# TOPOFLIGHT Mission Planner

The standard for photogrammetry & LiDAR flight planning and cost calculation

TOPOFLIGHT is a 3d flight planning software for fast and interactive design of flight plans. It is especially useful for photogrammetry and LiDAR missions and supports frame, line and LiDAR sensors. By including digital elevation models, TOPOFLIGHT produces optimal results for minimizing the number of lines of flight, images and, consequently, also the costs of flight missions. Different export interfaces allow an easy transfer to almost all flight management systems. TOPOFLIGHT presents the results in maps and tables. These are useful for project cost calculation and thus simplify the generation of quotations significantly.

Worldwide, many projects - from small to large - are being carried out with the help of TOPOFLIGHT.

An overview of TOPOFLIGHT's main characteristics
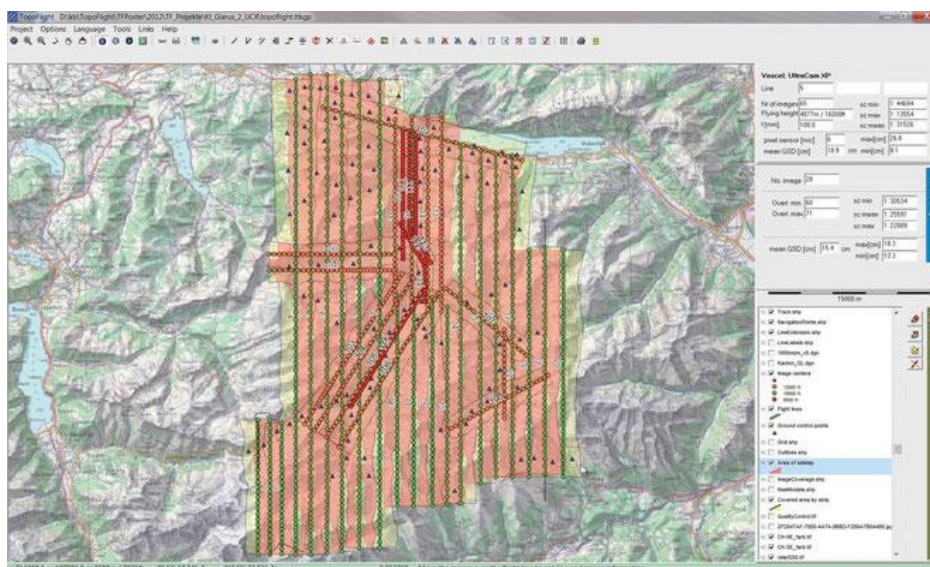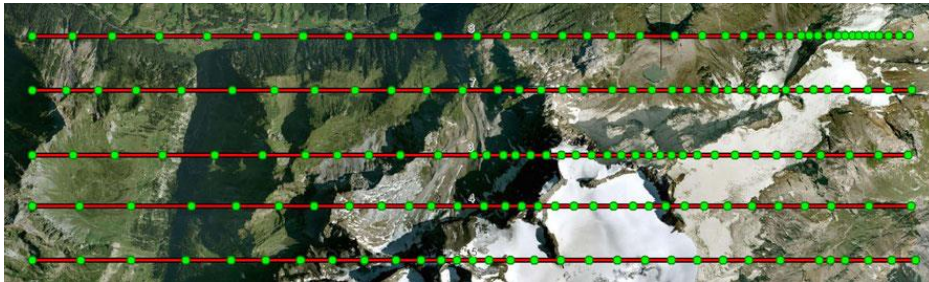

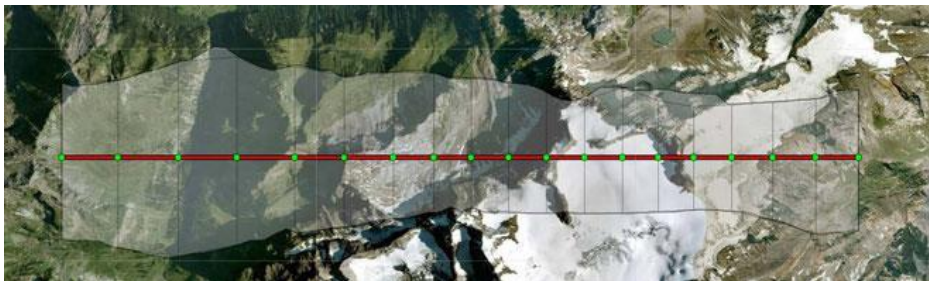*TOPOFLIGHT's main User Interface*
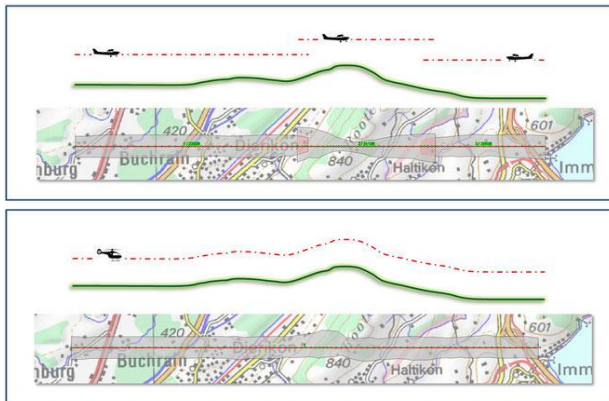
Horizontal (constant height) vs. terrain following

The distance between images varies terrain dependently to ensure minimal overlap, (user defined).

The area covered by each line of flight is calculated and visualized in 3d.

Different versions of flight plans lead to different prices.

Version 1

Version 2

Costs calculation in Excel using reports generated by TOPOFLIGHT:

One flight planning software for many sensors

Visualisation of areas covered

Visualisation of GSD (size of ground sample represented by one pixel)

3-7 cm	
7-10 cm	
10-12 cm	
12-20 cm	

LiDAR point density map

8-9 Pts/m2	
9-11 Pts/m2	
11-20 Pts/m2	
20-50 Pts/m2	
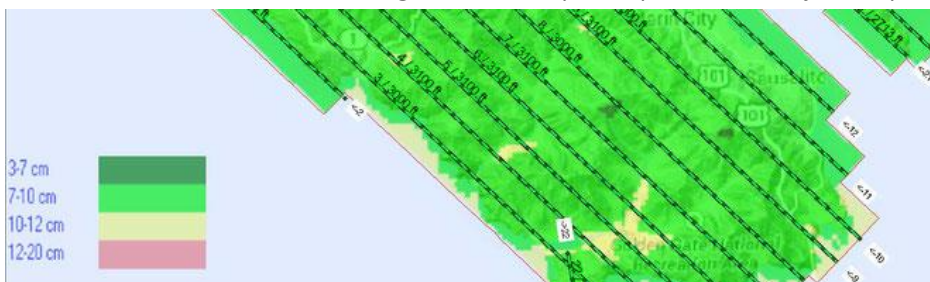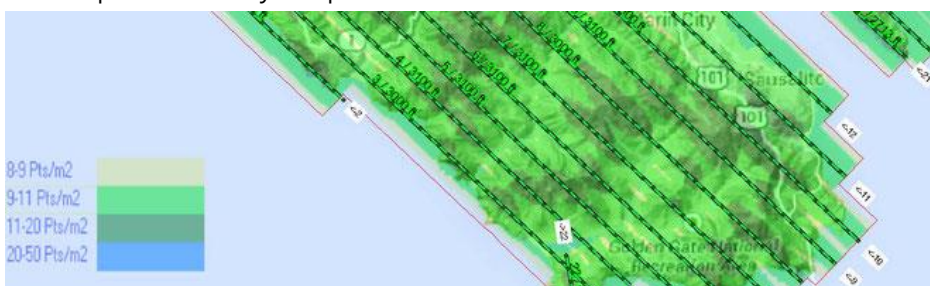
Visualisation of MTA zones

1	749	20	20
2	1124	20	20
3	1499	20	20
4	1874	20	20
5	2248	20	20
6	2623	20	20
7	2998	20	20
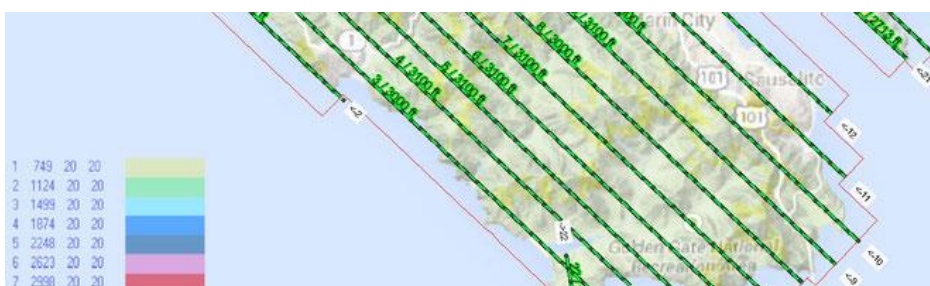
Visualisation in Google Earth

Features	Benefits
Flight planning • flight planning using DTMs over the entire area covered (not only profile) • support of all common aerial cameras and sensors (frame cameras, line scanners, thermal cameras, oblique camera systems, LiDAR scanners, stepper cameras) • terrain or constant height following • LiDAR flight planning • manual and automatic flight planning • generation of Excel reports • generation of PDF reports	• true 3d data over the entire area covered (not only profile) • TOPOFLIGHT generated flight plans allow direct cost calculation • export of plans to Excel with customized templates corresponding to the individual needs of companies
Graphic output • shape file (native format of TOPOFLIGHT) • georeferenced TIFF • Garmin FPL • DXF • GoogleEarth kml/kmz • GPX, GML • Ovl • Rafael • Mikrokopter WPL	• TOPOFLIGHT uses and exports standard vector and raster file formats. TOPOFLIGHT is an open file system hence users can easily integrate flight planning into their own project management workflows.
FMS output • Track-Air • Text	• TOPOFLIGHT can be integrated into existing FMS since it is an open

- ASCOT - CCNS4 ASCII - Z/I - SoftNav - ALTM / NAV - 3DAS PosPac - TOPOFLIGHT Navigator (native format)	system. TOPOFLIGHT's own FMS (called TOPOFLIGHT Navigator) reads the planned files directly without requiring additional export/import.
DTM input - SRTM directly inside program - TIFF32 - USGS DEM - Text XYZ	- all known DTM formats can be imported
Raster layers - All major raster file formats - Googole Earth **Vector layers** - All major vector layer formats	- flexible use of existing map data and Google map data as background information
Colored quality control maps with customizable color ranges - GSD - Number of rays - Image Scales - Sidelap - Image displacement (building lean) - Height above ground - Point densities for LiDAR - Range map for LiDAR - Laser beam footprint map **Quality control of flights** - Import of XYZ files - Import of XYZ OPK text files - colored post-flight quality maps	- the colored maps are quick and easy to read for anyone - colored maps allow fast and simple assessment of flight plans , hereby making TOPOFLIGHT the most important tool for flight planners and customers. - no number crunching is necessary for QC - flown missions can be checked and visualized using logged data
Ground Control - GCP planning, editing - Import of existing GCP - Export GSP to text or Garmin POI file - Export to KML/KMZ	- The GCP planning can be done in the same program as the flight planning.

Licensing

- A Thales / Sentinel HASP dongle or a software license is used for software protection.
- The license (software or hardware) can be used by any machine in the network. It does not have to be connected to the machine TOPOFLIGHT Mission Planner is installed on. The HASP driver will recognize the license as long as it is in the same network.
- Users can check in and check out software licenses through a Web interface.
- The license is perpetual. Therefore, it is only valid for the software version purchased. New main releases will require a new license that can be loaded onto the dongle.
- Users paying for software maintenance will always get the newest release and corresponding license file to be loaded onto the dongle.

Hardware and operating system

- TOPOFLIGHT Mission Planner runs on Windows 8 and newer. All tests and developments are performed on Windows 10 and 11. Therefore, we recommend Windows 10 or Windows 11.
- There are no special requirements for the hardware. Any PC having Windows 10 and being able to run standard CAD applications will be suitable for TOPOFLIGHT Mission Planner.