

MSFS FlightBag V 0.63.0.63

See (new V0.63) indications for updates from the previous version (V0.62)

Flight bag providing ...

- Standalone or Part of the MSFS HudBar Windows
- Shelf for image documents either JPG, PNG or GIF images for reference
- Airport centric Map display
- METAR retrieval
- Profile Calculator
- Performance and Touchdown data
- Notepad
- Route and document integration with SimBrief and MSFS Route and Flight files

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, Perf., Notes, and Config. Tabs.

The screenshots illustrate the application's interface across four tabs:

- Shelf:** Displays a list of documents and resources, including APR.Map, ARPAirways, DEPAirways, FPLAN.Departure.Map, FPLAN.IFR Tribhuvan Intl (VNKT) to Gonggar (ZULS).Impln 2022-02-12, FPLAN.Overview, INF.VNKT - Tribhuvan International Airport SkyVector 2022-02-12, INF.ZULS - Lhasa-Gonggar Airport SkyVector 2022-02-12, zKBD.DroneCam, zKBD.Lights, zKBD.Radio, and zKBD.Systems.
- Map:** Shows a static map of an area around Chicago O'Hare International Airport (KORD). The map includes various flight routes and airport icons. A red box highlights the 'Current Leg of flight'.
- METAR:** Shows flight data for O'Hare International Airport (KORD) for a Cessna Skymaster G1000 Asobo. The data includes:

| Weight and Balance: | Ibs to kg |
|---------------------|------------------|
| TOTAL Weight | 2,199 |
| REFL Weight | 0.188 |
| PAYOUT Weight | 0.340 |
| ZF Weight | 2,031 |
| CG Ionylat | 21.09 % / 0.00 % |
| Empty Weight | 1,691 |
| MAX Weight | 2,558 |

Request - KORD:
KORD 141512Z 080000Z 10SM FEW25B 15/11 A3010 RMK A02 SLP191 T01500111 10167 20144 53022
KORD 080000Z 141512Z 10SM FEW25B 15/11 A3010 RMK A02 SLP191 T01500111 10167 20144 53022
Altimeter: 30.10 inHg - 1019 hPa
Temp: 15°C (59°F) - Dewpoint: 11°C (52°F) (RH-77%)
Wind: calm
Visibility: 10.0 NM (16.1 km)
Clouds: few at 25'000 ft (AGL)
Flight Category: VFR (green)
- Config:** Shows flight parameters and configuration options. It includes fields for DEP (KORD), ARR (YPPH - Paris), and APT (YPPH - Paris). It also lists Last Touchdown Data and Design Data. The METAR tab is selected, showing the METAR string: O KORD 141512Z 080000Z 10SM FEW25B 15/11 A3010 RMK A02 SLP191 T01500111 10167 20144 53022.

- 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, JPG and GIF

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.



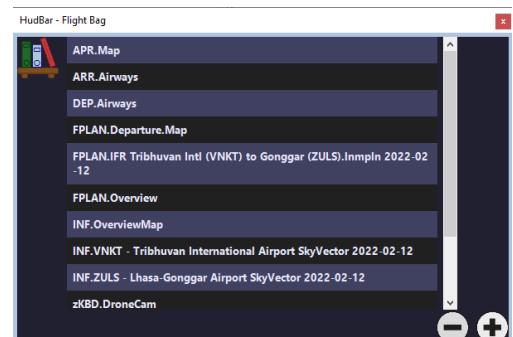
Use the **left mouse click and drag** to move the document in the window.

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

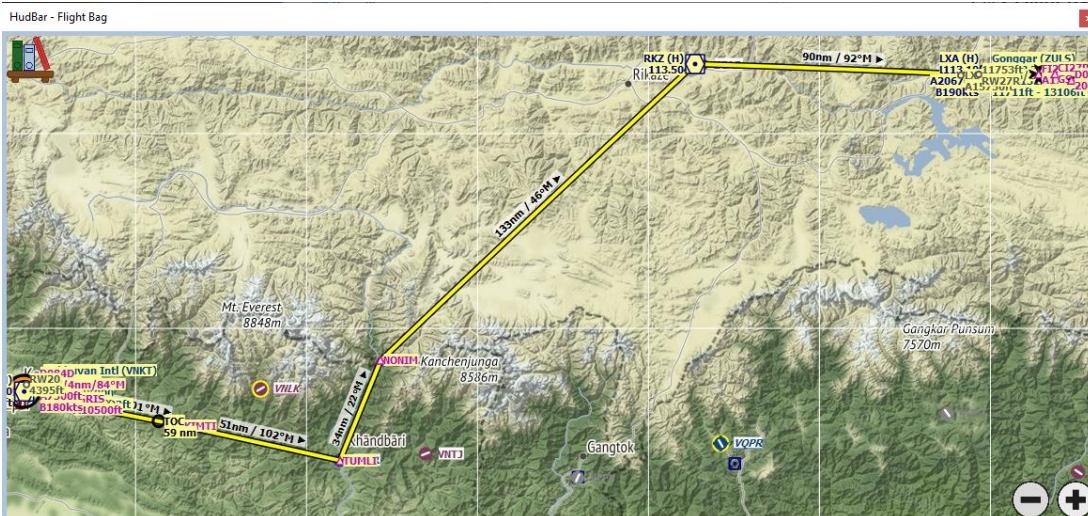
Click the Book Shelf icon to select another document.

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:

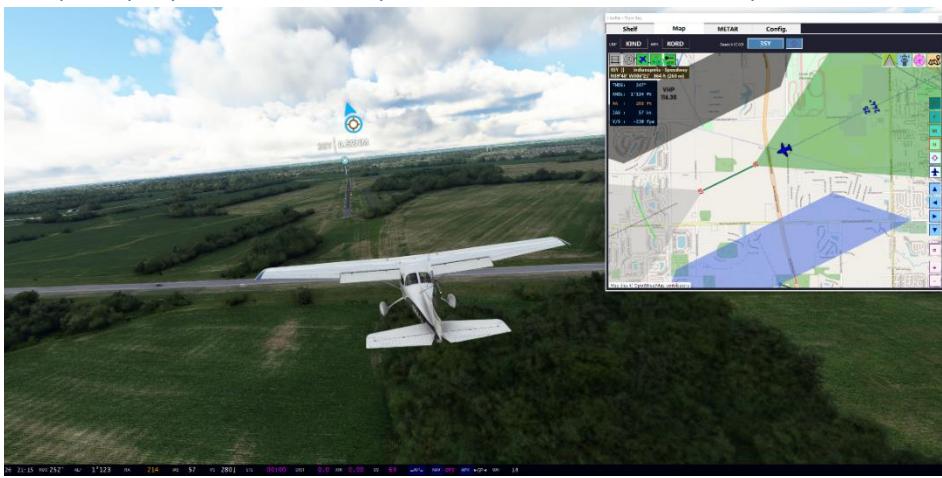
Don't ask for Google Map support – I don't have a key and they are rather complicated to work with...

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 (XF=7, FF, F, M, N, C=15) which are loaded on demand and where the user can zoom in and out at discretion. *Note: decorations except the Route will be hidden above range FF.*

When in **AutoRange (AR) mode** it will zoom seamlessly between Z6 and Z15 when zooming in or out. (V0.63)

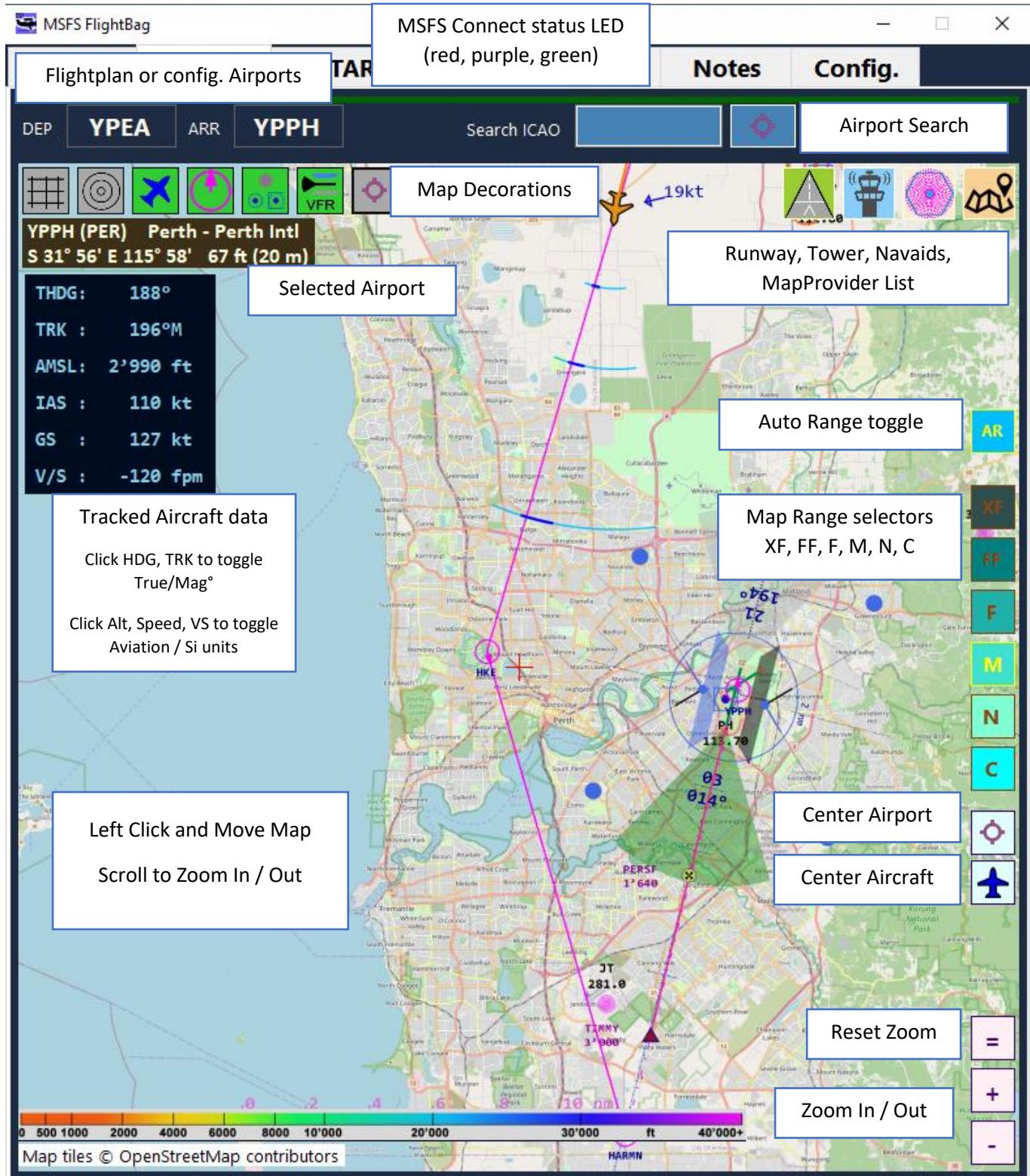
The map is intentionally NOT a moving map. The user may shift the mapped area if desired.

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

The map displays and tracks 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 navaids.

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 V0.63 should be even better now...)

Airport / Area Information (updated V0.63)

Runway 22R - Approaches

| | |
|--------------|---------|
| ILS (NOLEN) | RWY 22R |
| LOC (NOLEN) | RWY 22R |
| RNAV (NOLEN) | RWY 22R |

Airport - Runways

| | |
|------------|--|
| 04L (039°) | 2284x46 m - ASPHALT |
| 22R (219°) | IRXZ 111.30 GS(3.0° 27 nm) 2284x46 m - ASPHALT |
| 04R (041°) | IFJU 110.10 GS(3.0° 27 nm) 2458x46 m - ASPHALT |
| 22L (221°) | ILQQ 110.10 GS(3.0° 27 nm) 2458x46 m - ASPHALT |
| 09L (090°) | ISAJ 111.75 GS(3.0° 27 nm) 2284x46 m - ASPHALT |
| 27R (270°) | IABU 111.75 GS(3.0° 27 nm) 2284x46 m - ASPHALT |
| 09R (090°) | IJAV 110.50 GS(3.0° 27 nm) 3525x46 m - ASPHALT |
| 27L (270°) | IIAC 110.50 GS(3.0° 27 nm) 3525x46 m - ASPHALT |
| 10C (090°) | ISXH 108.95 GS(3.0° 27 nm) 3288x59 m - ASPHALT |
| 28C (270°) | IVZE 108.95 GS(3.0° 27 nm) 3288x59 m - ASPHALT |
| 10L (090°) | IMED 111.10 GS(3.0° 27 nm) 3960x46 m - ASPHALT |
| 28R (270°) | ITSL 111.10 GS(3.0° 27 nm) 3960x46 m - ASPHALT |
| 10R (090°) | IBYW 110.90 GS(3.0° 27 nm) 2279x53 m - ASPHALT |
| 28L (270°) | IVQX 110.75 GS(3.0° 27 nm) 2279x53 m - ASPHALT |
| 27C (270°) | IUYJ 111.90 GS(3.0° 27 nm) 3420x61 m - CEMENT |
| 09C (090°) | IOYG 111.90 GS(3.0° 27 nm) 3420x61 m - CEMENT |

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| Runway 22R - Approaches | | |
|-------------------------|---------|--|
| ILS (NOLEN) | RWY 22R | |
| LOC (NOLEN) | RWY 22R | |
| RNAV (NOLEN) | RWY 22R | |

Approaches are shown as above, where the quote indicates that the data is from the Navigraph source. Such data is sometimes different or not available in the Sim. Above the LOC approach is from MS data and may not be available as separate chart in the Navigraph App.

| |
|--------------------|
| Runway 22R |
| ILS OR LOC RWY 22R |
| 21-11 |
| RNAV (GPS) RWY 22R |
| 22-11 |
| Runway 27L |

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.

If there are **Approaches** for the selected runway found in the database it will show them above the runway panel as soon as you select (click) a runway. (new V0.63)

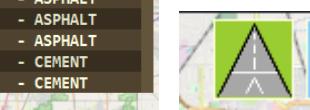
Selecting (click) an Approach will show the Approach as Waypoint/Line decoration in the map (new V0.63)

Selected items are highlighted (inverse coloring). (new V0.63)

Airport - Frequencies

| | |
|---------|---|
| 124.350 | - CHICAGO (APPROACH) |
| 125.700 | - CHICAGO (APPROACH) |
| 119.250 | - OHARE (CLEARANCE) |
| 119.250 | - OHARE (CLEARANCE_PRE_TAXI) |
| 121.600 | - CHICAGO/O'HAREINTL (CLEARANCE_PRE_TAXI) |
| 119.000 | - CHICAGO (APPROACH) |
| 133.625 | - CHICAGO (APPROACH) |
| 135.400 | - KORD (ATIS) |
| 121.600 | - OHARE (CLEARANCE) |
| 120.550 | - CHICAGO (DEPARTURE) |
| 125.000 | - CHICAGO (DEPARTURE) |
| 126.625 | - CHICAGO (DEPARTURE) |
| 128.200 | - CHICAGO (DEPARTURE) |
| 133.500 | - CHICAGO (DEPARTURE) |
| 118.850 | - OHARESOUTH (GROUND) |
| 121.675 | - OHAREMETTERING (GROUND) |
| 121.750 | - OHARE (GROUND) |
| 121.900 | - OHARE (GROUND) |
| 124.125 | - OHARENORTH (GROUND) |
| 128.900 | - OHARE (GROUND) |
| 128.975 | - OHARE (GROUND) |
| 129.050 | - OHARE (GROUND) |
| 129.075 | - OHARE (GROUND) |
| 129.675 | - OHARE (GROUND) |
| 130.375 | - OHARE (GROUND) |
| 131.300 | - OHARE (GROUND) |
| 131.700 | - OHARE (GROUND) |

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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.

Area - Navaids

| | | |
|---------|-----|--------------------------------------|
| NDB | GY | 236.0 kHz (23 nm) GARIE |
| NDB | IA | 414.0 kHz (23 nm) CHICAGO OHA TAFFS |
| NDB | ID | 385.0 kHz (23 nm) CHICAGO OHA INDOY |
| NDB | IK | 272.0 kHz (23 nm) LUKON |
| NDB | OS | 394.0 kHz (23 nm) CHSTR |
| NDB | RV | 257.0 kHz (23 nm) CHICAGO OHA JOCKY |
| NDB | US | 379.0 kHz (23 nm) WAUKE |
| NDB | VP | 212.0 kHz (38 nm) SEDLY |
| NDB | VYS | 230.0 kHz (38 nm) VALLEY |
| VOR DME | BUU | 114.50 MHz (38 nm) BURBUN |
| VOR DME | CGT | 114.20 MHz (60 nm) CHICAGO HEIGHTS |
| VOR DME | DPA | 108.40 MHz (60 nm) DUPAGE |
| VOR DME | ENW | 109.20 MHz (38 nm) KENOSHA |
| VOR DME | EOH | 113.20 MHz (60 nm) PEOTONE |
| VOR DME | GCO | 108.25 MHz (60 nm) CHICAGO |
| VOR DME | HRK | 117.70 MHz (38 nm) HORLICK |
| VOR DME | IKK | 111.60 MHz (60 nm) KANKAKEE |
| VOR DME | JOT | 112.30 MHz (395 nm) JOLLET |
| VOR DME | JVL | 114.30 MHz (60 nm) JANEVILLE |
| VOR DME | OKK | 113.00 MHz (395 nm) NORTHBROOK |
| VOR DME | OXI | 115.60 MHz (95 nm) KNOX |
| VOR DME | RFD | 110.80 MHz (60 nm) ROCKFORD |

Map tiles © OpenStreetMap contributors



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.

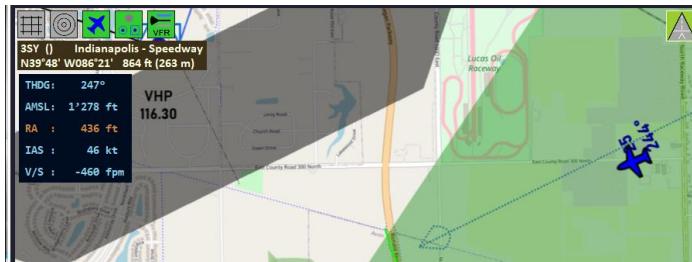
Decorating the map

- Map Lat/Lon Grid – toggles the grid
- Airport range circles (5, 15, 30, 60 nm radius)
- Aircraft tracking with some data points
- Route from SimBrief or MSFS Plans
- Navaids
- 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: (click an item to toggle either True/Mag or toggle Av/SI units

- True Heading (THDG) / Mag Heading (HDG)
- True Track (TTRK) / Mag Track (TRK)
- Altitude above MSL in ft / m
- RA in ft / m (<1500)
- IAS in kt / km/h
- GS in kt / km/h
- V/S in fpm / m/s

| | |
|-----------------|----------------|
| HDG : 320° | THDG: 320° |
| TTRK: 328° | TRK : 328°M |
| AMSL: 25'993 ft | AMSL: 7'923 m |
| IAS : 298 kt | IAS : 551 km/h |
| GS : 365 kt | GS : 675 km/h |
| V/S : +20 fpm | V/S : -0.1 m/s |

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.

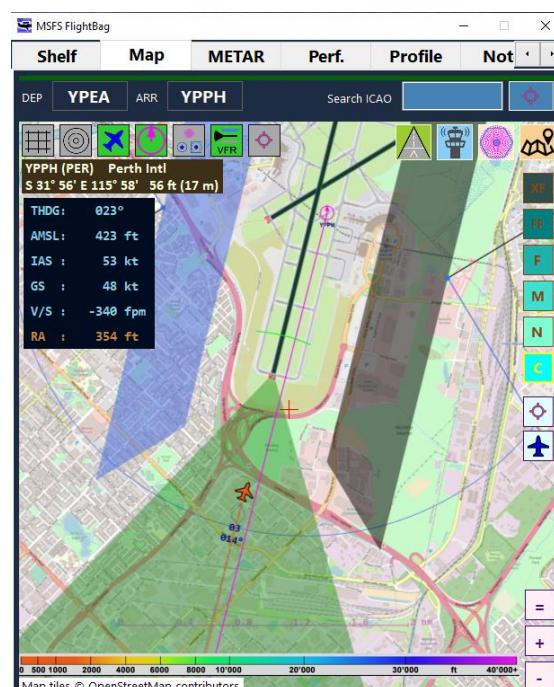


Under approach conditions the range marker changes to the expected ground contact at current IAS, VS and altitude which is shown as a green 20° arc (at the time of writing this feature needs some improvement...)

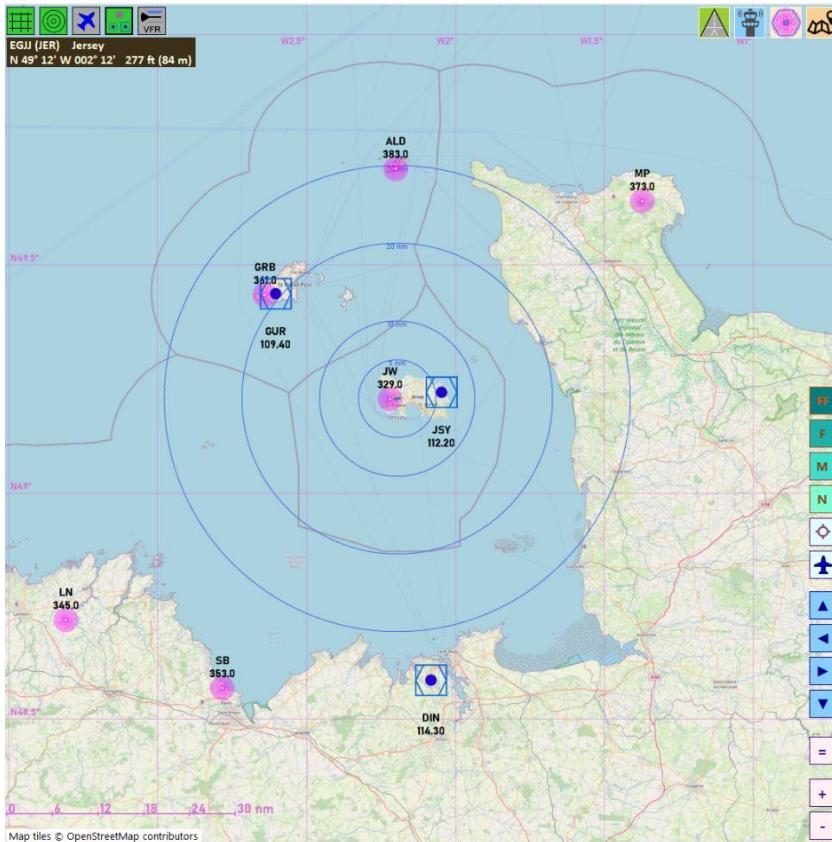


Wind speed and direction is shown as arrow with the speed label

The wind speed is default in kt but when changing units to SI it will be m/s



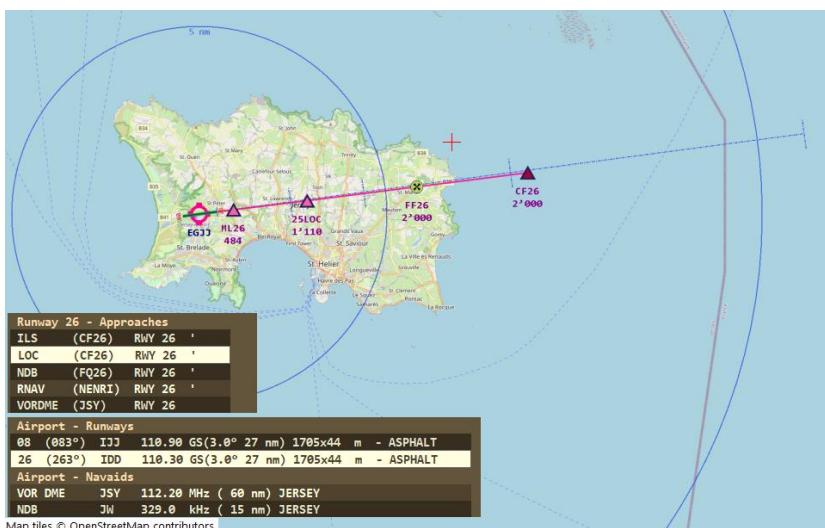
Navaids



VOR, DME, and NDB navaids 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 **AND approach** is selected from the runway list. (v0.63)



Above the runway 26 and the LOC approach 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 these waypoints are shown at once (above RW26 has actually 5 approaches sharing some waypoints)~~ With **v0.63** only the waypoints for the selected approach are shown also when Navaids are disabled (it allows for less clutter and more readable labels)

Also when selecting a runway a blue dotted line towards the runway is shown with steps at 2, 4, 8 and 16nm from the runway start. (v0.63)

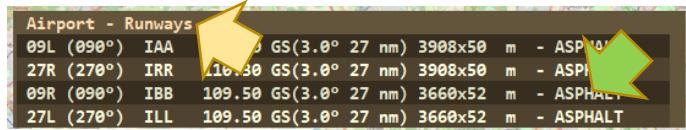
Airport VFR Marks

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

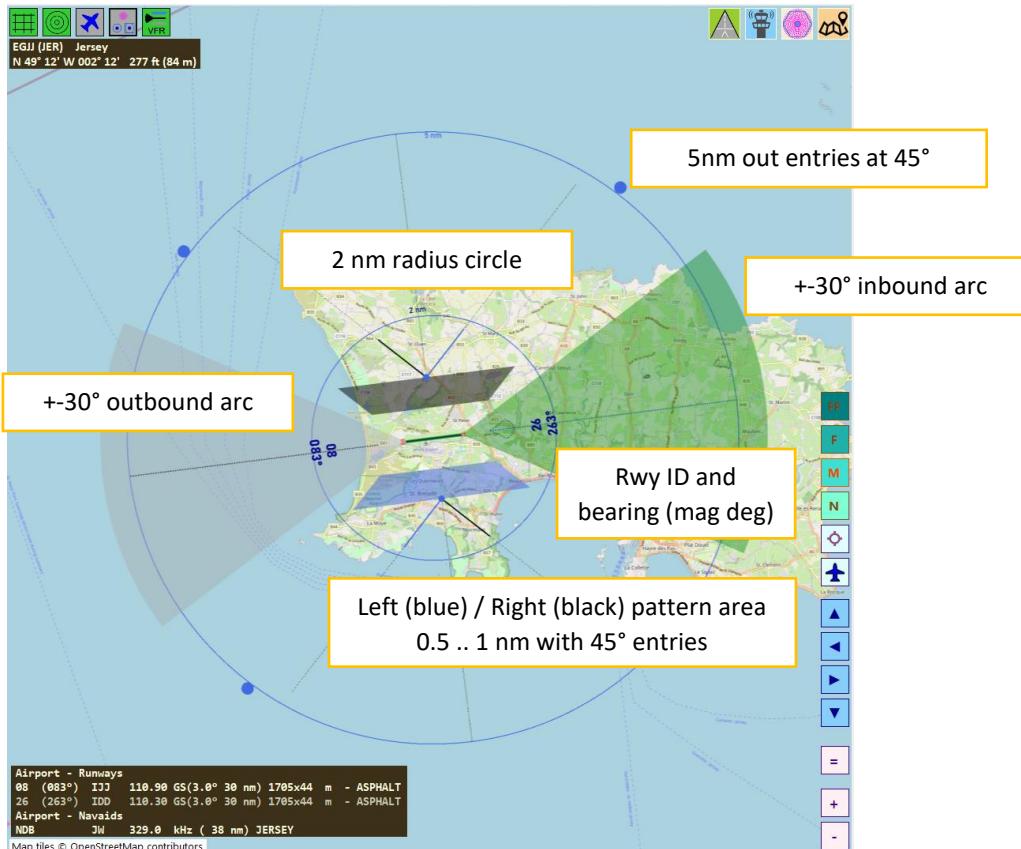
Selecting a runway for VFR or IFR approach waypoints decoration

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.



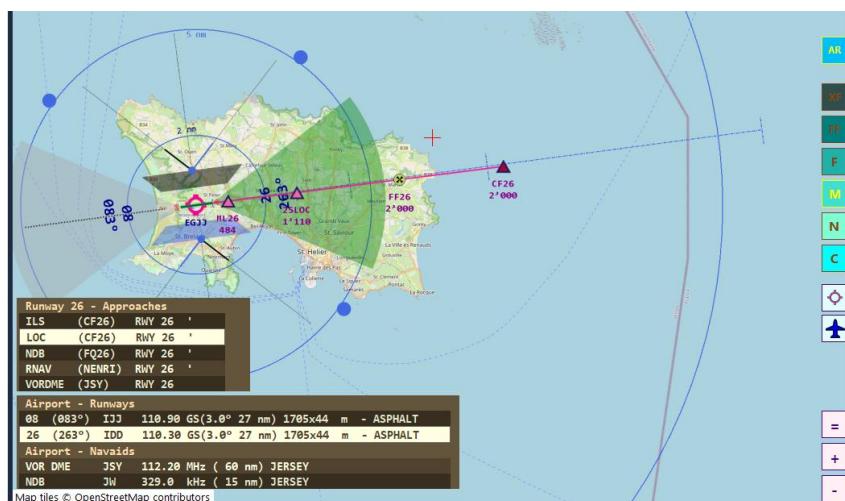
For a selected runway VFR marks are shown.



Above the runway 26 was selected (clicked)

(V0.63) To **select** an approach click the line item.

To **clear** the approach selection, click the 'Runway xy – Approaches' text (hand appears) and the decorations will go away.



When VFR marks is on and an approach is selected it looks like above.

Routes

Routes derived from SimBrief or MSFS Plan- or Flight files are shown when the Route icon is clicked.



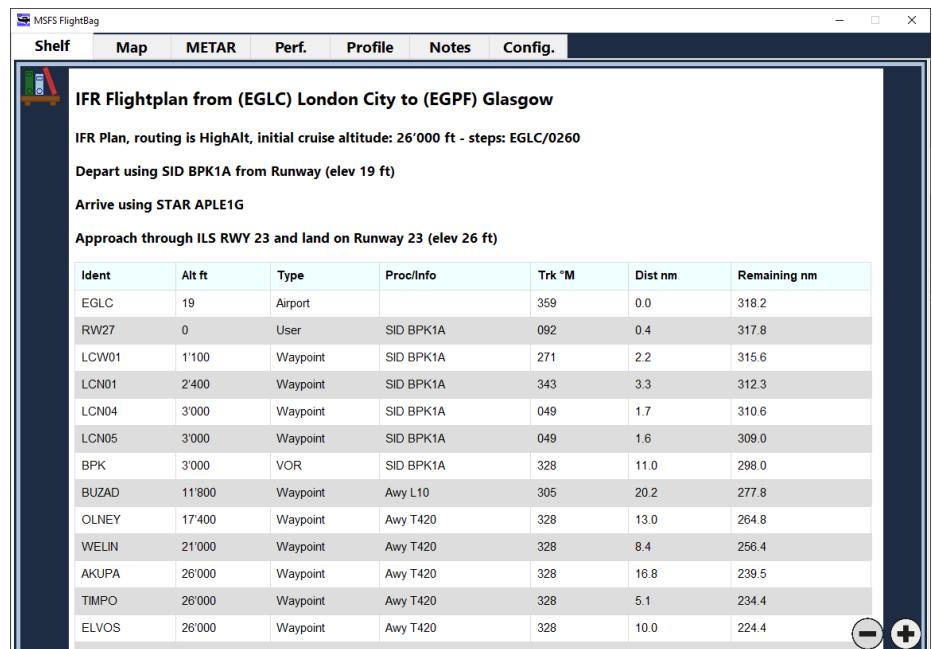
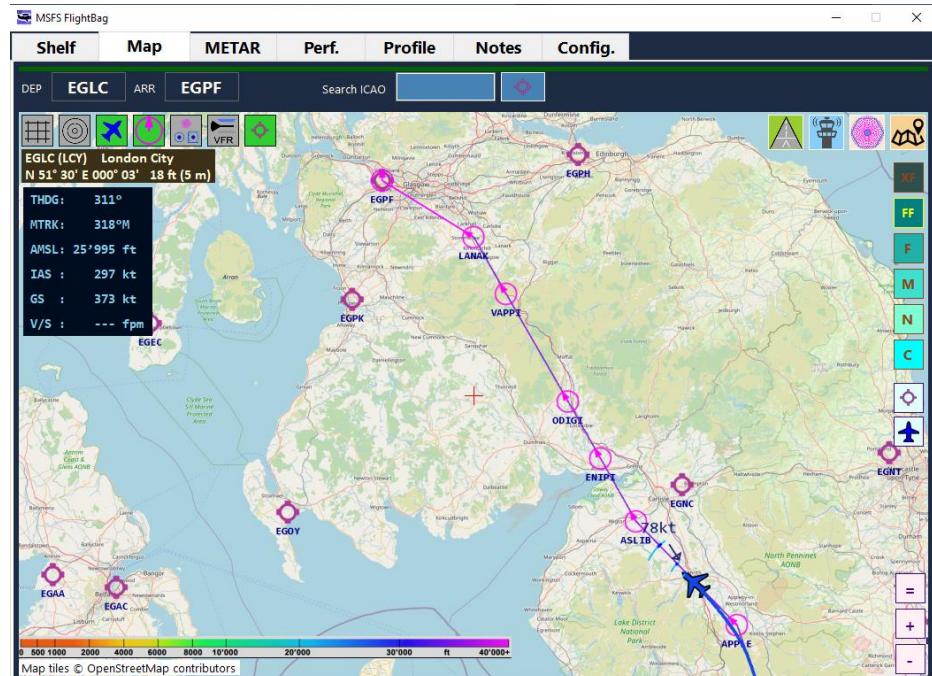
A route is marked with magenta lines and circles, where legs belonging to a SID or STAR are shown in a darker magenta color as in the example right from waypoint APPLE to LANAK.

As long as there is no Approach information in a plan the last leg ends at the airport (ex. LANAK-> EGPF)

Requested plans from the Sim may eventually contain Approach information. Such data is created by the Sim ATC/Planner and the validity is sometimes questionable...



It is also dependent of the aircraft flown, some FMS do not share plans with the Sim internal systems and will therefore not provide any meaningful information in MSFS derived plans.



For any plan a flight table document is created in the Shelf (@.FlightTable). The table contains a row for each waypoint found in the plan together with some helpful information about the plan.

For SimBrief downloads the plan document @.FlightPlan is created and the images contained in the plan are downloaded if available and stored in Shelf.

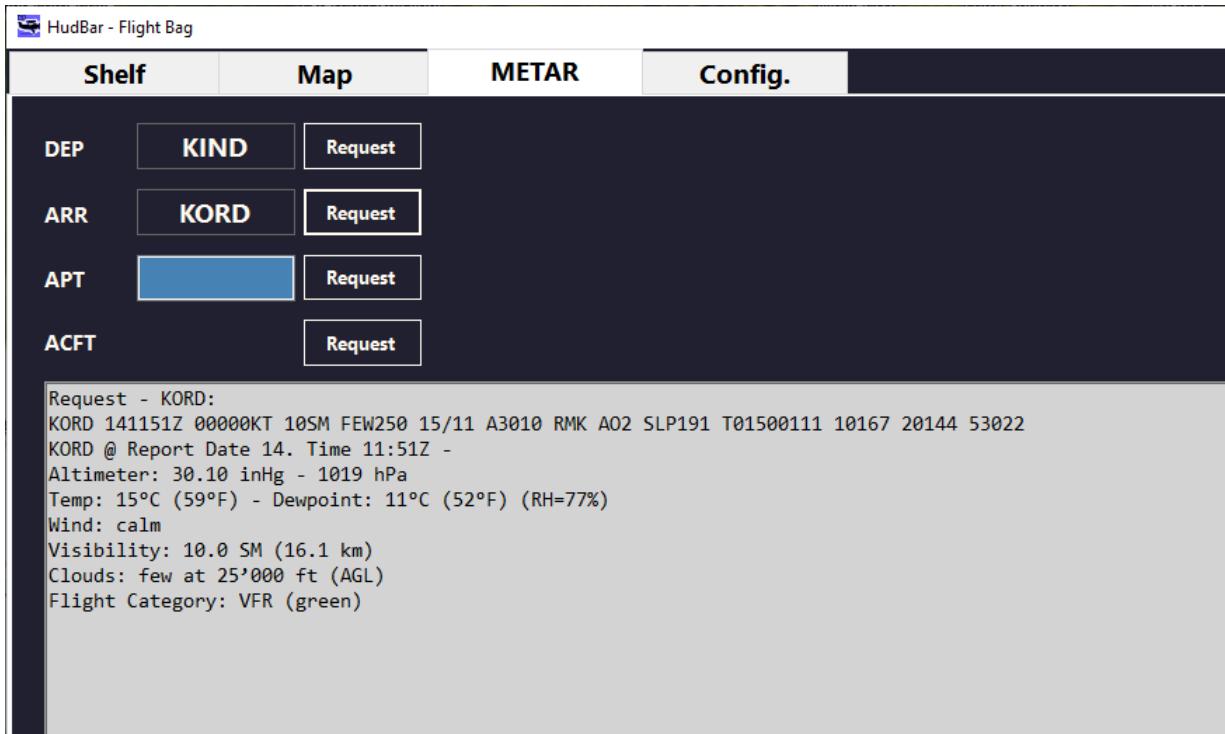
To the right is the list of docs for a SimBrief download.

Note: plan documents are overwritten as soon as a new one is created or downloaded. But the currently viewed document does not change – select it again to view the most recent version.

| |
|--------------------|
| @.FlightPlan |
| @.FlightTable |
| @.Route |
| @.SigWx 1 of 4 |
| @.SigWx 2 of 4 |
| @.SigWx 3 of 4 |
| @.SigWx 4 of 4 |
| @.UAD 1 of 3 |
| @.UAD 2 of 3 |
| @.UAD 3 of 3 |
| @.Vertical profile |

METAR Tab

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



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

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_m | 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 |
| 9 | 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)

Profile Tab

An interactive profile table – using the “Rule of 3” as base.

| FPA | IAS | TAS | GS | VS | Altitude | Dist [nm] |
|-----------|-----|-------|---------|----------|----------|-----------|
| 3.3 | 242 | 348 | 347 | 1980 | 23434 | |
| Profile ° | % | I/n/m | GS [kt] | VS [fpm] | Alt [ft] | Dist [nm] |
| 0.4 | 0.7 | 40 | 600 | 2500 | 45'000 | 57 |
| 0.6 | 1.0 | 60 | 580 | 4'450 | 40'000 | 45 |
| 0.8 | 1.3 | 80 | 560 | 2'450 | 35'000 | 41 |
| 1.0 | 1.7 | 100 | 540 | 1'450 | 30'000 | 36 |
| 1.2 | 2.1 | 120 | 520 | 1'400 | 24'000 | 32 |
| 1.4 | 2.4 | 140 | 500 | | | |

Above the tables are the current numbers as reported from the Simulator:

FPA is the current flight path angle then IAS, TAS, GS, VS, and Altitude (in kts and Alt in ft)

The current FPA, GS, and Altitude values are highlighted in the respective tables with a greenish color (for values in between row values for GS and Alt the higher one is marked in order to provide a safety margin).

Click a flight profile row in the left table - it will recalculate the 2nd and 3rd table.

The middle table shows the required vertical speed at a given **ground speed** (GS) in order to maintain the profile. E.g. above to maintain a 4.4° profile at GS of 260 kts it asks for 2000 ft/min vertical rate.

Clicking a row in the middle table serves only as mark or reminder and will not change any value.

The right table shows the distance which is flown to get to a certain altitude at the selected profile angle. E.g. starting from FL200 with a 4.4° profile it needs 23nm to get either down to FL100 or up to FL300.

Note: add a safety margin to the calculated distances!

Clicking a row in the right table will set this altitude as zero distance and calculate from there up and down.

There are no signed numbers in the tables, it's meant as either climb or descend.

Example:

We are at 26'000 ft with a GS of 480 as the greenish marks are showing, above the table are the real-time values from the Sim.

The plane is heading down at 2.4° and this profile is currently selected - showing a VS of ~2000 ft/min is required and flown.

Below the left screen has 26'000 ft selected as starting point and the distances are calculated up and down. To get down to 7'000 ft it shows we need about 79nm.

In the middle screen the new target altitude of 7'000 ft is selected and it shows the remaining distance as the green mark walks down while we descend. Also showing the needed distance to the airfield which is at about 1'000ft – it would be 25nm when flying at 2.4°.

In the right screen the approach profile of 3° is selected and now the VS has changed but also the distance from 7000 to 1000ft is back to 20nm for the steeper approach (now we only need to get our speed back in time and maintain the profiles..)

| FPA | IAS | TAS | GS | VS | Altitude | Dist [nm] |
|-----------|------|-------|---------|----------|----------|-----------|
| -2.4 | 331 | 471 | 472 | 1980 | 24'622 | |
| Profile ° | % | I/n/m | GS [kt] | VS [fpm] | Alt [ft] | Dist [nm] |
| 0.4 | 0.7 | 40 | 600 | 2500 | 45'000 | 57 |
| 0.6 | 1.0 | 60 | 580 | 2'450 | 40'000 | 45 |
| 0.8 | 1.3 | 80 | 560 | 1'450 | 35'000 | 41 |
| 1.0 | 1.7 | 100 | 540 | 1'400 | 30'000 | 36 |
| 1.2 | 2.1 | 120 | 520 | 1'400 | 24'000 | 32 |
| 1.4 | 2.4 | 140 | 500 | 1'200 | 20'000 | 25 |
| 1.6 | 2.8 | 160 | 480 | 2'000 | 30'000 | 17 |
| 1.8 | 3.1 | 180 | 460 | 1'950 | 28'000 | 8 |
| 2.0 | 3.5 | 200 | 440 | 1'850 | 26'000 | 0 |
| 2.2 | 3.8 | 220 | 420 | 1'750 | 24'000 | 8 |
| 2.4 | 4.2 | 240 | 400 | 1'700 | 22'000 | 17 |
| 2.6 | 4.5 | 260 | 380 | 1'600 | 20'000 | 25 |
| 2.8 | 4.9 | 280 | 360 | 1'500 | 18'000 | 33 |
| 3.0 | 5.3 | 300 | 340 | 1'400 | 16'000 | 42 |
| 3.2 | 5.6 | 320 | 320 | 1'300 | 14'000 | 50 |
| 3.4 | 5.9 | 340 | 300 | 1'200 | 12'000 | 58 |
| 3.6 | 6.3 | 360 | 280 | 1'150 | 12'000 | 54 |
| 3.8 | 6.6 | 380 | 260 | 1'100 | 12'000 | 58 |
| 4.0 | 7.0 | 400 | 240 | 1'000 | 11'000 | 63 |
| 4.2 | 7.3 | 420 | 220 | 900 | 10'000 | 67 |
| 4.4 | 7.7 | 440 | 200 | 850 | 9'000 | 71 |
| 4.6 | 8.0 | 460 | 180 | 750 | 8'000 | 75 |
| 4.8 | 8.4 | 480 | 160 | 650 | 7'000 | 79 |
| 5.0 | 8.7 | 500 | 140 | 600 | 6'000 | 83 |
| 5.2 | 9.1 | 520 | 120 | 500 | 5'000 | 88 |
| 5.4 | 9.5 | 540 | 100 | 400 | 4'000 | 92 |
| 5.6 | 9.8 | 560 | 80 | 350 | 3'000 | 96 |
| 5.8 | 10.2 | 580 | 60 | 250 | 2'000 | 100 |
| 6.0 | 10.5 | 600 | 40 | 150 | 1'000 | 104 |

| FPA | IAS | TAS | GS | VS | Altitude | Dist [nm] |
|-----------|------|-------|---------|----------|----------|-----------|
| -2.4 | 331 | 469 | 472 | 2'000 | 24'361 | |
| Profile ° | % | I/n/m | GS [kt] | VS [fpm] | Alt [ft] | Dist [nm] |
| 0.4 | 0.7 | 40 | 600 | 2500 | 45'000 | 158 |
| 0.6 | 1.0 | 60 | 580 | 2'450 | 40'000 | 138 |
| 0.8 | 1.3 | 80 | 560 | 1'450 | 35'000 | 129 |
| 1.0 | 1.7 | 100 | 540 | 1'400 | 30'000 | 121 |
| 1.2 | 2.1 | 120 | 520 | 1'200 | 24'000 | 113 |
| 1.4 | 2.4 | 140 | 500 | 1'100 | 22'000 | 104 |
| 1.6 | 2.8 | 160 | 480 | 2'000 | 30'000 | 96 |
| 1.8 | 3.1 | 180 | 460 | 1'950 | 28'000 | 88 |
| 2.0 | 3.5 | 200 | 440 | 1'850 | 26'000 | 79 |
| 2.2 | 3.8 | 220 | 420 | 1'750 | 24'000 | 71 |
| 2.4 | 4.2 | 240 | 400 | 1'700 | 22'000 | 63 |
| 2.6 | 4.5 | 260 | 380 | 1'600 | 20'000 | 54 |
| 2.8 | 4.9 | 280 | 360 | 1'500 | 18'000 | 46 |
| 3.0 | 5.2 | 300 | 340 | 1'400 | 16'000 | 38 |
| 3.2 | 5.6 | 320 | 320 | 1'300 | 15'000 | 33 |
| 3.4 | 5.9 | 340 | 300 | 1'200 | 14'000 | 29 |
| 3.6 | 6.3 | 360 | 280 | 1'150 | 13'000 | 25 |
| 3.8 | 6.6 | 380 | 260 | 1'100 | 12'000 | 21 |
| 4.0 | 7.0 | 400 | 240 | 1'000 | 11'000 | 17 |
| 4.2 | 7.3 | 420 | 220 | 900 | 10'000 | 13 |
| 4.4 | 7.7 | 440 | 200 | 850 | 9'000 | 8 |
| 4.6 | 8.0 | 460 | 180 | 750 | 8'000 | 4 |
| 4.8 | 8.4 | 480 | 160 | 650 | 7'000 | 0 |
| 5.0 | 8.7 | 500 | 140 | 600 | 6'000 | 4 |
| 5.2 | 9.1 | 520 | 120 | 500 | 5'000 | 8 |
| 5.4 | 9.5 | 540 | 100 | 400 | 4'000 | 13 |
| 5.6 | 9.8 | 560 | 80 | 350 | 3'000 | 17 |
| 5.8 | 10.2 | 580 | 60 | 250 | 2'000 | 21 |
| 6.0 | 10.5 | 600 | 40 | 150 | 1'000 | 25 |

| FPA | IAS | TAS | GS | VS | Altitude | Dist [nm] |
|-----------|------|-------|---------|----------|----------|-----------|
| -2.5 | 330 | 466 | 467 | -2'020 | 24'005 | |
| Profile ° | % | I/n/m | GS [kt] | VS [fpm] | Alt [ft] | Dist [nm] |
| 0.4 | 0.7 | 40 | 600 | 2'150 | 45'000 | 127 |
| 0.6 | 1.0 | 60 | 580 | 2'050 | 40'000 | 110 |
| 0.8 | 1.4 | 80 | 560 | 2'950 | 38'000 | 103 |
| 1.0 | 1.7 | 100 | 540 | 2'900 | 36'000 | 97 |
| 1.2 | 2.1 | 120 | 520 | 2'750 | 34'000 | 90 |
| 1.4 | 2.4 | 140 | 500 | 2'600 | 32'000 | 83 |
| 1.6 | 2.8 | 160 | 480 | 2'500 | 30'000 | 77 |
| 1.8 | 3.1 | 180 | 460 | 2'400 | 28'000 | 70 |
| 2.0 | 3.5 | 200 | 440 | 2'300 | 26'000 | 63 |
| 2.2 | 3.8 | 220 | 420 | 2'200 | 24'000 | 57 |
| 2.4 | 4.2 | 240 | 400 | 2'100 | 22'000 | 50 |
| 2.6 | 4.5 | 260 | 380 | 2'000 | 20'000 | 43 |
| 2.8 | 4.9 | 280 | 360 | 1'900 | 18'000 | 37 |
| 3.0 | 5.2 | 300 | 340 | 1'800 | 16'000 | 30 |
| 3.2 | 5.6 | 320 | 320 | 1'700 | 15'000 | 27 |
| 3.4 | 5.9 | 340 | 300 | 1'600 | 14'000 | 23 |
| 3.6 | 6.3 | 360 | 280 | 1'550 | 13'000 | 20 |
| 3.8 | 6.6 | 380 | 260 | 1'500 | 12'000 | 17 |
| 4.0 | 7.0 | 400 | 240 | 1'250 | 11'000 | 13 |
| 4.2 | 7.3 | 420 | 220 | 1'150 | 10'000 | 10 |
| 4.4 | 7.7 | 440 | 200 | 1'050 | 9'000 | 7 |
| 4.6 | 8.0 | 460 | 180 | 950 | 8'000 | 3 |
| 4.8 | 8.4 | 480 | 160 | 850 | 7'000 | 0 |
| 5.0 | 8.7 | 500 | 140 | 750 | 6'000 | 3 |
| 5.2 | 9.1 | 520 | 120 | 650 | 5'000 | 7 |
| 5.4 | 9.5 | 540 | 100 | 500 | 4'000 | 10 |
| 5.6 | 9.8 | 560 | 80 | 350 | 3'000 | 13 |
| 5.8 | 10.2 | 580 | 60 | 250 | 2'000 | 17 |
| 6.0 | 10.5 | 600 | 40 | 150 | 1'000 | 20 |

Can be used to estimate the TOD or to check if a constraint can be made with the current profile.

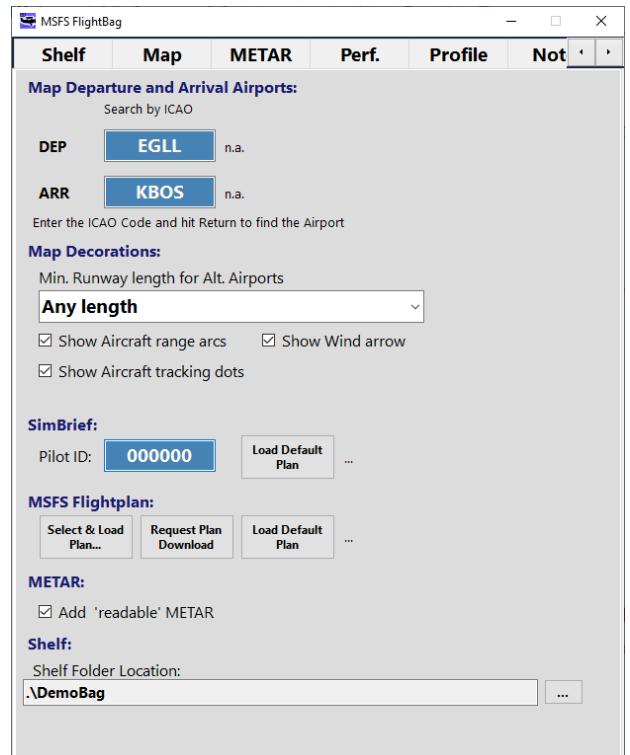
Notes Tab

just a notepad which is saved when closing the App

Config Tab

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 Navaids**' will show all approach waypoints for the selected runway when Navaids decoration is ON

~~Note: some labels will overlap when approach waypoints are close together (did not find a reasonable way to resolve this)~~
(does no longer apply in V0.63)

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 a min length 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.

Checked '**Show Aircraft Wind arrow**' will show an arrow of wind direction and the speed of the wind around the aircraft.

SimBrief:

Enter your SimBrief PilotID (2..7 digit number), hit Return to validate it (once – it will be stored in Settings)

Then click "**Load Plan**" to retrieve your latest Flight Plan – it will reply the Departure and Arrival Airport and also fill in the corresponding fields above.

MSFS Flightplan:

Select a PLN or FLT file from the disk, request the ATC plan from the Sim or load the default plan from MS to load a route and create a Plan Table document in the Shelf.

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.

SimBrief Integration

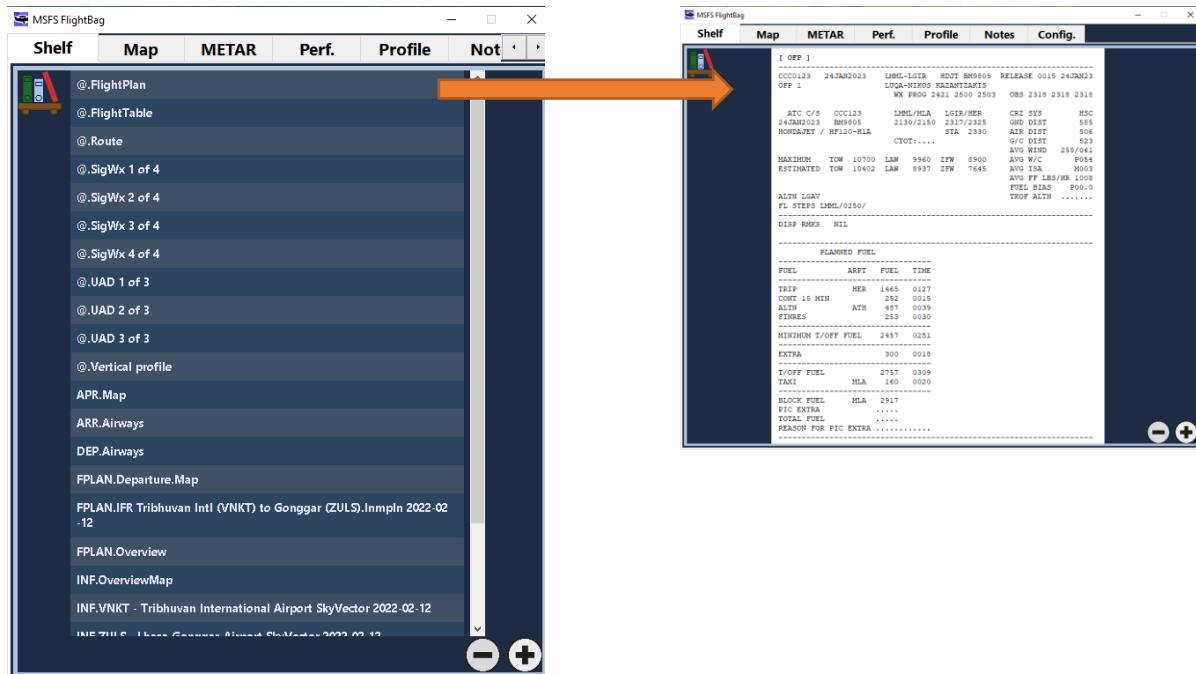
If you are using SimBrief for your flight planning you may retrieve the latest plan and some documents now.



First provide your Pilot ID (a 2..7 digit number) in Configuration, it will be stored in Settings.

Use “Load Plan” in Configuration to retrieve the last plan data.

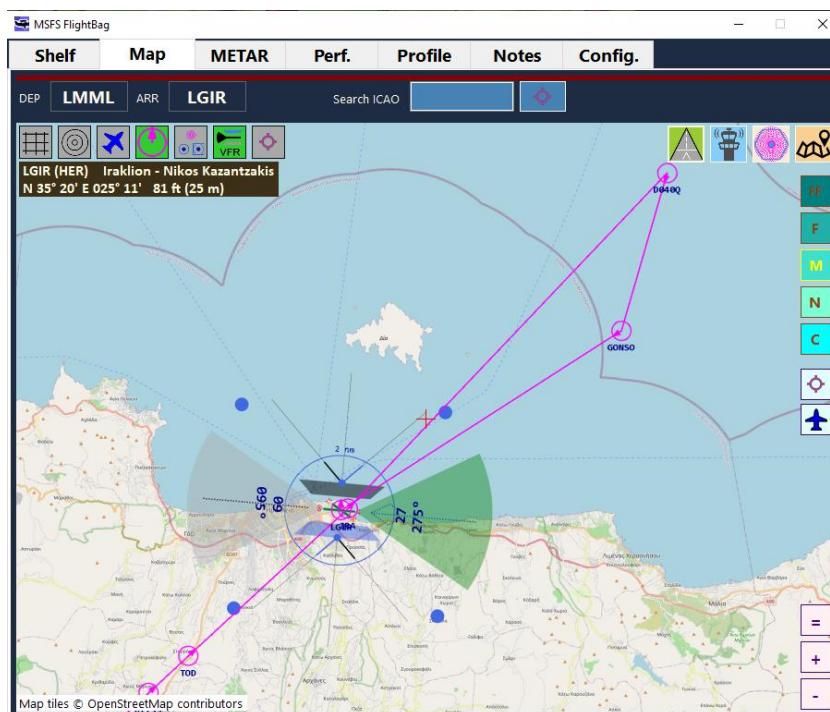
Once successful a Flight Plan document is stored in the Shelf together with the pictures created by SimBrief.



In Shelf you will find the documents starting with @. ... (e.g. @.FlightPlan, @.FlightTable, etc)

@.FlightPlan is the main plan where the long NOTAM and image sections have been stripped from. It is stored as one Image document and can be read, zoomed and scrolled like any other doc.

For the Map display the planned route is shown (can be toggled on and off) using this button:



While the route is shown as magenta line the waypoints are circles with the ID below.

Note:

The plan does not include approaches and therefore the last segment is usually pointing at the airport, rather than the approach path.

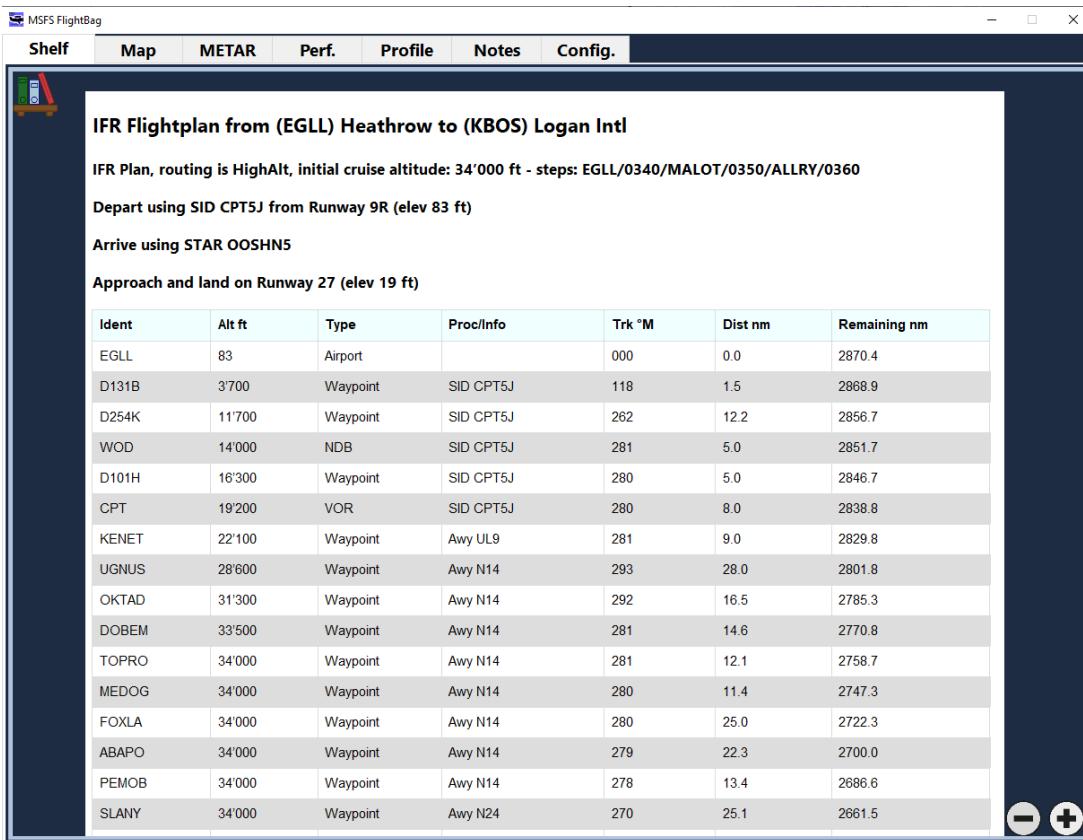
In the example the plan is to land on runway 27. With the VFR runway display one has at least a rough overview of the approach pattern needed.

Note: There are some settings in SimBrief which may disable the availability of images in the download, check SimBrief Settings for details.

MSFS Flightplan Integration

In Config you may load either the default MSFS Plan (CUSTOMFLIGHT.PLN in the MISSIONS folder) or request the most current Simulation ATC FLT plan or select a PLN or FLT Flightplan file from any location on the computer.

MS Plans will load the route and also a flight plan in table format is created and saved in the Shelf the name is: **@.FlightTable**



MSFS FlightBag

Shelf Map METAR Perf. Profile Notes Config.

IFR Flightplan from (EGLL) Heathrow to (KBOS) Logan Intl

IFR Plan, routing is HighAlt, initial cruise altitude: 34'000 ft - steps: EGLL/0340/MALOT/0350/ALLRY/0360

Depart using SID CPT5J from Runway 9R (elev 83 ft)

Arrive using STAR OOSHNS

Approach and land on Runway 27 (elev 19 ft)

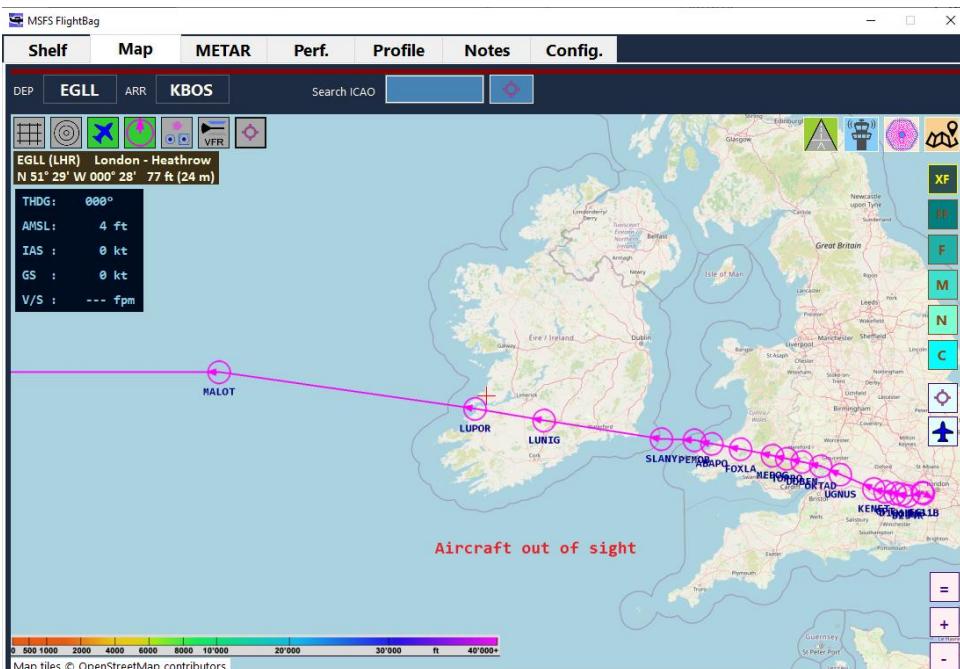
| Ident | Alt ft | Type | Proc/Info | Trk °M | Dist nm | Remaining nm |
|-------|--------|----------|-----------|--------|---------|--------------|
| EGLL | 83 | Airport | | 000 | 0.0 | 2870.4 |
| D131B | 3'700 | Waypoint | SID CPT5J | 118 | 1.5 | 2868.9 |
| D254K | 11'700 | Waypoint | SID CPT5J | 262 | 12.2 | 2856.7 |
| WOD | 14'000 | NDB | SID CPT5J | 281 | 5.0 | 2851.7 |
| D101H | 16'300 | Waypoint | SID CPT5J | 280 | 5.0 | 2846.7 |
| CPT | 19'200 | VOR | SID CPT5J | 280 | 8.0 | 2838.8 |
| KENET | 22'100 | Waypoint | Awy UL9 | 281 | 9.0 | 2829.8 |
| UGNUS | 28'600 | Waypoint | Awy N14 | 293 | 28.0 | 2801.8 |
| OKTAD | 31'300 | Waypoint | Awy N14 | 292 | 16.5 | 2785.3 |
| DOBEM | 33'500 | Waypoint | Awy N14 | 281 | 14.6 | 2770.8 |
| TOPRO | 34'000 | Waypoint | Awy N14 | 281 | 12.1 | 2758.7 |
| MEDOG | 34'000 | Waypoint | Awy N14 | 280 | 11.4 | 2747.3 |
| FOXLA | 34'000 | Waypoint | Awy N14 | 280 | 25.0 | 2722.3 |
| ABAPO | 34'000 | Waypoint | Awy N14 | 279 | 22.3 | 2700.0 |
| PEMOB | 34'000 | Waypoint | Awy N14 | 278 | 13.4 | 2686.6 |
| SLANY | 34'000 | Waypoint | Awy N24 | 270 | 25.1 | 2661.5 |

– +

The above is from a flight planned in SimBrief where the MSFS2000 (PLN) file was downloaded and loaded in Config Select & Load Plan...

MSFS Flightplan:
Select & Load Plan...

The new XF Range allows a larger overview of such a plan.



MSFS FlightBag

Shelf Map METAR Perf. Profile Notes Config.

DEP EGLL ARR KBOS search ICAO

EGLL (LHR) London - Heathrow N 51° 29' W 000° 28' 77 ft (24 m)

THDG: 000°
AMSL: 4 ft
IAS: 0 kt
GS: 0 kt
V/S: --- fpm

Map tiles © OpenStreetMap contributors

Aircraft out of sight

0 500 1000 2000 4000 6000 8000 10'000 20'000 30'000 40'000 ft

Note: You may use both SimBrief and MSFS Plan loading without having the Simulator running.

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 (updated V0.63)

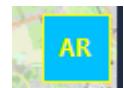
Map cache files:

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 6 different ranges: XF=7, FF= 9, F=11, M= 12, N=13, C=15

With **AutoRange** enabled it will load tiles from zoom level 6 to 15 when zooming the Map (V0.63)



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 ~128MB / ~5120 tiles at startup of the application. (V0.63)

MapLib maintains a memory cache for 800 tiles (about 20MB RAM) while an application is running. (V0.63)

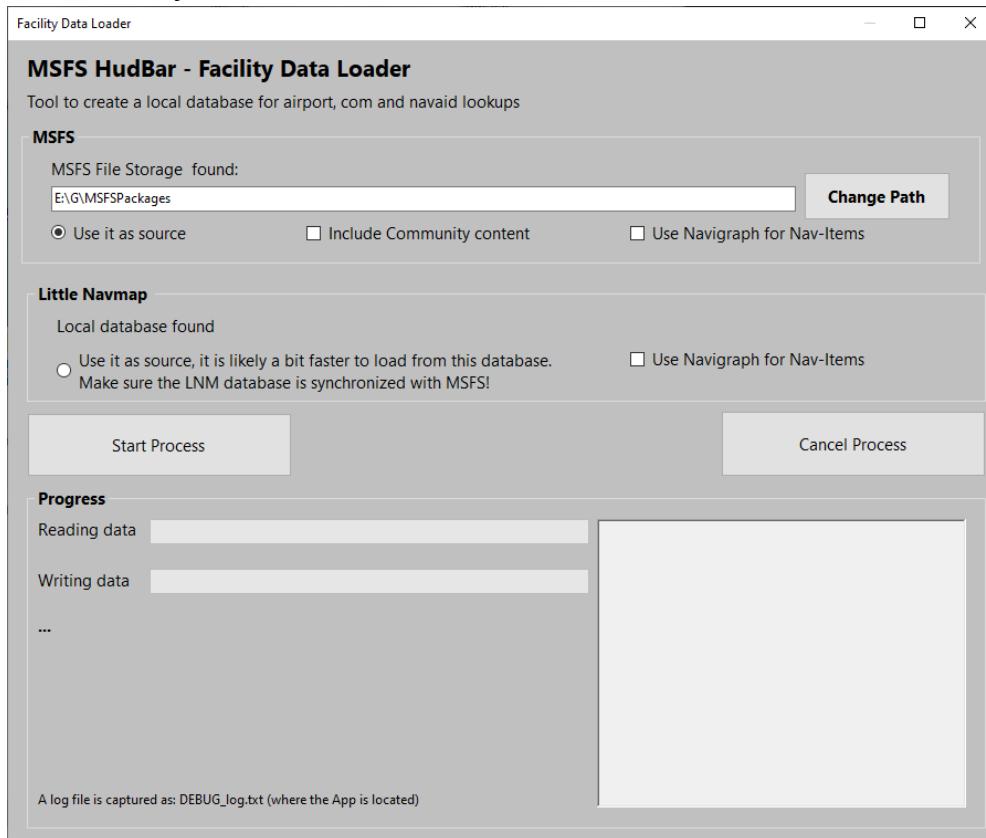
→ If you encounter incorrect tiles or other oddities – first delete the cache files and try again.

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.dbLite and is around 200MB.

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://flightsim.to/file/41426/msfs-flightbag>

For issues with a flight plans – the App stores the most recent version in

MyDocuments\MSFS_HudBarSave as file with the name **LastPlanDownload** and the ending **.FLT**, **.PLN** or **.json**

PLEASE trigger the request again and then immediately save and include the files when reporting errors.

Known Issues:

Stutter when requesting a Plan from Sim

The Simulator may stutter for a moment when requesting a plan download- seems to be an ASOBO/MS issue since long ago. Cannot do anything about it...

Settings are not stored or runtime exceptions

We have seen issues when Windows Protected Folders are enabled.

(<https://www.tenforums.com/tutorials/87858-add-protected-folders-controlled-folder-access-windows-10-a.html>)

In such a case Windows may deny programs which are not installed via MSI Installer access to write or delete files in some places, among them is the MyDocuments folder.

There is a check at the very beginning of the App which is trying to elaborate if such protection exists or not. If yes there is a MessageBox popping up related to Access Permission Error and the reason should be reported in the box.

In such a case first try to find out if protected folders are enabled and then add the FlightBag App to the list of allowed programs and start the program again to see if the problem persists – if it is still there head for Issue Reporting above.

(<https://support.microsoft.com/en-us/windows/allow-an-app-to-access-controlled-folders-b5b6627a-b008-2ca2-7931-7e51e912b034>)

MapLib – Map tile retrieval library

© 2022 - M.Burri

Feb 2023 Update see notes below marked with **Feb23**

Supported Map Providers

MapLib supports a fixed number of Map Tile Providers as well as 6 (**Feb23**) 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>

ChartBundle.com – disabled by default (**New Feb23**)

<https://www.chartbundle.com/charts/>

Free aviation charts with limited coverage (FAA airspace)

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 1..6 (**Updated Feb23**)

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 (Updated Feb23)

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: XF=7, FF= 9, F=11, M= 12, N=13, C=15

New With AutoRange enabled it will load tiles from zoom level 6 to 15 when zooming the Map

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 ~128MB / ~5120 tiles at startup of the application.

MapLib maintains a memory cache for 800 tiles (about 20 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_HudBarsSave`) 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

`Name=...` → The name shown in the selection list (new Feb23)

`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 and chartbundle 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}/{x}/{y}.imageformat`

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

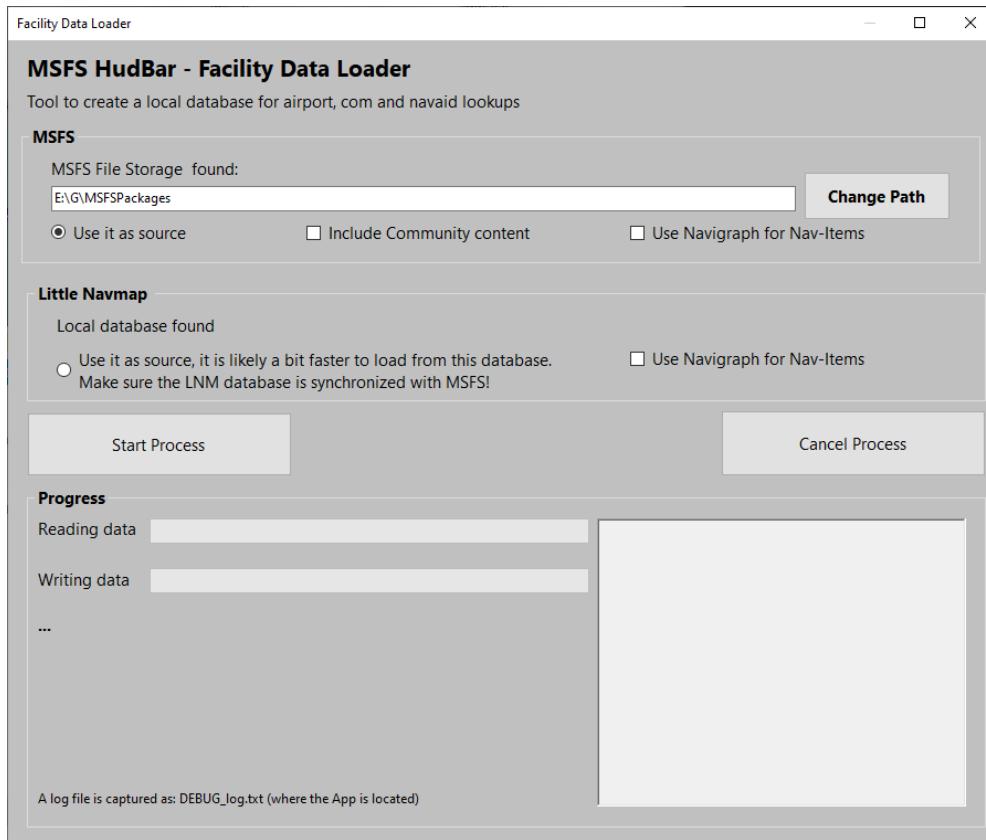
The library expects a Mercator Tile Set with 0/0 top left tile number and 256x256 sized tiles – PNG and JPG image formats are supported.

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.dbLite` and is about **200MB**.

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]
; /// Name=a name
; /// Enabled=true / false
; /// Http=URL
;
; Text after a semicolon is treated as comment
;
;=> File name must be 'MapLibProvider.ini'
;
; Define the DefaultProvider from the [PROVIDER] names
;
; In each providers section:
; Set 'Enabled=true' to be able to use it
; Change Name=new name if you don't like 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 subdomains are available - {s} can be used
; For some you need an access key (personal, subscription etc)
; Key=sadfsdfsdf
;
; NOTE there is no 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>

; PROVIDER SECTIONS

[OSM_OpenStreetMap]
; OpenStreetMap (see terms of use before using it)
Name=OSM OpenStreetMap
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)
Name=OpenTopo
Enabled=true
;Http=https://(s).tile.opentopomap.org/{z}/{x}/{y}.png ; default
;Http=https://a.tile.opentopomap.org/{z}/{x}/{y}.png ; without subdomain

[Stamen_Terrain]
; Street Map 3D shaped
; Stamen.com (see terms of use before using it)
Name=Stamen 3D Street Map
Enabled=true
;Http=https://stamen-tiles-(s).a.ssl.fastly.net/terrain/{z}/{x}/{y}.jpg ; default
;Http=https://stamen-tiles.a.ssl.fastly.net/terrain/{z}/{x}/{y}.jpg ; without subdomain

; ****
; From http://www.chartbundle.com/charts/ see terms of use
; For US regions only (FAA provides data at no cost, other countries do not...)
; Disabled per default - change: Enabled=true to get the ones you need
; ****
[CB_WAC]
; World Aeronautical Charts
Name=CB World Aeronautical Charts
Enabled=false
;Http=https://wms.chartbundle.com/tms/1.0.0/wac/{z}/{x}/{y}.png?origin=nw ; default

[CB_SEC]
; Sectional Charts
Name=CB Sectional Charts
Enabled=false
;Http=https://wms.chartbundle.com/tms/1.0.0/sec/{z}/{x}/{y}.png?origin=nw ; default

[CB_TAC]
```

```

; Terminal Area Charts
Name=CB Terminal Area Charts
Enabled=false
;Http=https://wms.chartbundle.com/tms/1.0.0/tac/{z}/{x}/{y}.png?origin=nw ; default

[CB_ENRA]
; IFR Area Charts
Name=CB IFR Area Charts
Enabled=false
;Http=https://wms.chartbundle.com/tms/1.0.0/enra/{z}/{x}/{y}.png?origin=nw ; default

[CB_ENRL]
; IFR Enroute Low Charts
Name=CB IFR Enroute Low Charts
Enabled=false
;Http=https://wms.chartbundle.com/tms/1.0.0/enrl/{z}/{x}/{y}.png?origin=nw ; default

[CB_ENRH]
; IFR Enroute High Charts
Name=CB IFR Enroute High Charts
Enabled=false
;Http=https://wms.chartbundle.com/tms/1.0.0/enrh/{z}/{x}/{y}.png?origin=nw ; 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
Name=Bing 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
Name=Bing Satellite Imagery w. 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
Name=Bing OSM StreetMap
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/ARCGIS Maps (subject to terms of use - your at your own here...)
; ****

[ESRI_Imagery]
; Satellite Imagery
; ESRI/ARCGIS World Imagery (see terms of use before using it)
Name=ESRI/ARCGIS World Imagery
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)
Name=ESRI/ARCGIS StreetMap
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)
Name=ESRI/ARCGIS WorldTopo
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
Name=User Tiles 1
Enabled=false
;Http=https://ip_or_address/route/{z}/{x}/{y}.imageformat ; MUST be changed to something meaningful

[USER_TILES_2]
; User defines Tile Server No 2
Name=User Tiles 2
Enabled=false
;Http=https://ip_or_address/route/{z}/{x}/{y}.imageformat ; MUST be changed to something meaningful

[USER_TILES_3]

```

```
; User defines Tile Server No 3
Name=User Tiles 3
Enabled=false
;Http=https://ip_or_address/route/{z}/{x}/{y}.imageformat ; MUST be changed to something meaningful

[USER_TILES_4]
; User defines Tile Server No 4
Name=User Tiles 4
Enabled=false
;Http=https://ip_or_address/route/{z}/{x}/{y}.imageformat ; MUST be changed to something meaningful

[USER_TILES_5]
; User defines Tile Server No 5
Name=User Tiles 5
Enabled=false
;Http=https://ip_or_address/route/{z}/{x}/{y}.imageformat ; MUST be changed to something meaningful

[USER_TILES_6]
; User defines Tile Server No 6
Name=User Tiles 6
Enabled=false
;Http=https://ip_or_address/route/{z}/{x}/{y}.imageformat ; MUST be changed to something meaningful
```