

The cadastre, the land registry, and the technicians collaborate in land administration improvement in Spain

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Palabras clave: land administration, cadastre, land registry, demarcation boundaries, technician, coordination, collaboration, Spain

SUMMARY

The Spanish cadastre and land registry are two independent institutions, and they are very different. The cadastre depends on the Ministry of Finance, with a primary goal of tax recovery, and has a continuous map of all national territory. On the other hand, the land registry is a rights registry, depends on the Ministry of Justice, and gives legal certainty in property transactions. The land registry was born with the Mortgages Law in 1861; it is volunteer, and does not have maps. In the latter years, it started using cadastral maps as the base of its recordings.

To improve the land administration in Spain, good coordination between cadastre and land registry is fundamental. Due to that, the laws of 1996 and 2015 about geographical coordination were created, and they have demonstrated to be quite effective. The law of 1996 sets the national cadastral reference as the union nexus of the two institutions. The goal of the law of 2015 is geographical coordination as property transactions occur. New technical requirements are needed to automate some procedures, in order to achieve the latter goal. For example, in most cases, a georeferenced map of the property is necessary, in the Spanish official coordinate system. Therefore gml format must be used, meeting some topological conditions, which must be validated through the cadastre website. In the case of the law of 2015, technicians have a relevant role in making property maps. Land registrars and notaries do the juridical side of the coordination. It is a slow but continuous process in which many different parts are implied.

RESUMEN

El catastro, el registro y los técnicos colaboran para mejorar la administración del territorio en España

En España el Catastro y el Registro son organismos independientes y muy diferentes. El Catastro depende del ministerio de hacienda, con una finalidad principalmente de cobro de impuestos; y dispone de una base gráfica continua de todo el territorio nacional. Por otro lado, el Registro es un registro de derechos, depende del ministerio de justicia, y aporta seguridad jurídica en las transacciones inmobiliarias. El Registro se creó con la ley hipotecaria de 1861, es voluntario y no dispone de base gráfica; en los últimos años ha empezado a utilizar la cartografía catastral.

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Para mejorar la administración del territorio en España es imprescindible y necesaria una buena coordinación entre el catastro y el registro. Por ello, con las leyes de 1996 y 2015 de coordinación gráfica se están realizando avances realmente efectivos. Con la ley de 1996 se establece como nexo de unión entre ambos organismos la referencia catastral. Mientras que con la ley de 2015 se busca la coordinación de la información gráfica a medida que se realizan las transacciones. Para ello, es necesario cumplir unos requisitos técnicos que permitan automatizar procesos. Entre estos requisitos está entregar una representación gráfica que esté georreferenciada en el sistema de referencia oficial ETRS89; se debe entregar de modo obligatorio en algunos casos, no en todos. Se debe entregar en formato gml, y cumpliendo unos requisitos topológicos que deben validarse a través de la Sede Electrónica del Catastro. En dicha ley los “técnicos competentes” ocupan un papel fundamental realizando las representaciones gráficas. El aspecto jurídico para la coordinación lo realizan los notarios y los registradores. Es un proceso lento, con muchas partes implicadas, pero que avanza día a día.

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1. THE SPANISH CONTEXT

Spain is a country in southwestern Europe with a total area of approximately 505,000 km². It shares 1,903 km of land borders with France, Portugal, Andorra, and Gibraltar, and has a coastline of 4,964 km. It has been a member of the European Union since 1986 and is comprised of 17 autonomous communities with their own parliament and government, possessing their own competencies in areas such as healthcare, education, and urban planning. Spain is made up of a total of 8,131 municipalities and has a population of 47.4 million inhabitants in 2022 (INE 2023).

Since 2007, its reference system for all official cartography is ETRS89, using the UTM projection, with zone distribution 29, 30, and 31 for the Iberian Peninsula and the Balearic Islands, and zone 28 for the Canary Islands [Figure 1].

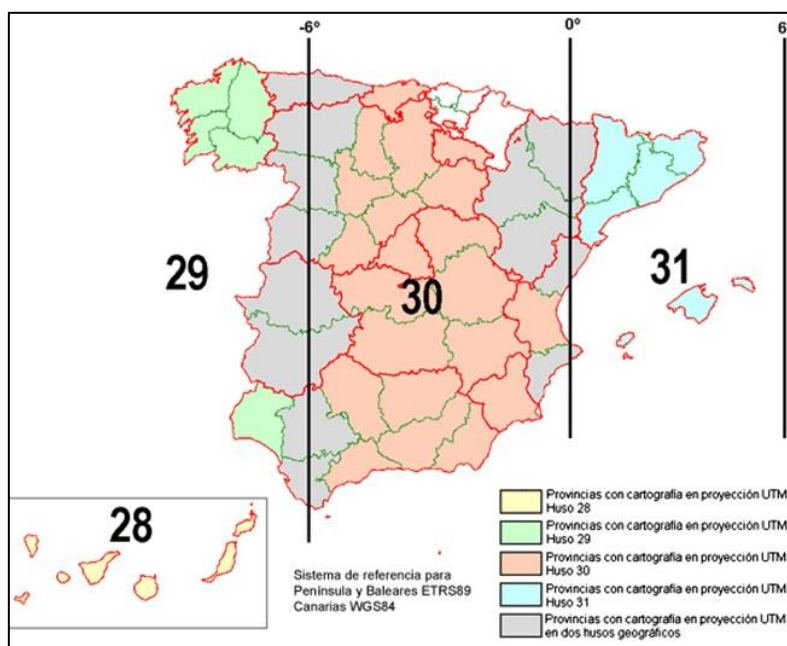


Figure 1: Map of Spain divided into provinces and autonomous communities with zone distribution.

2. CADASTRE LAND REGISTRY AND THE TECHNICIANS

Below, the institutions of cadastre and land registry in Spain are described. Both institutions are independent and quite distinct from each other. The situation of specialized technicians in cadastre and property delineation is also explained.

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2.1 Spanish Directorate General for Cadastre

In Spain, the cadastre institution is represented by the Spanish Directorate General for Cadastre (DGC), which covers the entire country except for two northern regions, País Vasco and Navarra. It manages 7,610 municipalities with a total of 80 million real estate properties. The basic unit is the "cadastral parcel." The cadastre falls under the jurisdiction of the Ministry of Finance, and its primary purpose is for property tax collection, although it is also utilized for various other purposes (Dirección General del Catastro, DGC 2023).

The cadastral cartography is comprehensive, covers the entire national territory, and is available in digital format (raster and vector). Access to this information has been free and open since 2006, facilitated through the Electronic Office of Cadastre (EOC) (Sede Electrónica del Catastro, SEC 2023) [Figure 2].

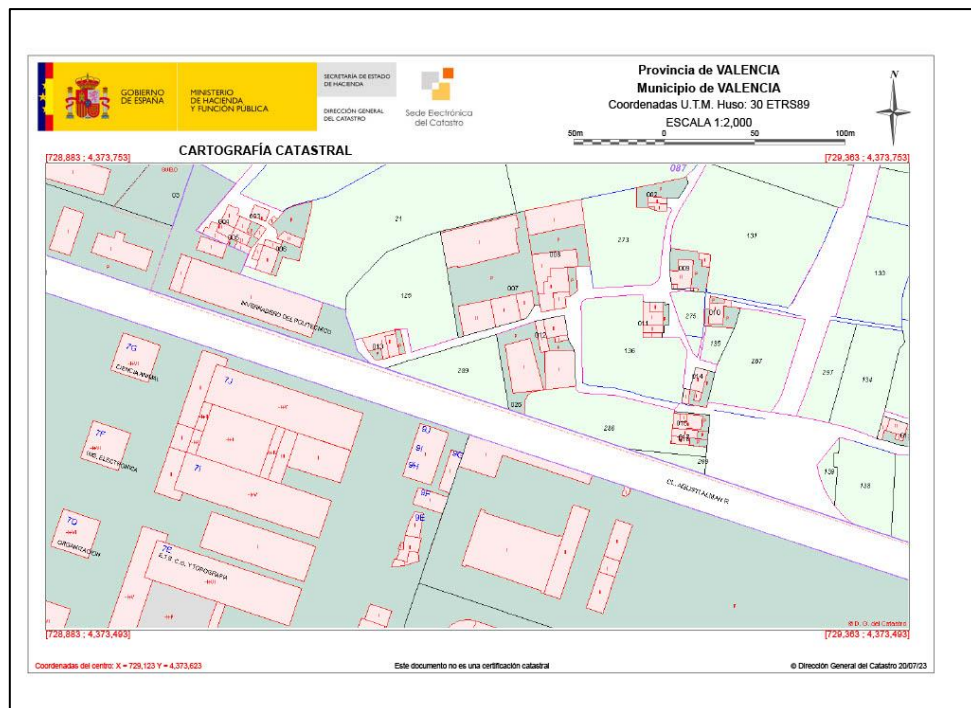


Figure 2. Cadastral cartography of an area north of Valencia. Source: EOC

The EOC allows the download of cartography in SHP, DXF, XML, and GML formats. The Spanish cadastre also offers WMS, ATOM, and WFS services, as stipulated by the European INSPIRE directive, for the cadastral parcel theme.

From the EOC, you can obtain the Descriptive Cadastral and Graphic Certification (DCGC) [Figure 3], which provides detailed alphanumeric and graphic information about all the cadastral parcels managed by the DGC. To access protected data such as ownership and cadastral value, authorization is required.

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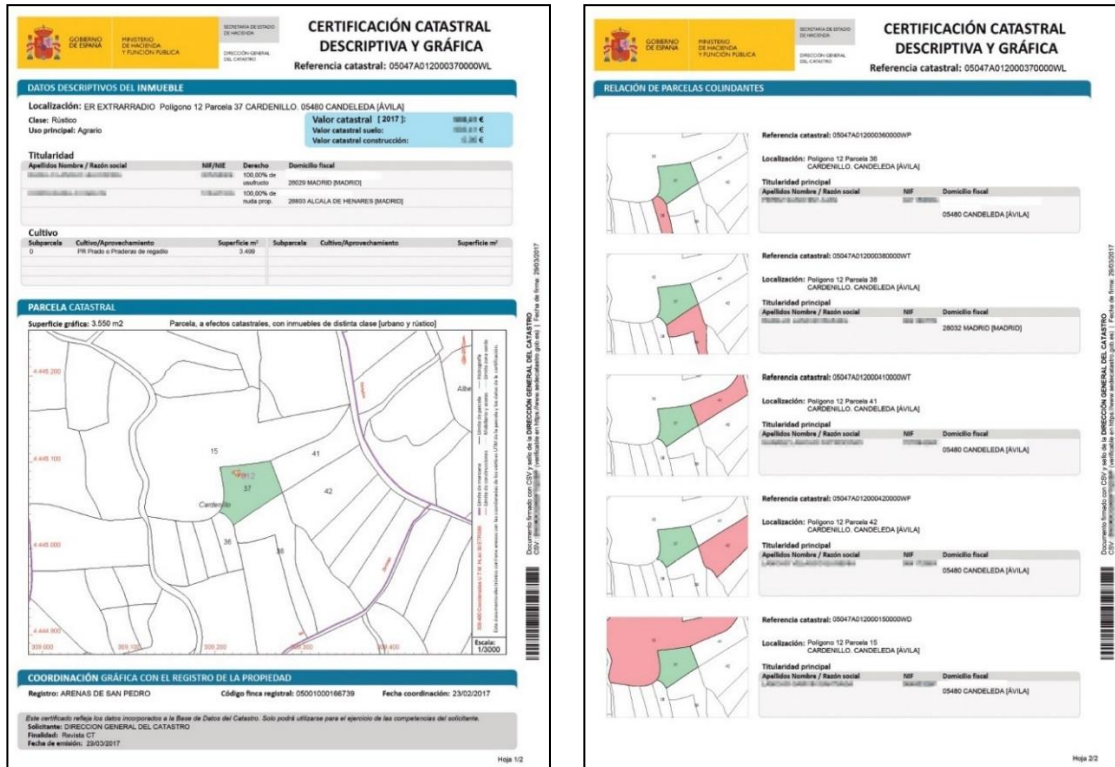


Figure 3. Descriptive Cadastral and Graphic Certification. Countryside cadastral parcel with adjacent parcels. Coordinated property. Source: EOC

2.2 Spanish Land and Trade Registrars Association

The Spanish land registry is a register of rights, with its basic unit being the "land registry unit" (which may or may not coincide with the cadastral parcel). The registry is represented by a collective of registrars organized under the Spanish Land and Trade Registrars Association (LTRA); these registrars are public officials with a liberal profession. A registrar heads each registry, and they are geographically delimited, with around 1.100 registries currently existing throughout Spain. Registration in the land registry is voluntary, with the exception of mortgages, which are mandatory (CORPME 2023a).

Land registries are regulated by the Mortgages Law. The origins of this law, and the Land Registry, in Spain date back to 1861. Initially, the registry was only a textual registry without a graphical basis; it contained only the alphanumeric physical description of each land registry unit. In recent years, it has begun to incorporate cadastral graphic information into its textual records.

The LTRA has its own auxiliary GIS, known as Geobase, to manage its graphical database of registered properties. Some of this information is publicly available the Land Registrars Geoportel (Figure 4) (CORPME 2023b). In any case, the official cartography remains the cadastral cartography.

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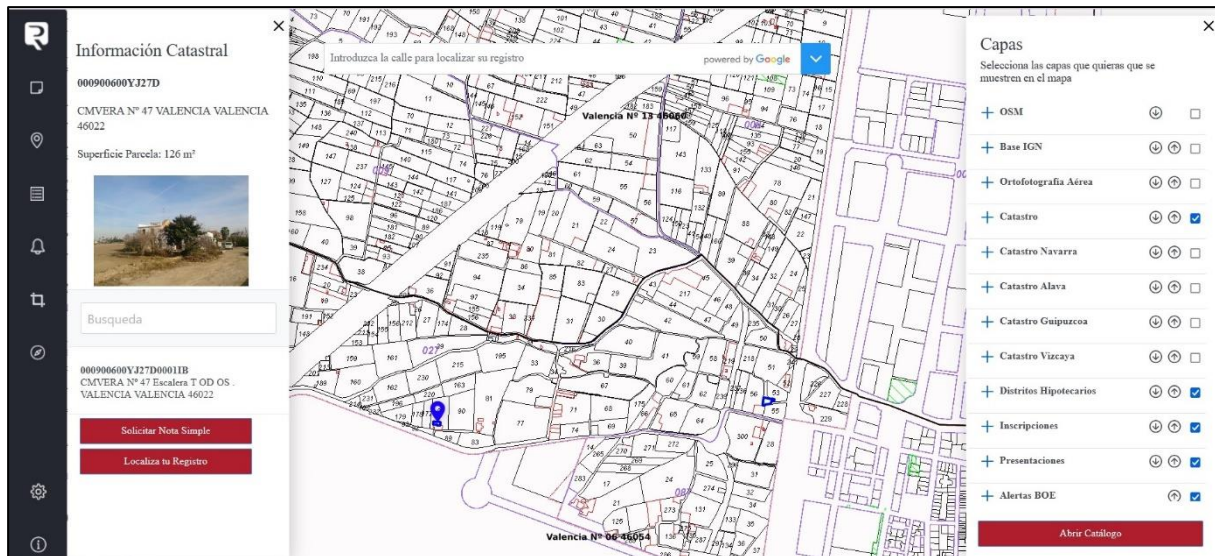


Figure 4. Land Registrars Geoportal. Graphical registrations over the cadastral map in the land registry number 6 of Valencia. Cadastral identification of the area: Cadastral polygon number 27 of Valencia. Source: LTRA

Table 1 shows the key characteristics of the cadastre and land registry in Spain (Femenia-Ribera, Mora-Navarro, and Martinez-Llario 2021).

Concept	Cadastre	Land Registry
<i>Ministry</i>	Tax	Justice
<i>Supervisory organisation</i>	General Directorate for Cadastre	Spanish Land and Trade Registrars Association
<i>Main objective</i>	Tax (+ other purposes)	Legal (preventive legal security)
<i>Role</i>	Collect property tax	Register of rights
<i>Type of management</i>	State administration	Private management (land registrars are publicly appointed self-employed professionals)
<i>Year of legislation originating current system</i>	Cadastre Act 1906 (current legislation 2004)	Registration Act 1861
<i>Basic unit</i>	Cadastral parcel	Land registry unit
<i>Basic unit identifier</i>	Cadastral reference (RC)	Unit registry number - IDUFIR Current: CRU (Unique Registration Code)
<i>Registration</i>	Obligatory	Voluntary except when a mortgage exists
<i>Maps</i>	From the beginning. Rural: 1/2000 and 1/5000 Urban: 1/500 and 1/1000 Various techniques	Mainly written descriptions. Cadastral maps have started to be included by some land registries since the 1990s
<i>Territorial continuity</i>	Continuous	Discontinuous
<i>Organisation</i>	DGC in almost all of Spain Rest: four independent regional systems (in provinces of Navarra, Vizcaya, Álava and Guipúzcoa)	Around 1.100 land registries within geographical territories
<i>Access and confidentiality</i>	Data on ownership and tax value is confidential	Public data

Table 1. Cadastre and land registry comparison. Source: Authors

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2.3 Spanish cadastre – land registry coordination

To improve territorial administration and improve legal security, it is necessary for the cadastre and the land registry to coordinate. Throughout history, there have been numerous attempts, but in recent years, thanks to technological advancements, they have become effective. In 1996, a law was published that establishes the cadastral reference as the connecting link between both institutions. Since then, it has been mandatory to include this cadastral reference in all notarial and land registry documents as real estate transactions take place.

Subsequently, in 2015, a law was enacted seeking the graphical coordination between cadastral parcels and land registry units (Act 13/2015). This law has brought about a true revolution for the entire Spanish territorial administration system, in which technicians play a fundamental role. When a coordination is achieved between a land registry unit and a cadastral parcel, the demarcation of the property is clearly mapped, and so the location and size specified in the cadastral data is recognised legally. This means that the cadastral parcel boundary becomes the ownership boundary, and this offers greater legal security for owners.

This coordination is mandatory in certain cases and requires a geo-referenced graphical representation (GGR) of the land registry unit, that could be the cadastral itself. If a modification is required, or the cadastre is incorrect, then an alternative geo-referenced graphical representation (AGR) is required. These map representations must comply with technical requirements defined in regulations published in Act 13/2015. These regulations also specify that the GML Inspire format must be used. This legislation has generated considerable change in the processes involved in real estate transactions. It has also meant a change in the objectives of many people using cadastral maps – for many users the main objective is now to obtain greater legal security in the demarcation of property, rather than to resolve questions related to tax. In addition, according to the cadastral regulations, the DCGC must be included in all the documents authorised by notaries that contain deeds or legal transactions that may lead to changes in the cadastre or the land registry (Femenia-Ribera, Mora-Navarro, and Martinez-Llario 2021).

When coordination between the cadastral parcel and the registered property is achieved, this information is reflected in the DCGC of the cadastral parcel in the SEC [Figure 5 and Figure 6]. As of August 9th, 2023, at 1:00 PM, there are 1,260,492 properties on 904,351 coordinated parcels. After almost eight years, this represents a relatively low percentage in relation to the total. The majority of currently coordinated properties are those that do not modify their cadastral graphical representation. In the case of alternative graphical representations, georeferenced maps of the land registry units are created by technicians and submitted to the Registry. However, the complete automation of changing the corresponding cadastral parcel geometries in the cadastre is not yet fully achieved. It is a lengthy and costly process that requires the flawless operation of all procedures and stakeholders involved; thus, continuous efforts are being made to improve it.

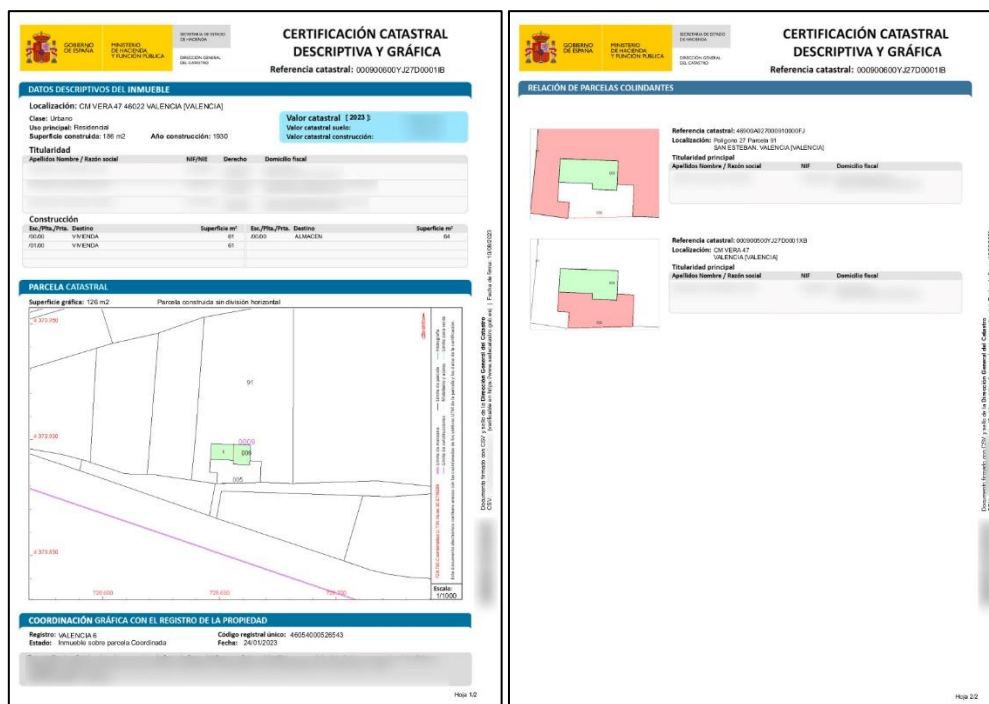


Figure 7. Descriptive Cadastral and Graphic Certification (DCGC). Building in the countryside. Cadastral polygon number 27 of Valencia. Coordinated land registry unit. Source: DGC

2.4 Specialist technicians

In Spain, there is no specialised technician with exclusive competence in the field of land administration, cadastre, and property demarcation. In Act 13/2015 on graphical coordination between the cadastre and property registry, this role is referred to as a "competent technician." The law does not specify any specific qualification for this role.

Based on the content and number of related subjects in the curriculum, as well as tradition, the most specialised engineer in these matters is the Engineer in Geomatics and Land Surveying (EGLS) (IGT 2023); a qualification formerly known as Engineer in Land Surveying (ELS). These graduates are part of the professional group known as the Corporation of Engineering in Geomatics and Land Surveying (CEGLS), a collective established in 1965. It is a national association with provincial branches, comprising around 4,300 members, including EGLS and ELS (COIGT 2023). The CEGLS is a founding member of the International Association of Surveyors; it is also a member of the Council of European Geodetic Surveyors (CLGE 2023) and the Pan-American Association of Surveying (APPAT 2023).

EGLS graduates are the professionals who carry out the majority of tasks related to cadastre and property demarcation, especially since the enactment of Act 13/2015. However, there are also other technicians who perform this type of work (Femenia-Ribera, Mora-Navarro, and Marques-Perez 2023).

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3. CADASTRE LAND REGISTRY AND TECHNICIANS COLLABORATE TO IMPROVE THE CADASTRAL MAPS

Act 13/2015 has given great importance to the maps of the land registry units (Mora-Navarro et al. 2022). Implementing Act 13/2015 involves significant collaboration among the cadastre, registry, notaries, and technicians. This collaboration is a complex task due to the distinct objectives of each entity and, above all, the different languages and work methodologies they employ. The aim is to foster direct collaboration between technicians and legal professionals. All involved parties have undergone eight years of continuous changes and learning, where ongoing education and technological adaptation are crucial.

There have been ongoing training and capacity-building efforts since the law came into effect, in addition to technological advancements that facilitate adaptation to changes. These efforts occur concurrently with signing collaboration agreements with universities and technicians.

The DGC is increasingly participating in conferences, courses, workshops, and events to introduce the institution and engage with collaborators who contribute to keeping their extensive cadastral database up to date. Direct collaborators include local administrations and professional groups, with whom agreements are signed and workshops are conducted. Agreements have been established with the Universitat Politècnica de València, the Polytechnic University of Madrid, and the Complutense University of Madrid.

Regarding technicians, and with the aim of institutionalizing public-private collaboration, a collaboration agreement has been signed with the CEGLS. This agreement seeks to standardize processes and ensure the quality of professional work, simplifying and expediting procedures for updating and correcting cadastral information. Educational initiatives are being implemented by both institutions, CEGLS and Cadastre, to incorporate all the developments outlined in the collaboration agreement (Velasco Martín-Vares et al. 2021). It is worth highlighting the significant usefulness of old cadastral maps for technicians in property delineation tasks. For this reason, the DGC is making this cartography freely available for use (Femenia-Ribera, Mora-Navarro, and Santos Pérez 2022).

People certification is an established tool to instil confidence in the market, authorities, or employers regarding the competency of specific individuals to perform certain activities. The Institute of Graduates in Engineering and Technical Engineers of Spain (INGITE) has been accredited as a certified member through the National Accreditation Entity (ENAC) to carry out such certifications. The CEGLS is part of INGITE and, through it, has propelled the certification of individuals with the title "Specialist Technician in Cadastre, Real Estate, and Valuation" (INGITE 2023). In the design and review of the certification scheme, a network of experts in the field has been engaged, including active participation from the DGC and LTRA, as well as universities specializing in geomatic engineering.

Like the DGC, the LTRA is also participating in conferences, workshop courses, and events, many of which are organized by the CEGLS and universities. There is also a collaboration agreement between the LTRA and the CEGLS. Participation mainly comes from the group board dedicated to graphical land registry bases within the LTRA and its provincial branches. The General Council of the Notariat is also involved in these efforts, though to a lesser extent.

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The DGC, LTRA, and CEGLS are national bodies and collectives that, increasingly over the past years, have been engaging in joint activities related to land administration and property demarcation across the entire national territory. They have also established direct collaborations with universities in the land surveying domain. In many cases, the Notaries have also participated.

Since the initiation of Act 13/2015, collaborations and intentions have existed, but the adaptation process is lengthy and complex. Changing the traditional way of doing things is difficult, but progress is continuous.

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