

Registration of Structured Immovable Properties: 3D Cadastre Implementation in Turkey

Yakup Emre CORUHLU, Osman DEMİR and Merve Ozlem MURAT

Geomatics Engineering, Karadeniz Technical University, 61080, Trabzon, Turkey
yecoruhlu@ktu.edu.tr, osmand@ktu.edu.tr, mervemurat@ktu.edu.tr

Key words: 3D cadastre, land object, registration, condominium, independent unit

SUMMARY

The aim of the study is to express registration of structured immovable properties in 3D cadastral concept as condominium thanks to selected real implementation and original flowchart in order to see the current situation on this market in Turkey. As stated by the Turkish Governmental Institution there have been produced about 58 million cadastral parcels in Turkey, and about 35 million were surveyed via cadastral works with required point accuracy. Especially in urban areas, buildings or structures have been built on parcels according to the zoning plans. Registration of immovable properties on land registry is an important issue for all areas in Turkey. The building process on a parcel can be reflected to land registry in two ways as “construction servitude” before construction and as” condominium” after construction. In this study, the documents and projects which are necessary to transform ownership type from the book of real estate registers into the condominium on the book of property ownership. In addition surveys, both land and building, have to be controlled by which institution. Finally, 3D cadastre implementation for buildings or structures known as condominium, which can be established for at least one independent unit or more, will be discussed in terms of registration, control, survey and legal perspective.

ÖZET

Bu çalışmanın amacı yapılı taşınmaz malların tescil durumlarının ve ülkemiz arazi piyasasındaki kat mülkiyeti kavramının, seçilen gerçek uygulamalar ve bu uygulamalardaki iş akışları sayesinde, 3B kadastro perspektifi altında açıklanmasıdır. Yetkili kamu kurumu (TKGM) verilerine göre, ülkemizde bu zamana kadar yaklaşık 58 milyon parsel üretildiği, ancak bunların 35 milyonunun arzu edilen nokta-konum hassasiyetine sahip olduğu belirtilmiştir. Bu 35 milyon parsel özellikle kentsel alanlarda üzerinde bina veya yapı olan taşınmazlar olarak imar planı uyarınca inşa edilmişlerdir. Tapu sicili üzerinde taşınmazların tescil edilmesi ülkemizdeki tüm alanlar, ki bunların bazılarında kadastro çalışmaları tamamlanmış ve tapu siciline tesciller yapılmış olup bazılarında kadastro çalışmaları henüz tamamlanmamıştır, açısından önemli bir durumdur. Parsel üzerindeki yapının tescil durumu kat mülkiyeti başlığı altında tapu siciline iki yöntemle yansıtılabilir. Bunlar yapı inşa edilmeden önce kat irtifakı tesisi ve yapı inşa edildikten sonra kat mülkiyeti tesisi ile

yapılabilir. Bu çalışma sayesinde, mülkiyet tescilinin tapu kütüğünden kat mülkiyeti kütüğüne dönüşüm için hangi tip belge ve projelerin hazırlanması gerektiği ile hem parcel ve hemde üzerindeki yapının ölçümlerinin hangi yöntemlerle ve hangi kurumlar tarafından kontrol edilmesi gerektiği araştırılacaktır. Sonuç olarak, en azından bir veya birden fazla bağımsız bölümün tesis edilebileceği kat mülkiyeti olarak bilinen bina/yapı temelli 3B kadastro uygulaması, tescil, kontrol, ölçüm ve yasal açılardan ele alınarak tartışılacaktır.

1. INTRODUCTION

3D registration process will be investigated in detail (Official Gazette, 1965). Registration process of properties on land registry should be explained firstly. Registration of properties was defined in Turkish Civil Law number 4721. Article 997 says that “land registry, which consisted of the book of real estate registers and the book of condominiums, has been used to register the rights of immovable property”. Article 998 says that “immovable property is recorded in the land registry as follows: 1-Land, 2-Independent and permanent rights for immovable property, 3-Single or independent places, which are subject to condominium ownership.”

Studies and registration on property rights are considered today as integrated with real estate, land management models, and 3D-cadastral applications (Aien et al., 2013). Traditionally, land and construction information, which includes geometric, visual and legal data for each property unit, independent section, or common place, has been two-dimensional (2D) and based on 2D land parcels (Kalantari et al., 2008).

3D data that describes the physical dimension of a land parcel and building, while encapsulating the legal information, has the potential to address the complexities of current processes. In this article, the authors addressed the physical world, that is, sourcing the geometry of a 3D model (i.e., building dimensions, semantics, and indoor plans) that will allow for high-level analysis and management and 2D land and property information registration in Melbourne. Integrated approaches can be used for land parcel boundary information, façade, roof and indoors (Jazayeri et al., 2014).

This study is not concerned with surveying methods of parcel boundaries, structure boundaries, floors, independent sections, façade or shared spaces. Rather, this article focuses on the registration process and registration progress according to law 634, condominiums in Turkey. This process also covers the legal world, the physical world and 3D land and property, like Jazayeri’s work, and covers registration issues (Figure 1). The secondary aim of the article is also to discuss the visualization from 3D buildings/structures on the cadastral system in Turkey.

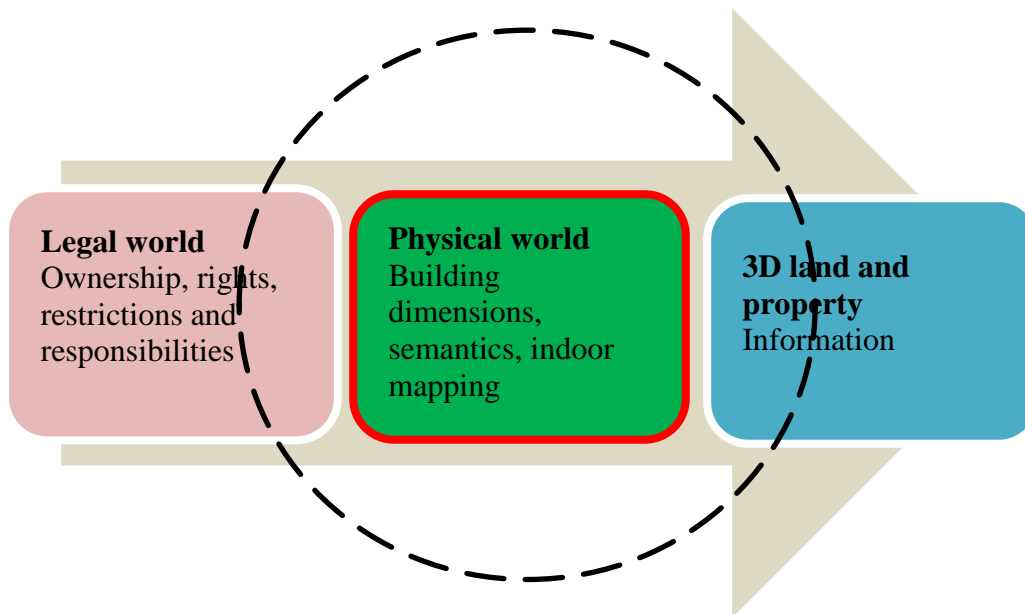


Fig. 1. 3D land and property information dimensions (Jazayeri et al., 2014)

As seen from the figure 2 Spanish Cadastre can make use of the advantages of 3D visualitions on cadastral duties together with parcels boundaries, and building photographs and also other non-graphical information (Doner et al., 2010).

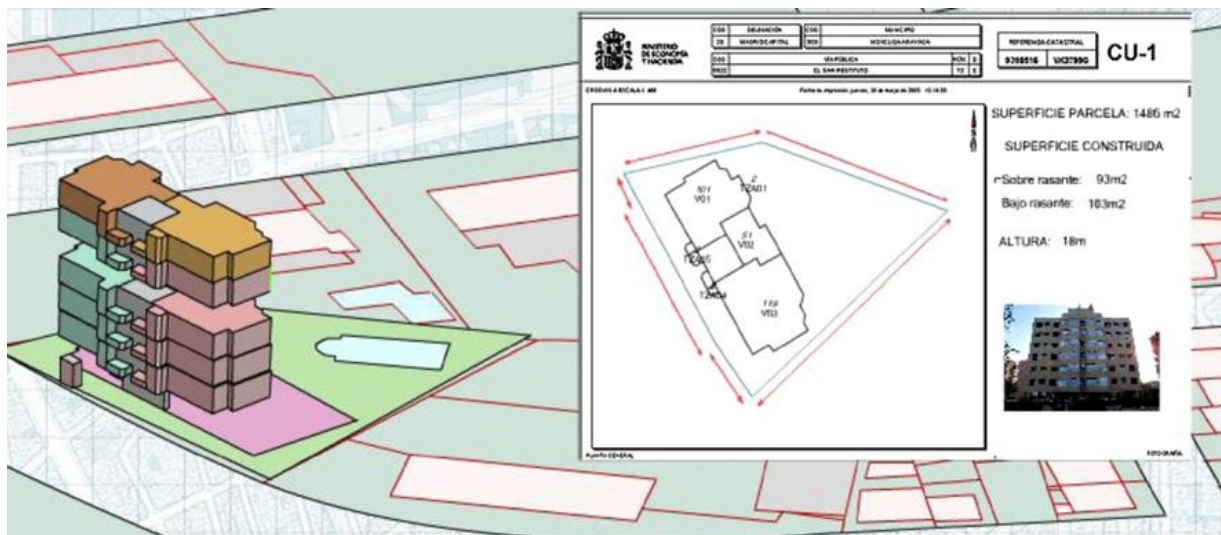


Fig. 2. 3D impression of individual units with floor sketch, photography and relevant attributes (courtesy to the Spanish cadastre) (Doner et al., 2010)

Can Land Registry and Cadastral System be able to show 3D structures like to Spanish in terms of both registraiton and visualization? Moreover, whenever an independent unit is to be sold to someone, Is it possible to make the buyer see the unit on the screen of a Land Registry

or Cadastre Office in Turkey? Especially in recent years, the Turkish Cadastral and Registrial System which is conducted by the General Directorate of Cadastre and Land Registry (GDLRC) can make use of the advantages of e-governance and visualizaiton events thanks to two e-governmental application which are TAKBİS and MEGSİS.

TAKBİS (Tapu ve Kadastro Bilgi Sistemi in Turkish): One of the most basic e-government applications that aims to ensure that ownership information is computerized and any type of query can be made across Turkey. Its objective is to ensure that Title Deed and Cadastre records across Turkey are computerized and all activities are carried out through a computer system so private as well as public properties are effectively monitored and checked (URL-6, 2015).

MEGSİS (Mekansal Gayrimenkul Sistemi in Turkish) It is an open-source application developed by the Land Registry and Cadaster General Directorate, where cadaster data are collected by the central system from local users in the cadaster offices in digital .cad format and are harmonized with land registry data in order to be submitted to stakeholder institution, organization, municipalities and citizens by e-government link. Studies held under Spatial Property System (MEGSİS) are collected under four main topics. i) Web-based application software ii) International standard map services iii) E-Government Services iv) Orthophoto Services (URL-7, 2015).

Figure 3 shows that TAKBİS and MEGSİS can reflect their own information for third parties. It is seen in figure 3 that the two systems can be queried and matched together at the same time on one screen thanks to the e-government application of GDLRC from the website of <http://parselsorgu.tkgm.gov.tr/>. But, a question can arise from someone, are these e-government applications, efficient and effective both for structured and unstructured properties in Turkey? The question can be investigated thanks to this article by exploring the current situations.

İdari Sorgu Coğrafi Sorgu

İl: Trabzon İlçe: Ortahisar Mahalle/Köy: Gazipaşa
 Ada: 499 Parsel: 10

Sorgula

İl	İlçe	Mahalle	Ada	Parsel	Tapu Alanı	Nitelik	Mevki	Pafta
Trabzon	Ortahisar	Gazipaşa	499	10	597,26 m2	Biri altı katlı betonarme dükkan diğeri yedi katlı betonarme apartman ve arsası	-	42

Yol Tarifi Komşu Parselleri Göster | Yazdır

İl	İlçe	Mahalle
Trabzon	Ortahisar	Gazipaşa
Mevkii	Ada	Parsel
	499	10
Nitelik	Yüzölçüm	Pafta
Biri altı katlı betonarme dükkan diğeri yedi katlı betonarme apartman ve arsası	597,26m2	42

Kadastro katmanı TKGM Kadastro Dairesi Tarafından Sağlanmaktadır
Harita verileri ©2015 Basarsoft, Google Görüntü ©2015 CNES / Astrium, DigitalGlobe | Kullanım Şartları

Fig.3. A query for a parcel from GDLRC's e-governance application

2. LEGAL FRAMEWORK

A title deed is defined as the "proof of one's rights on a land" (Dale and McLaughlin, 1999). The Register of Title Deeds is the name given to all registers, books, and documents kept by the state to indicate the owners of immovable properties and their legal status (Tüdeş and Bıyık, 1997). The Register of Title Deeds responds the "who" and "how" questions with regard to a piece of property (Henssen, 1995).

Property rights are guaranteed by international declarations and conventions, as outlined in Article 17 of the Universal Declaration of Human Rights, which was adopted and declared by the General Assembly of the United Nations on December 10, 1948 (URL-3, 2014).

Property rights are guaranteed by Article 1, Protocol no.11 of the European Convention on Human Rights on the protection of the human rights and fundamental freedoms, signed in Rome on November 4, 1950 (URL-4, 2014).

Property rights are also constitutionally guaranteed in Turkey, according to article 35 of the

Constitution of the Republic of Turkey on October 18, 1982 (Official Gazette, 1982a). Taking advantage of some applications about this matter can contribute to the understanding of this article. Even if the investigation of the transformation process from property ownership in unconstructed buildings into condominiums is intended thanks to current-real implementation and its original documentation can also help facilitate a better understanding of this subject. First, there is a legal framework related to ownership and condominiums.

To establish condominiums for building or structures, a list of all independent units, with their valuation and land share and construction management plan, have to be prepared to register them on the land registry, in accordance with law 634 (Official Gazette, 1965)

Land Plans Regulation

This regulation was put into practice in 2008, associated with law numbers 4721 and 634. It aims to draw the layout plan along with buildings/structures with parcel corner points and building corner points on the ground and to draw plans for independent units with their number. Therefore, building or structures within parcel(s) or block(s) can be related to cadastral coordinates and cadastral bases as layout plans. In addition, all plans of independent sections, can be prepared with their independent section numbers (Official Gazette, 2008).

As known, all ownership types for each structure or building in registerable areas must be transformed into condominiums with the required documents detailed below. For example, before starting construction on a structure or building, projects must be prepared by engineers and architects with construction details, such as architectural, static, electric, and mechanical details. Then, all projects must be controlled and evaluated as to whether they follow laws and regulations. If all projects and their controls can be properly suitable to laws and regulations, a construction permit can be prepared for the structure. After receiving the construction permits, the construction process can begin. After completing construction in accordance with construction permit-based projects, the occupancy permit can be prepared. After applying for an occupancy permit, construction, projects, and construction permits are evaluated whether they are the same or not. If all of these can be evaluated as suitable for each other or minor defaults occurred within the tolerance given by laws, an occupancy permit can be prepared. Once again, condominiums can be established for the construction(s) or building(s).

Building(s), type, the number of independent units, the area of common place, the number of floors, the list of independent units with their market value, land share, and the construction management plan have to be prepared by the owners. Then, all independent units can be registered on the title deed as a condominium and all documents to be kept in the Land Registry Office. Therefore, the building stock can be known easily. Thus, all structures and buildings must be registered on the land registry with all current details related to projects, management plans, independent sections, etc., in the name of 3D registration according to the 3D cadastre. Due to the transformation of the ownership type of these buildings into condominium, required data will be acquired to succeed the Turkish 3D cadastre.

3. MATERIALS AND METHOD

Property ownership can be defined in two ways according to the laws on the subject of land registry. The blue title deed form can be produced in two ways: one for unstructured properties, such as land (urban and rural), and one for the structuring but not the registration of condominiums. Condominium processes with a fresh example is seen in detail. First of all, a land registry or title deed for unstructured property (tapu senedi in Turkish) can be seen in figure 4 below.



Fig.4. the Display of property (unstructured) selected example

A condominium covers the independent units with additions and common areas in a building for the registration of property ownership. Independent units in a building or structure can obtain only its own title deed. Title deeds for both additions cannot be produced; they have to be matched with independent unit and common areas.

Property Law 634, article 1, explains that for departments of completed structures, such as floors, apartments, business offices, shops, stores, cellars and warehouses, which are separately used, the independent property rights can be established by owners or co-owners. Subsequent articles explain that buildings, apartments, inns, building communities and other structures located in parcels on the land must be registered on a land registry legally to owners. In the Turkish Cadastral System, a parcel has one land registration page in the Directorate of Land Registry. In addition, if the type of ownership for a building is property ownership or condominiums, every independent section has its own land registration page on the same parcel. First, the owner of a structured property has to obtain permission for his/her property in the form of an occupancy permit given by public authorities according to legal regulations. An occupancy permit is a document given by relevant Municipality/Provincial Special Administration and ensures that a building or structure complies with the relevant bylaws and codes and is safe for people to live in or to use (URL-4, 2014). An occupancy permit indicates that the building was built according to a construction permit in acceptance

of governmental institutions, such as a municipality in urban areas and a special provincial administration in rural areas.

It is one of the 35 title deed records (26 shops in A Block and 9 flats in B Block) from the constructed buildings after that establishment of condominium. The building was constructed on the parcel as two blocks A and B with a total 35 independent sections. The ownership of the parcel was transformed into property ownership or condominium with 35 title deeds.

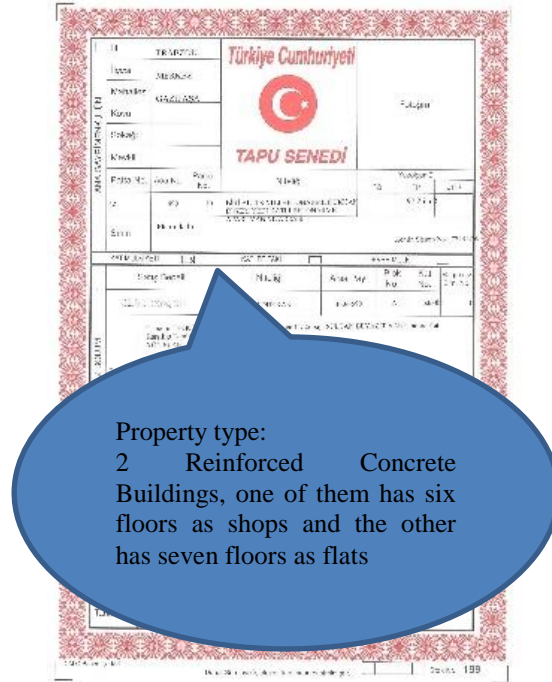


Fig.5. Title Deed of property selected example (structured)

4. FINDINGS

The current situation of all buildings in urban areas must be matched with the title deed registry record according to law 634. First, the status should be changed regarding the type of property, and the flat has to be registered in the records. After that, the ownership transformation process, from an unstructured property to a structured legal property, can be done perfectly. This process is also given via a graphical structure to be understandable for everyone who intends to comprehend this subject, as shown in figure 6 below.

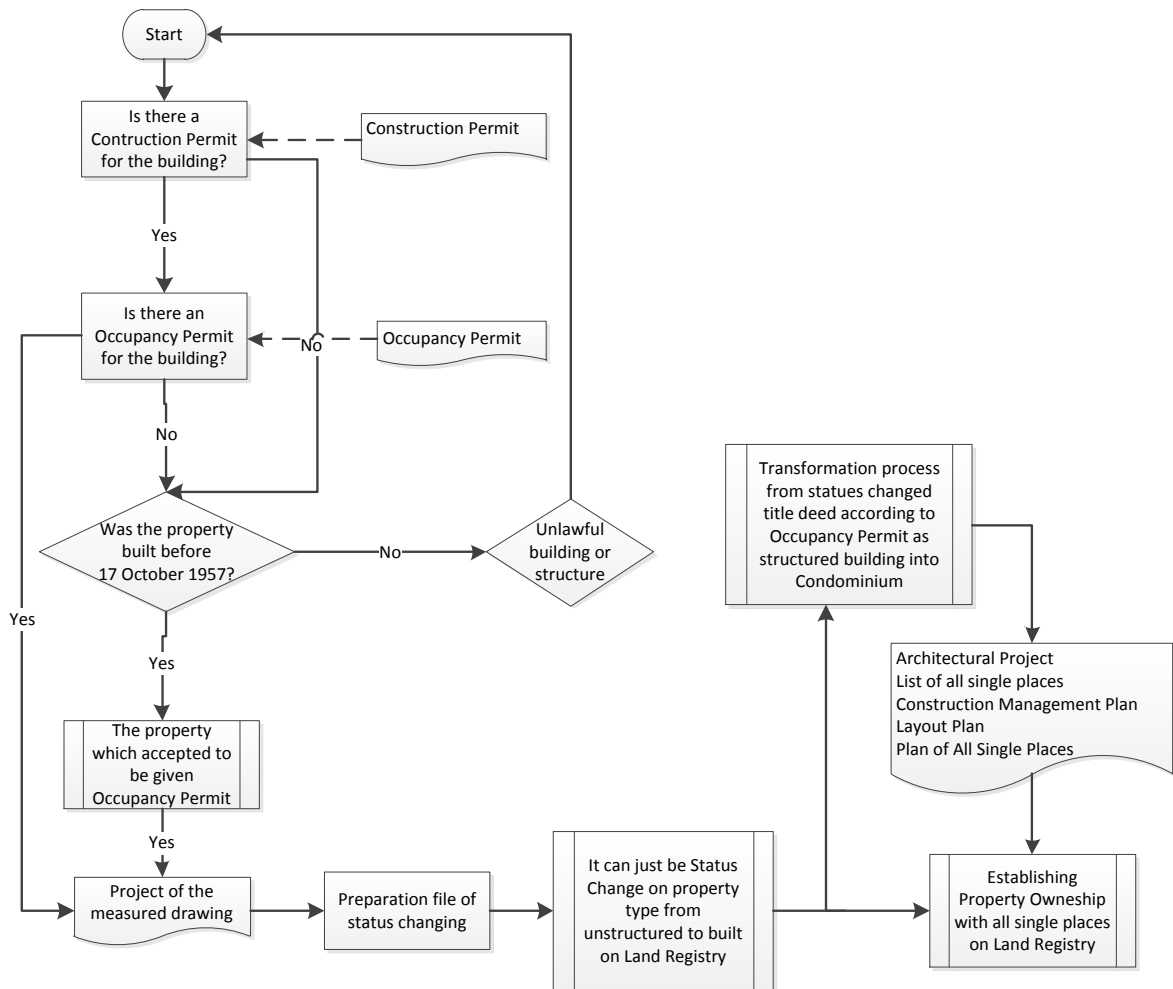


Fig. 6. Property (constructed) transformation process in terms of registration on title deed

It can also be emphasized in this paper that before constructing a building or structure, a construction permit has to be attained, which can only be given by governmental institutions, such as municipalities and provincial special administrations according to a zoning plan or regulations for planned and unplanned areas. A construction permit is composed of information about parcels and buildings to be built, such as parcel areas, parcel ownership, information about dimensional drawings, total construction area, number of floors, number of building (if more than 1), personal information of both the owner of the parcel and the governmental personnel (generally architects, civil engineers, mechanical engineers), independent sections with land share, common spaces, and so on. The construction type, height, independent sections, common spaces, and additional places have to be drawn on paper with a defined scale in an architectural project of zoning plans or regulations for unplanned areas. Architectural projects are only allowed with construction permits; otherwise, they are not allowed. Construction can be started via the construction project under the control of governmental organizations that determine whether the construction is going well in terms of related regulations. Upon completing the construction, an occupancy permit can be attained. Then, thanks to this permit, it can be ensured that a building or structure complies

with the relevant bylaws and codes and is safe for people to live in.

Buildings have been accepted as legal buildings according to laws related to property ownership in Turkey. The difference between these structures and modern construction is only these permits, in addition to architectural projects. Whereas modern buildings or constructions have to be designed and plotted on paper or CD via architectural projects to get permits, cultural assets like these bazaars do not. Therefore, building survey projects for all structures have to be designed and plotted on paper for the transformation process to occur from property ownership into condominium.

5. CONCLUSION AND SUGGESTIONS

Whenever normal buildings or structures are constructed on parcel(s), which must be registered on title deeds, the property ownership of these structures must be transferred into condominiums with defined documents and projects. These are construction projects, occupancy permits and construction management plans approved by the relevant institutions, such as municipalities, provincial special administrations, and the Union of Chambers of Turkish Engineers and Architects, indicated in laws 634 and 3194, which are needed for ownership transformation. The ownership transformation can be carried out according to these projects and documents by the Directorate of Land Registry. Then these projects and documents can be stored by GDLRC in the Land Registry Offices and Municipalities.

The cadastral map cannot be reflected in a 3D perspective for the structures with a plan and its project stored in the Land Registry Office so that all these projects and documents can reflect the real situation with a 3D perspective. Nevertheless the transformation process from property ownership to condominium on a title deed can be evaluated to be acceptable as 3D cadastre registration in Turkey. Therefore, this transformation process is also important in the name of the transition to 3D cadastre from 2D cadastral maps, 2D projects, and other documents. The required documents and projects should be obtained by owners so that correct registration can be accomplished by the Directorate of Land Registry on the title deed.

According to all information detailed above, first, the type of building registered on the title deed must be transformed into the type of building in the real world and then written in the table. Thus, the construction type of the building can represent its true form. Although all these buildings are 3D in the real World, why are they registered on the title deed and cadastral bases or maps in 2D? Is registration and presentation of these buildings in 3D, especially related to condominium events possible?

There are a lot of documents related to the registration and visualization of structured properties in Cadastral Offices and Land Registry Offices and Municipalities in Turkey. But, all of these documents are taken just only in paper format. Turkish Land Registry and Cadastral Systems have been carried out as e-governance applications like TAKBİS and MEGSİS via the internet. But, these systems are not yet ready in the name of registration and visualization for most particularly structured immovable properties. Turkish Cadastral and Registrial Systems should be converted from classic format into the digital format. Particularly, if the transformation process is to be accomplished carefully for structured buildings, all these documents and projects related to them would be seen in e-governance applications in 3D format.

REFERENCES

- Aien A., Kalantari M., Rajabifard A., Williamson I. and Wallace J., 2013. Towards integration of 3D legal and physical objects in cadastral datamodels, *Land Use Policy*, 35, 140– 154
- Dale, P. F. ve McLaughlin, J. D., 1999. *Land Administration*, Oxford University Press, New York, ISBN: 0-19-823390-6, 169 pages.
- Doner F., Thompson R., Stoter J., Lemmen C., Ploeger H., Oosterom P., and Zlatanova S., 4D cadastres: First analysis of legal, organizational, and technical impact—With a case study on utility networks, *Land Use Policy* 27 (2010) 1068–1081.
- FIG, 1995, FIG Statement on Cadastre, Publication No. 11, Fédération Internationale des Géomètres http://www.fig.net/commission7/reports/cadastre/statement_on_cadastre.html.
- Henssen, J., 1995. Basic Principles of the main cadastral Systems in the World, Proceedings Seminar “Modern Cadastres and Cadastral Innovations” in Delft, FIG Commission 7, Melbourne.
- Jazayeri, I., Rajabifard, A., and Kalantari M., 2014. A geometric and semantic evaluation of 3D data sourcing methods for land and property information, *Land Use Policy* 36 (2014), 219–230.
- Kalantari, M., Rajabifard, A., Wallace, J., Williamson, I., 2008. Spatially referenced legal property objects. *Land Use Policy* 25 (2), 173–181.
- Şahinalp MS and Günel V., 2012. Spatial Analysis Of Bazaar Systems: Their Location and Forms in the Ottoman Urbanism Culture, *MILLI FOLKLOR*, 93, 149-168.
- Official Gazette, 1934, Land Law, Başbakanlık Basımevi (2892), 1458-1435. <http://www.mevzuat.gov.tr/MevzuatMetin/1.3.2644.pdf>
- Official Gazette, 1965, Property Ownership Law, Başbakanlık Basımevi 2412038, 5, 4, 413-4177. <http://www.mevzuat.gov.tr/MevzuatMetin/1.5.634.pdf>
- Official Gazette, 1982a, Constitution of Republic of Turkey, Başbakanlık Basımevi 17863, 129-182. <http://www.mevzuat.gov.tr/MevzuatMetin/1.5.2709.pdf>
- Resmi Gazete, 1982b. Dünya Kültürel ve Doğal Mirasının Korunmasına Dair Sözleşmeye Türkiye Cumhuriyetinin Katılmasının Uygun Bulunduğu Hakkında Kanun, Tarih, 17670.
- Official Gazette, 1983a, Code of Protection of Cultural and Natural Properties, Başbakanlık Basımevi (18113), 5879-5900. <http://www.mevzuat.gov.tr/MevzuatMetin/1.5.2863.pdf>

Resmi Gazete, 1983b, Milletlerarası Sözleşme, Bakanlar Kurulu Kararı, Karar Sayısı: 8/4788, 17959.

Official Gazette, 1985, Zoning Law, Başbakanlık Basımevi (18749), 6677-6698, <http://www.mevzuat.gov.tr/MevzuatMetin/1.5.3194.pdf>

Official Gazette, 2001, Turkish Civil Code, Başbakanlık Basımevi 24607, 8049-8210. <http://mevzuat.basbakanlik.gov.tr/Metin1.Aspx?MevzuatKod=1.5.4721&MevzuatIliski=0&so urceXmlSearch=&Tur=1&Tertip=5&No=4721>

Official Gazette, 2008, Land Plans Regulation, Başbakanlık Basımevi (12038), <http://www.resmigazete.gov.tr/eskiler/2008/08/20080827-1.htm>

Official Gazette, 2012. Regulation Related to Determination and Registration for Immovable Cultural Heritage Needed Protection and Protected Area, Başbakanlık Basımevi, 28232.

Tanaç Zeren, M., 2012. Understanding and Re-Using The Cultural Heritage Buildings, *Structural Analysis of Historical Constructions*, 1, 3, 2800-2808

Tüdeş, T. ve Bıyık, C., 1997. Information of Cadastre, Karadeniz Teknik Üniversitesi Basımevi, 2.Baskı, 518 Sayfa, Trabzon.

URL-1, 2014. <http://kvmgm.kultur.gov.tr/TR,44798/turkiye-geneli-korunmasi-gerekli-tasinmaz-kultur-varlig-.html>. 18.09.2014

URL-2 2014. <http://whc.unesco.org/en/conventiontext/>

URL-3. Universal Declaration of Human Rights, All Human Rights for All, Fiftieth Anniversary of the Universal Declaration of Human Rights (1948-1998), <http://www.un.org/en/documents/udhr/index.shtml>, 18.09.2014

URL-4. Convention for the Protection of Human Rights and Fundamental Freedoms, Council of Europe, Registry of the European Court of Human Rights, Rome, <http://www.conventions.coe.int/Treaty/en/Treaties/Html/009.htm>, 18.09.2014

URL-5, 2014. <http://vancouver.ca/home-property-development/occupancy-permit.aspx>. 18.09.2014

URL-6, 2015. [44] URL-10, <http://www.tkgm.gov.tr/tr/TAKBIS>, 11.02.2015.

URL-7, 2015. <http://cbs.tkgm.gov.tr/uygulama.aspx>. 11.02.2015

Uysal M., 2010. A Spatial Analysis of Traditional Konya Bazaar from a Historical Perspective, *MILLI FOLKLOR*, 86, 149-162.

BIOGRAPHICAL NOTES

Yakup Emre Coruhlu is an Assistant Professor in Division of Land Management on Department of Geomatics Engineering at the Karadeniz Technical University (KTU) in Trabzon in Turkey since April 2014. He graduated from the Department of Geodesy and Photogrammetry Engineering at KTU in 2004. He received his MSc degree in June 2007 and his PhD degree in July 2013. He worked for private sector as technician in two years, for university as research assistant in 3 years, public sector as geomatics engineer in seven years in the same time branch manager of real estate and investment in six year. His research interests are foundational properties and their management, cadastre, 3D cadastre and cadastre information system, land registry and condominium and also immovable cultural heritages.

Osman Demir is an Associate Professor in Division of Land Management on Department of Geomatics Engineering at the Karadeniz Technical University (KTU) in Trabzon in Turkey. He graduated from the Department of Geodesy and Photogrammetry Engineering at KTU in 1989. He received his MSc degree in November 1993 and his PhD degree in September 2000. He worked for private sector as geomatics engineering in three years, university as academicians since 1993, and public sector as head of commission for protection of natural heritage in Trabzon Zone since 2010. His research interests are cadastre, 3D cadastre and cadastre information system, land registry and management of natural protected areas and foundational properties.

Merve Ozlem Murat is a Research Assistant in Division of Land Management on Department of Geomatics Engineering at the Karadeniz Technical University (KTU) in Trabzon in Turkey. She graduated from the Department of Geodesy and Photogrammetry Engineering at KTU in 2012. Her research interests are cadastre, cadastre information system, and management of natural protected areas.