EZPushback 0.3.2 (beta)

Synopsis

EZPushback is a lightweight pushback utility designed for X-Plane 10.20 or later. It simply moves the aircraft backward or forward. It can be controlled by menu, keyboard, joystick, or from other plugins. EZPushback is a pure C plugin with no significant dependencies (i.e. Python, Gizmo, OpenSceneryX, etc.). It is open source and MIT licensed, so hopefully it can be maintained (by me or others) for years to come as X-Plane changes and evolves.

Requirements

- X-Plane 10.20 or later (32 or 64 bit version)
- Windows or Mac OSX (Linux not yet supported)
- Microsoft Visual C++ 2010 Redistributable Package x64 (for 64-bit X-Plane on Windows)
- Microsoft Visual C++ 2010 Redistributable Package x86 (for 32-bit X-Plane on Windows)

Linux users: I do not have X-Plane development environment for Linux at this time. I will gladly port to Linux if the initial reviews for Windows and MAC versions are favorable and after the beta version is stable.

Beta

This is beta software. The following environment was used for build and test.

- Windows 7 x64
- Mac Mini running OSX 10.8.3
- X-Plane 10.20+ (32 and 64 bit versions)
- EADT x737 and stock 747.

Prerequisites

On Windows platforms, EZPushback requires the Microsoft Visual C++ 2010 Redistributable Package (x86 and/or x64). These packages provide the necessary C runtime libraries for the Windows version of the plugin.

There is a high probability that the redistributable packages may are already installed on your system. Check under **Control Panel > Programs and Features** to see if the Microsoft Visual C++ 2010 Redistributable Packages (x86 version and/or x64 version) are already installed.

If you are using **64bit X-Plane**, you must have the **Microsoft Visual C++ 2010 x64 Redistributable** installed. If this is not already installed you can download from:
http://www.microsoft.com/en-us/download/details.aspx?id=14632

If you are using **32bit X-Plane**, you must have the **Microsoft Visual C++ 2010 x86 Redistributable** installed. If this is not already installed you can download from:
http://www.microsoft.com/en-us/download/details.aspx?id=5555

If you use both 32 and 64 bit versions of X-Plane, then install both x64 and x86 versions of the redistributable.

Installation

The EZPushback.zip file contains a "FAT plugin" that supports both 32 and 64 bit versions X-Plane.

1) Download and unzip the EZPushback.zip file to a temporary location. At the top level there will be one "EZPushback" folder.

2) Find your X-Plane Resource/plugins folder.

3) Copy or move the EZPushback folder so that the EZpushback folder and contents reside within your X-Plane Resources/plugins folder.

4) Start X-Plane (32 or 64 bit).

5) Mouse over the X-Plane main menu and click "Plugins".

An EZPushback menu will appear on the Plugins menu if successfully installed.

Troubleshooting

If you do not see the EZPushback menu on the Plugins menu, check the Log.txt file in your X-Plane top level folder. All EZPushback messages are logged to this file.

- If you do not see any messages from EZPushback in Log.txt, make sure you installed the EZPushback folder in the correct location in your X-Plane folder. It should reside in the Resouces/plugins folder.
- On Windows, if you see an error 126 when X-Plane tries to load EZPushback, you probably do not have the correct Microsoft Visual C++ 2010 Redistributable installed. See the prerequisite section above for guidance.
- Verify you are using X-Plane 10.20 or later. EZPushback has not been tested with earlier versions of X-Plane. See the alternatives section later in this document if you are looking for a pushback utility that will run on earlier versions of X-Plane.

Usage

EZPushback provides two services: pushback (reverse) and tug (forward). The EZPushback plugin menu provides one way to request services:

X-Plane Main Menu **>**
Plugins **>**
EZPushback **>**
Start Pushback (reverse)
Start Tug (forward)

Stop

Pushback or tug will not start if the parking brake is engaged or if the aircraft is already moving. Engines may be started during pushback or tug (this is a common practice by some airlines).
Once moving, you can steer normally (i.e. via rudder pedals). Avoid sharp turns while steering as these may induce skidding. Application of brakes or thrust should obviously be avoided during movement as this will fight against the imaginary pushback truck; these actions are not currently prohibited by EZPushback, but may be in future versions.

A transparent status window appears when an EZPushback command is invoked. If you move the window around, EZPushback will remember the location. If the X-Plane window is resized, the EZPushback status window may reposition itself to ensure that it is visible.

A STOP button will appear in the status window when a pushback or tug is in progress. This button can be clicked to stop a push or tug operation.

Commands

In addition to the menu options described above, EZPushback provides five custom commands that can be used to request services. These commands can be assigned to keys, joystick buttons, or invoked from other plugins via the X-Plane plugin API.

Command	Provides
tpp/ezpushback/start_push	Start pushback operation (move backwards). This operation is not allowed unless the aircraft is stopped and the parking brake released.
tpp/ezpushback/start_tug	Start tug operation (move forwards). This operation is not allowed unless the aircraft is stopped and the parking brake released.
tpp/ezpushback/stop	Stop a pushback or tug operation that is in progress.
tpp/ezpushback/toggle_push	This command will toggle between pushback and stop using one command.
tpp/ezpushback/toggle_tug	This command will toggle between tug and stop using one command.

If you are not familiar with keyboard and joystick assignments in X-Plane, please check out Sandy Barbour's video: http://www.youtube.com/watch?v=LvFZXzq6gQ0

Configuration File

The EZPushback plugin directory contains a configuration file named ezpushback.ini. You may change acceleration, deceleration and target_speed by editing this file. The x and y values will be overwritten by the plugin when the status window is moved.

```
# ezpushback.ini
# You can change the values in this file.
# This file will be written and reformatted when the plugin saves state.

# dialog window position (x=left, y=top)
# moving the window in the sim will change x and y upon save
x=760
y=1033

# acceleration/deceleration in meters per second per second
acceleration=0.20
deceleration=0.50

# target speed in meters per second
target_speed=1.00
```

Datarefs

EZPushback provides several custom datarefs that may be used to monitor and control EZPushback from other plugins. You can also use the datarefs to monitor EZPushback using Dataref Editor. Note that there are no datarefs provided to start pushback, start tug, or stop operations; these functions can be invoked from other plugins by using the same custom commands documented above.

Dataref	Data type	read/write	Description
tpp/ezpushback/state	int	r	Current state: 0 = Idle 1 = Waiting (not currently used) 2 = Starting (accelerating) 3 = Active (moving at target speed) 4 = Stopping (decelerating)
tpp/ezpushback/direction	int	r	Direction of travel: -1 = Reverse (pushback) 0 = Stopped 1 = Forward (tug)
tpp/ezpushback/flags	int	r	Error flags (bit field). Must be 0 before pushback or tug is allowed: 0x0000 = OK 0x0001 = Aircraft not loaded 0x0002 = Parking brake engaged 0x0004 = Aircraft already moving
tpp/ezpushback/target_speed	float	rw	Target speed in meters/sec. Initially set from config file. Changes to this dataref are not written to config file.
tpp/ezpushback/acceleration	float	rw	Acceleration in meters/sec/sec applied when pushback or tug operation begins. Initially set from config file. Changes to this dataref are not written to config file.
tpp/ezpushback/deceleration	float	rw	Deceleration in meters/sec/sec applied when pushback or tug operation ends. Initially set from config file. Changes to this dataref are not written to config file.
tpp/ezpushback/local_vx tpp/ezpushback/local_vz	float	r	The current velocity (meter/sec) EZPushback is applying to the aircraft in the X and Z direction. This is computed based on the desired target velocity and aircraft true heading.
tpp/ezpushback/callbacks	int	r	The number of flight loop callbacks invoked since pushback or tug operation began. 0 when EZPushback is idle.

Alternatives

SimplePushback from Snailpup provides comparable functionality to EZPushback for versions of X-Plane earlier than X-Plane 10.20. EZPushback was written because SimplePushback is no longer maintained and does not work with 64-bit X-Plane versions.

Ground Services from Joan provides animated pushback, fueling, and other robust features. Ground Services has two large dependencies: Python and OpenSceneryX.

License

Source Code

EZPushback is free and open source. The source code can be found at:
https://github.com/thePuffyPuff/EZPushback

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- Joan (Ground Services)