

Extensions to the LADM Trinidad and Tobago toward a Juridical, Fiscal and Marine Cadastre

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Key words: Fiscal Cadastre, Juridical Cadastre, Marine Cadastre, Trinidad and Tobago

SUMMARY

A proposed profile that can extend the current LADM to incorporate juridical, fiscal, and marine components of the land administration together is developed. A proposed profile for the LADM that would accommodate the existing legal components of the Trinidad and Tobago cadastre was previously designed. This profile is now extended to include the marine cadastre details as well as the fiscal cadastre details. This extended profile will now move the idea further along toward an SDI for the country. A previous study described the initial structure of a LADM profile for Trinidad and Tobago as well as an STDm profile to include the large numbers of informal land parcels in the country. Initiatives have been on-going to improve parts of the land administration including the restructuring of the registration system and development of the fiscal system. The valuation roll is proposed to be updated with individual property assessments for all parcels in a plan to reintroduce property taxation after seven years of hiatus. The LADM profile has not yet been applied to the country, however, a fiscal extension as well as a marine cadastre extension can benefit the country. Currently there are no immediate plans to organise the marine areas into a cadastre. This extended LADM incorporates the STDm as well as values the informal parcels in order to uniquely define a profile for the country.

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1. INTRODUCTION

The ISO 19152: 2012 Land Administration Domain Model (LADM) defined a generic structure for the juridical (legal) aspect of cadastres, specifically the geospatial extent and nature of formal land rights. Fiscal and environmental aspects of land administration are identified as being external to the core packages of 1) administrative package, 2) spatial unit package, and 3) party package. The complete list of external feature classes that are identified in the standard that are anticipated to be linked to the LADM are the databases for valuation (ExtValuation), taxation (ExtTaxation), land use (ExtLandUse), land cover (ExtLandCover), utilities (ExtPhysicalUtilitiesNetwork), and physical building (ExtPhysicalBuildingUnit) (ISO 19152:2012, p.104). These are shown in model form in Figure 1.

The LADM (ISO 19152:2012) does not specify the content of a valuation class but simply indicates the presence of a class, external to the LADM, which could house the database related to valuation. Initial work has been done by researchers to specify the content of a generalised valuation database (Çağdaş et al, 2016; 2017). Çağdaş et al, (2017) provide a knowledge organisation system (KOS) that attempts to encapsulate all possible terminology for the entities, attributes, and operations that would be necessary for a LADM valuation module. Çağdaş et al, (2016) provide a possible modular structure for the extension with linkages and hierarchies. This work applies those ideas to structure the valuation database to fit the characteristics of the fiscal cadastre in Trinidad and Tobago. Work has also been done on adapting the existing LADM to marine rights and registration, including in Trinidad and Tobago (Athanasίου et al, 2017). These frameworks are also drawn on to further develop the marine cadastre profile for Trinidad and Tobago. Since there is still the issue of a large number of informal parcels and attempts at changes to the legislation to address these, the juridical aspect is also advanced so that the profile can incorporate juridical, fiscal, and marine aspects of the cadastre.

2. BACKGROUND

Trinidad and Tobago is a small archipelagic country in the southern Caribbean of approximately 5100km in area and 1.3 million persons. The formal cadastre is a separated one with registry data held at the Registrar General's Office of the Ministry of Legal Affairs, cadastral index held at the Lands and Surveys Division of the Ministry of Agriculture, valuation roll held at the Valuation Division of the Ministry of Finance and land use data held at the Town and Country Planning Division of the Ministry of Planning. The LADM structure can link all the separated data together through common identifiers. A recently derived system-generated identifier has been developed for a subset of existing formal parcels that

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have been georeferenced in a cadastral management information system (CMIS) upgrading project. Informal and marine land units as well as 3D units have not been uniquely numbered.

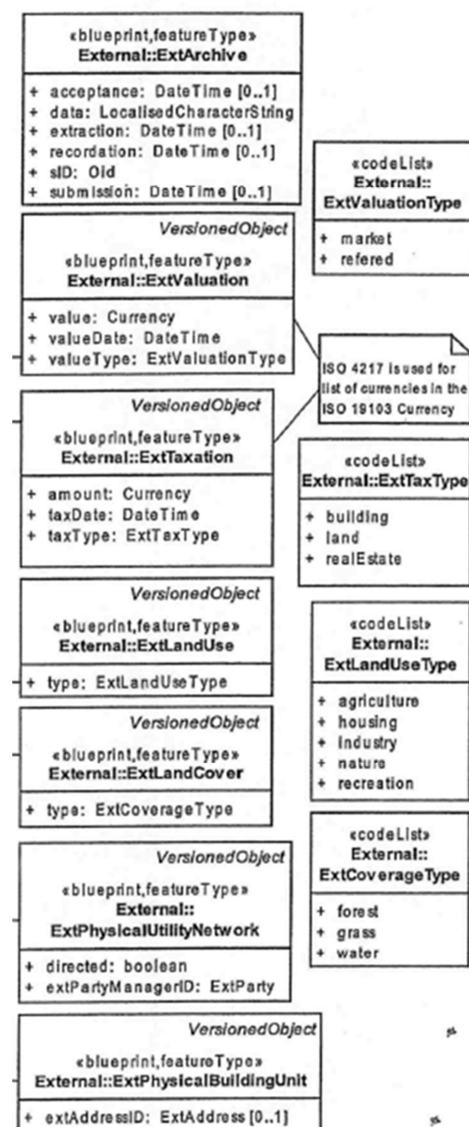


Figure 1. Excerpt of ISO 19152:2012, p 104 showing external LADM classes

Figure 2 gives an example of the small number of parcels that were identified and mapped in the project in contrast with the larger number of occupied parcels that are not identified, nor uniquely numbered in the cadastre.

Approximate statistics claim that the formal system houses only half of the actual parcels if unregistered and informally subdivided and occupied state and private lands are taken into consideration (Griffith-Charles and Opadeyi 2009, Griffith-Charles 2004, Griffith-Charles and Rajack 2017). A systematic adjudication and titling proposal with supporting legislation

passed since 2000 is stymied by the lack of a clear decision on whether to absolutely register long standing occupants on state lands or to grant short term leases to them (Griffith-Charles and Opadeyi 2009). This indecision does not obviate the development of an LADM but indicates that the evidenced duration of occupation must be accommodated in the attributes of the class of spatial unit. This will allow automatic conversion of the right when the decision is finally made.

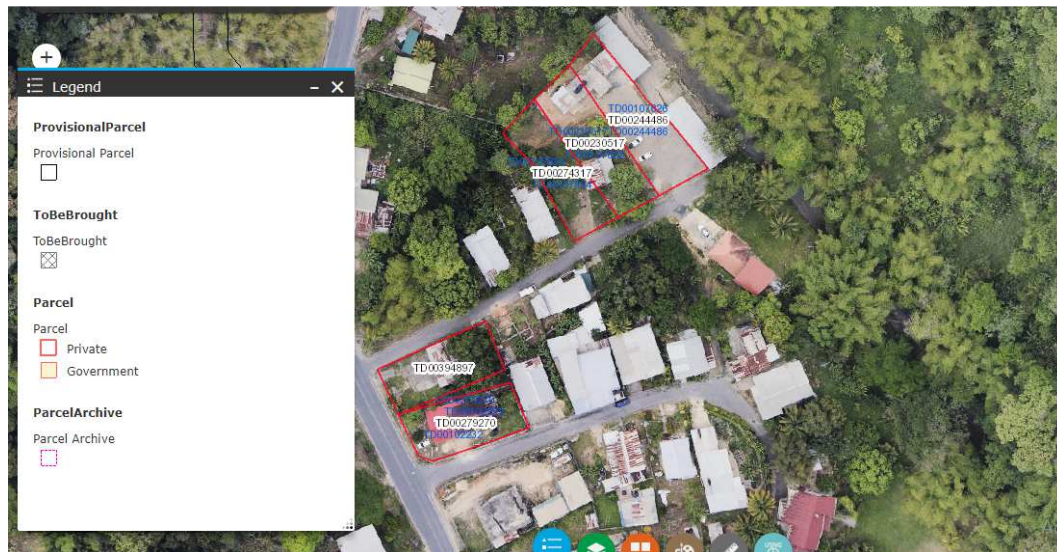


Figure 2. Parcels still without unique IDs

A previous study described the initial structure of a LADM profile for Trinidad and Tobago as shown in Figure 3, as well as an STDM profile to include the large numbers of informal land parcels in the country (Griffith-Charles 2011). Initiatives have been on-going to improve parts of the land administration system including the restructuring of the registration system and development of the fiscal system.

Currently, work is on-going on scanning the legal documents of certificate of title and deed. A new RFP has just been advertised and this seeks to engage a consultant to design and develop the database structure for the Land Registry. Similarly, the partial coverage, and out of date valuation roll, which is only textual data with no graphic, is proposed to be updated with individual property assessments for all parcels in a plan to reintroduce property taxation after seven years of hiatus.

The LADM profile has not yet been applied to the country, however, a fiscal extension as well as a marine cadastre extension can benefit the country. Currently there are no immediate plans to organise the marine areas into a cadastre. This extended LADM incorporates the STDM as well as values the informal parcels in order to uniquely define a profile for the country. Valuation units must be defined differently to, but be spatially related to legal parcels.

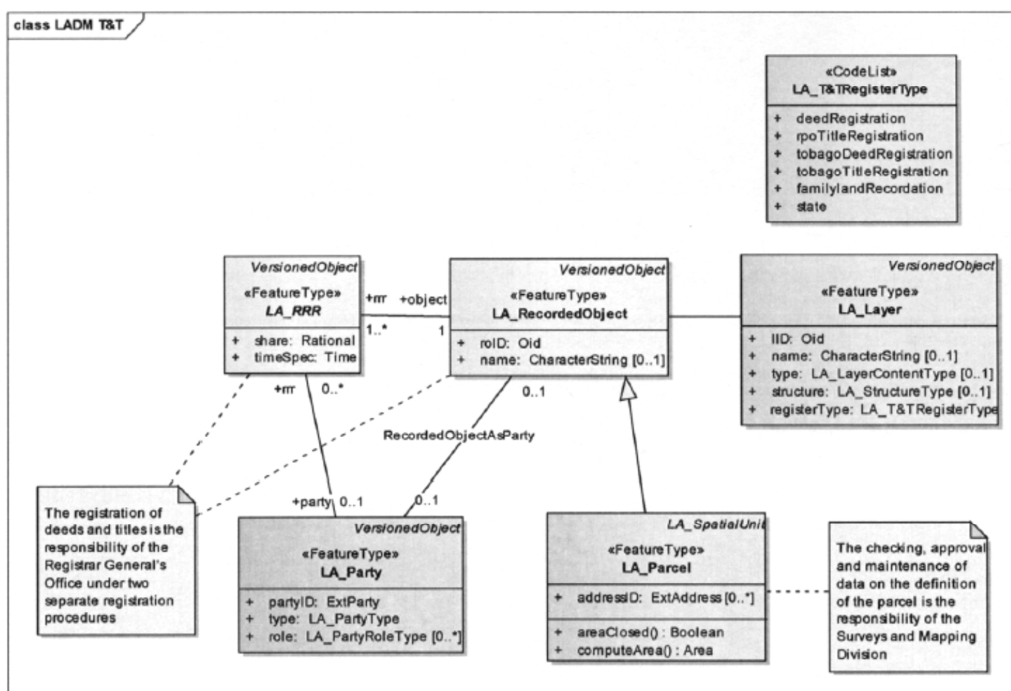


Figure 3. LADM for Trinidad and Tobago (Source Griffith-Charles 2011)

A proposed profile for the LADM that would accommodate the existing components of the Trinidad and Tobago cadastre was previously designed. This profile is now extended to include the marine cadastre details as well as the fiscal cadastre details. This extended profile will now move the idea further along toward an SDI for the country.

3. PROFILE CHARACTERISTICS IN TRINIDAD AND TOBAGO

3.1 Juridical characteristics

The legal situation is still very much the same as that which obtained in 2011 when the preliminary LADM profile was developed (Griffith-Charles 2011). New legislation is being piloted to make minor changes to existing land legislation that has not yet been implemented. This new legislation can have an impact on the model profile. The State Suits Limitation bill (2017), for example, seeks to prevent the state from evicting persons who have been in occupation of state land for more than 30 years. While much of this bill is a revision of the older Crown Suits Limitation Ordinance of 1898, a key difference of this new bill is that it now seeks to limit the application of the legislation on land that is environmentally sensitive, protected, reserved, and designated for a public purpose. This can impact on informal occupation of long standing on state lands. The STDM profile therefore needs to be extended to include a link to the land use and also to the land cover. The duration of occupation, together with evidence of this should be captured.

The proposed amendment to the Land Adjudication Act 2000, now known as the Land Adjudication Amendment Bill 2017 proposes to address the plight of the 55,000 to 60,000 households in occupation of state land (Griffith-Charles and Rajack 2017) by registering the parcels in the name of the state as indicated by the clause 11 which states:

“ a person who, without a documentary title to land is in open and peaceable possession of a parcel of State land and has been in such possession whether by himself or through his predecessors in title for a period of thirty years or more, the adjudication officer shall record title in the name of the State”.

This indicates that the LADM profile would need to identify the parcels as state but occupied. The STDM profile will need to record the informal and unofficial subdivision boundaries that are occupied in reality but not acknowledged by the state as defining the extent of the right.

3.2 Fiscal characteristics

The particular fiscal characteristics of property in Trinidad and Tobago that would need to be considered for the LADM profile include the fact that the land and building were valued and assessed separately for the purposes of taxation under the old law. Compared to other countries in the Caribbean which tax either the unimproved land or the improvements, Trinidad and Tobago taxed both. St. Vincent and the Grenadines, Antigua and Barbuda and St. Lucia tax land while many of the other countries do not apply land tax (Toppin-Allahar 2013). The land and building taxation system in Trinidad and Tobago was created to simplify the assessment process as land units could be ascribed a value based on two primary variables – location and area; and buildings (including commercial and industrial) were ascribed a value based on type, use and floor area. The new system of property taxation, that is yet to come into force, amalgamates the land and building units into one property unit. The new valuation roll is to be developed by appraising each property individually using pre-determined rates that are adjusted for condition and accommodation of the building and applied to the building floor area (or site area if the property is vacant land). The building and other improvements to the parcel therefore form part of the immovable property unit. This means that cadastral parcels that contain a building but which are a single legal property need not be represented other than as a polygon in 2D space or a cuboid in 3D space for juridical purposes. For fiscal purposes, however, the building must be included in the representation as a visualisation of the model and its attributes that impact on value. The attributes of the building that impact on value include: building size; condition and standard of finish. The domain model would also create entity relationships between the data tables as elements such as land area and geographic location from the graphical cadastre as well as land use designations from the planning data tables would be functional attributes that link to the valuation roll and vice versa.

One challenge arising out of this relationship is the fact that there is a large disparity between actual land use and designated land use. The data tables from the planning database only indicate designated use whereas the property taxation system is based on actual land use. This can be circumvented by the creation of two separate data sets on land use (actual/designated). As the implementation of property tax involves a large-scale and thorough data collection exercise, it is expected that the fiscal database would contain information that accurately reflects the current occupation and settlement patterns on the ground.

To create the profile for Trinidad and Tobago, the country specific activities and terminology can be extracted from the previous research in the literature.

3.3 Marine Cadastre characteristics

Coastal erosion and large amounts of reclamation are marine cadastre issues that are of particular importance to Trinidad and Tobago and which need to be specifically addressed in the marine cadastre. Beyond the generic structure for Trinidad and Tobago's marine cadastre explored in Athanasiou et al, (2017), these typically SIDS issues should be considered. Recent events in the south western peninsula of Trinidad, where several homes collapsed as the cliff overhanging the beach buckled and fell indicated this importance in a stark fashion. Drone footage captured early in the event can be viewed at the following url:

<http://www.cnc3.co.tt/news/drone-footage-coastal-erosion-claimed-two-houses-cedros>.

4. CLASSES AND CODE LISTS

4.1 Juridical classes and code lists

When the systematic adjudication process is implemented, supported by the amended legislation, the informal and unofficial extents of both family land and informal occupation on state and private land can be recorded as previously envisaged. The formal state parcels will be recorded in the LA_SpatialUnit class while the internal occupations will be recorded as STDM_SpatialUnit classes with the attributes of Oid for the occupation, and time of entry into occupation evidenced by a SourceDocument that includes any document of claim.

4.2 Valuation classes and code lists

This section describes the extended model including the core classes and code lists for the customised profile that would include the ExtValuation and ExtTaxation external classes described in the LADM. Extensions to the spatial unit class to accommodate the characteristics required for valuation and taxation are also described.

The profile must link the ExtValuation class to the ExtLandUse class for the purpose of using the existing land use as opposed to the permitted land use to calculate valuation for taxation. The FM_Valuation class as proposed by Çağdas et al (2017) can be replicated here but will only be linked to an FM_SinglePropertyAppraisal class and not to FM_MassAppraisal as this method has not been adopted by the country.

4.3 Marine classes and code lists

Extensions to the profile for marine parcels are described. Athanasiou et al (2017) include listings and structure of a Trinidad and Tobago profile for the marine cadastre for the country as shown in Figure 4. The visualisation and recording of boundaries is the important component of this module. Boundary types should include ambulatory and fixed for those that are related to the high water mark and to archipelagic boundary lines respectively.

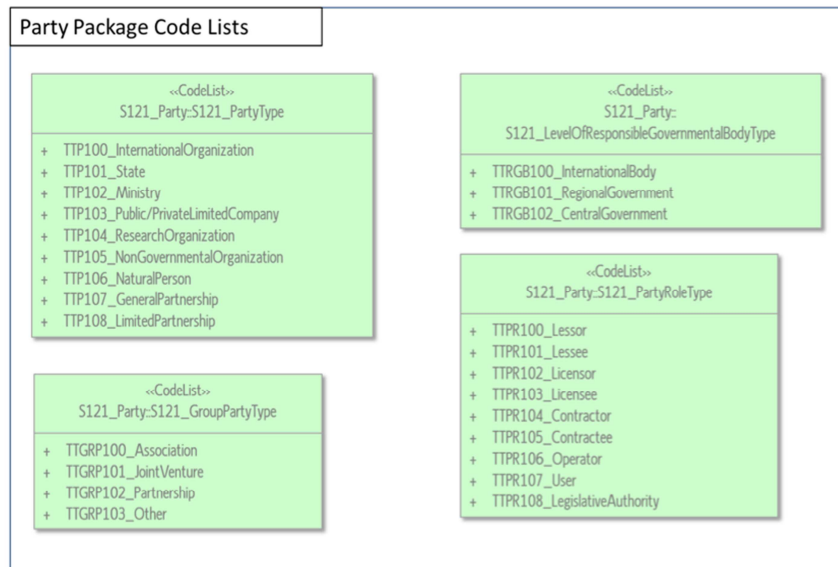


Figure 4. Marine cadastre partial profile (Source Athanasiou et al)

5. CONCLUSION

The LADM profile for Trinidad and Tobago has been advanced beyond what was previously suggested to take into consideration more recent developments particularly in fiscal cadastral extensions and marine cadastres but also to customise the existing juridical cadastre profile to fit proposed amendments to the legislation that formalises land rights.

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BIOGRAPHICAL NOTES

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