



Integrated Geospatial Innovations

IGI mbH - 40 years celebration

Founded 1978

More than 500 customers in 84 different countries

World-wide technical support



IGI office in Kreuztal, Germany

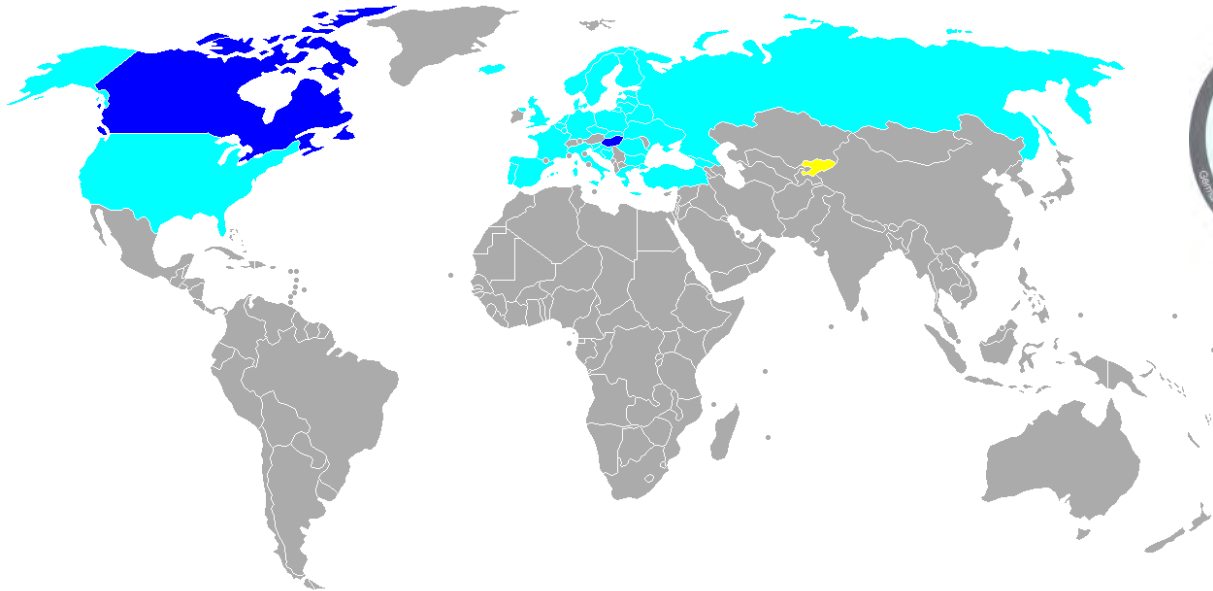
Area of Competence: Ride the Sky on Rails Antarktis, Polar 2 & Polar 3



Coast Patrol with Radar
Protection of a 200nm fishery zone



Open Skies – Area of Operation



IGI History: KSZE, Wien & Helsinki; 1990



IGI Sensor Management:

SMS-1,
Sensor Management System
11 different Sensors

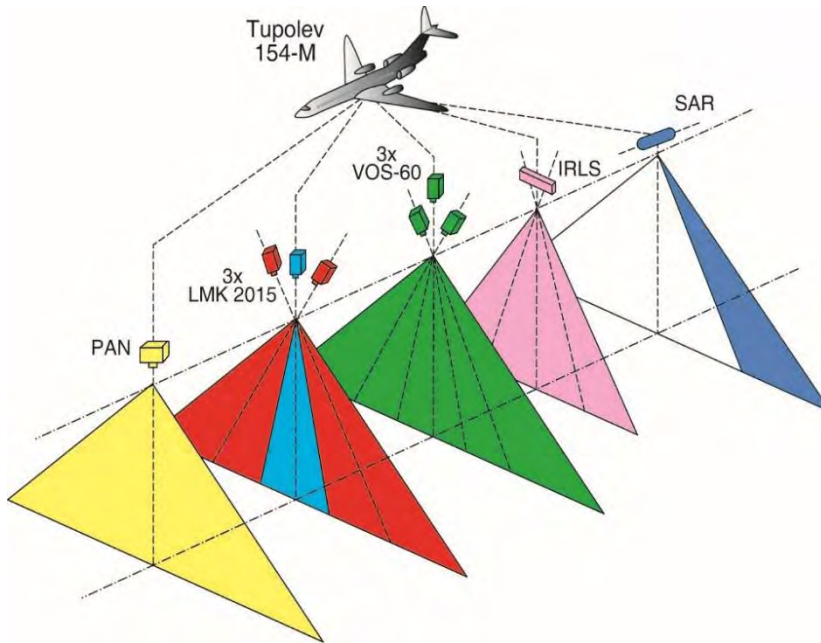
BD/Z-84,
Operator Interface for
Zenit Z-84 PAN-Camera



German Open Skies Aircraft until 1997: Tupolev 154-M



IGI History: KSZE, Wien & Helsinki; 1990



IGI Sensor Management:

SMS-1,
Sensor Management System
11 different Sensors

BD/Z-84,
Operator Interface for
Zenit Z-84 PAN-Camera

Source:

http://de.wikipedia.org/wiki/Tupolew_Tu-154M,_Deutsches_Open_Skies

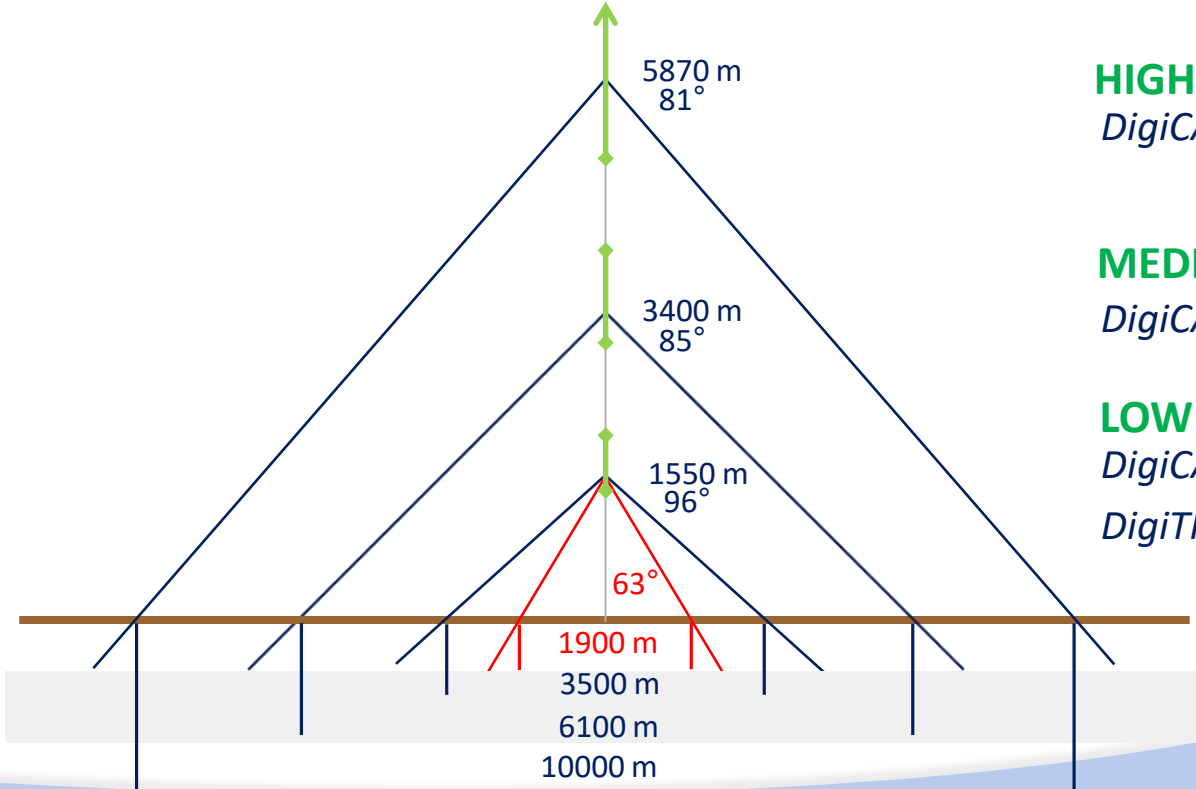
Open Skies 2017 Airbus A-319



Ein A319 der Flugbereitschaft. Noch einen Flieger dieses Typs will die Bundeswehr für „Open Skies“ – Foto: Aldo Bidini / CC-Lizenz / Wikipedia

<http://www.pivotarea.eu/2015/12/23/neuer-open-skies-flieger-fuer-die-bundeswehr/>

Open Skies – Flying Altitudes



HIGH
DigiCAM-OS-h

MEDIUM
DigiCAM-OS-m

LOW
DigiCAM-OS-l
DigiTHERM-OS-l



- Mission Planning & Flight Guidance
- Sensor Management
- **GNSS/IMU Navigation**

- Aerial Sensor Systems
- Mobile Mapping Solutions
- Turn-key Solutions

IGI AEROcontrol Compact

– supporting all flight levels



IGI TERRAcontrol Compact

– supporting all platforms

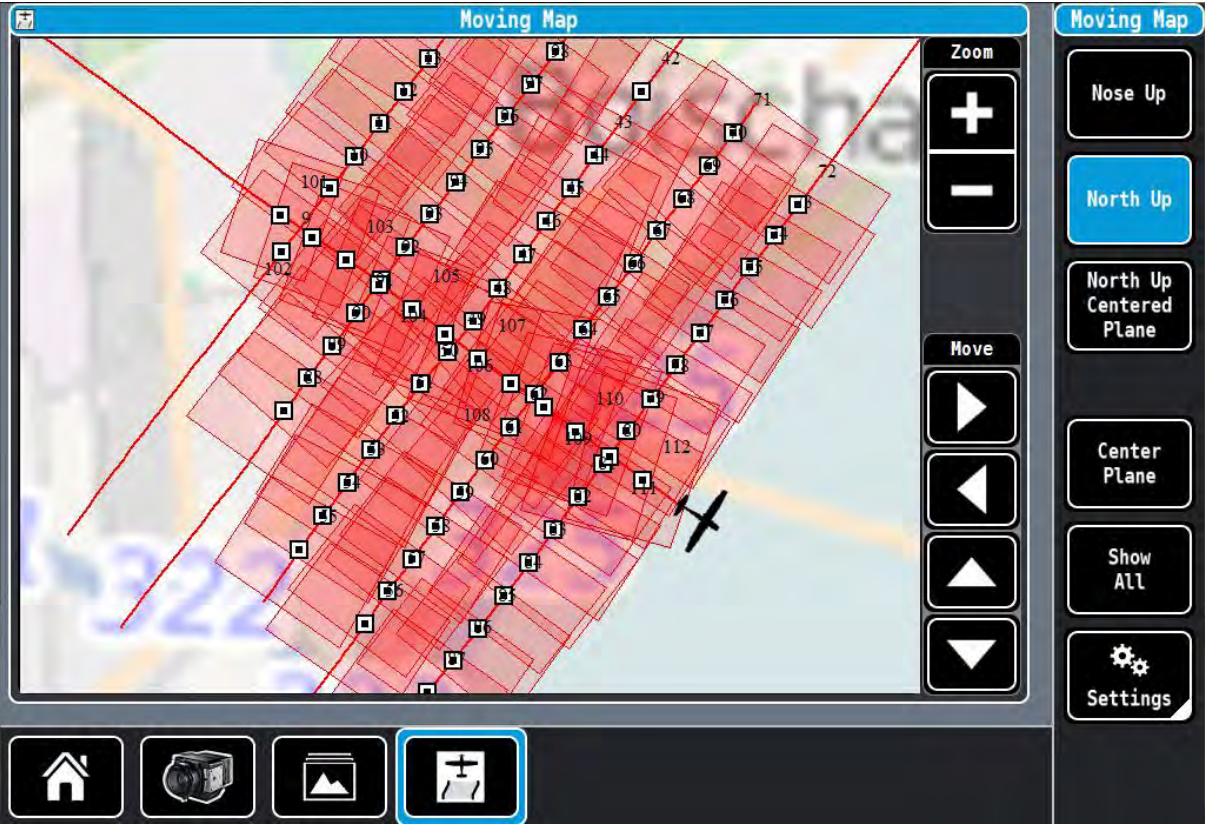




- Mission Planning & Flight Guidance
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- GNSS/IMU Navigation

- **Aerial Sensor Systems**
- Mobile Mapping Solutions
- Turn-key Solutions

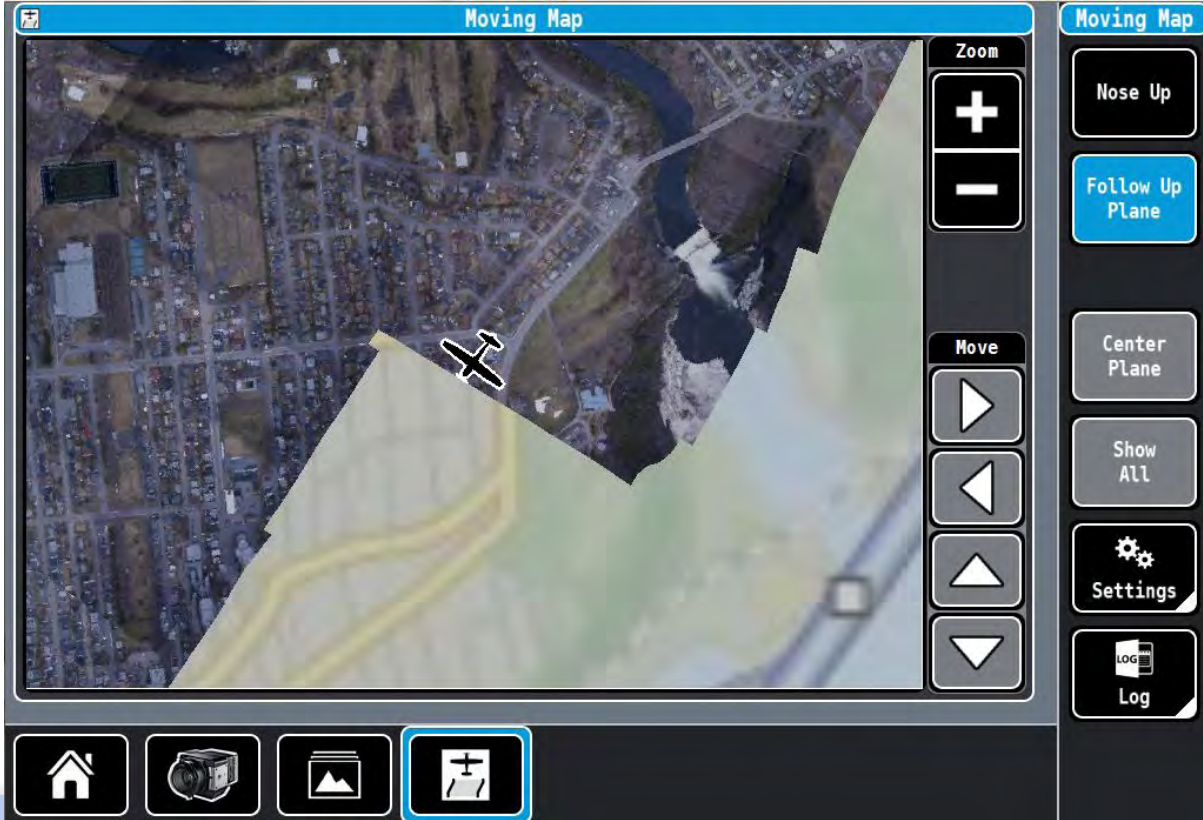
IGIvisu – Integrated Sensor Management (DigiCAM)



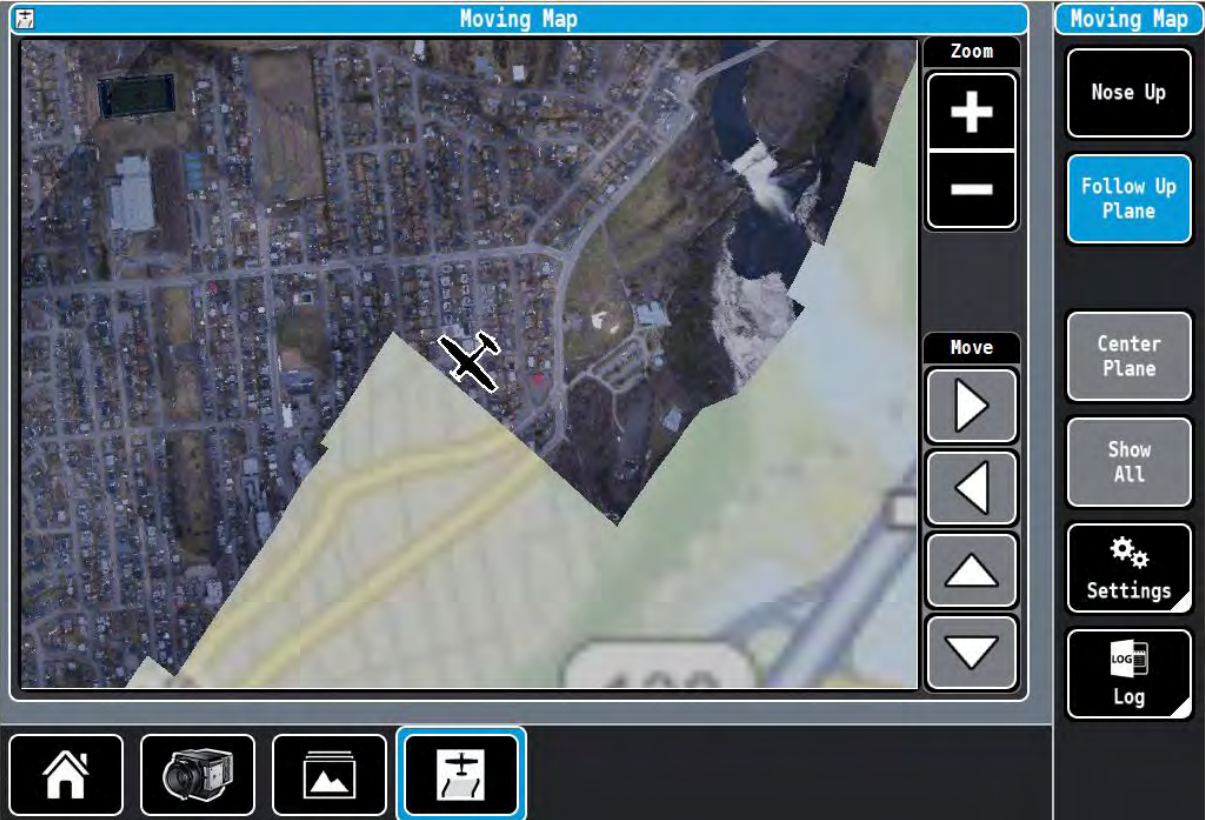
The screenshot displays the IGIvisu software interface. The main window is titled "Moving Map" and shows a map with a grid of red sensor footprints. Each footprint is labeled with a number, such as 10, 9, 103, 102, 105, 107, 108, 110, 112, 42, 35, 71, and 72. A black airplane icon is visible on the map. The interface includes several control panels:

- Zoom Panel:** Contains a "+" button for zooming in and a "-" button for zooming out.
- Move Panel:** Contains four directional arrow buttons (right, left, up, down) for moving the map.
- Map Orientation Panel:** Contains buttons for "Nose Up", "North Up" (highlighted in blue), "North Up Centered Plane", "Center Plane", "Show All", and "Settings" (with a gear icon).
- Bottom Navigation Bar:** Contains icons for Home, Camera, Map, and a highlighted "Moving Map" icon.

IGlvisu – Integrated Sensor Management (DigiCAM)



IGlvisu – Integrated Sensor Management (DigiCAM)



The screenshot displays the IGlvisu software interface. The main window is titled "Moving Map" and shows a satellite view of a residential area with a yellow semi-transparent overlay representing a sensor's field of view. A small airplane icon is positioned within this overlay. The interface includes several control panels:

- Zoom:** Contains a plus sign (+) and a minus sign (-) button.
- Move:** Contains four directional arrow buttons (right, left, up, down).
- Right Panel (Moving Map):** Includes buttons for "Nose Up", "Follow Up Plane" (highlighted in blue), "Center Plane", "Show All", "Settings" (with a gear icon), and "Log" (with a document icon).
- Bottom Panel:** Contains four icons: a home icon, a camera icon, a map icon, and a zoom-in icon (highlighted with a blue border).

IGlvisu – Integrated Sensor Management (DigiCAM)



The screenshot displays the IGlvisu software interface. The main window is titled "Moving Map" and shows a satellite view of a residential area with a white aircraft icon in the center. The map includes street names like "Royale" and "138". To the right of the map is a vertical toolbar with the following controls:

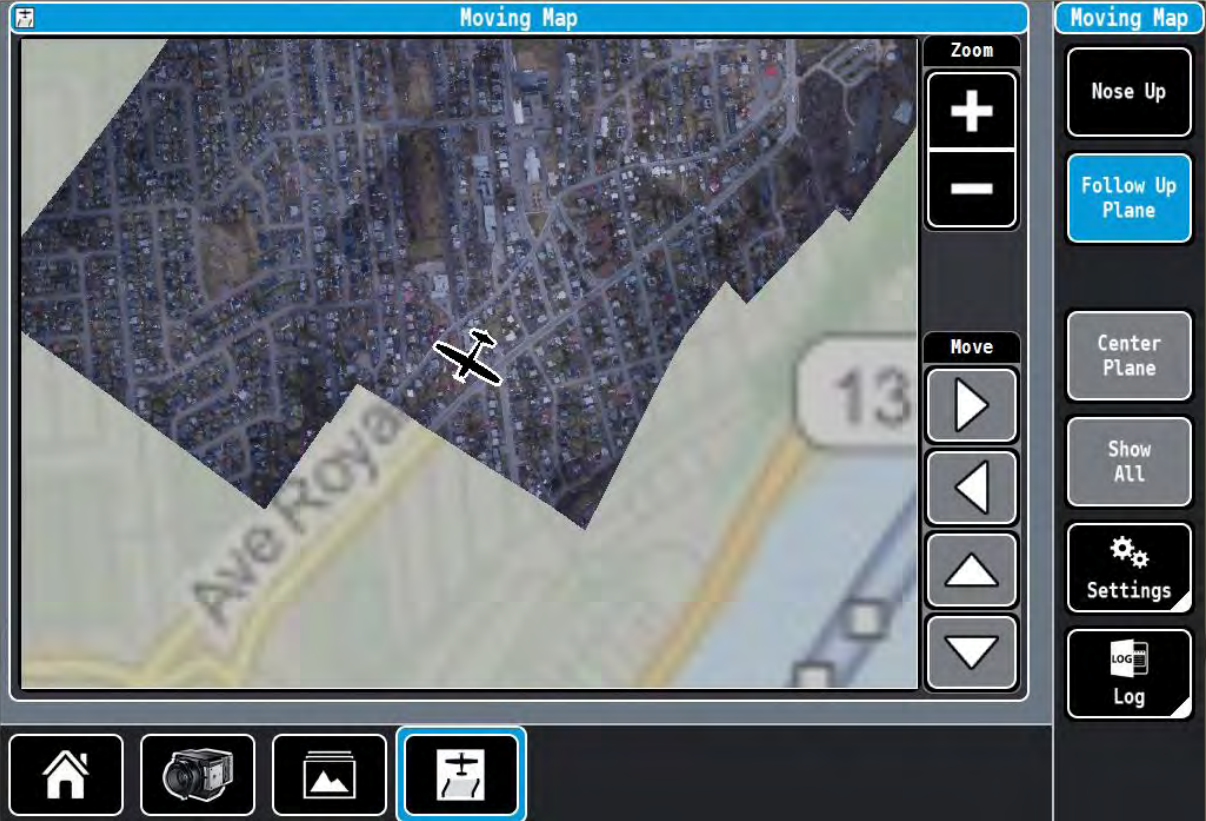
- Zoom:** A plus sign (+) button and a minus sign (-) button.
- Move:** Four directional arrow buttons (right, left, up, down).
- Follow Up Plane:** A blue button with white text.
- Center Plane:** A button with white text.
- Show All:** A button with white text.
- Settings:** A button with a gear icon and white text.
- Log:** A button with a document icon and white text.

At the bottom of the interface is a horizontal toolbar with five icons: a home icon, a camera icon, a map icon, a plus sign (+) icon, and a minus sign (-) icon. The plus sign icon is currently highlighted with a blue border.

IGlvisu – Integrated Sensor Management (DigiCAM)

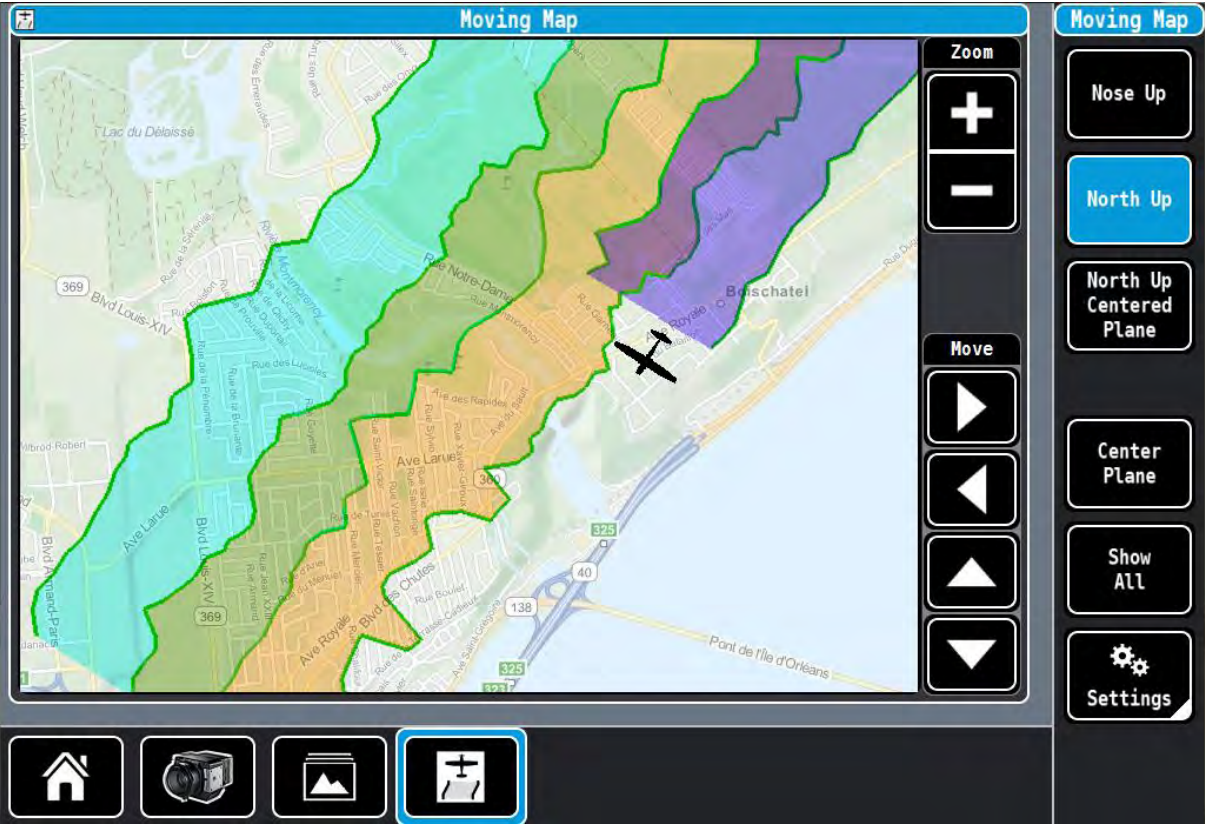


IGlvisu – Integrated Sensor Management (DigiCAM)



The screenshot displays the IGlvisu software interface. The main window is titled "Moving Map" and shows a satellite view of a city street grid. A white camera icon is positioned over the map. To the right of the map are "Zoom" controls with "+" and "-" buttons, and "Move" controls with four directional arrow buttons. Below the map is a bottom navigation bar with icons for Home, Camera, Map, and a selected icon with a plus sign. To the right of the main window is a vertical sidebar with a "Moving Map" header and buttons for "Nose Up", "Follow Up Plane", "Center Plane", "Show All", "Settings", and "Log".

IGlvisu – Integrated Sensor Management (LiteMapper)



The screenshot displays the IGlvisu LiteMapper interface. The main window is titled "Moving Map" and shows a map of a residential area with several colored overlays: a green area in the top left, a cyan area in the middle left, an orange area in the middle, and a purple area in the top right. A black airplane icon is positioned over the orange area. The map includes street names such as "Bvd Louis-XIV", "Ave Larue", "Ave Royale", and "Rue Notre-Dame".

Navigation and control panels are located on the right and bottom of the interface:

- Zoom Panel:** Contains a "+" button for zooming in and a "-" button for zooming out.
- Move Panel:** Contains four directional arrow buttons (right, left, up, down) for moving the map.
- Moving Map Panel:** Contains five buttons: "Nose Up", "North Up" (highlighted in blue), "North Up Centered Plane", "Center Plane", and "Show All".
- Settings Panel:** Contains a "Settings" button with a gear icon.
- Bottom Bar:** Contains four icons: a home icon, a camera icon, a map icon, and a zoom icon (highlighted with a blue border).

Wirbeljäger

Unter Führung des Instituts für Küstenforschung (HZG) erforschen 40 Wissenschaftler in einer groß angelegten Expedition den Einfluss kleiner Meereswirbel auf die Ozeanzirkulation und das Wachstum von Mikroalgen. Im Forschungsgebiet werden zahlreiche Messinstrumente eingesetzt. Erstmals spielt dabei ein Zennolin mit Spezialkamera eine zentrale Rolle



Bestandteile

Drei Ozeanglider sind eingesetzt. Die 1,5 Meter langen Tauchroboter sind mit optischen sowie Turbulenzsensoren ausgestattet. Sie bewegen sich etwa 1 km/h schnell und tauchen bis auf 100 Metern Tiefe.

Bestandteile

Der Schlepptrailer wird gezogen und bewegt sich dabei auf und ab. Seine Sensoren messen die Dichte des Wassers, den Sauerstoffgehalt und die Algenkonzentration.

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 Settings
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Center Lat 47N43.8967 dpm Center Long 009E23.4226 dpm Width Map 1973.2 = Height Map 1073.0 = Auto Map Off



IGIvisu

IGI

IGI UrbanMapper

2-IN-1 Aerial Camera System

- Large format camera with NIR module
- Oblique camera (4 x 100Mpixel)

Modular Design:

- Upgradeable NIR & Oblique Camera Modules

RGB 28,200 x 11,600 pixels

RGBI 24,900 x 11,600 pixels (option)

84db Dynamic range, CMOS Technology

0.6 sec Image Repetition Rate



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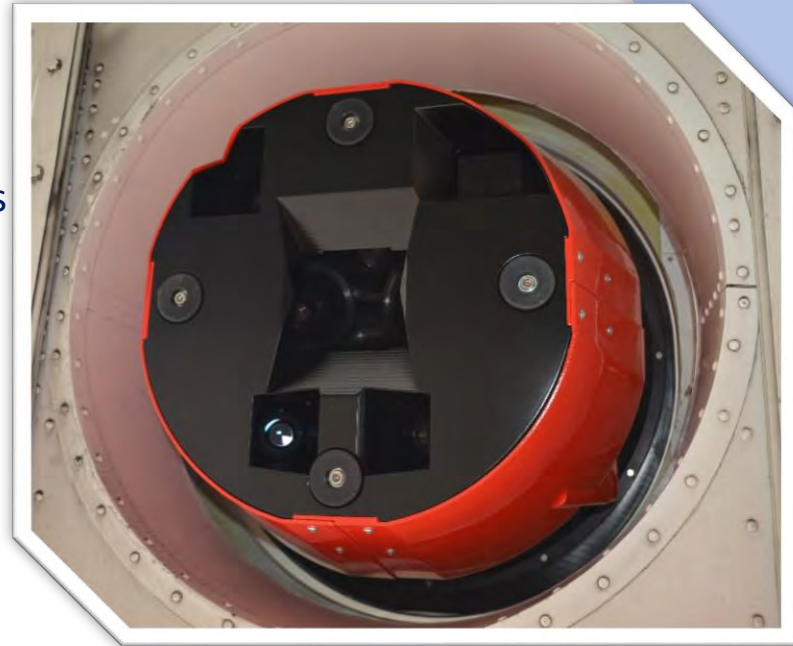
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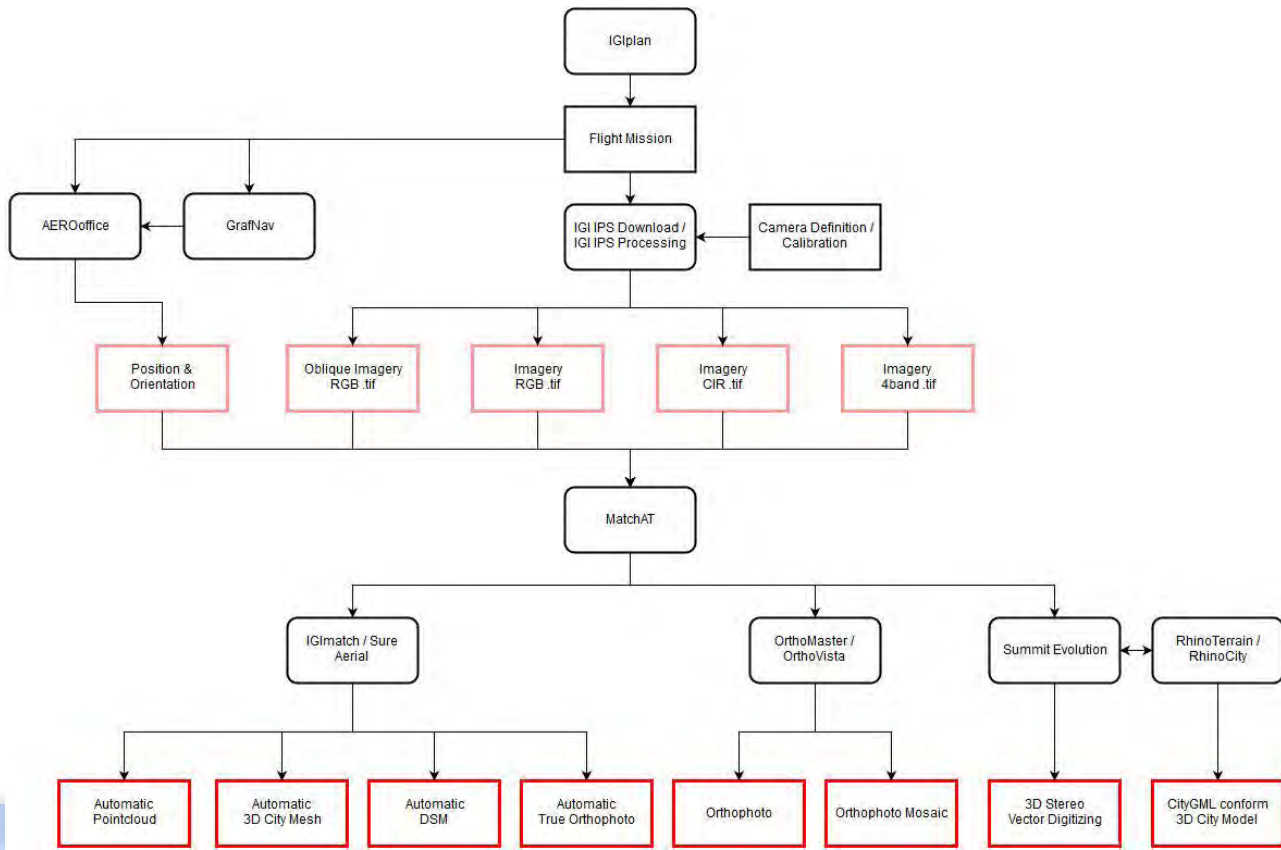


IGI UrbanMapper – IGIvisu, the operator's view

- 20" / 4K touch screen
- Control of camera groups & single modules
- Tools and indicators for optimal illumination



IGI UM – Image Processing Workflow



IGI UrbanMapper – @ AEROWEST

Project	Specification TOM (True-Orthomosaic) & MESH (3D Fotomesh)	GSD vertical	GSD oblique	km ²	Overlap Vertical Image	Point Cloud from Vertical & Oblique Image	Events	Images vertical & oblique
1	TOM	10	14	146	80 / 65		1710	1710
2	TOM	5	7	52	80 / 65		1441	1441
3	TOM	8	11	281	80 / 65		2286	2286
4	TOM	9	12.5	273	80 / 75		2570	2570
5	TOM	10	14	312	80 / 65		3000	3000
6	TOM	7	10	154	80 / 70	YES	4232	21160
7	TOM	5	7	73	80 / 65		2440	2440
8	TOM	7.5	10.5	103	80 / 65		1312	1312
9	TOM	7.5	10.5	107	80 / 65		1274	1274
10	TOM & MESH	5	7	91	80 / 65	YES	2378	11890
11	TOM & MESH	5	7	115	80 / 65	YES	3286	16430
12	TOM & MESH	7.5	10.5	52	80 / 65	YES	1504	7520
13	TOM & MESH	6	8.5	37	80 / 65	YES	845	4225
14	TOM & MESH	5	7	55	80 / 65	YES	1989	9945
15	TOM & MESH	7.5	10.5	544	80 / 65	YES	6316	31580
16	TOM & MESH	10	14	153	80 / 70	YES	1520	7600
17	TOM & MESH	10	14	15	80 / 65	YES	250	1250
18	TOM & MESH	5	7	123	80 / 65	YES	3107	15535
19	TOM & MESH	10	14	204	80 / 65	YES	2188	10940
				2890			43648	154108

Miranda35

An image-generating radar sensor



Mission Planning: *IGIplan*
Aircraft Guidance: *CCNS-4*
GNSS/IMU: *AEROcontrol*



Miranda94 of FHR, Wachtberg

An image-generating radar sensor

- Sensor frequency 94 GHz
- Sensor bandwidth 10 GHz
- Resolution 1.5 cm
- Power output 800 mW
- GNSS/IMU System *AEROcontrol*

- Automatically readjust the gimbal to a position



Miranda94 of FHR, Wachtberg

An image-generating radar sensor

- Sensor frequency 94 GHz
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Multi Sensor System for CTBTO



What is the CTBT?

The Comprehensive Nuclear-Test-Ban Treaty (CTBT) bans nuclear explosions by everyone, everywhere: on the Earth's surface, in the atmosphere, underwater and underground.

183 countries have signed the treaty, of which 166 have also ratified it, including three of the nuclear weapon states. The treaty is not yet in force.

The **Multi Sensor System** is mounted in an external helicopter pod. It can be attached flexibly to different Helicopter platforms.

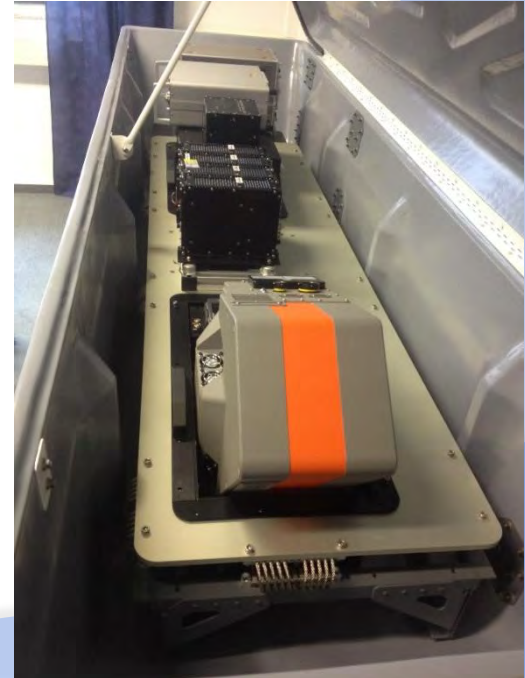
Multi Sensor System for CTBTO



preparatory commission for the
comprehensive nuclear-test-ban
treaty organization

The **Multi Sensor System** includes

- Hyperspectral sensor
- Optical camera
- Thermal camera
- LiDAR system
- *AEROcontrol*
- *CCNS-5*



LM-1560 for Ministry of Mining in Kenya

The **Multi Sensor System** includes

- VQ-1560 Dual LiDAR sensors
- *DigiCAM-100*
- *AEROcontrol*
- *CCNS-5*



LM-1560 for Ministry of Mining in Kenya

The **Multi Sensor System** includes

- VQ-1560 Dual LiDAR sensors
- *DigiCAM-100*
- *AEROcontrol*
- *CCNS-5*





Thank you!
 Please visit IGI Demo D, 2nd Floor, Room 17.21