

## RECEPTION OF SYSTEMATIC CADASTRE WORKS FOR THE REGISTRATION OF REAL ESTATE IN THE LAND REGISTER IN ROMANIA

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**ABSTRACT:** *The National Cadastre and Land Registry Program (PNCCF), initiated in 2015, is still ongoing and is being implemented with non-reimbursable European funds and from the state, the purpose of this project is the free registration of all properties in Romania in the integrated cadastre and functional registry system, the creation of the cadastral administrative plan and the opening of the functional registers in Romania to everyone. In order to carry out the reception work of the technical documents of the systematic cadastre, we chose Cadastral Sector no. 31 from the Territorial Administrative Unit of Papiu Ilarian commune in Mures county. Sector no. 31 is located both in the built-up area and in the extra-built area of the locality with a plateau relief and a predominant use category of arable land. Sector 31 includes a number of 71 buildings, each with a different identifier ranging from 31000 to 31071.*

**Keywords:** *reception of technical cadastre documents; systematic cadastre; cadastral sector; Papiu Ilarian UATs; integrated cadastre and land registry system;*

### 1. Introduction

To carry out the work, we went through the mandatory stages provided for by Order no. 1/2020. Thus, we started by organizing and carrying out the public information campaign to inform property owners and holders about the benefits of carrying out systematic cadastral works. Through the information campaign, it was hoped that property owners would cooperate in providing the data necessary to carry out the systematic work (property deeds, personal identification data, etc.) and allow access for measurements. Then, the boundaries of the administrative-territorial unit were identified, followed by the establishment of cadastral sectors, as well as the analysis of the information held; identification of the sites and their boundaries, carrying out topo-cadastral measurements, identifying the owners and drawing up legal documents; processing the information collected from the field and updating it, by preparing technical documents [6].

The reception of the updated cadastral technical documents followed by the reception commission. unde au existat cereri de rectificare asupra acestor documente, acestea s-au înregistrat și s-au soluționat. Ulterior s-au actualizat documentele tehnice, apoi prin înscrierea în cartea funciară s-au închis lucrările de înregistrare

sistematică, și s-au deschis noile cărți funciare. Finalizarea lucrărilor de înregistrare sistematică, efectuate la nivelul unității administrative teritoriale sau la nivel de sector cadastral, spre informare publică, s-au aflat on-line. Extrasul de carte funciară și extrasul de plan cadastral actualizat, s-a comunicat cetățenilor, iar documentele care au stat la baza înregistrării imobilelor în sistemul integrat de cadastru și carte funciară, au fost arhivate [6].

### 2. Material and methods

To determine the geodetic points used as support for carrying out the planimetric survey, the Sokkia GRX5 GPS receiver was used, and to determine the delimitation points of the buildings, the Sokkia SET530R3 total station was used. [2]. The Sokkia GRX5 GPS receiver, together with the Sokkia SHC6000 controller, is an integrated and flexible GPS system, capable of receiving signals from all existing geodetic satellite constellations in operation and determining the spatial position of the stationary point through GPS technology. The device has a Topcon Software field software that allows measurements to be made and data processing. On the ground, certain constructions affected the satellite signals, which is why it was not possible to determine the station points with GPS to collect the details of

the buildings. Thus, the Sokkia SET530RK3 electronic total station was used (Tab. 1, 2).

The data obtained from the measurements were processed using the specialized applications and software TopoSys, AutoCAD, TopoLT and e-Terra 3 – CadGEN, which allow efficient management of numerical and textual data, as well as the processing and graphical integration of information to generate the final documentation for updating the building (Fig. 2).

### 3. Data processing

The reception of the works was carried out by the reception committee within OCPI, designated by decision of the general director of ANCPI. Its purpose is to verify compliance with the technical specifications provided for in the contract, as well as compliance with the legal regulations in force in the field of cadastre and real estate advertising [6].

Tabel 1. Sokkia GRX5 GPS receiver field book<sup>1</sup>

Versione firmware	5.21			
Tipul antenei	Ris internal			
Metoda masurare	Partea inferioara a filetului			
Reglare ruleta	0.000			
Ofset pe orizontala	0.000			
Ofset vertical	0.065			
Punct	100	ΔX	3336.979	ΔY
Inaltime antena	2.000	Metoda	Fix	Tip
QC1		Tip	Necorectat	Preciz oriz
		Sateliti	11	PDOP
		Ora receptionarii ultimului pachet de corectii diferentiale	1	RMS
QC2		VCV xx (m <sup>2</sup> )	0.000416	VCV xy (m <sup>2</sup> )
				VCV yy (m <sup>2</sup> )
Punct	101	ΔX	3339.616	ΔY
Inaltime antena	2.000	Metoda	Fix	Tip
QC1		Tip	Necorectat	Preciz oriz
		Sateliti	12	PDOP
		Ora receptionarii ultimului pachet de corectii diferentiale	1	RMS
QC2		VCV xx (m <sup>2</sup> )	0.000264	VCV xy (m <sup>2</sup> )
				VCV yy (m <sup>2</sup> )
Punct	102	ΔX	3338.091	ΔY
Inaltime antena	2.000	Metoda	Fix	Tip
QC1		Tip	Necorectat	Preciz oriz
		Sateliti	12	PDOP
		Ora receptionarii ultimului pachet de corectii diferentiale	2	RMS
QC2		VCV xx (m <sup>2</sup> )	0.000286	VCV xy (m <sup>2</sup> )
				VCV yy (m <sup>2</sup> )

Tabel 2. Sokkia SET530RK3 total station field book<sup>2</sup>

06NM1.00000000					
01NM:SET230RK3	V33-09175233SET230RK3	V33-0917523331			0.000
02TP	11000.000	1000.000	300.000	1.780	4
03NM0.000					
09F1	1	1005.286	94.7046	155.6126	6
09F1	1	10110.516	86.1644	141.1190	6
09F1	1	1026.138	98.4594	170.7256	1
09F1	1	1037.783	98.4586	185.2652	1
09F1	1	1048.498	99.1710	202.1596	1
09F1	1	1058.326	99.3356	205.3330	6
09F1	1	10612.679	93.2024	213.3502	6
09F1	1	10712.594	94.2040	215.7808	6
09F1	1	10817.152	99.4724	218.9556	6
09F1	1	10917.140	99.4724	218.9496	6
09F1	1	11025.342	97.6540	226.4848	6
09F1	1	11125.095	97.6538	230.4686	1
09F1	1	11226.005	96.5812	219.2890	1
09F1	1	1135.581	124.1232	92.7910	4
09F1	1	11410.425	105.6014	127.9884	4
09F1	1	1158.945	104.4626	322.9398	4
09F1	1	1169.488	90.3842	271.0900	6
09F1	1	11714.956	90.0400	255.1170	1
09F1	1	11814.166	87.4172	293.8256	6
09F1	1	1199.297	91.8638	192.7238	6
09F1	1	12017.060	97.7608	223.2066	66
09F1	1	12112.103	96.4386	221.2422	66
09F1	1	12217.131	96.5346	218.9192	6

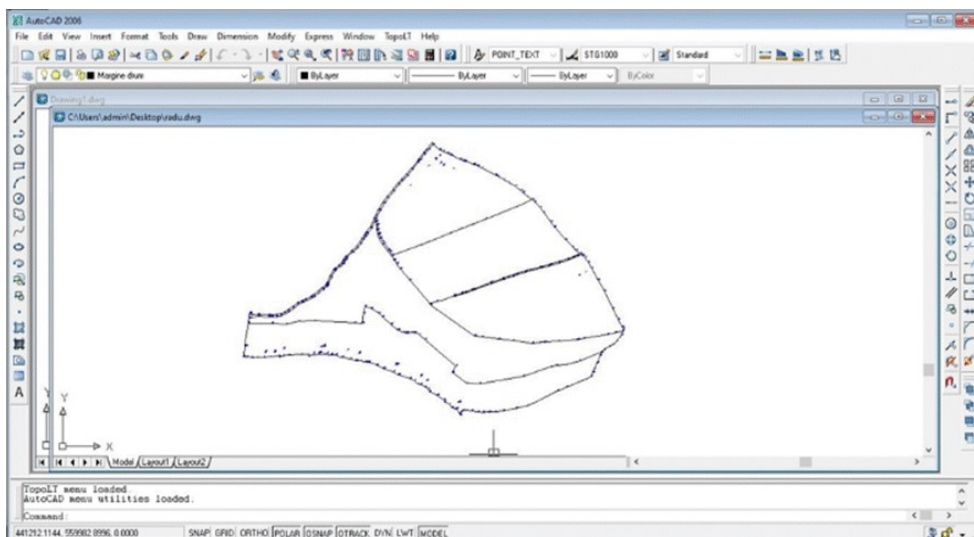


Fig. 1. Importing the coordinate inventory with TopoLT and joining the points<sup>3</sup>

The reception committee carried out both quantitative and qualitative checks on all components related to Delivery 1 – Technical documents of the cadastre for publication.

**a) Quantitative verification**

The quantitative check involved the following steps by the *reception committee*:

- Identification of the total number of files with the ID.cgxml extension;
- Identification of the number of ID.pdf files;
- Identification of the number of associated ID-Cn-Um.pdf files;
- Verification of the integrity and compliance with the content requirements for the delivered files: a 1% sample was randomly selected from all file types, which were opened to verify whether they are accessible and whether, upon summary analysis, the content corresponds to the requirements of the Technical Specifications;
- Determination of the total number of real

estate (NT) and the number of cadastral sectors (NS) included in the delivery.

During this stage, the reception committee established both the number of files delivered and the list of identifiers (IDs) whose files were subject to verification, in accordance with the Technical Specifications (Tab. 3).

The verification was carried out on a number of seven N =7 verified buildings.

**b) Qualitative verification**

The verification by the cadastral advisor of the cadastral sector 31 Papiu Ilarian was carried out using the ArcMap (ARCGIS) program, where the polygons related to the buildings from Apele Romane, ROMSILVA, ROMGAZ, Law 165/2013, etc. were imported (Fig. 2).

Following the qualitative verification of the content and correctness of the data in the .cgxml files and in the other deliverables related to Delivery No. – “Technical documents of the cadastre – for publication”, the Reception

Tabel 3. Sample establishment<sup>4</sup>

Category	Identifier	Number of properties
Total number of properties within the delivery	NT	71
Total number of properties to be verified	$N=N1+N2$	7
Number of properties containing information in Part III of the land register	N1	0
Percentage 10% of the number of properties without information in Part III of the land register	$N2 = 10\% \text{ of } NT-N1$	$10\%*(71-0)$

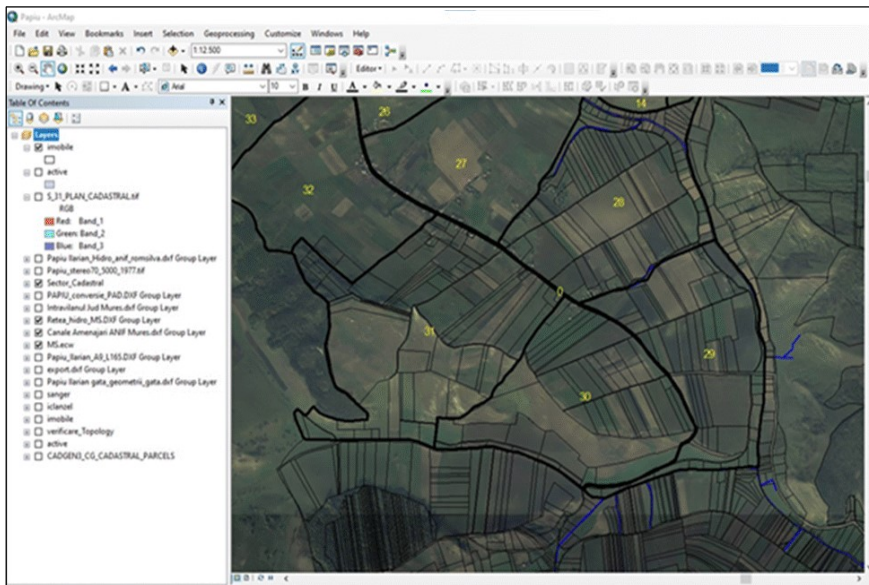


Fig. 2. Cadastral sector no. 31, ARCGIS<sup>5</sup>

Committee found that the delivery complies with the requirements set out in the Technical Specifications and in the other contractual documents.

The **qualitative verification** took into account the following aspects<sup>6</sup>:

a) Verification whether the Provider carried out the last update (verification/download) of the data relating to the properties registered in the OCPI records no later than 5 working days before the handover date and whether all properties that had an open land register in the integrated cadastre and land register system were correctly included in the systematic registration work.

b) Analysis of the structure, consistency and compliance with the topological rules of the .cgxml files, in accordance with the Technical Specifications.

c) Verifying the correctness and accuracy of the integration of information obtained from OCPI, city halls, other institutions and holders, with the data collected following fieldwork.

d) Verifying the correctness of the data entered in the .cgxml files and their coherence with the other deliverables provided for in the Technical Specifications, such as: Technical Memorandum, Cadastral Register of Real Estate, Alphabetical Directory of Holders of Real Property Rights, Possessors and Other Holders, etc.

The measures that were applied depending on the percentage of deficiencies found were:

According to art. 76 of Order no. 1/2020, if following the verification the Reception Commission finds deficiencies in a percentage equal to or greater than 20% of the total number of buildings verified (N), the entire delivery is considered undelivered, and the contractual provisions will apply.

In this case, the Commission draws up a rejection report, accompanied by the list of buildings verified and the report of errors and deficiencies identified, which is communicated to the Provider. The model of the report is provided in Annex no. 11 of Order 1/2020.

If the deficiencies affect less than 20% of the total number of buildings checked, the Commission shall draw up a report of findings, accompanied by the list of buildings checked and the deficiency report, which shall be communicated to the Contractor for remediation.

The Contractor shall be obliged to correct the deliverables and resubmit them to OCPI.

If, after resubmission, the Commission finds that the corrected files still present deficiencies, it shall draw up a new report of findings, accompanied by the list of buildings checked and the deficiency report, which shall be communicated to the Contractor again.

The Contractor will make the necessary corrections and resubmit the documents in the revised form.

If, upon checking the data in the files resubmitted a second time by the Provider, the

OCPI Reception Committee finds that they still present deficiencies, the work is rejected and the entire delivery may not be handed over, and contractual provisions will apply. In this situation, the OCPI Reception Committee draws up a rejection report, which contains a list of the buildings checked and the report of the errors and deficiencies identified, which is communicated to the Contractor.

**A) Verification and content of the Technical Report [6]:**

In the case of the technical report, it is verified whether at least the following elements are detailed and their content complies with the requirements of the work:

**a) General information about the work**

- Description of the object and purpose of the work;
- Area of deployment and the targeted administrative-territorial unit (ATU);

**b) Presentation of the topographic and cadastral works carried out:**

- Methods used in the development of the work;
- Description of the technical solution adopted;
- Percentage of the ATU area in which classical and GPS measurements were carried out, as well as the location of these areas;
- Type of equipment used, geodetic points (old and new) used;
- Details of measurements from the compaction and elevation network, as well as for topographic details, both classical and GPS;
- Topographic descriptions and coordinate inventories of new points in the network;
- Information on possible coordinate transformations;
- How to conduct the local public information campaign;

**c) How to integrate existing cadastral records:**

- The way in which existing cadastral data have been integrated into the current work is verified, to ensure coherence and continuity of information.

**B) Verification of the delivered files [6]**

It is checked whether the ID.pdf files, which contain the data sheets of the buildings and the collected documents, are correctly connected to the .cgxml files. The verification is carried out simultaneously, through the IT application dedicated to the reception of systematic registration works.

Given that the data sheet represents a working document of the Contractor, which can be modified or completed, within the reception process its existence is exclusively verified, with the exception of:

- Sheets drawn up for owners
- Sheets related to buildings in cadastral sectors where a surface deficit was found

These sheets must be signed by the owners or holders of the property right.

**C) Verification of .cgxml files**

The .cgxml files are analyzed by the computer application intended for the reception of systematic works. The technical verification is carried out by the cadastral specialist, who may decide, if necessary, to carry out field checks on the properties in the selected sample, in order to:

- Assess the way in which measurements are carried out
- Establish the correctness of the delimitation of the properties

The following are also analyzed:

- The way in which the properties are represented in the technical documents and in the .cgxml files;
- The correctness of the determination and entry of textual data (address, area, etc.) based on the attached documents, the parcel plans and the reality on the ground;
- The coherence and concordance of the information about the property in all the technical documents of the cadastral;

For properties already registered in the cadastral and land registry records at the time of delivery, the data existing in the territorial office database is compared with those resulting from the systematic registration work. In case of discrepancies, the source of data justifying the changes and the way in which they were interpreted and documented are verified.

**D) Verification of legal documents and correspondence with .cgxml files [6]**

This verification is the responsibility of the registrar or assistant registrar, who has the following responsibilities:

- Analysis of the submitted legal documents;
- Determination of the ownership/co-ownership right, identification of restrictions on the ownership right or the capacity to dispose, real encumbrances, as well as other relevant facts or legal relationships;
- Verification of the correct transfer into the cadastral work of the active entries from the

land books opened within the sporadic registration, in order to protect the real property rights existing prior to the systematic registration;

- Confirmation that the data of the holders of the real property rights are correctly entered in all technical documents of the cadastre.

In the case of already registered properties, a comparison is made between the data from the OCPI database and the newly collected ones. Any difference identified is analyzed by establishing the source that justifies the change.

Cadastral sector 31 of Papiu Ilarian UAT located in the urban and extra-urban areas of Ursoaia, is adjacent to sectors 27, 32; 30, 28; and Iclânzél UAT and Sânger UAT, respectively.

Topographical surveys were carried out on all the boundaries and details of the cadastral sector. No stable elements over time were identified

within the sector.

In sector 31, there were properties that belonged to individuals with property titles who were registered in the land register and persons without a property title for whom Land Possession Delivery Minutes were drawn up and provisional registration in the Land Register was requested and after obtaining the Property Title they definitively obtained the right of Ownership. There were also properties with an unidentified owner.

These were provisionally registered in favor of the Papiu Ilarian commune, and when the owners were identified, the ownership right was transferred based on the TP. In sector 31, there are roads that were provisionally registered in the Papiu Ilarian commune and by Decision of the Local Council, they became the property of the Papiu Ilarian commune (Fig. 3).

REGISTRUL CADASTRAL AL IMOBILOR														ANEXA Nr. 2	OPIRI ALFABETIC AL TITULARILOR DREPTURILOR REALE DE PROPRIETATE AL PONEȘTELOR ȘI AL ALTOR DETERMINĂRI														ANEXA Nr. 3
Județ Mureș Zona de cooperare CAD (Cai)														Sector cadastral nr. 31	Județ Mureș UAT Papiu Ilarian														
I. DESCRIEREA IMOBILULUI																													
DATE TEREN															DATE CONSTRUCȚII														
Identificator teren	Adresă imobil	Suprafață teren	Nr. CF	Tip teren	Suprafață teren (m <sup>2</sup> )	Nr. tip	Nr. barie	Nr. parcelă	Comuna	Localitate	Tip teren	Suprafață teren (m <sup>2</sup> )	Nr. CF	Tip construcție	Nr. tip	Nr. barie	Nr. parcelă	Comuna	Localitate	Tip construcție	Suprafață teren (m <sup>2</sup> )	Nr. CF	Tip construcție						
31010	Extindere Loc. Ursoaia, UAT Papiu Ilarian, Jud. Mureș	1000	E	10	10000	A	8000																						

Nr. nr.	Nume / denumire obiectiv	Suprafață teren (m <sup>2</sup> )	Verificator	Perioada	Data	Adresă imobil	Suprafață teren (m <sup>2</sup> )	Tip teren	Suprafață teren (m <sup>2</sup> )	Nr. CF	Tip construcție	Suprafață teren (m <sup>2</sup> )	Nr. CF	Tip construcție
1	Fabrică	3110	1	31	2000	Extindere Loc. Ursoaia, UAT Papiu Ilarian, Jud. Mureș	1000							
2	Vieți	1000	1	31	2000	Extindere Loc. Ursoaia, UAT Papiu Ilarian, Jud. Mureș	1000							
3	Chinga	3000	1	31	2000	Extindere Loc. Ursoaia, UAT Papiu Ilarian, Jud. Mureș	3000							
4	Chinga	3000	1	31	2000	Extindere Loc. Ursoaia, UAT Papiu Ilarian, Jud. Mureș	3000							
5	terea	3000	1	31	2000	Extindere Loc. Ursoaia, UAT Papiu Ilarian, Jud. Mureș	3000							
6	terea	3000	1	31	2000	Extindere Loc. Ursoaia, UAT Papiu Ilarian, Jud. Mureș	3000							
7	terea	3000	1	31	2000	Extindere Loc. Ursoaia, UAT Papiu Ilarian, Jud. Mureș	3000							
8	terea	3000	1	31	2000	Extindere Loc. Ursoaia, UAT Papiu Ilarian, Jud. Mureș	3000							
9	terea	3000	1	31	2000	Extindere Loc. Ursoaia, UAT Papiu Ilarian, Jud. Mureș	3000							
10	terea	3000	1	31	2000	Extindere Loc. Ursoaia, UAT Papiu Ilarian, Jud. Mureș	3000							
11	terea	3000	1	31	2000	Extindere Loc. Ursoaia, UAT Papiu Ilarian, Jud. Mureș	3000							
12	terea	3000	1	31	2000	Extindere Loc. Ursoaia, UAT Papiu Ilarian, Jud. Mureș	3000							
13	terea	3000	1	31	2000	Extindere Loc. Ursoaia, UAT Papiu Ilarian, Jud. Mureș	3000							
14	terea	3000	1	31	2000	Extindere Loc. Ursoaia, UAT Papiu Ilarian, Jud. Mureș	3000							
15	terea	3000	1	31	2000	Extindere Loc. Ursoaia, UAT Papiu Ilarian, Jud. Mureș	3000							
16	terea	3000	1	31	2000	Extindere Loc. Ursoaia, UAT Papiu Ilarian, Jud. Mureș	3000							

Fig. 3. Cadastral register of real estate and alphabetical list of owners (extract)<sup>7</sup>

Lista imobilelor verificate cu raportul erorilor și deficiențelor identificate														
Județ MUREȘ UAT Papiu Ilarian SECTOR 31 Data generării: 14-03-2025 Sursa: e-Terra 3														
Nr. Cn	Identificator	Suprafață	CAD						CF					
			Rec. A	Verificator	Data	Nota	Rec. A	Verificator	Data	Nota				
1	31001	50250												
			R											Se vor revizui categoriile de folosință și se vor reprezenta conform realității din teren.
2	31003	7200												Suprafețele parcelelor care formează lotul ID se vor actualiza conform TP 8638/10/05. Dacă găsim, se vor înscrive doar construcțiile definite.
3	31006	800												Se va proceda la identificarea în cartea funciara veche. De asemenea, să se revizuiască tipul înregistrării imobilului.
4	31008	8.800												
5	31012	50026												
6	31022	3.000												Se va revizui situația juridică asupra construcțiilor și, de asemenea, mențiunea de la observări, fila A și Registrul Cadastral al Imobilelor.
7	31023	50103												Se va revizui situația juridică. A fost omis un coproprietar

Fig. 4. List of verified properties<sup>8</sup>

The cadastral plan resulting from the systematic cadastral works, representing the only valid graphic support for making entries in the land register, was in accordance with Annex 1 of Order 1/2020, containing all the elements.

#### 4. Conclusions

Following the checks carried out by the Reception Commission for the cadastral sector 31 Papiu Ilarian, errors were found in a number of 7 buildings in the sample. Thus, a report of findings was sent along with the list of buildings checked with the report of the errors and deficiencies identified (Fig. 4):

After the reception, the technical documents were displayed for the purpose of informing the population and where there were requests for rectification of these documents, they were registered and resolved. Then the technical documents were updated, and by registering in the land register, the systematic registration works were closed, and the new land registers were opened. The completion of the systematic registration works was displayed online. The land register extract and the updated cadastral plan extract were communicated to the citizens, and the documents that formed the basis for the registration of the properties in the integrated cadastre and land register system were archived.

#### Notes

<sup>1</sup> Stud. Iosib Radu Emanuel, Reception of systematic cadastral works related to the registration in the land register of sector 31, Papiu Ilarian UATs, Mure County bachelor's thesis, 2025, University "1 Decembrie 1918" from Alba Iulia;

<sup>2</sup> Ibidem

<sup>3</sup> Idem

<sup>4</sup> Stud. Iosib Radu Emanuel, Reception of systematic cadastral works related to the registration in the land register of sector 31, Papiu Ilarian UATs, Mure County bachelor's thesis, 2025, University "1 Decembrie 1918" from Alba Iulia;

<sup>5</sup> Ibidem

<sup>6</sup> Order no. 1/2020 for the approval of the Regulation on the implementation, verification and reception of systematic cadastral works and the ex officio registration of real estate in the land register

<sup>7</sup> Stud. Iosib Radu Emanuel, Reception of systematic cadastral works related to the registration in the land register of sector 31, Papiu Ilarian UATs, Mure County bachelor's thesis, 2025, University "1 Decembrie 1918" from Alba Iulia;

<sup>8</sup> Stud. Iosib Radu Emanuel, Reception of systematic cadastral works related to the registration in the land register of sector 31, Papiu Ilarian UATs, Mure County bachelor's thesis, 2025, University "1 Decembrie 1918" from Alba Iulia;

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3. Magdolna -Eva Koncsag, Vasile Velțan, *Implementation of systematic cadastre in sector 60 of the Valea Largă commune, Mureș county, Romania*, Pangeea 2019, pg.105-113, DOI: 10.29302/Pangeea 19.15;
4. Law no. 7 of 13 March 1996, *Law on the cadastre and real estate advertising, with subsequent amendments and completions*;
5. Law no. 18/1991, *Law on the land fund, with subsequent amendments and completions*;
6. Order no. 1/2020 for the approval of the Regulation on the implementation, verification and reception of systematic cadastral works and the ex officio registration of real estate in the land register;

7. Decision no. 294/2015 on the approval of the *National Cadastre and Land Register Program* (P.N.C.C.F.);
8. Order no. 421/2024 on the amendment of the Regulation on reception and registration in the cadastre and land register records, approved by Order of the Director General of the National Agency for Cadastre and Real Estate Advertising no. 600/2023;
9. <https://legislatie.just.ro/Public/DetaliiDocument/222509>
10. <https://eu.sokkia.com>
11. <https://www.ancpi.ro>