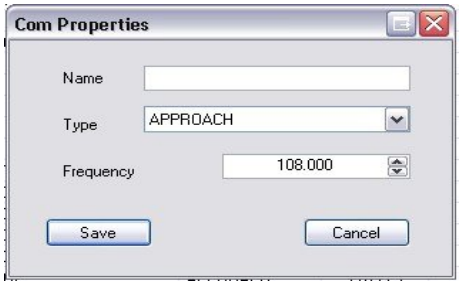
Enabling ATC:
To make ATC work at an airport that doesn't currently have it, all you have to do is add a control tower frequency and you will get full ATC service at your airport. It is as simple as that. This works even if there is no visible control tower object at that airport or a control tower there in real life.

Frequencies List:
The way to see current frequencies and work with them is with the Comm List. Open this from the List Menu.



This list shows the frequencies that belong to the airport you are working on. They have the black headphones icon. It also shows frequencies for airports within a 25nm radius. They have the gray headphone icon. You cannot add, edit or delete a frequency that does not belong to the current airport but the list will help you to see what frequencies are in use by which airport.

Adding a Frequency:



Click the 'Insert' button on the frequencies list window. You will be provided with a window to fill in the properties for a new radio channel.

Comm Properties:
Use the Comm Properties window to examine or modify the following settings:

Frequency	ADE does not generate a unique frequency in this version but later versions will. Before adding you should take a look at the frequencies in the list and make sure you use an appropriate one.
Type	All of the possible comm types are available from the list, but the most important for adding ATC is *Tower*. This will give you the combined Ground, Tower, Departure, Arrival (etc.) services that you can expect from a small airport tower. You may also want to add ATIS. You could also add separate channels for Ground, Clearance Delivery, Departures, Arrivals etc, but that would probably stretch the boundaries of realism if you have a one-runway airstrip.
Name	For tower frequencies, (except for ATIS), this field should have the name of your airport, usually the town name.

Editing a Frequency
If the Edit button is active then you can edit the information for the selected frequency. The same dialog will open that is used to add.

Deleting a Frequency:
Select the frequency in the list and click the Delete button. This button will only be available if the frequency is associated with the airport you are working on.

Navaids

When you open an airport ADE will display all stock navaids in the vicinity of that airport. In ADE Home Edition you cannot modify move, delete or modify stock Navaids but you can add certain types of new ones.

ADE can work with all the types of navaids that FSX recognizes, these are:

Marker Beacons (OM, MM, IM, BC)
ADE will display stock marker beacons but you cannot move, delete or modify them.

Flight Simulator provides outer, middle, inner, and back course markers. Markers are part of many ILS systems but have become less common as DME equipment has become cheaper. Canada and other countries have removed all middle markers, and many other marker types as well, in favor of DME fixes or other fix types. Outer markers may be paired with or replaced by low power NDBs, referred to as Compass Locators in the U.S. This may also be done with middle and back course markers.

Marker Beacon Locations:
All markers are on an extension of the centerline of the runway. When you create markers with ADE it will place them at the typical locations by default and you can move them later if needed. Exact marker locations, or distances from the runway, can be determined from approach charts.

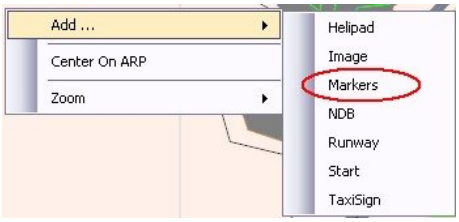
Outer Marker (OM): The outer marker (and/or Compass Locator NDB) is normally located at the intercept point for the Glide Path. This is nominally about 3.9 to 4.4 miles from the runway threshold, where the GP beam is about 1400 ft above the runway elevation. A distance of 3.5 to 7 miles is allowed to accommodate terrain.

Middle Marker (OM): This is normally located 3500 feet from the threshold of the runway where the GP beam is at the decision height for a Cat I ILS.

I**nner** Marker (IM): IMs are only used for Cat II or Cat III ILS. They are normally located 1000 feet from the threshold of the runway where the GP beam is at the decision height for a Cat II ILS.

Back Course Marker (BC): BCs (and/or low power NDBs) may be used where a back course approach is approved for a runway. They are the equivalent of an OM on a front course. The BC is typically located 3.9 to 4.4 miles from the threshold of the back-course approach runway. If a runway has an ILS at both ends then it won't need BC markers. NOTE that there are no back course markers in FSX!

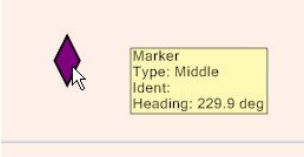
Adding Marker Beacons
As mentioned above ADE will add marker beacons in sensible locations. You can modify these later. To add markers Right click on the display and select Add > Markers from the menu. Note that ADE will not use any information related to the mouse location in locating markers.



The New Markers Window will then appear:

You now need to complete three steps:

1. Select the runway that you want the markers to be associated with from the drop down list. Each runway end is listed separately
2. Check those marker beacons that you wish to add for the runway. You can keep the defaults distances or modify them before going to step 3. You will be able to move or edit the markers later if you wish
3. Click Save to create the beacons or Cancel to abort the process



The beacons will now appear on the display. Here is a middle marker,

This can be edited as it is a user defined marker.

Marker Beacon Properties:
Select a marker and then bring up the Marker Beacon Properties window to examine the following settings. Note that all markers use the same frequency, 75MHz, so it is not necessary to set a frequency :

Identifier Identifiers are seldom used for markers. In FS usually only markers that are co-located with NDBs (Compass Locators) have identifiers and they use the same ident as the NDB. Unlike other navaids, the ident is not sent in Morse code and serves no useful purpose. If a marker has an ident it will be only two letters. For an OM, the ident is usually the first two characters after the "I" of the ILS the marker serves, for example "OR" for the IORD localizer approach. If a middle marker has an associated NDB then the ident is usually the second two letters, for example "RD".

Type One of: Outer, Inner, Middle, Back Course.

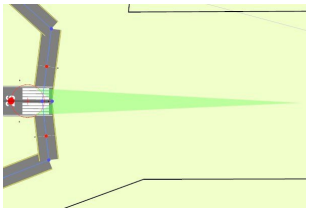
Heading This should be the same as the runway heading. It is used to orient the vertical 'fan' beam. ADE should have set this correctly so you should not need to change it.

Comment Any information you wish to keep about the marker. Note that comments are saved in the .ade file but are not passed into a .bgl file.

ILS

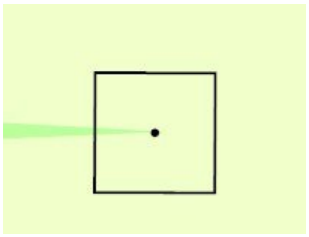
You may Add, Edit and Delete your own ILS. ILS that are identified in a stock airport cannot be deleted. If you were to delete one it would just be read from the stock .bgl. There is no way to remove stock ILS (or other navaids) completely from FSX (except perhaps by removing it from the default .bgl file and this is certainly not recommended).

ADE displays all elements of an ILS in their correct locations.



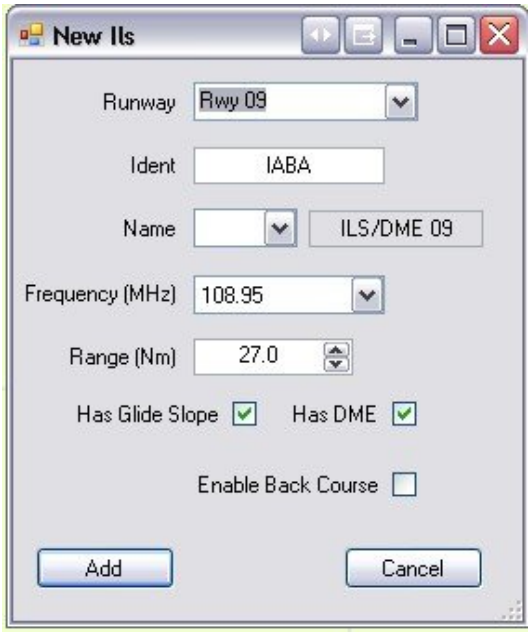
This is the localizer and it is usually located beyond the end of the runway. It is the localizer for a stock ILS that you cannot delete. You may delete the glideslope and DME if present

This is the glideslope and is usually located to one side of the runway near the center point



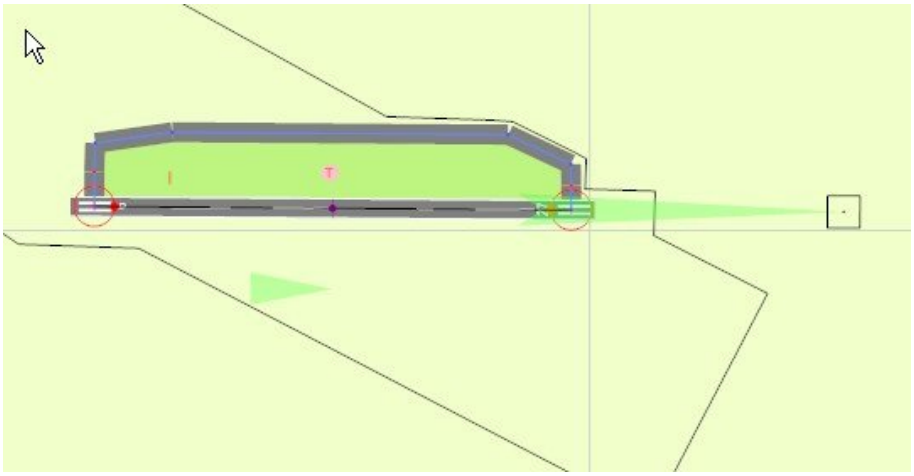
The DME may be co-located with the Localizer or set somewhere else int the airport

Adding ILS



Select Add > ILS from the Right Click menu. This dialog will open. ADE does most of the work of placing the elements of an ILS for you. First select the runway you want the ILS for from the list at the top. ADE will give you a default Ident for the ILS. You will want to change this if you are adding a real ILS, if not either keep this or assign your own. Notice that you are given a name for the Navaid. Naming of ILS follows a specific format and ADE will construct the appropriate name depending on the elements present. The drop list to the left allows you to add CAT II or CAT III if your ILS requires that as part of the name. You will notice that a frequency is assigned for you. This is a valid frequency assigned at random. Range is generally 27nm so you do not need to change this. By default glideslope and DME are checked – uncheck them if you do not want them. Notice that the name will change if you do this. Finally check Enable Back course if you want one and click Add.

You will see that the ILS, glideslope and DME are all placed at the airport.



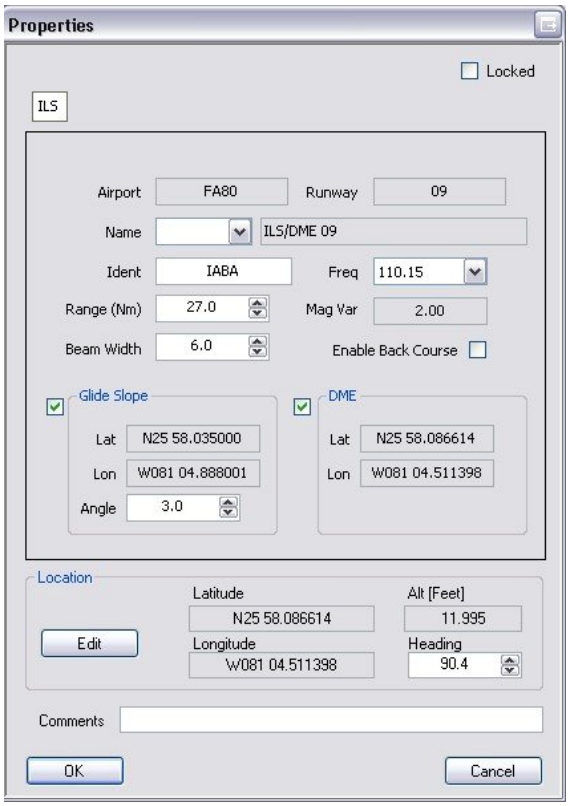
These are typical locations but if you want to move the glideslope DME to suit their real world locations then it is easy enough to do.

Moving ILS

Generally you would not want to move the localizer very much as it should point along the runway. To move any element just select and drag to it's new location. If you change your mind then Undo should return it back to it's starting place.

Editing ILS

Selecting any element of an ILS (localizer, glideslope or DME)and opening it for edit will open the ILS Properties dialog.



Much of the information will be familiar from the Add ILS dialog. There is some additional information about the glideslope and DME. The only thing that you can change for these is the angle for the glideslope. To move them drag them in the main display. The location of the Localizer is listed at the bottom. Altitude is the same for all elements and is fixed at the airport reference point. You cannot change this in ADE Home and generally you should not need to do so. Heading applies to both the localizer and glideslope so if you change this both will point in the new direction. While some ILS are offset to the runway heading they serve it is not something that you would normally do unless you are adding a real world ILS that is offset. Magnetic variation is always that of the airport. Ticking or unticking the glideslope and DME will either remove them or add them.

Deleting ILS
Deleting glideslope or DME is easy enough either select them on the airport and delete or uncheck them in the dialog. Stock localizers cannot be deleted and if you try you will get a warning message. Localizers that you have added yourself can be deleted by selecting and deleting.

VOR/DME
ADE will show stock VOR/DME if they are within 25nm of the current airport. You cannot edit, move or delete these. In this version of ADE you cannot add VOR/DME but this will be available in a future version.

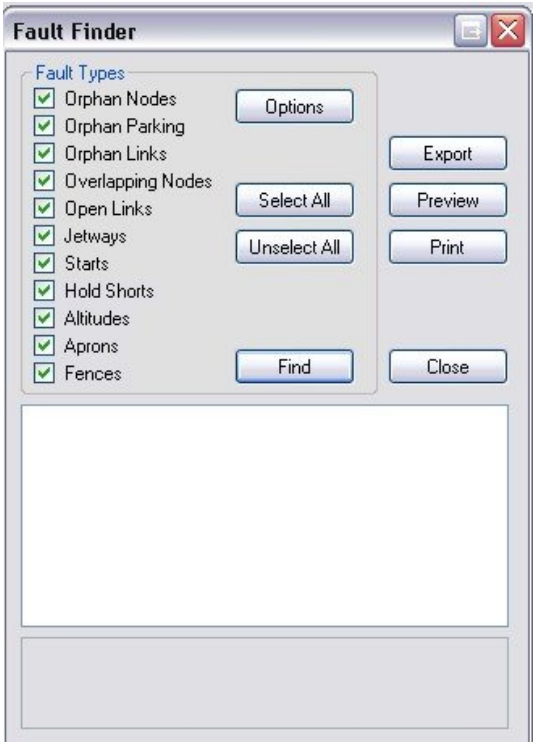
NDB
ADE show stock NDBs as display only if they are within 25nm of the current airport. You can add new terminal NDBs but not regular ones. That is, all NDBs you add will be stored in the airport record.

Navaids List:
You can see a list of all navaids that are within 25nm of the current airport. To show this use Lists > Navaids. Select a Navaid from this list and ADE will center it on in the display. If the Edit button is active then you will be able to edit the properties of the selected Navaid from the list.

Fault Finder

There are a number of things that can happen when building or modifying an airport for FSX. ADE provides a fault finder to help you identify some of these things. The fault finder will look for things that generally don't make sense or may cause the compiler to crash. In a lot of cases you may have done something as part of the design that the fault finder identifies as a potential problem. In that case you can just ignore those. For the others it is a good idea to investigate what has happened. ADE can help you with that by moving the display to the place where the potential problem is and selecting the object. In some cases ADE will give you the chance to correct the problem from the fault finder.

To open the fault finder select Tools and then Fault Finder. The Dialog looks like this:



The fault finder window will stay open and on top of the other windows. You can switch between the fault finder and the main design window as you work through the list of faults.

Fault Types

There are a number of potential fault types and these are listed to the left. Each type has a checkbox and you can select what fault types to look for. The two buttons at the bottom of the list allow you to either select or unselect the whole list. This should make it easy if you just want to

search for one type of fault. Click Unselect All and then tick the one to find. The fault types are described below. In future versions this list may be extended

Orphan Nodes These are taxiway nodes that are not associated with any paths. ADE will save these to the .ade format file but remove them when compiling. You may want to delete these and this can be done from the fault finder (see below)

Orphan Parking Parking spots that have no parking link and no connection with the taxiway network. You may have created these to place static aircraft but generally these will create problems for AI traffic. Aircraft will never park here and any aircraft spawned at the spot will be unable to move. You may have missed linking one up but if you do not want it then you can delete it from the fault finder. ADE will also raise a fault if you have more than 254 parking spots at your airport that have airline codes assigned to them. This is a limit set by the compiler. You can have as many unassigned spots as you wish. ADE will also raise a fault (Unconnected Parking) if a parking spot is not connected to a Taxi, Apron or Runway link.

Orphan Links. These are links that are not connected to the rest of the network. This may be quite correct if, for example, they are closed paths. On the other hand it is easy to miss a connection and find a link isolated.

Overlapping Nodes It is quite easy to place nodes close together and sometimes even overlap them. Maybe you meant to join a link to an existing node but for some reason the link did not join properly or maybe you placed two nodes by mistake.

Open Links An open link is listed as a fault if a node is close to a link. If it is within five meters of a link then this may be a case where you planned to join the links together but something went wrong. Alternatively it is quite legitimate in some circumstances to put a small break in a taxiway. In that case there is not a problem

Starts. All Runways that you want to use for take-offs must have a start located at the end. The Fault finder checks if there are any runway ends without a start and warns you. If you want to add one then you can do it from the fault finder window. In some cases you could have two starts with the same runway number. This will cause the compiler to fail so ADE will look for these and give you the chance to change the runway number for one of the duplicates. You can do this from the fault finder.

Jetways These are the animated jetways for FSX. If you place them too far from their parking spot or one is numbered wrongly, (you should not be able to do this if you add jetways using ADE by the way), then jetways may be seen trundling across the airport and even runways to get to their assigned parking spot. ADE knows what the likely distances are for different types of gate and will warn you if a jetway appears to be too far away from it's parking spot. In the real world you will only find jetways at certain types of parking. ADE will allow you to add a jetway to any parking type so if you want a jetway for your Cessna 152 over at the flying club then you can have one. However you will be warned that the use of a jetway at certain parking types is not normal.

Hold Shorts. Hold Short nodes that are more than about 225 feet from the runway they are intended to serve will cause problems. Aircraft reaching them may never be given clearance by ATC to take off. ADE provides a visual cue (View > Hold Short Limits) in the form of a red circle so you can see on the main display whether a node may be too far away. The fault finder also makes the check and will list any that are outside the normal limits. Of course you may have done this as part of your design. In that case these can be ignored.

Altitudes Airports in FSX are basically flat. This means that generally runways, starts and other elements are placed at the same altitude as the airport itself. In fact ADE Home Field Edition will not allow you to change the altitudes of some elements and will set them at the airport altitude

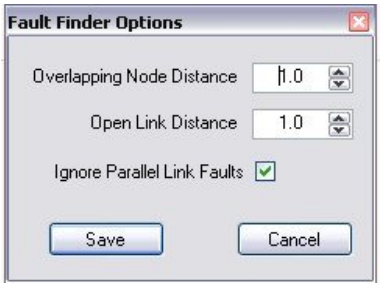
when you create them. Nevertheless if you have loaded an airport created in some other way there could be these altitude problems. The fault finder will therefore list any elements that are normally at airport altitude but are not in this case. Since you cannot edit altitudes in the property dialogs the Fault finder gives you a way to change the altitude of the element to the airport altitude.

Aprons. If one or more of an apron's edges cross each other then this will result in unpredictable behavior in the Sim including CTD. Also you should not have apron lights with crossed edges. The fault finder will identify both these conditions. The fault finder will also raise a fault if there are more than 254 aprons at your airport. This is a limit set by the compiler. ADE will tell you about this on the main screen status bar as well and will not allow you to add more than this number of aprons.

Fences ADE will raise a fault if there are edges that cross each other in a single fence. Sometimes these can be difficult to see but check corners and other turns to see if some extra vertex points are included that cause the overlap.

Only those fault types that are ticked will be searched for. To make it easier to select just what you need you can use the 'Select All' and 'Unselect All' buttons to tick or un-tick all the items.

There are some options that you can set to control the behavior of the fault finder. Click the 'options' button to open the Setting dialog:

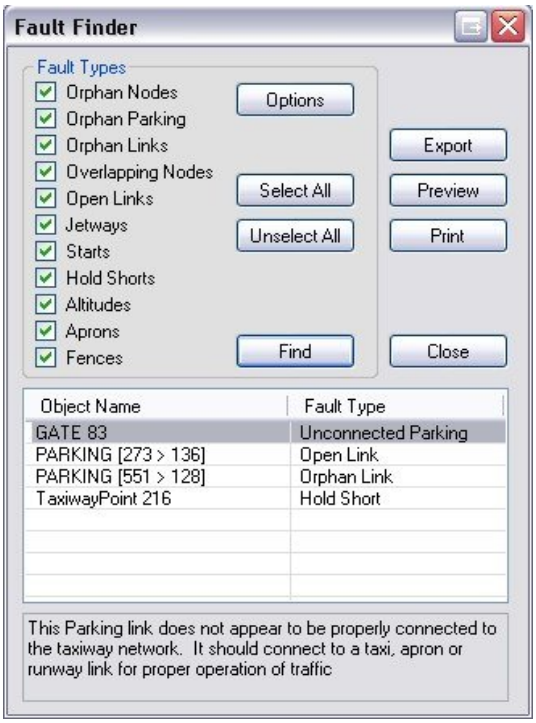


Overlapping Node Distance. This is the distance that the fault finder will use to determine if two nodes overlap. By default it is one meter. So any links that are less than one meter apart will be reported as overlapping. Can be set between 0.1m and 5m. The bigger the distance the more faults will be reported

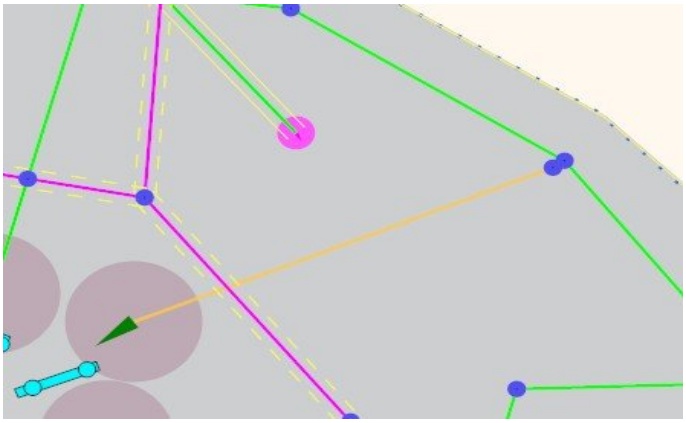
Open Link Distance. The fault finder looks for nodes that are close to links. If a node is close to but not part of a link then this would cause problems with AI traffic and vehicles if it should be in the link. By default the test distance is one meter and it can be set between 0.1m and 5m. The bigger the distance the more open links will be reported – and more of them will not really be problems

Ignore Parallel Link Faults. A number of designers will place links close together, perhaps running in opposite directions ('plumbing'). The fault finder could raise a lot of unnecessary fault reports in this case. If you tell ADE to ignore parallel link faults then open link faults between parallel links will be ignored.

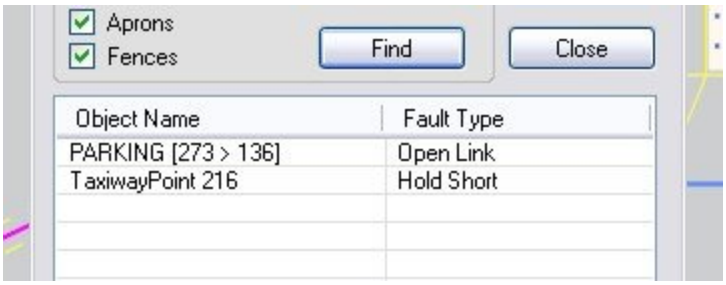
To run the fault finder select those items you want checked and click the Find button. If it is a large airport then you can monitor progress – as a test is completed the relevant item will get a green background. A progress bar appears above the Find button to show progress of the current test.



If there are no faults then the list will be blank and the message area will tell you there are no faults found. In this case we have some potential faults listed. The fault finder will automatically select and center the first fault in the main display.

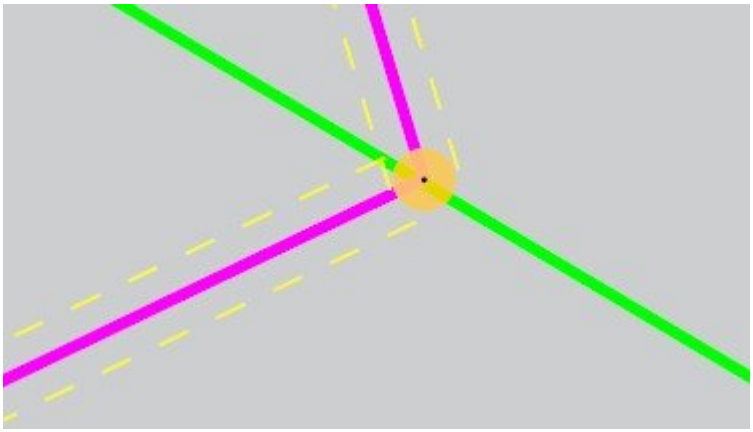


The first possible fault is Unconnected Parking for Gate 83. Looking at the picture it is easy to see that the parking link ends in a node with another one very near by. These nodes are not linked so that Gate 83 is not connected to the taxi network and would not be usable by AI traffic. In some cases designers deliberately place unconnected parking if they want to leave a static aircraft or make sure the spot is unused. In this case it needs fixing. It an be fixed by going to the main display, deleting the node and re-drawing the parking link. Once fixed the fault finder can be run again. This time there are only two faults displayed:

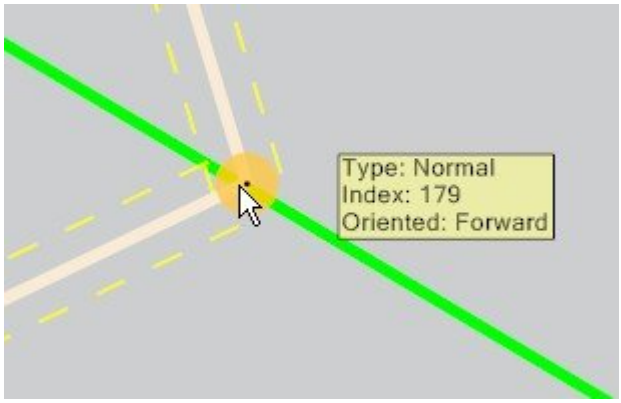


Note that the orphan link fault has gone. The fault finder also identified this link as not being connected to the network. It is very common that you will get different faults raised for the same problem. Fix faults from the top of the list and then check for faults again. Note that the fault finder will not automatically remove faults as you fix them in the main window but it is easy to re-run the finder and if you do click a fault that is already fixed you will be taken to the location but nothing else needs to be done.

The open link fault is shown below:

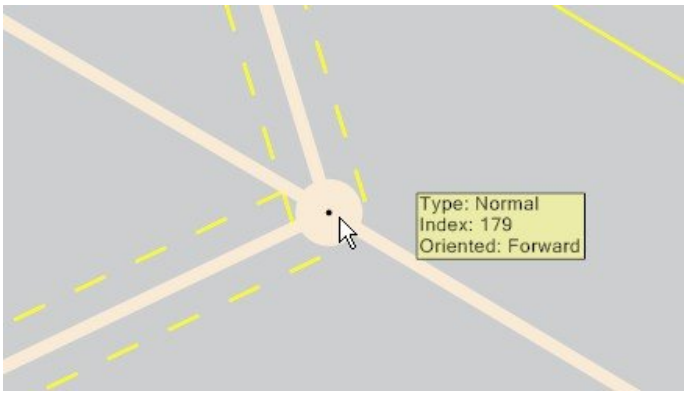


The fault finder is telling you that this node is very close to another link but is not part of it. You can explore this further and confirm the finding by placing the cursor over the node. ADE highlights all links connected to a node.

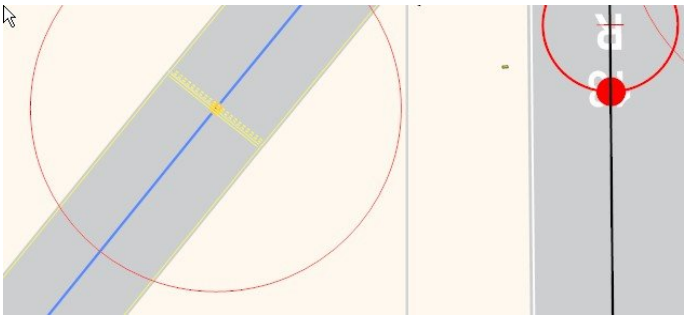


In this case we can see that it is connected to the vehicle path but not to the parking link. This would make it much harder for a vehicle to attend the parking spot and this looks like a genuine fault. Fixing it involves deleting the parking link, relinking the parking spot to this node and this

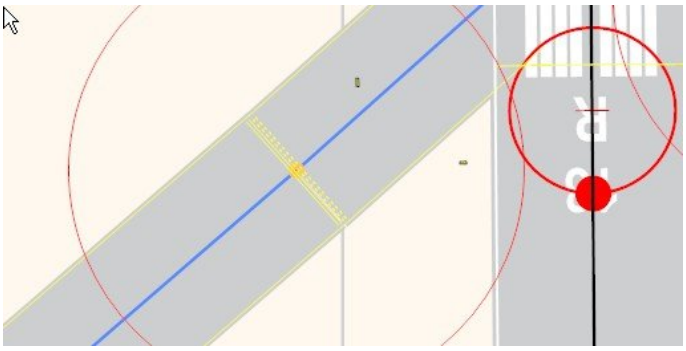
node to the taxi network using an apron (path) link. Once done the node now highlights all the links as it should:



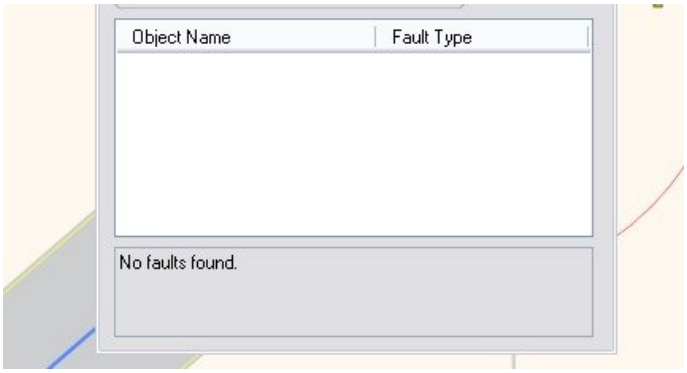
The final fault is a Hold Short Fault. The highlighted node is more than 225 feet from a runway. ADE turns on the hold short limit rings temporarily when showing hold short faults so that you can see the limit and compare it to the runway edge.



There are sometimes good reasons to have hold shorts beyond the normal limit but in this case it is certainly not correct and can be fixed by moving the node until the ring overlaps the edge of the runway.

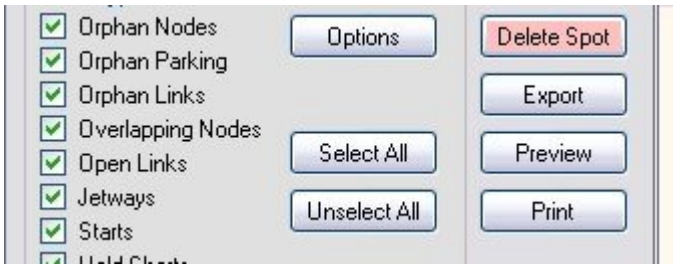


A final check with the fault finder now shows no faults.

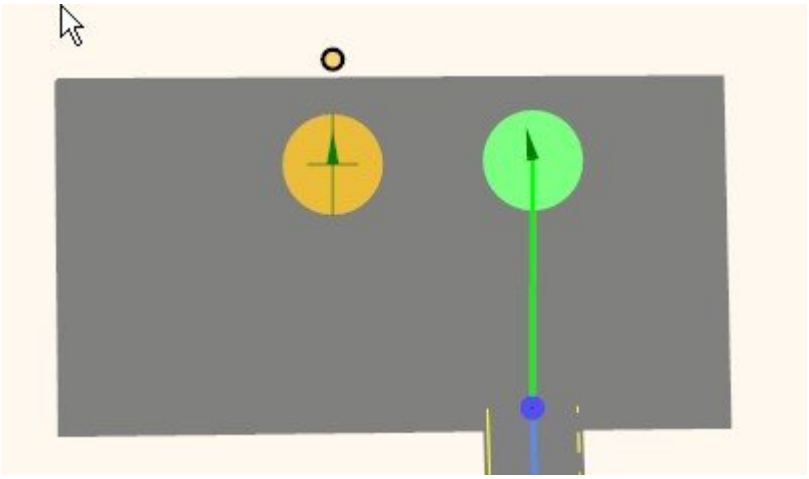


Auto Repair

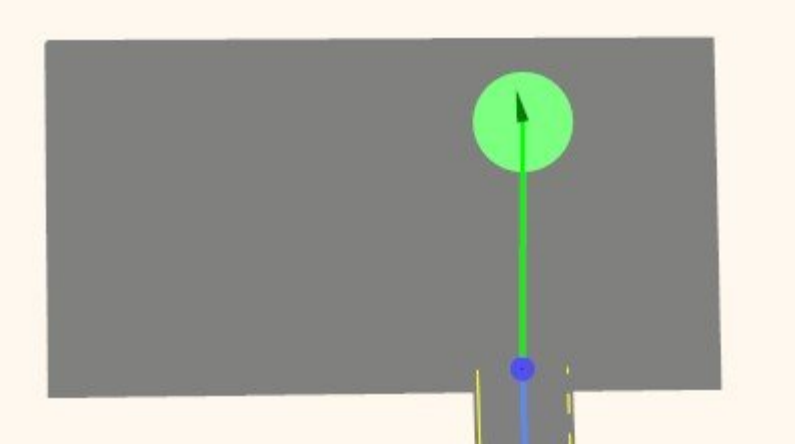
There are some fault types that the Fault Finder will offer to Repair. If you select a fault type that can be repaired from the fault finder then a Repair button will be visible.



In this case we have an orphaned parking spot.



You could delete it if you wished from the main screen or by clicking the Delete Spot button. The associated fault will be removed from the list and the spot deleted.



The spot is gone but it could be recovered, if you made a mistake, using the undo function.

Menus and Commands

This section provides a quick view of ADE Home Edition functionality based on the menus and other commands that are available.

MAIN MENU

File
The file menu gives access to the main opening, saving and printing functions.

New Airport Allows you to create a new airport that does not exist in the FSX database. Make sure to use an Ident that does not already exist.

Open Stock Airport Stock airports are those that already exist in the FSX scenery database. This will open a dialog to allow you to either select an airport from a list of countries, cities and airports; or search by ICAO, Name, city etc. The chosen airport will be loaded and displayed. Note that if the airport tree is empty ADE cannot find the database and you should check that you have the path to your FSX installation set correctly and then run Create Database from the Tools Menu.

Open Airport Opens a dialog so that you can select an airport. The airports listed will be in .ade format. ADE remembers the last folder you looked in and will open that next time you want to open an airport. The .ade format is the primary project format for ADE. While working on airports you should open and save your work in this format. It allows extra information to be stored over and above what you will find in a .bgl or .xml file. It is also extensible so, as new features are added to the program, they can be saved in this format.

Open Airport from Bgl If you have an airport or airports that are compiled in a .bgl file then you can open them from this menu option. As mentioned above, once you have them open you should save them in .ade format (see Save Airport). ADE treats a .bgl file as a new airport and will ask you to save it if you change airports or exit the program. As above ADE remembers the last folder you opened to get a .bgl file and will start there

Open Airport from Xml There may be times when you have an .xml file containing an airport. ADE will load this provided that the file is compliant with the current BglComp for FSX. In fact ADE will compile the .xml before loading the compiled version. Thus if the compile fails you will not be able to open the file until you find and fix the problems outside ADE. There are so many potential problems with bad XML that this is the best way for ADE to be sure that what it is working with is valid. Again ADE remembers the last folder you used to get an .xml file and will start there.

Save Airport Save the current loaded airport in .ade format. Please be aware that if the airport came from stock, .bgl or .xml the save file dialog will open so that you can name the file. The same situation will arise if ADE did not close normally the last time you used it. Because ADE has an autosave facility it will try to recover the last file you worked on. Since it does not know what to call it, you will be asked to give it a name in the save file dialog when you do want to save it.

Save Airport As Give the airport a new name – this will still be an .ade format file

Compile Airport Use this to create the .bgl file itself for your airport. A save file dialog will open to allow you to name the .bgl. Note that the compiler will automatically over-write any .bgl with the same name that is already in the folder. This is BglComp behavior. IMPORTANT! If FSX is currently open then the file will not be over-written and the old version will remain. This can give rise to a lot of heartache! ADE remembers the folder you last compiled an airport to and will start at that one when you compile.

Print Print the currently displayed area to the current Windows printer.

Save Image Save an image of the currently displayed area using the currently defined image settings (See Settings > Options).

Recent Files Shows a list of the last six files you worked on. IMPORTANT – these are files saved in .ade format. If you open a file in another format and do not save it then it will not appear on this list. Clicking a file in this list will open it.

Clear Recent Files Removes all the entries in the Recent Files list.

Exit Closes the program. If your work is unsaved then you will be asked it you wish to save it before the program closes.

Edit

Currently this menu gives access to Undo and Redo. At this time there is no Copy, Cut or Paste available in ADE

Undo reverses the last action. Redo re-instates the last action. NOTE that Undo/Redo does not currently work for the following actions:

- Add, delete or move a vertex point in aprons, fences and edge lights
- Editing the beam width property of a glideslope

View

The options available in this menu set your preferences for what objects you wish to display. Those that will be displayed have a tick next to them. To change the status just click the menu option. ADE will remember these settings from session to session. The following can be turned on and off in the display. Edge Lights, Parking Spaces, Guidelines, Hold Short Node Limits,

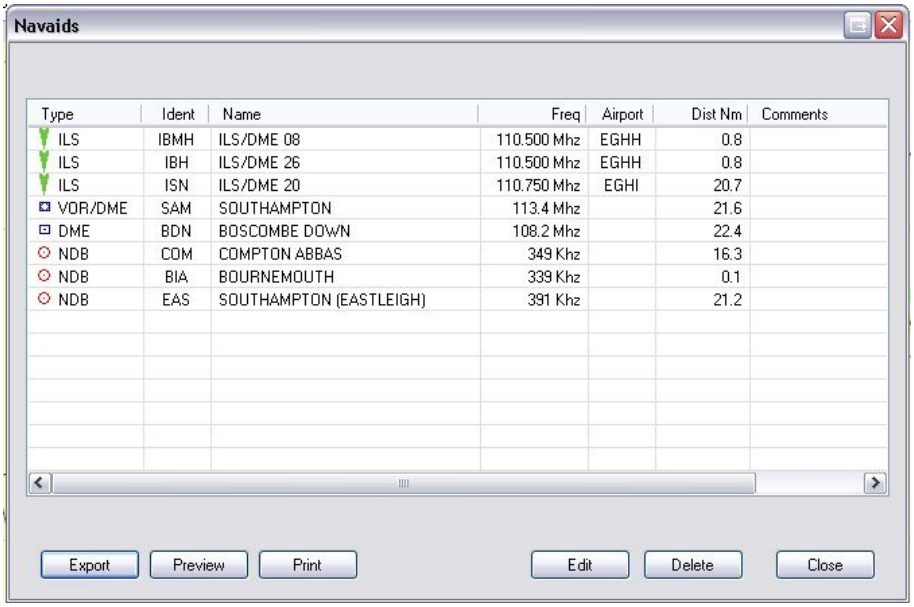
Jetways, Navaids, Starts and Taxi Signs. ADE will remember your choices from session to session.

Lock

In ADE you can lock objects individually so that they cannot be moved or deleted. You do this from the right click menu (see below). These commands determine whether you have all the items locked or not. This information is not stored in the objects but in the program. For example if you set Aprons Locked (tick next to the menu item) then you will not be able to move any aprons. ADE remembers these settings from session to session. So if you find you cannot move an apron or runway then you need to check here and see if you have them locked. Locks of this type can be applied to Aprons and Runways.

Lists

Lists provide an alternative way to look at the objects in the airport. There is a wide range of lists to help you.



The picture above shows the Navaid List. Lists can be sorted by clicking any column heading. One click will sort ascending, while another click on the sorted column will sort descending. From the List display you can export the current list to a text file or print it. The preview button allows you to see the printed output before your print. In most cases clicking on an item in the list will center the ADE main display on that object and it will be highlighted (selected). Where appropriate you will see the Edit and Delete buttons which allow those actions on the selected object.

Comms This list is the place to add and/or edit communication frequencies. The list shows the frequencies for the airport currently open in ADE (Black headphones icon) and those of nearby airports (Grey headphones icon). You can add, delete or edit the frequencies for the open airport but the others are read only.

Images Shows the list of images currently associated with the airport. Note that image information is stored in the .ade file format so other formats will not have images associated with them. This list allows you to show or hide the image and also change the order in which images are displayed.

Jetways The list of jetways provides some information that is useful in checking for errors. The distance from the associated parking spot is shown. If jetways are too far from the parking spot they will be seen to travel across the airport when needed including crossing taxiways and runways. The fault finder will also identify those that are too far (based on common distances used in stock airports) from their parking spot.

Navaids This list shows those navaids associated with the current airport as well as other navaids within a 25nm radius. You can edit navaids associated with the current airport but not the others. The list shows the distance of the navaid from the reference point of the current airport.

Nearby Airports You might be interested to know what airports are located withing a 25nm radius of the current airport. This list shows those airports and how far away they are. Selecting one in the list will move the display to that airport. ADE displays the reference point and runways for that airport

Parking Lists all the parking spots at the airport. Select one to center the display on that spot

Runways Lists the runways at the airport.

Starts Navigate around the Start locations with this list. You can edit the details here as well.

Taxi Designators Here you can look at the list of taxiway names in use. Selecting one will highlight the paths associated with that name. Note that you can have several taxiways with the same name. FSX (and ADE) sort them out based on a unique index number. You can add and delete taxiway designators from this list. Note that if you delete a designator all the paths associated with it will be given the BLANK designator.

Taxi Links Displays a list of taxi links. You can display each one in turn by selecting it in the list. The list, in common with all others, can be sorted on any heading.

Taxi Points Shows all the taxi points at the airport. Select one in the list to show it at the center of the display. You can edit the properties of the point from the list if you wish.

Taxi Signs Lists all the signs at the airport.

Tools

Some useful tools to manipulate your ADE installation or the current airport.

Create Databases ADE keeps a database of all stock airports and navigational aids. This option allows you to refresh or create these databases if they are lost or become corrupted.

Fault Finder There are a number of things that ADE will check for to help ensure that an airport works correctly. The fault finder gives access to these checks and in some cases can effect a repair.

Load Stock Data ADE stores information about nearby airports and navigational aids. These are stored in the .ade file and displayed for information. Usually this is gathered once when a stock airport, airport from Bgl or airport from Xml are opened. Use this option if you want to refresh the stock information.

New User Wizard The first time you run ADE you will work through the New User Wizard. Use this option if you want to run the Wizard again.

Settings
Modify the way ADE works or looks here.

Options Set your program options here. Some of these duplicate the new user wizard – others are not found here. These include general options; setting the BglComp and FSX folders, defining how you want units displays (feet, meters and so on); specify the radius values for different parking types and define how you want images saved from ADE to be handled,

Colors The color of most items displayed in ADE can be defined by the user from the background color all the way to the color of the tower viewpoint symbol.

Help

Check for Update ADE can get updates from the Internet. Intermediate updates are provided by this method for the application and it's main support libraries. The check requires you to run it, and nothing is downloaded or installed automatically.

About The about box displays version information about ADE and it's components. If you have a query or bug you should always check this and quote the versions in any email or forum post.

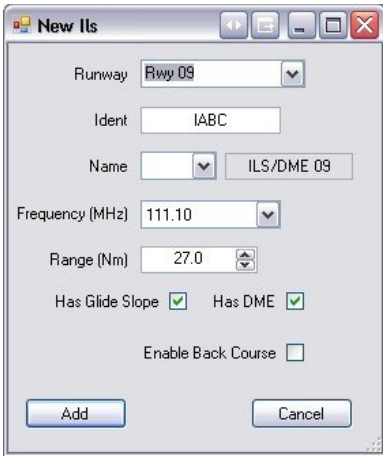
RIGHT CLICK MENU

The right click menu provides easy access to many of ADE's functions. Most of the time you will not see all the options shown here. The program will only show you options for actions that are appropriate or make sense for the situation you are in or the object you currently have selected.

Add
If you are in a situation where it is appropriate, you can add new objects to the airport. Remember that if you add something here that you decide you do not want, you can undo the add using Undo.

Helipad Just position the mouse pointer where you want the Helipad located then select this. The properties dialog will then open so that you can set the properties as you want them.

ILS An ILS must be associated with a runway. The dialog you see when you select Add > ILS looks like this:

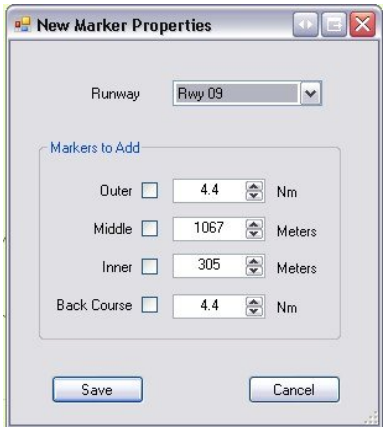


All you need to do is pick the runway that you want to add the ILS to. Give it an Ident Code. Note that ADE will give the ILS a name – you do not need to do that. The name given meets the standard used by default ILS and you should not change it. You can use the small drop list to the left to add CAT II or CAT III if you want to. ADE will generate a random frequency in the allowable range. Change this is you are creating a real world ILS. By default ADE will add a glideslope and DME. If you do not want one or both then just untick the box. ADE will add the ILS, glideslope and DME in typical positions at your airport. You can always move them by dragging if they are not where you want them to be.

Image Adds a new background image. ADE can have as many images as you like at an airport. The image itself is not stored in the airport file but the file name is. You should not move images in the file system once they are assigned to an airport.

Jetway This will only be available if you have a parking spot selected. Since all jetways need to be associated with a parking spot ADE won't let you create one until it knows which spot it is to be used with.

Markers Markers are not much used these days in real world flying having been replaced with other types of navaid. If you want to add one then ADE will do most of the work. From the Add Marker Dialog you just need to select the runway you want them for, which markers you want and what distance you want them from the runway.



ADE provides defaults that are commonly used values.

NDB You can add terminal NDBs – those are NDBs that are part of the airport record in FSX. With the Home Edition you cannot add NDBs that are not terminal

Runway Add a new runway. It will be centered on the mouse pointer. The property dialog will appear to allow you to set all the runway parameters before you save it.

Other Start If you want to place a Start at a place other than a runway (Helipad for example) then use this option

Runway Start If you want to see a runway in the runway list in FSX or to start you aircraft from there you need a Runway Start. It is important to have these (The ADE fault finder will warn you if a runway is missing a start).

Taxi sign Position a taxi sign. There is no taxisign wizard in this release but this is planned for future versions.

Tower Places a tower viewpoint. You can only have one in FSX so if there is already one at the airport then you will not see this option

Delete Object Deletes the selected object. Can usually be undone (except for vertex points) using Undo.

Display Options You can change the way ADE displays some objects (taxi paths and Parking for example). If this option is visible when you select an object and right click then it does have some display parameters that you can set. There are not many of these in this version of the Home Edition but there may be more in the future. ADE will remember your settings between sessions.

Edit Object Opens the properties dialog so that you can change them. If you change your mind after saving the new properties then use Undo. You can also open the object properties by double clicking an object or by using the Enter key when an object is selected.

Lock Object Sometimes you might want to stop an object being deleted or moved. One way is the protection that Undo provides that will reverse a mistake. However ADE allows the individual locking of object. This locking is stored in the .ade file so it is remembered from session to session. You can also apply program level locking of aprons and runways (see the Lock Menu). This works differently in that once set all aprons and/or runways will be locked, irrespective of airport.

Position Image When you load an image in ADE you may need to make adjustments to place it at the correct scale and location. This option is available when an image is selected and allows the re-sizing and moving of an image to accurately position it.

Center on ARP Centers the display on the airport reference point.

Center on Selected Object Pans the display so that the selected object is centered on the screen.

Move Aircraft Here Available only when connected to FSX. The user aircraft is moved in the sim to the location defined by the mouse position in ADE.

Reverse Direction Taxiway paths have a left and right side which are defined when looking from the start taxi point to the end taxi point. This may sometimes matter especially if you have different markings on each side. This option is only available when you select a taxiway path and will reverse it's direction. If you have the directions arrows turned on for taxiway paths (see Display Options above) then you can see visually the direction of the path and the arrow will change direction when you use this option.

Reverse Fence Some fences have angled tops and blast fences have a front and back. If you find you have one facing the wrong way then you can use this option to reverse the way the fence faces. This option is only available when a fence is selected.

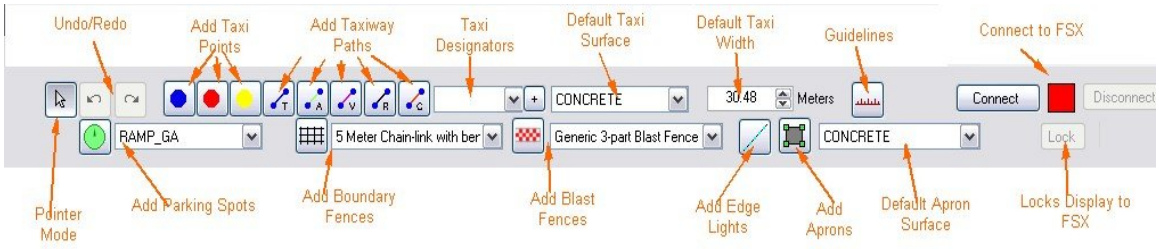
Move to Front , Move to Back If one object is obscuring another you can change the order in which the items are displayed. This works only within each layer of the display. For example taxi surfaces will always be below runways so you cannot move a taxiway above a runway.

Zoom There are several ways to zoom the display. The mouse wheel and '+' '-' keys will do this. These are both incremental zooms so if you want to make a large change this option offers a range of preset zoom values from 1% (0.01x) to 500% (5.0x). Select the zoom level you want from the list.

OTHER COMMANDS

Main Button Bar

This bar gives access to many of the commands you will need when designing your airport. The combination of this and the right click menu provides the basis of all the interaction with ADE's design capabilities.



Pointer Mode is the basic mode. You need to be in Pointer mode to select or drag objects. You can always see what Mode you are in if you look at the status bar (at the bottom of the display). The third item from the left is the current mode.

Undo/Redo Use the buttons as one method of undoing or re doing your last actions. You can also use the Edit menu or Ctrl Z and Ctrl Y to undo or redo

Add Taxi Points Blue for regular taxi points; Red for Hold Short and Yellow for ILS Hold Short. When one of these buttons is clicked the cursor changes and each time you left click you will place a taxi point of the selected type.

Add Taxiway Paths From the left these buttons provide access to creating Taxi paths, Apron paths, Vehicle paths, Runway paths and Closed paths. Adding Taxiways is easy. Just left click where you want a taxi point (these will always be regular taxi points) drag out the line where the path is to go and click again. Each time you click and drag a new section of path will be drawn. If you start on an existing link or point, the properties of the path you draw will be taken from that. Otherwise the properties come from the defaults set at the top of the screen (see later).

Taxi Designators These are the letters given to taxiways. When ATC tell you to follow taxiway A then F they are using the designators that are listed here. Taxiways that do not take their properties from another path will use the default path designator. You can add new path designators with the small '+' button. Another way to manage designators (including adding and deleting) is via the Taxi Designators List

Default Taxi Surface This is the surface that will be used for new taxi ways if they do not start on an existing one.

Default Taxi Width This is the width that will be used for new taxi ways if they do not start on an existing one.

Guidelines  These are handy little lines that can be drawn on the display.

Unlike AFCAD guides they can be saved and will remain in with the airport. The have a length and heading so can be used for measuring or laying out. You can also change their color and add some text to describe what they represent. To remove one just select and delete as for any other object. ADE does not currently provide point markers but you can easily use short guides (2.5m is the smallest) to mark a spot

Connect to FSX It is very useful to be able to use the position of the user aircraft in FS to position things in ADE. When FSX is running clicking the Connect button will establish a connection. Provided that the aircraft in FSX is located at the airport you are working on you will see a small red stick airplane representing the location of the user aircraft. If you can't see it, or it is at another place then you can use the Right Click Menu to move the aircraft in FSX to the place where your mouse pointer is.

Lock Display to FSX If you are connected to FSX and this button is not depressed then the airport display in ADE will stay still and the aircraft will move around as it is moved in FSX. Much of the time you will want the aircraft in the middle of the display area and the airport oriented in the same way as FSX. Clicking this button will do that. It might take a second but then the aircraft will appear center screen and the display will rotate so that it is in the same orientation as FSX.

Add Aprons Use this mode to draw aprons. Use left click and drag to draw out the polygon. The best way to create an apron is to double click for the last point. You do not need to close the apron. ADE will do that for you and, in fact, it is better not to close the apron yourself but let ADE do it.

Default Apron Surface This shows the surface that new aprons will get. You can always edit it afterwards.

Add Edge Lights Add lights around aprons using point and drag

Add Blast Fences Place blast fences using point and drag. The type of blast fence is specified in the drop down box. If the fence is facing the wrong way then you can reverse this using the Reverse Direction function from the Right Click context menu.

Add Boundary Fences Place boundary fences using point and drag. The type of boundary fence is specified in the drop down box. If the fence is facing the wrong way then you can reverse this using the Reverse Direction function from the Right Click context menu.

Add Parking Spots Select the type of spot to add and then use this to place it.

Mouse

Left Click Selects the object whose tool tip is currently displayed.

Shift Left Click Selects multiple taxi paths or parking spots for group edit.

Ctrl Left Click When the pointer is over a selected apron edge you will see a tool tip 'Add Vertex' Use Ctrl Left Click to make the addition.

Right Click opens context menu with options that are appropriate for the selected object or situation.

Left Double Click Opens the property dialog for the currently selected object. Used to complete an apron, fence or run of edge lights

Left Drag Moves the currently selected object another location. Can be undone (except for movement of vertex points in aprons, fences and apron edge lights.

Wheel Zooms in and out

Ctrl Wheel Rotate display using five degree increments.

Shift Wheel Rotate display using one degree increments.

Keyboard

Arrow Keys Use the arrow keys to pan around the display.

Enter Key On the main display this will open the properties dialog for the selected object.

Plus and Minus Keys Zoom in and out.

Home Key Resets the airport display to the default heading of North.

Page Down Rotate clockwise.

End Rotate counter clockwise.

'T' Highlight the next taxiway designator in the list.

Shift 'T' Highlight the previous taxiway designator in the list.

Esc Escape will generally cancel or close a dialog discarding any changes made.

Ctrl Z Undo. You can also use the buttons on the main button bar or the Edit menu.

Ctrl Y Redo. You can also use the buttons on the main button bar or the Edit menu.

Ctrl P Print the currently displayed area to the current Windows printer.

Ctrl I Save an image of the currently displayed area using the currently defined image settings (See Settings > Options)

Assistance and Reporting Problems

ADE has it's own web site at http://www.airportdesigneditor.co.uk. This is the place where the latest news on ADE can be found. Also over time it will become the home to articles, tutorials and so on related to airport design for Microsoft Flight Simulators

ADE has it's own support forum located at

http://www.fsdeveloper.com/forum/forumdisplay.php?f=95

Some of the best airport designers around have been involved in the development of this program. They spend time around this forum and will help where they can.

A lot of time and effort has gone into the development of this program. We know it is not perfect and almost certainly has some bugs here and there. If you find something that does not work or get a message concerning an unrecoverable problem then please try to replicate it.Then make a note of the steps that led to the problem. If there is an error message then take a legible screenshot of it. Report the problem on the forum explaining what steps were taken and what happened. One of the hardest things for us is to get a 'it did not work' problem or one that cannot be replicated. If one or more of the team can replicate your problem then we have a much better chance we can fix it.

You can contact the developers at jon@scruffyduck.co.uk.

Legal Bits