CADASTRE IN RUSSIA.

THE USE OF STEREOPHOTOGRAMMETRIC METHOD FOR ITS CONTENT ON THE EXAMPLE OF THE COMPLEX CADASTRAL WORKS

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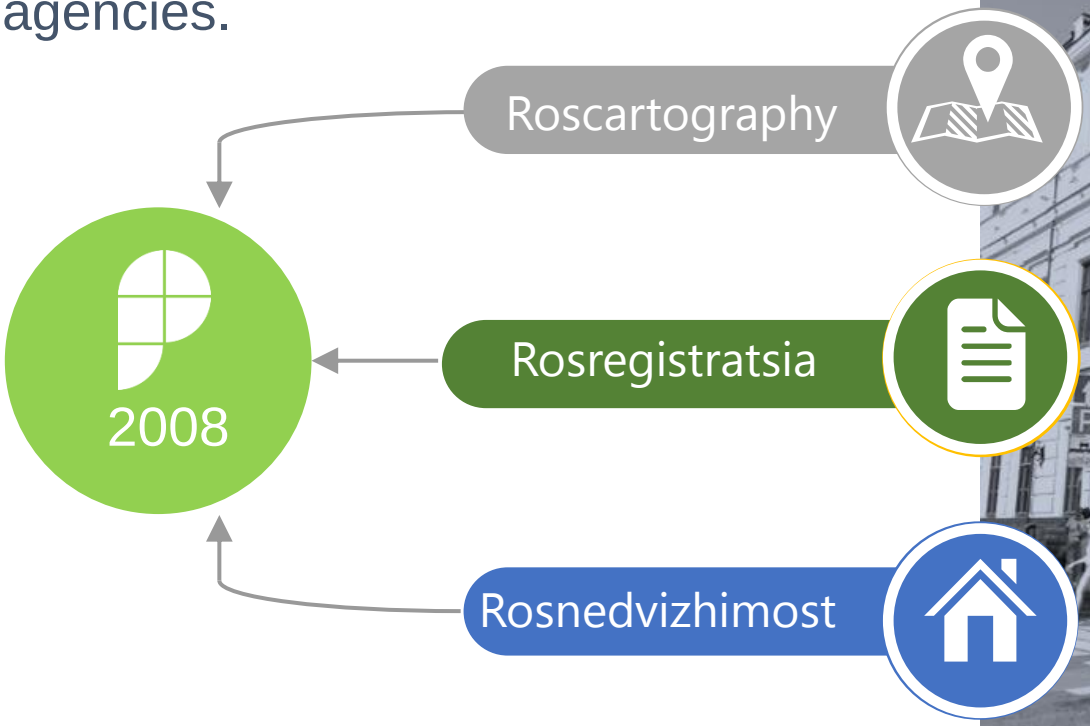
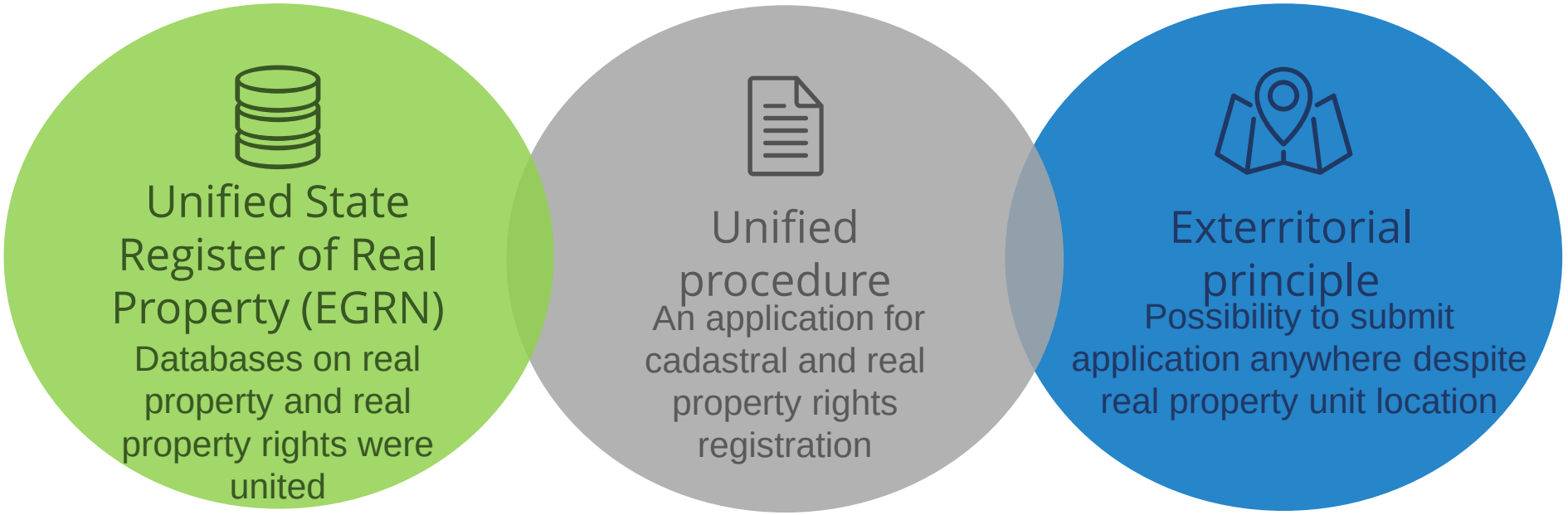
History of Rosreestr

Rosreestr was founded in 2008 by merging
3 agencies.



System of cadastral and real property rights registration

In 2017 Federal Law “On State Registration of Real Property” came into force.

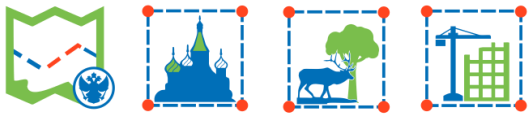


Composition of information

PROPERTY UNITS

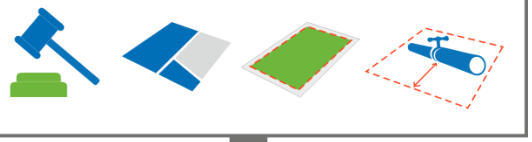
- type of property unit
- cadastral number
- land category
- information about the form of ownership
- cadastral value
- area
- permitted use

REGISTER OF BORDERS



- borders of units of cadastral division
- State border of the Russian Federation
- borders between constituent entities of the Russian Federation, borders of municipalities, settlements
- borders of territories with special status
- register numbers

ADDITIONAL DATA



- land plot layout on cadastral plan of territory
- land plots to be sold on the auction
- unencumbered land plots
- building lines
- minimum distances from gas, oil and oil-products pipelines

General procedure for performing complex cadastral works

Complex cadastral works are performed simultaneously for all real property units located on the territory of one or more cadastral blocks

Collection and analysis of initial data

Determination of coordinates of real property unit borders with an accuracy of 10 cm

Preparation of maps-plans
Conclusion of the Conciliatory Commission
Approval of maps-plans

State cadastral registration

Determination of borders coordinates of real property units by a PHOTOGRAMMETRIC method is fixed by the Order of the Ministry of Economic Development of Russia of 01.03.2016 No. 90

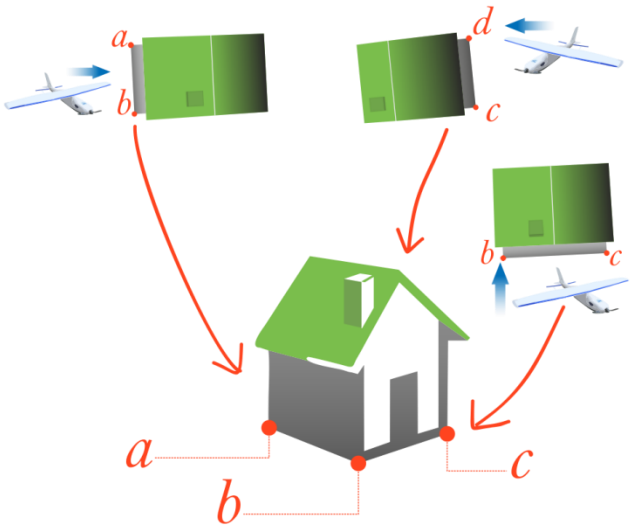
Photogrammetric method

- FINANCIAL SAVINGS
- REDUCTION OF TIME EXPENDITURES

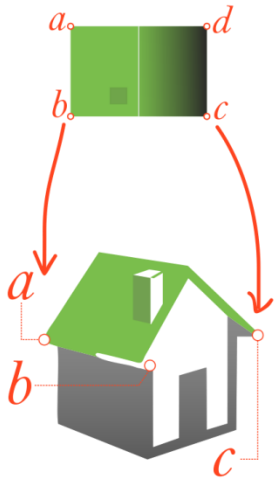
STEREOMODELS

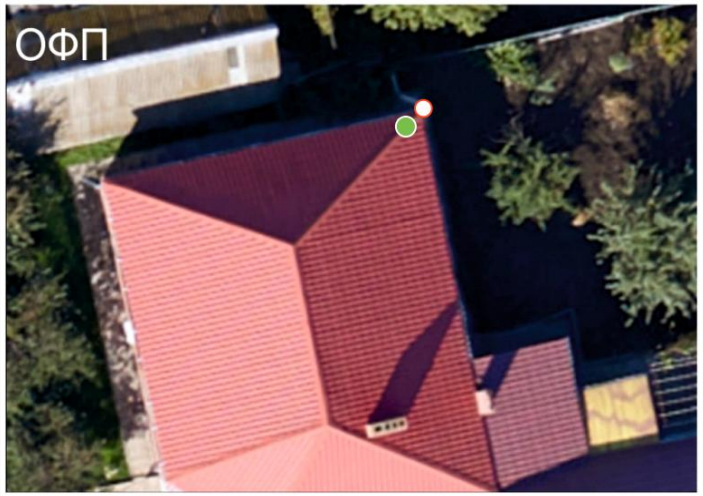
Photogrammetric method

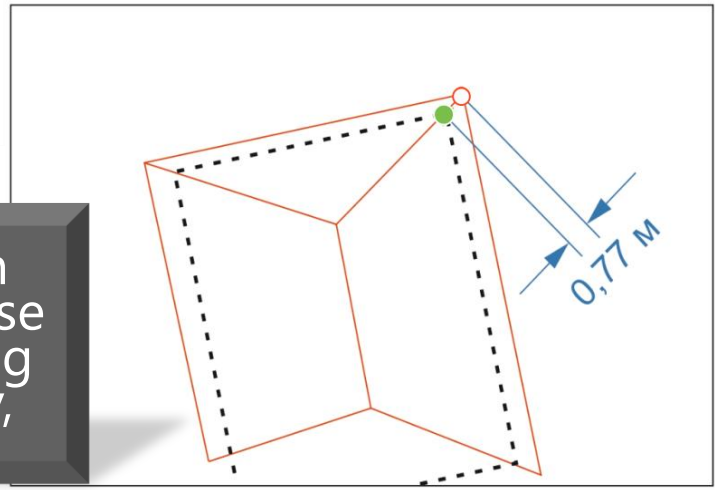
Photogrammetric method



Orthophotoplans







Shooting from different angles reveals the true position of hidden points

The projection from above reflects the false points of the covering object (roof, canopy, etc.)

Testing of the accuracy

≤ 90%

IN IN-HOUSE CONDITIONS

41% 32%

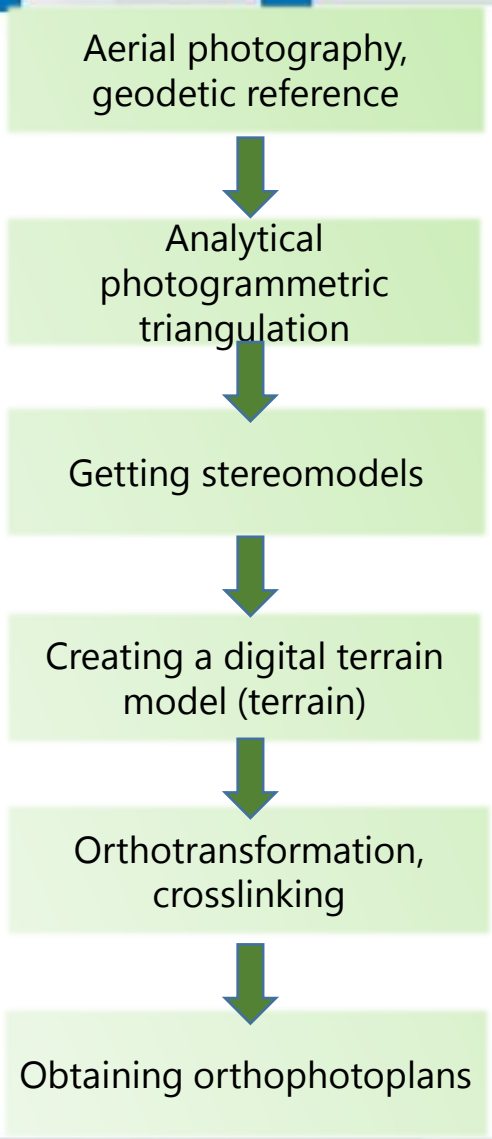
ORTHOPHOTOPLANS

86% 76%

PHOTOGRAMMETRIC METHOD

ACCURATE AND RELIABLE TOOL FOR EXECUTION AND ACCEPTANCE OF CADASTRAL WORKS, INCLUDING COMPLEX CADASTRAL WORKS

STEREOMODEL AND ORTHOPHOTOPLAN



Type of photogrammetric materials	**Determination of characteristic points coordinates with an accuracy of 10 cm**	
	Land plots	Property units
Stereomodel	80-92 %	72-80 %
Orthophotoplan	24-30 %	12-18 %

1. The cost of creating stereomodels in the office is three to five times **less** than the creation of orthophotoplans.

2. The reliability of recognition of real property units is much **higher** in stereomodels than in orthophotoplans.

TECHNOLOGY OF STEREOPHOTOGRAMMETRIC METHOD

AERIAL PHOTOGRAPHY GEODETIC COUPLING

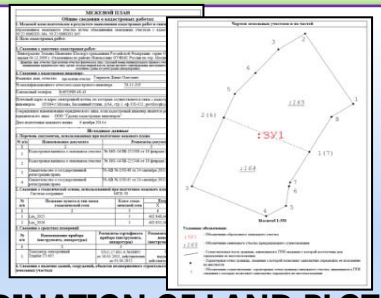
IN-HOUSE PROCESSING OF AERIAL PHOTOGRAPHS

GETTING STEREOMODELS WITH AN ACCURACY OF 10 CM

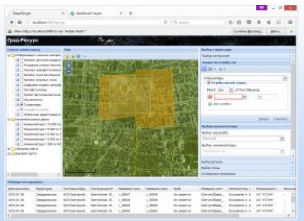
S ≤ 3 km²

S = 3÷100 km²

S ≥ 100 km²

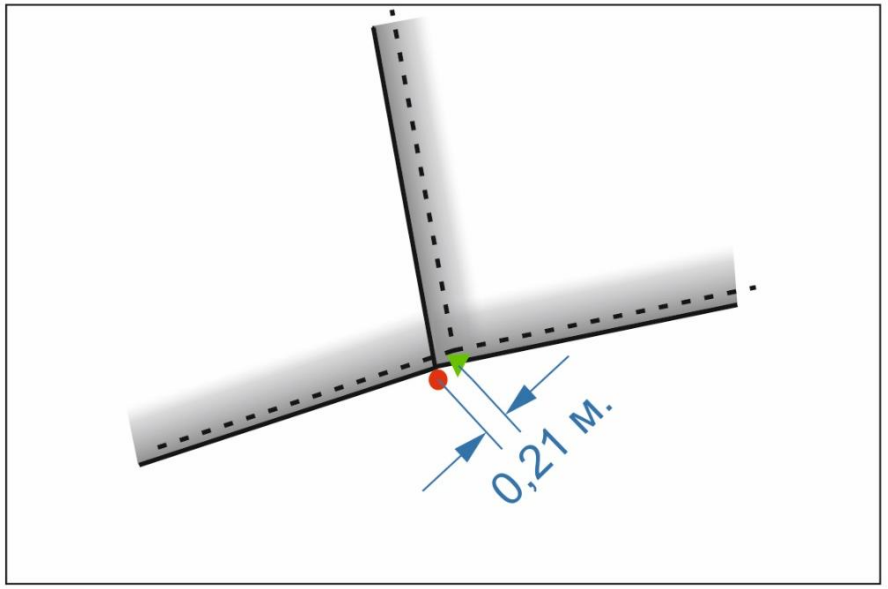


COORDINATION OF LAND PLOTS BOUNDARIES AND CONTOURS OF BUILDINGS AND STRUCTURES, PREPARATION OF MAPS-PLANS



STORAGE AND MANAGEMENT OF PHYSICAL-GEOLOGICAL MODEL DATA (SERVICE GEORECOURSE)

Why STEREOphotogrammetric method?



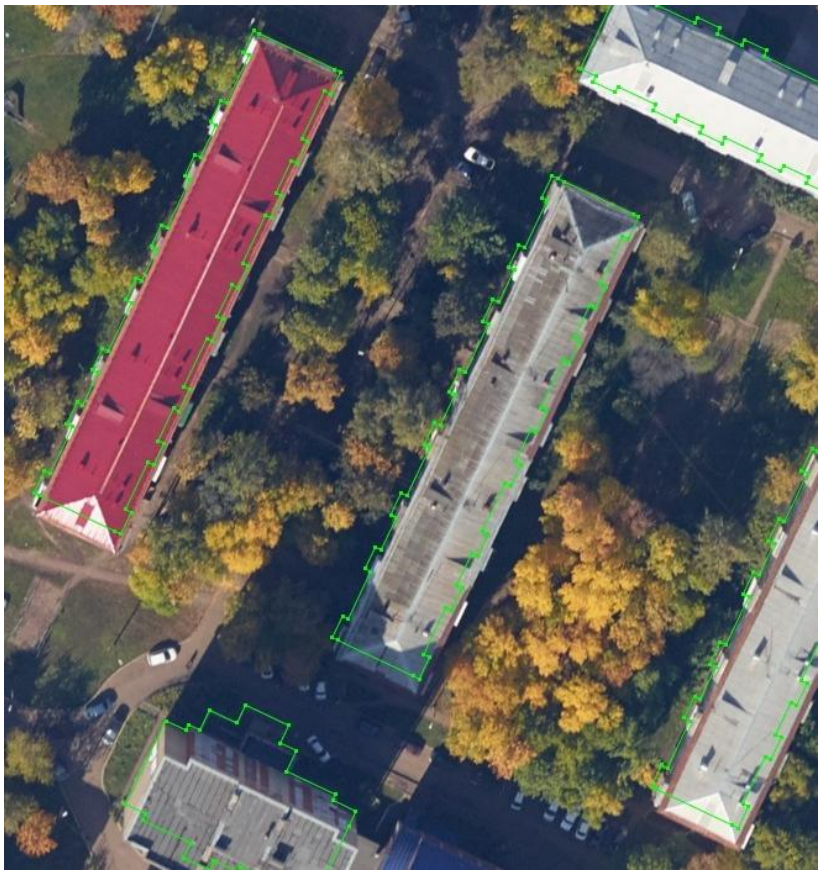
- Characteristic point, measured on the orthophotoplan with an error
- The characteristic point measured according to the stereomodel corresponds to the true position of the fence

——— The top of the fence is falsely taken as a basis for the orthophotoplan

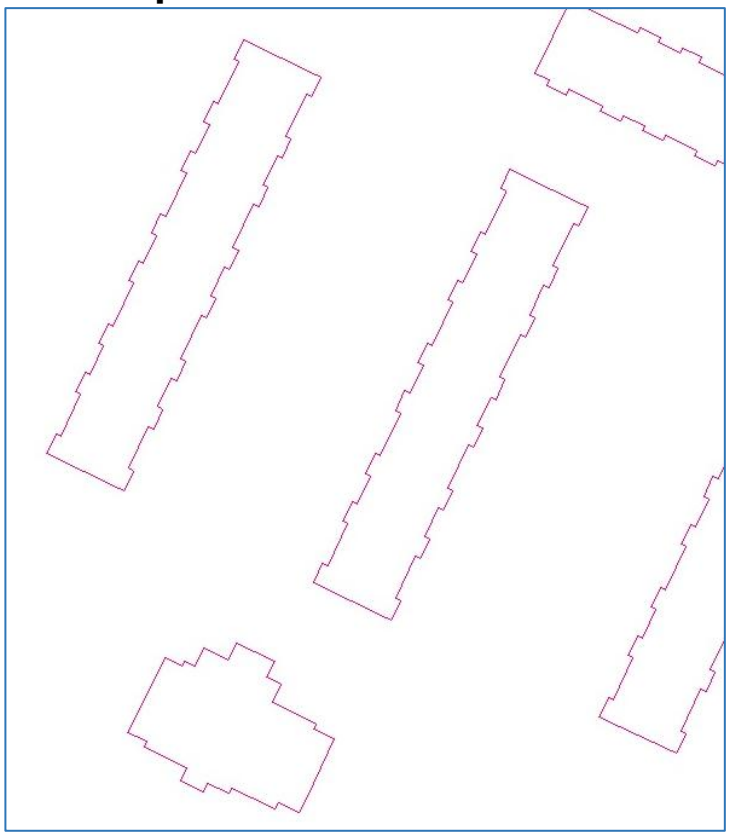
- - - - The true position of the base of the fence

Why STEREOphotogrammetric method?

MULTI-STOREY RESIDENTIAL DEVELOPMENT



Complex cadastral works in Ufa

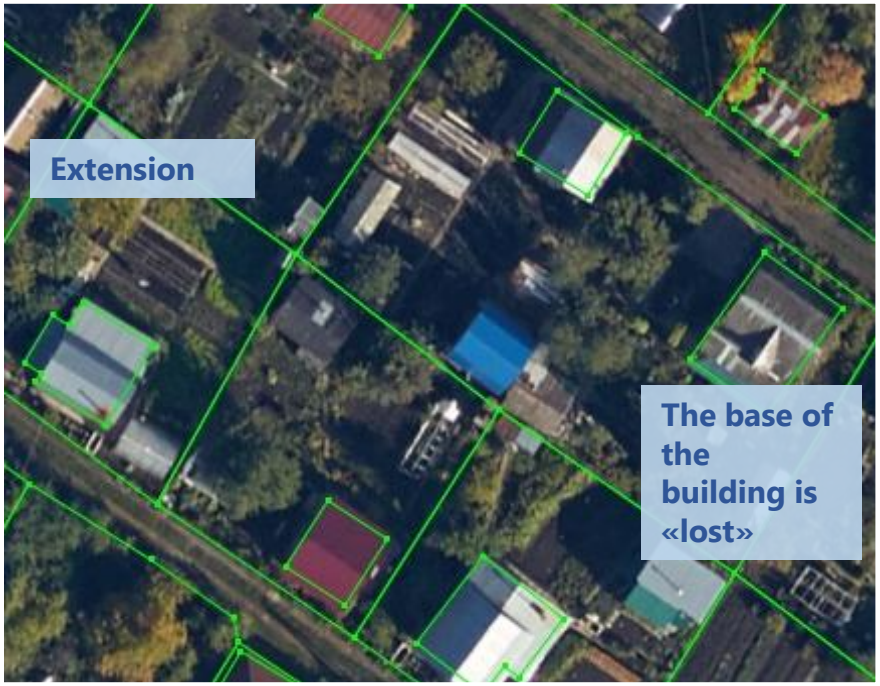


It is necessary to coordinate all structural elements of the building, including balconies, blind spots, entrances.

Why STEREOphotogrammetric method?

PRIVATE RESIDENTIAL DEVELOPMENT and GARDENS

Complex cadastral works in Ufa



Both the boundaries of land plots and the contours of capital construction objects are coordinated in stereo for the correct identification of characteristic points

Summary:

1. The coordinates of characteristic points of real property units can be determined using the photogrammetric method. At the same time, the results of aerial photography from both manned and unmanned aerial vehicles are used as initial data.
2. Decoding and measurement of characteristic points coordinates of real property units in settlements shall be carried out on stereomodels.
3. Stereophotogrammetric method fully meets the requirements of the current legislation and in the office conditions provides the definition of coordinates of up to 90% of the characteristic points of real property. At the same time, field work on the extraction of characteristic points by geodetic methods can be minimized. The technique of stereophotogrammetric measurements is more simple in comparison with measurements on orthophotoplanes, due to the greater number of decoding features of objects.

Summary:

4. Orthophotoplanes are unsuitable for determination of characteristic points coordinates of borders of land parcels and contours of real property units at carrying out cadastral works in settlements.

It can be stated that the photogrammetric method is an accurate and reliable tool for the performance and acceptance of cadastral works, including complex cadastral works.

The use of photogrammetric materials ensures the unity of measurements (convergence of the planned position of the boundaries of real property) on the territory of settlements.

MULTIPURPOSE USE OF STEREOPHOTOGRAMMETRIC METHOD

LAND MANAGEMENT

AREA IMPROVEMENT

URBAN DEVELOPMENT ACTIVITIES

FILLING AND ADJUSTMENT OF THE UNIFIED STATE REGISTER OF REAL PROPERTY

LAND INVENTORY

HOUSING AND UTILITY SERVICES

MONITORING COMPLIANCE WITH ENVIRONMENTAL LEGISLATION

SAFE CITY

Stereophotogrammetric method has already been embraced

- ✓ **Ufa** (since 2014)
Land Committee

- ✓ **Ufa region, Republic of Bashkortostan** (since 2018)
Land Committee, Department of Architecture

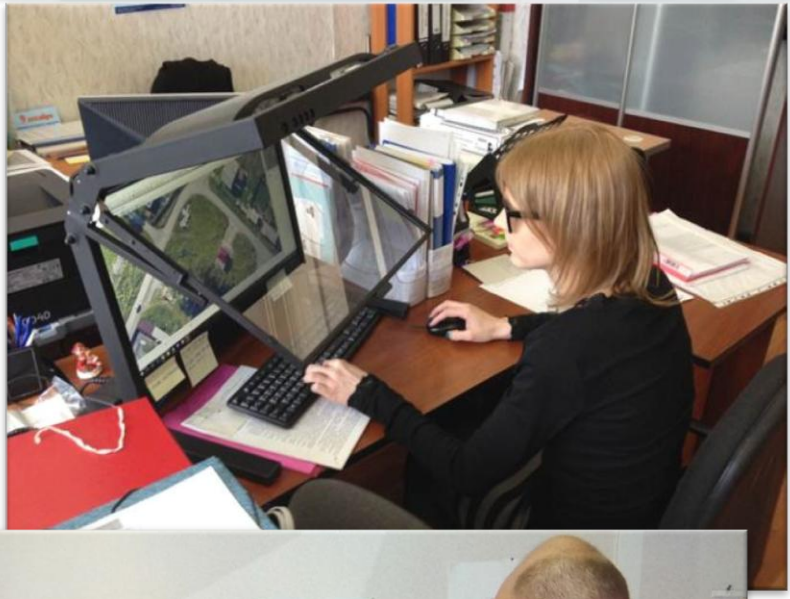
- ✓ **Salavat City** (since 2018)
Architecture Division

- ✓ **Ekaterinburg City** (since 2016)
Land Committee, General Layout Office

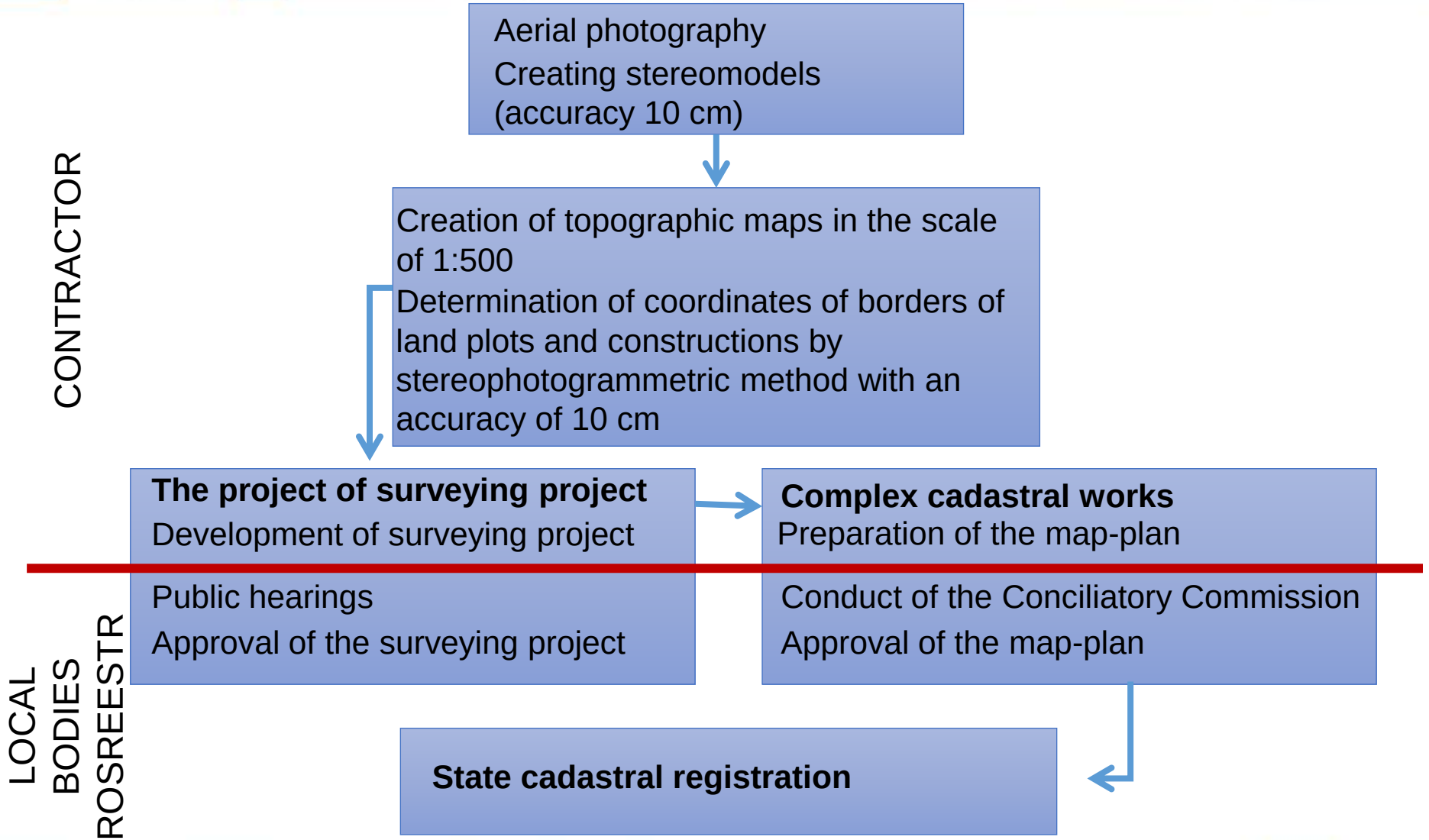
- ✓ **Revda City** (since 2015)
Architecture Division

- ✓ **Kachkarskiy City District** (since 2016)
Architecture Division

- ✓ **Asbestovskiy City District** (since 2017)
Architecture Division



Methods of complex cadastral works with the use of stereophotogrammetric method on the territory of settlements

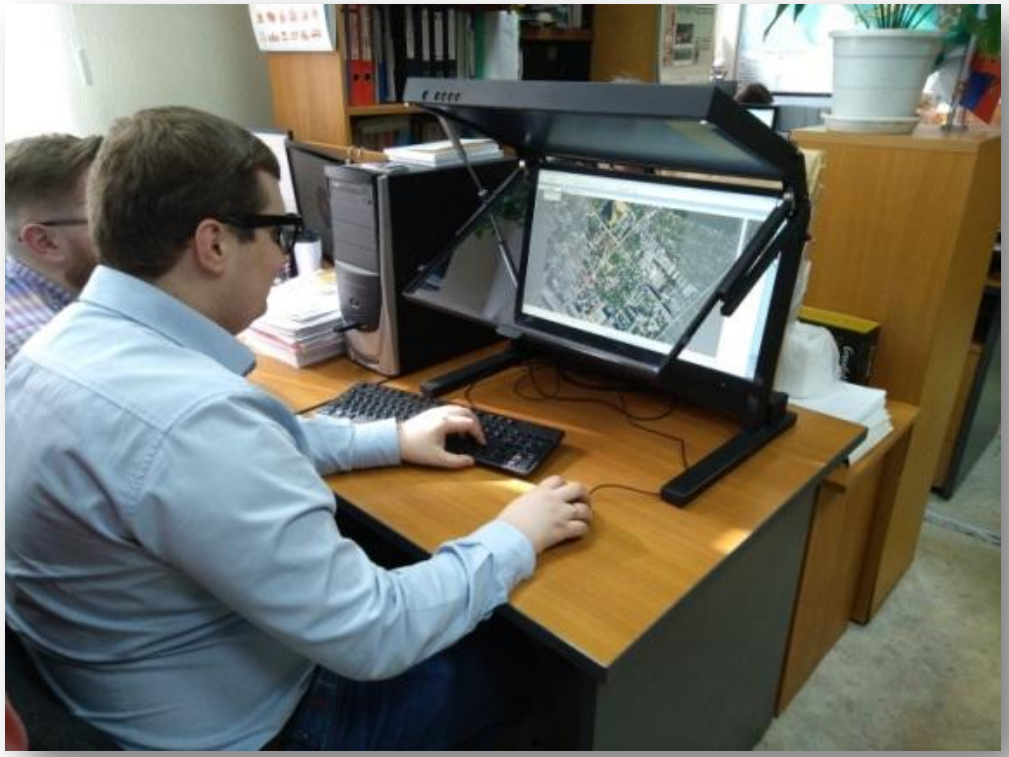


Republic of Bashkortostan 2017-2018
Aerial photography and creation of stereomodels for complex cadastral works

Within the framework of the Decree of the Government of the Republic of Bashkortostan "On Spatial Data Infrastructure of the Russian Federation in the Territory of the Republic of Bashkortostan" dated 28.04.2015 No. 206 aerial photography was performed and stereomodels with an accuracy of 10 cm were created for 239 settlements: cities, centers of districts and village councils, large rural settlements.

Republic of Bashkortostan 2018-2020
Carrying out complex cadastral works

On the basis of the Decree of the Government of Republic of Bashkortostan of February 22, 2017 N 61 in the territory of the Republic of Bashkortostan **complex cadastral works** are carried out:
2018 – 100 cadastral blocks
2019 – 207 cadastral blocks
2020 – 183 cadastral blocks



SALAVAT CITY, DEVELOPMENT OF TERRITORY PLANNING PROJECTS AND COMPLEX CADASTRAL WORKS

The works were carried out on the territory of 15 cadastral blocks with apartment buildings. The period of performance was from July to December 2018.
Nine contractors.

THANK YOU FOR ATTENTION

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