

MINISTRY of EDUCATION AND SCIENCE of the RUSSIAN FEDERATION
Udmurt state University
Institute of natural Sciences
Department of geography, cartography and Geoinformatics

COURSEWORK ON THE TOPIC: "**Digital Photogrammetric System
PHOTOMOD 5.21 Lite and its application
for processing aerial images»**

Completed by a student in the field of
cartography and geoinformatics OAB -05.03.03-11

Scientific supervisor

Foreign language adviser:

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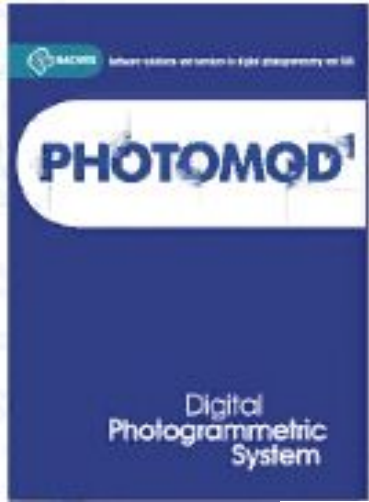
Trebuch Olga Sergeevna

Izhevsk, 2020

Research goal: to study and master the digital photogrammetric system PHOTOMOD Lite 5.21

Research problem:

1. Analyze the literature in the field of photogrammetry.
2. To study the technologies of digital photogrammetric system PHOTOMOD Lite 5.21.
3. Master the process of digital photogrammetric processing in PHOTOMOD Lite 5.21 for further use in solving professional tasks;



PHOTOMOD Lite 5.21 is a free software package which has all features of PHOTOMOD



80 countries

800 companies, 8000 workplaces

Users

50% in Russia

10% in the CIS

40% in other countries

The PHOTOMOD software family comprises a wide range of products for the remote sensing data photogrammetric processing. This state-of-the-art software allows the extraction of geometrically accurate spatial information from almost all commercially available types of imagery, whether obtained by film or digital cameras, UAS, high resolution satellite scanners or synthetic aperture radars.

the process of Interior orientatio

n

2_0710 - Waldkirch - Interior orientation

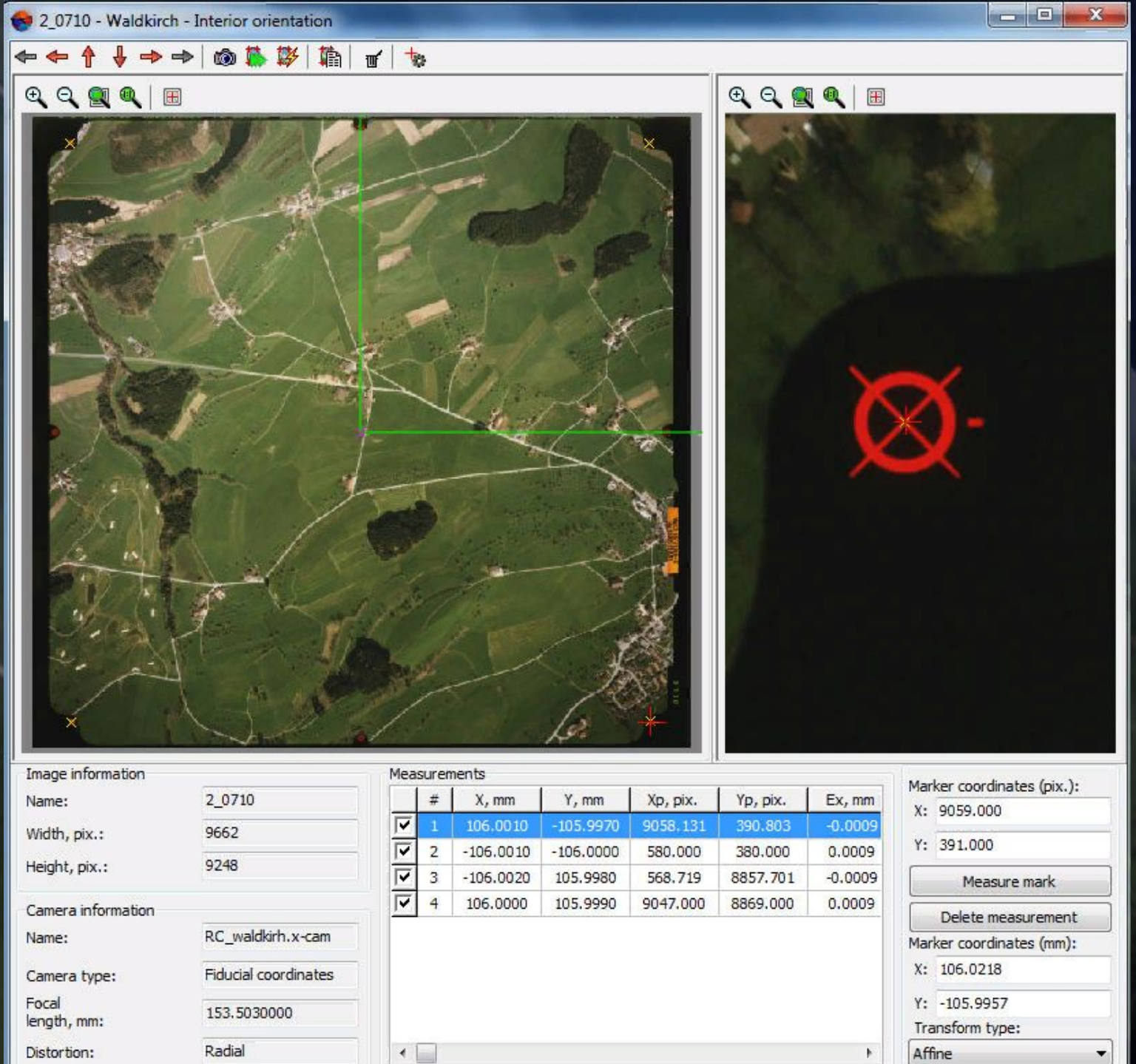


Image information

Name: 2_0710

Width, pix.: 9662

Height, pix.: 9248

Camera information

Name: RC_waldkirch.x-cam

Camera type: Fiducial coordinates

Focal length, mm: 153.5030000

Distortion: Radial

Measurements

#	X, mm	Y, mm	Xp, pix.	Yp, pix.	Ex, mm
<input checked="" type="checkbox"/>	106.0010	-105.9970	9058.131	390.803	-0.0009
<input checked="" type="checkbox"/>	-106.0010	-106.0000	580.000	380.000	0.0009
<input checked="" type="checkbox"/>	-106.0020	105.9980	568.719	8857.701	-0.0009
<input checked="" type="checkbox"/>	106.0000	105.9990	9047.000	8869.000	0.0009

Marker coordinates (pix.):

X: 9059.000

Y: 391.000

Measure mark

Delete measurement

Marker coordinates (mm):

X: 106.0218

Y: -105.9957

Transform type:

Affine

GCP measurement, Relative orientation

The screenshot displays a software interface for GCP measurement and relative orientation. It features four camera viewports arranged in a 2x2 grid, each showing a different perspective of a ground surface with a red crosshair indicating the camera's position. Below the viewports is a table of triangulation points, and at the bottom right are control buttons.

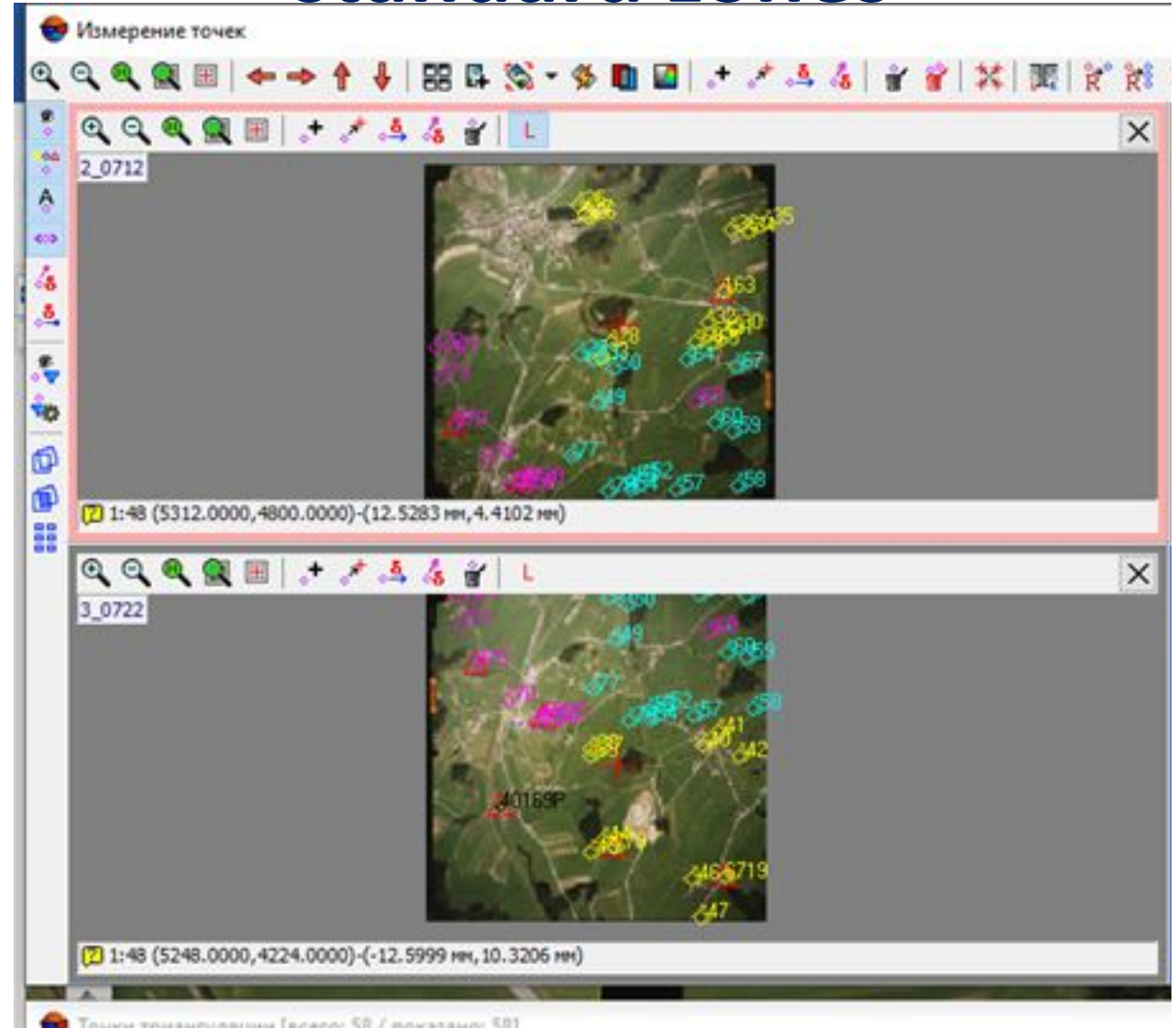
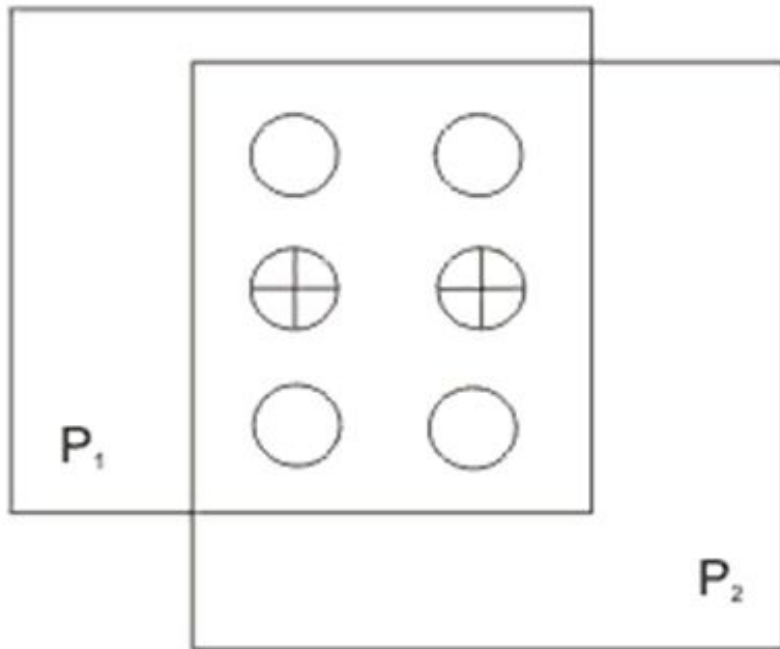
Точки триангуляции [всего: 42 / показано: 6]

Код	Имя	Тип	X, м	Y, м	Z, м	СКО X, м	СКО Y, м	СКО Z, м	К-во измерений
Новая точка	163	Опорная	737988.821	259849.345	586.248	0.2	0.2	0.2	2
Новая точка	40169P	Опорная	736405.485	258080.392	589.463	0.2	0.2	0.2	1
Новая точка	6719	Опорная	737810.891	257589.784	633.26	0.2	0.2	0.2	0
Новая точка	6720	Опорная	736702.642	258651.461	586.595	0.2	0.2	0.2	2
Новая точка	779	Опорная	737124.879	257793.53	612.451	0.2	0.2	0.2	2
Новая точка	970	Опорная	736273.122	259010.329	581.178	0.2	0.2	0.2	0

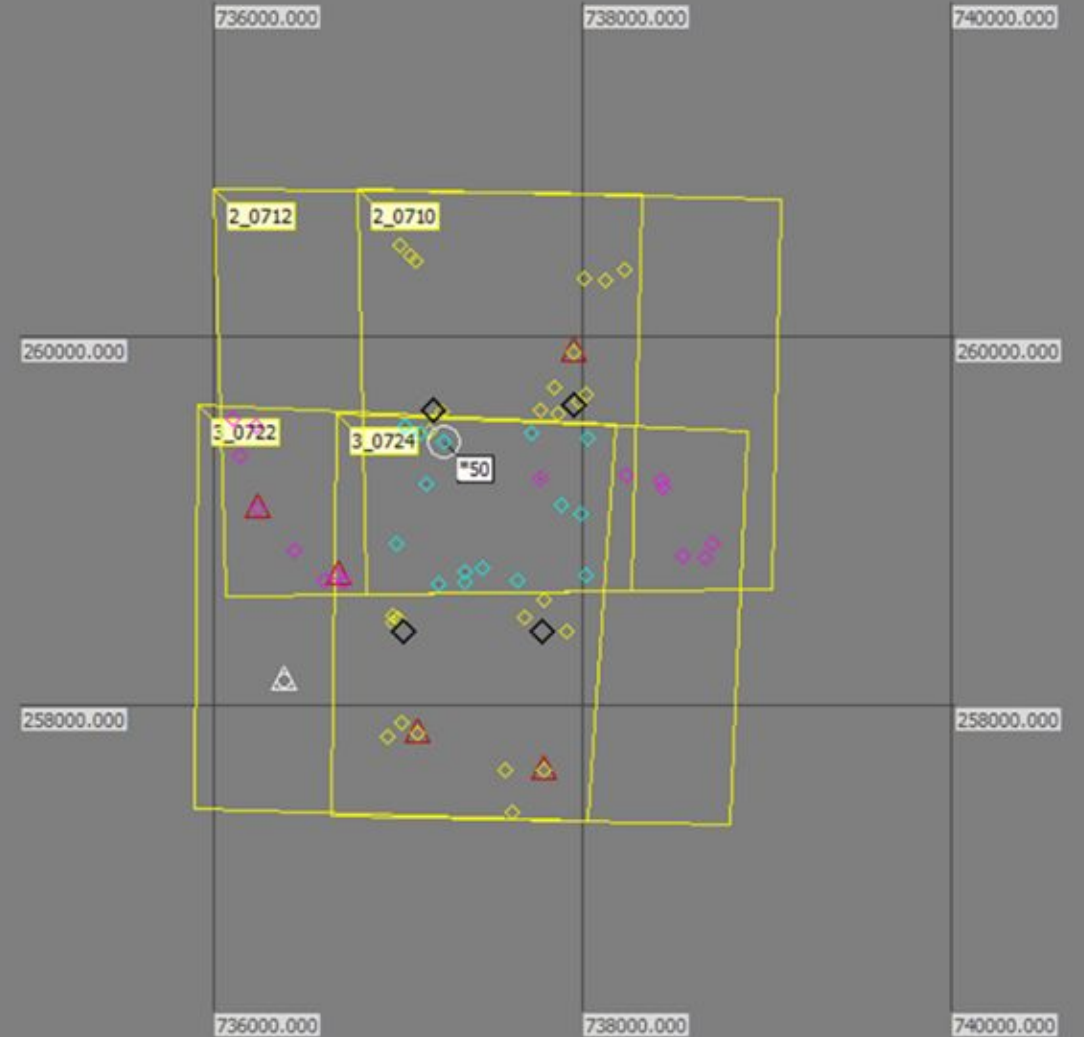
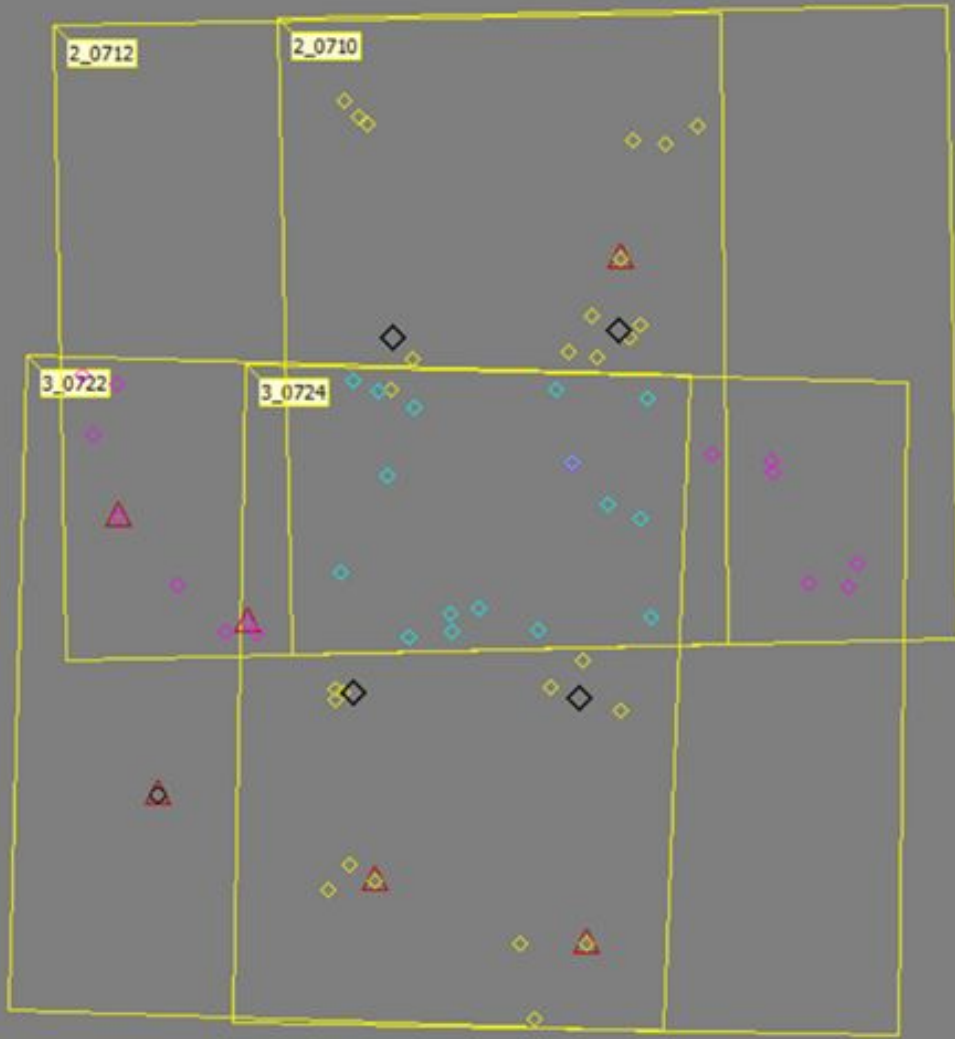
Buttons: OK, Отмена, Применить

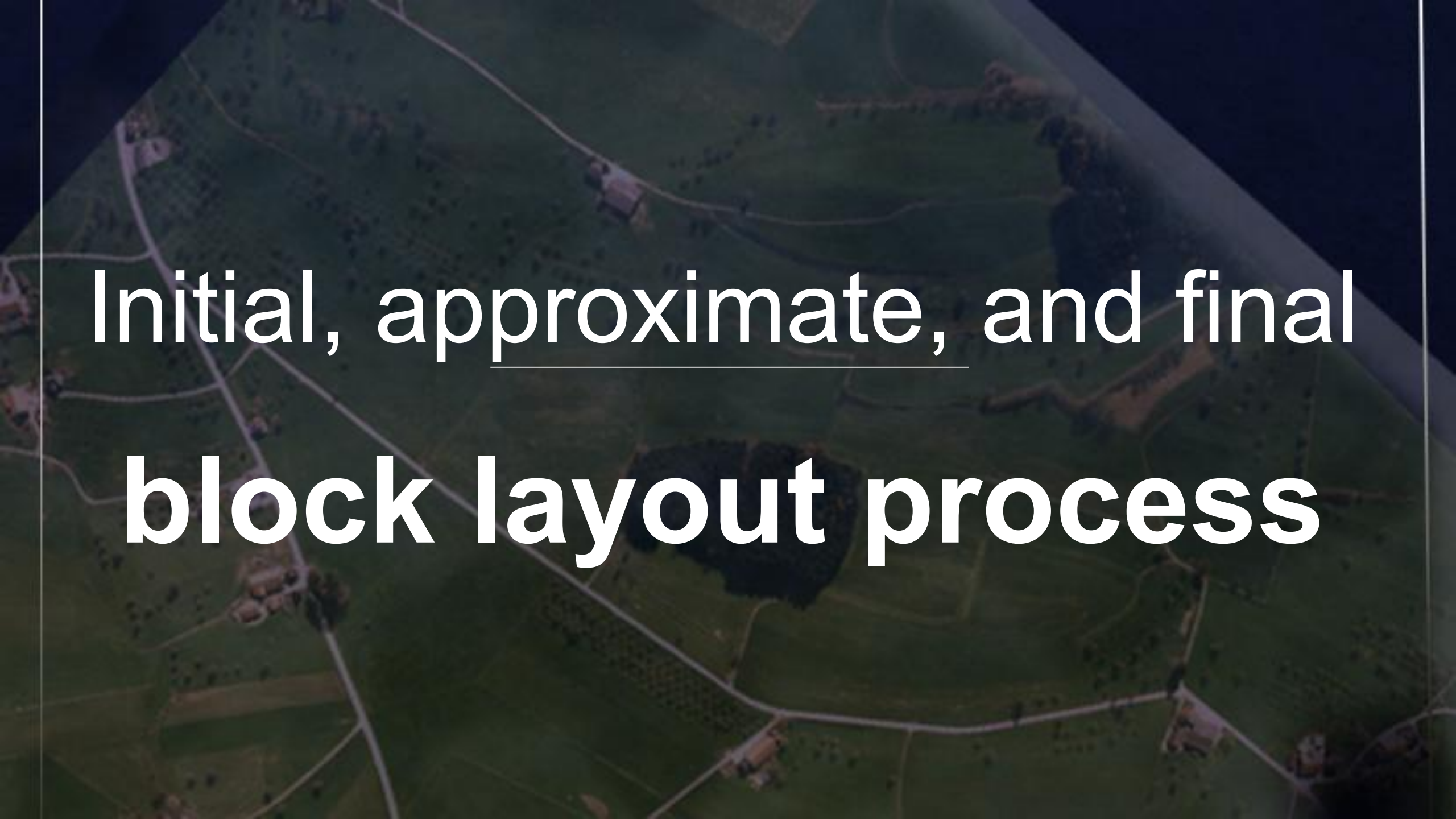
Measuring tie points in the standard zones

Scheme of standard zones location



Block Scheme BEFORE and AFTER adjustment

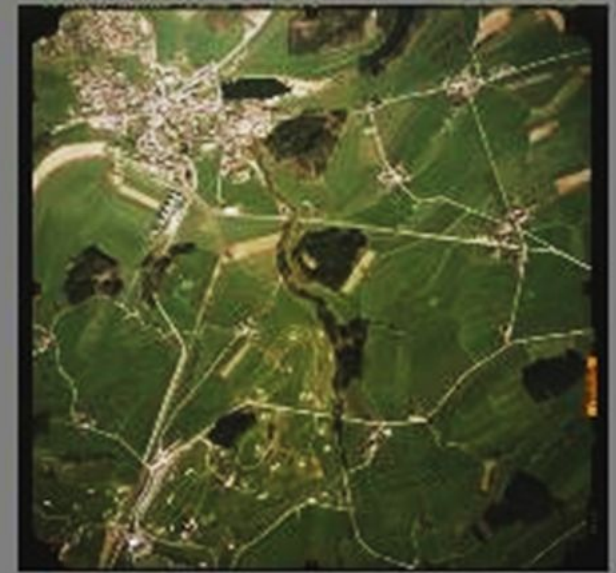


An aerial photograph of a rural landscape, showing a network of roads and fields. A dark, irregularly shaped area is visible in the center of the image, possibly representing a specific site or feature of interest. The text is overlaid on the image in a white, sans-serif font.

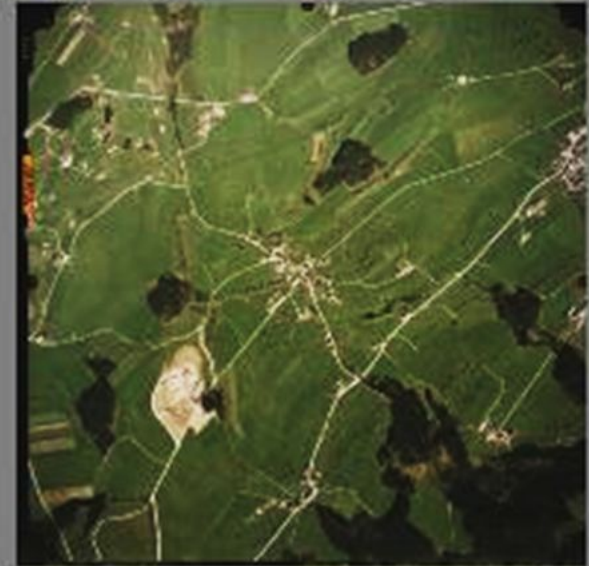
Initial, approximate, and final
block layout process

BLOCK SCHEME

Imported photos, no changes



+



BLOCK SCHEME

Block layout using:
**-Initial approximation –
overlap**

The mismatch of roads is
clearly visible



BLOCK SCHEME

- Block layout using:
- Initial approximation
 - QuickTies
 - Tie points
 - GC points
 - Imported exterior orientation



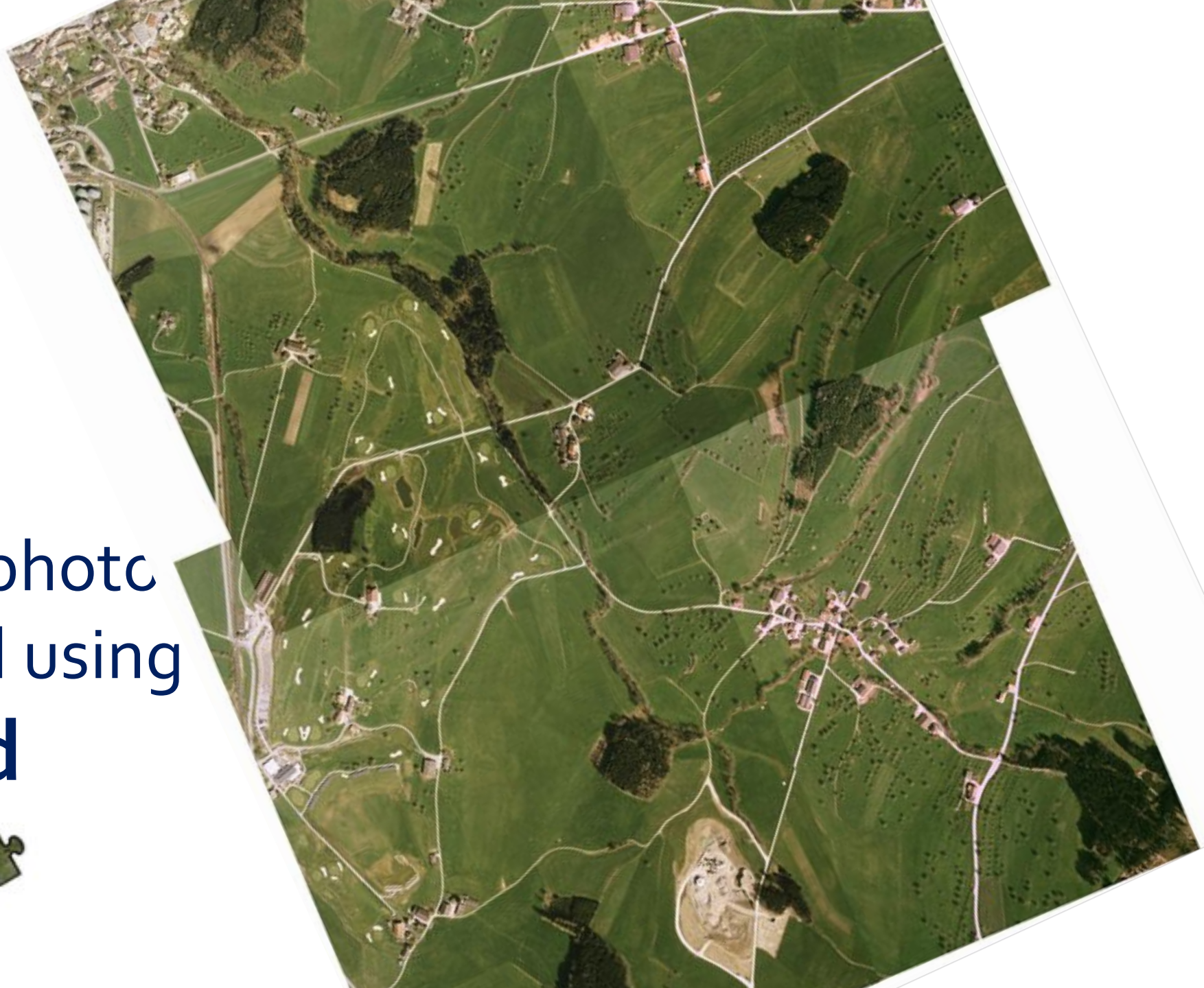
BLOCK SCHEME

Block layout using:

- Initial approximation
- QuickTies
- Tie points
- GC points
- Imported exterior orientation
- Adjustment results



Ready-made photo
scheme. Created using
the **Photomod**
GeoMosaic 





**Thanks for your
attention!**