**This is Ivy, your new co-pilot.**

Gone are the days, when you could fly without transponder, enlighten the stratosphere with your landing lights and transform the passenger's meal in pottery to pottery in passenger meal upon landing, without anyone complaining.

Now that your airline has assigned your new co-pilot no mistake will go unnoticed. So make sure that you fly properly!

**Installation:**

You need the following to run Ivy:

* Python 2.7
* Sandy Barbour's Python Interface
* Pygame (for audio support)
* Copy the contents of this folder to X-Plane 11\Resources\plugins\PythonScripts

Python 2.7:

https://www.python.org/downloads/  
When given the possibility in the installation, enable adding Python 2.7 to the path environment variable.

Sandy Barbour's Python Interface

http://www.xpluginsdk.org/python\_interface.htm

Pygame can be installed via Python:

https://www.pygame.org/wiki/GettingStarted

Personally, I use the following commands to install pygame. Remember to set your Path environment variables first, so that python can be started from anywhere. Otherwise you must do this in your Python 2.7 folder:

*python -m ensurepip*

*python -m ensurepip --upgrade*

*pip install wheel*

*pip install wheel --upgrade*

*python -m pip install --upgrade pip*

*python -m pip install -U pygame --user*

If you need support installing pygame or python interface, please refer to the pygame or x-plane community. Do not PM me, I have rather high response times and I only know the issues I had myself.

**Implemented Failure Detections:**

1. Bump on the ground
2. Tire blown
3. Hard braking
4. Transponder not active when airborne
5. Landing lights not on when close to the ground in the night
6. Landing lights not off on high altitude
7. Beacon lights not on when taxiing
8. Nav lights not on when airborne
9. Strobes not on when airborne
10. Battery low
11. Engine fire
12. Engine flameout
13. Engine ground failure
14. Engine airborne failure
15. Engine hot start
16. Battery not on
17. Cabin pressure raising too fast
18. Cabin pressure raising extremely rapidly
19. Bank angle pre-warning
20. Bank angle too high
21. Bank angle extremely high
22. Pitch down pre-warning
23. Pitch too low
24. Vertical G Force high
25. Vertical G Force very high
26. Vertical G Force very, very high
27. Vertical G Force too low
28. Vertical G Force negative
29. Barometric pressure not set accordingly while close to ground or taxiing (within tolerance)
30. Barometric pressure not set to standard above transition altitude
31. Ice airframe low
32. Ice airframe high
33. Ice pitot low
34. Ice pitot high
35. Ice propeller low
36. Ice propeller high
37. Ice cockpit window low
38. Ice cockpit window high
39. Cabin pressure low
40. Cabin pressure too low to breath
41. Birdstrike

Most variables needed to configure the tolerances of failure detection are editable in the **Ivy.ini** file.

**Landing evaluation:**

Most people only think about sink rate upon landing,

however, your passengers will not fly with you again,

if the g-forces upon landing are too high.

No matter what your vertical speed was.

Or to put it in other words:

A friend of my father was once happy like a little kid, because upon short runway on a greek island (I think it was Mykonos), he put his MD-80 with force to the ground (to ensure a no-flare situation), which resulted in serious pain in his back, broken ceramics of the passenger meals they had for their return flight, but the technician said after checking his data: *"No, this was not a hard landing."*

Well, the passengers might have other constraints than your technicians. Hence, the rating is the following:

*Rating A:*

Sink rate < 100 ft/min

Vertical forces < 1.5g

*Rating B:*

Sink rate < 250 ft/min

Vertical forces < 2g

*Rating C:*

Sink rate < 400 ft/min

Vertical forces < 3g

*Rating D:*

Sink rate < 500 ft/min

Vertical forces < 4g

*Rating F:*

Everything else that did not trigger the X-Plane crash detection

A proper landing requires you to touch down more than 5 seconds.

The rating includes **all bounces** within a 10 seconds window before your final touchdown.

Rating of your flight, depending on the errors you made:

0 Errors : Excellent

<5 Errors : Good (nice)

<10 Errors : Bad

>=10 Errors : Horrible

Details of your highest sink rate and vertical g-forces are spoken upon landing (including all bounces in the evaluation)

Every landing is stored in your IvyLogbook.

**Implemented callouts for all aircraft:**

1. Gear down callout (default: 100ft/min)
2. Gear up callout
3. 60 knots callout (need to be compatible with smaller aircraft)
4. Positive rate of climb
5. Approaching Minimums (default: DH+100, DH must not be zero)
6. Fasten Seatbelts
7. Take Off Announcement on Non-Smoking Toogle or Commmand
8. Landing Announcement on Non-Smoking Toogle or Commmand

Remember that Ivy is a Union member and will only perform one take off and one landing announcement per flight. However, she might consider doing it on multi-leg flights.

**Implemented callouts for specific aircrafts:**

* V-Speeds:
  + V1
  + VR
  + V2
  + V2 not achieved within 5 seconds after take off
* Flaps settings
* Slats settings

I supply multiple aircraft configuration files, but I can only implement and test them for aircraft I own. V-Speeds are currently available for CL 300 and Rotate MD-80. Unfortunately, CRJ-200 does not provide V-Speeds as datarefs.

* Standard MD-80
* Baron B58
* Cessna 172 SP Skyhawk
* Cirrus personal jet
* King Air C90
* Stinson L5 Sentinel
* Bombardier Challenger 300 for XP 11
* Rotate MD-80
* Jetstream 32
* CRJ-200
* Twin Otter Version 2 (BTW: Seatbelt and Non-Smoking signs not setting Dataref)
* Douglas C-47
* VSKYLABS DC-3
* Standard B747-400
* ERJ-140

You can open the data for slats and flaps positions via menu or command and create your own configuration file if you like

**Commands**

The following commands can be bound to your keyboard:

* *Ivy/cabin\_announcement*: Ivy will make a Take-Off or Landing announcement.
* *Ivy/say\_baro:* Say the current barometric pressure
* *Ivy/say\_wind*: Say wind direction and speed
* *Ivy/show\_output*: Show the flaps/slats position for creating *IvyAircraft\_X.ini*
* *Ivy/reset\_ivy*:Resets Ivy. Recommended for multi leg flights.

**Loogbook**

Ivy remembers everything! She keeps precise tracking of all your mistakes and landings, noting every detail in your logbook. At least, most of it. You can open your loogbook in the plugins menu.

Arrival and departure airports are simply the next Airport Refs from your take-off/landing. There are certain runways in x-plane close to another airport, which might cause wrong airport names.

**What else is there to say?**

Remember that fun is subjective. If you don't like certain call outs, you can simply remove the individual mp3 file. No need to renumber the sound files, Ivy is not that picky. If you don't like the plug-in at all, go write your own.

All speech was generated using the Amazon Polly Text-to-Speech synthesis engine. You may generate your own sound files, if you want more proper call outs. You just need an AWS account, which is currently free of charge or any other speech synthesis software. However, I hereby deny the use of any speech that contains sexism, racism or fascism (there are always some idiots out there).   
  
Amazon offers a variety of voices and it is definitely on my ToDo list to generate different voice packs. Ivy is just the most funny voice that I decided to start with.

Any other sounds were taken from freesound.org, where all chosen sounds were using the creative commons 0 license. One sound was taken from GNU GPL licensed software (WeakAuras).

This software is published under the GNU General Public License v3. Remember that this gives you no warranty for functionality and by using this software, you yourself take the full responsibility for any fatalities caused by any bugs.

This software was **not** written by a professional pilot. It does **not** follow any real life procedures and is **not** safe for flight training. If you cause a fatal crash, because you followed Ivy's suggestions, we might consider your nomination for the Darwin Award.

Many animals were hurt during the creation of this product. Deere were hit on the runway, birds were soaked into the engine. Most of them are better now. Even though the turkey was too well done. Not all virtual pilots yet recovered from the injuries of countless crashes that were used to train Ivy's supervision talents. However, as freeware does not produce any income, we cannot afford to pay them a doctor. Yes, you should feel bad about that!