

Digitization of the Land Registry within a Plural Legislative Framework: A Case Study of Land Registry Innovations in Trinidad and Tobago

Keywords: *Common Law, Torrens, Digitization, Integration, Land Management, Data Standardization*

Themes: *Land policy and political economy
Data integration & interoperability for public service provision*

Abstract

Land is a limited and precious resource and its management is the key to holistic development within a nation. For Besley and Ghatak (2009), the identification of property rights is a primary factor in sustainable economic development. Such management relies on the formulation of policy that is built on timely knowledge of tenure, population migration patterns, and the use of national spaces to promote and sustain economic growth through responsible land management (Enemark, 2005a). The core objectives of land management are to secure tenure and regulate land use (Dale and McLaughlin, 1999; Enemark et al., 2005). This case study examines the complexities faced during the digitization of land records within Trinidad and Tobago. The study will review digitization approaches used for both Common Law and Real Property Act (Torrens) based records.

Trinidad and Tobago is a twin island republic located at the most southerly base of the Caribbean archipelago. The larger island, Trinidad is 4,800 km², while Tobago is 300 km². The country has national and local levels of government, but local government in Trinidad is not enshrined in the constitution. Despite this, land on both islands is partly managed under municipal land management bodies, with the Tobago House of Assembly in Tobago, and fourteen (14) regional corporations in Trinidad. Land is also managed at the national level, through the Ministry of Agriculture, Land and Fisheries (State Land management and Surveys and Mapping), the Ministry of Planning - Town and Country Planning Division (building and construction approvals), the Ministry of the Attorney General and Legal Affairs - Registrar General's Department (land registration), the Ministry of Rural Development and Local Government (local government land zoning, land use examination and approvals) and the Ministry of Finance (land taxation). With this unitary approach to governance, the systems of standardization and management of land must be balanced under both local and national requirements.

Trinidad and Tobago is governed under two land registration legal categories. Prior to independence from Great Britain, Trinidad and Tobago categorized land under Common Law, or a “free simple” law to hold ownership indefinitely to the owner unless a registered transfer takes place. Further to independence in 1962, Trinidad and Tobago introduced the Real Property Act (RPA), a Torrens based system that supported land registration and land transfer under indefeasible title tied to a Certificate of Title. RPA did not remove the validity of land and other property transfers registered under Common Law, thus leading to the establishment of two legislative frameworks in Trinidad and Tobago. Additionally, Tobago faced decades of land transfers that were not legally registered, despite land being handed down through families over generations. As such, Trinidad and Tobago is now seeking to introduce a third type of legislation to support the registration of all property. Digitization then must include at least two types of documents that register ownership of land and property on both islands, with potential for a third type being registered in the near future.

Registration of land and property resides with the Registrar General’s Department – Land Registry (RGD). In 2000, the RGD began its modernization path with the scanning (black and white) of Common Law Deeds dating back to 1970. The images were part of an electronic system designed to automate the retrieval of images based on limited metadata. New transfers under Common Law were also scanned to continue the digitization of new registrations. Deeds issued pre-1970 were scanned within a ‘Scan-on-Demand’ system, to respond to transfer requests. However, little technological advancements took place since the implementation of this first digitization exercise and Titles under the Real Property Act system remained 100% manual. In 2014, the RGD received financing through an international loan, to complete the digitization of all Common Law Deeds, and to completely digitize the RPA documents. The digitization exercise of the RPA titles did not start until late 2016, and the coordinated digitization of the Pre-1970 Deeds is still not in place. As such, the Land Registry remains predominantly manual.

With a vibrant real estate market, and increasing numbers of annual land transfers, the partial digitization of Deeds and Titles has impacted on the ease of doing business in Trinidad and Tobago. In collaboration with key stakeholders, the Land Registry views the digitization of its records as the first step towards improving internal and external processes and supporting better integration with stakeholders. The integration of the data between land management agencies at the local and national levels is necessary for a future integrated land administration system. Delays in completing land related registration are expected to decrease, and improvements in accurate and more secure data are anticipated by the Registry and its stakeholders.

This paper will focus on the challenges being faced by the Land Registry to (i) digitize its records under both legal frameworks; (ii) standardize metadata and other fields within an electronic land records database; (iii) capture non-land related transactions under the Deeds system; and (iv) improve quality, accuracy and completeness in the final database. The paper will explore whether these interventions increased efficiency of Land Registry services, and explore the integration risks

posed by partner organizations that may have incomplete or inaccurate data. Finally, the paper will look at the newest efforts to modernize the land Registry under a proposed computerized Property Business Registration System to improve compliance with global ISO 19152 (Land Administration Domain Model) standards within the country.

1.0 Introduction

Land is a limited and precious resource and its management is the key to holistic development within a nation. For Besley and Ghatak (2009), the identification of property rights is a primary factor in sustainable economic development. Such management relies on the formulation of policy that is built on timely knowledge of tenure, population migration patterns, and the use of national spaces to promote and sustain economic growth through responsible land management (Enemark, 2005a). The core objectives of land management are to secure tenure and regulate land use (Dale and McLaughlin, 1999; Enemark et al., 2005). This case study examines the complexities faced during the digitization of land records within Trinidad and Tobago. The study will review digitization approaches used for both Common Law and Real Property Act (Torrens) based records.

In its 2016 Doing Business Report, the World Bank explored the benefits that digital records offered to improving ease of doing business across the globe. Positive improvements were noted in jurisdictions in the North, such as England and Wales and South, such as Rwanda, with computerized records offering improvements related to processing times, customer management, data protection and disaster recovery approaches. This study compares the approach being taken by the Government of the Republic of Trinidad and Tobago in seeking similar results to protect the integrity and historical accuracy of the records, while improving ease of access, recordation standards and transparency in its Land Registry.

2.0 Methodology

The paper explores historical and current digitization activities across similar jurisdictions, using a literature review. The paper will also include observations from the authors on the current digitization process of the Real Property Act (RPA) and Common Law documents in Trinidad and Tobago. This will include feedback taken from real time reviews of Quality Assurance and Quality Control testing applied during the digitization of land records.

3.0 Data and Land Registration

A modern market requires a robust system of property rights. Introduction of technology is disrupting different industries and real estate is not an exception. Already, land administration in different countries are implementing Land Information Systems (LAIS) beyond the traditional ways of registration. With internet access facilitating accessibility, there is an opening up of the land market in unprecedented ways, creating new opportunities for end users willing to acquire property or owners willing to sell it.

The modernization of the land administration, however, needs to be accompanied with robust and reliable information related to the history of the properties. Land disputes are common in developing countries, and the lack of proper access to reliable, evidentiary and 'real time' documentation creates unnecessary delays in the resolution of these cases. For instance, according to a study by Bengaluru-based Daksh - a civil society organization that undertakes research and activities to promote accountability and better governance in India, land and property cases amount to two-thirds of all pending civil lawsuits in India.

In short, economies are seeking information storage mechanisms that provide proper and multi-user access to data for both search and recordation purposes.

3.1 Why digitize?

Jurisdictions that still rely on paper-based transaction, research and title inspection faced the painstaking process of digging into boxes and shelves of documents in order to find records for transfer and / or validation of historical transactions. Sometimes it is not possible to study the archival documents (e.g., glass plate and film negatives) without prior conversions into readable or viewable media (e.g., prints). Digitization, by contrast, permits quick and easy browsing of large volumes of material.

Maintenance of land records and easy access to land information is one of the critical features of any attempt to modernize and computerize the land administration. "Land Records" itself is a generic expression and can include records such as the register of lands, Records of Rights, restrictions and encumbrances register, mutation register, disputed cases register, etc. It can also

include spatial information regarding the shape, size, soil-type of the land; and economic information related to the valuation of the property.

Among the many benefits of creating a digital history of the property, the most visible are:

- Transparency in land record management
- A single window to handle land records, including maintenance and updating of maps, survey and registration of properties' data
- Clarity over ownership status
- Ease of doing business by making it simpler for the developers and buyers to check the authenticity of the land property

3.2 Fundamental principles of digitization of documents

There are different procedures and standards for the digitization of land records. In the same way, there is no consensus on the data to be captured during indexing or what should be digitized by a Land Registry, i.e. the complete archive of paper records or just the rights of ownership. However, there are excellent guidelines and proposed standards by leading organizations such as The United Nations Educational, Scientific and Cultural Organization (UNESCO), the World Bank or the Society of American Archivists.

UNESCO drafted a process of digitization, with the following, suggested activities:

- Selection
- Assessment, including needs
- Prioritization
- Preparation of originals for digitization
- Metadata collection and recreation
- Digitization and creation of data collections
- Submission of digital resources to delivery systems and repositories

The body advised that this process be accompanied by intellectual property rights management, quality control, and evaluation.

In addition, quality control is an essential activity to ensure that the digital document remains accessible in the long- term, is accurate and meets both archival standards and current needs of the organization, using internationally recognized standards and best practices.

3.3 Processes for Data Conversion

There are different ways to digitize land-related documents. One of the most accepted and popular procedures consists of three (3) simple steps; (i) Indexing; (ii) Digitizing (Scanning); and (iii) Performing quality control on both the indexed data and the scanned images. There are some variations in cases where the land registry is integrated with the cadastre, in which case the process may include integration with the digital parcel inventory.

The images below describe the steps involved in each stage of the scanning, rehabilitation and indexing workflow:

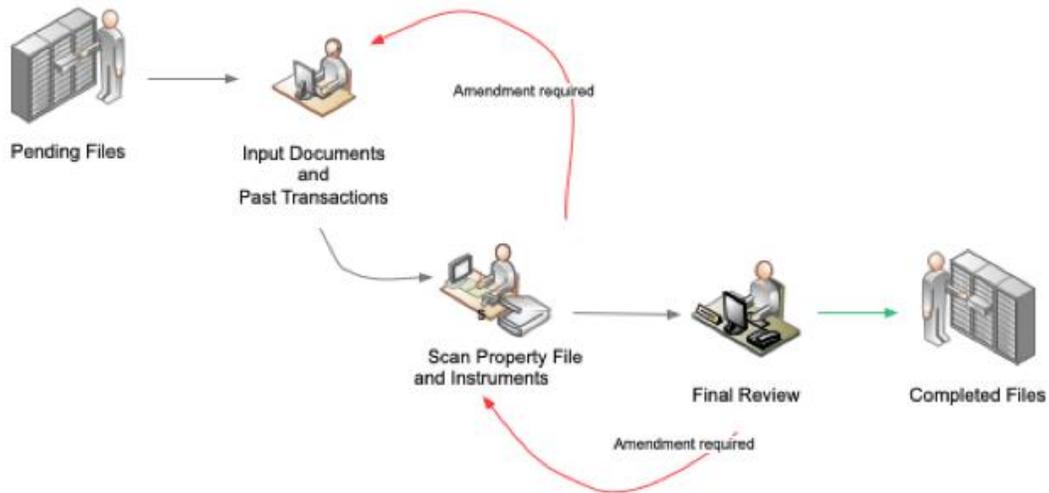


Figure 1 - Digitization of Land Registry Documents

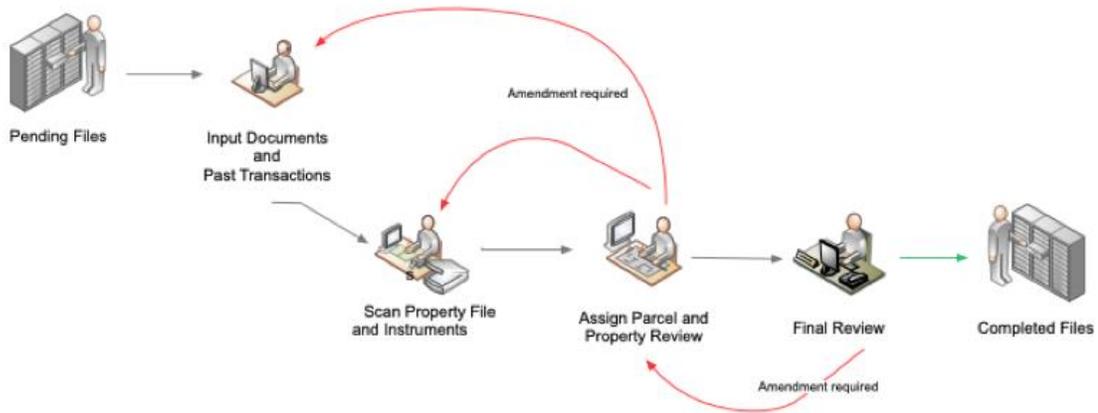


Figure 2 Digitization of Land Registry Documents and Integration with Cadastre

Both processes follow the basic UNESCO guidelines with some variations that can be adjusted to meet the content of land records.

a) Quality Assurance - Scanning

There are some variations in the treatment of land record documents that rely heavily on legal guidelines in a jurisdiction. For the legal evidentiary of the property rights, the process of improving the digital documents should be as less invasive as possible.

The commonly accepted operations during quality assurance are:

b) De-Skew

- Digitized images are often skewed (if the paper was moved or rotated when scanning);
- De-skew detects the skew angle and rotates the image automatically to the correct position, so the page is aligned correctly;

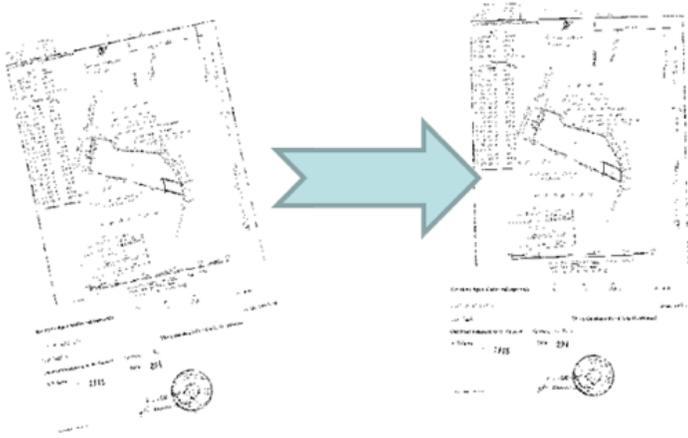


Figure 3 - De-skew of the documents during the scanning process

c) De-Speckle

- De-speckle automatically removes any speckles, dust or particles that appear on the scanned image.

d) Blank pages threshold

- Determines whether a blank page should be scanned or not;
- Detects noise, bleed through, lined and blank pages with high precision and speed;
- Eliminates blank pages, reduces the time and disk space;

The more controversial operations are related to altering the physical appearance of the document itself. This type of operation was common in many registries that undertook digitization, but the practice changes the concept of a digital "copy" of a document.

e) Hole Punch Removal

- Hole Punch Remove detects and removes the holes of punches on the image.

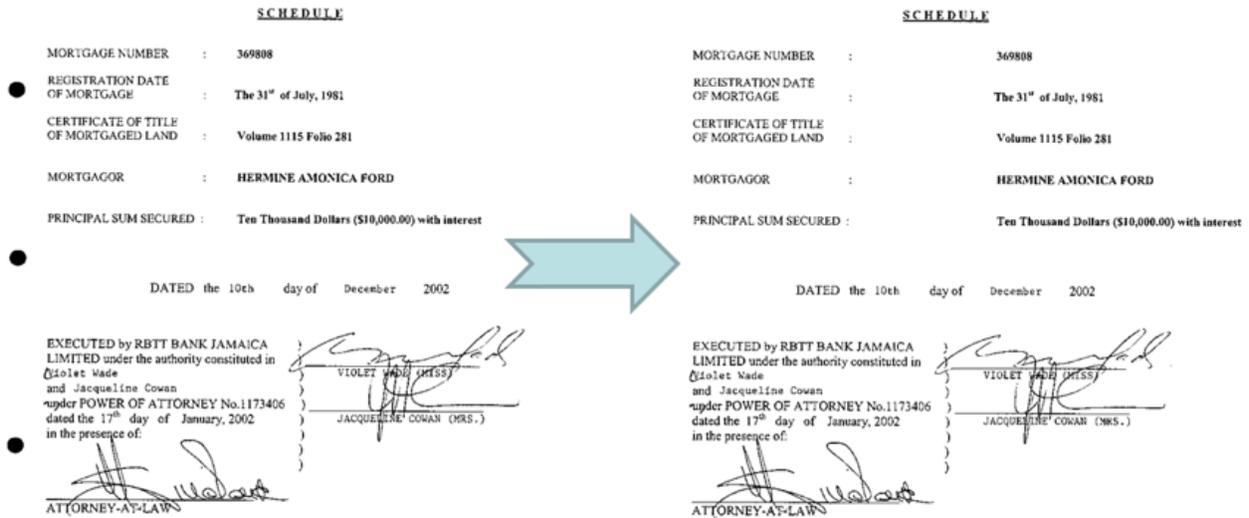


Figure 4 - Sample of hole punch removal effects

f) Border Removal

- Border Removal finds and removes the black borders in a 1-bit black and white image

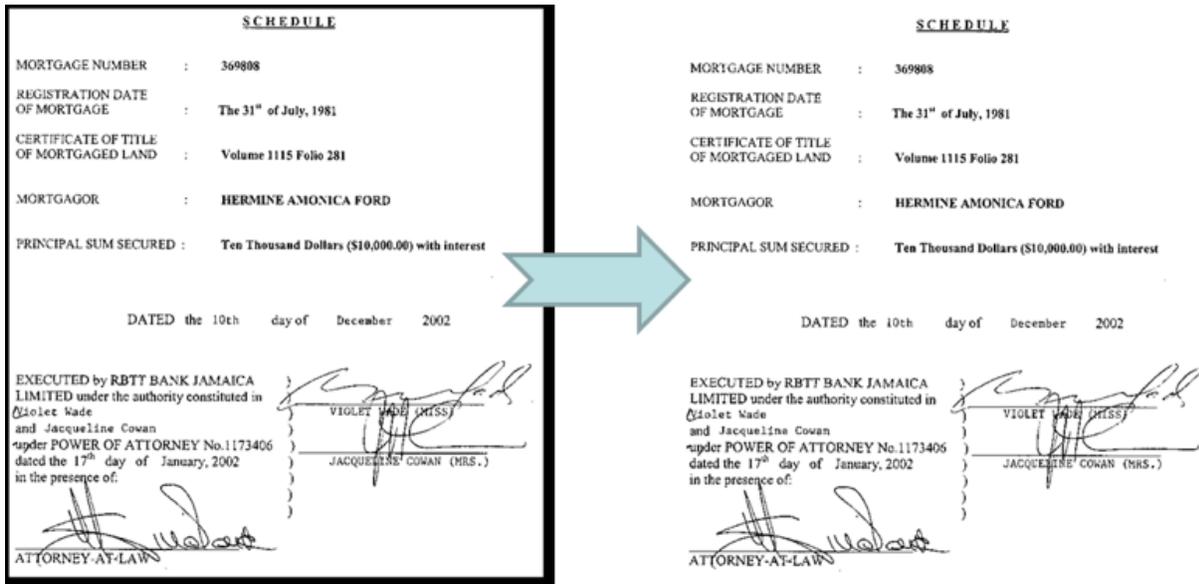


Figure 5 - Border removal sample

3.4 Metadata

The approach to geographic and legal information modelling usually follows a reference model, a conceptual schema language and rules for the application of that schema. The standardization of the metadata modelling was set by the ISO Technical Committee 211 (ISO/TC 211). The standard deals with geographic information but can also be extrapolated to the legal aspects of land information and more specifically the description of the land rights as defined later in the ISO 19152:2012 LADM (LADM).

The LADM approach was conditioned by the assumption that geographic information is fundamentally no different from other kinds of information. As such, methods applied across the entire field of information technology are equally valid for geographic and property rights information. The conceptual modelling is based on an object-oriented paradigm use of objects to describe reality. In this approach, an object represents an entity in the real world. An object contains information that describes the properties and behavior of the entity that it represents. An individual object identifies by the elements of information in which it differs from other objects.

During the process of digitization, the attributes describing the parties, properties and rights associated are captured in different ways. Usually, the capture is closely linked to the software used to capture the information, as well on the initial requirements for the project. For instance, in cases where digitization is the end goal of the project, the metadata usually is captured with basic rules and with a minimum necessary set of content, e.g. Parties' names and address to be able to perform searches (digital index card).

In digitization activities where the goal goes beyond inventory and seeks to build land information system, the metadata captured is more complex. Data related to relationships between the parties, different active rights and restrictions and more information related to the property and parcel are captured in those instances.

4.0 Digitization in Trinidad and Tobago

4.1 Background

Trinidad and Tobago is a twin island republic located at the most southerly base of the Caribbean archipelago. The larger island, Trinidad is 4,800 km², while Tobago is 300 km². The country has national and local levels of government, but local government in Trinidad is not

enshrined in the constitution. Despite this, land on both islands is partly managed under municipal land management bodies, with the Tobago House of Assembly in Tobago, and fourteen (14) regional corporations in Trinidad. Land is also managed at the national level, through the Ministry of Agriculture, Land and Fisheries (State Land management and Surveys and Mapping), the Ministry of Planning - Town and Country Planning Division (building and construction approvals), the Ministry of the Attorney General and Legal Affairs - Registrar General's Department (land registration), the Ministry of Rural Development and Local Government (local government land zoning, land use examination and approvals) and the Ministry of Finance (land taxation). With this unitary approach to governance, the systems of standardization and management of land must be balanced under both local and national requirements.

4.2 Legal Framework

Trinidad and Tobago is governed under two main land registration systems that are maintained under a national Land Registry. Land is transferred under:

- 1) English or Common Law System (Conveyancing and Law of Property Act, Chap. 56:01);
and
- 2) Real Property Act Title System (Real Property Act, Chap. 56:02)

Land registration must also adhere to supporting legislation (Appendix A) related to land use, spatial mapping and taxation. In 2018, the Government of the Republic of Trinidad and Tobago (GoRTT) passed new pieces of legislation to introduce a third system of registration. This legislation (Land Adjudication, Amendment, 2018) is not yet proclaimed, so registration is still limited to guidelines under Common Law or RPA.

Prior to independence from Great Britain in 1962, land in both islands was registered primarily under the Common Law System, a “free simple” law to hold ownership indefinitely to the owner unless a registered transfer takes place. Under the Common Law System, documents include *inter alia* Deeds, Deed Polls, Wills, Lis Pendens, Bills of Sale, Judgements (Appendix B). Land (immoveable assets) and personal property were both registered under the Land Registry within this legislative framework. In contrast, there exists the Real Property Act Title System (brought into force in 1945), formerly the Real Property Ordinance. Under this Act, land is brought under a system of “indefeasible title” and “land ownership is transferred through the registration of title” (Legal Insights, Fitzwilliamstone.com, Accessed 2019). Under RPA, unlike the Common Law System, the transfer is focused primarily on the immovable asset of land, and does not include personal property or other non-land transfers.

Registration of land and property resides with the Registrar General's Department – Land Registry (RGD) that now falls under the Ministry of the Attorney General and Legal Affairs. The RGD is guided by over 20 different pieces of legislation, including the Conveyancing and Law of Property Act, Chapter 56:01, the Real Property Act, Chapter 56:02, the Registrar General Act, Chapter 19:03, the Valuation of Land Act, Chapter 58:03, among others. The Acts, in general, support a paper-based system of transfer, with later amendments reflecting small changes to account for electronic or automated systems of transfer. As an example, under the Real Property Act, reference is made to the use of a “Register Book” to be kept by the Registrar General, with “bound originals of all grants and of all certificates of titles” (RPA, Chapter 56:02, Part III, Article 31, 2015). While the Act does not specify the use of a physical book, the language requiring the binding of originals implies a paper-based transaction. However, under the Registrar General Act, Chapter 19:03, Article 4(5), the “records, documents and indexes required to be kept and maintained by the Registrar General under this Act may also be kept and maintained in an electronic system.” As such, the current legislative framework that governs Trinidad and Tobago requires records be kept primarily as physical, printed documents, with an allowance for the use of electronic records.

4.3 Digitization of Land Records

The RGD recognized the value of electronic access to records and agreed to move towards developing an electronic system. As an island state, susceptible to natural disasters (e.g. flooding, hurricanes) and man-made threats through theft and / or fraud, the movement to duplicate records as both physical and electronic was a welcomed initiative. In 2000, the RGD began its modernization path with the scanning (black and white) of Common Law Deeds dating back to 1970. The images were part of an electronic system designed to automate the retrieval of images based on limited metadata. New transfers under Common Law were also scanned to continue the digitization of new registrations. Deeds issued pre-1970 were scanned within a ‘Scan-on-Demand’ system, to respond to transfer requests. However, little technological advancements took place since the implementation of this first digitization exercise and Titles under the Real Property Act system remained 100% manual. In 2014, the RGD received financing through an international loan, to complete the digitization of all Common Law Deeds, and to completely digitize the RPA documents. The digitization exercise of the RPA titles did not start until late 2016, and the coordinated digitization of the Pre-1970 Deeds is still not in place. The digitization of Real Property Act Titles, and the improvements that will be made towards creating structured approaches for digitization of Pre-1970 Deeds is the main focus of this paper.

Further to independence in 1962, Trinidad and Tobago pushed the roll-out of RPA registration. As a Torrens based system, RPA supported land registration and land transfer under indefeasible title tied to a Certificate of Title. RPA did not remove the validity of land and other property transfers registered under Common Law, thus leading to the establishment of two legislative

frameworks in Trinidad and Tobago. Despite this push, both islands continue to rely heavily on the Common Law System for land transfers, with Common Law transactions of land and personal property transactions making up over 80% of annual registrations done by the Land Registry. The reliance on this older legal model has its challenges, and the Land Registry, built upon an older, slower paced economic model, is straining to keep pace with the growing demand for land.

4.4 Economic Framework

The economic landscape in Trinidad and Tobago dictates both land use and land transfers. Artana et al (2007) described the economy as an oil rich middle economy, with a heavy reliance on Oil and Gas for Gross Domestic Product (GDP) growth. The oil boom between 1950-1973 (Artana et al, 2007, p. 7) show “relatively high growth with stable international oil prices” followed by increased growth that began to slow down with negative growth per capita from 1983. Stable growth followed from 1983 - 2008, with dips observed in response to the global financial crisis of 2008. Despite the volatility of the economy, the GNI per capita (PPP) is US \$28,622, compared to US \$13,671 in Latin America and the Caribbean, and US \$7,846 in Jamaica (UN Human Development Index 2018, p. 3).

Trinidad and Tobago has seen an increase in the growth of the hidden economy since the 1983 decline, with gains attributed to informal activities (e.g. home based unregistered businesses) and organized crime networks. Money laundering and the use of land to layer illegal money has been a focus of the Ministry of the Attorney General and Legal Affairs, prompting the passage of several anti-money laundering and anti-corruption pieces of legislation. In 2017, the Financial Intelligence Unit (FIU) of Trinidad and Tobago recorded around US \$3 Million in 'suspicious transactions' “an increase of 500 percent compared to the figures for 2016” (Loop News, 2017). Improvements in the tracking and investigation of illegal gains will require access to more reliable and accessible real time information on land use, transfers and ownership.

With a vibrant real estate market, and increasing numbers of annual land transfers, the partial digitization of Deeds and Titles has impacted on the ease of doing business in Trinidad and Tobago. In collaboration with key stakeholders, the Land Registry views the digitization of its records as the first step towards improving internal and external processes and supporting better integration with stakeholders. The integration of the data between land management agencies at the local and national levels is necessary for a future integrated land administration system. Delays in completing land related registration is expected to decrease, and improvements in accurate and more secure data are anticipated by the Registry and its stakeholders. The digitized data will also feed into the creation of a new Land Registry system, the Property Business Registration System (PBRs) that is scheduled for full launch in 2020 (Loop News, 2018).

4.5 Administrative Structure

In Trinidad and Tobago, management of the various components of land administration is separated across four (4) State organizations under different reporting Ministries. Each agency is granted through legislation or policy remit for the capture, management and storage of the data pertinent to their organizational needs. This approach has led to the generation of silos of data in varying formats. This structure arises out of the laws passed down under the Commonwealth while under British rule. Though some Commonwealth countries have chosen to amend this organizational structure with changes to legislation, Trinidad and Tobago retains the traditional configuration of its organizations with responsibility for land administration.

With the administration arms separated, each organization has modernized at varying speeds within their assigned remit. Most agencies still relying heavily on manual processes and attempts to modernize or automate these systems have faced challenges related to availability of human and economic resources. There are three (3) Central government and (1) local government body that have the main responsibilities for land administration.

The agencies responsible for components of land administration include:

1. **Ministry of Agriculture Land and Fisheries**

- a) **Survey and Mappings Division**

This Division administers, co-ordinates, maintains and extends geodetic control networks, traverses, precise levelling or other precision measurements forming the National Survey Control System, and maintains the salient permanent reference marks governing or providing subsidiary controls surveys. This division creates topographic map sheets which is used for cadastral surveys. they include sketches and labels along with log book reference.

Key data: Cadastral plans, special information, address, property description, unique identification number



Image 1 - Cadastral Sheet

b) Commission of State Lands

Land in Trinidad and Tobago can be either privately owned or freehold land titled to the state (State Land). This includes the islands' shorelines below the high-water mark and the seabed within the nation's territories. These lands are administered by the Commissioner of State Lands, included in this responsibility is the issuing of licenses, rights of way, special permissions, leases and agreements, the service of eviction notices for squatters, as well as advisory and termination notices to tenants in breach. The Commissioner of State Lands is also responsible for the issue of State grants and for the acquisition of privately-owned land for public use.

Key Data:

2. Ministry of the Attorney General and Legal Affairs

a) The Registrar General Department

The Registrar General's Office has responsibility for the registration of deeds and instruments related to land. They are the legal custodian of all land records. Under the RPA System the department is accountable for title.

Key Data Stored: plans, address, property description, owners, chattel description, value, Registration unique identification number

3. Ministry of Planning and Sustainable Development

a) Town and Country Planning Division

This Division is responsible for the maintenance of special records for all applications submitted or development permission. They maintain a master cadastral index map upon which new applications are plotted. Processing of applications under this Unit must be preceded by authorization from municipal authorities (local government).

Key Data: unique identification number, cadastral information,

4. Ministry of Finance

a) The Valuation Division

Under the direction of the Commissioner of the Commissioner of Valuation is responsible for the valuation of every parcel of land in Trinidad and Tobago (including buildings, plant and machinery) for all purposes required by Government, subject to Presidential exemption from such valuations.

Key Data stored: address, land description, owners, unique identification number, special data, value, attributed

b) Inland Revenue Division

The Inland Revenue Division is responsible for the collection of Stamp Duty. Stamp Duty is the tax paid when executing certain transactions that require legal documents. Deeds of Conveyance, Deeds of Gift, Deeds of Mortgage, Release of Mortgage Loan, Release of Life Insurance Policies, Transfer of Shares, Deeds of Lease, Deed Polls, Bonds, and any other deeds, require “stamping”, which means you must pay duty. This tax is required for the registration of legal documents within the registry.

Data Stored: unique identification number, address, owner, value, stamp duty

5. Local Government

a) Ministry of Rural Development and Local Government

Municipal Corporations are responsible for development control within municipalities. Land use changes (building, land development and construction) are subject to approval from local corporations. There are fourteen (14) Corporations registered in Trinidad and Tobago that fall under this Ministry. Approvals relate to construction planning and related activities, land development, building and land subdivision plans, and other linked activities for building and land development.

b) Tobago

Although land registration in Tobago is managed under the national framework, Tobago faces high numbers of land that are not registered legally. Tobago has recorded decades of land transfers that were not regularized with the Tobago House of Assembly (local government) or Land Registry, RGD. Instead, land was handed down through families over generations. This practice prompted the THA to request support for the regularization of land (Tobago House of Assembly, 2012). As such, Trinidad and Tobago is now seeking to introduce a third type of legislation to support the registration of all property. Digitization then must include at least two types of documents that register ownership of land and property on both islands, with potential for a third type being registered in the near future. At the time of completion for this paper, this new Act was not yet proclaimed.

Each state entity captures, stores and manages data independently, leading to duplication of effort, inconsistency in data structure across the state entities and inaccuracy of data collected. independently with entities using each other data.

5.0 The Project

In 2012, the RGD sought financing to digitize over 1.6 million records under both the Common Law (Pre-1970) and RPA stored in the Land Registry. The unit conceptualized and proposed a five (5) year project that would include:

- Digitization of land records
- Archival and Conservation Approaches
- Upgraded Workspaces and Vault
- Streamlining of customer information
- Development and Launch of an automated land transfer solution

The RGD, under its lead government Ministry, the Ministry of Legal Affairs, submitted a proposal to access US \$20 Million through an internationally financed loan to roll out the project. In 2013, the project was approved, and the Government of the Republic of Trinidad and Tobago received financing for the *Strengthened Information Management at the Registrar General's Department* Project. Financed through an Inter-American Development Bank (IDB) loan, this five year initiative was tied to an overall national vision linking national policies and strategies towards measurable results. In alignment with Public Sector Investment Programme (PSIP) goals, the project aims to:

1. Improve the service delivery at the Registrar General's Department head office and satellite sites in Trinidad and Tobago
2. Establish stronger foundations for property registration processes by improving reliability, accuracy and accessibility of RGD services
3. Create improved governance and physical structures to foster maximized use of human and financial resources

The Project falls under the 2016 – 2020 thematic planning areas of: (i) Delivering Good Governance and Service Excellence; and (ii) Building Globally Competitive Business.

The Project demonstrates the need for a comprehensive approach to the digitization activity. With records dating back to the 1700s, the RGD will ensure that the digitization process does not erode the fragile paper documents, accurately captures the data and documents' historical, archival value, while still meeting the needs of the busy Registry. This approach also ensure that there is a dedicated investment into this activity, that identifies financial and human resources to reduce timelines and minimize the disruption to daily operational requirements.

Some resources financed under the project related to the digitization activity include:

- Firm to scan and index all records using standardized metadata fields
- Legal Consultant to review existing and proposed legislation to ensure digitization is compliant or in alignment with legal framework
- Archivist to ensure data capture is in line with international best practices for digital documents
- Conservator to support treatment and handling of documents, in particular older, damaged books and maps

On October 19, 2017, the Ministry of the Attorney General and Legal Affairs entered into an agreement with the University of the West Indies, St. Augustine to digitize all records under RPA from inception to September 2017. This would include all RPO and RPA records, and would include scanning, indexing and quality assurance using a digital framework designed by UWI. The primary objective was to improve access to records for searches, verification of content against both the image and indexed data and provide base data for the proposed Property Business Registration System (PBRS) that would introduce an improved automated system of registration in the Land Registry.

The contract, valued at just over US \$700,000.00 was scheduled for one (1) year period and would rely on the other resources attached to the movement to automation, i.e. Archivist, Conservator and the firm for the creation of the PBRS. Prior to commencement of the process, the Ministry was responsible for:

- A. Creating adequate office space for digitization team
- B. Prepping of records, including corrections and treatment as needed from a Conservator
- C. Deconstruction of bound books with large maps for scanning
- D. Creating and Maintaining a Quality Assurance Team to audit usability and accuracy of digitized images and captured metadata

Given that the Land Registry relies heavily on paper-based verification and manages a 'live vault', the Ministry also needed to ensure that access to the documents for digitization did not interfere

with requests for the documents to perform searches, transfers or other registry activities. Closure of the Land Registry to facilitate digitization was also not an option, and the firm was also restricted in access to the vault within existing operational hours of access, i.e. 7:00a - 3:00pm.

6.0 Digitization Process Structure

6.1 Process

The digitization process sought to create electronic records of land title documents for the purpose of preservation and eventual upload into a Land Administration Information System (LAIS) which at the time was, yet to be developed. This exercise formed a critical task to the implementation of the LAIS as the digitized information was core to the operationalizing of the proposed LAIS.

As a requirement of this exercise, the documents to be digitized, remained on the RGD premises. This was required for the following reasons:

1. The vault remained active - the RPA system within the land registry remained manual with the physical documents required for the day to day operation of Registry;
2. Due to legal requirements the Registrar General required oversight of the handling and security of documents being digitized;
3. The vault was only accessible to employees of the RGD;
4. Registrar General is the legal custodian as such the security and maintenance of these documents are within her remit

With the vault active, the project intended to use the existing vault resources and manual processes to provide access to the required documents for digitization. With the documents to be digitized primarily bound in books, as part of the initial steps of the project, the books in the vault were catalogued. This list was used by the contractor to request volumes from the vault the day before they were required by the digitization team. This list allowed the registry the opportunity for the first time to identify all the volumes in the vault along with those that may have gone missing or lost over the years as well as those in need of restoration.

The books were delivered at start of the business day and returned to the vault at the end of the business day. Diagram 1 – High Level Digital Imaging Process shows that the process for the creation of digital images of the volumes.

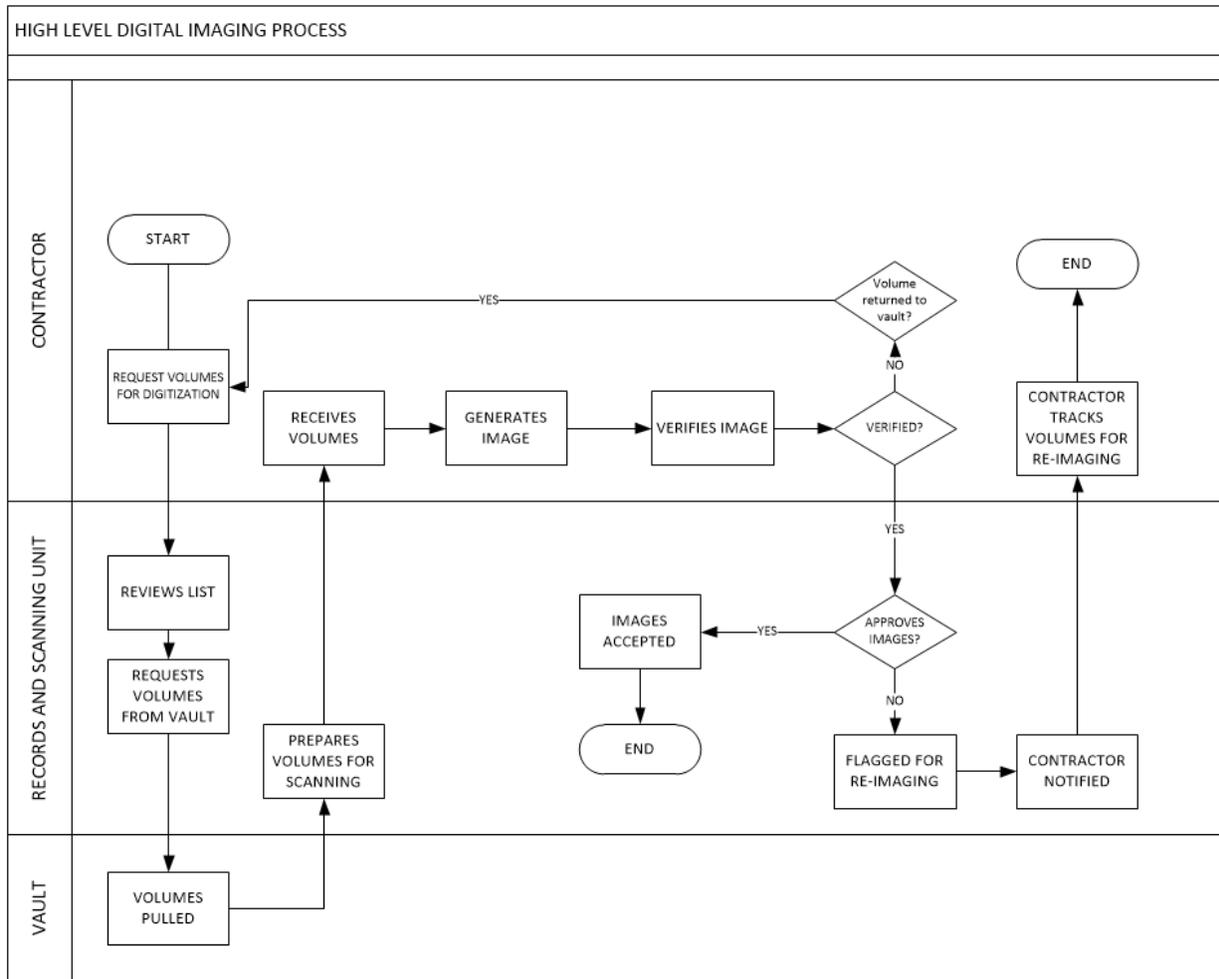


Diagram 1 - High Level Digital Imaging Process

The firm used a typical conversion process with a team of approximately 40 to 80 persons creating digital images, indexing and verifying volumes. This team was broken up into:

- 11 - 12 Scanners using book, flatbed and wide format scanners
- 20-25 Indexers

- 10 Verifiers (Quality Assurance)

The Ministry committed to providing office space, connectivity for an isolated network, and four (4) Scanners: 1 Flatbed Scanner, 2 Book Scanners and 1 Wide Format Scanner for large maps. The firm was responsible for the provision of all supplementary equipment required for the project, inclusive of scanners, computers, servers and software. Prior to the mobilization of the digitization activities, a ‘Train the Trainers’ for the RPA document structure and content was led by the Records Unit. This was needed as most of the Scanners, Indexers and Verifiers engaged by the Firm were not trained or familiar with the Registry, but were temporary hires procured under that consulting firm.

The digitization exercise was broken up into two main processes:

a) Image Capture

The documents to be digitized were primarily bound in hard covered books using a combination of glue and stitching. As such as far as possible the volumes were scanned as is in book format. The book scanner used a dual-camera adjustable “V” cradle imaging system for capturing images of the documents. The scanners design allowed for even light distribution with no visible bright or dark spoke within the frame. The image captured needed to be high resolution, sharp images as manipulation of the image was not permitted. The scanners were chosen not only for the quality it produces but also presented an ergonomic design allowing the operator to be comfortable and protected from the bright lights.

The scanning method allowed for the preservation of the documents. Some of the volumes stored in the vault were torn, tattered and/or illegible due to over use, age and poor storage conditions. Further to these issues the documents to be digitized were created and stored in a manner that did not anticipate digitization:

1. Stamps placed close to the edge of the document where it was bound
2. Ink used for stamps faded over time
3. Documents bound in books for security and long-term retention
4. Books not stored within physical conditions for preservation
5. Books access by persons not using appropriate gloves

This contributed to development of the project and dictated the approach to digitization.

	Identified Issue	Actions Taken
1	Stamps placed close to the edge of documents	Binding of book loosened
		images not over cropped
2	Ink used for stamps faded over time	high definition scanners used to capture the highest quality image possible
3	Documents bound in books for security and long-term retention	book scanner used to prevent unnecessary unbinding of books
4	Books not stored within appropriate preservation environment	A conservator and archivist position created to assist in the management and conservation of the documents
5	Books accessible to staff and members of the public for years	Contractor required to use acid free gloves when handling the books

Indexing

The contractor provided the software for the management of the data captured from the digitized image. The software was developed by the contract for use specifically within land data capture project with which they have had previous experience. As the document was scanned and the image verified, the indexing persons used the digital images to extract the metadata fields for data entry and verification.

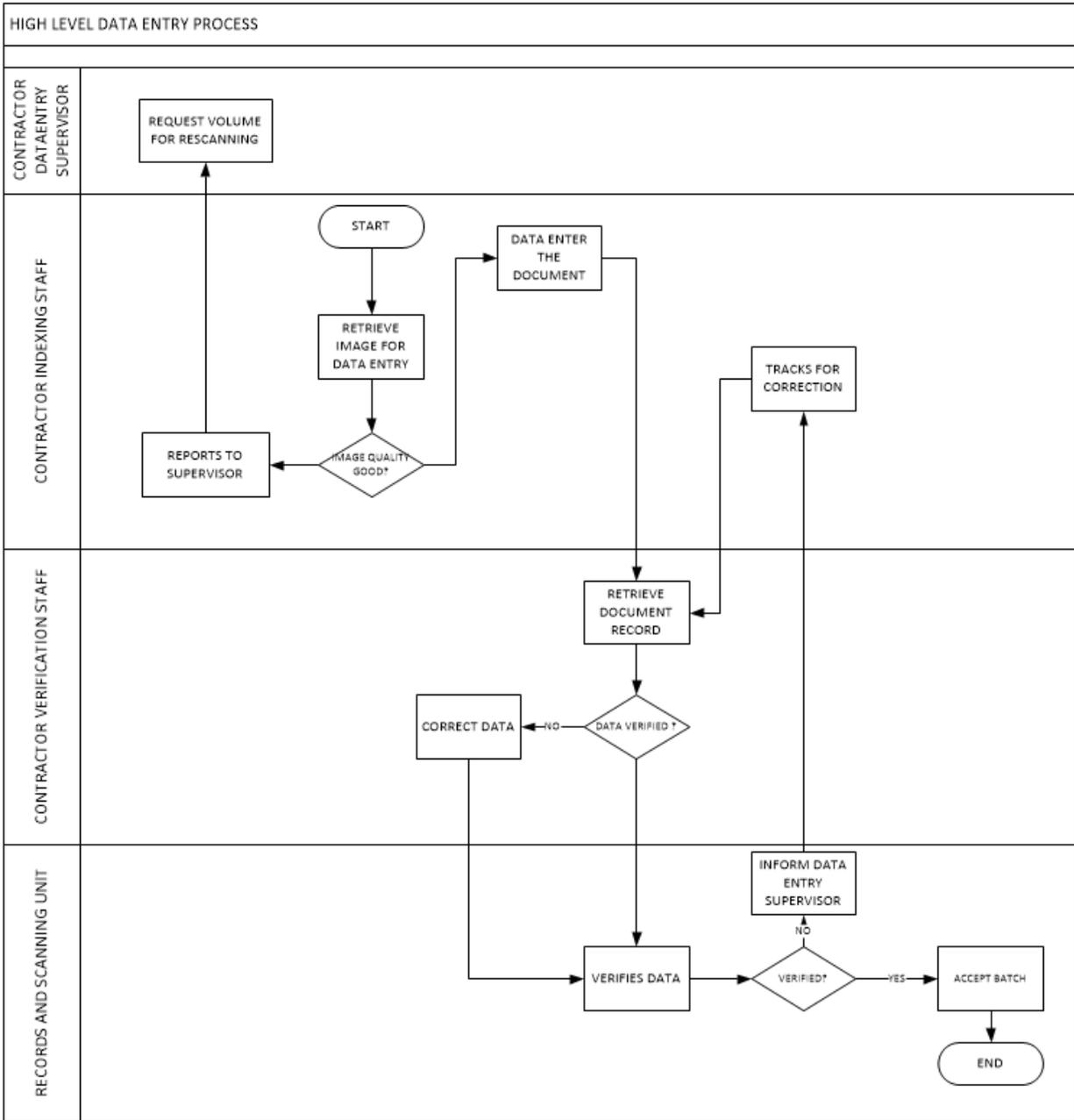


Diagram 2- Digitization Process

Indexing Fields

At the start of the project, focus was placed on the identification of metadata actively being used within the registry's manual processes, Appendix -Indexing Fields -First Version. These fields focused primarily on the identification of the relevant title document through the use of the owner and property details. Critical to the process was the determination of the document type. Having contracted the digitization exercise out the teams of persons performing the indexing process though familiar with spatial identification of the property were less so with document types within the Registry and less so the impact the document type had on the extraction of data to index and by extension title.

Clarification on document type was an ongoing process with Registry staff working closely with the contractors to assist with the daily queries of the contractors. This process of seeking clarification when needed added to delays in the project as a result the decision was made to pause the digitization exercise and conduct training on the recognition of document types. To facilitate this training the registry compiled for the first time a listing of all document types, See Appendix B – Document Types and their corresponding attributes.

7.0 Digitization Challenges

The digitization process was extended by the Ministry and is now scheduled for completion of all scanning by April 2019. Delays in the digitization process were documented and addressed, but timeline shifts were unavoidable in the quest for reliable, accurate and compliant data that would feed into the new PBRs.

The challenges encountered included:

a) Business Challenges

1. Changes to Indexing Fields

At the start of the project, the indexing fields identified were based primarily on the 'as is' manual processes of the Land Registry. With the implementation of an LAIS system actively being pursued, the indexing fields being captured by the firm were not sufficient for the development of meaningful workflows for the management of land titles. In addition, the introduction of new legislation to govern land registration required more expansive data collection, and as a consequence, additional fields during the digitized process.

2. Identification of type of document

With the documents related to the RPA still manual, the operations of the Land Registry was based on hands-on training and the institutional knowledge of the staff within the Registry. Prior to the digitization project, document types and its attributes had not been documented electronically. Classification and identification of indexing fields in scanned documents was further exacerbated by the fact that there existed no fixed format for documents. Lawyers were free to use their own styles while still adhering to legislation. This created a steep learning curve for the digitization firm. The temporary staff structure of the firm and fixed timeline for completion of the digitization process clashed with the requirement to read titles in detail to source required indexing fields. This led to longer timeframes for indexing and increased level of effort by the contractor.

3. Siloed Approach

Following along the same path as the independent agencies who contribute to the administration of land within Trinidad and Tobago, the digitization project focuses primarily on the needs of the Registrar General's Department. The type of digitized image and metadata fields captured is primarily meant to meet the needs of the RGD staff and is tied to improving ease of access and business functions within the RGD. Collaboration with stakeholders in identifying and agreeing of most used fields was undertaken in 2017 and during the first half of 2018. Since then, further stakeholder collaboration has not been undertaken by the Ministry to reaffirm the appropriateness and relevance of the proposed revisions to the indexing fields.

4. Resources

Initially the digitization was to operate on a shift basis allowing a smoother and more optimal workflow as well as faster processing of the batches. Being restricted to using the existing vault resource this could not take place as the firm was restricted to fixed hours of work (7:00am - 3:00pm for Scanning and 7:00a - 7:00 pm for Indexing and Quality Assurance).

5. Live Vault

The vault is still active, as such during the digitization process volumes requested would need to be returned to the Registry for operational needs. This disrupts the workflow and adds significant overhead for the tracking of books requested, scanned and returned. It also created conflicts in the demand for the books by internal and external users.

6. Land Administration Domain Model (LADM)

A Land Administration Model for the country is yet to be finalized. The Ministry engaged an external resource to assist in the drafting of a national LADM, and the draft LADM model was discussed during a training session in November 2018. LADM is identified as a preferred standard for data management under the new Property Business Registration System, so the Ministry will prioritize this activity, in collaboration with national partners to finalize the model.

b) Technical Challenges

1. Data Capture

Having configured the application to capture the indexing fields defined by the Land Registry, the digitization firm created drop down boxes for the agreed list of fields in 2017. The drop-down boxes had defined data sets such as wards and counties and as far as possible were used to reduce errors in data entry. However, the use of these boxes slowed down the data entry process due to the design of the software. As a result, indexers were allowed to enter text freely and the verifiers correct as necessary. In some instances, fields such as description of property that should have been captured as discrete fields were entered in a free text field. These fields would later be broken apart through the use of programming.

c) Contractor Challenges

1. Staffing

The digitization processes of scanning, indexing and verification was not considered a specialized skills and the data capture and entry is usually done by entry level, low-skilled personnel. The digitization firm did have skilled and experienced key experts, such as a Project Manager and Supervisor, who demonstrated previous experience with digitization projects in similar jurisdictions. However, due to the non-standardized structure of the document, and the unique terminology used by the Land Registry, the use of entry level low skilled resources created challenges for scanning quality, data entry accuracy and verification precision. Given the type of documents to be digitized, language training and need for discernment required staff hired by the digitization firm to undergo significant training. Prior to the training, the process was slow and prone to errors. Further, given that the positions were entry level and low skilled, the firm faced high levels of staff turnover and absenteeism that required ongoing recruitment, retraining and inconsistency in batches of digitized records submitted by the firm.

2. Contract Adjustment

Having determined the metadata fields based on the ‘as is’, the Registry looked forward to the implementation of business rules as part of the LAIS the metadata fields being captured was identified as lacking. With the data from this digitization project to be imported into the LAIS, the completeness of the data was important to immediate usefulness of the new system.

d) Natural Disasters

A 6.9 magnitude earthquake on August 21, 2018 created an unexpected disruption to the digitization process. The emergency evacuation of personnel and vault contents took over two (2) months to complete, resulting in a disruption of the digitization process. The time lag also led to staffing losses for the firm, and full operations were not restored until November 2018. Natural and man-made disasters, including flooding, theft / destruction of documents and fire are ongoing risks that can affect the paper records, and reiterates the need for digitization.

8.0 Digitization Successes

The Ministry has not yet defined the successes of the digitization process as the contract is still in force. However, the following gains were documented:

- 1) 320,323 digitized RPA Documents as at December 31, 2018 (Baseline was 0)
- 2) The RGD has a compiled list of all RPA documents in the Vault
- 3) Electronic documentation of document types and their characteristics under RPA

The digitization process is a precursor to the implementation of the national LAIS (referred to as the Property Business Registration System (PBRSS)).

9.0 Stakeholders and Digitization

The involvement of stakeholders in the process of digitization can help or hinder the effectiveness and usefulness of the final product. The Council of State Archivist in its Digital Best Practices Series guide (August 2017) identifies two (2) key stakeholders that determine the success of a digitization project: (i) Executive Stakeholders; and (ii) Other Stakeholders.

The Executive Stakeholders determine the scope, quality and content guidelines that govern the digitization. This body is often familiar with international best practices for standards related to digital archiving, conservation guidelines for the treatment and care of older, more fragile records

that are being digitized, and technical teams to ensure that the digitized records meet operational and legal requirements to not only support but improve the accessibility and ease of access of records by internal and external users.

Other stakeholders refer to users that should be considered during the digitization process, such as “members of the public, a public agency, or a niche community” (COSA, 2017, p.7). Communication with stakeholders and staff during the process of digitization on project’s goals, timetables, and progress related to acceptability of submissions can flag issues early in the process and effectively track and promote successes achieved in real time.

The digitized records must be accepted by staff and stakeholders to be deemed successful. Stakeholders that do not understand or buy-in to the categorization of metadata fields, the approach to image capture (full color or black and white) or data presentation could lead to resistance to change, with both staff and / or users dismissing the final products.

10.0 Gaps in the Digitization Process

The digitization activity of RPA documents is one element in the digitization approach undertaken by the Land Registry of Trinidad and Tobago. The Registry continues to digitize new Deeds processed through Common Law and respond to Pre-1970 ‘Scan on Demand’ requests as needed. However, the indexing fields being captured for new Deeds remain similar to the limited fields that were captured at the start of the RPA Digitization process. Further the indexing fields will need to be amended to align with the land and non-land transactions that are undertaken under this legal framework (Appendix B). As such, the RGD will need to collaborate with its stakeholders to agree on the final list of indexing fields that will be captured for each document type. The RGD is also considering the engagement of a new firm to undertake the Pre-1970 Deed data capture, a process that may face similar ‘learning curve’ challenges if the firm’s entry-level personnel are unfamiliar with the RGD document structures and varying types.

The benefits of the bulk capture approach gained by the hiring of a firm is meant to support a faster completion of the digitization activity, and the classification of the activity of a project, that would mean a dedicated project team, financial resources (as opposed to relying on recurrent expenditure costs) and a specific timeline for engagement. A key lesson learned by the Ministry in the RPA Digitization is the need to either:

- I. Engage a firm that can identify and provide trained and experienced personnel at all levels to digitize records; OR

- II. Build in a one (1) month training and monitoring program at the start of the digitization project, to define and agree on quality of images, data capture approaches and staffing arrangements. Close monitoring of lags at the start of the project can also flag the need to adjust the timelines, if required, to include a longer orientation period, or to increase the number of man hours / shifts rolled out by the consulting firm.

Both lessons learned will be applied by the Ministry in the upcoming approach to engaging a firm for the digitization of the Pre-1970 records.

11.0 The Way Forward

The launch of the Property and Business Registry System (PBRS) based on the ISO: 19152:201 Land Administration Domain Model (LADM) standards will be an innovative step towards the modernization of the Land Registry services of the RGD in Trinidad and Tobago. Under this PBRS solution, the RGD will have a platform to facilitate iterative changes that are both scalable and adaptable in response to changing legislative, business and technology requirements. After reviews and consultations with other jurisdictions in Canada, the United Kingdom, Uganda and the Caribbean, the ability to adapt systems and processes over time was identified as one of the most critical requirements under a Land Registry framework.

Recommendations for Standardization Across Government Agencies

Standardized terminology, i.e. to develop one word, phrase or synonym to describe a single concept for the purpose of effective communication across within a defined domain (Pike 2000: 281).

With the identification that there is a need for a unified understanding of the structure the data should take across all related legislation, agencies, ministries and key stakeholders. Key to this process was a need to establish a common terminology. With all participants operating in the same arena and within the same legal context there existed nuances to the interpretation. The law is subject to the reader understanding and the use of words in the legal domain is often used in different contexts based on the participating agency. The terms needed to be brought in sync to add in the development of classification and structure. This terminology once established will create a framework to be applied not just to the RGD across all land administration participants to improve data handling, sharing and reporting.

In the Trinidad and Tobago scenario with two legal frameworks and land administration reform legislation in the pipeline this standardization was critical to the digitization and ongoing evolution of the RGD.

Digital Sorting, Archiving & Conservation

In alignment with UNESCO's Guidelines on Preservation and Conservation Policies in the archives and library heritage, the RGD should prioritize the adoption of a Policy document (UNESCO, 1990, Section 4.1) to:

- (i) adopt preventive measures to minimize the rate of deterioration;
- (ii) identify housekeeping routines to clean, protect and extend the life of materials;
- (iii) prioritize staff and user training programs to promote and encourage correct handling and transport of materials; and
- (iv) introduce security measures and contingency plans for disaster control and recovery; among other areas for the protection and repair of land registry documents.

The Ministry should also promote a movement to limit access to paper records once the digitization processes are completed, to ensure that boxing, binding, and wrapping, particularly among older or more brittle documents are prioritized by the RGD.

Data Strategy and Organizational Structure

As the Registry moves closer to becoming a digital registry, the data collected and stored will not only grow in size but content and provide the details required for land titling and the holistic management of land. This data can be leverage across several state agencies allowing for a holistic approach to decision making, investments and national development. This approach forms part of a data driven strategy to for the collection, standardization, management and protection of data collected and shared. This a digital transformation journey where data will be treated as an asset will ensure all initiatives abide by a common structure and method allowing for uniformity, efficient communication, and non-duplication.

Organizational Structure

Recognizing accurate data as an asset and its management important to the move to a data driven decision making, there is needs to look at its organizational structure to drive and support this effort.

Data Management

As part of the data strategy, data management will play a critical role particularly in the Trinidad and Tobago environment. With the existing siloed approach to land management there is need for the standardization of data, their attributes and groupings as follows:

Data sets:

Data sets seek to group data functionally. with independent organization responsible for different sets of data both administratively and legally there is need to identify these data set to glean an understanding of the organizational and data dependencies.

Meta data:

Comprises of supplementary information about the data to be collected, managed and used. This is managed separately from the data and provides information on data. With data being collected from several sources and with multiple custodians. In such a legal framework metadata is important to improve the accountability for the data being captured and shared

Data Stewardship:

Who is responsible for the data, the catalogue development, maintenance and auditing to ensure high quality and correctly secured for proper authorization by approved users. Such an approach shall allow for the development of enterprise data which can then be pivoted for future use in analytics and business intelligence.

Proposed Improvements in the data conversion process

When the digitization process is part of the activity to establish an integral land information system, the data captured should incorporate as much information as possible to build a digital land registry and link the records to have a chain of title.

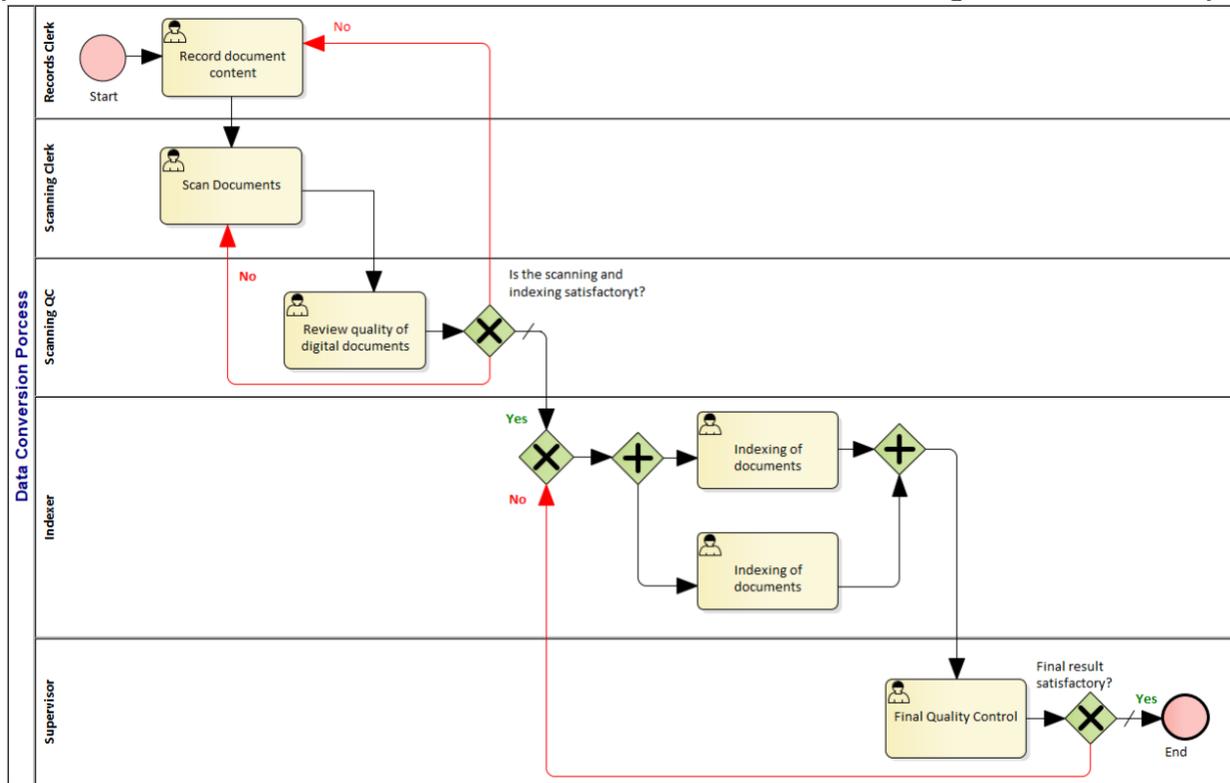
Capturing basic metadata from each digitized document is not necessarily a good practice. The digitization should be carefully planned to take into account the future use in the land information system and when possible to model using the essential but mandatory elements in LADM.

As part of the process, each document should be linked with other documents affecting the same property. This can be achieved in different manners according to the legislation. When the rights are recorded in a title with a Torrens system, the process is more straightforward as usually the documents are clearly marked and, in many cases, stored together. When a deeds system supports the rights, the registries usually are dispersed, having one register separated for ownership, other for encumbrances and is common to have one separated for mortgages. For this type of scenarios, the system should support a more flexible way to convert the rights.

Use of workflow capabilities.

The advances in technology and reduction in the cost of hardware make possible to design a better data conversion software taking in account the LADM standards, the creation of a chain of title and linkage of the documents related to a transaction, all in a transactional system. The proposed

process follows the following steps.



The diagram displayed above, have the scanning of documents at the beginning of the process, to allow the indexers to use digital images (preferably in two screens) for the indexing of the documents, this gives the advantage to having the activity in parallel. The double indexing minimizes the errors in the data entry, as the indexers have the information entered in parallel, and the system can flag, at the final quality control, the discrepancies in a visual manner. For instance, highlighting in red the fields that are not equally giving the possibility for the supervisor to send it back or correct it on the fly based on the digital documents.

The use of an automated business process allows configuring this type of workflow customized to the particular needs of the legislation.

In summary, standardization of fields, use of automated business process and double entry, is a good recipe for the creation of a reliable registration inventory with the necessary capabilities for title inspection and to serve as a source for an integrated land information system.

Legislative Review

The legal framework will need to be amended to ensure that electronic registration is accepted, documented and archived within the Land Registry. The approach to modernization of land administration among the various Ministries should also be streamlined under the revised legal framework, and guidelines for alignment can be identified under Trinidad and Tobago's Vision 2030 document (GoRTT, 2016). Areas of concern that should be addressed urgently relate to the acceptance of electronic feeder documents, and the validity of both electronic and paper titles and Deeds.

12. Conclusion

Digitization is the first step towards the automation of a Land Registry. However, this activity must be aligned with an overall vision and strategy to promote change management within the Registry, including conservation and archival procedures, knowledge management towards behavioral change and communications, application of the digitized product in an automated environment, and improvements to the legislative framework to support electronically stored data. In Trinidad and Tobago, the approach is comprehensively linked to a national vision, despite delays related to procurement of supporting activities. The application of the digitized products in an updated electronic land registry will strengthen the Land Registry and the Registrar General's Department as a whole.

With a projected launch date in mid-2019, the Land Registry's Property Business Registration System (PBRS) will boost the RGD's services for both Deeds and RPA titles, improving ease of doing business for private citizens, governmental partners and corporate bodies in the legal and banking sectors. The PBRS will support shorter time frames for title searches and improved accountability for accessing and processing documents under both legal frameworks. Other project benefits expected by 2019 / 2020 included:

- Improvements to the RGD workspace and access to resources
- Improved care of older and more fragile documents
- More secure tracking of vault contents and changes to vault management structures
- Increased access and availability of electronic services

The improvements under the PBRS should also support inter-governmental links with Ministries and governmental agencies that currently share or receive information from the Land Registry. Improved interoperability and information flow is expected with the Survey and Mapping Division (Ministry of Agriculture, Land and Fisheries), the Water and Sewerage Authority (WASA), the

Board of Inland Revenue (Ministry of Finance), the Judiciary, Local Government, and the Police, to name a few. Improved internal linkages between the Land Registry and other RGD Registries (Civil and Companies) are also built into the PBRS design. The improved synergies between external and internal stakeholders will create a more enriched view of Land ownership in Trinidad and Tobago. Data from the Land Registry can then feed into medium and long-term policy and developmental plans for Trinidad and Tobago.

Beyond 2020, the RGD should examine the technology landscape to include fully automated rules based registration and more secure system solutions such as Blockchain. Both approaches remove human element of error during transaction and limits fraudulent interference and transfers. However, the adoption of fully electronic processing and / or Blockchain requires strong, accurate data and a single legislative structure (Torrens / Torrens based) that guides all land transactions. The legislative structure needed for advanced e-processing and Blockchain encompasses areas such as (i) Data Standards, Classification and Security; (ii) Electronic Signatures; (iii) Identity Management; (iv) Electronic Payments; (v) Electronic Conveyancing; and (vi) Standards for forms, submissions and metadata. The governance structure also combines the Land Registry with other non-traditional Departments. Other jurisdictions have mobilized to new technologies by partnering with private sector stakeholders to establish the required infrastructure. It is this type of partnership that should be examined after the launch of PBRS to further improve the services within the RGD over the medium to long term.

APPENDIX A - Legislative Framework for Land Registration in Trinidad and Tobago

Extract from Business Analysis Report (2019) for the Property Business Registration System (PBRS) of Trinidad and Tobago, Source: Ministry of the Attorney General and Legal Affairs

Title of Act	Chapter	Act No.	Year	Amended	Year amended
Administration of Estates	9:01	28	2000		
Agricultural Small Holdings Tenure	59:53:00	32	1961		
Bills of Sale	82:32:00		1925	Yes	
Co-operative Societies	81:03:00				
Commissioners of Affidavits	6:52				
Computer Misuse			2000		
Condominium		23			
Conveyancing and Law of Property	56:01:00	18	1939		
Crown Suits Limitation		8	2018		
Cybercrime			2017		

Cybercrime, Explanatory Note					
Data Protection	22:04	13	2011		
Data Protection, Proclamation			2011		
Distribution of Estates		28	2000		
Division of Trinidad	26:01:00	5	1926		
Electronic Transactions	22:05	6	2011		
Electronic Transactions Part VII, Proclamation			2011		
Electronic Transactions Parts I through IV, Proclamation			2011		
Exchequer and Audit	69:01:00	20	1959	Yes	
Exchequer and Audit (Electronic Funds Transfer) (The), Regulations			2015		
Foreign Investment		16	1990	Yes	
Geographical Indications	82:78				
Geological Survey	60:02:00	11	1905		

Land Acquisition	58:01:00	28	1994	Yes	
Land Adjudication		14	2000		
Land Adjudication, Amendment		10	2018		
Land Law and Conveyancing		20			
Land Registration		24	1981		
Land Surveyors	58:04:00	33	1996		
Land Tenants (Security of Tenure)	59:54:00	11	1981		
Land Tribunal		15	2000		
Land Tribunal, Amendment		9	2018		
Landlord and Tenant		19			
Lands and Buildings Taxes	76:04:00				
Legal Aid and Advice	7:07				
Legal Profession	90:03:00				
Limitation		22			

Municipal Corporations	25:04:00	21	1990	Yes	
Municipal Corporations (Amendment)		8	1992		
Notaries Public	6:51				
Property Tax, Amendment		6	2019		
Real Property	56:02:00	Ordinances No: 20-1945, No: 41-1947, No: 47-1950			
Real Property Limitation	56:03:00	Ordinance Chap. 5 No: 7-1940		Yes	
Registrar General	19:03	49	1921	Yes	
Registration of Deeds	19:06	18	1884	Yes	
Registration of Titles to Land		16	2000		
Registration of Titles to Land, Amendment			2012		

Registration to Titles to Land, Amendment		7	2018		
Remedies of Creditors	8:09				
Rent Restriction (Dwelling Houses)	59:55:00	45	1981		
Rent Restriction (Serviced Premises)	59:52:00	10	1943		
Rent Restriction (Short Tenancies)	59:51:00	14	1944		
Resumption of Land	57:03:00	22	1914		
Stamp Duty	76:01:00	28	1908	Yes	
Stamp Duty (Special Provisions)	76:03:00				
State Grants and Leases (Re-Issue)	57:02:00	20	1904		
State Land (Regularisation of Tenure)	57:05:00	25	1998		
State Lands	57:01:00	32	1918		
Succession		27	1981		
Three Chains (Tobago)	57:04:00	28 Vict: c: 1			

Tobago Deeds	19:07				
Town and Country Planning	35:01:00				
Trinidad and Tobago Housing Development Corporation	33:03:00				
Trinidad and Tobago Survey	60:01:00	29	1939		
Trustee		21			
Valuation of Land	58:03:00	18	1969		
Valuation of Land, Amendment		5	2018		
Water and Sewerage	54:40:00	16	1965	Yes	Acts 9 of 1969, 32 of 1969, 3 of 1970, 7 of 1978, and 45 of 1979
Wills and Probate	9:03	Ordinances 25 of 1945, 34 of 1945		Yes	

APPENDIX B - Document Types

This is a list of document types captured under the Common Law System within the Trinidad and Tobago Land Registry

1. Acquisition / Resumption
2. Assent
3. Assignment
4. Caveat
5. Certificate of Title Issue
6. Certificate of Title Reference
7. Certificate of Title Request and Issue
8. Consolidation Request
9. Court order
10. Death of Life Tenant
11. Death Other
12. Discharge of Mortgage
13. Endorsement Request
14. Gifts and Settlements
15. HDC Charge
16. HDC Release
17. Lease
18. Lease of Oil Rights
19. Lispendens Caveat
20. Memorandum of Assent
21. Memorandum of Discharge
22. Memorandum of Discharge Request
23. Memorandum of Easement
24. Memorandum of Gift
25. Memorandum of Lease
26. Memorandum of Mortgage
27. Memorandum of Partition
28. Memorandum of Transfer
29. Memorandum of Surrender
30. Memorandum of Transfer of Sub-Lease Merger
31. National Loan
32. National Loan Release
33. Partial Discharge
34. Partition
35. General Plans
36. Power of Attorney

- 37. Request for Certificate of Title
- 38. Re-Registered
- 39. RPO Charge
- 40. State Lease
- 41. Sub-Mortgage
- 42. Sublease
- 43. Surrender of Lease
- 44. Substitution of name
- 45. Transfer
- 46. Transfer of Lease of Oil
- 47. Transfer of Mortgage
- 48. Transfer of Sub Lease
- 49. Variation of Mortgage
- 50. Vesting Order
- 51. Withdrawal of Caveat
- 52. Out for Corrections
- 53. Missing
- 54. Withdrawn
- 55. Memorandum of State Agricultural Lease
- 56. Memorandum of Partial Discharge
- 57. Memorandum of variation of Mortgage
- 58. Grant of State Lands
- 59. Registration of Remaining Portion Plan

Appendix - List of Wards

ID	WARD_NAME
1	Arima
2	Blanchisseuse
3	Borough of Arima
4	Borough of Chaguanas
5	Borough of Point Fortin
6	Cedros
7	Chaguanas
8	Charuma
9	City of Port of Spain
10	City of San Fernando
11	Cocal

- 12 Couva
- 13 Cunupia
- 14 Diego Martin
- 15 Erin
- 16 Guayaguayare
- 17 La Brea
- 18 Manzanilla
- 19 Matura
- 20 Montserrat
- 21 Moruga
- 22 Naparima
- 23 Ortoire
- 24 Pointe-a- Pierre
- 25 San Rafael
- 26 Savana Grande
- 27 Siparia
- 28 St. Ann's
- 29 Tacarigua
- 30 Tamana
- 31 Tobago
- 32 Toco
- 33 Trinity
- 34 Turure
- 35 Valencia

References

Chapman, P. (1990). Guidelines on Preservation and Conservation Policies in the archives and library heritage. [online] UNESCO. Available at:

<https://unesdoc.unesco.org/ark:/48223/pf0000086345> [Accessed January 30. 2019]

Council of State Archives (2017). Digitization Projects, Digital Best Practice Series. [online] Available at:

https://www.statearchivists.org/files/6015/0272/2035/COSA_DigitizationProjects_final.pdf [Accessed February 04. 2019]

Tobago House of Assembly. (2012). Chief Secretary Writes Minister Of Legal Affairs On The Regularisation Of Land Titles In Tobago. [online] Available at:

<http://www.tha.gov.tt/news/chief-secretary-writes-minister-of-legal-affairs-on-the-regularisation-of-land-titles-in-tobago/> [Accessed February 27, 2019]

Artana, D et al. (2007). Trinidad & Tobago: Economic Growth in a Dual Economy An IDB Research. [online] Available at: <https://sta.uwi.edu/salises/pubs/workingpapers/16.pdf> [Accessed February 26, 2019]

Government of The Republic of Trinidad and Tobago. (2017). Vision 2030 - National Performance Framework (2017 - 2030) [online] Available at: <https://www.planning.gov.tt/sites/default/files/National%20Performance%20Framework%202017-2020.%20pdf.pdf> [Accessed February 26, 2019]

Griffith-Charles, C. (2017). The Relative Efficacy of Deed and Title Registration Procedures for Facilitating Land Transactions, Trinidad and Tobago, 6th FIG Regional Conference 2007 San José, Costa Rica. [online] Available at: https://www.fig.net/resources/proceedings/fig_proceedings/costarica/papers/ts06/ts06_01_griffith-charles_2444.pdf [Accessed February 04, 2019]

Opadeyi, J. (2002). Spatial Data Infrastructure and the Cadastral System of Trinidad and Tobago: the Caribbean Experience, Trinidad and Tobago, FIG XXII International Congress Washington, [online] Available at: https://www.fig.net/resources/proceedings/fig_proceedings/fig_2002/Js10/JS10_opadeyi.pdf [Accessed February 16, 2019]

Bourne H. C. (1897) Real Property Law in Trinidad and Tobago, Journal of the Society of Comparative Legislation, Vol. 2

Ministry of The Attorney General And Legal Affairs (2015) Conveyancing and Law Of Property Act - Laws Of Trinidad And Tobago, Ordinance No. 18 Of 1939, Updated To December 31st, 2015

Human Development Indices and Indicators: 2018 Statistical Update Briefing note for countries on the 2018 Statistical Update Trinidad and Tobago, [online] Available at: http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/TTO.pdf, [Accessed February 02, 2019]

Real Property Act, [online] Available at: https://rgd.legalaffairs.gov.tt/laws2/alphabetical_list/lawspdfs/56.02.pdf, [Accessed February 12, 2019]

Ministry signs \$35M deal to automate land registry system, [online] Available at:
<http://www.looptt.com/content/ministry-signs-consulting-firm-automate-land-registry-system>
[Accessed November 30, 2018]

AG: FIU records \$22 billion in 'suspicious transactions' (2017), [online] Available at:
<http://www.looptt.com/content/ag-fiu-records-22-billion-suspicious-transactions> [Accessed
February 12, 2019]