

# MSFS FlightBag V 0.55.0.55

See (new V0.55) indications for updates from the previous version (V0.54)

## Flight bag providing Shelf, Map, METAR

- Standalone or Part of the MSFS HudBar Windows
- Shelf for image documents either JPG or PNG images for reference
- Airport centric Map display
- METAR retrieval
- Performance and Touchdown data (new V0.55)
- Notepad (new V0.55)

**MSFS\_FlightBag** is a standalone application but also integrated in the MSFS\_HudBar application.

Both are the same and share the same settings, data and configuration.

The integrated version attempts to gather the flight plan departure and arrival airports where the standalone version expects those to be entered in the Config. Tab – otherwise they are the same.



### IMPORTANT:

**MSFS\_FlightBag** makes extensive use of airport, runway and navigation data intended for the simulator.

As one cannot distribute MSFS and/or Navigraph data via the application package the user must initiate the data collection and consolidation.

There is a program provided in the application package which does this chore.

→ Below in the Appendix find the chapter **Data Loader** and proceed accordingly

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## Standalone Installation and Usage

- Deploy the release all zip content in a folder (no installer provided or needed)

**Best is to start MSFS first, then the Flight Bag (but the App should connect the sim in any case)**

- Start MSFS2020 first and once the Main Menu is shown
- Start FS20\_FlightBag.exe
- It attempts to connect to the Flight simulator in 5 sec intervals, but shows a red bar while it is not connected to MSFS
- Use the **Tabs** for Shelf, Map, METAR, Perf., Notes, and Config.
- To **Exit** and stop the program click the top right X mark

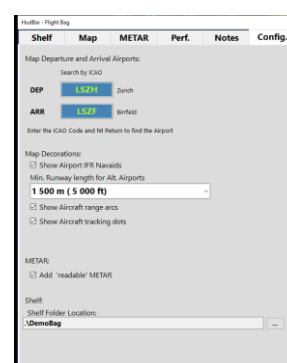
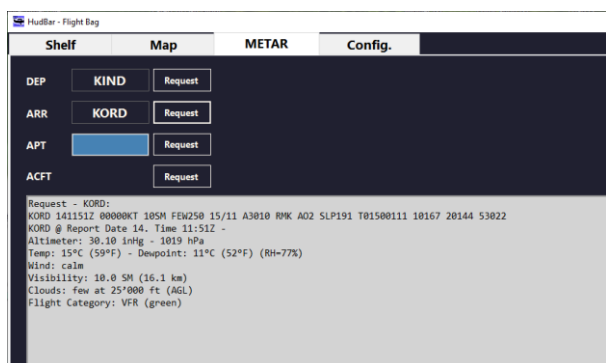
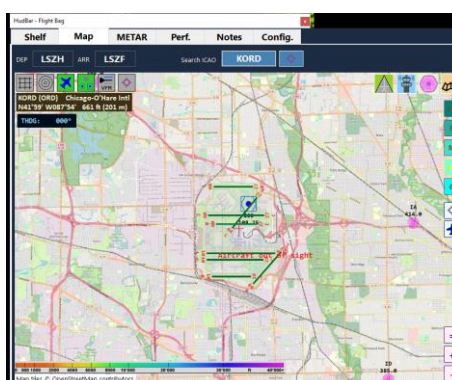
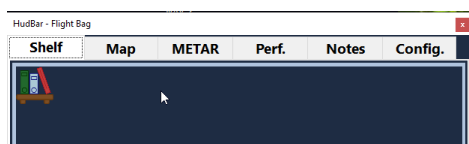
## Limitations

Some aircraft do not provide or do not synchronize data with the Simulator as expected.

Such aircrafts maintain their own internal models and act properly but do not share or interact well with the generic simulation where the FlightBag takes the data from to track aircraft and selected airports.

## What is shown

At startup there is an empty shelf, Map, METAR and Config. Tabs.



- Shelf provides a list of documents located in the selected folder
- Map shows a static map with various display options
- METAR allows to retrieve METAR information – if selected it translates the METAR string into something more readable.
- Perf. Lists Aircraft Performance numbers and Touchdown Data as reported from the Sim.
- Notes – a simple notepad area,
- Config. Allow to setup some options

See below for some of the items available

## Shelf Tab

- The Window allows to choose from image files contained in a folder.
- An image can be zoomed in or out and dragged within the window.
- Supported image file formats are PNG and JPG

Tip: scale the image in a way that the resolution is high enough to read it properly at the most used zoom level, usually this is around 1400 pix on the longer side – but you may try and find what works best.

### Configuration:

In order to use the Flight Bag you must select the folder where your images are located – go to **Config.** Tab



Default is the directory **DemoBag** in the App folder – supplied with some demo images in the App distribution.

Click ‘...’ and choose any directory to use.

### Usage:

The first time the window will open empty

– Click the **Book Shelf Icon** in the top left corner to load the documents (images)

From the list of documents **click** the one to display.

**Zoom** the document with the mouse **scroll wheel** or **click the +- icons** in the bottom right corner.

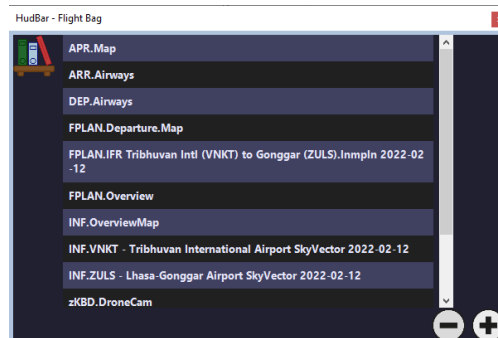
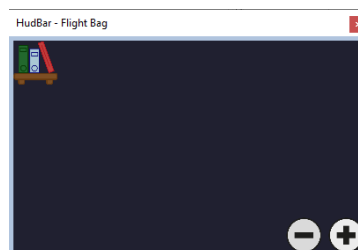
Use the **left mouse click and drag** to move the document in the window.

**Click right** to reset the zoom and re-center the document.

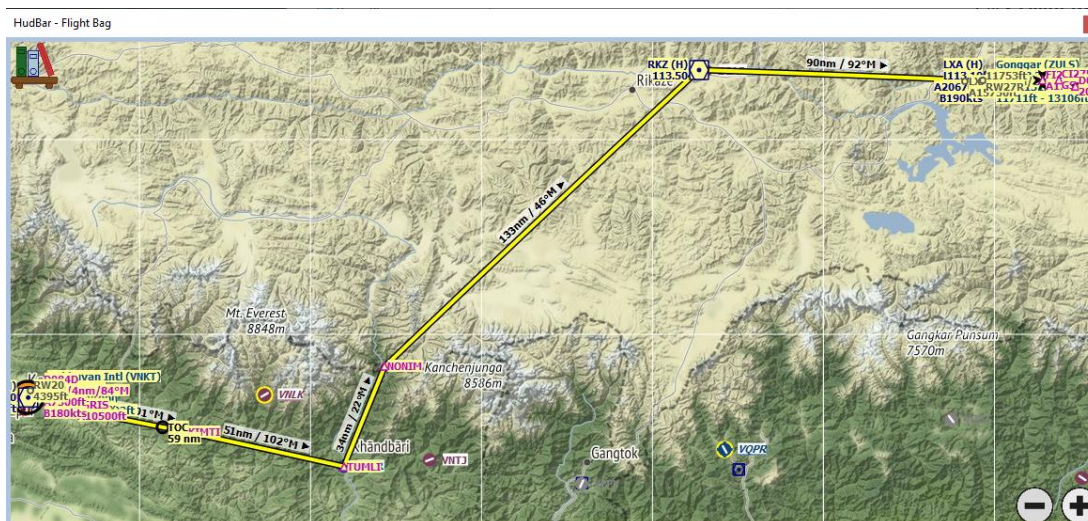
Click the Book Shelf icon to select another document.

**Resize** the window as usual in Windows.

**Hide** the window with Hotkey, Context Menu or the X icon.



### Example from the Demo included



# Map Tab

## Supported Map Providers

**MapLib** supports a fixed number of Map Tile Providers as well as 3 user defined ones.

→ **ALWAYS consider the terms of use for any of the map providers**

**Free and open Tile services are at the time of writing** – enabled by default  
OpenStreetMap (OSM) and some derivatives

<https://www.openstreetmap.org>

OpenTopo, a 3d enhanced map from an open source project (usually rather slow to respond...).

<https://opentopomap.org>

Stamen 3d shaped terrain map (remote areas are rather slow to respond)

<http://maps.stamen.com>

**Tile Services which need either a key or are subject to licensing terms** – disabled by default

Bing Maps (Microsoft map service) needs a key and subject to licensing

<https://docs.microsoft.com/en-us/bingmaps/getting-started>

ESRI/ARCGIS Tile Services as part of their offering – subject to license, don't use if not licensed

<https://developers.arcgis.com/documentation/mapping-apis-and-services/data-hosting/services/image-tile-service/>

**Remark:**

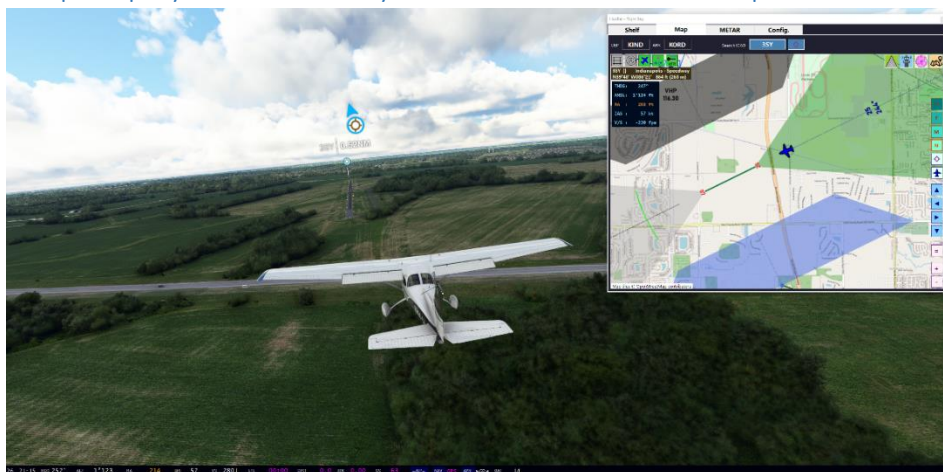
**Don't ask for Google Map support – I don't have a key and they are rather complicated to work with...**

## User defined tile services

You may have an own tile service running on your NAS or know a tile service you like to use.

**Provider Configuration → Check the guide for MapLib (MapLib-Doc.pdf)**

## Map Display – Intentionally a zoomable but static map with decorations



The Map display intends to minimize the performance footprint and will only request tiles on user request.

There are 5 predefined ranges (FF, F, M, N, C) which are loaded on demand and where the user can zoom in and out at discretion.

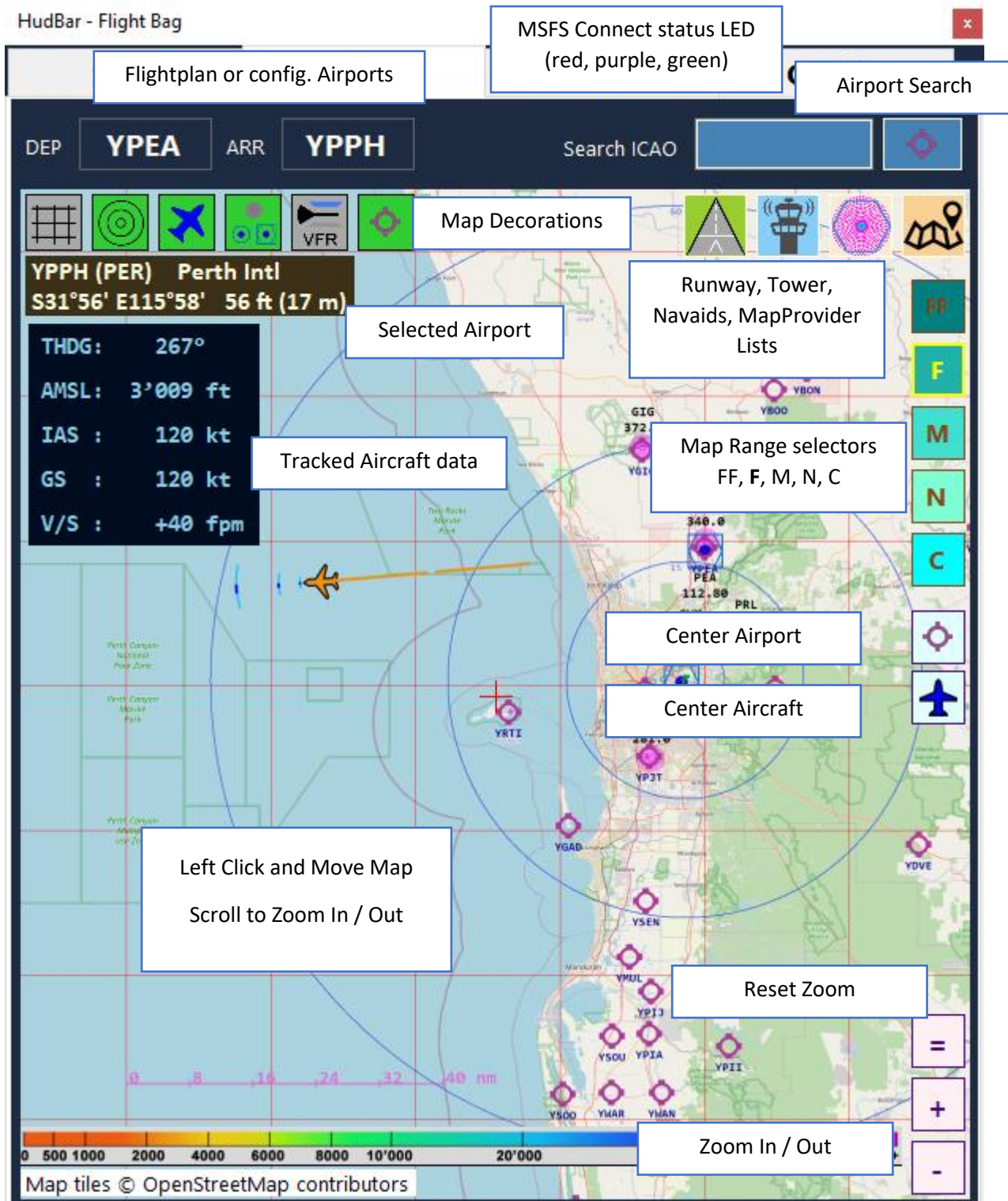
The map is intentionally NOT a moving map. The user may shift the mapped area if desired.

The map draws the selected airport runways if in sight and can be decorated with Nav aids, VFR patterns, Aircraft

The map displays the aircraft with some predefined essential data



## Map – Ops



The map is Airport centric – i.e. usually you would have an airport selected.

Use Search Airport or click the DEP, ARR ICAO label to center the view on that airport (above it's YPPH)

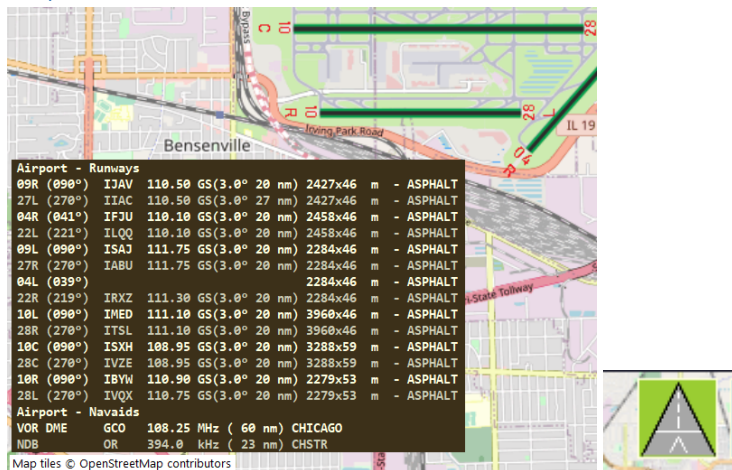
While in flight you may move the shown map area using the mouse with left click or use the 'center aircraft' button once in a while to re-locate the map.

For the selected airport one can list runways, tower frequencies as well as the area nav aids.

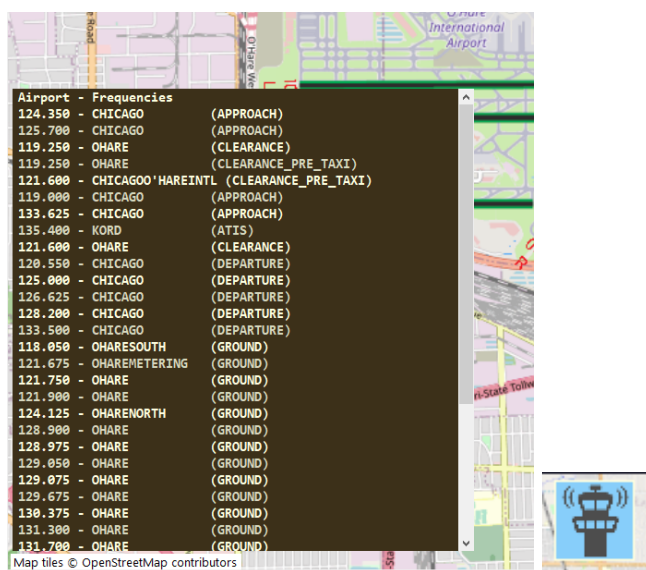
*NOTE: for the time being the map may be a bit jumpy when moving it around rather fast. In the end it should show the expected area – if a yellow border remains, try to do a small move with the mouse.*

*(Work in progress to clean it up)*

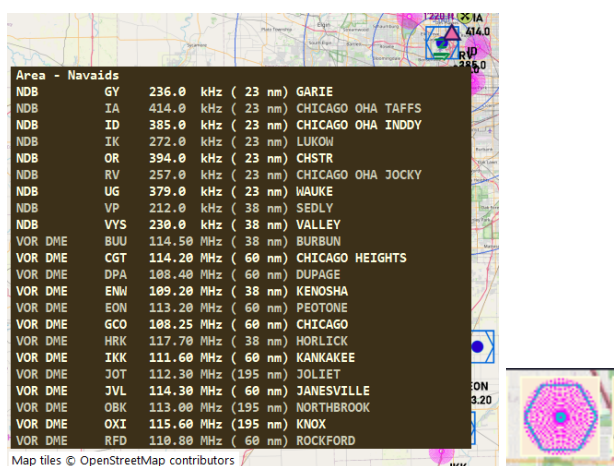
## Airport / Area Information



Clicking the Runway Icon will show/hide the list of airport runways found in the database. If there is an ILS located for the runway the ILS ID, Frequency, GS angle and range is shown.



Clicking the Tower Icon will show/hide the list of airport communication frequencies found in the database. When there are many like at KORD it will turn into a scrollable list.



Clicking the NavAids Icon will show/hide the list of the mapped FF Area VOR/NDBs and frequencies found in the database.

Note: Whether or not showing the NavAids on the map is part of decoration selection.

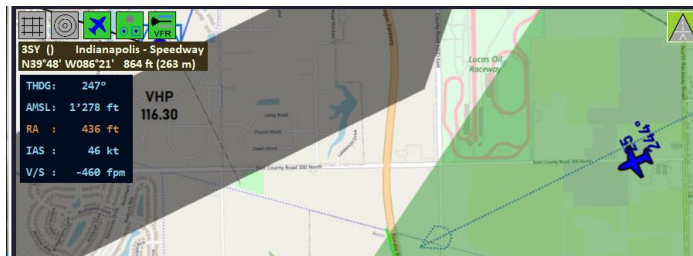
## Decorating the map

- Map Lat/Lon Grid – toggles the grid
- Airport range circles (5, 10, 30, 60 nm radius)
- Aircraft tracking with some data points
- Nav aids
- Airport VFR Markings
- Airports within the shown area (use Config. to select a minimum runway length)



Click to toggle visibility of the items

## Aircraft tracking

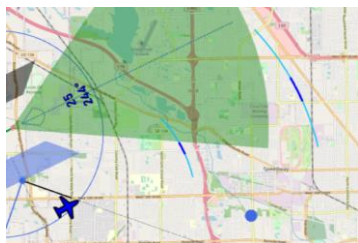


When visible it will show the aircraft on the map if in the shown area, else it says 'aircraft out of sight'.

Data points are:

- True Heading (THDG)
- Altitude above MSL in ft
- RA in ft (<1500)
- IAS in kt
- GS in kt
- V/S in fpm

The aircraft has a range feature which either shows 30° arcs at 2.5, 5, 10 nm out in light blue, the true ground track is marked with a 6° dark blue segment. These are TRUE degrees on the true north oriented map.

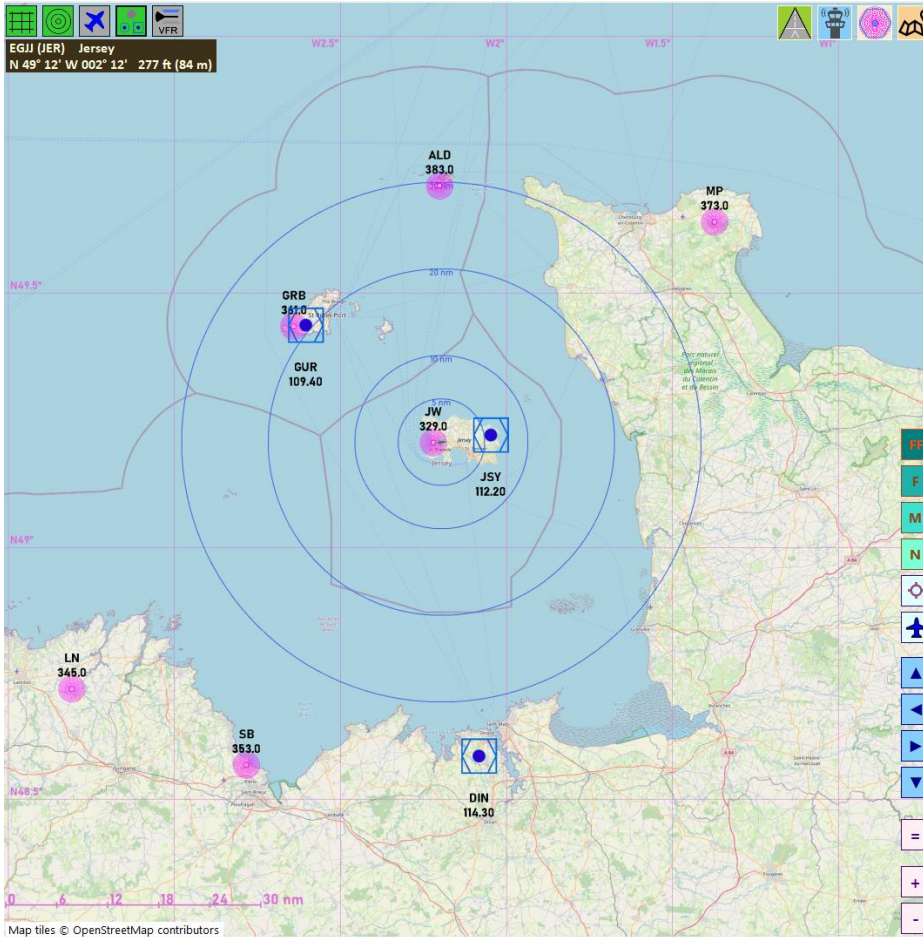


Under approach conditions the range marker changes to the expected ground contact at current IAS, VS and altitude which is shown as a green 20° arc (at the time of writing this feature needs some improvement...)



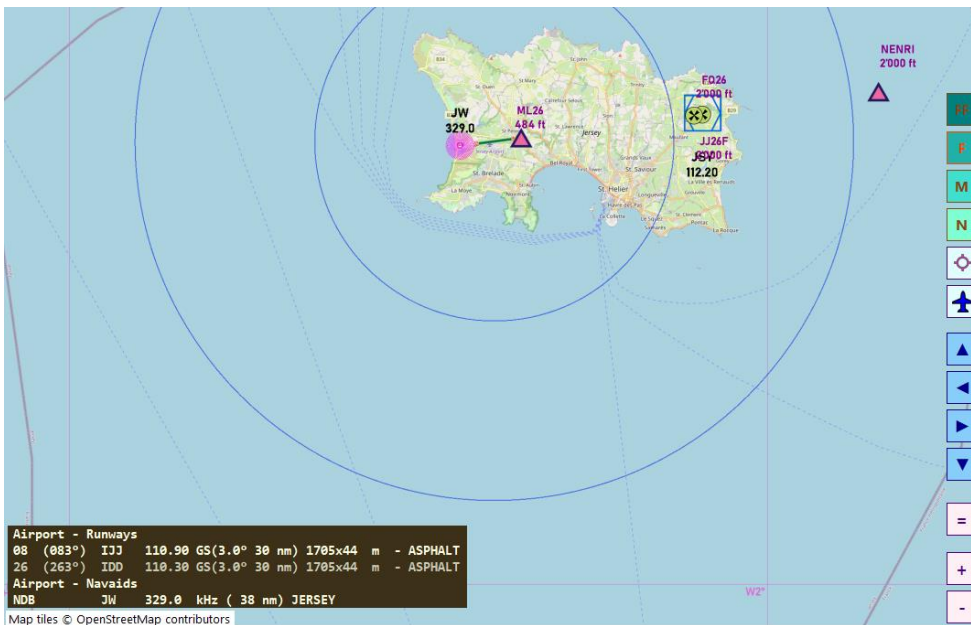


## Nav aids



**VOR, DME, and NDB** nav aids are shown with ID and frequency at their location. There is no further interaction available.

**Waypoints** for runway approaches can be shown if a runway is selected from the runway list.



Above the runway 26 was selected (clicked), Approach waypoints with their assigned altitude found in the database are placed on the map if Navaid decoration is visible. If multiple approaches are found all of those waypoints are shown at once (above RW26 has actually 5 approaches sharing some waypoints)

## Airport VFR Marks

Note: this feature may or may not please all kind of pilots – please let me know ...

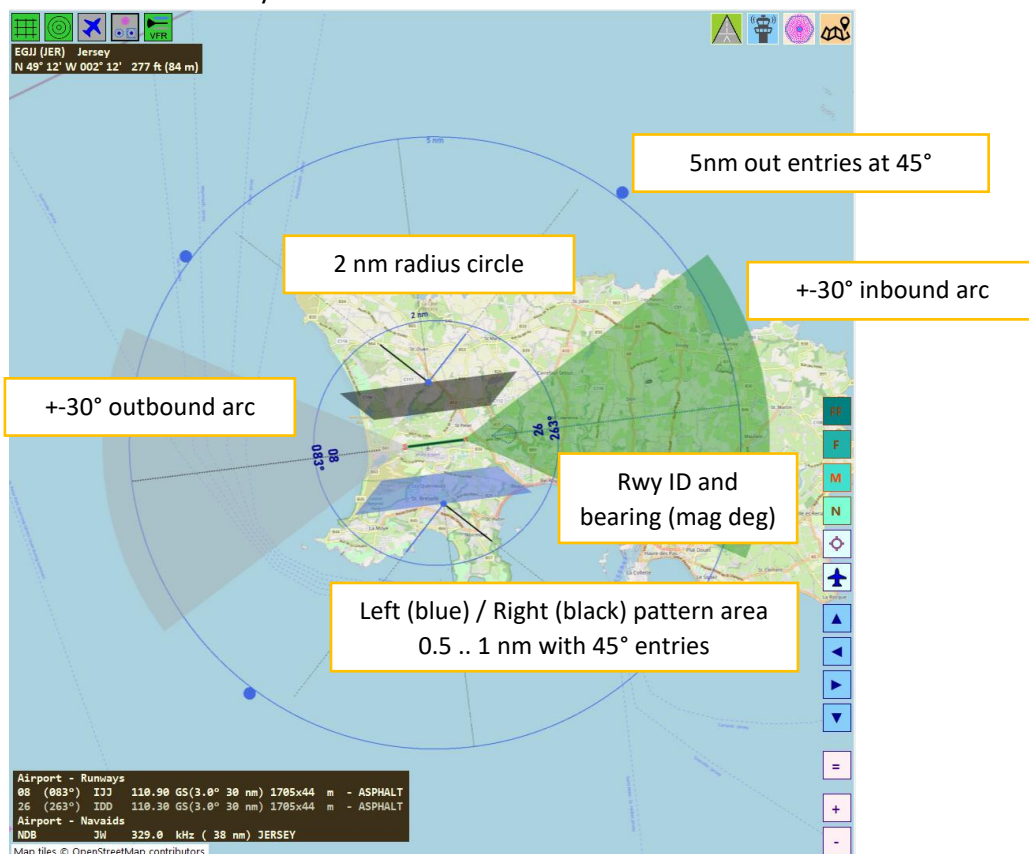
Selecting a runway for VFR or IFR approach waypoints decoration

To select a runway get the Runway list and **click** one of the runways.

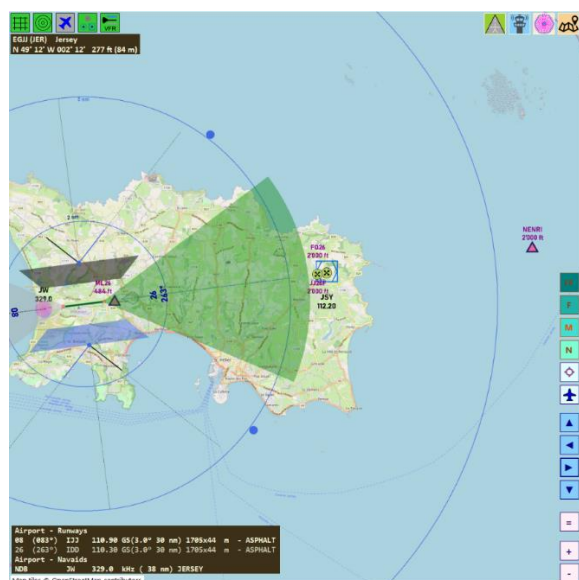
To clear the selection, click the 'Airports – Runways' text (hand appears) and the decorations will go away.

Airport - Runways									
24	(239°)	IPH	GS(3.0° 27 nm)	2161x44	m	-	ASPHALT		
06	(059°)			2161x44	m	-	ASPHALT		
21	(194°)	IGD	109.50 GS(3.0° 27 nm)	3441x44	m	-	ASPHALT		
03	(014°)	IPN	110.10 GS(3.0° 27 nm)	3441x44	m	-	ASPHALT		
Airport - Nav aids									

For a selected runway VFR marks are shown.



Above the runway 26 was selected (clicked)



When Navaid decoration and VFR marks is on it looks like above.

## METAR Tab

This Tab will return METAR information for the station where the **Request** button was clicked.

HudBar - Flight Bag

Shelf	Map	METAR	Config.
DEP	KIND	Request	
ARR	KORD	Request	
APT		Request	
ACFT		Request	

Request - KORD:  
KORD 141151Z 00000KT 10SM FEW250 15/11 A3010 RMK A02 SLP191 T01500111 10167 20144 53022  
KORD @ Report Date 14. Time 11:51Z -  
Altimeter: 30.10 inHg - 1019 hPa  
Temp: 15°C (59°F) - Dewpoint: 11°C (52°F) (RH=77%)  
Wind: calm  
Visibility: 10.0 SM (16.1 km)  
Clouds: few at 25'000 ft (AGL)  
Flight Category: VFR (green)

If set in Config it will 'translate' the telegram into a more readable version as shown above.

If METAR does not provide data it might be that the service does not respond (try again in a few seconds) or the station is not available at all.

**The ACFT** will ask for a station based on the aircrafts LAT/LON position from the nearest weather station found within max. 500 Statute miles in direction of flight, the returned station is sometimes not really what one expects, but what the Metar server provides... (Cannot change it though).

**The Metar is real weather information at the location i.e. suitable when using Live Weather.**

– MSFS Sim weather cannot be retrieved outside the sim.

## Perf. Tab (new V0.55)

Performance data as reported from the Simulator.

Touchdown data as reported from the Simulator.

There is a Touchdown log saved (MyDocuments\MSFS\_HudBarSave\TouchDownLog.csv) when using the FlightBag

	Aircraft	Callsign	Date_Time	VRate_fpm	Pitch_deg	Bank_deg	Hdg_deg	RwylatDev_ft	RwylonDev_ft
2	Cessna Skyhawk G1000 Asobo	BM98-CH	2022-10-16T18:25:06	4.8	0	0	274	NaN	NaN
3	Cessna Skyhawk G1000 Asobo	BM98-CH	2022-10-16T18:28:33	88.6	-2.7	-1.2	78	NaN	NaN
4	Cessna Skyhawk G1000 Asobo	BM98-CH	2022-10-18T01:09:36	5.7	0	0	274	2664.9	-15406.1
5	Cessna Skyhawk G1000 Asobo	BM98-CH	2022-10-18T01:11:49	144.8	-1.7	0.7	78	3.7	199.2
5	Cessna CJ4 Citation Asobo	BM98-CH	2022-10-18T01:33:04	8	-3.6	-0.3	152	NaN	NaN
7	Cessna CJ4 Citation Asobo	BM98-CH	2022-10-18T01:47:34	306.9	-2.7	0.6	94	-1.4	-909
3	Cessna CJ4 Citation Asobo	BM98-CH	2022-10-18T02:00:39	200.2	-2.4	-1.3	96	5.8	-848
3	Cessna Skyhawk G1000 Asobo	BM98-CH	2022-10-19T14:10:34	6	0	0	274	3307.9	-15702.9
0	HJET HA420 Dark Blue Stripes	BM98-CH	2022-10-19T14:50:42	0	0	0	318	2952.7	-15285.4

You may find Runway Deviation sometimes NaN or off by miles. The deviation is derived from the ATC assumed runway – which sometimes is just not set (NaN) or is still the starting runway (number is far off).

Also when you bump at the takeoff (happens...) you see most likely a separate line with a small number for the VRate (e.g. line 2)

## Notes Tab (new V0.55)

Just a notepad which is saved when closing the App

The screenshot shows the 'Config' tab of the 'HudBar - Flight Bag' application. The interface is divided into several sections:

- Map Departure and Arrival Airports:** This section includes a 'Search by ICAO' label. Below it, there are two input fields: 'DEP' with the value 'LSZH' and 'Zurich' to its right, and 'ARR' with the value 'YPPH' and 'Perth Intl' to its right. Below these is a text prompt: 'Enter the ICAO Code and hit Return to find the Airport'.
- Map Decorations:** This section contains four checkboxes, all of which are checked: 'Show Airport IFR Nav aids', 'Min. Runway length for Alt. Airports' (with a dropdown menu set to 'Any length'), 'Show Aircraft range arcs', and 'Show Aircraft tracking dots'.
- METAR:** This section has a single checked checkbox labeled 'Add 'readable' METAR'.
- Shelf:** This section includes a label 'Shelf Folder Location:' followed by a text input field containing '.\DemoBag' and a button with three dots '...' to its right.

### Set the desired **Departure** and **Arrival Airports**

Enter the ICAO code and hit the Enter key – if the airport is found it will turn green and the common name is shown right to it, else it will turn red, indicating that ICAO code was not found in the database.

### Map Decorations:

Checked '**Show Airport IFR Nav aids**' will show all approach waypoints for the selected runway when Nav aids decoration is ON

Note: some labels will overlap when approach waypoints are close together (did not found a reasonable way to resolve this)

Min. **Runway length for Alt. Airports**' lets you select the minimum length for any runway an airport must have in order to be shown when Airports decoration is ON.

Choose from the drop down.

Checked '**Show Aircraft range arcs**' will show the leading arcs of the tracked aircraft when Aircraft decoration is ON

Checked '**Show Aircraft tracking dots**' will show the trailing dots of the current tracked aircraft when Aircraft decoration is ON

### METAR

Checked 'Add 'readable' METAR will show the more readable METAR information along with the received telegram.

### Shelf:

**Shelf Folder Location:** click the button <...> to select a folder where the images for the Shelf Tab can be found.

➡ The Configuration is shared for the standalone and the HudBar version of the FlightBag.



## METAR Data Retrieval:

Please note that the program will issue HTTP Requests to an external server to retrieve the latest METAR information.

The data for METAR is retrieved from: <https://aviationweather.gov>

Please make sure to comply with their terms and conditions when retrieving METAR data with this program.

See also: <https://aviationweather.gov/dataserver/example?datatype=metar>

## Distributed Contents:

My FlightSim Libraries (included in the release package)

SEE README.TXT FOR THE LIST

CoordLib is based on: <https://github.com/chrisveness/geodesy>

Translated to C# and partially modified

Original code license: The MIT License (MIT)

## Appendix:

### File Storage

Files are generally stored in the "<MyDocuments>\MSFS\_HudBarSave" folder

### Settings Files and Reset Configuration

The configuration is stored in using a Json AppSettings Library.

The configuration can be found here: <MyDocuments>\MSFS\_HudBarSave\settings\<APP>

For the Flight Bag, the settings file is: **FShelfAppSettings.json**

This file stores your configuration but I suggest to not edit it – unless you know what to change, it may prevent the program from starting if done wrongly.

If you find something really wrong – you may backup and delete the settings file and the program will use the defaults to start with.

### Map Data retrieval and storage disclaimer

Map cache files:

The map cache files can be found here: <MyDocuments>\MSFS\_HudBarSave\cache\<Provider>.dblite

**MapLib** retrieves tiles only for the user requested location and zoom level.

The visualization WinForms UserControl **bm98\_Map** requests tiles as a matrix of 8x8 tiles at zoom levels for the 4 different ranges: FF= 9, F=10, M= 12, N=13, C=15

**MapLib** stores tiles per provider in a computer local disk cache and will clean up tiles older than 100 days or when the providers cache exceeds ~64MB / ~2560 tiles at startup of the application.

**MapLib** maintains a memory cache for 400 tiles (about 10 MB RAM) while an application is running.

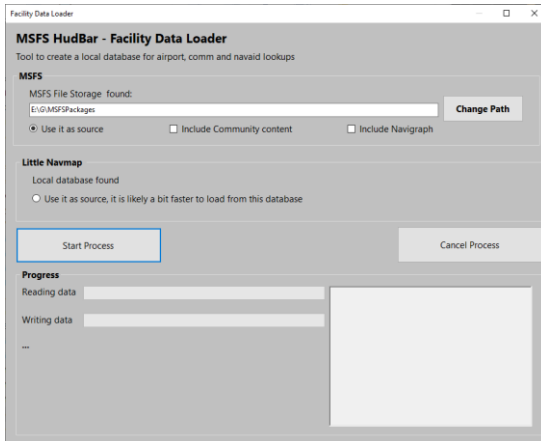
→ If you encounter incorrect tiles or other oddities – first delete the cache files and try again.

**Provider Configuration** → Check the guide for MapLib (MapLib-Doc.pdf – at the end of this document)

## Data Loader

Go for the application folder and then into the subfolder \dataLoader

Run FacilityDataLoader.exe:



First check if the program finds the MSFS data path.  
It does follow the MS specs for Store and Steam but...

If not you may need to use Change Path.. to point it to the folder  
(where Community and Official folders can be found)

If the LittleNavMap database is found it will show it as well.

You may choose the source for the data, either collecting from the  
MS files where you may include Community content and/or  
Navigraph (if installed)  
Or from the LittleNavMap database which is usually faster.  
Check one of the sources.

Then hit Start Process and have some patience.

The program will report progress and once it finished its data collection it will tell you.

The database is stored at MyDocuments\MSFS\_HudBarSave\db\fs2020genApt.db1 i te and is somewhat larger  
than 130MB.

**REDO this process when either a new Navigraph version is out and when MS provides substantial updates.**

## Instances

You may want to start the FlightBag more than once or get independent configurations and therefore programs  
running.

However they share the same Settings i.e. the location is saved from the last movement on any of the instances.  
In order to have truly independent instances with their own settings (all settings in Config and locations etc.) an  
Instance Name can be added to the Command Line when starting the FlightBag.

No command line parameter is considered and referred to as 'Default'

If you provide an Instance name to start the FlightBag it will be shown in the Window Title (Window Bar and  
Configuration)

You may start instances the easy way by creating a **Desktop Shortcut** and then modify the **Properties** of the  
**Shortcut** (right click) by adding an Instance name to the **Target** field:

This is the command line; add a space and the name at the end of the text field

Then may be rename the **Shortcut** in order to recognize it later.

## Issue Reporting:

In case you encounter a problem please include as much information as possible. Sometimes it is also relevant  
which aircraft you were using.

Issues can be reported directly via GitHub (or a Message in Flightsim.to)

[https://github.com/bm98/FS20\\_HudBar/issues](https://github.com/bm98/FS20_HudBar/issues)

<https://flightsim.to/file/16604/msfs-hudbar>

# MapLib – Map tile retrieval library

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## Supported Map Providers

**MapLib** supports a fixed number of Map Tile Providers as well as 3 user defined ones.

→ **ALWAYS consider the terms of use for any of the map providers**

**Free and open Tile services are at the time of writing** – enabled by default  
OpenStreetMap (OSM) and some derivatives

<https://www.openstreetmap.org>

OpenTopo, a 3d enhanced map from an open source project.

<https://opentopomap.org>

Stamen 3d shaped terrain map

<http://maps.stamen.com>

**Tile Services which need either a key or are subject to licensing terms** – disabled by default

Bing Maps (Microsoft map service) needs a key and subject to licensing

<https://docs.microsoft.com/en-us/bingmaps/getting-started>

ESRI/ARCGIS Tile Services as part of their offering – subject to license, don't use if not licensed

<https://developers.arcgis.com/documentation/mapping-apis-and-services/data-hosting/services/image-tile-service/>

**Remark:**

**Don't ask for Google Map support – I don't have a key and they are rather complicated to work with...**

## User defined tile services

You may have an own tile service running on your NAS or know a tile service you like to use.

The URL to be provided looks like:

Http=https://ip\_or\_address/route/{z}/{y}/{x}.imageformat

Where the {z} {y} {x} parts will be replaced by the requested zoom and coordinates.

The library expects a Mercator Tile Set with 0/0 top left tile number and 256x256 sized tiles – PNG and JPG image formats are supported.

Example:

Http=https://myNas:23356/tiles/{z}/{y}/{x}.jpg

## Data retrieval and storage disclaimer

**MapLib** retrieves tiles only for the user requested location and zoom level.

The visualization WinForms UserControl **bm98\_Map** requests tiles as a matrix of 8x8 tiles at zoom levels for the 5 different ranges: FF= 9, F=11, M= 12, N=13, C=15

**MapLib** stores tiles per provider in a computer local disk cache and will clean up tiles older than 100 days or when the providers cache exceeds ~64MB / ~2560 tiles at startup of the application.

**MapLib** maintains a memory cache for 400 tiles (about 10 MB RAM) while an application is running.

→ If you encounter incorrect tiles or other oddities – first delete the cache files and try again.

## INI File

Configuration goes via an **INI File** (**MapLibProvider.ini**) located per default in the **Applications directory**.

If the Library finds a MapLibProvider.ini file in a user folder (MyDocuments\MSFS\_HudBarSave) it takes preference over the default one.

**I.e. if you change INI settings, first copy the original file to this folder and make changes there, else it will be overwritten when extracting a new version from the Zip file**

- The INI file consists of the Main section + a number of Provider sections
- INI files consists of lines where everything after a semicolon <;> is considered as comment.
- INI files do have a Keyword and a content in the form of: Keyword=Content
- INI files do have sections which start with a bracketed Name: [Section]
- The part of the INI file which is not lead by a section name is the Main Section

**→ INI files are text files, use only Notepad or similar editors, never Word or other text processing programs to edit it's content**

### Main Section

DefaultProvider= .. → Default Provider and tiles the Map starts with

Use any of the enabled [ProviderNames] found in the later sections Use the exact name, or uncomment the template ones, only the first entry in the file is considered.

Example:

DefaultProvider=OSM\_OpenStreetMap

BingKey= .. → A Key to use Bing Maps (see remark below)

A rather large number of characters provided by BING Maps in order to access their map services, visit URLs below at Microsoft

<https://docs.microsoft.com/en-us/bingmaps/getting-started>

<https://docs.microsoft.com/en-us/bingmaps/getting-started/bing-maps-dev-center-help/getting-a-bing-maps-key>

### Provider Sections:

[ProviderName] → Provider name – **don't change**, the library expects those names

Enabled=.. → True if the provider is enabled else False  
To enable a provider set this entry to True, to disable use False  
Enabled providers will show up in the map selection to choose from.  
The free providers are enabled in the INI file, not so free ones disabled.

Example:

Enabled=True

Http=.. → The map tile server address, most don't need an entry and are listed as comment for reference.

For OSM one could use a variety of specialized servers in order to get e.g. names in another language than OSM provides them, e.g. the .de server will supply translated city names for parts of Asia.

For the User Entries see below.

Http=https://ip\_or\_address/route/{z}/{y}/{x}.imageformat

Where the {z} {y} {x} parts will be replaced by the requested zoom and coordinates.

The library expects a Mercator Tile Set with 0/0 top left tile number and 256x256 sized tiles – PNG and JPG image formats are supported.

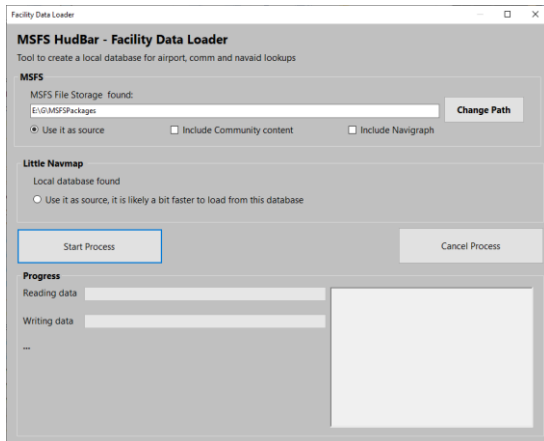
Example: see above



## Data Loader

Go for the application folder and then into the subfolder \dataLoader

Run FacilityDataLoader.exe:



First check if the program finds the MSFS data path.

It does follow the MS specs for Store and Steam but...

If not you may need to use Change Path.. to point it to the folder (where Community and Official folders can be found)

If the LittleNavMap database is found it will show it as well.

You may choose the source for the data, either collecting from the MS files where you may include Community content and/or Navigraph (if installed)

Or from the LittleNavMap database which is usually faster.

Check one of the sources.

Then hit Start Process and have some patience.

The program will report progress and once it finished its data collection it will tell you.

The database is stored at MyDocuments\MSFS\_HudBarSave\db\fs2020genApt.db1ite and is somewhat larger than 130MB.

**REDO this process when either a new Navigraph version is out and when MS provides substantial updates.**

## APPENDIX (default INI File):

```
; MapLib Provider Overrides
;
; Format:
; /// DefaultProvider=PROVIDER
; /// BingKey=KEY
; ///
; /// [PROVIDER]
; /// Enabled=TRUE
; /// Http=URL
;
; Text after a semicolon is treated as comment
;
; => Filename must be 'MapLibProvider.ini'
;
; Define the DefaultProvider from the [PROVIDER] names
;
; In each providers section:
; Set 'Enabled=true' to be able to use it
; Uncomment 'Http=http....' to override the URL used to retrieve map tiles
; -> If unsure, leave it alone (The App may break or not respond any longer)
;
; For URLs:
; There are 3 placeholders for {x},{y},{z} (xy tile coords + zoom)
; When multiple server instances are available - {s} can be used
; For some you need an access key (personal, subscription etc)
; Key=sadfsdfsdf
;
; NOTE there is not privacy or protection when typing the key here
;   the key is only used in the tile loading HTTP request as per provider guidance
;
;
; Default Provider to use => one of the Provider Chapter IDs ([NAME] from below)
DefaultProvider=OSM_OpenStreetMap ; OSM_OpenStreetMap is the free default provider

;DefaultProvider=OpenTopo
;DefaultProvider=Stamen_Terrain

; Here comes your Bing Map Key if you want to use Bing Maps
BingKey=<YOUR KEY>

[OSM_OpenStreetMap]
; OpenStreetMap (see terms of use before using it)
Enabled=true ; should never be disabled
;Http=https://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png ; default, labeled according to the region (e.g. Japanese etc)
;Http=https://{s}.tile.openstreetmap.de/{z}/{x}/{y}.png ; adds translated names to the local ones
;Http=https://{s}.tile.openstreetmap.fr/osmfr/{z}/{x}/{y}.png ; focus on french translation; international items are partly translated

[OpenTopo]
; Street Map 3D enhanced
; OpenTopo (see terms of use before using it)
Enabled=true
;Http=https://tile.opentopomap.org/{z}/{x}/{y}.png ; default

[Stamen_Terrain]
; Street Map 3D shaped
; Stamen.com (see terms of use before using it)
Enabled=true
;Http=https://stamen-tiles.a.ssl.fastly.net/terrain/{z}/{x}/{y}.jpg ; default

, *****
; Microsoft Bing MAPS (needs a Key to access -> https://www.microsoft.com/en-us/maps/create-a-bing-maps-key)
, *****
; Note: Bing URLs are retrieved dynamically and changing the Provider here has no effect (for reference only)

[Bing_Imagery]
; Satellite Imagery
Enabled=false
;Http=https://ecn.{subdomain}.tiles.virtualearth.net/tiles/a{quadkey}.jpeg?g=12552 ; not used, for reference only

[Bing_ImageryLabels]
; Satellite Imagery with road labels
Enabled=false
;Http=https://ecn.{subdomain}.tiles.virtualearth.net/tiles/h{quadkey}.jpeg?g=12552&mkt={culture} ; not used, for reference only

[Bing_OStreetMap]
; Street Map
Enabled=false
;Http=https://ecn.{subdomain}.tiles.virtualearth.net/tiles/r{quadkey}.jpeg?g=12552&mkt={culture}&shading=hill ; not used, for reference only

, *****
; ESRI/ARC GIS Maps (subject to terms of use - your at your own here...)
, *****

[ESRI_Imagery]
; Satellite Imagery
; ESRI/ARC GIS World Imagery (see terms of use before using it)
Enabled=false
```

;Http=https://services.arcgisonline.com/arcgis/rest/services/World\_Imagery/MapServer/tile/{z}/{y}/{x} ; default

[ESRI\_StreetMap]

; Street Map

; ESRI/ARCGIS StreetMap (see terms of use before using it)

Enabled=false

;Http=https://services.arcgisonline.com/arcgis/rest/services/World\_Street\_Map/MapServer/tile/{z}/{y}/{x} ; default

[ESRI\_WorldTopo]

; Street Map 3D shaped

; ESRI/ARCGIS WorldTopo (see terms of use before using it)

Enabled=false

;Http=https://services.arcgisonline.com/arcgis/rest/services/World\_Topo\_Map/MapServer/tile/{z}/{y}/{x} ; default

; \*\*\*\*\*

; USER Maps (your at your own here...)

; \*\*\*\*\*

[USER\_TILES\_1]

; User defines Tile Server No 1

Enabled=false

;Http=https://ip\_or\_address/route/{z}/{y}/{x}.imageformat

[USER\_TILES\_2]

; User defines Tile Server No 2

Enabled=false

;Http=https://ip\_or\_address/route/{z}/{y}/{x}.imageformat

[USER\_TILES\_3]

; User defines Tile Server No 3

Enabled=false

;Http=https://ip\_or\_address/route/{z}/{y}/{x}.imageformat