Towards Turkish LADM valuation information model country profile

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Key words: LADM Valuation Information Model; ISO 19152:2012 Land Administration Domain Model (LADM); Immovable property valuation, Turkey Country Profile.

SUMMARY

A recently established joint working group under International Federation of Surveyors (FIG) Commission 9 (Valuation and the Management of Real Estate) and FIG Commission 7 (Cadastre and Land Management) has started the development of an information model for the specification of valuation information maintained by public authorities especially for property taxation. In this initiative, ISO 19152:2012 Land Administration Domain Model (LADM) has been taken as the basis for the development of a Valuation Information Model. A first version of the LADM Valuation Information Model was created based on international standards, literature survey and data gained from questionnaires replied by the national delegates of FIG Commission 9 and FIG Commission 7. The planned further works include (i) creating country profiles, and (ii) development of prototypes for the assessment of country profiles and conceptual model itself.

This paper presents an overview of immovable property valuation conducted for taxation purposes in Turkey. Based on this overview, it also proposes a country profile of LADM Valuation Information Model in Turkey case. The country profile covers valuation activities for annually levied recurrent property taxes (i.e. Land Tax and Building Tax) in Turkey, characteristics and spatial aspects of valuation units used in property valuation, property valuation approaches employed for property taxation, transaction prices used in valuation procedures, parties involved in valuation practices, and information on taxes on immovable property. The profile also includes the content of code lists that detail administrative valuations in relation to property tax assessments in Turkey. The proposed profile is evaluated with Unified Modeling Language (UML) instance level diagrams in examples of property taxes on land and building in Turkey for assessing whether the profile fulfills the needs of information management aspects of valuation activities for property taxation.

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INTRODUCTION

Cadastre was created for taxation purposes and its aim was to record the land value subject to land tax and the identification of tax payer (Silva and Stubkjær, 2002). However, it changed from being a fiscal cadastre primarily as a basis for land valuation and taxation to a legal cadastre at late of 1800s (Enemark and Sevatdal, 1999). Today's cadastral systems serve mostly for legal purposes in continental Europe, while in some countries cadastral systems serve both fiscal and legal purposes, such as the Kadaster in the Netherlands (Stoter, 2004).

According to FIG (1995), cadastre is a parcel based, and up-to-date land information system containing record of interests in land and it usually includes geometric description of land parcels linked to other records such as interest in land, ownership of this interest and often the value of the land. Traditional cadastre can provide geographical and legal datasets concerning the legal objects required for property valuation and taxation. However, cadastral datasets used for identification and registration of legal information in relation to immovable properties, may not be sufficient for today's complex taxation and valuation practices. More specifically, they only provide two-dimensional geometry and legal information about property units, whereas valuation practices also require detailed physical, geographic, economic, and environmental characteristics related to components of the property units. Moreover, information produced through valuation activities and market indicators should be recorded for further market analysis, dispute resolution and quality control processes. These requirements reveal the need of the development valuation registries or databases which record input and output data used and produced in single or mass appraisal processes.

A recent initiative which is carried out by a Joint Working Group established under International Federation of Surveyors (FIG) Commission 9 (Valuation and the Management of Real Estate) and FIG Commission 7 (Cadastre and Land Management) has started development of an information model which could be used for constructing valuation registries or databases. In this initiative, LADM has been taken as the basis for the development of the valuation information model, since LADM is an international standard for the domain of land administration, which is related to management of information concerning the ownership, value and use of land. The current version of LADM mainly focuses on the legal and administrative aspects of land administration, but it has been extended to cover valuation and taxation related datasets with this research.

The purpose of LADM based valuation information model, namely LADM Valuation Information Model is to specify semantics of inventories used in immovable property valuation made for public purposes and relations between them (see Figure 1). It has been designed to

facilitate recording information in relation to all stages of property valuation applied for recurrently levied immovable property taxation, namely the identification of properties, assessment of properties through single or mass appraisal procedures, generation and representation of sales statistics. It enables the recording of data concerning the parties that are involved in valuation practices, property objects that are subject of valuation, as well as their geometric, legal, physical, economic, and environmental characteristics. While extending LADM for public valuation purposes, the international procedural valuation standards, immovable property measurement standards and 2D/3D geographical data standards that related to immovable properties are used especially for code list values. It is aimed that LADM Valuation Information Model will provide public bodies a common basis for the development of local or national databases, enable integration of valuation databases with cadastral databases, and can act as a guide for the private sector to develop information technology products.

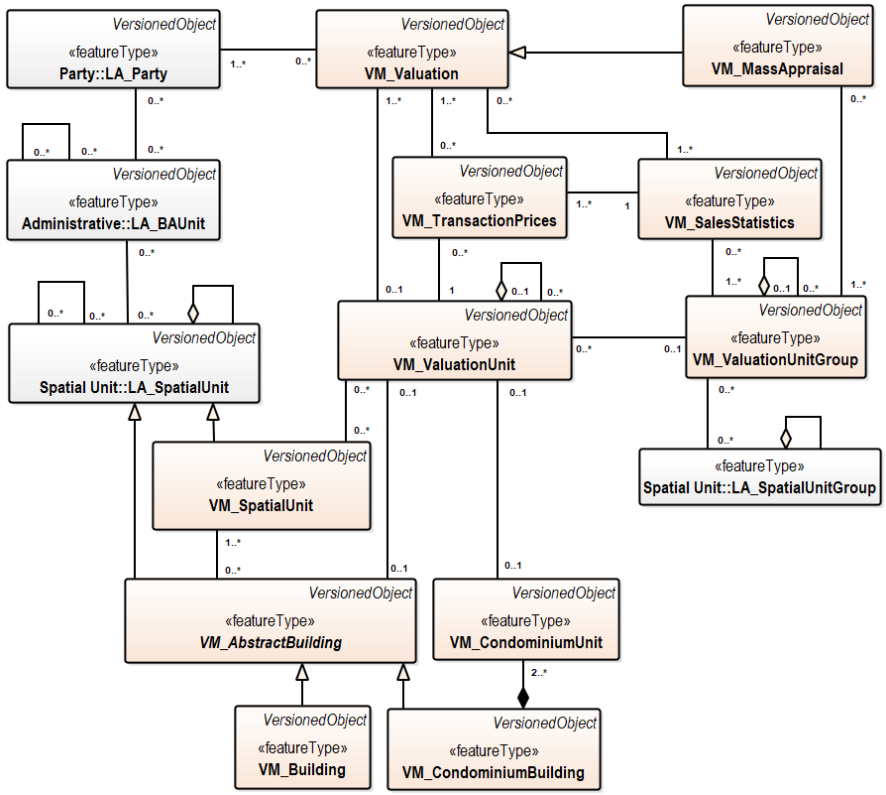

Figure 1 LADM and Valuation Information Model

The conceptual structure of the proposed LADM Valuation Information Model was presented in previous studies (Kara et al., 2017; Kara et al., 2018). Further working steps are determined by the FIG joint working group as (1) creating country profiles and (2) development of prototypes for the assessment of country profiles and conceptual model itself.

This paper presents a comprehensive country profile of the LADM Valuation Information Model in Turkey case. The main purpose is to reveal current situation of valuation activities for annually levied recurrent taxes (i.e. Land Tax and Building Tax) on immovable properties, characteristics and spatial aspects of valuation units used in property valuation, property valuation approaches employed for property taxation, transaction prices used in valuation procedures, parties involved in valuation practices, and information on taxes on immovable property in Turkey. The profile also includes the content of code lists that detail administrative valuations in relation to property tax assessments in Turkey and have importance on semantics in fiscal aspect of land administration.

The remaining part of the paper is organized as follows: Section 2 gives an overview of property valuation activities conducted for recurrently levied immovable property taxation in Turkey. Next, Turkey Country Profile for LADM Valuation Information Model is presented in Section 3. This section also demonstrates a few example of valuation conducted for land and building taxes in Turkey with Unified Modeling Language (UML) instance level diagrams. The purpose is to determine whether the proposed profile fulfills the needs of information management aspects of valuation activities for property taxation. The last section suggests further research and concludes the present paper.

1. AN OVERVIEW OF IMMOVABLE PROPERTY VALUATION IN TURKEY

This section describes property valuation activities conducted for recurrently levied immovable property taxes in Turkey.

There are two types of annually levied recurrent taxes on immovable property in Turkey, namely building tax and land tax. The main principles on immovable property taxes are given in the Property Tax Law No. 1319, dated 1970. Furthermore, the Tax Procedure Law No. 213 (1961) and the Tax Assessment Statute No. 7/3995 (1972) contain the rules regarding assessment procedures of immovable properties.

The land tax is levied from unimproved properties (i.e. cadastral parcels) and the building tax is levied from improved properties which cover both ’legal buildings’ and their legal parts (e.g. condominium units) and ’illegal buildings’. Legal buildings refer to buildings that have an occupancy permit which legally documents the building is suitable for occupancy. Illegal buildings cover structures that were not constructed in compliance with relevant legislation (Çağdaş, 2013).

The land and building taxes are levied according to the ‘tax value’ of properties. According to the Tax Assessment Statute, tax value defined as the market value of an immovable property that is subject to property taxes. However, in practice, tax value is generally lower than the market value. The tax values of urban and rural parcels are assessed by on the basis of unit parcel values determined by local valuation commissions in every four years, for each street in urban areas and each district in rural areas. The building tax values are generally assessed with a cost approach based on the ‘cost of building per square meter’ determined by the Ministry of

Finance and the Ministry of Public Works and Settlement. These tax values are updated between the assessment periods by the half of the revaluation rate which indicates annual changing rate in the Wholesale Price Indices computed by Ministry of Finance.

In Turkish property taxation system, the tax rates have been determined by the law with different tax rates being imposed on properties according to their usage and location. The current tax rate is 0.1% for residential buildings, 0.2% for non-residential buildings, 0.1% for rural land, and 0.3% for urban land located outside metropolitan municipality boundaries. Land and buildings located within the determined boundaries of metropolitan municipalities are taxed at twice that of the above-mentioned tax rates; namely 0.2% for residential buildings, 0.4% for non-residential buildings, 0.2% for rural land and 0.6% for urban land. Some properties are temporarily or permanently exempt from property tax. According to the law, land parcels located outside municipal areas and mostly used for agricultural purposes are exempt from land tax. Immovable properties that belong to public organizations, and properties used for health, religious, transportation, infrastructure and other public services are also have given tax exemptions (Çağdaş, 2013).

The taxpayer is the owner of the building/land, the owner of any usufruct right over the building/land or if neither of these exists any person that uses the building/land is considered as its owner (Revenue Administration, 2016).

The Tax Assessment Statute details the valuation methods used and their data requirement for property taxation in Turkey. However, it should be emphasized that valuation approaches specified in the Tax Assessment Statute are not effectively applied in practice, even though it is still in force.

The statute has determined different methods and data requirements for the three different taxation objects, namely, improved property, unimproved property (cadastral parcel) located in urban areas, and unimproved property (cadastral parcel) located in rural areas.

According to the statute, tax values for improved properties should be determined via sales comparison approach, if there is enough sales data for comparison. Table 1 shows that the improvement characteristics utilized when the building tax values are determined by sales comparison approach.

Table 1 Data required for valuation of improved properties

Improvement (building) characteristics	Characteristics value
Distance	Proximity to point of interest, city center, parking, gardens, schools, public transportation, seafront, main road
Address (location)	-
Existence of urban infrastructure	Water, gas, electricity, sewerage
Area	-
Floor number	-
Number of rooms	-
Number of bathroom	-
Interior quality (comfort)	-
Direction of building	Street-front, rear front
Neighborhood	-
Elevator	-
Heating/air conditioning	
Annex	-
Landscape (view)	-
Building use type	Residential, office, other specific building
Building construction type	Steel framework, concrete framework, stone, stone frame, timber, shanty, sun-dried or mud brick
Building quality type	Luxury, first class , second class , third class, simple construction

If tax value of an improved property cannot be determined by sales comparison approach, it is determined by cost approach. In practice, the improved property values are assessed by cost approach. Accordingly, improved property value consists of construction cost of improvements, contractor profit which is 20 % of construction cost and value of parcel that building is located. The construction cost of improvements is calculated by multiplying gross floor area of building with 'cost of building per square meter'. The cost of building per square meter is determined by the Ministry of Finance and the Ministry of Public Works and Settlement every year on the basis of building type, use and quality. If the improvement includes elevator and heating/air conditioning, values of these facilities are added to the construction cost, 6 % and % 8 for each elevator and for heating/air conditioning, respectively. Any value is added to the construction cost due to elevator if a building unit is (i) at ground floor level, or (ii) below the ground floor level which do not benefit from elevator. The Tax Assessment Statute specifies some further rules for calculating construction costs, as follows:

- In multi-storey buildings, calculated construction cost is decreased by 10 – 15 % for building units below ground floor level, 3 % for ground level, 2 % for fourth floor, 3 % for fifth floor, and 4 % for sixth or higher floors.

- The calculated construction cost is decreased by between 4 – 95 % as physical obsolescence in accordance with building construction type and building age,

- If a building unit is directed to a square, a beach or a street, then calculated total construction cost is increased by 5 – 10 %.

- If building unit use type is office, then calculated total construction cost is increased by 15 -25 % for ground level, 10 – 15 % for first floor, and 5 -10 % for second floor.

If it is not possible to apply above-mentioned cost approach, tax value of improved properties should be determined by income approach. In this approach, the tax value of an improved property is calculated by multiplying annual gross income by ten. The annual gross income refers to the average annual rent that can be earned in the neighborhood of that building.

Tax value of unimproved properties or cadastral parcels in urban and rural areas is calculated by multiplying parcel area and parcel unit price per square meter assessed by local valuation commissions every four years. Between general assessment periods, these unit values are updated by the half of the revaluation rate which is determined by the Ministry of Finance. Table 2 and Table 3 presents factors that should also be taken into consideration for the determination tax values of unimproved properties in urban and rural areas, respectively.

Table 2 Data required for valuation of unimproved properties (parcels) in urban areas

Parcel characteristics	Characteristic value type
Distance	proximity to point of interest, city center, parking, gardens, schools, public transportation, seafront, main road
Address (location)	-
Existence of urban infrastructure	water, gas, electricity, sewerage
Appropriate building construction type for the future	steel framework, concrete framework, stone, stone frame, timber, shanty, sun-dried or mud brick
Land use plans	-
Size of land lot and construction site	-
Topography of land	-

Table 3 Data required for valuation of unimproved properties (parcels) in rural areas

Rural land characteristics	Characteristic value type
Rural land type	barren land, bottom land, wetland
Rural land fertility type	good, medium, week and non-fertile
Rural land class type	dry land, irrigated land and lain in rainy climate
Crop plant type	arm, meadow, vineyard, tea and fruit garden, olive grove, nursery, poplar wood, etc.
Agricultural product type in the alternation	cereals, industrial plants, feed crops, edible legume, vegetables, etc.

Although the Tax Assessment Statute provides detailed methods and characteristics that should be taken into consideration during the valuation procedures, most of these are not applied in practice since there is a legal gap between the law and the statute. In other words, the Tax Assessment Statute is in force, but not used fully in practice. Although this situation does not

conform to the hierarchy of norms in law, tax values of properties are determined according to the official statements issued by the Ministry of Finance**,** instead of the Tax Assessment Statute. The official statements regarding Property Tax Law are published in every year and give information about how properties are valued. The actual data used in valuation of improved and unimproved properties according to official statements regarding Property Tax Law is presented in Table 4, below.

Table 4 Data required for valuation of buildings and parcels according to the official statements related to the Property Tax Law

Improvement (building) characteristics	**Definitions and characteristic value type**
The cost of building per square meter	It is determined by the Ministry of Finance and the Ministry of Public Works and Settlement every year on the basis of building construction type, use and construction quality type.
Building use type	Type of building usage defined by Turkish Property Tax Law (residential, office, other specific building).
Building construction type	Type of construction (steel framework, concrete framework, stone, stone frame, timber, shanty, sun-dried or mud brick).
Building quality type	Construction class of buildings defined in Turkish Property Tax Law (luxury, first class, second class, third class, simple construction).
Gross floor area	Total gross area of building
Physical obsolescence	It is calculated by a scheme given in Tax Assessment Statute
Elevator	Existence of the elevator.
Heating/air conditioning	Existence of the heating and/or air conditioning.
Urban land parcel characteristics	
Land parcel area	Area of land parcel

Parcel unit price per square meter	It local valuation commissions every four years and these values are updated between the assessment periods by the half of the revaluation rate.
Rural land characteristics	
Land parcel area	Area of land parcel
Parcel unit price per square meter	It local valuation commissions every four years and these values are updated between the assessment periods by the half of the revaluation rate
Rural parcel type	Type of rural parcel (barren land, bottom land, wetland)

In a nutshell, , tax values of improved and unimproved properties are currently calculated by the equation 2.1 and 2.2 according Property Tax Law and the official statements issued by the Ministry of Finance. In equation 2.1 and 2.2, $V_{imp.\ pro.}$ and $V_{unimp.pro.}$ represent tax value of improved and unimproved properties; A_{impr} and A_{parcel} denotes areas of building and parcel areas; V_{Parcel} stands for the unit price per square meter of parcels; C_{impr} represents cost of construction per square meter; o, e, h stand for physical obsolescence of improvements, availability of elevator and heating/air conditioning in improvements, respectively.

$$V_{imp.\ pro.} = \left[\left(A_{impr} \times C_{impr}\right) \times (1 - o) \times (1 + (e + h)\right] + (A_{parcel} \times V_{Parcel}) \quad (2.1)$$

$$V_{unimp.pro} = A_{parcel} \times V_{Parcel} \quad (2.2)$$

Using the information obtained from this section, the LADM Valuation Information Model Turkish Country Profile is proposed in the next section. The country profile is developed in accordance with the Property Tax Law and official statements outlined above.

2. LADM VALUATION INFORMATION MODEL TURKISH COUNTRY PROFILE

This section describes Turkish Country Profile of the LADM Valuation Information Model. In the country profile, 'TR_' prefix is used for only newly added classes. Figure 2 shows classes of LADM Valuation Information Model Turkish Country Profile. The turquoise, vanilla and white colored classes present the country profile, valuation information model, and LADM, respectively.

Table 4 presented in the previous section shows data required for Turkish Country Profile of the LADM Valuation Information Model. Some of this data has already been defined in the LADM Valuation Information Model. For example, building use type and gross floor area of building attributes were specified in the VM_AbstractBuilding class and the parcel area attribute were specified in the LA_SpatialUnit class. Moreover, physical obsolescence and the

cost of building per square meter attributes were specified in the VM_CostApproach class. But the model is still extended with new classes and attributes for fully representing country applications in Turkey. Therefore, the LADM Valuation Model is extended for the country profile with TR_Valuation, TR_ValuationUnitGroup, TR_Parcel, TR_AbstractBuilding, TR_CondominiumUnit and TR_ExtTaxation classes. Moreover, the model is extended with construction type, quality type, elevator, heating/air conditioning, parcel type, parcel unit price per square meter, reassessment rate and date, valuation group type, and valuation party type attributes for completely representing the valuation activities conducted for recurrently levied immovable property taxes in Turkey.

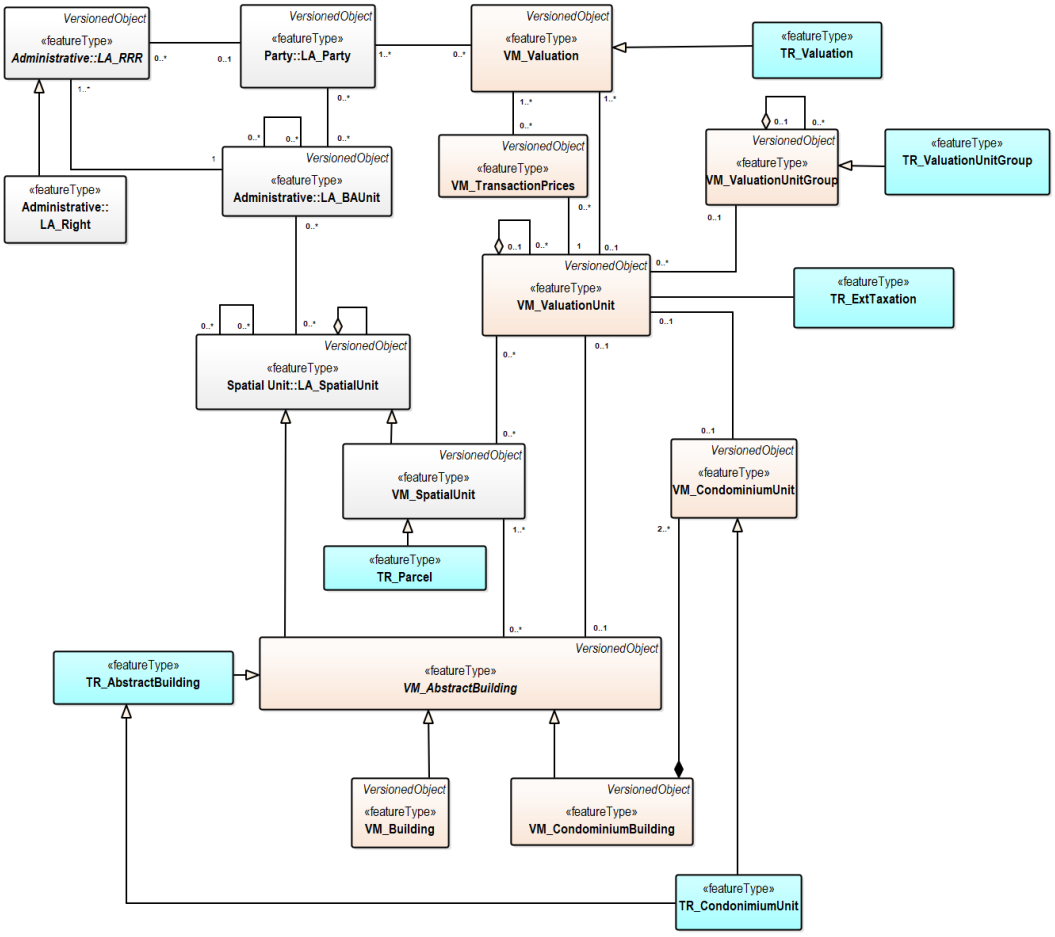

Figure 2 LADM Valuation Information Model Turkish Country Profile - An overview

There are two valuation unis with the subject of recurrently levied immovable property taxes in Turkey, namely unimproved property (cadastral parcel) and improved property. In the LADM Valuation Information Model, LA_SpatialUnit has been extended with the VM_SpatialUnit and VM_AbstractBuilding for representing parcels and buildings and legal building parts (i.e. condominium units) of improved properties. In the country profile, these spatial classes is again

extended with TR_AbstractBuilding, TR_CondominiumUnit and TR_Parcel classes. Figure 3 and Figure 4 presents the characteristics of spatial part and code list classes of the country profile, respectively. The TR_AbstractBuilding class includes status, quality, type, elevator and air conditioning attributes. The quality, type, elevator and air conditioning attributes are used for calculating tax value of improvements. In Turkey, building tax covers both 'legal buildings' and 'illegal buildings' and the status attribute expresses these values. TR_CondominiumUnit presents the condominium property. The land and improvements together constitutes the condominium property. In the country profile, TR_CondominiumUnit class has multiple inherence that is because do not harm the general structure of the LADM Valuation Information Model. TR_Parcel includes parcel number and parcel type attributes. The parcel type attribute in the TR_Parcel specifies the types of urban parcel, rural parcel, and rural parcel types, such as barren land, bottom land and wetland. As mentioned in the previous section, parcel type is utilized when determining tax values of unimproved properties (parcels) in urban and rural areas.

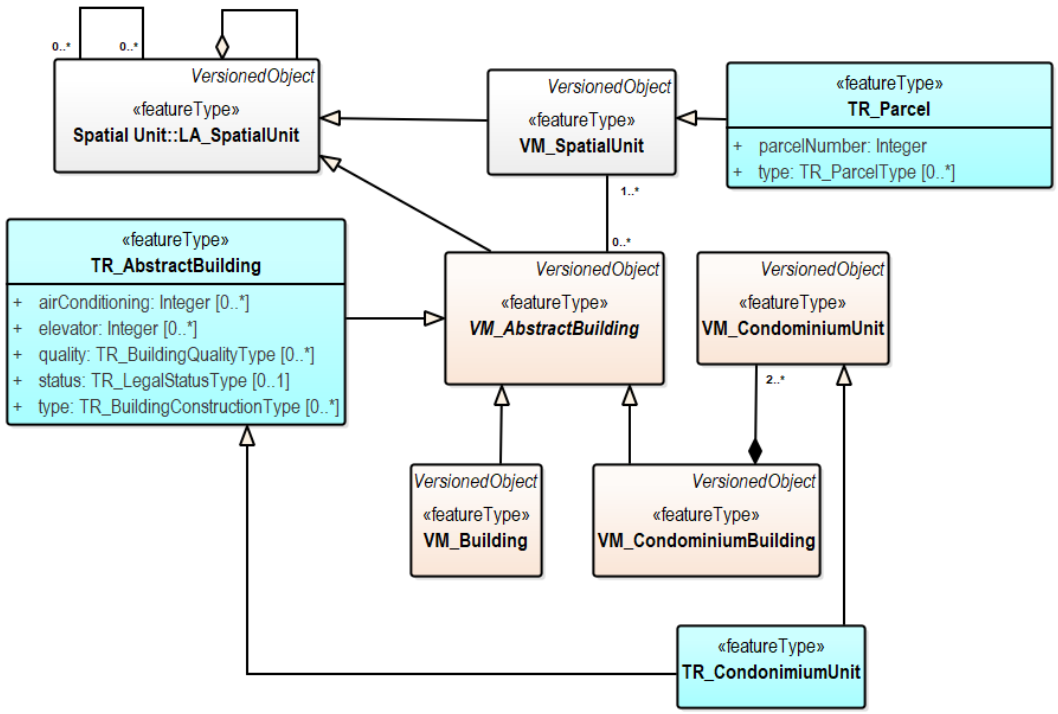

Figure 3 Spatial classes of LADM Valuation Information Model Turkish Country Profile

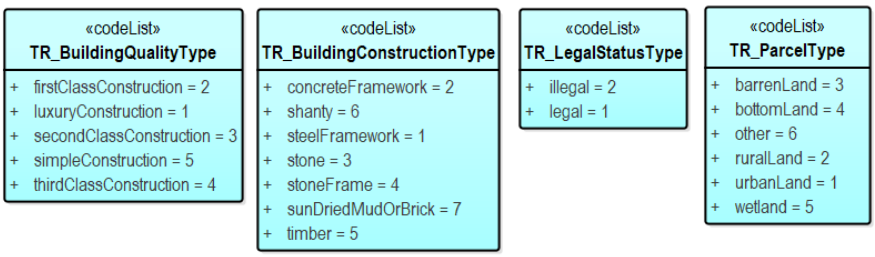

Figure 4 Code lists of spatial part of the Turkish Country Profile

The tax value of a parcel is assessed by the parcel area and the parcel unit price per square meter. The different basis are specified in the Property Tax Law for the determination of the land parcel unit price per square meter, such as street, thoroughfare, neighborhood, parcel block, and other value zones in urban areas; and village, district and province in rural areas. These areas are identified by local valuation commissions. Figure 5 shows the VM_ValuationUnit, VM_ValuationUnitGroup, TR_ValuationUnitGroup feature classes and TR_ValuationUnitGroupType code list. The VM_ValuationUnit class defines common characteristics for the valuation objects through attributes, such as valuation unit type, neighborhood type, and available utility services. The VM_ValuationUnitGroup is extended with the TR_ValuationUnitGroup and TR_ValuationUnitGroupType classes. These classes can be employed for determining valuation unit areas or zones in Turkey.

VM_Valuation class of the LADM Valuation Information Model is one of the main class that specifies value types, assessed value, valuation date, and valuation approaches. This class is extended with the TR_Valuation class for specifying valuation unit group based value per square meter, date of valuation unit group based value, reassessment rate and date of reassessment (see Figure 6). As mentioned above, valuation unit group based value per square meter is determined by valuation local valuation commissions every four year. These values are updated between the assessment periods by the half of the revaluation rate.

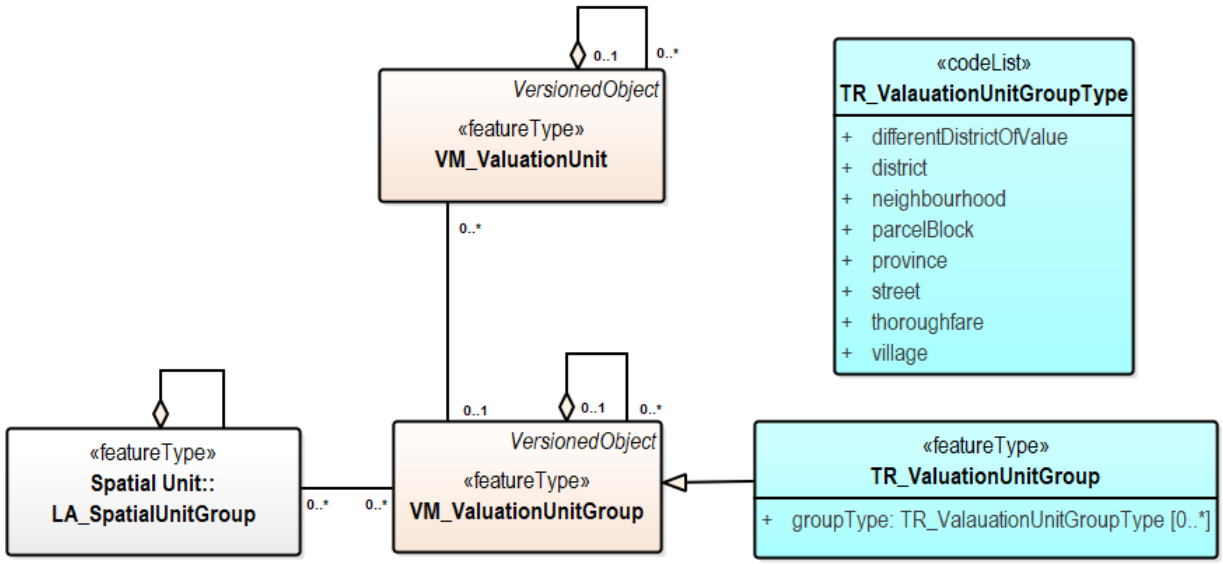

Figure 5 Valuation Unit Group part of the Turkish Country Profile

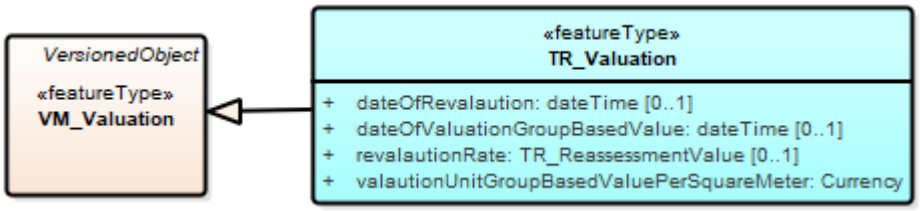

Figure 6 Valuation part of the Turkish Country Profile

There are a number of party role type for valuation conducted for recurrently levied immovable property taxes in Turkey. The valuation unit group based values per square meter for land parcel are determined by local valuation commissions. Figure 7 presents the TR_PartyRoleType code list which extends the LA_PartyRoleType code list with local valuation commission value.

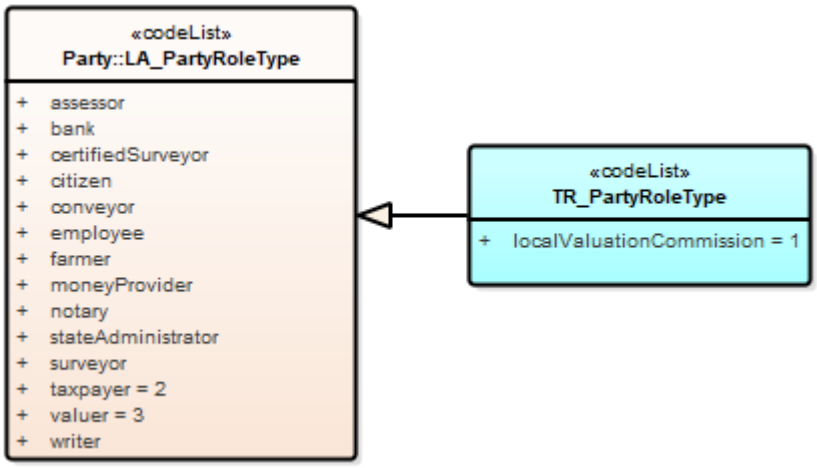

Figure 7 Extended LA_PartyRoleType for the Turkish Country Profile

Finally, LADM ExtTaxation class is developed with TR_ExtTaxation class for calculating tax amounts in accordance with the tax values of improved and unimproved properties in Turkey. TR_ExtTaxation class includes tax amount, tax assessment ratio, tax type, tax rate type, tax date, appeal subject, appeal status, exemption type, and exemption amount, as seen in the Figure 8.

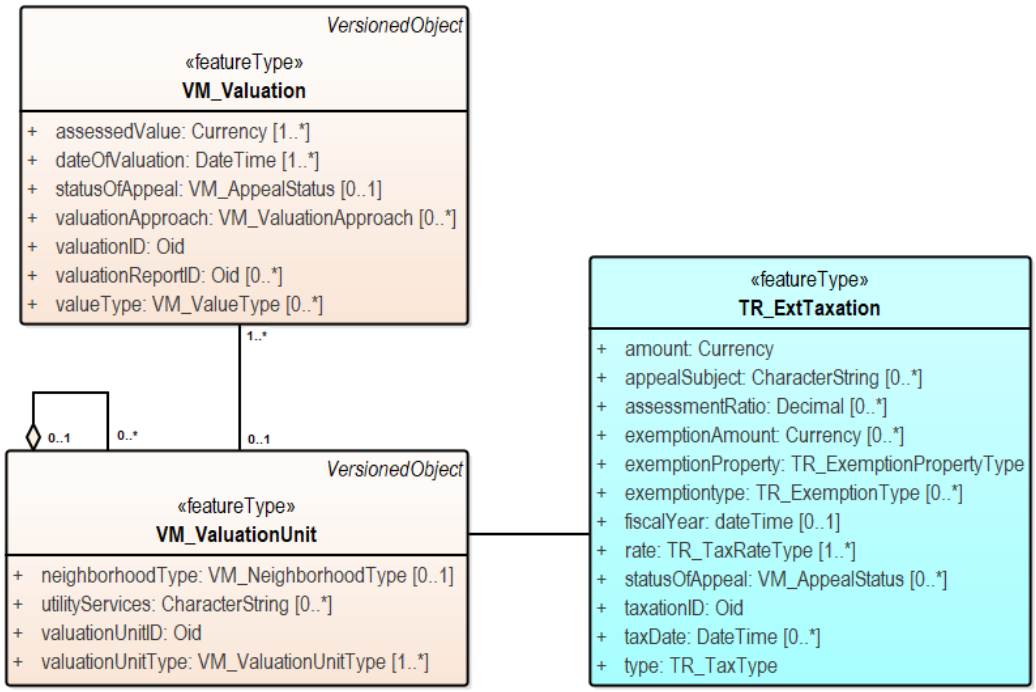

Figure 8 Extended Taxation class for Turkish Country Profile

Figure 9 shows code list classes of TR_ExtTaxation class. TR_TaxType class defines tax types in Turkey, namely, land and building tax. TR_TaxRateType class specifies the tax rate types for different properties in different areas. TR_ExemptionPropertyType class specifies immovable property types that have tax exemptions. TR_ ExemptionType details the types of exemption as either temporary or permanently. VM_AppealStatus code list specifies status of appeal.

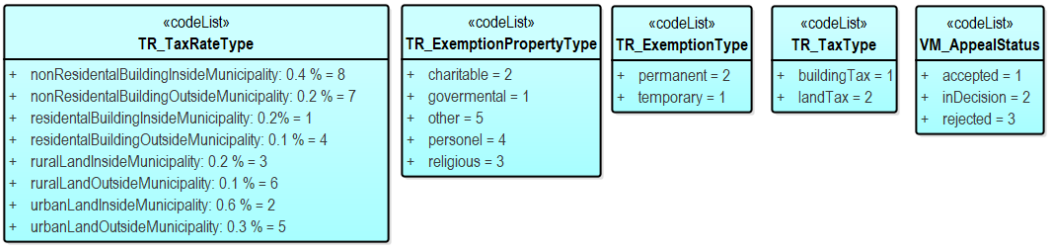

Figure 9 TR_ExtTaxation code list classes

Figure 10 and Figure 11 presents UML instance diagrams for determining tax values of the unimproved (rural land parcel) and improved (building) properties, respectively.

A public valuation conducted for determining the tax value and tax amount of an unimproved property (i.e. parcel in rural area) is shown in the Figure 10. This parcel is a bottom land in agricultural use, therefore, parcel area and parcel unit price per square meter are required for determining the tax value. The ‘Parcel2:TR_Parcel’ instance includes the parcel area. In this instance level case, the parcel unit price per square meter was determined on street basis, as indicated in ‘Parcel2ValuationUnitGroup:TR_ValuationUnitGroup’ instance. The ‘Parcel2:TR_Valuation’ instance represents the parcel unit price per square meter, revaluation rate, date of revaluation, and assessed value (tax value) of unimproved land parcel. The tax value of unimproved property is calculated with the equation 2.2 given in the previous section. Tax amount of the parcel specified in the ‘Parcel2Tax:TR_ExtTaxation’ instance is calculated by multiplying tax value and tax rate, which is 0.1% for a rural land.

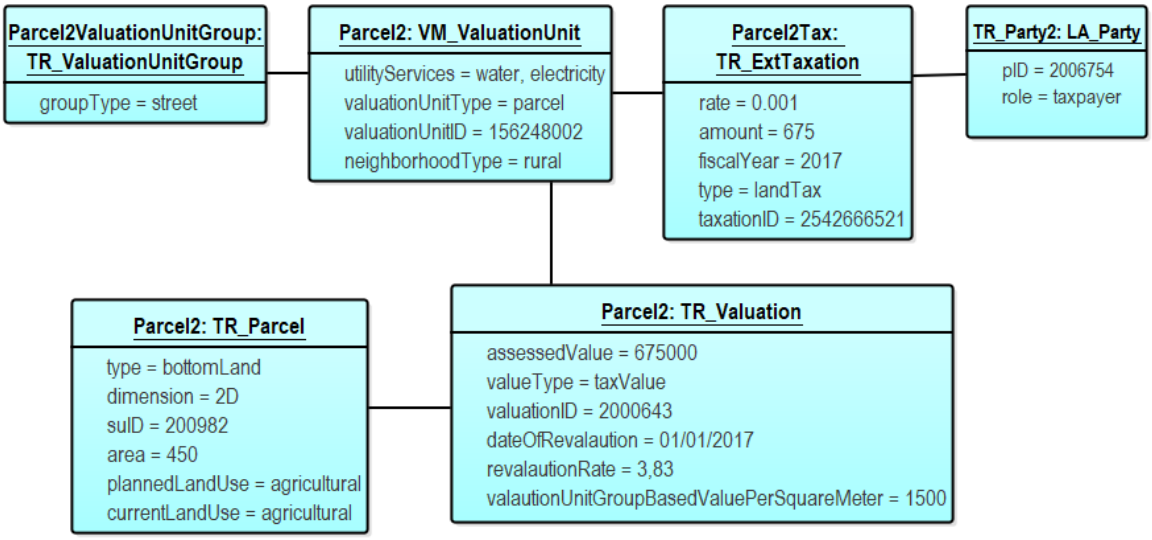

Figure 10 UML instance diagram for the tax value of a land parcel in rural area

In Figure 11, UML instance diagram for the tax value of a condominium property is illustrated. The tax value of a condominium property is calculated by summing assessed value of land parcel and estimated value of condominium unit as indicated in the equation 2.1 given in the previous section. In order to calculate the assessed value of the land parcel, parcel area and the parcel unit price per square meter attributes are required which are specified in 'TR_Parcel1:TR_Parcel' and 'CondominiumProperty1Valuation:TR_Valuation' instances, respectively. The estimated value of condominium unit equals to replacement cost minus physical obsolescence represented in 'CondominiumUnit1:VM_CostApproach'. The replacement cost of a condominium unit is calculated using cost approach, which requires area of the condominium unit and the cost of building per square meter. The area of condominium unit is specified in 'CondominiumUnit1Area:VM_AreaValue' instance. The cost price per square meter is determined on the basis of building construction type, building use and construction quality type. The physical obsolescence of a ten-year-old building is specified as 10 % by the Ministry of Finance. The tax value of condominium property is represented with assessedValue attribute of 'CondominiumProperty1Valuation:TR_Valuation' instance. Tax amount of the condominium property specified in the ImmovableProperty1Tax:TR_ExtTaxation' instance is calculated by multiplying tax value and tax rate, which is 0.1% for a condominium property in municipal area.

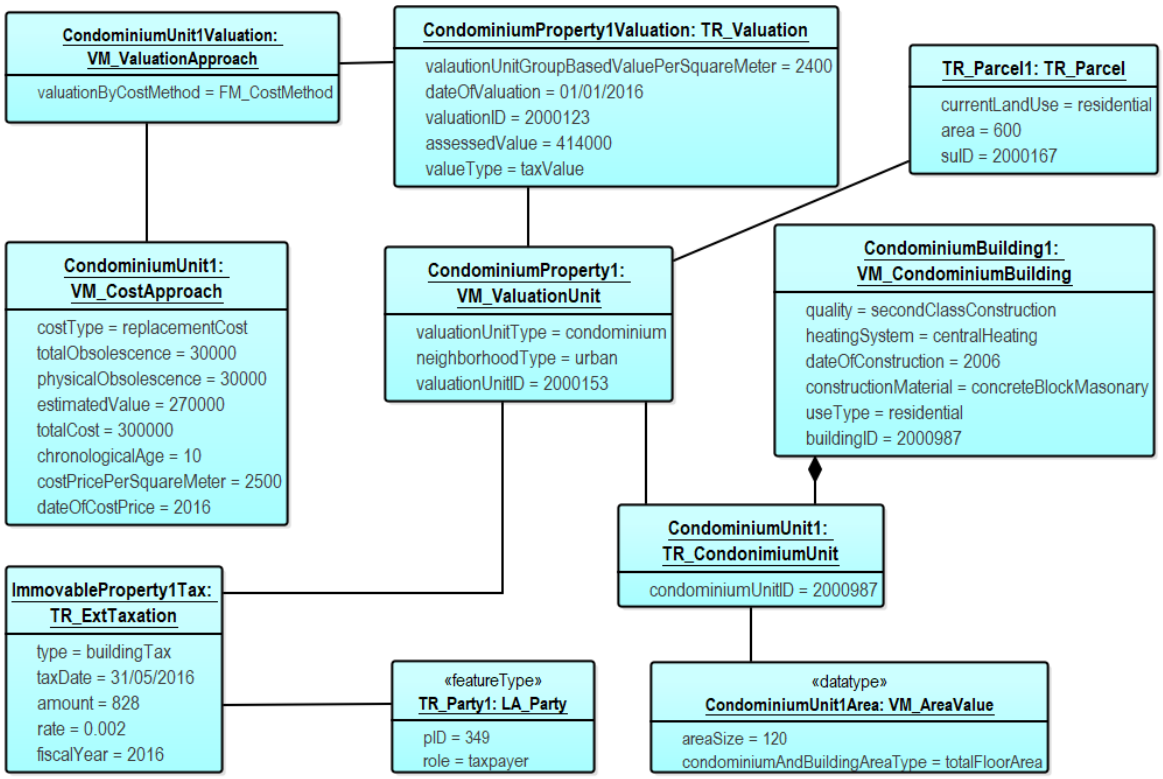

Figure 11 UML instance diagram for the tax value of a condominium property

3. CONCLUSION

This paper proposes a Turkish Country Profile for the LADM Valuation Information Model. The LADM Valuation Information Model is designed to facilitate all stages of immovable property valuation, namely the identification of properties, assessment of properties through single or mass appraisal procedures, generation and representation of sales statistics, and dealing with appeals. More specifically, it enables the recording of data concerning the parties that are involved in valuation practices, property objects that are subject of valuation, as well as their characteristics. The flexible framework of LADM and LADM Valuation Information Model provides for the further development of country specific data models.

The paper specifies valuation procedures for recurrently levied immovable property taxes in Turkey. Currently, in Turkey, a type of hybrid valuation approach (mass and single property appraisal) is applied for calculating tax values of land and buildings. The land parcel unit price per square meter is determined by local valuation commissions once in a four year for the determination of land tax value. Moreover, the cost of building per square meter is determined by Ministry of Finance every year for the determination of the building tax value. The official statements of the Property Tax Law are published in every year and give information about how land tax of building and land are determined. It should be noted that there is a modernization

project for performing the mass appraisal pilot applications and preparing guidelines for the local property tax system in selected municipalities (Yıldız et al. 2015). However, it is not known whether the project will be put into practice or not.

The Turkish country profile has been evaluated with UML instance diagram, however, further assessments are needed. The further research is planned as development of prototypes for the assessment of the Turkish Country Profile for evaluating whether the profile fulfills the needs of information management aspects of valuation activities for property taxation. In the prototype development, the classes, attributes, constraints, cardinalities and relations between classes of the country profile will be converted to technical (physical) model, namely the Oracle Spatial 11g database schema will be generated from the conceptual model definitions. After that the implemented database will be populated with sample datasets related to public property valuation in Turkey.

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