

**PHILIPPINES-AUSTRALIA LAND
ADMINISTRATION AND MANAGEMENT
PROJECT**

LAMP PROTOTYPE 1

**DATABASE REVIEW AND
PROPOSED DATA MODEL**

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REPORT C56



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SUMMARY OF RECOMMENDATIONS

1. The revised CIM database should be developed with the prime objective of providing cross references between agency records and identifying problems in land records (Refer to 3.2.1).
2. A systems development strategy should be commissioned to define the total requirements of the OSS and propose a staged implementation plan for realization of its requirements (Refer to 3.2.1).
3. The CIM database should be redeveloped to reflect the data structures depicted in Section 4.1. (Refer to 3.2.2). The existing system enforces PIO1 to capture far too much data which is not assisting PIO1 functions. This is a waste of resources and the data of other agencies can not be maintained.
4. The Document Tracking System database should be redeveloped based on the data model depicted in Section 4.2 (Refer 3.3.1)
5. Additional data should be included in the Document Tracking database to track complaints and the actions undertaken in response to those complaints (Refer to 3.3.1).
6. The delivery function should be undertaken by the OSS Front Counter staff (Refer to 3.3.2).
7. All customer contact should be directed through the Front Counter (Refer to 3.3.2).
8. Where a transaction resides at a location for more than one day, the transaction should be recorded against the person who is holding the transaction (Refer to 3.3.2).
9. Details of Public Land Applications and the issue of patents should be integrated in the CIM database (Refer to 3.4).
10. The CIM/UPI should be used as the linking data between the CIM database and the GIS (Refer to 5.1).
11. A procedure should be adopted in the OSS whereby new titles are automatically issued for new lots upon the approval of subdivision and consolidation plans (Refer to 5.4).

IMPLEMENTATION TASKS

Strengthen the systems development team by providing immediate information technology, data management and subject matter expertise.

Data Management

- Confirm the data items to be included in the new database based on the data model shown in this report. The principles for ROD collection are:
 - Capture only essential data from the title
 - Capture only live, not cancelled titles
 - Every title is labeled as it is captured so that update will be notified to the database manager
- Modify the existing data capture programs to conform with the data content of the new database (includes CIM and ROD data capture)
- Decide if the data in the existing database will be migrated to the new database or re-collected. Factors to be considered are the quality and the quantity of the existing data.
- Change procedures for data capture so that the data is of good quality
- Quantify the resource requirements for the capture of ROD data and develop a work plan for completion. This must include resources for keeping the database records up to date.
- Determine data update procedures to ensure the database is maintained in a current state
- Maintain files of all data codes such as PLA types, administrative units (barangays, municipality, province, etc.), land use codes, transaction types, etc., ensuring that where National codes exist they are adopted

I.T. Development

- Provide training for the systems development team in using SQL, database administration, systems administration applications development and in data analysis
- Design and develop specific data entry screens for data capture for each application (CIM, base camp, DTS, etc.)
- If required, write programs to migrate the existing data to the new database structures
- Build the new database tables and test and document with version control

- Develop applications software (specify, code, test, implement and document) for the CIM, base camp and front counter systems

1 INTRODUCTION

The study of the PIO1 databases was undertaken over a three week period in November 2004. One day was spent in Quezon City looking at the PIO2 databases and collecting documentation on the systems and the remainder of the time was spent at the prototype office in Leyte. The terms of reference for the study are shown in Appendix A.

The first two weeks of the study centered on collecting information from system documentation, procedure manuals and on viewing the existing computer systems and their outputs. Staff members in the OSS were interviewed and a visit was undertaken to the base camp at Pastrana. Three computerized systems were identified during the study. These were the Cadastral Index Map System (CIM), the Document Tracking System (DTS) and the Systematic Adjudication Unit System.

Preliminary database structures were designed based upon the information gathered and in the last week of the study a workshop involving key staff was held to test the design.

A presentation of the recommendations was given to the OSS Management Committee on 12/1/04

The study was centered on the content of databases and the structure of those data rather than on procedures however some comments are made on clerical procedures where they impact on data issues. Similarly, little time was available to study the integrity problems in the data or the data update issues, however a recent report (Analysis of the PIO1 and PIO2 databases/Cross Index, August 2004, Report D37) provides comments on this aspect.

2 OVERVIEW OF EXISTING DATABASES

2.1 Cadastral Index Map System

The Cadastral Map Index System is the main database of digital information in the OSS. It provides the textual information required for producing the Cadastral Index Maps is used to identify fake titles and duplicate lots.

The objectives of the Cadastral Index Map system are to:

- Maintain unique parcel identifiers for all parcels of land and provide a reliable link between textual land administration records and the graphical representation of the land parcel framework
- Provide an up-to-date cross reference between the records of the land administration agencies
- Supply information to support the surveying and land titling operations of LAMP.

The system has been developed on a Microsoft ACCESS database by the OSS personnel. The database consists of 29 tables and sub-tables. Six tables are for ROD data, three for CENRO and two for each of the other agencies. Four tables exist to record internal and adjoining owners of parcels. There are also two cross-reference tables and three code files and three security tables

The agency tables for ROD, DENR, DAR, LRA, CENRO and the Tax Assessors contain the following common data items:

- Region
- Province
- Municipal code
- Municipal name
- Barangay code
- Barangay name
- Source Code
- Lot Number
- Cadastral Plan Number
- Isolated Survey Number
- Land area
- Owners/Claimants names
- Owners/Claimants addresses

In addition, a significant amount of other information related to individual agencies is catered for in the database, including:

- land values

- land use codes
- tax declaration numbers
- claimant details
- land status
- patent numbers
- history of references to titles issued for parcels
- links between mother and child titles
- minimum and maximum latitude and longitude of parcels
- survey approval dates

A data model for the system is shown in Appendix B.

The database resides on a server in the computer room and is accessed by 8 computers in the OSS located in the CIM Unit, Support Services Unit, Monitoring and Evaluation Unit and the Office of the Prototype Management. Copies of the database are held on standalone computers at the San Miguel and Pastrana base camps.

The major user of the system is the CIM Unit. This Unit updates the database as regards new parcel numbers and title references and uses the system to answer enquiries from the public. Enquiries are usually to discover title references or other interests in a parcel of land. Enquiries can be made using the survey and lot number or by the name of the land owner.

2.2 Document Tracking System

The Document Tracking System (DTS) has been developed to record the movement of transactions lodged in the OSS.

The objectives of the Document Tracking System are to:

- Support the functions of the Front Counter of the One Stop Shop
- Provide management and statistical reports to assist in the management of the One Stop Shop
- Track the movement of transaction processed in the One Stop Shop

The system was developed in Microsoft ACCESS. The database resides on a server in the Computer Room and is accessed by a single computer at the OSS Front Counter.

The ACCESS database consists of six tables. There is a main table that records details of customers and the transaction they lodge and a sub-table to permit a series of location records to be recorded for each transaction. The other four tables are code/decode files for agencies, staff members, transaction types and time periods. The data model is shown in Appendix C.

Currently the Front Counter of the OSS deals with an average of 24 customers each day, with peak times in the morning. The clients either personally come in to the OSS, phone in or occasionally send letters.

Two log books are used to record customer requests and these are filled in by the OSS customers. Details of enquiries and requests for services are entered into one book (Transaction Log Book) and the other book is used to record complaints. At a convenient time, the data from the Transaction Log Book is transferred to the computer system by the Front Counter Staff. The records are updated from referral slips that accompany transactions and are returned to the Front Counter following completion of transactions. Entries in the Complaints Log Book are not recorded on the computer system.

Customer contacts fall into three categories:

- Enquiries that can be satisfied by the Front Counter staff
- Transactions that need to be referred to officers in the various agencies in the OSS
- Complaints or issues needing to be addressed.

The computer system focuses on the second category of transactions although some, by not all walk-in enquiries and enquiries by phone are logged. Complaints are handled manually.

2.3 Systematic Adjudication Unit System

The Systematic Adjudication Unit System was developed on a Microsoft ACCESS platform to support the operations of the Pastrana base camp. It records details of sketch notification sheets (SNS's), the progress of applications for patents and produces management and statistical reports.

The system resides on the two stand-alone computers at the base camp. The database consists of a main table, two code files and three login tables that mirror the tables for the CIM system. A data model of the system is shown in Appendix D.

3 ANALYSIS OF THE EXISTING SITUATION

3.1 Introduction

The three existing databases were developed as prototypes rather than production databases and have evolved over a period of years. Accordingly, they reflect that history. In particular, they contain data that is no longer required, there have been changes to the scope of the systems over time and the documentation of the systems and databases are limited. This type of situation is normal for a prototype environment, where it can be expected that user requirements will evolve over time as they interact with the prototype and develop their ideas.

3.2 Cadastral Index Map System

3.2.1 Scope of the CIM System

There is a variety of opinions on what data should be included in the system, varying from a simple cross-reference to a system that will encompass all the operational needs of the agencies in the OSS. The scope of the system in terms of its data requirements and functionality has not been adequately defined and it has tended to expand as users have requested information to be added.

The CIM data can be consider in three categories. Firstly, the core data that is required to enable the cross-referencing of records between agencies. The data elements involved are:

- Cadastral Map Index and Unique Parcel Identifier
- Property Identification Number (PIN)
- Standard Parcel Identifier (SPI)
- Names of Owners
- Address of Property

This data is also required to perform the critical task of identifying conflicting data, duplicate and fake titles, duplicate parcels and conflicting claims.

The second category of data is the data required for the production of CIM's and for the adjudication process, and the last category is the data used for general enquiries and data to support the operations of the agencies in the OSS.

Significant resources are currently being expended in encoding the category two and category three data items but the benefits of these data are limited because much of the data being encoded is historical (e.g. cancelled title data) and there are integrity problems with the data.

Data required for CIM production and the adjudication process, other than the core data mentioned above, could be provided in hard copy rather than in digital form since accuracy is of paramount importance for these functions and the data are not required for the project on an on-going basis. In effect, some data items

are being converted to digital form and then only used once and it would be more efficient and safer to use the manual records for these functions.

It is recommended that the revised CIM database is developed with the prime objective of providing cross references between agency records and identifying problems in land records.

Considerable quantities of data are being added to the CIM database for the purpose of answering enquiries from the public and to support functions of the agencies in the OSS. However, more analysis of agency requirements and costs and benefits of computerization of agency records should be undertaken before the collection of data is extended to cover these areas.

It is recommended that a systems development strategy is commissioned to define the total requirements of the OSS and propose a staged implementation plan for realization of its requirements.

3.2.2 CIM Database Structures

Data for the system has been collected by encoding records from the individual agencies and then loading all of this data into the database. There is a large overlap in the information held by agencies and thus there is now a massive duplication of data in the database. In particular:

- many data items are common to each agency table and so this data may be repeated up to seven times on the database
- individual name and address files have been created for each agency and thus the owners for land parcels can be repeated several times within the database
- tables listing internal and adjoining owners for each parcel have been created and these tables duplicate the data recorded in the names files created for the agencies.

It is standard practice to initially collect data in the way the data has been collected, however the data should then be rationalized by editing the data and storing it in a normalized form. This step is yet to be undertaken and accordingly the data is not integrated. This lack of integration is evident when enquiries are made on the database. An enquiry on the database produces a result based upon the records of a particular agency rather than on the information of all agencies.

Ideally, the database should be structured to support enquiries using the keys of:

- Title Reference
- PLA Number
- Owners Name (individual or Company)
- PSPIN
- CIM/UPI

- SPI
- Property Address (for urban areas)
- Tax Identification Number (if it is decided to collect this data)

Normalizing the data and in particular creating separate database tables for repeating data items will increase the flexibility of the database, eliminate inconsistencies and improve the integrity of the data.

It is recommended that the CIM database is redeveloped to reflect the data structures depicted in Section 4.1.

Migration from the existing database to the proposed data base will involve the development of a substantial file creation program and the need to re-write applications programs to provide the required functionality.

3.3 Document Tracking System

3.3.1 Database Structures

The database for the Document Tracking System is simple in structure with only one main table and a sub-table. Good use has been made of code/decode tables to provide flexibility, ease of maintenance and data consistency. A code file for Municipality could also be provided since this field is required for reporting on the source of customers.

There are some redundant data items and fields that are not used on the database such as "PLA Steps", "Other Transactions", "Status", Date Forwarded, etc. These are a legacy of the prototype nature of the system.

It is recommended that the Document Tracking Database is redeveloped based on the data model depicted in Section 4.3.

Further normalization of the data structures would enhance the database. For instance separate tables could be created for "Fees" and "Documents Lodged".

A requirement was identified for documentation, tracking and reporting on complaints received at the Front Counter.

It is recommended that additional data is included in the database to track complaints and the actions undertaken in response to those complaints.

3.3.2 Procedural Issues

The effectiveness of the computer system is being reduced by a variety of procedural and environmental issues and these issues should be addressed.

The main function of the system is to record the location of documents so customers can be informed of the progress of their requests, however the system may not provide the required information because agency staff do not always return referral slips to the front desk when transactions have been completed. The breakdown in this procedure also impacts on the ability of the system to report on the number of transactions completed and the time they take to be processed. Better control could be maintained if the delivery function was performed by the Front Counter staff rather than by the production staff in the agencies. This would also alleviate the potential problem of recording details of documents lodged with transactions at the Front Counter but releasing those documents from the production areas of the agencies.

It is recommended that the delivery function is undertaken by the Front Counter staff.

The tracking of transactions within the system is ineffective because it only records the agency to which a transaction is sent, rather than the area within the agency or the actual person who is processing the transaction. This could be achieved by ensuring that all staff processing transactions are listed in the system as "locations" and rules for moving transactions are enforced. This has benefits for the agencies in terms of the ability to report on transactions at the individual staff member level. The procedure would be made more workable if computers networked to the database were conveniently located for use by agency staff for this purpose.

It is recommended that where a transaction resides at a location for more than one day, the transaction is recorded against the person who is holding the transaction.

Follow-up enquiries from customers suffer from two problems. Firstly, clients returning to the Front Counter to check on the progress of transactions may not have the required information to locate their transactions. Either the enquiry capabilities of the system need to be improved or customers should be given a slip showing the Log Book number.

The second issue arises because customers sometimes return to the agency staff who are handling their transaction rather than to the Front Counter. This practice subverts the system and impinges on the effectiveness of agency staff to perform their jobs.

It is recommended that all customer contact is directed through the Front Counter.

The computer system is operated retrospectively. In many cases information is not entered to the system until after transactions have been completed. This mode of operation satisfies the reporting objectives of the system but provides limited assistance in tracking unfinished transactions. It would be preferable if the Log Books were dispensed with and information was entered to the computer directly. It is recognized however that issues such as the unreliable power supply make this a difficult objective to achieve in the short term.

3.4 Systematic Adjudication Unit System

The database has been developed as a simple prototype to test its usefulness in assisting the operations of the base camp. Accordingly, there are data items on the database that are no longer used and others that would be better stored in code tables to simplify maintenance of the system.

The data in the system relating to applications for public land and the issue of patents should be integrated with the CIM database. The benefits in adopting this concept would be:

- The “Name” and “Parcel” tables could be shared
- Information on the progress on applications for public land could be made available to Front Counter customers
- The data could be linked to the GIS to provide products such as maps distinguishing between titled and untitled lots, and lots where patents are being issued. Similarly, maps could be produced for inspectors showing the location of lots where evidentiary documents are required.
- Holding the details of PLA’s in digital form will facilitate the future computerization of the production of patents and the automatic notification of their issue to agencies that require the information.

The revised CIM database should include database tables to record:

- Details of Public Land Applications (PLA’s), applicants and claimants
- Progress of the issue of patents
- Status of documents required for processing PLA’s.

It is recommended that details of Public Land Applications and the issue of patents are integrated in the CIM database.

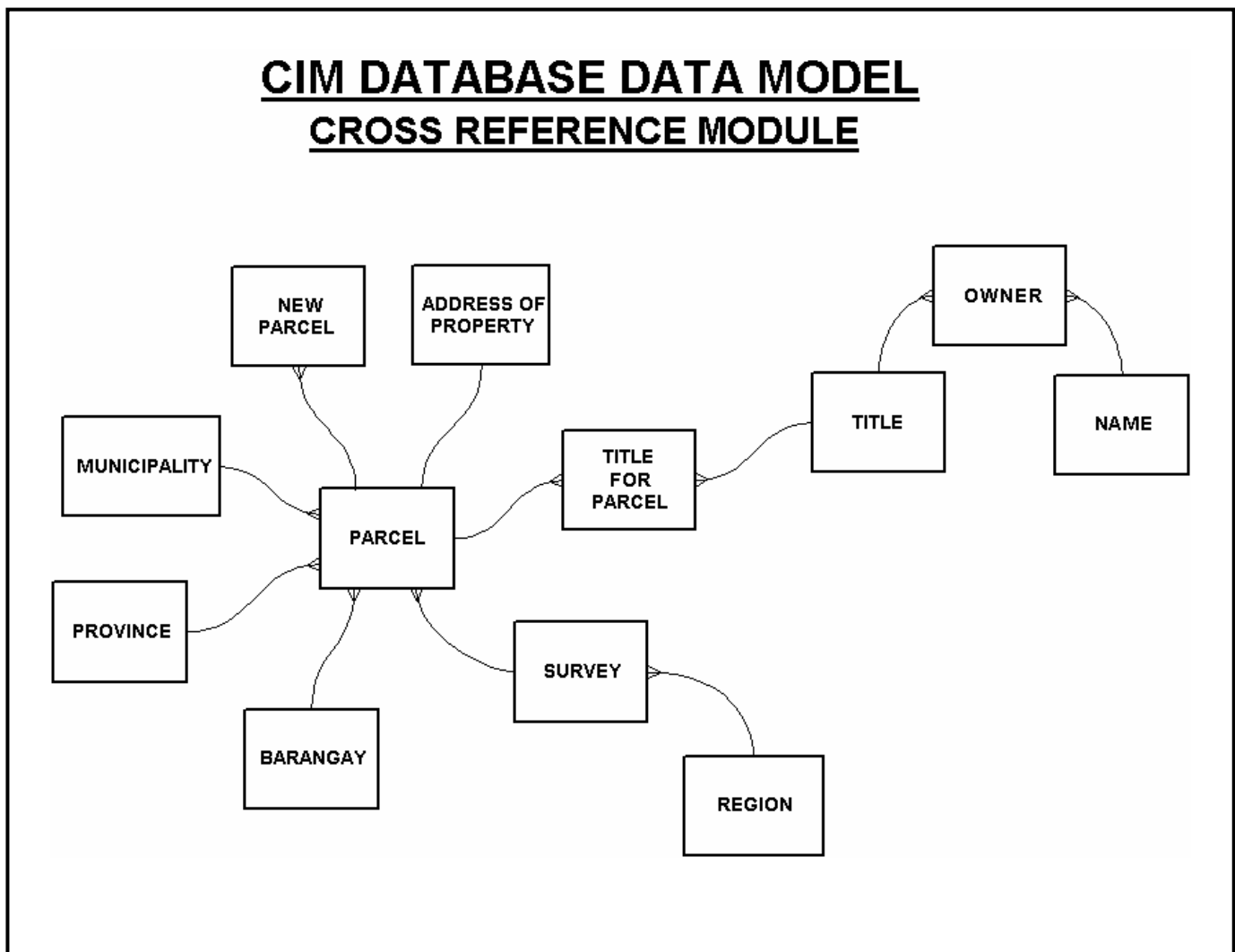
Ideally the base camps should be able to access the CIM database at the OSS but in the short term the availability of the required telecommunications facilities is unlikely. Copies of the CIM database will need to be held at the base camps with update transactions transferred to the OSS on CD/DVD’s and updated versions of the database delivered back to the base camps at regular intervals.

4 PROPOSED DATABASES

4.1 Cadastral Map Index System

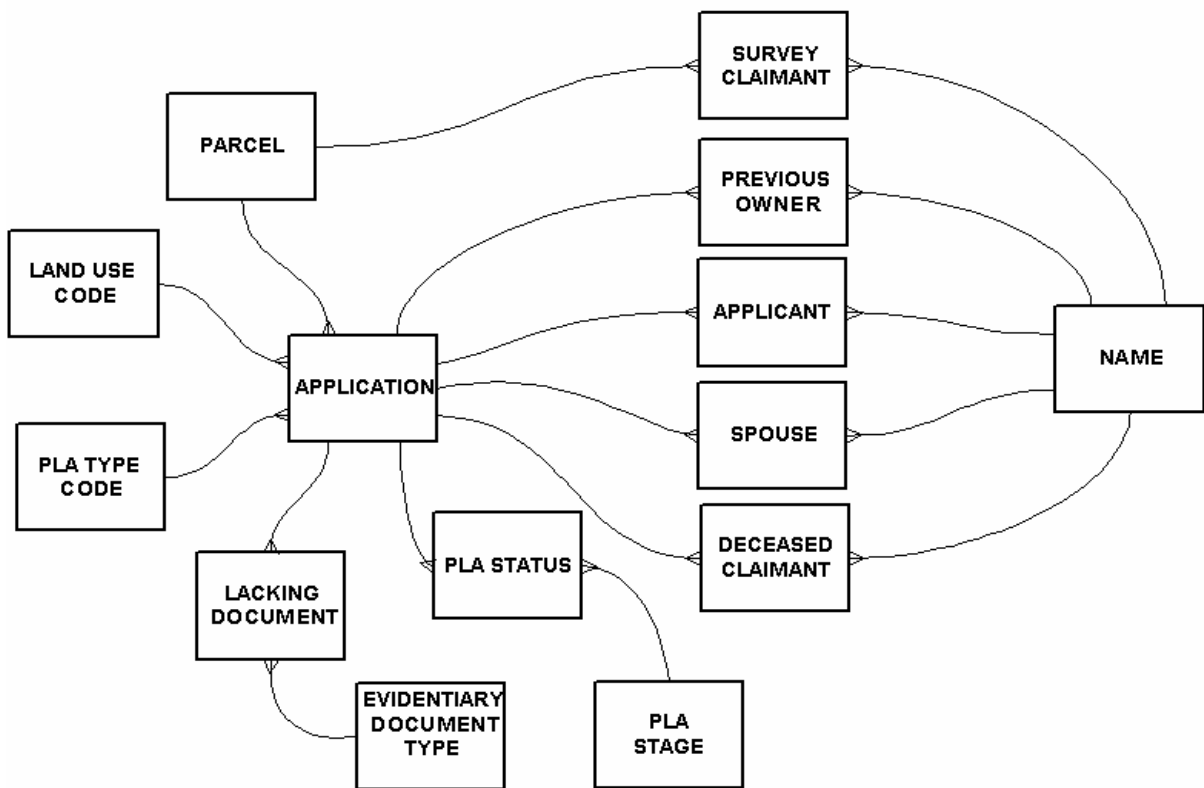
4.1.1 Data Model

The data model has been divided into two modules for ease of presentation and understanding



CIM DATABASE DATA MODEL

PLA MODULE



4.1.2 CIM Database Tables

Table – ADDRESS OF PROPERTY

CIM
UPI
Unformatted Address
House Number
Street Name/Type
Locality

Table - APPLICANT

Name #
PLA Number
Date of Birth
Place of Birth
Citizenship
Civil Status
Representative Indicator

Table - APPLICATION

PLA Number
CIM
UPI
PLA Type Code
Land Use Code
Pending Claim Indicator
Adjudicator Last Name
Adjudicator First Name
Adjudicator Middle Initial
Dispute Indicator
CARP Benefactor Indicator

Table – BARANGAY

Barangay Number
Barangay Name

Table – EVIDENTORY DOCUMENT TYPE

Document Code
Document Type

Table - **DECEASED CLAIMANT**

Name #
PLA Number
Date of Birth
Place of Birth
Date of Death
Citizenship
Civil Status
Spouse Last Name
Spouse First Name
Spouse Middle Initial

Table - **LACKING DOCUMENT**

PLA Number
Document Code
Date Claimant Notified
Date of Follow up
Date Document Produced

Table – **LAND USE CODE**

Land Use Code
Land Use Description

Table – **MUNICIPALITY**

Municipality Number
Municipality Name

Table – **NAME**

Name #
Last Name
First Name
Middle Initial
Company Name
Tax Identification Number
Unformatted Address
House Number
Street Name/Type
Locality

Table – **NEW PARCEL**

New CIM
New UPI
Date Created
Old CIM
Old UPI

Table – **OWNER**

Name #
Title Prefix
Title Number
Sequence #

Table – **PARCEL**

CIM
UPI
Status
PSPIN
Province Number
Municipality Number
Barangay Number
Survey #
Cadastral Lot Number
Area
Source of Area

Table – **PLA STAGE**

Stage Code
Stage Description

Table – **PLA STATUS**

PLA Number
PLA Stage Code
Date
Notes

Table – **PLA TYPE CODE**

PLA Code
PLA Type

Table – **PREVIOUS OWNER**

Name #
PLA Number
Date of Birth
Place of Birth
Date Claim Commenced
Date Claim Ended
Citizenship
Civil Status
Spouse Last Name
Spouse First Name
Spouse Middle Initial

Table – **PROVINCE**

Province Code
Province Name

Table - **REGION**

Region Code
Region Name

Table – **SPOUSE**

Name #
PLA Number
Place of Birth
Citizenship

Table – **SURVEY**

Survey #
Region Number
Block Number
Plan Prefix
Plan Number
Plan Suffix
Case Number
Date of Survey
Name of Surveyor

Table – **SURVEY CLAIMANT**

Name #

CIM
UPI

Table – **TITLE**

Administrative Prefix
Administrative Number
CIM
UPI
Title Prefix
Title Number
Title Status
Date Registered
Date Cancelled

Table – **TITLE FOR PARCEL**

Administrative Prefix
Administrative Number
CIM
UPI

Notes:

1. Unique keys for tables are shown in bold. Foreign keys are underlined.
2. System generated numbers are designated by a # sign.

4.1.3 Explanation of Tables

Address of Property

The table allows for addresses to be stored in a structured format to permit better analysis of the data and improved functionality, such as searching the properties in a street or locality. Accepting that not all addresses can be recorded in a structured format, particularly in rural areas, provision has also been made for recording property addresses in a free format.

There can be a zero to one or one to one relationship between PARCEL and ADDRESS OF PROPERTY and separate tables have been created for this reason but the address could be stored in the PARCEL table.

Applicant

The table relates people's names and addresses to public land applications and records details of the applicant for a PLA. The data items stored are those required for the PLA form.

The “Representative Indicator” is provided to indicate that the Applicant is a representative of a deceased claimant. If the indicator is set there must be a “Deceased Claimant” record for the application.

Application

The table is used to record details of applications for public land in accordance with the administrative process. The application may be initiated as part of the titling process of the SAT or there may be a pending claim. A field has been included in the table to indicate if the application is a pending application.

Barangay

A code/decode table to permit the storage and display of either barangay names or their numbers.

Evidentiary Document Type

A code/decode table listing evidentiary documents required by claimants. The table will permit the storage and display of either document codes or their descriptions.

Deceased Claimant

The table relates people’s names and addresses to public land applications and records details of deceased claimants. The data items stored are those required for the PLA form.

Lacking Document

The table records documents that have been produced and those still required for processing a land claim.

Land Use Code

A code/decode file to permit the storage and display of land uses for land subject to a PLA and the codes for these uses (such as agricultural, commercial, residential, etc.).

Municipality

A code/decode table to permit the storage and display of either municipality names or their numbers.

Name

The names of land right holders and their details are recorded in this table.

The standard way for recording names in the Philippines; Last Name, First Name and Middle Initial or Company Name, has been adopted.

The fields provided to record the contact addresses for land holders is in the same format as for the address of property. However, the benefits of adopting a structured address format, say to identify owner occupied properties, may be outweighed by the overheads of inputting the data

A field to store a person's tax identification number (TIN) has been included in the table to permit a linkage to the records of the Bureau of Internal Revenue although the data is currently not available.

New Parcel

The table has been included in the database to permit new parcels created by way of subdivisions and consolidations to be linked to their parent parcels.

The table will permit finding the parent title using the new parcel identifier as the key or finding the new parcels using the old parcel identifier as key. The relationship from PARCEL to NEW PARCEL is a zero to many, rather than a many to many relationship. For consolidations and subdivisions over more than one parent title, it will thus be necessary to relate new parcels to each of the parent titles.

The date of creation of the new parcel has been included in the table primarily for reporting purposes. It will permit checking for a given time period to check if the parcel details and/or linkages have been added to the database.

Owner

The table records the names of the registered owners of a title for a parcel of land by relating a Name # to a title reference.

A sequence number field has also been included to either retain the order of names in an ownership or change the sequence of names.

Parcel

The table uses the CIM and UPI as its primary key and it is expected that the GIS will link to the database via this key. If it is decided to use the SPI (Standard Parcel Identifier) as the primary key, a system number could be generated for the SPI to simplify the identifier or the CIM and UPI could be stored as an attribute and still be used to link with the GIS. The combination of the survey # and the cadastral lot number form the SPI for the parcel.

The area of the parcel is stored on this table rather than on the TITLE table since areas are required for all parcels but not all parcels are titled. The "Source of Area" field records the authority for the area (title, tax declaration, GIS, etc.) A code/decode table could be added to the database.

No field has been included in the table to indicate if the parcel has been retired, since this can be ascertained from the NEW PARCEL table but it may be considered more efficient to add this information to the table.

PLA Stage

This is a code/decode table to record and display the codes and descriptions of stages in the processing of public land applications.

PLA Status

The table maintains a record of the stages a public land application has been through and the date each stage was completed.

PLA Type Code

A code/decode file to record PLA types (such as free, miscellaneous, sales and homestead patent applications) and their codes.

Previous Owner

The table records the details of claimants who have occupied the land during the period required to substantiate the claim for the applicant.

The table has been included in the logical database "for consideration" but it is considered that since the information is only required during the adjudication process and will not appear on the patent, it should not be included in the implemented database.

Province

A code/decode table to permit the storage and display of either province names or their numbers.

Region

A code/decode table to permit the storage and display of either region names or their numbers.

Spouse

The table relates people's names and addresses to public land applications and records details of the spouse of an applicant for a PLA. The data items stored are those required for the PLA form.

Survey

This table records the components of a survey reference and generates a system number for each record to simplify linkages to other tables.

The date the survey was approved and the surveyor's name have been included because these data items are shown on new patents.

Survey Claimant

The table records the claimant for a parcel at the time the cadastral survey was undertaken.

The table has been included in the logical database "for consideration" but it is considered that since the information is only required during the adjudication process and will not appear on the patent, it should not be included in the implemented database.

Title

The table holds basic details of titles.

The "Administrative Prefix" and "Administrative Prefix" fields record the patent or CLOA reference.

Title for Parcel

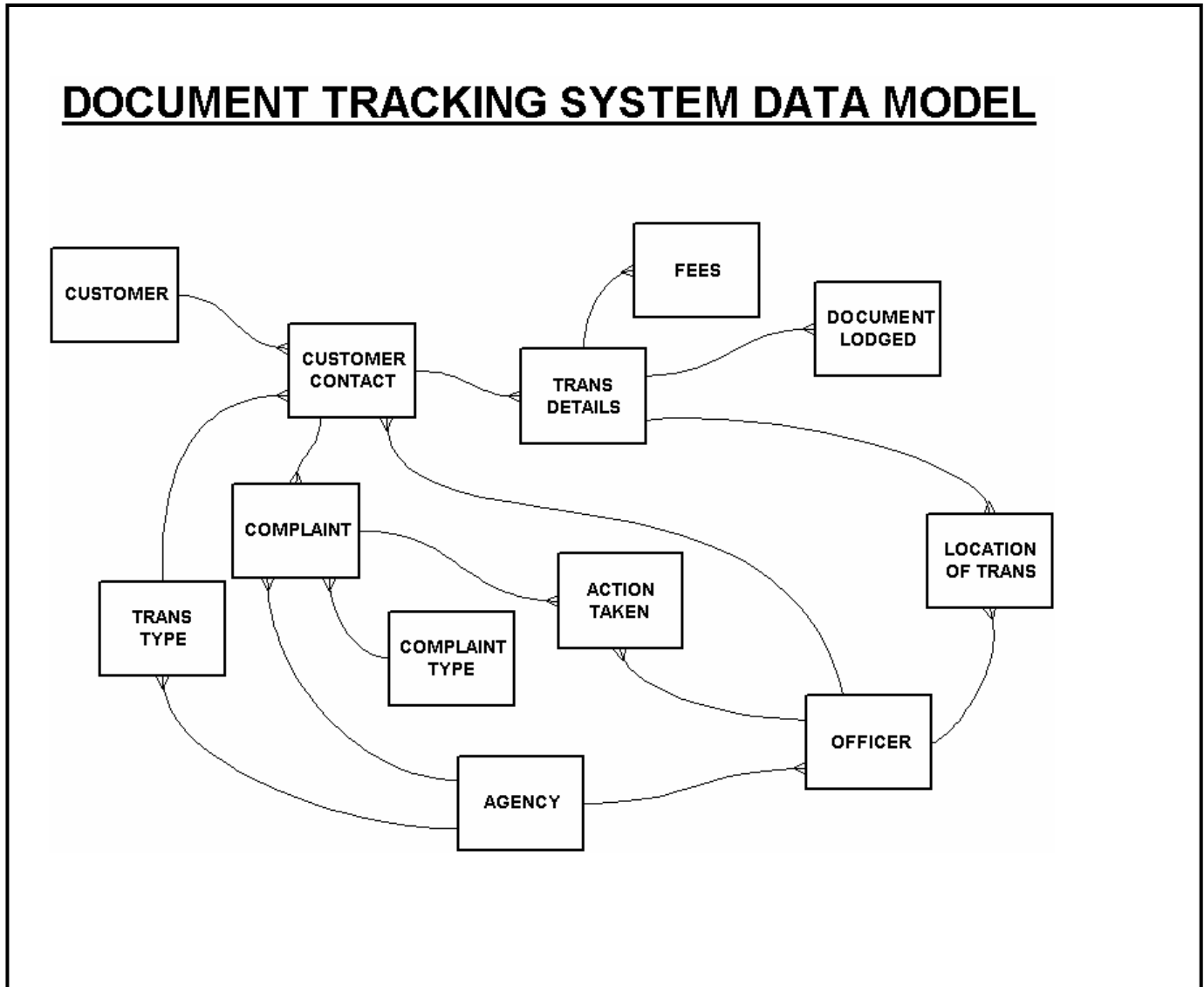
The table records the many to many relationship that can exist between titles and land parcels.

There can be more than one title issued for a parcel of land over time and in some circumstances there may be more than one current title over a land parcel.

There can be more than one parcel for a title in circumstances where land has been subdivided by an isolated survey but new titles have not been issued for the new parcels.

4.2 Document Tracking System

4.2.1 Data Model



4.2.2 Data Structures

Table – **ACTION TAKEN**

Complaint Log Book Number
Sequence #
Actioning Officer ID
Date Action Taken
Time Action Taken
Action Details

Table - **AGENCY**

Agency Code
Agency Name

Table – **COMPLAINT**

Complaint Log Book Number
Sequence #
Complaint Code
Agency Code
Details

Table – **COMPLAINT TYPE**

Complaint Code
Complaint Description

Table - **CUSTOMER**

Customer #
Last Name
First Name
Middle Initial
Company Name
Address
Municipality
Gender
Contact Phone Number
Cell Phone Number

Table - **CUSTOMER CONTACT**

Log Book Type
Log Book Number

Date of Request
Time of Request
Customer #
Transaction Number
Receiving Officer ID
Referred Indicator
Date Request Satisfied
Time Request Satisfied
Comments

Table - **DOCUMENT LODGED**

Transaction Log Book Number
Sequence #
Document Prefix
Document Number
Remarks

Table - **FEE**

Transaction Log Book Number
Sequence #
Fee Amount
Fees Type
Official Receipt Number

Table - **LOCATION OF TRANSACTION**

Transaction Log Book Number
Sequence #
Officer ID
Date Sent
Time Sent
Notes

Table - **OFFICER**

Officer ID
First Name
Last Name
Title
Agency Code
Designation

Role #

Table - **TRANSACTION DETAILS**

Transaction Log Book Number
Sequence #
Notes

Table - **TRANSACTION TYPE**

Transaction Number
Transaction Type

Notes:

1. Primary keys for tables are shown in bold. Foreign keys are underlined.
2. System generated numbers are designated by a # sign.

4.2.3 EXPLANATION OF TABLES

Action taken

This table records the action taken by an officer in response to a complaint. The structure allows for one to many actions for a complaint

The date and time of the action have been included in the key to the record to allow for the situation where more than one action is taken by the same officer in response to a complaint.

Agency

A code/decode table to permit the storage and display of either agency names or their codes.

Complaint

The table is used when a customer contact relates to a complaint. The primary key to the table is the Complaints Log Book Number and a system generated sequence number to allow for more than complaint in relation to a customer contact.

Agency Code refers to the agency that is the subject of the complaint.

There is a zero to many relationship between the tables CUSTOMER CONTACT and COMPLAINT.

Complaint Type

A code/decode table to permit the storage and display of either complaint types or complaint codes.

Customer

The names of front desk customers and their details are recorded in this table.

The standard way for recording names in the Philippines, Last Name, First Name and Middle Initial or Company Name, has been adopted.

The field "Municipality" has been provided to allow reporting on the locality where customers of the OSS live.

The "Gender" field is also for reporting and statistical purposes.

Allowance has been made for contact by cell phone and fixed telephones.

If the DTS and the CIM information were to be held in the same database, consideration should be given to modifying the NAMES table being proposed for CIM and using that instead of this table, since both tables are files of persons' names.

Customer Contact

This table records a request for assistance from an Officer at the front Counter.

The primary key to the table is the Log Book Type (Transactions or Complaints) and the number in the Log Book

The "Transaction Number" field is used to record the type of customer request.

The request may be for information that can be provided by the attending officer. In this case the request is satisfied and the date and time of completion of the request is recorded.

Alternatively, the request may relate to a complaint/issue or a transaction that needs to be referred to one the OSS agencies. The referred indicator has been included for this purpose although it is redundant information but would save reading the TRANSACTION and COMPLAINT details to see if a record exists for the particular Log Book reference.

Document Lodged

The table records references to documents that have been lodged with the attending officer as part of the transaction.

The database structure makes provision for zero to many documents to be recorded for a transaction.

Allowance has been included in the table to record comments in relation to each document lodged.

Fees

The table allows for one to many fee records for a transaction. Total fees for a transaction can be totaled by software.

The Fee Type refers to Entry, Registration, etc. A decode table for these fees could be added to the database if warranted.

Provision has been made to record official receipt numbers although this information is not currently recorded.

Location of Transaction

The table records the location of transactions. A transaction can have one to many locations before it is completed. The unique key is the Transaction Log Book Number and the Officer ID.

Officer

The table records the details of all officers at the Front Counter, all those who process transactions and those who have access to the system.

The field "Title" refers to Ms, Mrs, Dr, Mr, etc.

The "Agency Code" is the agency (ROD, DENR, etc.) they work for and the "Designation" is their position in the agency.

"Role #" refers to the system access level allowed for the officer.

Transaction details

The table records the date and time a transaction is completed. Allowance has been made to record notes about the transaction.

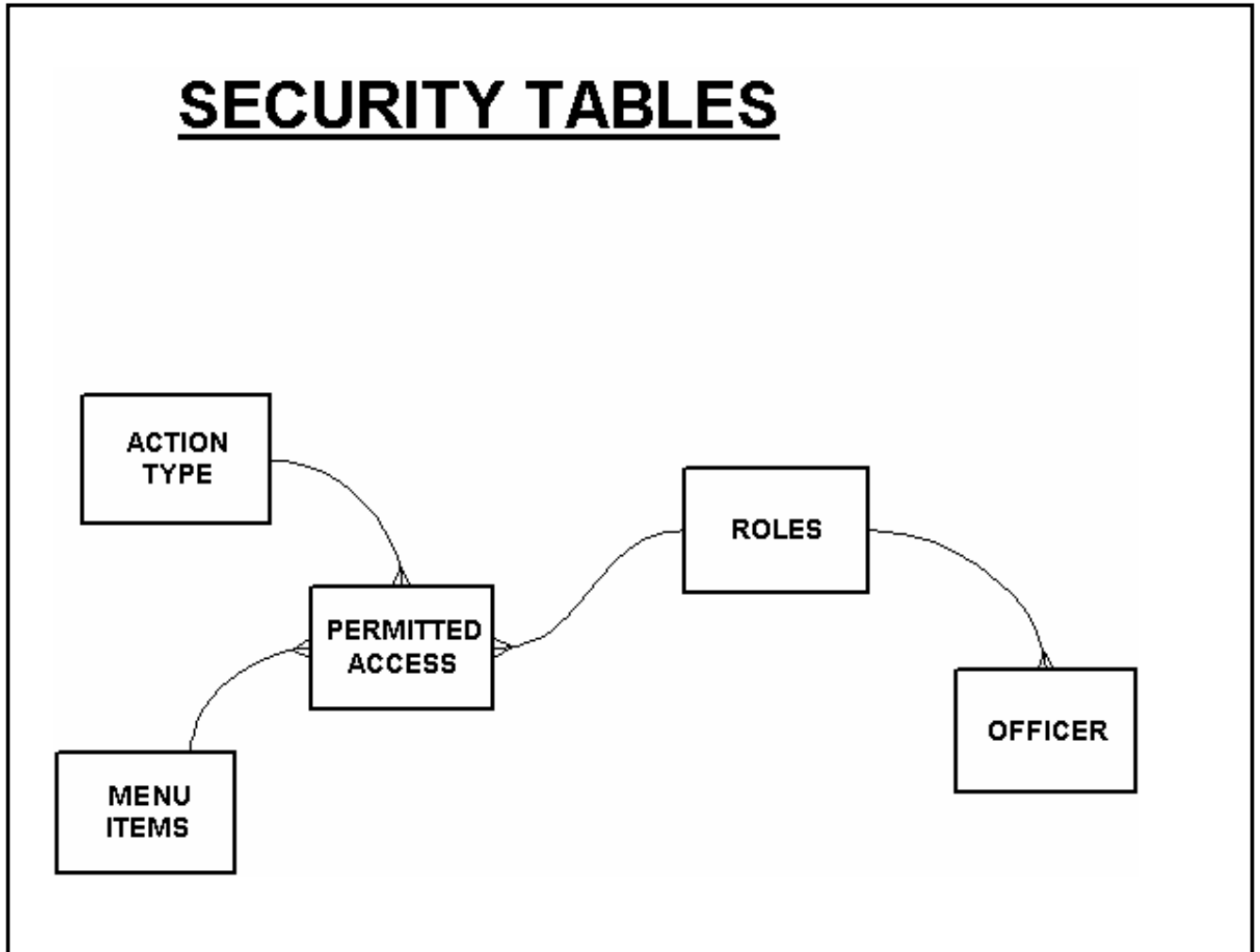
The primary key to the table is the Transaction Log Book Number and a system generated sequence number to allow for more than transaction emanating from a customer contact.

Transaction Type

A code/decode table to permit the storage and display of either transaction descriptions or their numbers.

4.3 Security Tables

4.3.1 Data Model



4.3.2 Data Structures

SECURITY TABLES

Table – **ACTION TYPE**

Action Type
Action Code

Table - **AGENCY**

Agency Code
Agency Name

Table – **MENU ITEMS**

System
Function
Description

Table – **OFFICER**

Officer ID
First Name
Last Name
Title
Agency Code
Designation
Role #

Table – **PERMITTED ACCESS**

Role #
Function #
Action Code

Table – **ROLE**

Role #
Role Description

5 INTERFACE TO THE GIS

5.1 Linkage to the CIM Database

The link between the CIM database and the GIS could be forged by the use of one of three identifiers. These are:

- Standard Parcel Identifier (SPI)
- Cadastral index Map Number and Unique Parcel Identifier (CIM/UPI)
- System generated number

The most important attribute for a linking mechanism is uniqueness and there is doubt regarding the uniqueness of the Standard Parcel Identifier. The SPI consists of a survey number and a lot number and there are difficulties with both of these elements. The survey number is complex and may consist of the following parts:

- Region Number
- Block Number
- Plan Prefix
- Plan Number
- Plan Suffix
- Case Number

The Plan Suffix is not required for uniqueness, however, some survey plans rely on the Region Number for their uniqueness and some plans need Block Numbers and/or Case Numbers to uniquely identify plans.

Lot numbers are less of a problem but can become complex when an original cadastral lot is subdivided many times. A further complication can arise when a lot is subdivided by an isolated survey. In these cases, the mother lot is appended with an alphabetic character to uniquely identifier the lot. This lot number is referred to in the title that issues for the lot, however, the cadastral plan is updated by using the next lot number for the cadastral survey. In these instances there are two lot numbers for the same land parcel.

In contrast, the CIM/UPI is unique, permanent and has geographical meaning although its value is diminished because it is not used by any other agency and needs to be cross-referenced to the SPI, title and PSPIN numbers. There is a potential problem with the CIM/UPI if the Country adopts a geocentric datum because this will result in a shift in the coordinate values that the CIM are referenced by. However, if the CIM numbers continue to be based on the existing datum and projection, the identifiers can remain unique and permanent although the geographic relevance of the map numbers would be diminished.

Linkages could be maintained by using a computer generated serial number for each parcel; however problems have been encountered in other jurisdictions with this methodology. In particular, difficulties arise when there is a need to apply incremental updates to digital copies of the parcel framework.

It is recommended that the CIM/UPI be used as the linking data between the CIM database and the GIS.

5.2 Data layers in the GIS

The basic layer to the GIS will be the land parcel framework and this data layer will be built as CIM maps are produced. The lots will be referenced by their UPI numbers. Other data layers in the GIS will be:

- Street names
- Irrigation channels
- Waterways
- Barangay boundaries
- Municipal boundaries
- Aerial photography
- Satellite imagery

5.3 GIS Applications

The GIS has the potential to assist the project, the OSS and all levels of government and these opportunities should be explored. It is understood that both DAR and local government have computerized systems and providing their files can be linked to the CIM/UPI, thematic mapping could be undertaken for these agencies.

Consideration should also be given to mapping land use planning and demographic information held by other agencies via the political and administrative boundary layers on the GIS.

5.4 GIS ISSUES

A potential issue will be in matching the parcel framework in the GIS with the parcels recognized by ROD and local government. It is understood that new titles are not always issued for lots in a subdivision following the approval of the subdivision. This can create a situation where the GIS reflects a situation where the mother lot is retired and the child lots are part of the current cadastre, however the title for the land still refers to the mother lot. Local government may or may not create separate property identification numbers (PIN's) for the new lots. A more complex situation can arise if the parent title is "partially cancelled" and a new title is issued for only one or some of the new lots.

It is recommended that a procedure be adopted whereby new titles are automatically issued for new lots upon the approval of subdivision and consolidation plans.

There is no doubt there are currently approved parcels where no title has been issued and decisions will need to be made on how this situation will be resolved.

DRAFT TERMS OF REFERENCE

INTERNATIONAL DATA BASE ADVISER

2004 (1 month)

The PA-LAMP foreshadows a potential 15-20 year program to improve land administration in the Philippines. It is a strategic GOP initiative which aims to support an efficient land market and alleviate the present low level of confidence in the system of formal land registration and the lack of tenure security.

The **Goal** of AusAID assistance, through support of the TA program, is *to assist the GOP to improve the effectiveness, transparency and efficiency of land administration to achieve the resultant flow of economic and social benefits in the Philippines.*

The **Purpose** of the TA program is *to assist the GOP to establish structures and operating procedures for a long term program to reform the land administration system in the Philippines.*

The DATA BASE adviser to the LAMP Project will be based in PIO1 (Leyte). He/She will report to the TA team leader through the deputy team leader and systematic registration adviser. The adviser will work closely with Project counterparts.

The approach at all times will provide the Project with best practice, a safe working situation and be Gender sensitive. The adviser will cooperate with the members of the Quality Assurance Panel whose job it is to verify that TA outputs are of a suitable standard and completeness. To this end, the adviser shall maintain an up to date work plan and have regular review meetings with counterparts on progress, issues and changes to the plan. A monthly report will be submitted to the team leader.

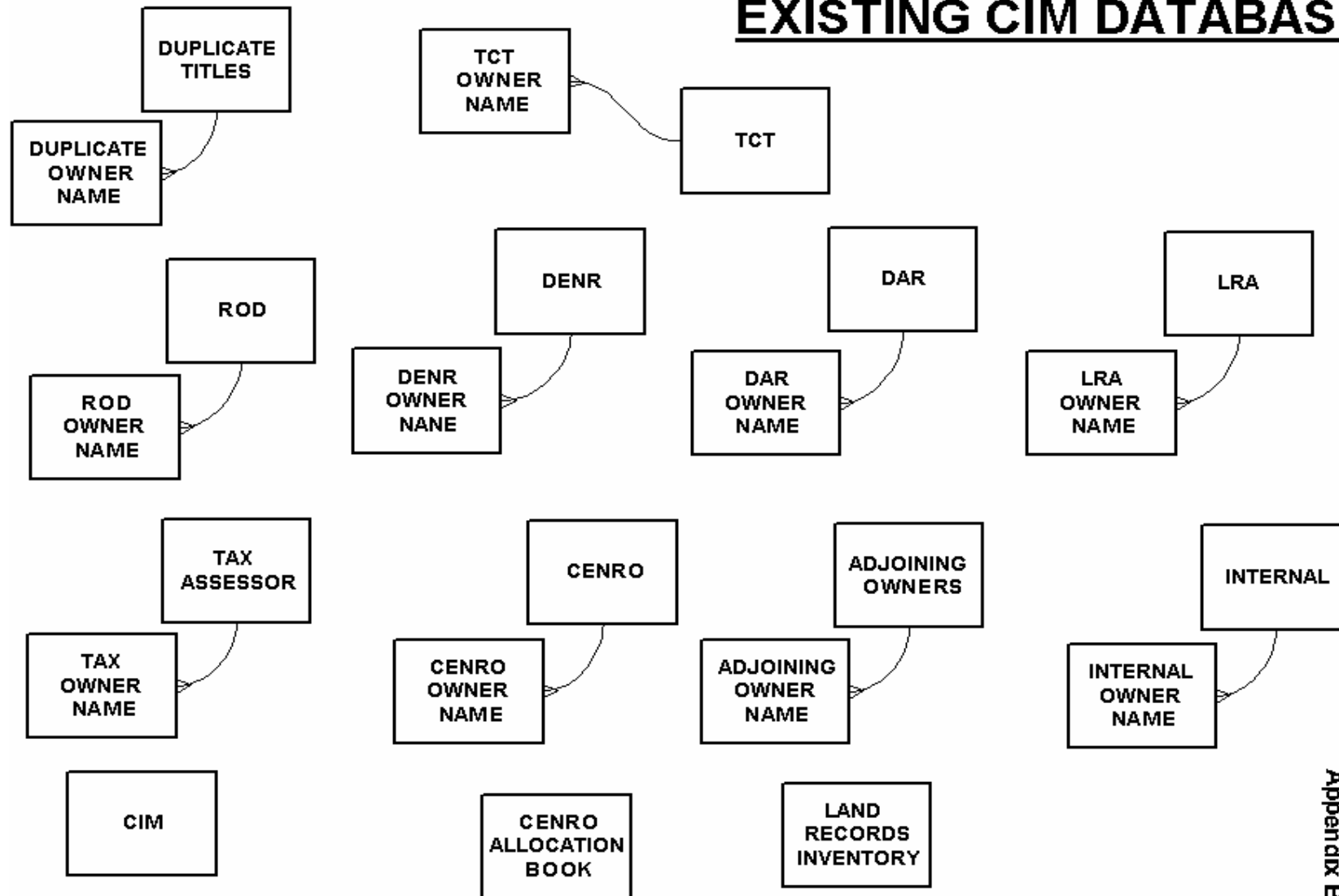
The overall purpose of this activity of PA LAMP is to use the lessons of the project to design a better data model and data base design for the data base used for both support to titling operations and to the One Stop Shop. The existing database is ACCESS based system and has operated for over 2 years. PIO1 are soon to install a server with SQL Server software. The take off points are a recent assessment of the PIO1 (Leyte) data base, a recent work shop on lessons and future directions, various reports on the PIO2 data base. The national GIS adviser will provide background. The adviser will coordinate with the OSS management adviser who is currently putting together a management plan for the One Stop Shop. The counterpart group is the IT and mapping sections of PIO1. The data base is to serve 6 municipalities (70,000 parcels) under LAMP, and in the medium term (ie 5-6 years) could be expected to serve about 75% of the province (ie. some 400,000 land parcels).

The International Data Base adviser will be responsible for completing the following work by 30 November 2004:

1. Review the user needs of the data base from the well documented processes of the office and field activities and the OSS. Review the existing reports on the data base at PIO1 and at PIO2 and other relevant lessons reports from LAMP. Review the participating agency records.
2. Together with counterparts agree on the data base services to be provided.
3. Design and document an improved data model, with emphasis on; the land document key (called the SPI key in local terminology) and the unique parcel identifier (UPI) key (referencing the parcel on the map); and the essential data that needs to be held and its data entry and update points (organisation).
4. Make a data base design to operate on the new computer environment.

End

EXISTING CIM DATABASE



EXISTING CIM DATABASE

CODE FILES

**MUNICIPALITY
CODE**

Used by following tables:

DENR
LRA
DAR
ROD
CENRO
CIMTax Assessor
Adjoining Owners
Internal Owners
Duplicate Titles
Land Records Inventory

**BARANGAY
CODE**

**LAND USE
CODE**

Used by following tables:

DENR
CENRO
DAR
LRA ???
Tax Assessors

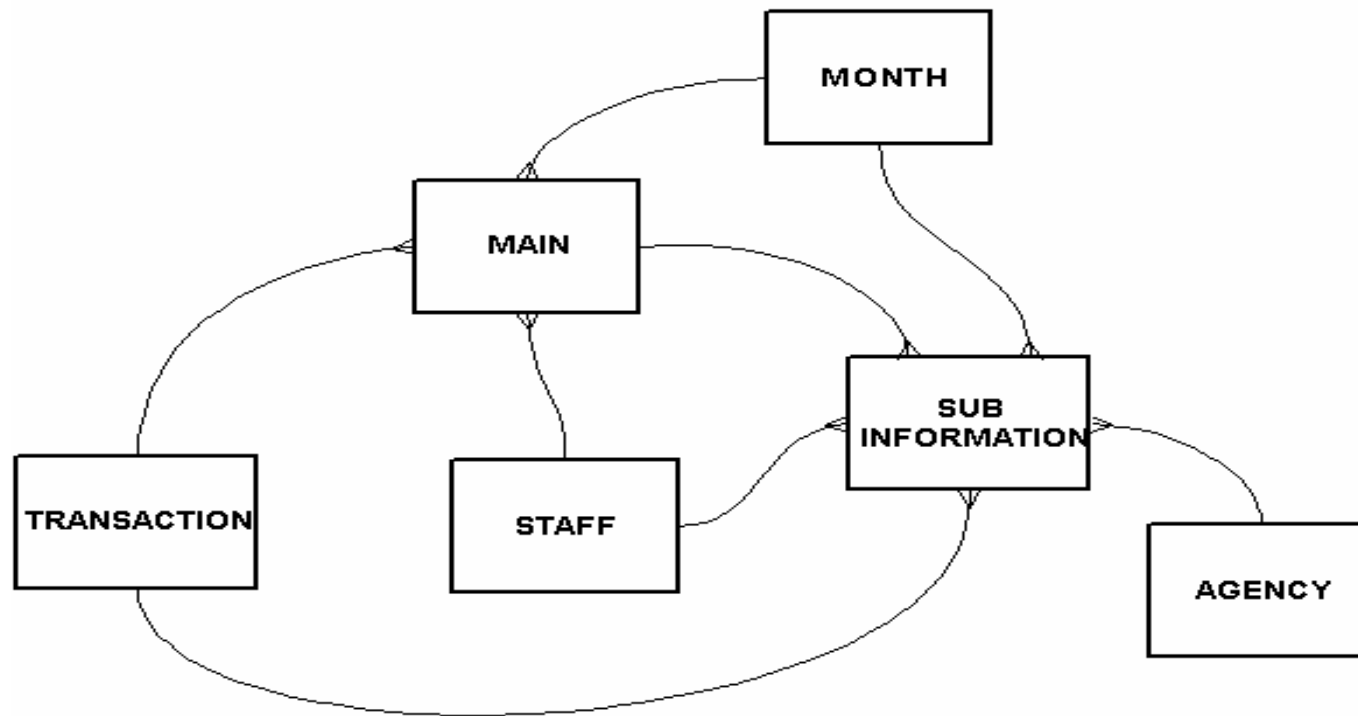
SECURITY FILES

**USER
LOGIN
LEVEL**

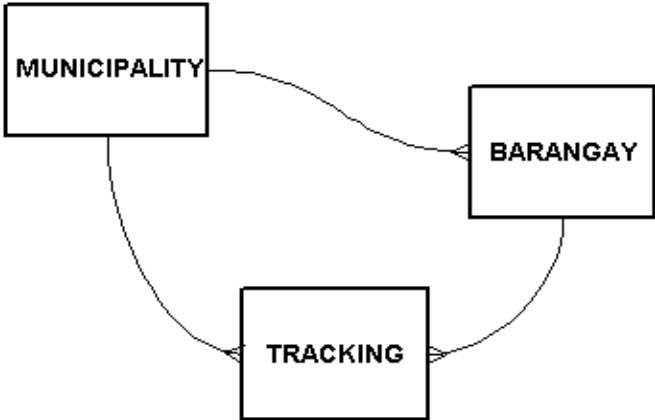
**LOGIN
LEVEL**

**LOGIN
LEVEL
BACKUP**

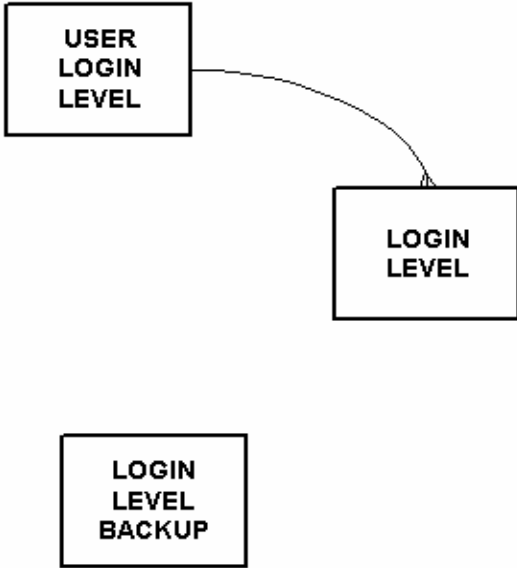
EXISTING DTS DATABASE



EXISTING SYSTEMATIC ADJUDICATION UNIT SYSTEM



SECURITY FILES



DATABASE WORKSHOP OBJECTIVES

- Decide what functionality is desired from the computer system
- Get agreement on what is achievable in the short term
- Determine the data elements required to support the agreed functionality
- Determine the methodology for capturing data
- Determine how data items will be kept in a current state
- List products and services required from the GIS

DATABASE WORKSHOP

Held on 11/29/04 and 11/30/04

ATTENDEES

Benny Sanico

Hazel Hibanada

Ralph Micanda

Jason Diorico

Kevin Rainsford