

GEODEMAT - Distribution of digitized cadastral documentation to citizens: an example of a win-win public-private partnership for the benefit of the citizen

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Key words: cadastre, digitization, cadastral plan, land parcel, cadastral documentation, blockchain

SUMMARY

The Ordre des Géomètres-Experts (OGE) is a legal entity under private law established by law (1946) and delegated with a public service mission of regulation of the French surveying profession.

The 2,000 licensed surveyors are thus the only professionals by law authorized to recognize the definition of property boundaries. In this regard, the licensed surveyors establish technical acts which allow to update the cadastral plan (modification / creation of cadastral parcel(s)).

Since 1956, the profession has been actively collaborating with the Ministry of Finance for the conservation of the cadastral plan.

In 2020, the assembly of cadastral plans totals nearly 100,000,000 parcels over the French territory.

A significant part of them has been created since the 1930s by one of the 10,000,000 administrative acts produced by the licensed surveyors. These documents constitute to this day the one and only source of knowledge of the evolutions of the cadastral plan that occurred since the first third of the 20th century.

This cadastral documentation suffers to this day from being accessible only in paper format and from being dispersed in the Property Tax Centres and Services throughout the territory.

The age of the documents (up to 90 years old) leads to the fear that in the medium term there will be irrevocable losses of information (ink or pencil writings that fade, layers that become brittle...). Moreover, this documentation is very uncomfortable to consult and to handle because of the great diversity of supports and formats used.

Aware of the importance of preserving this knowledge base, OGE launched a Geofoncier land information portal in 2010 for the exclusive use of surveyors and in 2011, a web version for the general public.

In this context, OGE launched in 2020 the national operation GEODEMAT aiming at making freely accessible in the general public portal Géofoncier.fr all the dematerialized cadastral documentation to guarantee its durability.

This operation is part of a more global approach to setting up a digital land chain (blockchain).

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Florian Lebourdais (France)

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SUMMARY (in French / en français)

L'Ordre des Géomètres-Experts (OGE) est une personne morale de droit privé instituée par la loi française (1946) et déléataire d'une mission de service public de régulation de la profession.

Les 2 000 géomètres-experts sont ainsi les seuls professionnels par la loi, habilités à reconnaître la définition des limites des biens fonciers. A ce titre, les géomètres-experts établissent notamment les actes techniques qui permettent de mettre à jour le plan cadastral (modification / création de parcelle(s) cadastrale(s)).

Depuis 1956 la profession collabore activement avec le Ministère des Finances pour la conservation du plan cadastral. En 2020, l'assemblage des plans cadastraux totalise près de 100 000 000 de parcelles sur la totalité du territoire national. Une part importante d'entre elles a été créée depuis les années 1930 par l'un des 10 000 000 actes administratifs produits par les géomètres-experts. Ces documents constituent à ce jour la seule et unique source de connaissance des évolutions du plan cadastral survenues depuis le premier tiers du XXe siècle.

Cette documentation cadastrale souffre à ce jour d'être accessible uniquement au format papier et d'être dispersée dans les Centres des Impôts Fonciers répartis sur l'ensemble du territoire. L'âge des documents (jusqu'à 90 ans) laisse craindre à moyen terme des pertes irrévocables d'informations (écritures à l'encre ou au crayon de bois qui s'estompent, calques qui deviennent cassant...). Par ailleurs, cette documentation est très inconfortable à consulter et à manipuler de par la grande diversité de supports et de formats utilisés.

Conscient de l'enjeu de préserver cette base de connaissance, l'OGE a lancé sur ses fonds propres en 2010 un portail Géofoncier à l'usage exclusif des géomètres-experts et en 2011, une version web grand public dudit portail (www.geofoncier.fr).

C'est dans ce contexte que l'OGE a lancé en 2020 l'opération nationale GEODEMAT visant à rendre librement accessible dans le portail Géofoncier.fr grand public l'ensemble de la documentation cadastrale dématérialisée pour en garantir la pérennité.

Cette opération vient s'inscrire dans une démarche plus globale de mise en place d'une chaîne numérique (blockchain) du foncier.

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1. Context of the project

The Ordre des géomètres-experts (OGE) is a legal entity under private law established by law 46-942 of 7 May 1946 and placed under the supervision of the Ministry in charge of planning. Delegated with a public service mission to regulate the surveying profession, the OGE's role is to represent the profession to the public authorities, to ensure discipline, and to ensure the quality of the service provided to citizens, particularly in terms of defining their property boundaries, mainly by means of contradictory demarcation.

The 2,000 geometres-experts licensed by the Order are the only professionals by law authorised to recognise the definition of property boundaries. On the basis of the property limits defined contradictorily with the riparian owners, the licensed surveyors draw up, in particular, the Documents Modificatifs du Plan Cadastral (DMPC); technical acts which make it possible to update the cadastral plan (modification/creation of cadastral parcel(s)).

2. Presentation of the DMPC dematerialisation operation

Since 1956, the profession has been actively collaborating with the Direction Générale des Finances Publiques (DGFIP - Ministry of Finance) for the conservation of the cadastral map of the 35,000 French municipalities. Regularly over the years, surveyors intervene directly to renew all or part of the cadastral plans via the procedures of Agricultural, Forestry and Environmental Land Management (AFAFE) - ex-membership. The geometry of the cadastral plan is then considerably improved, resulting in a permanent and enforceable materialization of property boundaries. In the same spirit of "modernization" of the cadastral plan, the profession has assisted the DGFIP in its work of land reorganization and reshaping.

In 2020, the assembly of cadastral plans totals nearly 100,000,000 parcels in the 101 French departments. A large proportion of these have been created since the 1930s by one of the 10,000,000 administrative acts: Croquis d'Arpentage (CA), which later became Documents Modificatifs du Plan Cadastral (DMPC). These CA / DMPC documents and their inventories and directories (communal notebooks known as "Model 40" - MOD 40 -) constitute to this day the only source of knowledge of the changes in the cadastral plan that have occurred since the first third of the 20th century.

This cadastral documentation, the "memory of the land" par excellence, suffers to this day from being accessible only in paper format and from being dispersed in the decentralised services of the DGFIP throughout the country, i.e. the Land Tax Centres (CDIF) and/or the Topography and Cadastral Management Centres (PTGC).

To find out about the origin of his or her cadastral parcel(s), the citizen must currently "investigate" himself or herself by going personally and physically to the cadastral service(s) on which his or her parcels depend; in other words, there are so many places where documents are stored. All the documentation to be consulted CA / DMPC / Model 40 / AFAFE consolidation plans / reorganisation plans is still very widely available, exclusively on physical media. The age of the documents (up to 90 years) leads to fears of irrevocable loss of information in the medium term (fading ink or pencil writings, brittle layers, etc.). Furthermore, this documentation is very uncomfortable to consult and handle due to the wide variety of media and formats used (A4 / A3 / A0 / Large Eagle / rolls, etc.).

Aware of the importance of preserving this knowledge base, the Ordre des Géomètres-experts launched a Géofoncier land information portal for the exclusive use of geometres-experts in 2010 and a web version of this portal for the general public in 2011 (www.geofoncier.fr). The purpose of this public portal is to inform landowners, State administrations, professionals in the field of land surveying and land management, and the general public.

In 2020, the Géofoncier portal centralises the metadata of nearly 5,000,000 land-related operations and allows the general public to view the Référentiel Foncier Unifié (RFU) created on the initiative of the profession, the purpose of which is to explicitly represent 'geometrically accurate' (centimetric geo-referencing) and 'legally enforceable' (ratified by demarcation reports) property boundaries.

It is in this context that it is proposed, in conjunction with the services of the DGFIP, to set up an operation aimed at making all dematerialised and anonymised cadastral documentation freely accessible on the Géofoncier portal in order to guarantee its durability and distribution. This operation is part of a more global approach to setting up a digital chain (blockchain) for land ownership, the objective of which would be to open it up to all players in the field of development and the living environment in order to share this information, to enrich it as projects evolve, and ultimately to have a mutualised infrastructure that would allow all the documents in the land ownership chain to be authenticated in an unfalsifiable digital register.

Following feasibility studies conducted by several of the OGE's regional councils in partnership with the CDIF/PTGCs in their districts, the OGE decided to industrialise the dematerialisation of the Documents Modificatifs du Parcellaire Cadastral (DMPC) at national level.

As part of the economic model to be put in place to ensure the financing of the national operation to digitise cadastral documents, a request for European subsidies from the European Regional Development Fund (ERDF) is being made, in a coordinated manner throughout the

national territory (metropolitan France and the French overseas departments), to the ERDF instructing services in the regions.

3 Objectives

The objectives of the approach are national in scope. However, the dematerialisation work on cadastral documentation that will be carried out within the framework of this technical allotment (digitisation / input / publication of data), like the project management of the operation, will take the form of framework agreements with purchase orders allowing the work to be implemented by region, in accordance with the ERDF territorial breakdown.

Objective 1: To ensure the durability and safeguarding of cadastral documentation through the complete dematerialisation of CA / DMPC / Model 40 / AFAFE consolidation plans / reorganisation plans held in the CDIF/PTGC.

Objective 2: To guarantee free access to this documentation from the Geofoncier web portal for the general public.

Objective 3: Establish a "parcel genealogy" by entering communal registers known as "Model 40" to trace the evolution of cadastral parcels since 1 January 1956, the date of the reform of the land registration system.

Objective 4: To contribute to the modernisation of the public cadastral service.

4 Technical Approach

The operation is structured around different phases combining technical and organisational actions. It involves several actors.

4.1 Phase 0: Exploratory Phase

This phase, which has now been completed, helped to define the operation's perimeter from extensive feasibility studies carried out in 2011. Data production experiments were thus conducted with exclusive funding from certain regional councils of the OGE to test and trial the various components of the operation.

Feedback has confirmed the technical feasibility of the operation from a logistical and technical point of view.

These various actions have made it possible to ensure the reliability of the volumes of documents to be dematerialised in each region. On the basis of feedback, a 10% increase in quantities was applied in order to anticipate specific local situations such as the existence of double numbering of the DMPCs in certain 'large' communes in the 1950s and 1960s (division

of communes into a 'rural zone' and an 'urban zone'). The increase applied also makes it possible to secure the quantification of survey sketches (for the period 1930-1956), which is based solely on the feedback from the three digitised regions (absence of a directory).

4.2 Phase 1: Preparatory Phase - completed

This phase enables OGE to acquire the project management tools needed to guarantee the proper completion of the work within the allotted time, as well as the quality and exhaustiveness of the dematerialisation of the cadastral documentation to be processed.

The Delegated Project Owner, the Société En Participation GEODEMAT, created by GE for the needs of the operation and in order to ensure the delegated project management, is assisted by a project manager, SAS Géofoncier, chosen and appointed in July 2021 following a tender.

4.3 Phase 2: Operational Phase – on-going

The works to be undertaken in this phase are structured around three (3) technical lots entrusted to different actors:

- LOT A: Digitisation of cadastral documentation, Work entrusted to 2 service providers in accordance with specifications that have already been tested and proven on more than 3,000,000 documents in the pilot regions.
- LOT B: Input of Models 40 to "computerise" the parcel filiations over the period 1956-1990, Work entrusted to one service providers following specifications already tested and proven in the exploratory phase. The data entry interface was specifically developed on the initiative of SAS Géofoncier so as to allow centralised entry of information relating only to the DMCP listed in the models 40.
- LOT C: Concerns the production of data produced in lots A and B on the Geofoncier portal infrastructure. The services relating to lot C consist, on the one hand, of ensuring the computer hosting of the files produced and their distribution on the Géofoncier portal by means of appropriate consultation interfaces and, on the other hand, of geolocating the documents (data from lot A) and constructing the "parcel genealogy" (data from lot B).
This lot is entrusted by the project owner to SAS Géofoncier, under a public service delegation agreement.

4.4 Phase 3: Completion Phase

Once the technical operations have been completed, any citizen can access the cadastral documentation and the "parcel genealogy" free of charge. A communication campaign

dedicated to this operation will inform the general public of this innovative and unique digital service offered by the Géofoncier portal.

5 Expected results

The development and implementation of a digital process for the dematerialisation of cadastral documentation has several objectives:

- Safeguarding the living heritage of cadastral documentation;
- Maintaining the geometric accuracy of the cadastral plan and reducing disputes over property boundaries;
- Modernisation of the management of cadastral documentation through dematerialisation and the development of a digital process;
- Accessibility of the documentation via web tools to all users including citizens;
- Reduction of greenhouse gas emissions (less travel to access documentation);
- Better management and efficiency of public action.

The target of the operation is multiple since it aims initially at citizens wishing to have access to these archives, but also at local authorities and professionals working on these themes (surveyors but also notaries, real estate professionals, etc.). The dematerialisation of this data will allow direct and free access via the Géofoncier portal.

As a result of the requirement by the Ministry of Public Accounts, the DMPCs must be anonymised by deleting the personal information present on the documents to be digitized.

6 Final Users

Different users are therefore directly impacted by the results of this operation. They will derive several benefits from it:

For the general public:

- Easier access to documents describing the origin of cadastral parcels by "natural" search from a map,
- Free downloading of dematerialised and geolocalised DMPCs from the Géofoncier portal,
- Access to the documents allowing to identify in a reliable way the surveyor "creator" of the cadastral parcel (possibility of putting in contact to obtain, if necessary, the report and the plan of demarcation),
- Immediate access to land consolidation plans (AFAFE) as a boundary plan,
- Possibility of identifying and locating a missing parcel (e.g. a parcel mentioned in a notarial act).

For the geometre-experts:

- Continued preservation of documentation,
- "Unified" access to all cadastral documentation,

- Immediate matching of cadastral data with the profession's other databases (surveyors' files / Unified Land Registry),
- Savings in physical travel from one CDIF/PTGC to another.

For the public agents of the DGFIP's decentralised services:

- Long-term preservation of documentation,
- "Unified" access to all cadastral documentation,
- Macroscopic view of documents (no longer limited to the territory of a CDIF/PTGC),
- Time saving for agents who no longer have to carry out tedious searches on behalf of users,
- Possibility of transferring physical documentation to the Departmental Archives (saving space in the premises),
- Free conventional access, via a dedicated version of the Géofoncier portal and by means of a specific search engine, to all the cadastral documentation deposited and to all the authors of the DMPC. They also have access, as do surveyors, to the online geolocation module to make modifications or additions.

For land professionals: notaries, estate agents, etc.

- "Unified" access to all cadastral documentation,
- Possibility of identifying and locating a missing parcel (e.g. a parcel mentioned in a notarial deed),
- Free downloading of dematerialised and geolocated DMPCs online from the Géofoncier portal,
- Modernisation of land document exchanges between land and property professionals.

7 Provisional timetable of the operation

- Prerequisite: Finalisation of the digitisation agreements between the CDIF/PTGC and the regional councils of the OGE (prior to each region going into production);
- Choice of a project manager for the award of contracts with service providers and the supervision of the work (completed in July 2021);
- Consultation and selection of contractors for Lot A and Lot B (completed in February 2022);
- Digitisation of the cadastral documentation (from March 2022 until the total dematerialisation of all documentation - probably December 2023);
- Acceptance of the work and quantitative checks of the digitisation work;
- Data processing for flow management, filiation and data upload. - Start in January 2022 and operational developments until June 2022;
- Quality control of data and services (from March 2022 to December 2023);
- Continuous publication - as validated deliveries are made - of the data produced in Lots A and B on the Géofoncier infrastructure: auto-indexing of PDF files and geolocation of DMPC/CAs; launch of algorithms for reconstituting the genealogy of parcels;

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- Restitution of the results of the operation to the agents of the CDIFs by the regional reference surveyors;
- Broad communication to all portal users and the general public through a regional and national communication plan (from the complete delivery of the first region).

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