



geniX Software Development



User Guide

FSX AI Spotter for FSX

Version 1.5.X

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1 About this guide

This document is divided into the following chapters:

- Chapter 2, “Introduction”, that expose a briefing of the program.
- Chapter 3, “Describing the system”, that illustrates the general requirements
- Chapter 4, “Starting FSX AI Spotter”, that describe a *first start* of FSXAIS
- Chapter 5, “Step by step instructions for using FSXAIS”, that contains detailed instructions on how deal with the program.

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1.1 Who Should Use It

This guide is intended for users of different degrees of knowledge and experience with the following applications:

- MS-Windows Operating Systems
- MS-FSX (release fsx-sp120070510-2038)
- MS-SimConnect.dll installed (release 10.0.61242.0 minimum)

This guide assumes that you have some knowledge of the operating of the above programs and applications.

For more information, see the appropriate related documentation.

2 Introduction

2.1 Purpose

FSXAI Spotter (FSXAIS) is a software add-on for MS-FSX. This software can create AI Aircraft in departure and arrival conditions simply by loading raw text “traffic files”.

Moreover, FSXAIS is able to call any custom Windows Console Application in order to generate these traffic files (for example, an application that connect on internet and arranges for the traffic files based on live airport information), or load, at configurable interval the traffic files itself (for example, traffic files generated by a more complex Windows Application).

Purpose of this document is to provide all information on how interact with the program.

2.2 Scope

Scope of this guide is to provide a panoramic view of how to play with FSXAIS.

Further, some mandatory prerequisites are listed in order to run the program.

2.3 System Organization

This document applies to:

- FSX AI Spotter for FSX
- Version 1.5.x
- All builds

2.4 History

Rel 1.5.0

- Now the user can switch from prevalently IATA code aircraft type generation to ICAO one thanks to an utility that modifies aircraft.cfg file adding a IATA model code field.

Rel 1.4.4

- Capability to convert IATA code (provided by external connectors) to FSX used ICAO one.
- Max rows to get from external connectors are now 128.

Rel 1.4.1

- The complete departure/arrival roster now is visible unchecking the “Full Log” flag.

Rel 1.3.1

- Improved GUI interface, with some useful info on A/C creation, flight plan assignment and arrival flights queueud.
- Introduced “separation” concepts on arrival flights. Now is it possible to create arrival flights each x seconds one from the other. This to avoiding multiple A/C created in the same sky zone.
- Introduce alerts for take-off and landing aircrafts providing destination runway info, too.
- Try to fix SimConnect server problem on slow PC. The aircraft are created right, but some mandatory info are missed by Microsoft. FSXAIS try to fix these in order to provide better A/C status retrievalment.

Rel. 1.1.6

- Old log files are automatically deleted from the folder.
- From now on, FSXAIS will not use A/C Tail as search-key but it will try to use all the airline variants of the same A/C. Example, if an airport schedule presents more than one Ryanair B738, and FSX has more than one Ryanair B738 “Title” A/C to provide, the program will use one of each to fill the schedule.

Rel. 1.0.0

- First public release of the program.

3 Describing the System

3.1 Key Features

FSXAIS is indicated for people loving airports environments and air-watching in the world of MS-FSX (AI Spotters...yes!).

The program, using the user installed AI Aircraft, is able to create both departure and arrival flights in a certain airport, starting from a couple of simple text (Comma Separated Values) files describing the flights themselves.

In order to perform this kind of works, the AI aircraft must have the appropriate values for a couple of properties in the aircraft.cfg file.

An *alerting* system will provide informations on aircraft landing and departing directly into MS-FSX® main window.

3.2 Program Inventory

FSX AI Spotter is composed by the following files:

File	Note
Ais_traffic.xml	XML raw DB containing airline traffic information
Ais_aircrafts.xml	XML raw DB containing user AI aircraft available in FSX
Midas.dll	Internal library of FSXAIS
Airlines.xml	XML raw DB containing real world airline information (not used in 1.x)
Standard.xml	FSX standard xml template for flight-plan (not used in 1.x)
FSXAIS.exe.manifest	.net extension used to load the RTM version of Simconnect.dll
FSXAIS.exe	Main FSXAIS executable

FSXAIS.ico	Main FSXAIS icon
FSXAIS.ini	Main FSXAIS configuration file
FSXAIS.sub	Internal file for aircraft substitution (filled with samples)
Standard.org	FSX standard template for flight-plan
lata-icao2.cds	File for matching ICAO code (used by FSX) with IATA code (used sometimes by Airport Data Providers) when available/defined
Release notes	FSXAIS latest release notes
User Manual	FSXAIS user manual

That must be all together into the destination folder selected by the original setup.

3.3 Environment

To run FSXAIS is necessary:

- MS-Windows Me / XP / 2000 / Vista / Win 7 Operating system
- MS-SimConnect.dll installed (release 10.0.61242.0 minimum).
- A running MS-FSX SP1
- A default printer assigned into MS-Windows
- Minimum 5 Mb of free disk space
- About 7Mb of free RAM memory
- FSUIPC.dll (from P.Dowson) 4.5 minimum

We assume also that the system hardware configuration where FSXAIS will run are adequate to run MS-FSX first.

3.3.1 AI aircraft.cfg recommendation

In order to display the best aircraft for a certain flight, FSXAIS needs that:

1. **atc_parking_codes** is equal to the effective 3-letters ICAO code of the aircraft'airline.
2. **atc_model** is equal to the effective 3-letters ICAO code for the aircraft¹.

When more than one airline-ac type aircraft is present in FSX, the assigning phase of an aircraft "title" for a certain flight is based on a cyclical algorithm. In this manner, at list one different ac title will be assigned for each different flights.

Note: FSX AIS has an utility that can add a new couple of key-value in the aircraft.cfg, "iata_model", under General section. Using this value, some aircraft type could be more specific (ie ICAO code hasn't the definition for the 757-200 winglet as IATA in the 75W value).

Note: *For those people that seems give low importance expecially to atc_parking_code, we remember that aspects of a full correct behaviour of the MS-FSX is related on HOW are corrects the aircraft.cfg files along textures and other things. Infact, these configurations will affects FIRST your FSX AI environment, next FSXAIS behaviour.*

3.4 System Operations

FSXAIS must be started **after** MS-FSX but, only for configuration purpose, it can be started alone. This case is when you need to rebuild FSXAIS internal DB of AI Aircraft configuration or install a **connector**.

¹ A good source for A/C codes is http://homepages.mcb.net/bones/Flight_Sim/data/FS_Aircraft_Codes.htm

3.4.1 Connectors

Connector is the way to define an external Windows Console Application that FSXAIS can execute at a certain interval in order to produce the traffic files. This operation is what we indicate as online mode.

Otherwise, in the offline mode, FSXAIS simply load the traffic files at certain interval; in this mode, the user could provide himself to generate the traffic file that the program will load.

From the FSXAIS perspective, **the master key in such traffic files is the couple ICAO airline code (3 letter)+Flight number**. This information is almost used in the whole program.

4 Starting FSX AI Spotter

4.1 First-time Users

Note: As for the Installation Guide, to start FSXAIS click twice with the mouse on the program desktop icon.

The main FSXAIS interface is the following:



The figure show the main FSXAIS window

Starting from the left, from top to down, we have:

- FSX Link info box: here are the information on the loaded version of FSUIPC and SIMCONNECT
- Log view panel: here are the program log lines written during the running of the application.
- Start button: this button will start the FSXAIS operations. The button will be enabled only when the airport icao code is given, together the two connection to FSX.
- Input ICAO code box: here the user must insert the airport ICAO code where the traffic files must be generated
- Settings button: this button will display a window with FSXAIS related settings.

- A/C DB: this button will display the panel that report the current AI Aircraft located on the FSX
- DPE Settings: This button will show the window with Data Service Provider (connector) settings.

Note: The very first time the program starts, it will going to populate the internal AC DB of AI Aircraft first. A window will ask for this: click “Yes” and wait for the DB creation

A status bar is also present; during the simulation it will be filled with useful operational informations.

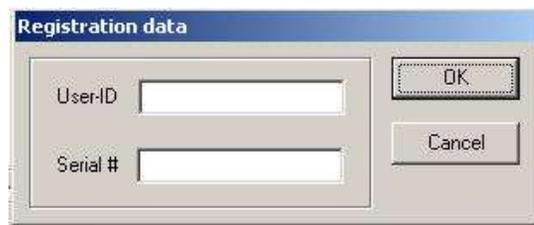
4.2 Register FSX AI Spotter

FSXAIS is first released as shareware form, with the following limitation:

1. Max 3 flights potentially generated²

In order to *unlock* the above limitations, you must have registered the programs buying a personal license from the vendors.

Having these data, click on the Settings button, next on the **Register** button. A dialog box will appears:

A screenshot of a Windows-style dialog box titled "Registration data". It contains two text input fields: "User-ID" and "Serial #". To the right of the fields are two buttons: "OK" and "Cancel".

Inputs for the register windows

Type the user-id and serial number you get into the appropriate fields and then click on the **Ok** button: if the data are valid, your copy of FSXAIS is well registered. Thank you!

² This means that FSXAIS will count each flight in the traffic files as valid regardless of the creation or not in FSX

4.3 Exit FSX AI Spotter

To exit FSXAIS program, click on the standard Windows *close button*, on the upper left corner of FSXAIS main window.

Warning: FSX AI Spotter must be closed before MS-FSX ®

5 Step by Step Instructions for using FSXAIS

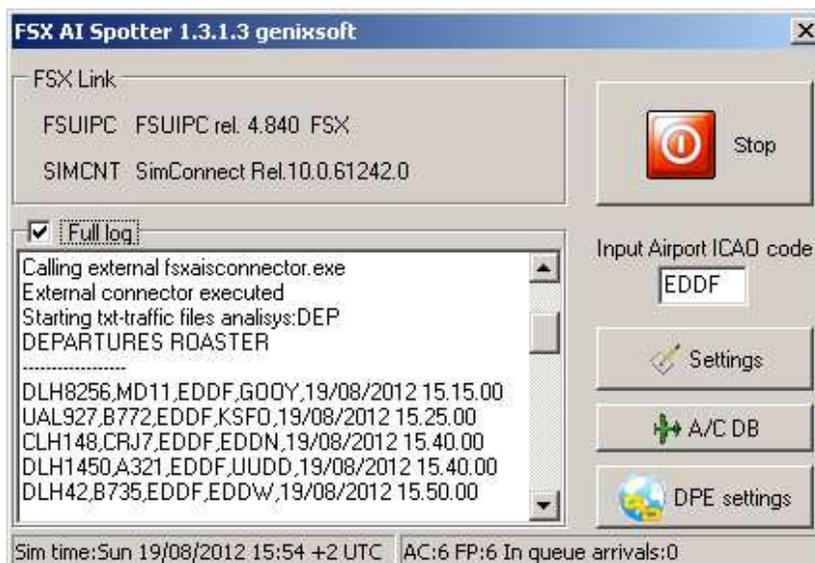
In the following chapter, we'll assume that MS-FSX is up and running: so, before continue reading this user guide, please **START FSXAIS BY DOUBLE-CLICKING ITS DESKTOP ICON**

5.1 Instructions

Referring to the main FSXAIS window, edit the ICAO code text of the airport where you stay located with your vehicle (here KJFK) and next click on the **Start** button.

FSXAIS will start the routine for the **connector** (if the online mode is enabled), next the routine for cancel all "static" BGL related aircraft, next it will collect the FSX-Time (UTC).

The routine from the connector will produce the traffic files and their content displayed in the log window:



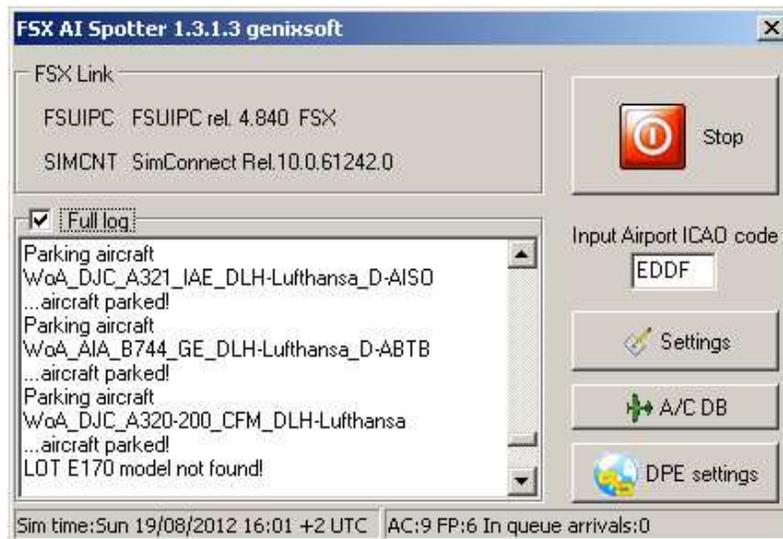
The main (working) FSXAIS window

Depending on the number of aircrafts to be displayed, FSXAIS will work like the following screenshot. One for the departure roaster and one for the arrival.

The Log view display informations about operational routine of FSXAIS.

Each departure flight is displayed using the best matched AI Aircraft located in FSX; if no such aircraft is available, that flight will be not visualized.

When it is the time to depart, FSXAIS will assign the related flight plan to that aircraft.



Main FSX Window with departures working.

Each arrival flight is displayed using the best matched AI Aircraft located in FSX; if no such aircraft is available, that flight will be not visualized.

Depending on the “A/C proximity” selected (see “Settings” paragraph for further info), FSXAIS will try to display the arrival flight at a distance from the airport respect to the flightplan and according to the arrival time scheduled (more or less).

5.1.1 Status bar info

The status bar info are divided into two areas. At the left there is the current MS-FSX © simulator time plus the UTC shift as they coming from the simulator itself. At the right there are three informations *live*:

- **AC:** aircrafts created (dep+arr).
- **FP:** flightplans (created) and assigned to aircrafts.
- **In queue arrivals:** if the “Separation” value is greater than 0, all arriving aircrafts will be forced in a queue. Each time interval (separation value) one aircraft will be created and visualized in the FSX when needed.

5.1.2 Pausing FSXAIS

After start working FSXAIS, the Start Button become **Stop** button.

This Stop button is useful when you need to stop working FSXAIS **but not the actual AI traffic in the FSX generated by the program, that remain alive.**

5.2 Errors and Malfunctions

FSXAIS is able to detect some errors and display messages on the Windows desktop.

Some windows will be displayed if one of three important files are missed in the main FSXAIS directory:

ais_aircrafts.xml – A box window will appear with the message “AI Aircraft DB not exists! Exiting...”

Standard.org - A box window will appear with the message “FSX Standard template plan not exists! Exiting...”

ais_traffic.xml - A box window will appear with the message “AI Traffic DB not exists! Exiting...”

After the message box, the application will exit.

Another message box could be displayed in the case of wrong registration code (or user): “Not a valid registration”. In this case, the program will continue to work in the *shareware* mode.

A warning will be written in the *DPS Setting Window*, in the space for the connector information if these are missed once loaded a connector program: “Warning! No info from connector. Please re-load”. This error could put FSXAIS in the offline mode; the error could be related to the connector itself.

5.2.1 FSX AI Spotter Messages

These messages could be displayed in the FSXAIS log space:

Message	Where	Why
Connector Execution problem !	Problem encounter during execution of the connector application during its installation phase (“Load” button in the DPS setting window)	General error. The executable could be the primary cause of this.
Error retrieving FSX current state	During the checking of FSX freezed state before any important phase of the program	FSXAIS is not able to get the current freezed status of FSX.
FSX Freezed. Wait next interval.	During the checking of FSX freezed state before any important phase of the program	FSX is not in <i>Ready to fly mode</i> ³ .
Error retrieving FSX current time!	During the checking of FSX time, each minute	Heavy load on FSX SimConnect interface
Error receiving AC_id for	Creation of parked aircraft (Departure phase) or creation of enroute aircraft (Arrival phase).	Heavy load on FSX SimConnect interface, no AC-Id assigned ⁴
FP NOT assigned	Flightplan not assigned due a problem with FSX	Heavy load on FSX SimConnect interface
Error calling SetTrafficDensity(0)!	Problem aencounter at first start of FSXAIS	FSUIPC related call failed
Stopping simulation	The user clicked the “Stop” button or an error was encountered	Normal behaviour in the most cases.
offline work suspended: missing text files	During the offline works	No traffic files to load.
Connector Execution problem: stopping simulation...	Problem encounter during execution of the connector application during FSXAIS running	General error

³ when FSX is loading, or reloading a flight or aircraft or scenery.

⁴ **FSXAIS will try to assign the correct ID as the aircraft, despite this error, is EVEN created.**

Connector Timeout: stopping simulation...	Problem encounter during execution of the connector application during FSXAIS running	The remote Web Data Provider didn't respond in timely manner.
Probably Network connection Error: stopping simulation...	Problem encounter during execution of the connector application during FSXAIS running	The connector works fine but no traffic files where produced; probably a Web Data Provider remote problem.

5.2.2 SimConnect specialized messages

Below the table the display FSUIPC (error) messages that can appears in the FSXAIS log space:

Message	Why
SIMCONNECT_EXCEPTION_CREATE_OBJECT_FAILED	FSX is not able to load/create the AI Aircraft selected by FSXAIS. Sometimes, for A/C enroutes, this issue is resolved setting a lowest AC proximity value.
SIMCONNECT_EXCEPTION_OBJECT_ATC	The airport where is FSXAIS working doesn't have ATC Parking space to accommodate the aircraft
SIMCONNECT_EXCEPTION_OBJECT_CONTAINER	The A/C is installed in FSX but is not detected. Restarting FSX should resolve the problem. Try also to verify the correct texture folder for that aircraft.

Warning: All the SIMConnect error have the form SIMCONNECT_EXCEPTION_XXXXXX, where XXXXXX is a message string of variable length. The table above lists only those messages that are most common⁵

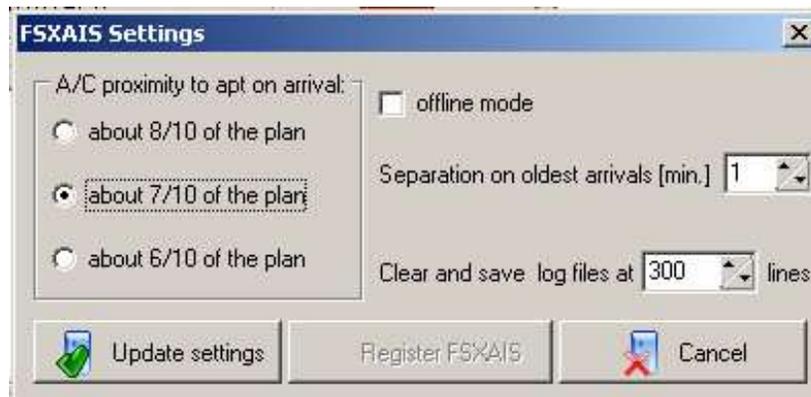
⁵ Please report to geniX technical support.

5.3 FSXAIS settings windows

In this chapter we are going to explain the various optional settings of FSXAIS.

5.3.1 (FSXAIS) Settings

Below the screen shot of the dialog box:



FSXAIS general settings window

The **A/C proximity** selector tells FSXAIS the distance (more or less), respects the flight-plan, where it should create the enroute aircraft that will landing. The creation is made according with the arrival time for the flight.

Note: FSXAIS doesn't take in account any third party application that manage arrival flight nor FSX policy for landing aircraft. This means that the arrival time could be modified from other programs (such as AISmooth) or FSX AI-Algorithm itself.

The **offline mode** flag permits to tell FSXAIS how manage flights creation:

If this flag is checked, FSXAIS will use the timer interval (see DSP settings) only to load the traffic files without calling any external connector. The user is responsible to provide (in any way) such files to FSXAIS.⁶

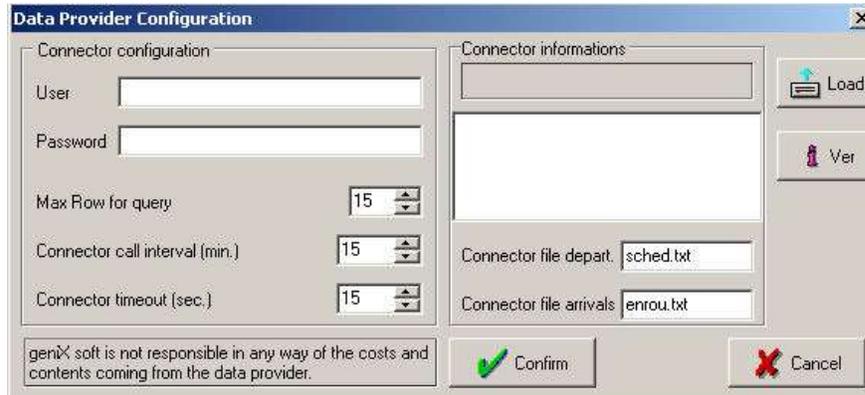
The **Separation** value is used to avoid "groups" of aircraft in the same sky zone. All the arriving flights/aircrafts will be created with the interval selected here.

⁶ **geniXsoft provide for free the Technical Specs for the connector and the traffic files format**

The **clear and save log** variable determines how many lines the log windows will contains before clear and save the log⁷ in a text files.

5.3.2 DPE settings

Below the screen shot of the dialog box:



FSXAIS Data provider configuration settings window

This windows is mainly for “connectors” configuration.

The **connector configuration** box permits the input of User and Password couple for access Data Provider on the internet. These values are passed to the external connector when called. The Max Row for query – that can be optional – is used in the case the connector can ask the DPE for a certain number of flight instead of all.

The **connector call interval** defines the minutes between two consecutive connector call.

The **connector timeout** defines how many seconds FSXAIS should waits before declare a *connector timeout*.

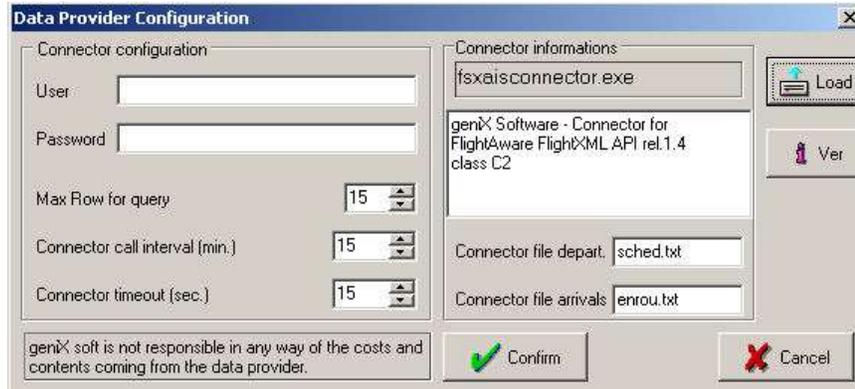
The **connector informations** box groups the connector data, such as filename and version.

The filename for departure and arrivals **normally** are filled by the connector itself during the loading phase.

In order to load a connector, click on the “Load” button. A standard Windows *File-Open* dialog will appear. Select the connector executable and click “Ok”.

The DPE Settings window will filled with the connector name, the release note and the connector traffic files names.

⁷ Log files are deleted on per-day basis.



FSXAIS Data provider connector settings

If no connector is specified, the standard names are used⁸:

- sched.txt for departure flight
- enrou.txt for arrival flights

5.4 FSXAIS AI Aircraft Database

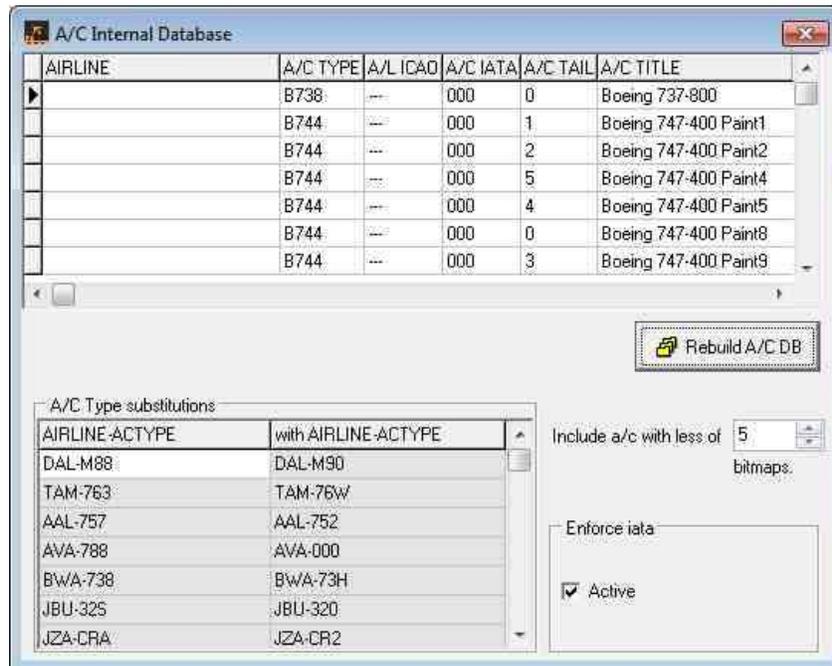
FSXAIS own an internal database of the AI Aircraft that are installed in the user' FSX simulator.

The creation of this aircraft is obviously fundamental for the FSXAIS program. The following chapter will explain the use of the A/C DB windows

5.4.1 A/C DB window

Below the screenshot of the A/C DB window:

⁸ This name must be used in case of user provided application that wish to dela with FSXAIS (offline mode)



FSXAIS A/C internal DB settings

The magic button is the “Rebuild A/C DB” but it is important also the value for the **include a/c with less of xx bitmaps (.bmp/.dds)**, that the user can set in order to tell FSXAIS to search and include only aircraft with texture folder count a certain number of bitmap files. In this manner, the AI aircraft DB will contain only the *lightest* aircraft and so reduce the FSX work to display them.

The “**A/C Type substitutions**” is an utility that is used to match the data coming from the external source (by DPE connector) with those of user AI aircraft.

The “**Enforce iata**” setting enable the program to try to get an a/c type suitable for the dep/arr route, searching first for a *iata_model* value.

In fact, we can resume the way FSXAIS get the appropriate A/C type in this way, depending on the above setting (Activate) on or off.

For example, the external provider codes a JetBlue Airline (JBU) flight using the a/c type **32A** (IATA A320 Sharklets model): what’s happens in FSXAIS?

Activate = checked

1. The string UAL-32A is searched in the subst table. If found, the alternate couple is used (for example, UAL-A320).

2. If the above point fail, the program will search in the A/C DB an aircraft with the attribute iata_model=32A and atc_parking_codes=UAL. If found, the related "Title" is used to create the route.
3. If the above point fail, the program will search in the A/C DB an aircraft with the attribute atc_model=A320 and atc_parking_codes=UAL. If found, the related "Title" is used to create the route.
4. If the above point fails, FSXAIS will write a row in the log with the missing a/c (sometimes with the a/c description) and a new row in the "Subst" table (UAL-A320=UAL-000).

Activate = unchecked

1. The string UAL-32A is searched in the subst table. If found, the alternate couple is used (for example, UAL-320).
2. If the above point fail, the program will search in the A/C DB an aircraft with the attribute atc_model=32A and atc_parking_codes=UAL.
3. The above point fail because the non-existent ICAO code =32A: so the program will search the appropriate (ICAO) code for the "32A" and so will use the atc_model=A320 and atc_parking_codes=UAL. If found, the related "Title" is used to create the route.
4. If the above point fails, FSXAIS will write a row in the log with the missing a/c (sometimes with the a/c description) and a new row in the "Subst" table (UAL-32A=UAL-000).

Another example: the external provider codes a JetBlue Airline (JBU) flight using the a/c type **A320** (ICAO Airbus A320 generic model): what's happens in FSXAIS?

Activate = checked

1. The string UAL-A320 is searched in the subst table. If found, the alternate couple is used (for example, UAL-320).
2. If the above point fail, the program will search in the A/C DB an aircraft with the attribute iata_model=A320 and atc_parking_codes=UAL.
3. The above point fail because no IATA code exist equal to A320.

4. FSXAIS will search in the A/C DB an aircraft with the attribute atc_model=A320 and atc_parking_codes=UAL. If found, the related "Title" is used to create the route.
5. If the above point fails, FSXAIS will write a row in the log with the missing a/c (sometimes with the a/c description) and a new row in the "Subst" table (UAL-A320=UAL-000).

Activate = unchecked

1. The string UAL-A320 is searched in the subst table. If found, the alternate couple is used (for example, UAL-320).
2. If the above point fail, the program will search in the A/C DB an aircraft with the attribute atc_model=A320 and atc_parking_codes=UAL.
3. If the above point fails, FSXAIS will write a row in the log with the missing a/c (sometimes with the a/c description) and a new row in the "Subst" table (UAL-A320=UAL-000).

Note: The IATA aircraft model specification is more accurate and updated respect the ICAO one (used by MS – Flight Simulators).
