

# The French digital model for updating land and cadastral data

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## **SUMMARY:**

Our society, our world has a challenge:

The challenge of inclusiveness, the challenge of tolerance, the challenge of a safer world, the challenge of equality between men and women.

The land registry is one area where these challenges are evident because its constitution assures people of their rights.

But what happens once land is registered? It sometimes remains static, becoming virtually obsolete the day after it is drawn up. In fact, it is constantly evolving and changing. A person may sell his or her property, or a family may divide it up as part of an inheritance.

It is therefore necessary to update the land registry as changes occur on a daily basis.

Updating varies from one national land registry to another. It depends on the laws in force in each country and its own culture. As a result, each country has its own model. In France, at the beginning of the constitution and development of its cadastre, the cadastral plan was sacred. It could not be modified, and therefore could not be updated. A parcel was present for an unlimited period of time. Cadastral mutations and divisions were not updated, so it was very difficult to know how a parcel had been divided

Faced with this challenge, the legislator created the Ordre des Géomètres-Experts in 1946, an organization of certified surveyors to draw up legal plans of landholdings.

Since its creation, the Ordre des Géomètres-Experts has been in direct contact with the land registry to keep it up to date. This relationship has evolved over time, and today it has become a partnership (public administration/private organization) to organize direct updating of the land registry.

Each surveyor who draws up a land plan that modifies the cadastre can and must increment the new boundaries directly on a GIS developed by the Ordre des Géomètres-Experts. This has the effect of modifying and updating the land register in time, and ensures that the land register is maintained over time.

This Public Administration/Geometres-experts partnership will make it possible to

- ensure the continuity of the land register
- Develop a geofoncier tool with a graphical interface
- Update the cadastre

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## 1. INTRODUCTION

The Order of Land-Surveyor-Experts (OGE) was granted legal status as a person by private law 46-942 of May 7, 1946. The OGE is responsible for the public service mission to regulate the French profession of surveyor.

Land-Surveyor-expert ( « Surveyor-expert » or « surveyors ») is authorized to determine official boundaries between plots of private land. The Surveyor-expert is empowered to draw up demarcation plans and legal plans related to the title of property such as easement plans. In this context, the profession always works very close with administrations such as the cadastre, land registration services, but also with its supervisory ministry and all administrations. To complete this mission a lot of information is needed from the administration. Furthermore, the completed mission must be stored in the archives of the Surveyor-expert to protect the property rights of citizens.

In 2007, the OGE began to create an e-portal to facilitate access to the information collected by surveyor-experts. Then, in 2010, the order of Surveyor-experts created GEOFONCIER. In close collaboration with the land administration, the OGE developed this e-portal further.

Since 2007, this e-portail is constantly evolving and we are going to present to you a short history and describe how it can be useful for all surveyors to complete their mission and furthermore how we can use it to secure property. We will also show how this tool can help the administration to conserve their data and to update the cadastre. Finally, another benefit of the accurate recording of data is to protect the rights of the individuals involved and ensure a system of land registration that is fair for everyone.

## 2. EVOLUTION:

### 2.1: Cadastre Napoleon:

The Cadastre in France was started in 1807. It came about because Napoléon wanted to have a map of every single village in France.

The Cadastre has been completed in the 36000 cities of France. To complete the Cadastre each city had to pay the surveyors and provide them food, and housing. In exchange the surveyors had to :

- Make the map ;
- calculate the value of the fields ;
- use color to make the maps accurate and aesthetically appealing ;
- use specific paper of a specific size called big eagle= AO ; and

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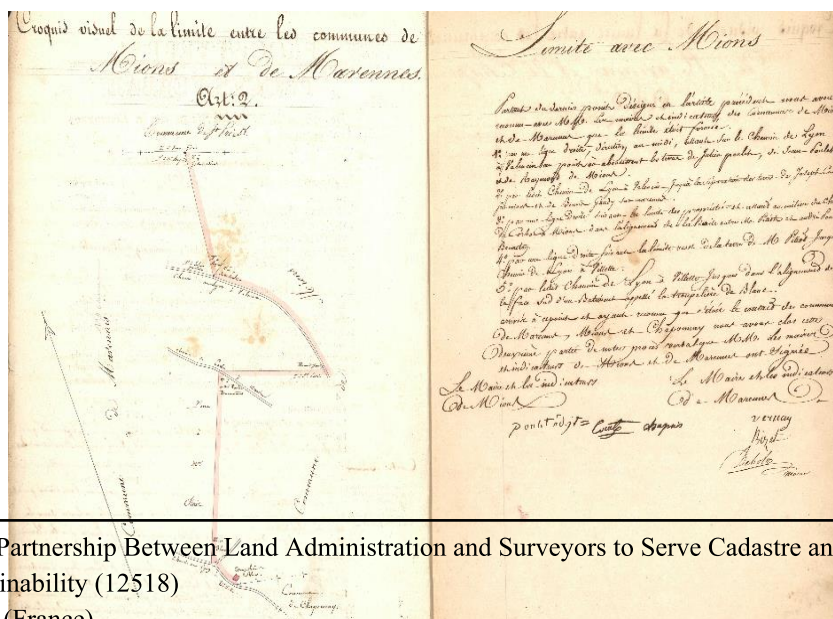
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- determine the communal territory.



Exemple of the Cadastre Map of LYON (the second biggest French city in the center-east of France).



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Example of boundaries of Local Territory.

This map was amazing at that time, but became outdated. It was not possible to update it and by this way new renters and new buyers were not able to justify what they bought and where were the boundaries of their property.

## 2.2: THE 1930 CADASTRE RENOVATION ACT :

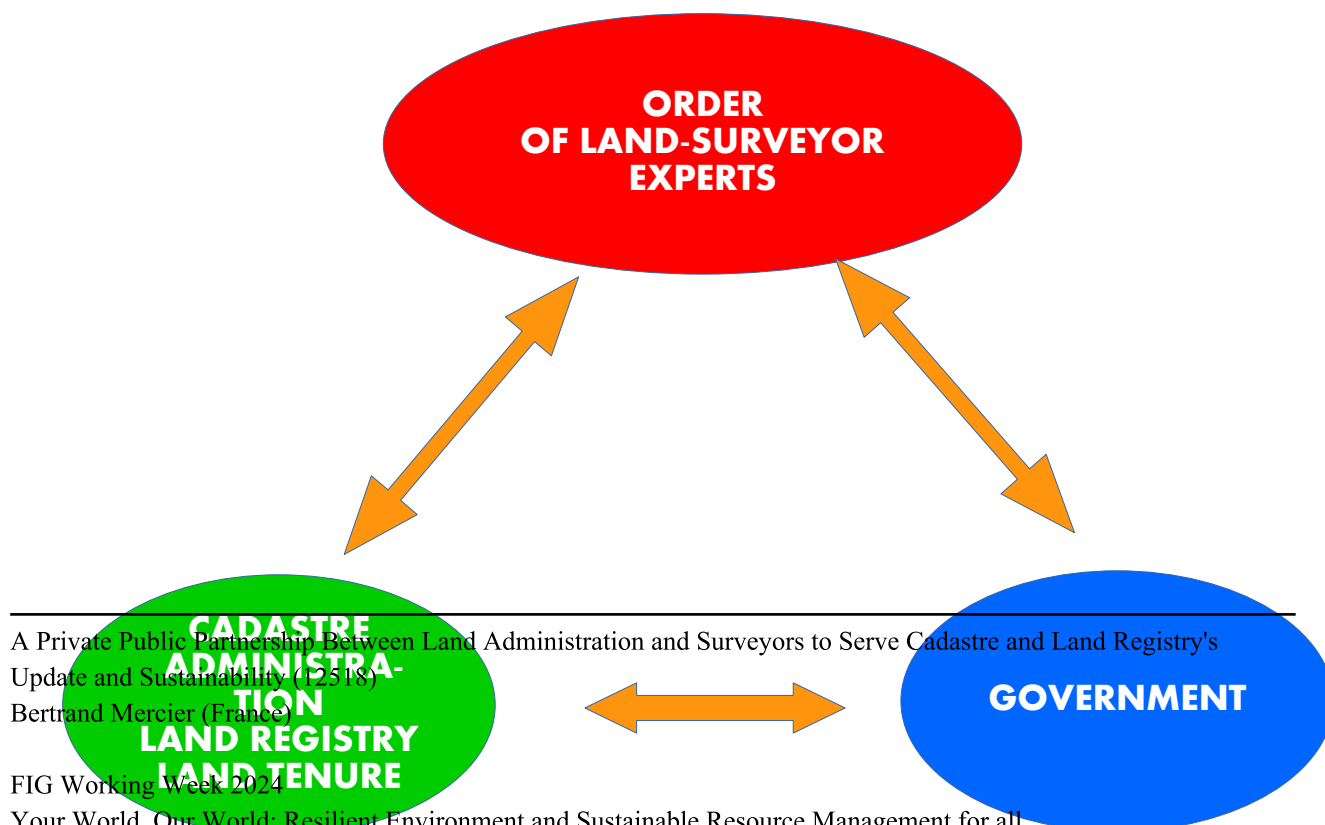
To address this situation, a new law was written to update the property title analysis - 1 owner = for 1 piece of land at the minimum – and updating the Napoleon cadastre map. The purpose of this law was good and it was hoped that it would result in an accurate Cadastre, but the result was different. People hired in the cities to do the job were not necessarily surveyors and a lot of mistakes were made. The new law led to a lot of conflicts and the government decided to keep the Cadastre as a fiscal goal and to figure out how to preserve individuals' rights by creating a new system.

## 2.3: The 1946 LAND-SURVEYORS-EXPERTS ACT :

The government created new system to ensure individuals' rights, monitor the Cadastre and create something independent to be monitored by the government.

The Order Of Land-Surveyor-experts was created to resolve conflicts between owners, to determine boundaries between properties and to update the Cadastre.

PLAN OF RELATIONSHIP :



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This system has a few advantages:

- The Government controls and can regulate the exercise of the profession;
- the administration monitors the Surveyor-expert's work; and
- the Surveyor-expert updates the Cadastre.

### **3. EVOLUTION OF RELATIONSHIP BETWEEN CADASTRE AND LAND-SURVEYOR EXPERTS:**

#### **3.1: 1956: implementation of land registration and cadastral map conservation :**

It was in 1956 that the French government created the land registry system, entrusting notaries, who are public officials, with the task of drawing up and publishing land transfer deeds. At the same time, the land registry department began updating the cadastral map with the help of Land-surveyor experts throughout the country.

#### **3.2: The surveyor's role in cadastral map production :**

In the first part of the 20th century, the tax authorities entrusted Land Surveyor-experts with the task of producing cadastral plans. Land Surveyor-experts also produce cadastral plans for land consolidation operations, now known as agricultural, forestry and environmental land development operations.

#### **3.3: The role of the surveyor in updating the cadastral map :**

Today, surveyors are the key players in updating the cadastral map. This updating is carried out by means of cadastral survey documents (DA For Document d'Arpentage), which are drawn up by Land Surveyor-experts, checked and numbered by the land registry before being supplied to the notary for the drawing up of land transfer deeds and their publication in the real estate register.

#### **3.4: 1990: vectorization of the cadastral map :**

The first operations to vectorize the cadastral map were launched in the 1990s. Expert-surveyors were sometimes the technical players in this first stage of cadastral map modernization, but also, through the OGE, the financial partners of the local authorities responsible for these operations.

#### **3.5: 2000: the digital survey document to update the cadastral map :**

It was in the 2000s, in partnership with the land registry, that surveyors implemented the digital cadastral survey document, another step in the modernization of cadastral map updating. Some 200,000 cadastral survey documents are produced every year.

### **3.5: 2010: Nationwide rollout of the GEOFONCIER portal by the Ordre des Géomètres Experts:**

The GEOFONCIER portal is managed by SAS GEOFONCIER, a subsidiary of the Ordre des Géomètres Experts. The OGE has entrusted SAS GEOFONCIER with the delegation of a public service involving the creation and updating of the database of land-related work carried out by surveyors throughout France.

The GEOFONCIER portal enables each surveyor to fulfill his or her professional obligations in the best possible conditions, both technically and financially. Land Surveyors Experts upload to the GEOFONCIER portal all the land-related operations they carry out on a daily basis; these are geolocated and accompanied by the land-related documents drawn up for these operations, plus the production of digital data for the RFU (United Land Tenure Referentiel).

### **3.6: 2010: first stage in the partnership between the Order des Géomètres Experts ( Order of Land-Surveyors-Experts) and the General Directorate of Public Finances (Cadastre):**

The launch of the GEOFONCIER portal was the occasion for the signing of an initial partnership agreement between the Ordre des Géomètres Experts and the French General Directorate of Public Finances (Cadastre). The cadastre provides the profession with data flows concerning the vectorized cadastral plan, as well as computerized filiation data for cadastral parcels, enabling GEOFONCIER to produce genealogies and histories of divided parcels. (a first in France).

### **3.7: 2010 first steps in the partnership between the Ordre des géomètres- experts (Order of Land-Surveyors-Experts) and the national geographic institute:**

For the construction of the GEOFONCIER portal, an effective technical partnership was set up between the profession and the French National Geographic Institute. This partnership resulted in GEOFONCIER's use of the IGN 's first Géoportail (IGN: National Geographic Institute). Today, the GEOFONCIER portal offers over 200 public open data layers, the vast majority of which are derived from the IGN Géoportail.

### **3.8: 2011 production of RFU (unified land registry) data by surveyors:**

The unified land registry was presented by the profession at the 2006 national congress. This pioneering data was a precursor to digital land surveying and the production of qualified data for the long-term updating of cadastral map modifications. The topological data structure guarantees the numerical and geometric quality of the land boundaries defined by this repository, which therefore meets all the requirements for a national repository. Today, we can confirm

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that the RFU (unified land registry ) is a qualified piece of data, which has also given the Ordre des Géomètres Experts a new strategic position.

### **3.9: 2016: GEOFONCIER portal opens to real estate professionals:**

The year 2016 marked a turning point for the OGE GEOFONCIER portal with its opening to professional subscribers. Today, more than 40 professions dealing with land and real estate are regular users of the GEOFONCIER portal. The portal also offers value-added services for public and private open data. It is also a collaborative portal between these professionals and surveyors. As a reminder, notaries, land registry services and, to a certain extent, the land registry are among the four players in the digital land chain.

### **3.10: 2020: second stage in the partnership between the Ordre des géomètres experts and the Direction générale des finances publiques (General Directorate of Public Finances):**

In March 2020, the Ordre des Géomètres Experts signed a new partnership agreement with the Minister of Public Accounts and Public Finance. This agreement covers the dematerialization of cadastral survey documents, this is almost 15 million documents nationwide, which will be processed and geolocated in the GEOFONCIER portal.

It also covers the implementation of a platform for the automated control, in partnership, of survey documents drawn up by surveyors and numbered by the land registry services.

### **3.11: 2024: deployment of the e-DA (Survey Documents) platform for automated control of cadastral survey documents:**

In April 2024, the e-DA platform will be rolled out nationwide, enabling surveyors and land registry departments to work together to automatically check, qualify and process survey documents as part of a modernized, standardized chain for all land registry departments.

### **3.12 2024: Qualification of land deeds drawn up by surveyors, with their numbering and inclusion in a national register attached to the GEOFONCIER portal.**

The qualification of land deeds drawn up by surveyors is a major project supported by the Ordre des Géomètres Experts. Land deeds entered into the portal will be qualified by the Order of Surveyors Experts. Validation of the qualification will generate a national numbering for each land deed. Through the GEOFONCIER portal, these qualified deeds will be accessible to the general public, as recommended by the Inspire law of October 2010, based on the European Inspire directive of 2007.

### **3.13: 2024 onwards: Production of the RPCU (unique cadastral parcel representation) by the land registry service nationwide.:**

This unique cadastral parcel representation is a modernization operation of the cadastral map launched by the General Directorate of Public Finances with the technical support of the Na-

tional Geographic Institute (IGN).

The RFU data is made available to the land registry department as part of the RPCU preparation process. Topologically structured and centimeter-accurate RFU vertices are used by the land registry for calibration and control operations, and since 2024, for integration into the new cadastral parcel system, thus enriching it with vertices that legally and topologically define property boundaries.

To date, six departments have been implemented throughout France. A new test department is planned for 2024, to validate the industrial development process for this representation on the entire French cadastral map.

## **4. OUTLOOK:**

### **4.1: cadastral survey documents with integration of RFU data:**

If today the RFU data produced by Land-Surveyors, i.e. almost 30 million topological and georeferenced objects with centimetric precision over the territory, are and will be integrated into the new single cadastral parcel representation, this will facilitate the production and improve the quality of the RPCU by injecting precise objects defining property boundaries. It should be remembered that these supplies of RFU data are made free of charge by the géomètres-experts profession to the Cadastre and IGN departments. This is one of the aspects of the PPP (public-private partnership) defined in the agreements signed with the DGFIP and IGN.



## 5. CONCLUSION:

Since 1956, the implementation of land registration and the updating of the cadastral map have proved their worth. It is the demonstration of an effective public-private partnership between the four players involved: :

- General Directorate of Public Finances, Cadastre
- surveyors
- Notaries
- Land registry services.

Each of these players has taken major steps to digitize their data. They have also deployed internal management tools for all their data. They are all currently working to ensure the interoperability of their tools with their institutional partners.

By deploying the GEOFONCIER portal nationwide in 2010, the Ordre des Géomètres Experts (OGE) has led the way in digitalization, metadata distribution, data sharing and the implementation of value-added services for the benefit of the society.

All these operations and projects clearly contribute to the construction of the digital land chain, which mobilizes the four private and public players in this chain. Several links already exist, and others are under construction. With the GEOFONCIER portal, the Ordre des géomètres experts is positioning itself as a dynamic and essential player in the creation of this digital chain, for the benefit of all players and, in particular, citizens, which is the objective set by the 2007 European Inspire directive, transcribed into French law in October 2010.

The profession's commitment to modernization has also demonstrated the feasibility and economic viability of a project such as this, by involving both Land-Surveyors through an annual national fee, and professional subscribers - the portal's ever-growing number of users - who contribute to the portal's development through the payment of a flexible, modular subscription. This business model can now be reproduced by other professional organizations of surveyors in their own countries.