

# BushMissionGen

by f99mlu @ 2021

The first official mission generator for MSFS 2020!

**Requires:** Java 8 or newer (64-bit).

Thanks to **Lithilium** for the original sim files. And to **cptdev** for the extra documents!

The tool generates all the directories and files needed, including default single color images, to compile a bush or landing mission. The input file is one single text file or XLSX file containing waypoint names, coordinates, generic mission data, nav log texts, etc. It can be generated by the tool from an existing flight plan (PLN file)!

BushMissionGen will **never**:

- be a Bing maps screenshot generator for add-on images, loading screens or navlog images.
- generate standard navlog instructions.
- have an extensive GUI for all fields.
- make use of the SimConnect DLL for advanced communication with the sim.
- be a graphical scenery/airport creation tool.

If you require some of those features, check out the excellent Bush Trip Injector by BuffyGC!

<https://flightsim.to/file/4131/bushtripinjector>

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# HOW-TO

## Step-by-step instructions

1. Download BushMissionGen (<https://flightsim.to/file/3681/bushmissiongen>).
2. Create an input file for the tool. Have a look at the sample file (sample\_inputfile.txt or the XLSX file) included in the default distribution or generate your own input file from scratch by using the PLN conversion feature in BushMissionGen.
3. Double-click on the BushMissionGenerator.jar file to start the application.
4. Select an input file by pressing the "Select" button.
5. Put WAV files to be used in the same folder as the input file.
6. Click on the "Generate" button. See the output dir for the generated mission files.
7. Replace the standard images in the "images folder". You can also add POI images (see Images below).
8. Select the Tool/Compile menu item.

## Images

An Activity\_Widget.jpg image (816x626), a Loading\_Screen.jpg (3840x2160) and a Thumbnail.jpg (412x170) are automatically generated. In addition to this, PNG and JPG images are generated for each airport to be used in the leg selection screen and in the NavLog.

- The airport JPG images should be Ultra HD or Full HD images with a top/side-view of the airport.
- The NavLog PNG images should be smaller images (1200x800 or in that vicinity) and be "screenshots" from Bing Maps or Google Maps.

You can supply images to the input file folder to add images to any navlog sub leg text. The name must match the POI number (POI5.png, POI22.png, etc). These images are not auto-generated (since it is optional). If you remove a POI image from the source folder, you must also remove it from the output images folder. After a change to the POI images (adding or removing POIxxx.png files), you must generate the mission again. Then the tool will autodetect the images and add them to the mission.

## Tutorials

|   |   |
|---|---|
| Youtube tutorial made by Tom Guyatt - bush missions     | <a href="https://youtu.be/JCfpbqIP2cQ">https://youtu.be/JCfpbqIP2cQ</a>                               |
| Youtube tutorial by Flying Theston - bush missions      | <a href="https://www.youtube.com/watch?v=GSjKZSOlz70">https://www.youtube.com/watch?v=GSjKZSOlz70</a> |
| Youtube tutorial by Flying Theston - landing challenges | <a href="https://www.youtube.com/watch?v=7Jz66u-KNq8">https://www.youtube.com/watch?v=7Jz66u-KNq8</a> |

## Cool features

- Landing challenges can also be generated! Also with failures and dialogs etc.
- You can create input files by converting a PLN file.
- You can compile the generated source files with the SDK (if installed) by triggering the build from inside the tool (Tools menu).
- Supports multiple coordinate formats.

Examples:

8°07'34.4"N 98°55'22.0"E  
N8° 07' 34.4",E98° 55' 22.0"  
N65° 18.25',E17° 58.51'  
64.412136, -78.630752  
Little Navmap format

- Validation of some some input values.
- An input file can be specified on the command line to load it automatically into the application at startup.
- You can customize the weather by editing the weather file (Weather.WPR).
- A number of weather presets can be selected.
- Plane selector (PLN import). There is also a menu option to show ALL planes available on the disk.
- Preview the navlog texts and images before launching the sim.
- A GeoJSON map is created by default and can be opened in <http://geojson.io/> to see the flight plan and trigger areas for dialogs, failures, etc.
- Images are never overwritten. This means you can put the final images in the images output directory, then just change values in the input file and generate over and over again without losing them. Same with Weather.WPR.. it will never be overwritten in any output folder.
- Sounds are never overwritten.
- You can assign references and use them in sophisticated triggers to make very interesting bush missions.
- You can add landmarks (markers for POIs and cities). And also fauna!

## Format explanation

Using the sample input file as an example. I guess the generic information about the bush trip is obvious.

**author**=f99mlu

**project**=scaniabush

**version**=1.0.0

**location**=Scania

**title**=Scania Bush Trip

**description**=A bush mission around Scania in Sweden

**intro**=Welcome to the most southern part of Sweden called Scania. Here you will find beautiful coastlines surrounding rich farmland and woods.

**plane**=Asobo Savage Cub

**latitude**=N56°11'10.2"

← Important! This is where your plane starts on the first runway.

**longitude**=E12°34'45.2"

← Important! This is where your plane starts on the first runway.

**altitude**=+21.00

← Important! This is where your plane starts on the first runway.

**pitch**=0

**bank**=0

**heading**=240

← Important! This is where your plane starts on the first runway.

**season**=Summer

**year**=2018

**day**=167

**hours**=9

**minutes**=35

**seconds**=0

## Weather presets

|                                      |                                      |
|--------------------------------------|--------------------------------------|
| .\WeatherPresets\BrokenClouds.WPR    | .\WeatherPresets\Rain.WPR            |
| .\WeatherPresets\ClearSky.WPR        | .\WeatherPresets\ScatteredClouds.WPR |
| .\WeatherPresets\FewClouds.WPR       | .\WeatherPresets\Snow.WPR            |
| .\WeatherPresets\HighLevelClouds.WPR | .\WeatherPresets\Storm.WPR           |
| .\WeatherPresets\Overcast.WPR        |                                      |

## Optional fields with examples

*Altitudes are in AMSL, but can be overridden by useAGL=[True/False] or by appending AGL or ASML after a height)*

| Field Example   | Description   |
|---|---|
| <b>sdkPath</b> =C:\MSFS SDK\Tools\bin\fspackagetool.exe   | Full path including the fspackagetool.exe   |
| <b>navlogImageSize</b> =789#855   | Standard size is 1200x800, but this can be overridden by this parameter.  |
| <b>navlogImageFormat</b> =jpg   | Standard format is png, but it can be overridden with jpg by this parameter.  |
| <b>uniqueApImages</b> =True   | Generate different images if the same airport is used multiple times.   |
| <b>loadingTip</b> =Scania is beautiful!   | Multiple loading tips can be listed by duplicating the loadingTip field! Maximum five right now.  |
| <b>introSpeech</b> =Here we go!   | A text which is spoken by a male voice when reaching the intro screen of the mission. Or specify a WAV file (44.1 kHz!!). This must be put in a "sound" folder parallel to the images folder. |
| <b>introSpeech</b> =I hope you enjoy the mission.#10.000  | As above but delayed 10 seconds after the mission start. Multiple entries are possible.   |
| <b>poiSpeech</b> =true  | Voice announcements when flying close to an airport or POI. Reads the sub legs texts.   |
| <b>poiSpeechBefore</b> =true  | Same as above, but reads one airport/POI in advance (RECOMMENDED instead of the above variant).   |
| <b>dialogEntry</b> =hello#56°08'25.0"N 12°35'15.3"E   | Voice dialog with arbitrary text at a specific coordinate (5000 x 5000 x 10000 meters).   |
| <b>dialogEntry</b> =Here you are!#55°56'03.2"N 12°46'50.1"E#10.000#4000.000#4000.000#8000.000               | As above, but specified heading, length, width and height in meters of cubic area.  |
| <b>dialogEntry</b> =There you are!#55°56'03.2"N 12°46'50.1"E#10.000#4000.000#4000.000#8000.000#5.000        | As above but also with a delay before the dialog (seconds).   |
| <b>dialogEntry</b> =There you are!#55°56'03.2"N 12°46'50.1"E#10.000#4000.000#4000.000#8000.000#5.000 #False | As above but also with a setting to handle re-triggering of the dialog. False = re-triggers will happen.  |
| <b>dialogEntryExit</b> =Leaving Las Vegas#36°05'09.4"N 115°08'45.4"W#0.000#6000.000#6000.000#3000.000       | As above but when leaving a specified area.   |
| <b>finishedEntry</b> =Welcome to Landskrona Airport. Clap! Clap!#ESML#5.000                                 | Landing announcement of a text at an airport with length in seconds.  |
| <b>finishedEntry</b> =clap.wav Welcome to Landskrona Airport. Clap! Clap!#ESML#5.000                        | As above, but a sound is played and the text is used for subtitles.   |
| <b>finishedEntry</b> =land1.wav Welcome to Trelleborg Airport.#ESMR#5.000#0.000                             | Three next rows are example of multiple announcements per airport.  |
| <b>finishedEntry</b> =land2.wav Take a quick break.#ESMR#3.000#6.000  |   |
| <b>finishedEntry</b> =land3.wav Wake up! Now go to ESMS.#ESMR#4.000#10.000                                  |   |
| <b>altitudeWarning</b> =No higher mate. I am afraid of heights.#5000.000                                    | Warning text at a certain altitude (feet). Multiple entries possible!   |
| <b>altitudeWarning</b> =No higher mate. I am afraid of heights.#5000.000#False                              | As above but also with a setting to handle re-triggering of the dialog. False = re-triggers will happen.  |

|   |   |
|---|---|
| <b>speedWarning</b> =Now you are fast enough#90.000   | Warning text at a certain speed (knots). Multiple entries possible!   |
| <b>speedWarning</b> =Now you are fast enough#90.000#False   | As above but also with a setting to handle re-triggering of the dialog. False = re-triggers will happen.                                    |
| <b>altitudeAndSpeedWarning</b> =Now you are fast enough and high up enough!#2000.000#90.000       | Combination of altitude and speed. Multiple entries possible!   |
| <b>altitudeAndSpeedWarning</b> =Now you are fast enough and high up enough!#2000.000#90.000#False | As above but also with a setting to handle re-triggering of the dialog. False = re-triggers will happen.                                    |
| <b>formulaWarning</b> =Watch it mister!#(A:GROUND VELOCITY, Knots) 90 &gt;                        | Warning text when a criterions for a formula has been fulfilled.  |
| <b>formulaWarning</b> =Watch it mister!#(A:GROUND VELOCITY, Knots) 90 &gt;#False                  | As above but also with a setting to handle re-triggering of the dialog. False = re-triggers will happen.                                    |
| <b>pilot</b> =Male  | Male or Female pilot  |
| <b>coPilot</b> =Male  | Multiple copilots can be listed by duplicating the coPilot field!   |
| <b>coPilot</b> =Female  |   |
| <b>simFile</b> =apron.flt   | To start dark & cold. Other values are: runway.FLT, final.flt, approach.flt, taxi.flt, climb.flt, etc.                                      |
| <b>fuelPercentage</b> =90   | Set how full the fuel tanks should be at start in a non-airliner plane.   |
| <b>fuelPercentageList</b> =90#80#80#30#30#40#40#50#50#100#100                                     | A complete list of all 11 fuel percentages for all possible tanks in a non-airliner plane. Overrides the fuelPercentage field.              |
| <b>parkingBrake</b> =0  | Parking brake set at start = 100. Else use 0.<br><b>NOTE!!! DOES NOT WORK AT THE MOMENT!! SIM BUG???</b>                                    |
| <b>payloadList</b> =170.0#170.0#0.0#0.0#0.0#0.0#30.0#0.0  | A list of payloads in pounds. Both for airliners and other planes.  |
| <b>tanksList</b> =0.25#0.25#0.25#1  | A list of airliner tanks and their fill percentages.  |
| <b>tailNumber</b> =VH-MSF   |   |
| <b>airlineCallSign</b> =SAS   |   |
| <b>flightNumber</b> =1234   |   |
| <b>appendHeavy</b> =False   |   |
| <b>multiPlayer</b> =True  |   |
| <b>weather</b> =live  | custom, live (unlocks the weather settings) or an existing weather preset. Leave empty to use the default custom weather file (Few clouds). |
| <b>failureEngineFire0</b> =30-60  | failure{Failing system = see below}{sub index = 0-N}={from time in seconds}-(to time in seconds}  |
| <b>failureOilLeak0</b> =25-300  |   |
| <b>failureEngine0</b> =0.000#24°59'60.0"N 71°00'00.0"W#10.000#4000.000#4000.000#8000.000          | failure at a specific coordinate (cube detection). The value before the coordinate is the health percentage.                                |
| <b>failureExitCompass0</b> =0.000#24°59'60.0"N 71°00'00.0"W#10.000#4000.000#4000.000#8000.000AGL  | Same as above but fails upon exit of the detection cube.  |
| <b>altitudeFailureEngineFire0</b> =50.000#5000.000  | failure at a specific altitude (AMSL). The value before the altitude is the health percentage   |
| <b>speedFailureEngineFire0</b> =50.000#95.000   |   |
| <b>altitudeAndSpeedFailureEngineFire0</b> =50.000#1234  |   |

|   |   |
|---|---|
| .567#95.000   |   |
| <b>formulaFailureEngineFire0</b> =50.000#(A:GROUND VELOCITY, Knots) 100 &gt;  | Failure triggered by a formula.   |
| <b>showVfrMap</b> =False  | False = panel is disabled!  |
| <b>showNavLog</b> =True   | False = panel is disabled!  |
| <b>enableRefueling</b> =True  |   |
| <b>enableAtc</b> =True  |   |
| <b>enableChecklist</b> =True  |   |
| <b>enableObjectives</b> =True   |   |
| <b>requireEnginesOff</b> =True  | Can be used to enable the usage of the same airport twice in a mission.   |
| <b>requireBatteryOff</b> =True  | Can be used to enable the usage of the same airport twice in a mission.   |
| <b>requireAvionicsOff</b> =True   | Can be used to enable the usage of the same airport twice in a mission.   |
| <b>requireNothing</b> =True   | Same as above, but require nothing special. Used as an override to avoid tool warning dialog.                     |
| <b>useAGL</b> =True   | Use AGL (Above Ground Level) instead of ASML (Above Mean Sea Level) for detection cubes.                          |
| <b>useOneShotTriggers</b> =False  | Voice/sound announcements and warnings/failures can be triggered more than once. False = re-triggers will happen. |
| <b>standardAirportExitAreaSideLength</b> =3000.000  | Override the standard size of the airport trigger areas when leaving the area.                                    |
| <b>standardEnterAreaSideLength</b> =5000.000  | Override the standard size of the airport/POI trigger areas when entering the area.                               |
| <b>missionFailureArea</b> =56°11'54.0"N 12°32'51.7"E#0.000#1000.000#1000.000#8000.000AMSL                             |   |
| <b>missionFailureArea</b> =56°11'54.0"N 12°32'51.7"E#0.000#1000.000#1000.000#8000.000AMSL<br>#text                    |   |
| <b>missionFailureExitArea</b> =56°02'16.7"N 12°36'58.0"E#0.000#1000.000#1000.000#8000.000AGL                          |   |
| <b>missionFailureExitArea</b> =56°02'16.7"N 12°36'58.0"E#0.000#1000.000#1000.000#8000.000AGL#t<br>ext                 |   |
| <b>missionFailureAltitude</b> =5000.000   |   |
| <b>missionFailureAltitude</b> =5000.000#text  |   |
| <b>missionFailureSpeed</b> =110.000   |   |
| <b>missionFailureSpeed</b> =110.000#text  |   |
| <b>missionFailureAltitudeAndSpeed</b> =7000.000#90.000  |   |
| <b>missionFailureAltitudeAndSpeed</b> =7000.000#90.000#text   |   |
| <b>missionFailureTime</b> =600.000  | Sets this time limit for each leg in the mission.   |
| <b>missionFailureTime</b> =600.000#text   | Sets this time limit for each leg in the mission.   |
| <b>missionFailureFormula</b> =(A:AUTOPILOT MASTER, Bool) 0 &gt;#Autopilot is not allowed in this mission!             | Reverse polish notation (RPN) formula!  |
| <b>libraryObject</b> =46168F7E-5861-4F8B-A63F-02062032C4BD#N49° 40' 23.06",E18° 26' 3.40"#0.000AGL#0.000#10.000       | Place a scenery object in the world. Can be used with references to show and hide objects!                        |
| <b>libraryObject</b> =46168F7E-5861-4F8B-A63F-02062032C4BD#N49° 40' 23.06",E18° 26' 3.40"#0.000AGL#0.000#10.000#False | Same as above plus an option to control if the object is activated (visible )at mission start or not.             |



|   |  |
|---|--|
| <b>libraryObject</b> =46168F7E-5861-4F8B-A63F-02062032C4BD#N49° 40' 23.06",E18° 26' 3.40"#0.000AGL#0.000#0.000#False#10.000#False       | Same as above plus additional options for pitch, bank and snap to ground (True/False).   |
| <b>landmarkObject</b> =My great place#N49° 40' 23.06",E18° 26' 3.40"#50.000#0.000#POI   | Place a marker for POI or city on the world map and in the mission. Also fauna can be added.   |
| <b>addAirport</b> =F99M#F99MLU#Baske City#55°35'56.3"N 14°18'21.7"E#100.000#1000.000  | Creates an airport with an ICAO identifier and a name. See the "Airport creation" chapter below.   |
| <b>addRunway</b> =F99M#55°35'56.3"N 14°18'21.7"E#100.000#45.000#300.000#49.555#55°35'55.2"N 14°18'17.5"E#55°35'57.1"N 14°18'23.8"E#DIRT | Creates a runway with a runway number for a specified airport. See the "Airport creation" chapter below.   |
| <b>deactivateDialogsAtStart</b> =True   | All dialogs can be set to deactivated when the mission starts. Instead of True/False, a comma-separated list of dialog triggers can be supplied.                         |
| <b>deactivateWarningsAtStart</b> =True  | All warnings can be set to deactivated when the mission starts. Instead of True/False, a comma-separated list of warning triggers can be supplied.                       |
| <b>deactivateFailuresAtStart</b> =True  | All failures can be set to deactivated when the mission starts. Instead of True/False, a comma-separated list of failure triggers can be supplied.                       |
| <b>deactivateMissionFailuresAtStart</b> =True   | All mission failures can be set to deactivated when the mission starts. Instead of True/False, a comma-separated list of mission failure triggers can be supplied.       |
| <b>deactivateMissionFailuresAtStart</b> =mfe1,mfe2  | Example with specified triggers.   |
| <b>deactivateLibObjsAtStart</b> =True   | All library objects can be set to deactivated (hidden) when the mission starts.  |
| <b>activateTriggers</b> =de1#mfalt1,aw1,aw2   | Activates a list of triggers (dialogs, failures, mission failures, library objects and warnings) when a dialog, warning or failure is triggered. See References below!   |
| <b>deactivateTriggers</b> =de2#mfalt1,aw1,aw2   | Deactivates a list of triggers (dialogs, failures, mission failures, library objects and warnings) when a dialog, warning or failure is triggered. See References below! |
| <b>counterActivateTriggers</b> =de1,de2,aw1#mfarea1,mfalt1  | Activates a list of triggers when all of the dialogs, warnings and failures have been triggered in a list.   |
| <b>counterDeactivateTriggers</b> =de3,de4#mfarea2#play.wav  | Deactivates a list of triggers when all of the dialogs, warnings and failures have been triggered in a list.   |

**Example 1:** Usage of references (**reference name::field name**=field value)

**aw1::altitudeWarning**=No higher mate. I am afraid of heights.#5000.000AGL

**mfalt1::missionFailureAltitude**=6000.000AGL

**de1::dialogEntry**=Ok, somehow my fear of heights has disappeared. Fly as you want!#N29° 57' 7.59",E81° 55' 35.34"#0.000#500.000#15000.000#10000.000#0.000

**de2::dialogEntry**=Fly like a bird in the sky!#29°57'20.7"N

81°49'34.3"E#0.000#5000.000#5000.000#5000.000#0.000

**deactivateTriggers**=**de1#mfalt1,aw1,de2**

**Example 2:**

**de1::dialogEntry**=Now you are free to land! I promise I won't shoot.#N29° 57' 7.59",E81° 55' 35.34"#0.000#500.000#15000.000#10000.000#0.000

**mfarea1::missionFailureArea**=56°11'54.0"N 12°32'51.7"E#0.000#1000.000#1000.000#8000.000AMSL

**counterDeactivateTriggers**=**de1#mfarea1**

**Example 3:**

**deactivateLibObjsAtStart**=False

**lo1::libraryObject**=46168F7E-5861-4F8B-A63F-02062032C4BD#N49° 40' 23.06",E18° 26' 3.40"#0.000AGL#0.000#10.000

**de1::dialogEntryExit**=Now the blue car should disappear.#N49° 40' 56.57",E18° 28' 45.46"#0.000#4000.000#4000.000#8000.000#0.000

**activateTriggers**=**de1#lo1**

## Airport creation

Make sure you choose a unique ICAO for your "imaginary" airport, which does not conflict with any existing ICAO/identifier in the sim. You can add as many airports and runways as the sim supports (5?). Then just refer to them in your waypoint list as any other airport.

## Runway surfaces

|            |                     |            |
|------------|---------------------|------------|
| ASPHALT    | DIRT                | SHALE      |
| BITUMINOUS | GRASS               | SNOW       |
| BRICK      | GRAVEL              | STEEL_MATS |
| CLAY       | ICE                 | TARMAC     |
| CEMENT     | MACADAM             | UNKNOWN    |
| CONCRETE   | OIL_TREATED, PLANKS | WATER      |
| CORAL      | SAND                |            |

## Failing system when specifying a time interval

*Not all are applicable to every kind of plane!*

|                            |                      |                    |
|----------------------------|----------------------|--------------------|
| EngineSystem               | ElectricalSystem     | NavSystem          |
| OilLeak                    | ElevatorSystem       | PitotSystem        |
| OilSystem                  | FlyByWire_ELAC       | RearTailSystem     |
| EngineFuelPump             | FlyByWire_FAC        | RightAileronSystem |
| EngineFire                 | FlyByWire_SEC        | RightBrakeSystem   |
| ADFSysytem                 | FuelGauge            | RightFlapSystem    |
| AirspeedGauge              | FuelLeak             | RightGearSystem    |
| AltimeterGauge             | GPSSystem            | RightMagneto       |
| ApuFire                    | Generator            | RightWingSystem    |
| ApuSystem                  | HoistMotor           | RightWingTipSystem |
| AttitudeGauge              | HydraulicLeak        | RudderSystem       |
| AuxGearSystem              | HydraulicPumpFailure | SlingCable         |
| BrakeSystemHydraulicSource | LeftAileronSystem    | StaticSystem       |
| CenterGearSystem           | LeftBrakeSystem      | TransponderSystem  |
| ComSystem                  | LeftFlapSystem       | TurbineIgnition    |
| CompassGauge               | LeftGearSystem       | TurncoordGauge     |
| CoolantSystem              | LeftMagneto          | VSIgauge           |
| Cylinder                   | LeftWingSystem       | VacuumSystem       |
| DGgauge                    | LeftWingTipSystem    |                    |

## Failing system when specifying a failure with a coordinate

|                  |               |                            |
|------------------|---------------|----------------------------|
| Engine           | HydraulicLeak | AuxGear                    |
| EngineFire       | LeftMagneto   | LeftBrake                  |
| Cylinder         | RightMagneto  | RightBrake                 |
| Coolant          | Elevator      | BrakeSystemHydraulicSource |
| OilSystem        | LeftAileron   | AttitudeIndicator          |
| OilLeak          | RightAileron  | AirspeedIndicator          |
| VacuumSystem     | Rudder        | Altimeter                  |
| Pitot            | RearTail      | DirectionalGyro            |
| Static           | LeftFlap      | Compass                    |
| ElectricalSystem | RightFlap     | TurnCoordinator            |
| Generator        | LeftWing      | VSI                        |
| FuelPump         | LeftWingTip   | COMRadios                  |
| FuelLeak         | RightWing     | NavRadios                  |
| APU              | RightWingTip  | ADFRadios                  |
| APUFire          | CenterGear    | Transponder                |
| TurbineIgnition  | RightGear     |                            |
| HydraulicPump    | LeftGear      |                            |

## Formula information

[http://www.prepar3d.com/SDKv3/LearningCenter/utilities/variables/simulation\\_variables.html](http://www.prepar3d.com/SDKv3/LearningCenter/utilities/variables/simulation_variables.html)

## Planes to choose from

### Standard

Airbus A320 Neo Asobo  
Asobo Savage Cub  
Asobo XCub  
Beechcraft King Air 350i Asobo  
Boeing 747-8i Asobo  
Bonanza G36 Asobo  
Cessna 152 Asobo  
Cessna 208B Grand Caravan EX  
Cessna CJ4 Citation Asobo  
Cessna Skyhawk G1000 Asobo  
DA40-NG Asobo  
DA62 Asobo  
DR400 Asobo  
Extra 330 Asobo  
FlightDesignCT Asobo  
Icon A5 Asobo  
Mudry Cap 10 C  
Pitts Asobo  
TBM 930 Asobo  
VL3 Asobo

### Deluxe

Asobo Baron G58  
Cessna 152 Aero Asobo  
Cessna Skyhawk Asobo  
DA40 TDI Asobo  
DV20 Asobo

### Premium Deluxe

Boeing 787-10 Asobo  
Cessna Longitude Asobo  
SR22 Asobo  
Pipistrel Alpha Electro Asobo  
Savage Shock Ultra Asobo

You can manually set any plane you want, like the A330-300 from PMP, by finding the plane's name (title) in the aircraft.cfg file of the addon. Example: Title="Airbus A330-300". Or use the menu option **Show available planes...** in the Tools menu.

## Waypoints and navlog texts

Down here we have the waypoints and navlog text etc. Columns are separated by a | character (pipe).

| Column | Header     | Description  |
|--------|------------|--|
| 1      | #icao      | ICAO (Airports only! Leave empty for POIs)   |
| 2      | rw         | Runway number (Airports only! Leave empty for POIs. Must not start with zeros!)  |
| 3      | name       | Airport name   |
| 4      | type       | Waypoint type (A = Airport, U = User-defined (POI))  |
| 5      | LL         | Coordinate (Latitude,Longitude)  |
| 6      | alt        | Altitude in feet   |
| 7      | WpInfo     | Waypoint info<br><i>estimated knots,</i><br><i>actual knots,</i><br><i>height in meters,</i><br><i>actual time enroute,</i><br><i>estimated time of arrival,</i><br><i>fuel remaining when arrived,</i><br><i>estimate of fuel required for the leg,</i><br><i>actual fuel used for the leg.</i><br>Some of the values may be unknown and recorded as zero |
| 8      | legtext    | Leg description (NOT VISIBLE IN THE SIM! MAYBE IN THE FUTURE)  |
| 9      | sublegtext | Subleg description   |

**NOTE!** Never remove the line below ("#icao rw name ...") from any input file. The tool uses it!

```
#icao rw name type LL alt WpInfo legtext
sublegtext
```

```
ESMH|24|Hoganas Airport|A|N56° 11' 05.1",E12° 34' 29.9"|+000028.00|58, 0, 47, 0, 0, 28.0, 0.0, 0.0|ESMH-ESML|-
```

```
||Helsingor harbour|U|N56° 02' 37.9",E12° 41' 32.6"|+000000.00|60, 0, 182, 0, 0, 0.0, 0.0, 0.0||Enjoy the coastline! One could call this a smorrebrod trip. Follow the shores down to Helsingborg and do not forget to peek over towards Elsinore. It is the city closest to the Swedish border in this area.
```

```
||Ven|U|N55° 55' 05.8",E12° 41' 04.6"|+000000.00|126, 0, 304, 0, 0, 0.0, 0.0, 0.0||Visit the island of Ven where the famous astronomer Tycho Brahe once lived.
```

```
ESML||Landskrona Airport|A|N55° 56' 46.9",E12° 52' 09.4"|+001000.00|126, 0, 304, 0, 0, 0.0, 0.0, 0.0|ESML-ESMR|Now fly to the east and head for Enoch Thulins Airport. It lies 3.5 miles from the Oresund between highway 20 and a small river.
```

```
||Barseback|U|N55° 44' 38.7",E12° 55' 15.7"|+000000.00|126, 0, 304, 0, 0, 0.0, 0.0, 0.0||Radio activity... beep beep beep! This is the old nuclear plant Barseback and is currently not in operation.
```

```
||Limhamn|U|N55° 34' 03.3",E12° 55' 49.2"|+000000.00|126, 0, 304, 0, 0, 0.0, 0.0, 0.0||The limestone quarry in Limhamn is 65 meters deep and 150 years old.
```

||Falsterbo|U|N55° 24' 20.0",E12° 51' 07.7"|+000000.00|126, 0, 304, 0, 0, 0.0, 0.0, 0.0||  
Falsterbonaset. This is a peninsula you just cannot miss if you fly over Scania and Oresund.

ESMR||Trelleborg Airport|A|N55° 23' 28.7",E13° 01' 19.6"|+001000.00|126, 0, 304, 0, 0, 0.0, 0.0, 0.0|  
0.0|ESMR-ESMS|Land at Trelleborg/Maglarp airstrip, if you manage to find it! There is a number  
printed on the runway.

||Trelleborg harbour|U|N55° 22' 15.8",E13° 09' 02.7"|+000000.00|126, 0, 304, 0, 0, 0.0, 0.0, 0.0||  
Have a look at the harbour in Trelleborg. From here the ferries go to and from Germany and Poland.

||Havgardssjon|U|N55° 28' 59.8",E13° 21' 30.4"|+000000.00|126, 0, 304, 0, 0, 0.0, 0.0, 0.0||A small  
lake before reaching the airport.

ESMS||Malmo Airport|A|N55° 32' 10.7",E13° 22' 34.3"|+001000.00|126, 0, 304, 0, 0, 0.0, 0.0, 0.0|  
ESMS-ESTO|Land at Sturup, also known as Malmo Airport. The largest airport in Scania.

||Four lakes|U|N55° 31' 44.2",E13° 44' 01.5"|+000000.00|126, 0, 304, 0, 0, 0.0, 0.0, 0.0||Start at  
Sturup for a nice trip to the southeastern parts of Scania called Osterlen.

ESTO||Tomelilla Airport|A|N55° 32' 32.7",E13° 59' 56.2"|+001000.00|126, 0, 304, 0, 0, 0.0, 0.0, 0.0|  
0.0|ESTO-ESMK|We pass over the four lakes Krageholm, Ellestad, Snogeholm and Sovde before  
landing in Tomelilla. The airstrip runs parallel to road 11 east of the village and is quite close to a  
go-kart track.

||Djupadal|U|N55° 36' 43.2",E14° 16' 45.1"|+000000.00|126, 0, 304, 0, 0, 0.0, 0.0, 0.0||Djupadal is  
known for the golf course and the surrounding apple orchards. Nearby lies another golf court called  
Lilla Vik.

||Stenshuvud|U|N55° 39' 43.9",E14° 16' 30.7"|+000000.00|126, 0, 304, 0, 0, 0.0, 0.0, 0.0||  
Stenshuvud is a national park with a 97 m peak. Some say it looks like the head of a dolphin. What  
do you think?

||Gropahalet|U|N55° 51' 30.0",E14° 14' 02.3"|+000000.00|126, 0, 304, 0, 0, 0.0, 0.0, 0.0||Gropahalet,  
another national park, where Helge river flows into the Baltic Sea. This is where you should leave  
the coast and look for the airport surrounded by trees and farmland.

ESMK||Kristianstad-Everod Airport|A|N55° 55' 20.3",E14° 05' 08.3"|+001000.00|126, 0, 304, 0, 0,  
0.0, 0.0, 0.0|ESMK-ESFI|Land at Kristianstad-Everod Airport. Road 19 runs parallel to the airport.

||Hammarsjon|U|N55° 59' 51.4",E14° 11' 22.3"|+000000.00|126, 0, 304, 0, 0, 0.0, 0.0, 0.0||Here you  
will notice a change of scenery with more woods and lakes. Fly over the lake and pass west of the  
city of Kristianstad.

||Araslovsjon|U|N56° 03' 35.2",E14° 07' 07.0"|+000000.00|126, 0, 304, 0, 0, 0.0, 0.0, 0.0||Lake  
Araslov is the next thing to look out for.

ESFI||Knislinge Airport|A|N56° 11' 38.0",E14° 07' 41.6"|+001000.00|126, 0, 304, 0, 0, 0.0, 0.0, 0.0|  
ESFI-ESMF|Follow the small river until it makes a longer turn to the west. Land at Knislinge  
Airport.

||Vittsjon|U|N56° 20' 51.8",E13° 40' 22.6"|+000000.00|126, 0, 304, 0, 0, 0.0, 0.0, 0.0||Vittsjon, one  
of the hundreds of lakes up here. Keep looking at all those lakes to find the right one to aim for.

ESMF||Fagerhult Airport|A|N56° 23' 17.7",E13° 28' 15.5"|+001000.00|126, 0, 304, 0, 0, 0.0, 0.0, 0.0|ESMF-ESTL|Land at Fagerhult Airport on the west side of the small lake Fedlingsjon.

||Finjasjon|U|N56° 08' 06.6",E13° 41' 59.8"|+000000.00|126, 0, 304, 0, 0, 0.0, 0.0, 0.0||Lake Finja!  
Navigate by recognizing the shape of the small seas below you. The rivers are also quite useful to not get completely lost.

ESTL||Ljungbyhed Airport|A|N56° 05' 00.4",E13° 11' 36.8"|+001000.00|126, 0, 304, 0, 0, 0.0, 0.0, 0.0|ESTL-ESTA|Land at the military airport of Ljungbyhed. This has several runways so choose the one you feel comfortable with. I recommend the largest one.

||Kvidinge|U|N56° 08' 06.0",E13° 02' 44.8"|+000000.00|126, 0, 304, 0, 0, 0.0, 0.0, 0.0||Follow the rivers north west until you see the beautiful shoreline again.

ESTA||Angelholm Airport|A|N56° 17' 28.7",E12° 51' 19.4"|+000062.00|54, 0, 0, 0, 0, 0.0, 0.5, 0.0|-|  
Land at Angelholm-Helsingborg Airport. Thank you for flying around Scania! I hope you enjoyed the flight.

You can use HTML tags like <i> and <br> to highlight words and create paragraphs etc in leg texts.  
& and " will be escaped to &amp; and &quot;;.

## What about landing challenges?

These fields are only used for landing challenges.

| #  | Entry   | Description   |
|----|---|---|
| 1  | missionType=landing   | "landing" for landing challenges.. Leave out completely or use "bush" for bush missions.  |
| 2  | challengeType=Epic  | Epic, Famous or StrongWind  |
| 3  | velocity=100  | The velocity (feet/second) of the plane in the air when the mission starts  |
| 4  | flapsHandle=050.00  | <b>Optional!</b> Percentage of maximum flap handle position. Default = 050.00   |
| 5  | leftFlap=050.00   | <b>Optional!</b> Percentage of maximum flap position of left flaps. If the maximum flap position is 40 degrees, then 002.50 indicates the flaps are at 1 degree. Default = 050.00 |
| 6  | rightFlap=050.00  | <b>Optional!</b> Percentage of maximum flap position of right flaps. Default = 050.00   |
| 7  | elevatorTrim=050.00   | <b>Optional!</b> Percentage of maximum elevator trim. Default = 050.00  |
| 8  | noGear=True   | <b>Optional!</b> Ignore the landing gear.   |
| 9  | maxDistanceToRunway=30  | <b>Optional!</b> Set the maximum distance in nautical miles to the runway.  |
| 10 | forceAirliner=True  | <b>Optional!</b> Forces BMG to use airliner templates. Useful for 3 <sup>rd</sup> party planes.   |
| 11 | #icao rw name type LL alt   |   |
| -  | CUST0 U N55° 23' 45.6",E13° 03' 57.5" +000500.00                      |   |
| 14 | ESMR 21 Trelleborg Airport A N55° 23' 28.7",E13° 01' 19.6" +000000.00 |   |

**Some important things!** Create at least one custom waypoint and one airport waypoint. Don't forget to set the standard "**heading**=" field manually to point the plane in the right starting direction in air. The optional fields "**payloadList**=" and "**tanksList**=" aren't too bad to set up properly too to ensure a correct flight feeling (i.e. center of gravity). Also, do not start too far away from the landing point, or you will get an error when you load the mission. Also try restarting the challenge and make sure you don't get "you did not land at designated runway" message. If that error pops up, try moving first waypoint closer.

Converting a PLN file to a landing challenge? If you want to start the plane in mid-air, make sure this is also reflected in the PLN file before importing. This means, the Departure LLA must be a coordinate+altitude in the air and the same values as the first waypoint. The first waypoint should then be of type **USER**, not **AIRPORT**.



## **A320 specifics**

These can be manually added to the FLT file after generation (but before compiling!) to get a more complete setup of the A320/A32NX. Add under the [LocalVars.0] section:

```
BTN_LS_FILTER_ACTIVE=1
BTN_LS_1_FILTER_ACTIVE=1
BTN_CSTR_FILTER_ACTIVE=1
BTN_CSTR_1_FILTER_ACTIVE=1
A320_Neo_MFD_Range=1
A320_Neo_MFD_Range_1=1
XMLVAR_Autobrakes_Level=2
XMLVAR_RTO_Level=0
A32NX_INITIAL_FLIGHT_PHASE=5
A32NX_FWC_SKIP_STARTUP=1
A32NX_ADIRS_PFD_ALIGNED_FIRST=1
GPSPrimaryAcknowledged=0
GPSPrimary=1
A32NX_GPS_PRIMARY_LOST_MSG=0
A32NX_ADIRS_TIMER_1=0
A32NX_ADIRS_TIMER_2=0
A32NX_ADIRS_TIMER_3=0
A320_Neo_ADIRS_TIME=0
A320_Neo_ADIRS_IN_ALIGN=0
A32NX_ADIRS_PFD_ALIGNED_ATT=1
```

## **A330 specifics**

Same as the A320?

## **B747 specifics**

T.B.A.

## **B787 specifics**

T.B.A.

## Translations / multi-language

These rows must be put AFTER the declaration of the route. I.e. after the last airport. Last in the file, so to say :). Please observe! The main language in the sim is English. So, the all the texts above the translations should be in English. Then you add other languages than English to the input file as translations:

```
meta|zh-CN||location|translated location
meta|zh-CN||title|translated title
meta|zh-CN||description|translated description
meta|zh-CN||loadingTip|translated loading tip #1    ← All multiple loading tips must be translated
meta|zh-CN||loadingTip|translated loading tip #2    ← All multiple loading tips must be translated
meta|zh-CN||intro|translated intro
```

```
ESMH|zh-CN|translated airport name|ESMH-ESML|-
POI|zh-CN|translated POI name||translated subleg text
POI|zh-CN|translated POI name||translated subleg text
ESML|zh-CN|translated airport name|ESML-ESMR|translated subleg text
POI|zh-CN|translated POI name||translated subleg text
POI|zh-CN|translated POI name||translated subleg text
POI|zh-CN|translated POI name||translated subleg text
ESMR|zh-CN|translated airport name|ESMR-ESMS|translated subleg text
POI|zh-CN|translated POI name||translated subleg text
POI|zh-CN|translated POI name||translated subleg text
ESMS|zh-CN|translated airport name|ESMS-ESTO|translated subleg text
POI|zh-CN|translated POI name||translated subleg text
ESTO|zh-CN|translated airport name|ESTO-ESMK|translated subleg text
POI|zh-CN|translated POI name||translated subleg text
POI|zh-CN|translated POI name||translated subleg text
POI|zh-CN|translated POI name||translated subleg text
ESMK|zh-CN|translated airport name|ESMK-ESFI|translated subleg text
POI|zh-CN|translated POI name||translated subleg text
POI|zh-CN|translated POI name||translated subleg text
ESFI|zh-CN|translated airport name|ESFI-ESMF|translated subleg text
POI|zh-CN|translated POI name||translated subleg text
ESMF|zh-CN|translated airport name|ESMF-ESTL|translated subleg text
POI|zh-CN|translated POI name||translated subleg text
ESTL|zh-CN|translated airport name|ESTL-ESTA|translated subleg text
POI|zh-CN|translated POI name||translated subleg text
ESTA|zh-CN|translated airport name|-|translated subleg text
```

Please have a look at the sample files (sample-multi-lang.[txt|xlsx]).

# TROUBLESHOOTING

- If the mission does not appear in the FS2020, there is a big chance you have selected a plane that isn't there.. or misspelled it!
- Make sure you delete the SAVE folder before starting up the simulator to test your compiled mission. The path looks something like this:

```
c:\Users\{USER}\AppData\Local\Packages\
Microsoft.FlightSimulator_8wekyb3d8bbwe\LocalState\MISSIONS\
ACTIVITIES\YOUR-MISSION_SAVE
```

- Do you get strange TTS/WAV triggers at the wrong time or place? Make sure you press "HTML preview" when generating and open the LINK at the top to see your trip on a map to find overlapping trigger areas etc.

## Known serious issues (both tool and mission related sim bugs)

- SIM: Using subtitles for sound files only works if the bush mission is not exited and resumed.

# APPENDIX

## Standard fields summary

| Field name  | Multiple |
|---|----------|
| <b>sdkPath</b> = { full path including fspackagetool.exe }  |          |
| <b>navlogImageSize</b> =width#height  |          |
| <b>navlogImageFormat</b> =png/jpg   |          |
| <b>uniqueApImages</b> = [True/False]  |          |
| <b>loadingTip</b> =text   | x        |
| <b>introSpeech</b> =text/wav[ subtitles]  |          |
| <b>introSpeech</b> =text/wav[ subtitles]#delay from mission start in seconds  | x        |
| <b>poiSpeech</b> = [True/False]   |          |
| <b>poiSpeechBefore</b> = [True/False]   |          |
| <b>dialogEntry</b> =text/wav[ subtitles]#coordinate   | x        |
| <b>dialogEntry</b> =text/wav[ subtitles]#coordinate#heading#length#width#height<br>(length/width/height in meters)                        | x        |
| <b>dialogEntry</b> =text/wav[ subtitles]#coordinate#heading#length#width#height#delay<br>(length/width/height in meters)                  | x        |
| <b>dialogEntry</b> =text/wav[ subtitles]#coordinate#heading#length#width#height#delay#[True/False]<br>(length/width/height in meters)     | x        |
| <b>dialogEntryExit</b> =text/wav[ subtitles]#coordinate   | x        |
| <b>dialogEntryExit</b> =text/wav[ subtitles]#coordinate#heading#length#width#height<br>(length/width/height in meters)                    | x        |
| <b>dialogEntryExit</b> =text/wav[ subtitles]#coordinate#heading#length#width#height#delay<br>(length/width/height in meters)              | x        |
| <b>dialogEntryExit</b> =text/wav[ subtitles]#coordinate#heading#length#width#height#delay#[True/False]<br>(length/width/height in meters) | x        |
| <b>finishedEntry</b> =text/wav[ subtitles]#icao#announcement length in seconds  | x        |
| <b>finishedEntry</b> =text/wav[ subtitles]#icao#announcement length in seconds#delay after landing  | x        |
| <b>altitudeWarning</b> =text/wav[ subtitles]#altitude in feet   | x        |
| <b>altitudeWarning</b> =text/wav[ subtitles]#altitude in feet#[True/False]  | x        |
| <b>speedWarning</b> =text/wav[ subtitles]#speed in knots  | x        |
| <b>speedWarning</b> =text/wav[ subtitles]#speed in knots#[True/False]   | x        |
| <b>altitudeAndSpeedWarning</b> =text/wav[ subtitles]#altitude in feet#speed in knots  | x        |
| <b>altitudeAndSpeedWarning</b> =text/wav[ subtitles]#altitude in feet#speed in knots#[True/False]   | x        |
| <b>formulaWarning</b> =text/wav[ subtitles]#HTML escaped RPN formula  | x        |
| <b>formulaWarning</b> =text/wav[ subtitles]#HTML escaped RPN formula#[True/False]   | x        |

|  |   |
|--|---|
| <b>pilot</b> =[Male/Female]  |   |
| <b>coPilot</b> =[Male/Female]  |   |
| <b>simFile</b> =[file]   |   |
| <b>fuelPercentage</b> =[0-100]   |   |
| <b>fuelPercentageList</b> ={integer values for all eleven fuel percentages}                  |   |
| <b>parkingBrake</b> =[0-100]   |   |
| <b>payloadList</b> ={list of payloads in pounds. Number of elements is plane specific}       |   |
| <b>tanksList</b> ={list of tanks and fill percentage. Number of elements is plane specific}  |   |
| <b>tailNumber</b> =text  |   |
| <b>airlineCallSign</b> =text   |   |
| <b>flightNumber</b> =text  |   |
| <b>appendHeavy</b> =[True/False]   |   |
| <b>multiPlayer</b> =[True/False]   |   |
| <b>weather</b> =[custom, live or a preset]   |   |
| <b>failure{System}{Index}</b> =[{from time in seconds}-{to time in seconds}]                 | x |
| <b>failure{System}{Index}</b> =health#coordinate#heading#length#width#height (in meters)     | x |
| <b>failureExit{System}{Index}</b> =health#coordinate#heading#length#width#height (in meters) | x |
| <b>altitudeFailure{System}{Index}</b> =health#altitude in feet                               | x |
| <b>speedFailure{System}{Index}</b> =health#speed in knots                                    | x |
| <b>altitudeAndSpeedFailure{System}{Index}</b> =health#altitude in feet#speed in knots        | x |
| <b>formulaFailure{System}{Index}</b> =health#HTML escaped RPN formula                        | x |
| <b>showVfrMap</b> =[True/False]  |   |
| <b>showNavLog</b> =[True/False]  |   |
| <b>enableRefueling</b> =[True/False]   |   |
| <b>enableAtc</b> =[True/False]   |   |
| <b>enableChecklist</b> =[True/False]   |   |
| <b>enableObjectives</b> =[True/False]  |   |
| <b>requireEnginesOff</b> =[True/False]   |   |
| <b>requireBatteryOff</b> =[True/False]   |   |
| <b>requireAvionicsOff</b> =[True/False]  |   |
| <b>requireNothing</b> =[True/False]  |   |
| <b>useAGL</b> =[True/False]  |   |
| <b>useOneShotTriggers</b> =[True/False]  |   |
| <b>standardAirportExitAreaSideLength</b> =length in meters                                   |   |
| <b>standardEnterAreaSideLength</b> =length in meters   |   |
| <b>missionFailureArea</b> =coordinate#heading#length#width#height (in meters)                | x |
| <b>missionFailureArea</b> =coordinate#heading#length#width#height#text (in meters)           | x |
| <b>missionFailureExitArea</b> =coordinate#heading#length#width#height (in meters)            | x |

|  |   |
|--|---|
| <b>missionFailureExitArea</b> =coordinate#heading#length#width#height#text (in meters)   | x |
| <b>missionFailureAltitude</b> =altitude in feet  | x |
| <b>missionFailureAltitude</b> =altitude in feet#text   | x |
| <b>missionFailureSpeed</b> =speed in knots   | x |
| <b>missionFailureSpeed</b> =speed in knots#text  | x |
| <b>missionFailureAltitudeAndSpeed</b> =altitude in feet#speed in knots   | x |
| <b>missionFailureAltitudeAndSpeed</b> =altitude in feet#speed in knots#text  | x |
| <b>missionFailureTime</b> =time in seconds   |   |
| <b>missionFailureTime</b> =time in seconds#text  |   |
| <b>missionFailureFormula</b> =HTML escaped RPN formula#text  | x |
| <b>libraryObject</b> =mdlGUID#coordinate#altitude#heading#scale (in feet)  | x |
| <b>libraryObject</b> =mdlGUID#coordinate#altitude#heading#scale#[True/False] (in feet)   | x |
| <b>libraryObject</b> =mdlGUID#coordinate#altitude#heading#pitch#bank#[True/False]#scale#[True/False] (in feet)                     | x |
| <b>landmarkObject</b> =text#coordinate#altitude#offset#[POI/City/Fauna] (in feet)  | x |
| <b>addAirport</b> =ICAO#name#city#coordinate#altitude in feet#radius in meters   | x |
| <b>addRunway</b> =ICAO#coordinate#altitude#width#length#heading#start coordinate#end coordinate#surface (in feet)                  | x |
| <b>addRunway</b> =ICAO#coordinate#altitude#width#length#heading#start coordinate#end coordinate#surface#offset threshold (in feet) | x |
| <b>deactivateDialogsAtStart</b> =[True/False/ <b>comma-separated list of reference names</b> ]                                     |   |
| <b>deactivateWarningsAtStart</b> =[True/False/ <b>comma-separated list of reference names</b> ]                                    |   |
| <b>deactivateFailuresAtStart</b> =[True/False/ <b>comma-separated list of reference names</b> ]                                    |   |
| <b>deactivateMissionFailuresAtStart</b> =[True/False/ <b>comma-separated list of reference names</b> ]                             |   |
| <b>deactivateLibObjsAtStart</b> =[True/False]  |   |

## Reference fields summary

| Field name  | Multiple |
|---|----------|
| activateTriggers= <b>reference name#comma-separated list of reference names</b>   | x        |
| deactivateTriggers= <b>reference name#comma-separated list of reference names</b>   | x        |
| counterActivateTriggers= <b>comma-separated list of reference names#comma-separated list of reference names</b>                         | x        |
| counterActivateTriggers= <b>comma-separated list of reference names#comma-separated list of reference names</b> #text/wav[ subtitles]   | x        |
| counterDeactivateTriggers= <b>comma-separated list of reference names#comma-separated list of reference names</b>                       | x        |
| counterDeactivateTriggers= <b>comma-separated list of reference names#comma-separated list of reference names</b> #text/wav[ subtitles] | x        |