USAID | EGYPT
FROM THE AMERICAN PEOPLE

INTEGRATED REGISTRY CADASTRE SYSTEM: SYSTEM REQUIREMENTS SPECIFICATIONS

EGYPT FINANCIAL SERVICES PROJECT
TECHNICAL REPORT #94

December 20, 2006

This publication was produced for review by the United States Agency for International Development. It was prepared by Chemonics International Inc.

DATA PAGE

Submitted by:	Raymond Struyk, Chief of Party Egypt Financial Services (EFS) Project 4 Hayet El Tadrees Square Dokki, Cairo, Egypt Tel: (20) 2 762-6140 Fax: (20) 2 762-6150 www.egyptfs.com Contract No. 263-C-00-05-00003-00
Submitted to:	EFS CTO: Paul Bruning EFS DCTO: Ingi Lotfi Private Sector Programs Office of Policy and Private Sector USAID Mission to Egypt
Task:	Task 2: Improve Operation of Urban Registration System in the Ministry of Justice
KRA:	2.11: Redesign and Automation of Business Processes for Personal Deed System
Activity:	2.11.2: Functional Performance Specifications for Enhanced Deed System
Author:	Registration Team (Task 2) and Faris Sayegh, Kholoud Saad
Version:	Draft
Date:	December 20, 2006

This publication was made possible through support provided by the Office of Financial and Information Technology, U.S. Agency for International Development, under the terms of Contract No. 263-C-00-05-00003-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the U.S. Agency for International Development.

Privacy Information

This document may contain information of a sensitive nature. This information should not be given to persons other than those who are involved in the EFS Project or who will become involved.

Version History

REVISION CHART			
Version	**Author(s)**	**Description of Version**	**Date Completed**
1.0	Faris Sayegh, Kholoud Saad	First Draft	17 December 2006
1.1	Faris Sayegh, Kholoud Saad	Final Draft	24 December 2006

Document Owner

The primary contact for questions regarding this document is:

Author: Faris Sayegh, Kholoud Saad
Project Name: Egypt Financial Services, Task 2
Email: fsayegh@alum.mit.edu, Kholoud.saad@esrinea.com

Executive Summary

A crucial part of any registration process is the cadastre survey part. Studies to the cadastre process within Egypt have shown that it's highly complicated and completely dependant on papers' operations. The same apply to the registration process. This has always held back the attempts to enhance and streamline these processes. The impact of this inefficient registration/cadastre system has negatively affected the Egyptian economy since it directly hinders activating the real-estate market.

The Egypt Financial Services Project will support and finance development of a modern computerized cadastre system to support the automation of the newly proposed enhanced parcel based deed registration system.

This system requirements specifications document has been developed, focusing on functional and non-functional requirements for the Integrated Cadastre Registry System (ICRS). The intended readers of this document are system analysts, software architects and software developers. The system requirements specifications cover all necessary topics in order to start development or customization of the modern cadastre system.

The objectives of the ICRS include supporting cadastre operations for the enhanced deed registration process, in conformance with new simplified regulations and procedures, using transparent workflows, and increasing accessibility for all parties.

The specific objectives of the ICRS System are to provide a set of technical processes and procedures, that complies with the real property legislation of Egypt, allowing easy access to immovable property information, creating the capability for the production of standard products and services, providing the capability to effectively manage the land and buildings in the territory, and ensuring a homogeneous and consistent set of records for the registration and cadastral data.

The main section of the document covers the functional requirements for the anticipated Cairo Province ICRS. Specific requirements are categorized as either being Mandatory, Required, or Desired, and each requirement will be tested via an acceptance test plan at system commissioning.

The system must have rule-based configurable workflows, configurable user management, full cashiering functionality, scanning and indexing functionality, ability to generate all documents required by law, functionality to generate various types of operational reports, ability to safeguard the data, allow authorized users to access certain types of data.

Implementation of the ICRS system includes customized software, integration with the Enhanced Parcel Based Deed System implemented at the REPD, delivering all operational documentation and training material in Arabic, providing comprehensive training, providing technical assistance, and managing and coordinating the activities during the implementation of the system.

The ICRS environment will be implemented as multi-tier system, with a Database Management System in the 1st tier, the EPBDS and ICRS application servers at the 2nd tier, and various ICRS clients at the 3rd tier. The ICRS will be deployed through 11 different modules: Reception, Scheduling, Investigation, Survey, Processing, Monitoring, Cashier, Scanning, Administration, Web Services, and Web Access.

The ICRS will support various user groups other than the ESA staff of the Cairo Provincial Office and ESA staff at the Mokattam Improved Registration Office. These include public guest users, authorized subscribers needing regular web access to limited information, external staff members, and external systems.

The ICRS will be operated from the Cairo Province Office and in the ESA Training Development Laboratory (TDL) for training purposes. For the purposes of the ICRS, the Cairo EPO will include a public area, an off-limits staff area, and various other support spaces. The ICRS will be operated by an ESA person at the MRO, as well as six different categories of staff at the Cairo Province Office, namely the Reception Clerk, Cashier Clerk, Scanning/Indexing Clerk, Surveyor, Editor, and Technical Investigator, in addition to the System Administrator.

The document has the following content:

- *Chapter 1 "Overview"* – Chapter provides a description of the current document, list of parties involved with the system and other service information.
- *Chapter 2 "Requirements specification"* – This section, the core of the document, provides complete coverage on all functional and non-functional requirements for the anticipated ICRS.
- *Chapter 3 "Design Constrains"* –describes constraints, grouped into three areas covering software, hardware and user interfacing.
- *Chapter 5 "Annexes"* – contains all related appendixes, diagrams and schemas.

Table of Contents

Index of Figures

Index of Tables

1 OVERVIEW

In November 2004, the United States Agency of International Development (USAID), awarded Chemonics International the Egypt Financial Service (EFS) Project under Contract No. 263-C-00-05-00003-00.

Under this contract, Chemonics International is providing technical assistance services to the Ministry of Justice (MoJ) and the Egyptian Survey Authority (ESA).

One of the tasks of the contract involves improvement of the Registration System for Urban Real Properties. The reform and modernization of the system for registration of real property in urban areas will require a complex combination of technical assistance to the Government of Egypt (GoE) in policy formation, regulatory and legal reform, administrative system design and implementation, dataset acquisition and processing, software/ hardware platforms, public awareness and training all intended to:

- Reduce the time delays, complexities and costs of real property registration and other obstacles to the formalization of ownership of urban land and real estate;
- Provide a Certificate of Title as the proof of ownership and subordinate interests in land and real property units, replacing a variety of handwritten documents;
- Ensure the reliability of the system for timely registration and release of liens on property by ensuring that appropriate forms for real estate finance are developed and that appropriate procedures exist for their registration and for the prompt registration of subsidiary notices, orders and removals of liens;
- Remove the requirements of repetitious surveys for the registry of property interests and transactions (except when they change the parcel or unit by subdivision, consolidation or spatial adjustment) and outsource professional property survey work on a competitive basis; and
- In a model office or in an appropriate related institution (such as court, tribunal or municipality) establish mechanisms by which people, who possess defective titles to land and real property's units can perfect their ownership or other rights. Develop simple procedures for administrative hearings or adjudication, standards of proof and subsequent refinement of legal documents and registry records.

In order to meet objectives mentioned above on of the main tasks is to develop and put into operation a computerized deed registration system with the project's key counterparts, the Real Estate Publicity Department (REPD) and the Egyptian Survey Authority, that conforms to international standards and best practices that will enable property to be registered, titled, and used as collateral.

This objective will be achieved by the selection of a model registry office, introduction of the pilot system that consists of automated business applications, operational manuals, IT upgrade, significant training and evaluation of results.

1.1 PURPOSE OF THIS DOCUMENT

This System Requirements Specification (SRS) focuses on the cadastral aspects of a deed registration system – both functional and non-functional. The document is intended for system analysts, software architecture designers and software developers. This SRS covers

all necessary topics in order to start development or customization of the modern computerized deed registration system.

1.2 DEFINITIONS, ACRONYMS AND ABBREVIATIONS

This section provides the definitions of all acronyms and abbreviations used in the document.

API	Application Programming Interface
AS	Application Server
CIF	Cadastral Information Form
DBMS	Database Management System
EFS	Egypt Financial Services
EPBDS	Enhanced Parcel Based Deeds System
EPO	ESA Province Office
ESA	Egyptian Survey Authority
ESRI	Environmental Systems Research Institute
GIS	Geographic Information System
GoE	Government of Egypt
GPS	Global Positioning System
ICRS	Integrated Cadastre Registry System
MRO	Model Registration Office
ISIS	Image and Scanner Interface Specification
KRA	Key Results Area
WAN	Wide Area Network
MoJ	Ministry of Justice
MRO	Model Registration Office
MSAD	Ministry of State for Administrative Development
PID	Property Identifier
PIM	Property Index Map
PIN	Parcel Identification Number
POS	Point of Sale
REPD	Real Estate Publicity Department
REU	Real Estate Unit, *land parcel, building, or apartment*
RO	Current Deeds Registry Office
SRS	System Requirements Specifications
TDL	Training Development Laboratory
TWAIN	Technology Without An Interesting Name, *scanning standard*
RTID	Registration Transaction Identifier, *unique never changed number assigned to the registration transaction, RTIR is unique throughout the country*
USAID	United States Agency for International Development, *agency financing the development of ICRS*
CTID	Cadastre Transaction Identifier, *unique never changed number assigned to the cadastre transaction , CTID is unique throughout the country*

1.3 GLOSSARY OF TERMS

This section provides the definitions of all terms used in the document

Abstract of title	A summary of the evidence which has been extracted from the title deeds and other relevant documents that establishes ownership as required by a purchaser or mortgagee.
Annotations	Matter added to Registry which does not have legal impact, only declarative. Used by registration staff for adding comments to the objects of the special interest in the Registry.
Applicant	Person, organization representative, power of attorney, or lawyer providing be email or in person documents for the registration or survey work.
Registry Abstracts	Extracts from the Registry on registered entities – properties, parties, rights and encumbrances.
Cadastral Object	Cadastral object is a spatial object created and maintained in the Cadastral System. Cadastral object is one of following types – land parcel, building or construction, apartment unit.
Cadastral Survey	A survey that determines boundaries and location of an object that is the subject of registration (parcel of land or strata unit).
Cadastre	A map showing results of a survey. Cadastres can support land registration, parcel identification, planning, taxation, utilities and services. A Juridical Cadastre establishes the legal titles to land, the Fiscal Cadastre deals with land taxation.
Cadastre Abstracts	Extracts from the Cadastre on cadastre entities – property PID, description, dimensions and area.
Chain of title	The succession of conveyances, from some accepted starting point, whereby the present holder of real property derives title.
Deed	A document, being written evidence of a legal transaction, which has been signed, sealed and delivered to testify to the agreement of the parties concerned.
Deed Recordation	Registration of title deeds.
Definitive Level	The Registry, repository where to all being registered objects come after commitment by the Registrar of Title.
Easement	A right to use the land of another for a specific purpose, such as for a right-of-way or utilities; an incorporeal interest in land.
Geographic Information System	Graphic land information, usually with multi purpose layers or data, such as roads, services, parcels, resource tenures, uses, planning zones and so on.
Immovable Property	Land and attachments defined in Civil Law.
Map	A graphic representation of the earth's surface or some part thereof.
Parcel	Land, building, apartment, usually capable of being sold, with its own title.
Real Estate Unit	Is an immovable property registered as a single object in the EPBDS.
Registration of land or title	The process of recording property and associated rights into the registration system.
Registration of Transactions	The process of recording a transaction (usually a transfer, lease, mortgage or subdivision) in the EPBDS.

Requirement	Describes a condition or capability to which a system must conform; either derived directly from user needs, or stated in a contract, standard, specification, or other formally imposed document.
Strata Unit	A 3-D real estate unit within the building – e.g. apartment, office, shop etc. Can also refer to a whole building when the building is a single registered object and has not been subdivided for the purposes of registration.
Subdivision	A tract of land divided by the owner, known as the sub divider, into blocks, building lots, and streets according to regulations.
Temporary Layer	Temporary repository of information relating to surveyed objects before commitment by the Registry Office.
Transfer (noun)	The document which conveys or transfers property
Transfer (verb)	The act of conveying or transferring property
Use Case	Describes a sequence of actions a system performs that yields an observable result of value to a particular actor.
Versioning	Method of updating the Registry by creating new copy (version) of the object and by archiving previous copy.

1.4 SCOPE

For the sake of clarity, we refer to the system defined by these specifications as the *Integrated Cadastre Registry System* – the *ICRS*. It is expected that the ICRS will do the following:

1. The ICRS will facilitate and support cadastre and survey works for the re-engineered deed registration procedures in a new Registration Office (RO) that will be deployed in the Mokattam area.
2. The ICRS will be deployed in the Cairo Provincial Office of ESA (also referred to as the EPO).
3. Staff at the Mokattam MRO will be able to access certain functions of the ICRS.
4. The ICRS will be the sole system in place for all land and real estate cadastre transactions in the Mokattam area.
5. The ICRS will simplify and automate the procedures for land and real estate cadastre transactions or any other related matters for all involved stakeholders.
6. The ICRS must be well integrated with the Enhanced Parcel Based Deed System (EPBDS) implemented at the REPD.
7. The ICRS must contain required functionality such that it can be used as a basis for implementation in the rest of Egypt.
8. The ICRS must provide a set of technical processes and procedures that complies with the real property legislation of Egypt, for cadastral operations required for the registration of rights and interest in real estate units in Egypt.
9. The ICRS must cover all operational work including automation of cadastre operations, provision of extracts from the cadastral database, provision of various reports on activity of the offices including staff productivity, and financial information on collected fees for the provided services.
10. The ICRS must be flexible to reflect any changes in organization structures of the EPO or ESA and customizable for any changes in legal and organizational environment.

11. The ICRS should provide creation of all paper documents generated during day-to-day activity.

1.5 DOCUMENT OVERVIEW

This document focuses primarily on software system requirements for the cadastre component of the deed registration system. Chapters are the following:

- *Chapter 1 "Overview"* – Chapter provides description of current document, parties involved and other service information.
- *Chapter 2 "Requirements Specifications"* – This section, the core of the document, provides complete coverage on all functional and non-functional requirements for the anticipated Integrated Cadastre Registry System.
- *Chapter 3 "Design Constrains"* – it describes constraints, grouped into three areas covering software, hardware and user interfacing.
- *Appendixes* – contains all related appendixes, diagrams and schemas.

1.6 KEY STAKEHOLDERS

The EFS project's key stakeholders are (in alphabetical order):

- Egypt Financial Services Project (EFS)
- Egyptian Survey Authority (ESA)
- Ministry of Justice (MoJ)
- Ministry of State for Administrative Development (MSAD)
- Real Estate Publicity Department (REPD)

1.7 POINTS OF CONTACT

R. Dougal Menelaws

EFS Project Task 2 Team Leader, Senior Property Registration Advisor

Tel: 202-762 6140

Fax: 202-762 6150

4, Hayet El Tadrees Square,

Dokki, Giza, Egypt

1.8 RELATED DOCUMENTS

1. "Inception Report by Task 2 Team – Registration", Egypt Financial Services Project, May 2005
2. "Business Process Reengineering" DRAFT report, EFS Project, October 2005.
3. "Business Area Analysis" DRAFT report, EFS Project, October 2005.
4. "Bottlenecks and Recommendations for ESA Cadastral Management System", QSIT, November 2004.
5. "Introduction of Sigueal El-Ainee in Urban Areas" report, Egypt Financial Services Project, November 2005.

6. “Assessment and Procurement Report for Training Development Laboratory and Model Registry Offices”, Egypt Financial Services Project, November 2005.
7. “Business Process Reengineering - Parcel Based Personal Deed System” report, Egypt Financial Services, December 2006.
8. “Enhanced Parcel Based Deeds System Requirements Specifications for the registration Component”, Egypt Financial Services Project, December 2006.

2 REQUIREMENTS SPECIFICATIONS

The following chapter contains functional requirements for the anticipated Cairo Province Integrated Cadastre Registry System (ICRS).

2.1 INTRODUCTION

Requirements fall into one of the three following categories:

- *MAN-Mandatory* – Essential feature; system cannot be commissioned if feature is not available in the final release.
- *REQ-Required* – Individual features are not essential, but together they impact the system's viability.
- *DES-Desired* – Optional feature; one or more of these features could be omitted without affecting the system viability, but availability of such functionality essentially affects the system usability.

Each requirement is verifiable and cannot be omitted in the acceptance test plan at system commissioning.

2.1.1 OBJECTIVES

The ICRS System to be acquired must be a transaction-based cadastre system for real property registration as defined earlier in the EFS reports. The implementation of the ICRS system has the following general objectives:

- The ICRS will facilitate and support cadastre operations for the enhanced deed registration process with conformance to new regulations and procedures.
- The ICRS will simplify the procedures for cadastre operations for the enhanced deed registration process or any other related matters for all involved stakeholders.
- The ICRS must have open program interfaces, be transparent, and easily accessible for all parties such as applicants, real estate brokers, surveyors, and municipal and state property managers.

The specific objectives of the ICRS System are:

- To provide a set of technical processes and procedures, that complies with the real property legislation of Egypt, for the cadastral operations required for registration of rights and interest in land, buildings and apartments in Egypt.
- To provide tools and technologies that will allow easy access to immovable property information.
- To create the capability for the production of standard products and services necessary to support a functioning real-estate market.
- To provide the administrators of immovable property in Egypt with the capability to effectively manage the land and buildings in the territory.
- To provide timely updating of land and building cadastral information simultaneously to ensure a homogeneous set of records for the registration and cadastral data.
- To provide tools and procedures that guarantee consistency between registration and cadastre systems.

Aforementioned objectives should be derived on technical basis which assumes the following specific technical objectives:

- Provide rule-based configurable workflows[1] to automate everyday activities of modern cadastre office;
- Provide functionality to support processing survey data and spatial editing.
- Provide functionality for survey appointments scheduling.
- Configurable user management for defining user access rights to the modules, operations and data;
- Provide functionality for automatic fee calculation and collection in different tender types – cash, check, debit/credit cards, deposit account;
- Provide functionality for scanning all incoming documents submitted, and outgoing documents generated from within the system;
- Generate all outgoing paper documents required by law including but limited to financial receipts and certificates;
- Generate various reports on database content, staff productivity and status of the transactions;
- Provide authorized users with all necessary information related to the property, which includes browsing of cadastre content and viewing copies of scanned images;

2.1.2 DELIVERABLES

Implementation of the system includes, but is not limited to, the following goods and services:

- Acquire, implement, and configure an Integrated Cadastre Registry System for ESA Cairo Provincial Office.
- Customize software according to the local changing needs in Egypt.
- Integrate with Enhanced Parcel Based Deed System implemented at the REPD.
- Deliver all operational documentation (user and administrator guides and on-line help) and training material in Arabic.
- Provide comprehensive training, such that the system can be operated and maintained effectively by local staff.
- Provide technical assistance in the operation of the system and in the definition of its working procedures.
- Manage and coordinate the activities during the implementation of the system.

2.1.3 SYSTEM USERS

The various user groups that will work with the ICRS are anticipated to be:

1. *ESA staff of the Cairo Provincial Office and ESA staff at the Mokattam Improved Registration Office* – users directly involved with the reengineered cadastre process supporting the enhanced deed registration process. They will work with ICRS modules on the computers according to assigned roles. System Administrative staff will be in charge of the system maintenance which includes regular backups of the data, upgrading the system with new releases of the application, technical support of the registration process, system management of the applications. These users will be fully trained as long as required to be completely familiar with system and subject area. Training will include the following subjects:
    - Legal issues of cadastre – basic principles of the cadastre, types of cadastral transactions;

[1] Rule-based workflow is a workflow driven by business rules configured in the system.

- *Technical issues of cadastre and surveying* – cadastral workflows; Handling and processing of digital survey data.
- *Basic computer skills* (operating system, office software, internet, e-mail)
- *GIS fundamentals*
- *Spatial editing techniques and(QA/QC)*
- *System administration* (network administration, security policy and user management, backup procedures, etc.)
- *Database Concepts*
- *Database Administration*

Training will be conducted prior to the operation of the MRO/EPO.

2. *Guests* – public users, who will use the web search module to query the cadastre database.
3. *External Staff Members* – authorized staff members of other governmental agencies/ organizations who will use web access on regular basis in order to fulfill their daily tasks. These users are mainly representatives of other REPD and ESA offices, taxation authority, etc.
4. *External Systems* – the ICRS will provide integration with the REPD system (EPBDS) and this implies communication through the use of web services or similar appropriate interfaces to perform data/request exchange. Other possible external applications besides cadastral system that might need to be interfaced with could be financial accounting, taxation, appraisal, and management applications.

2.1.4 ASSUMPTIONS

General assumptions:

1. The total number of existing parcels is estimated at 10,000, and minor cases of subdivisions may occur but these are not expected to be numerous. Expected number of transactions in the Cairo EPO for first time survey of a parcel is expected to start at one a day or 300 a year (which is 3% of the total). The work volume is expected to increase once the new more efficient and fast registration processes are in place and also as the development of the Mokattam area picks up. If the volume increases by 5% each year for the first five years and then start to slow down till it flattens out in year 11, survey of all parcels could be complete in year 15.
2. The total number of existing strata units is estimated at 25,000, and can be expected to reach 90,000 as development of the Mokattam area picks up. Expected number of transactions in the Cairo EPO for first time digitizing of a strata unit floor plan or a first time survey of a strata unit is expected to start at one a day or 300 a year (which is 1.2% of the total). The work volume is expected to increase once the new more efficient and fast registration processes are in place and also as the development of the Mokattam area picks up. If the volume increases by 5% each year for the first ten years and then start to slow down by 5% each year, survey of all strata units could be complete in year 18.
3. Existing Mutation Forms for Mokattam project area will be scanned and loaded into the ICRS prior to commencement of operations at the MRO and EPO. Minimal information from the Mutation Forms will be entered, and a PID will be assigned to each one.
4. The EPO ICRS will have permanent on-line connection to the EPBDS in the MRO during working hours.
5. All properties (parcels/strata unit) should be assigned a unique PID, as per the schema developed by EFS. PIDs will be preassigned for parcels, during the initial creation of the Property Index Maps, with the understanding that certain parcels may

not be identified in the PIM at that time. PIDs for strata units will be assigned during sporadic first time registration.

6. There will be no hard copies of supporting documents submitted at the EPO or to the EPO for the survey work for a deed transaction initiated by the EPBDS system. Such documents will be submitted at the MRO and sent electronically to the EPO. The only exception is a floor plan submitted by an applicant.
7. Volume of supporting documents submitted at or to the EPO for the survey work for a transaction initiated by the applicant is up to 10 pages per transaction.
8. EPBDS obtains Property Identifiers (PIDs) from the ICRS in the EPO. EPBDS does not create, modify or delete Property Identifiers. The EPO ICRS manages Property Identifiers (PID).
9. The EPO ICRS does not imprint existing paper based forms which are currently in use with registration information. All paper documents are generated from within the system on plain paper.
10. If a deed transaction requires survey work, the deed transaction should be accepted and lodged at the MRO and fees (including ESA share) should be paid, after which the necessary information is electronically forwarded to the EPO for survey activities to be undertaken. Once the survey activities are completed, the necessary information is electronically forwarded to the MRO for the deed transaction to be completed. Any documents or information from the MRO required by the EPO or from the EPO required by the MRO should be transferred electronically.
11. An applicant may request survey work at the EPO directly, after paying the required fees at the EPO. Once the EPO conducts the work, the information should be kept in a temporary form at the EPO, and the applicant can receive a receipt confirming completion of the survey. The applicant should then go to the MRO to start the deed transaction and upon presentation of EPO provided document(s), a specific amount should be deduced from the fees to be paid by the applicant to the MRO, based upon a rule table that will be designed by EFS but completed by REPD/ESA.
12. For already registered properties, the EPO may conduct survey activities after verifying ownership simply by checking the identity of the applicant against the EPBDS database. Such Cadastre transactions will be finalized after notification from the EPBDS will be received.
13. In case there is no mutation form for a parcel, the EPO may conduct survey activities without verifying ownership but after receiving a signed and notarized affidavit from the applicant stating their right to the property consistent with the nature of the transaction, and that should it subsequently be determined that they have no right to the property the applicant may be liable for the payment of damages.
14. It is assumed that ESA may collect fees for certain survey activities that are required for registration procedures, especially as any such fees should be later deducted from the fees paid by the applicant at the MRO, based on a rules table completed by REPD/ESA.
15. Any person should have the right to perform a search and view limited results on a free public access terminal.
16. Any person should have the right to submit a search or query application at the EPO and the MRO, against the payment of fees to be completed by REPD/ESA in a rules table. The applicant should receive a print out for a particular parcel or strata unit containing information on the location, area, owners and their shares, encumbrances, PID, textual description of the parcel boundaries, graphical representation of the parcel, and other information.
17. If the applicant is present on-site during the field survey work by EPO staff, the EPO staff should only confirm the identity of the person present and will not include on-site verification of ownership documents. The field survey work should be limited to

determining the location and boundaries of the property and any other relevant physical objects.

18. When an applicant starts a deed transaction at the MRO which requires survey work or when an applicant starts a survey transaction at the EPO, the applicant must be present on site during the survey. The EPO surveyor will contact the applicant and agree on a schedule. The EPO surveyor will proceed to the site and conduct the survey only if the applicant is present.
19. ESA staff at the MRO should use the ICRS to perform various types of investigations, using the ICRS. This should be integrated into the EPBDS, and should be performed early in the workflow process, prior to the applicant paying the necessary fees. The MCIT reengineering proposal for rural title registration incorporates ESA staff into the proposed "one-stop-shop" RO and this has already received approval from ESA and REPD.
20. The 114/1946 deed law does not require a mutation form or CIF to be prepared, regardless of whether or not the deed transaction initiates any survey work. Article 22 of law 114 of 1946 states that "The requisite and substantial information with regards to the identification of the premises, particularly the location, area, boundaries; if such is a plot of agricultural land, it is necessary to state the name of the administrative area (nahiya) wherein it exists, the name of the basin (hawd), the no. of the plot of land; and if such is an urban land, or a constructed property, it is necessary to indicate the name of the police station (kissim) within which the jurisdiction of such exists, the street, the alley (hara), and the number (raqim), if present."
21. Only certain deed transactions will require interaction with the ICRS and possible survey work. The following two tables clarify how the registration deed transactions will interact with the ICRS and which should initiate ESA work at the EPO and which should not.

Table 1. Interaction with ICRS for parcels

Geometry condition	PID & mutation form exist	Only PID exists	Only scanned mutation form exists	No PID or mutation form exist
No geometry change	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Subdivision	Scenario 4	Scenario 4	Scenario 4	Scenario 4
Merge	Scenario 4	Scenario 4	Scenario 4	Scenario 4
Boundary adjustment[2]	Scenario 4	Scenario 4	Scenario 4	Scenario 4

Scenario 1: The necessary digital data will be copied from the EPBDS and should be automatically inserted into the deed and any other documents by the EPBDS.

Scenario 2: The ESA staff at the MRO uses the ICRS to link the PID to the transaction. The ICRS launches survey work, prepares the mutation form, and assigns the PID to the surveyed object. The ICRS will send digital data that will be a modified version of the current CIF. The Mutation Form should have already been checked in the EPO. The digital data should be automatically inserted into the deed and any other documents by the EPBDS.

Scenario 3: The ESA EPO staff enter all required information and digitize the survey data from the scanned mutation form. ICRS prepares the mutation form, and assigns a PID to the property object and to the transaction. The ICRS will send digital data that will be a modified version of the current CIF. The Mutation Form should have already been checked in the

[2] A boundary adjustment is equivalent to consecutive subdivision and merge transactions.

EPO. The digital data should be automatically inserted into the deed and any other documents by the EPBDS.

Scenario 4: The ICRS launches survey work, prepares the mutation form, and assigns a PID to the surveyed object and to the transaction. The ICRS will send digital data that will be a modified version of the current CIF. The Mutation Form should have already been checked in the EPO. The digital data should be automatically inserted into the deed and any other documents by the EPBDS.

Table 2. Interaction with ICRS for strata units

Geometry condition	PID & floor plan exist	No PID or floor plan exist
No geometry change	Scenario 5	Scenario 6
Subdivision	Scenario 6	Scenario 6
Merge	Scenario 6	Scenario 6
Boundary adjustment	Scenario 6	Scenario 6

Scenario 5: The necessary digital data will be copied from the EPBDS and should be automatically inserted into the deed and any other documents by the EPBDS.

Scenario 6: The MRO instructs the applicant to obtain a floor plan or if this is not possible ESA will survey the strata unit. The EPBDS sends a request to the ICRS to scan a submitted floor plan or for the EPO staff to conduct a field survey if no floor plan was submitted. The ICRS assigns a PID. The ICRS will send digital data that will be a modified version of the current CIF. The Floor Plan and associated documents should have already been checked in the EPO. The digital data should be automatically inserted into the deed and any other documents by the EPBDS. The ICRS will send an image of the floor plan.

22. Mutation forms for common areas will no longer be required. Instead, once a structure on a parcel is to be subdivided into more than one strata unit and property rights to common areas will be assigned to the owners of the strata units, floor plans for such common areas will be appended to the mutation form of the parcel itself, and both the parcel and common areas will share a single PID.
23. For deed transactions on a strata unit which is on a parcel for which there is no Mutation Form, the parcel Mutation Form should first be created, including footprints of any permanent structures present on the parcel.
24. Since information contained in current Cadastral Information Forms (CIF) will in the future be sent as a digital stream of data from the ICRS to the EPBDS, and since REPD and ESA staff at the MRO will be able to view Mutation Forms stored on the ICRS, there is no longer any need to generate paper Cadastral Information Forms, and given that the transmission of digital mutation form data to the EPBDS satisfies the fees model.
25. ESA will define minimum requirements for a strata unit floor plan.
26. The EFS urban deed registration property identification schema corresponds to the title (rural and urban) registration property identification schemas in terms of the structure up to the parcel. Internal to the parcel, the structures differ.
27. The EPO ICRS will have permanent on-line connection to the EPBDS in the MRO during working hours.
28. Existing mutation forms for Mokattam project area will be converted and loaded into the new ICRS database prior to the commencement of operations at the MRO and EPO.

Integration assumptions:

1. During development of the ICRS, special focus will have to be paid to scanning, indexing, and the overall data catalogue in order to support future migration to the MSAD Urban Title Registration System.
2. The ICRS will be designed to maximize the harmonization of the hardware, software, and networking platform selection with the MSAD Urban Title Registration System.
3. No integration of the Notarization System with the ICRS.
4. No integration of the Prohibited from Transaction System with the ICRS.
5. No integration of the Local Government System with the ICRS.
6. No integration of the Taxation Authority System with the ICRS.
7. No integration of the LADIS Deed Archiving System with the ICRS.
8. No integration of the ECIM System with the ICRS.
9. No integration of the MCIT Rural Registration System with the ICRS.
10. No integration of the Informatique Deed Registration System with the ICRS.

2.2 CAIRO PROVINCE OFFICE

The ICRS will be installed in Cairo Province Office and in ESA Training Development Laboratory (TDL). ESA TDL will be set up and first version of ICRS will be first deployed in the TDL. *After that all staff to be dedicated for the* ICRS (1) will be trained at TDL and (2) after that will start working on ICRS in real production environment serving handling real incoming survey requests.

The general layout of the needed working area for the ICRS staff in Cairo EPO will include the following functional areas:

- *Public Area*, open for visitors and adjoining with reception office provide documents to the Intake window, collect registered or rejected documents from Delivery Window, and pay survey fees. It's also preferable to adjoin the survey scheduler to facilitate appointments arrangement with clients.
- *Staff Area*, not allowed for the visitors; for the Cairo EPO personnel only and partitioned to the following:
    a. *Survey group (8 personnel/ 1 supervisor)*
    b. *Editor group (2 personnel/ 1 supervisor)*
    c. *Scanning and indexing (2 personnel)*
    d. *Technical investigator (1 personnel)*
    e. System administrator (1 personnel)
- Survey equipment storage room
- *Archives*, storage room with paper archives;
- *Server room*, with server and communication equipment; restricted access even for EPO staff;

Please refer to Annex 2 for Cairo Province Office Proposed Layout

The following is a list of basic staffing needs for running the ICRS in Cairo Province Office to support incoming requests from Mokattam MRO:

Table 3. Staffing needs for ICRS/Cairo Province Office to support Mokattam MRO

Role	Description	Required
Reception Clerk	Answers questions from incoming applicants. Receives and makes an initial review of applications. Delivers all documents to applicants.	2
Cashier Clerk	Calculates fees with the use of cashiering software and accept payments.	1
Scanning/Indexing Clerk	Scans incoming/outgoing documents. Batch scanning is used to speed up process. perform basic indexing	2
Cadastre Technical Investigator	Checks cadastre transaction validity.	1
System Administrator	Provides hardware/software support to office.	1

Role	Description	Required
Support Clerk	One person for daily office support activities.	1
Scheduler	Responsible of assigning survey schedule for all transactions	1
Office Surveyor	Responsible of the survey data processing "uploading survey equipment data to the system "	2
Field Surveyor	Responsible of the field survey activities	2
Surveyor assistance	Supports the surveyors in the field survey	2
Technician	Supports the surveyors in the field survey	2
Surveyors' Supervisor	Responsible of the reviewing/monitoring survey group work	1
Editor	Edit/update the PIM based on survey information and issuing the mutation forms "survey plan"	2
Editor Supervisor	Responsible of the reviewing/monitoring editors work	1
	Total:	**21**

It is also assumed that personnel will be fully trained and familiar with computer/office hardware as well as relevant GIS/Cadastre system software. Survey group will receive a special training on field survey.

2.3 SYSTEM ARCHITECTURE OVERVIEW

The ICRS must be implemented as multi-tier system:

- **1st tier** – Database Management System (DBMS). IBM DB2 is selected as target DBMS for the ICRS.
- **2nd tier** - the ICRS application server. Application Server (AS) will serve as middleware between clients and DBMS. ESRI ArcGIS server is selected as the target GIS server for ICRS.
- **3rd tier** – various ICRS clients as needed to support ICRS requirements.

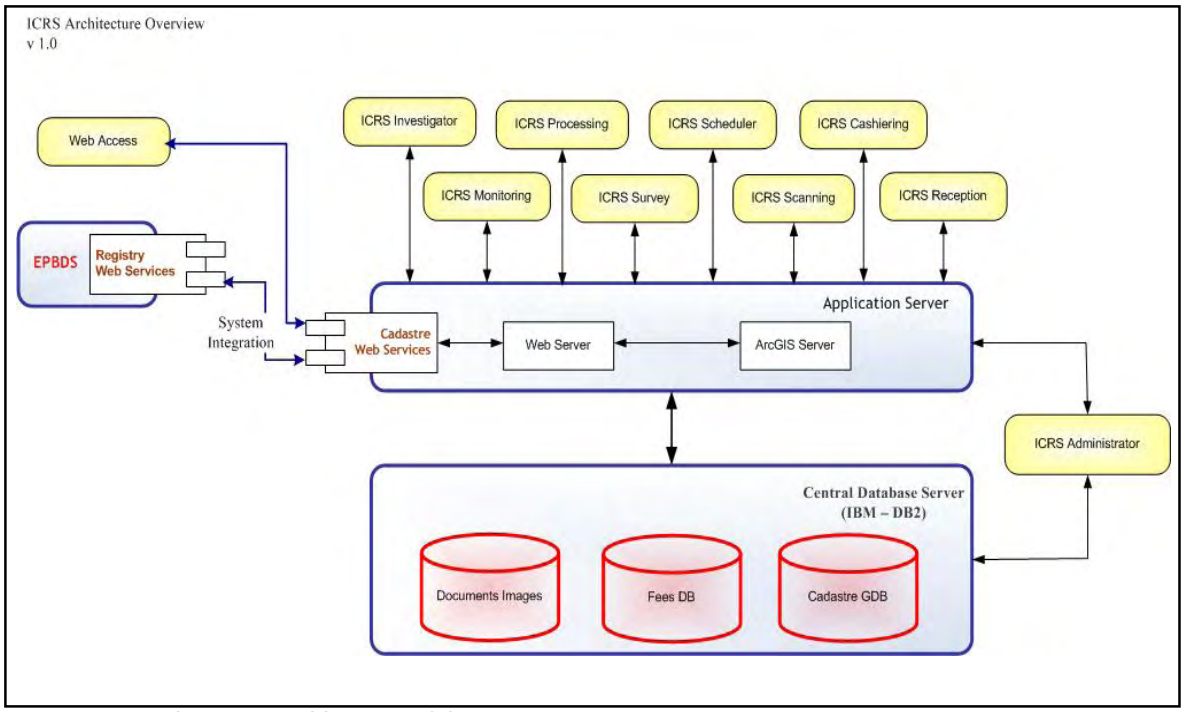


Figure 1 Proposed system architecture of the ICRS system

DBMS

For security, performance and usability reasons, at least three separate databases, residing on the same DBMS instance, are recommended for the ICRS:

1. *Cadastre GeoDatabase* – database which keeps all spatial features and survey measurements as well as other related tabular attributes. Please refer to *Data Requirements* section for more information. The Cadastre GeoDatabase will be initially populated with Property Index Map.
2. *Fee Database* – database with financial data, it includes configured fee schedule for automatic calculation of the registration fee, chart of accounts, information about collected fees and printed invoices.
3. *Digital Documents* – database with images of the documents in digital form – scanned or documents created in office applications. It keeps all digital documents including their versions for the paper documents updated with manual corrections. It is recommended to keep the digital documents database may be substituted by storage on file system if all security and performance requirements will be met.

Separation of the cadastre, financial and digital documents databases simplifies backup and database maintenance.

Application server

The application server will support GIS services for spatial data management, visualization, and spatial analysis.

The ICRS Reception Clients/module

The *ICRS Reception* will serve the following needs:

- Lodgment of incoming survey requests;
- Tracking status of survey requests;
- Generating reports according to client requests.
- Document delivery.
- Supporting search for cadastre objects to help citizen identify their properties PIDs.

The ICRS Scheduler Client/module

The *ICRS Scheduler* will support management of survey appointments settings and forwarding assignments to field survey crews.

The ICRS Investigator Client/module

The *ICRS Investigator* will be accessed by both the ESA engineer in the MRO and the Cadastre technical investigator in Cairo Province office. *ICRS Investigator* supports validation to the cadastre transaction validity according to configured system rule.

The ICRS Survey Client/module

The *ICRS Surveying* will support needed survey processing functionalities for importing/exporting data from digital survey instruments as well as survey computations and COGO functionalities.

The ICRS Processing Client/module

The *ICRS Processing* will be used by the editors for spatial data processing/editing according to spatial validation rules and maintaining the history chains. *ICRS Processing* will also support automatic generation of UPI for all newly created cadastre objects.

The ICRS Monitoring Client/module

The *ICRS Monitoring* will support tracking the activities within the ICRS system and monitoring of the staff performance. Accessibility to this module is limited to senior management and supervisors.

The ICRS Cashier Client

This client provides the following functionality – automatic calculation of registration fees based on the type and parameters of the registration transaction, collecting registration fees in different tender types, and printing receipts. In addition to these ongoing functions the Cashier client provides opening the cash drawers at the beginning of the work day and reconciliation at the end of the work day.

The Cashier client is used by Cashier Clerks. Considering the special importance of this application working with financial information, the other staff does not have access to the Cashiering system registration clients. Audit of financial operations in Cashier Client is also separated from general ICRS audit.

The ICRS Scanning Client

Scanning of all incoming/outgoing documents will be done with the help of this client application. The module is operated by the Scanning Clerk. The scanning client also allows attaching existing digital documents (Word, Excel, etc.) to the transaction.

The ICRS Administrator

This application provides centralized configuration, administration and audit of the ICRS system. All configuration settings are server centered. The application can be accessed only by users with Administrative permissions.

The ICRS Web services

The ICRS web services will be used for integration and communication with other systems. The main integration requirement is with Enhanced Parcel Based Deed System to support daily processing on incoming registration transactions.

The ICRS Web Access

The ICTS Web Access module provides access to the cadastre information for the involved users. Web Access provides functionality to: view transaction status; search and browse cadastre objects; generate and print certain types of reports and view scanned images or attached digital documents.

2.4 DEEDS REGISTRY/CADASTRE REQUIREMENTS

2.4.1 CADASTRE PRINCIPLES

The proposed Integrated Registry Cadastre System should be workflow-driven and property based. The following principles must be supported by the system.

No.	Description	Required	Details/Comments
2.4.1.1	The ICRS should be a cadastre system integrated to a property based registration system where the real estate unit is main object of registration.	MAN	According to a parcel-based deed system, rights can only exist on individual, single properties unit (e.g. land parcel or fixed property). First a property unit must exist and be registered before rights or burdens can be registered. The property unit is always the focus of interest. Property units are created in the Integrated Cadastre Registry System.
2.4.1.2	Each property object will be registered under unique property identifier (PID).	MAN	PID is generated automatically by the ICRS according to EFS proposed PID schema. Refer to Appendix 5 for more information.

No.	Description	Required	Details/Comments
2.4.1.3	Cadastre number of the property object should be unique not only within a particular office's database but throughout the entire country.	MAN	The ICRS will provide ability for second check of uniqueness condition during adding new property record into the ICRS.
2.4.1.4	ICRS should support lodgment, scanning, indexing, and cashiering for applicant-initiated survey requests	MAN	
2.4.1.5	Real Estate Unit within the cadastre and registry may include one or more of the following types of property objects: • Single land parcel, • Single strata unit (building, apartment, office, shop, warehouse)	MAN	All new property units are generated in the ICRS. EPBDS system requests ICRS for the information on properties.
2.4.1.6	Each transaction must have a unique sequential number/year or Cadastre Transaction Identifier (CTID). CTID cannot be changed over life of the transaction record in the ICRS.	MAN	CTID is an alphanumeric value.
2.4.1.7	Temporary survey work at EPO should have a limited holding duration, after which it should be considered invalid, in case the applicant does not quickly start the deed transaction at the MRO	DES	
2.4.1.8	CTID is unique not only within particular office's database but throughout the country.	MAN	For this purpose CTID should have a prefix with ESA province office code.
2.4.1.9	When the EPBDS initiates a deed transaction that requires survey work, it should flag the properties that are the subject of the deed transaction in the EPBDS and ICRS databases. If another deed transaction is initiated in the EPBDS on one or more of the flagged properties and survey work is not required, the EPBDS should bring up a warning message. The EPBDS should still allow the subsequent deed transaction to proceed	REQ	

No.	Description	Required	Details/Comments
2.4.1.10	The ICRS must allow providing snapshot of real estate unit status for any specified date.	MAN	This implies versioning support for all registration objects. For example it may be necessary to see the boundaries of a property two years ago and the neighboring properties at that time.
2.4.1.11	Documents can be submitted at the reception counter in person or by an authorized representative. The system will maintain a connection between all documents submitted with each transaction, as the transactional documents make their way through the system.	MAN	All related documents are uniquely identified with sequential numbers assigned by the System.
2.4.1.12	Entering information on person (name, contact info) lodging the transaction is mandatory.	MAN	Lookup tables containing customer mailing address information for frequent customers should be in place to facilitate efficient standardized data entry.
2.4.1.13	At the time the application for a transaction is lodged into the system a sequential document number is assigned to the application.	MAN	When an application is lodged on the system, it creates a new transaction with a unique number.
2.4.1.14	When a survey request is rejected the ICRS must generate a rejection letter with stated reason(s) of rejection.	MAN	Rejection letter together with all lodged documents is returned to the applicant.
2.4.1.15	If the transaction is postponed the ICRS must generate a pending letter and send it to applicants mailing address with stated reason and further actions required.	MAN	In new documents or other clarifications allow for the continuation of a postponed transaction, the transaction continues from the stage where it was postponed.
2.4.1.16	Modification objects in the definitive level (in the cadastre) by versioning.	MAN	Any modification of the objects in the cadastre must create a new version of the object. Objects that are placed in the definitive level are never removed from the system.
2.4.1.17	System cannot block cadastre work even when there are any obstacles preventing this.	MAN	System must generate a warning notice; decision-making on approval or rejection of cadastre work is always by EPO staff.

2.4.2 USER ROLES AND GROUPS

As the ICRS will be a workflow-based system, it is required that access to data, modules, workflows and their stages must be limited by predefined user groups and/or particular user roles. The following roles must be preconfigured for the ICRS:

No.	Group Name	Role Name	Role Description	Required
2.4.2.1	System Administration	System Administrator	System administrator will be fully responsible of system installation/configuration and management. His role includes assign new users/setting user privileges.	MAN
2.4.2.2	Recipient	Help Desk clerk	Receives and makes an initial review of applications. Lodge transaction into system	MAN
2.4.2.3		Complaints Clerk	Answers questions from incoming applicants, record complaints.	DES
2.4.2.4		Delivery Clerk	Delivers all documents to applicants.	MAN
2.4.2.5	Cadastre Experts	Cadastre Technical Investigator	Checks cadastre transaction validity.	MAN
2.4.2.6	Scanning Operators	Scanning clerk	Scans incoming/outgoing documents. Batch scanning is used to speed up process.	REQ
2.4.2.7	Cashiers	Cashier Clerk	Calculates fees with the use of cashiering software and accept payments.	MAN
2.4.2.8	Surveyors	Scheduler	Responsible of assigning survey schedule for all transactions.	MAN
2.4.2.9		Surveyor	Responsible of the survey data processing "uploading survey equipment data to the system "	MAN
2.4.2.10		Surveyors Supervisor	Responsible of the reviewing/monitoring survey group work	MAN
2.4.2.11	Editors	Editor	Edit/update the PIM based on survey information and issuing the mutation forms "survey plan"	MAN
2.4.2.12		Editor Supervisor	Responsible of the reviewing/monitoring editors work	MAN
2.4.2.13	Senior Management	Head of EPO	The head of Cairo EPO is responsible for monitoring all staff activities.	MAN

2.4.3 DOCUMENTS GENERATED BY THE SYSTEM

The operation of the automated ICRS system will be supported by automatic generation of needed documents based on standard templates. Below is a list of some examples of the documents to be generated by the ICRS system. Proposed draft layouts of these documents can be found in appendix 1.

Table 4. Documents generated from ICRS System

No.	Description	Required	Details/Comments
2.4.3.1	The ICRS must generate an ***Acceptance Receipt*** for each application filed by a customer. The Application Receipt will be signed by the Reception Clerk and Applicant, and will confirm the submission of documents by the applicant.	MAN	The Acceptance Receipt contains information about the transaction, including a list of documents provided by the Applicant, property PID and the name of the Reception Clerk who has lodged the transaction into the system. The Reception Clerk gives one copy of the Acceptance Receipt to the Applicant and puts the second copy in the Acceptance Receipt Folder.
2.4.3.2	The ICRS must print a ***Fees invoice*** to be delivered to the applicant in order to pay the required fees	MAN	As the reception clerk enters the transaction details into the System and based on the entered details, the System will automatically calculate the value of the fees to be paid "based on ESA configured fees rules", and print the fees invoice. The fees invoice will have detailed list of the fees calculated.
2.4.3.3	The ICRS must print one copy of a ***Cashier Receipt***, which will confirm payment from the applicant.	MAN	The receipt is to include a receipt number, the transaction number, the date and time that the application was accepted, total amount due, total payment received, cahier name, cash drawer.
2.4.3.4	The ICRS must print a ***Pending Letter*** if the EPO Technical Investigator finds any problem when first verifying the transaction, then he signs the letter and send it to the applicant to come to the EPO and resolve the issue.	MAN	The pending letter will state the problem that stopped the transaction processing. The applicant will come to the EPO and If the problem is solved the EPO Technical Investigator will submit the transaction to the next stage
2.4.3.5	The ICRS must print a ***Rejection Letter*** if EPO Technical Investigator found reasons to reject the cadastre transaction.	MAN	The Rejection Letter may set out one or more reasons for rejection. The Rejection Letter is signed by the EPO Technical

No.	Description	Required	Details/Comments
			Investigator and shows the reasons for rejection. Delivery Clerk gives the Rejection Letter to the Applicant.
2.4.3.6	The ICRS must print a ***Survey Schedule Letter*** that contains the date and time of the survey, and surveyor name.	MAN	The schedule letter is to be sent to the *applicant* and *any other party (organization)* that has to attend the survey. The applicant must be present on site during the survey
2.4.3.7	***Survey Plan*** *"the proposed new version of Mutation Form"* this is the birth certificate of the property and is kept in the EPO as a paper document containing all the information about the property	MAN	The ***Survey Plan*** *" the proposed new version of Mutation Form"* contains all the information about the property, a sketch indicating the boundaries, the owner name and all the requests applied for the property: ▪ Property layout, with beacons labeled. ▪ Registration Transaction number, for EPBDS initiated survey. ▪ Cadastre Transaction number, for Applicant initiated survey. ▪ Application date. ▪ Survey Plan Number ▪ Property PID ▪ Property Address ▪ Property Area ▪ Block number ▪ Survey Section name ▪ Registration Office name ▪ ESA Province Office name ▪ A table describing the beacons distances ▪ Surveyor Name ▪ Survey Date ▪ Scale ▪ North arrow ▪ Optional, Servitude data

2.4.4 SUPPORTED TRANSACTIONS

Below is a list of basic preconfigured transactions to be supported by the ICRS system. Other transactions may be configured under client's request when changes in legislation will take place.

Table 5. **Transactions to be supported in the ICRS**

No.	Description	Required	Details/Comments
2.4.4.1	First Registration	MAN	Cadastral property is created/ demarcated
2.4.4.2	Parcel Subdivision	MAN	Subdividing land into smaller parts.
2.4.4.3	Strata Unit Subdivision	MAN	
2.4.4.4	Parcel Consolidation	MAN	Two or more property units are merged to form a new property unit.
2.4.4.5	Strata Unit Consolidation	MAN	
2.4.4.6	Boundary Adjustment (or Re-allotment)	MAN	A piece of land is transferred from one property unit to another.
2.4.4.7	Search	MAN	Search transaction, does not change the Cadastre.

2.5 ICRS WORKFLOWS

A number of generalized workflow diagrams to be implemented by the ICRS are presented in the following pages. The diagrams indicate the role that participates at each stage of the workflow. Depending of matter of specific transaction one or another step can be omitted.

2.5.1 APPLICANT INITIATES SURVEY WORKFLOW AT MRO

- A transaction has already been lodged by the Applicant at the MRO. The EPBDS sends the necessary information to the ICRS. The ICRS will lodge a transaction and assign it a unique CTID. The EPO scheduler/surveyor will then select the transaction and estimate the required time to conduct the survey, and will then contact the Applicant and agree on an appointment. After preparing all necessary material, the EPO Surveyor will go to the site and conduct the survey and then return to the office. At the EPO, the EPO Surveyor will enter some basic information about the property and will upload the survey data. The EPO Editor will select the transaction and then process the survey data. The system will then generate and assign a Property Identifier if necessary, and generate the temporary Mutation Form (for parcels) or a Temporary Floor Plan (for strata units).
- The EPO Cadastre Technical Investigator will review the work and if no problems are found will close the transaction. The ICRS will send the transaction to the EPBDS.
- If the EPO Cadastre Technical Investigator finds any problem with the survey work, the transaction will be returned to for review, or a letter will be drafted to the MRO, or a letter will be drafted to the Applicant.

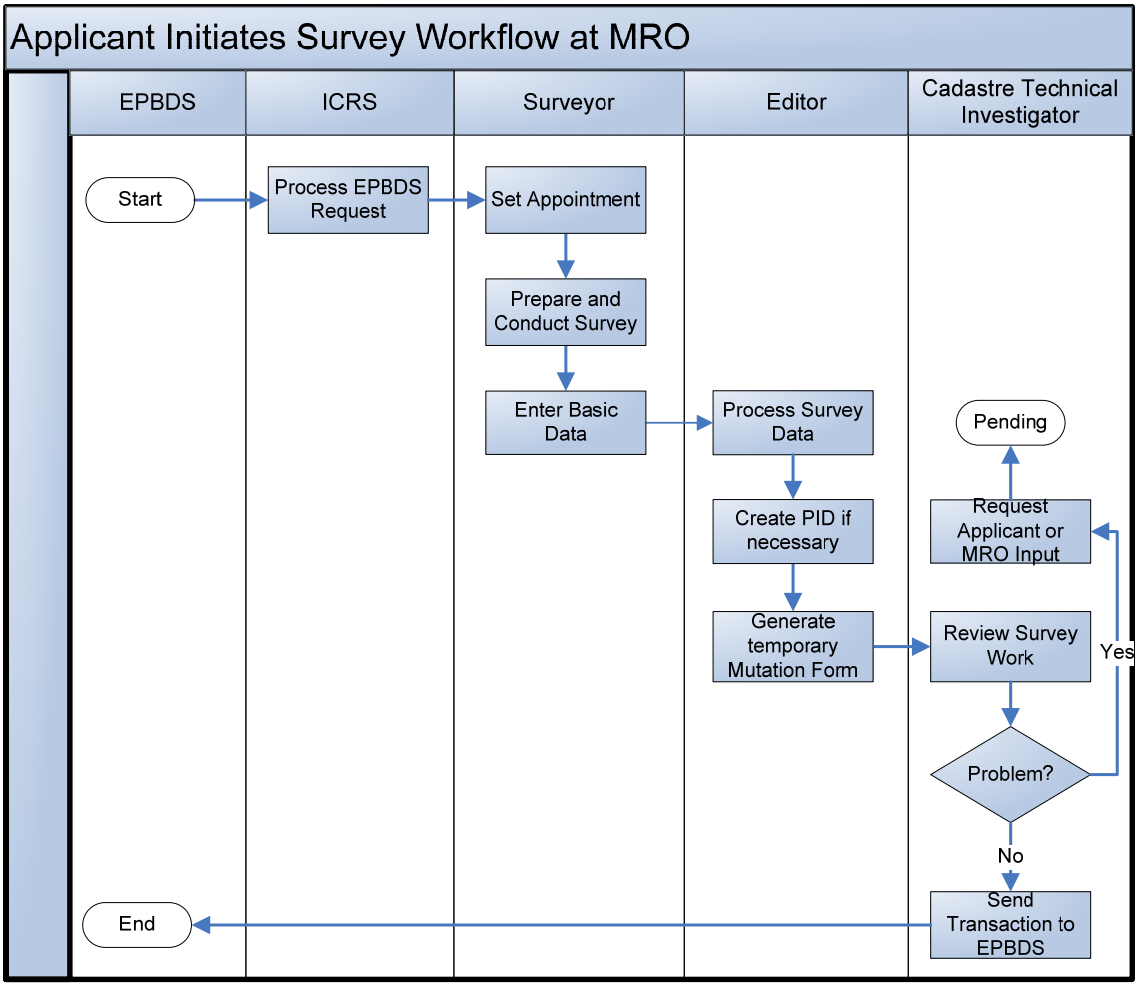


Figure 2. Applicant Initiates Survey Workflow at MRO

2.5.2 MRO FINALIZES TRANSACTION

- The ICRS sent the transaction to the EPBDS. The EPBDS finalized the transaction. The EPBDS sends the necessary information to the ICRS. The EPO Editor will select the transaction and then finalize the previously prepared survey data. This data will be used to update the Property Index Map. The system will then commit the Property Identifier if necessary, and commit the Final Mutation Form (for parcels) or Floor Plan (for strata units).
- The transaction is closed, and confirmation is sent to EPBDS.
- If the system determines that EPBDS has cancelled the transaction, the EPO Editor will select the transaction and set its status as canceled.

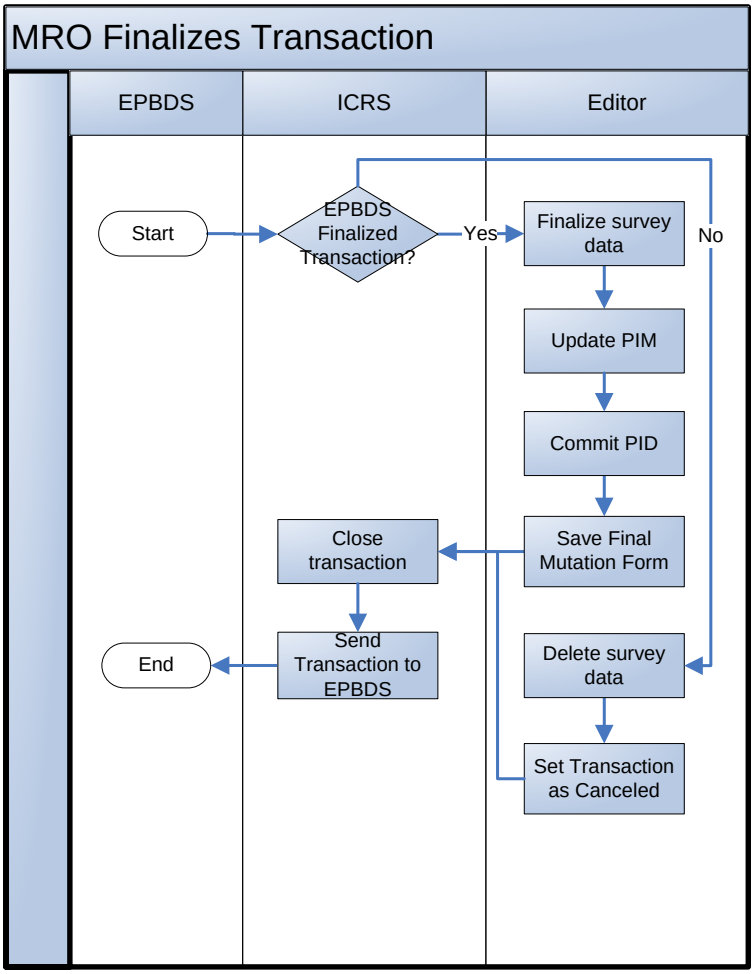


Figure 3. MRO Finalizes Transaction

2.5.3 APPLICANT INITIATES SURVEY WORKFLOW AT EPO

- The Applicant will complete an Applicant Form and submit it at the EPO along with any required documents. The EPO reception clerk will check the submitted documentation and ensure that the Application Form is complete. If all required documents are present, the EPO Reception clerk enters transaction details into the System and the ICRS will lodge a transaction and assign it a unique CTID. The reception clerk will write this assigned CTIF on the application form. Then, based on the entered details, the System will automatically calculate the value of the fees to be paid. The reception clerk will print a fee invoice and hand it over to the applicant.
- If there is a problem, the EPO Reception clerk rejects the lodgment of the transaction and notifies the Applicant.
- Once all details are entered, the EPO Reception clerk will print two copies of the Acceptance Receipt, sign the first copy and hand it to the Applicant and attach the second copy to the all other documents as a cover sheet. All required documents are taken from the Applicant and put on a special shelf to be later picked up for the EPO Scanning Clerk.
- Upon reception of the Acceptance Receipt, the Applicant goes to the EPO Cashier to pay the fee.
- The EPO Cashier opens the system and based on the information stated on the Acceptance Receipt finds the relevant transaction record. After the fee is paid, the

EPO Cashier prints the Cashier Receipt and gives it to the Applicant. The transaction is forwarded to the next stage.

- The EPO Scanning Clerk collects the documents and scans them and then performs basic indexing for each document, which includes entering information about the document type and date. When the scanning is complete, the documents are sent to the EPO Cadastre Technical Investigator. The EPO Cadastre technical Investigator will select the transaction and perform an initial verification. If there are no problems with the case, the EPO Technical Investigator approves it for execution. The EPO Surveyor will then select the transaction and estimate the required time to conduct the survey, and will then contact the Applicant and agree on an appointment if the Applicant has chosen to be present or will set an appointment without contacting the Applicant. After preparing all necessary material, the EPO Surveyor will go to the site and conduct the survey and then return to the office. At the EPO, the EPO Surveyor will enter some basic information about the property and will upload the survey data. The EPO Editor will select the transaction and then process the survey data. The EPO Technical Investigator will review the work.
- The Applicant will come to the EPO Reception clerk to enquire about the transaction. The system will generate a Confirmation of Survey. The EPO Reception clerk will deliver the Confirmation of Survey to the Applicant, and the transaction will be closed.
- If the EPO Technical Investigator finds any problem when first verifying the transaction, they will draft a Pending Letter. The ICRS will send the Pending Letter to the Applicant. The EPO Technical Investigator will contact the Applicant to notify them of the problem. The Applicant will come to the EPO to address the problem. If the problem is resolved, the EPO Technical Investigator will submit the transaction to the next stage, but if the problem is not resolved the EPO Technical Investigator will draft a Rejection Letter and the transaction will be closed. The Applicant will collect the Rejection Letter and other documents from the EPO.

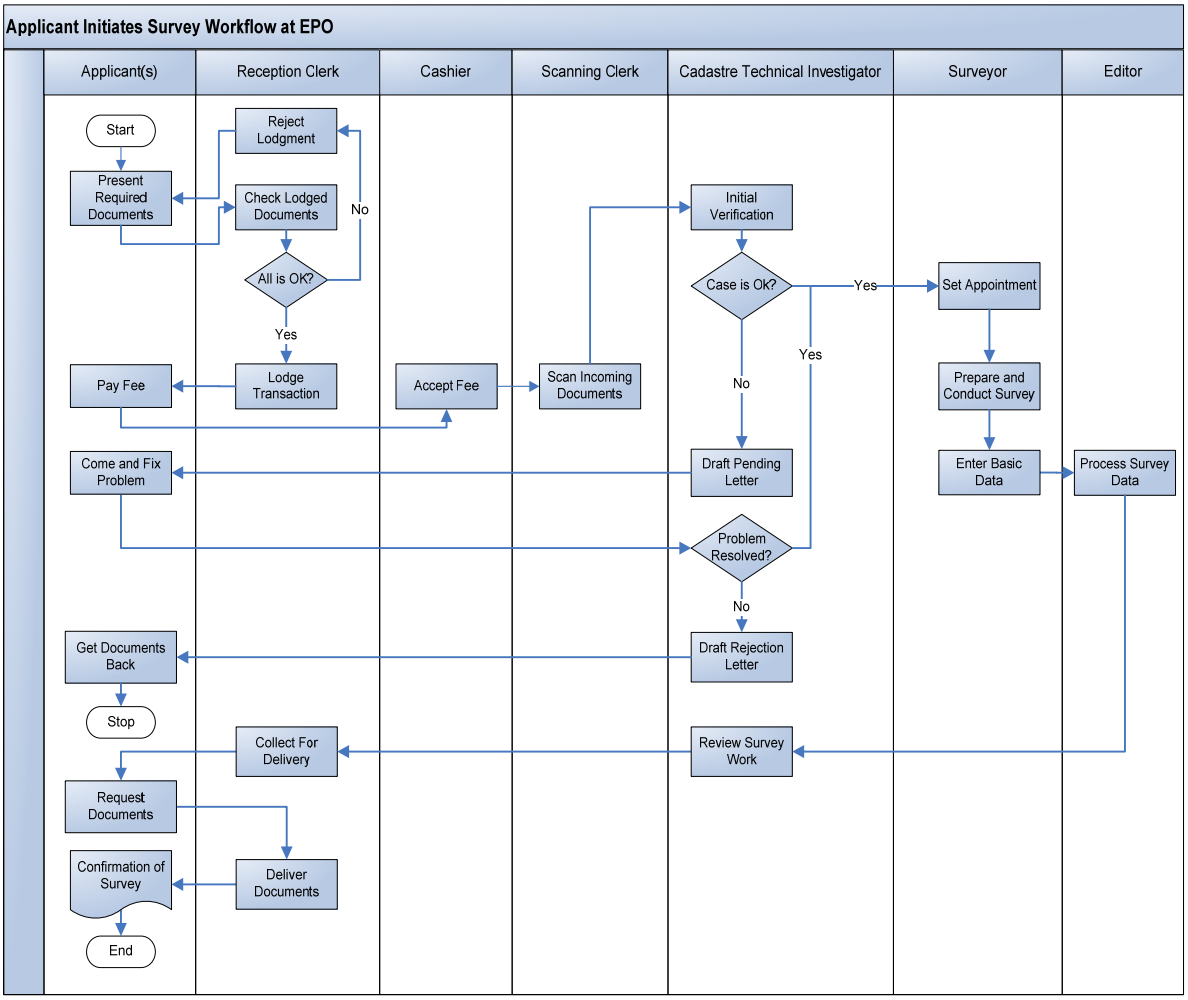


Figure 4. Applicant Initiates Survey Workflow at EPO

2.5.4 EPO FINALIZES

- The Applicant submits the Confirmation of Survey to the MRO. A transaction is lodged at the MRO. The EPBDS sends the necessary information to the ICRS. The ICRS determines that this transaction is for survey work that was requested by the Applicant at the EPO and that it has been completed.
- The EPO Editor will select the transaction and then process the survey data. The system will then generate and assign a Property Identifier if necessary, and generate the temporary Mutation Form (for parcels) or a Temporary Floor Plan (for strata units).
- The EPO Cadastre Technical Investigator will review the work and if no problems are found will close the transaction. The ICRS will send the transaction to the EPBDS.
- If the EPO Cadastre Technical Investigator finds any problem with the survey work, the transaction will be returned to for review, or a letter will be drafted to the MRO, or a letter will be drafted to the Applicant.

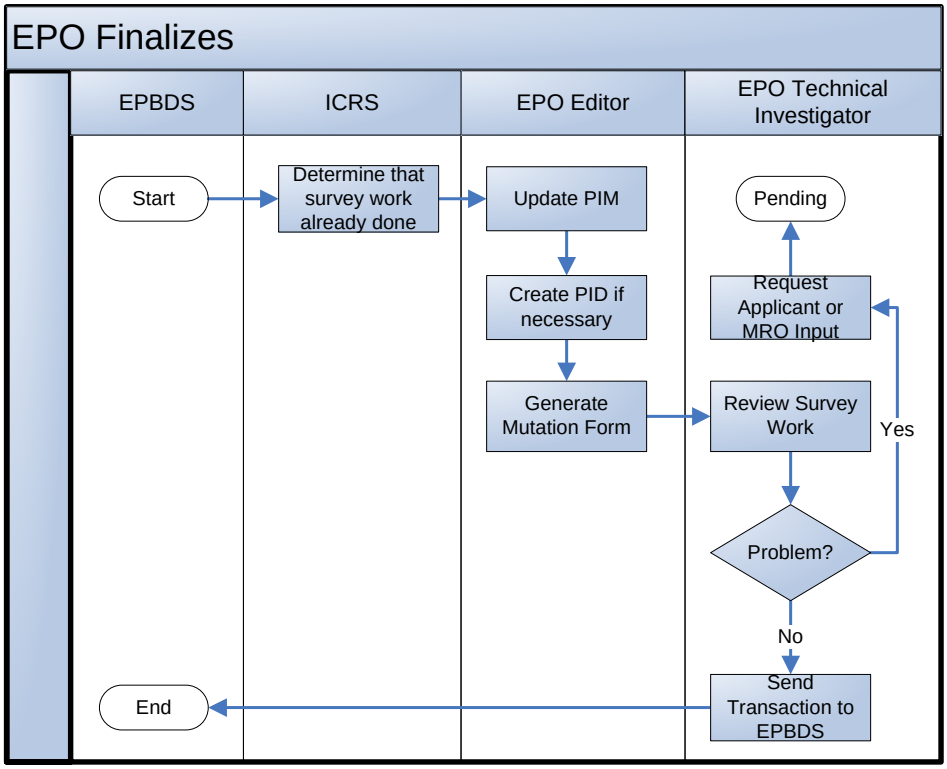


Figure 5. EPO Finalizes

2.5.5 EPO CERTIFIED SEARCH WORKFLOW

- The Applicant presents required documents to the EPO Reception clerk. The EPO Reception clerk enters transaction details into the System and, based on the entered details, the System will automatically calculate the value of the fees to be paid.
- Once all details are entered, the EPO Reception clerk will print two copies of the Acceptance Receipt, sign the first copy and hand it to the Applicant and attach the second copy to the all other documents as a cover sheet. All required documents are taken from the Applicant and put on a special shelf to be later picked up for the EPO Cadastre Technical Investigator.
- Upon reception of the Acceptance Receipt, the Applicant goes to the EPO Cashier to pay the fee.
- The EPO Cashier opens the system and based on the information stated on the Acceptance Receipt finds the relevant transaction record. After the fee is paid, the EPO Cashier prints the Cashier Receipt and gives it to the Applicant. The transaction is forwarded to the next stage.
- The EPO Reception clerk conducts the necessary search. If no results are found, a Search Result Letter is drafted and printed and kept for later collection by the Applicant. If the required documents are found, the EPO Reception clerk checks if the required documents are available in digital format. The required documents are either printed from the system or photocopied. The EPO Reception clerk sends submitted documents and generated documents to the EPO Cadastre Technical Investigator for certification. The EPO Cadastre Technical Investigator certifies the copies and sends them to the EPO Reception clerk for delivery.
- The Applicant will come to the EPO Reception clerk to enquire about the transaction. The EPO Reception clerk will deliver the documents to the Applicant, and the transaction will be closed.

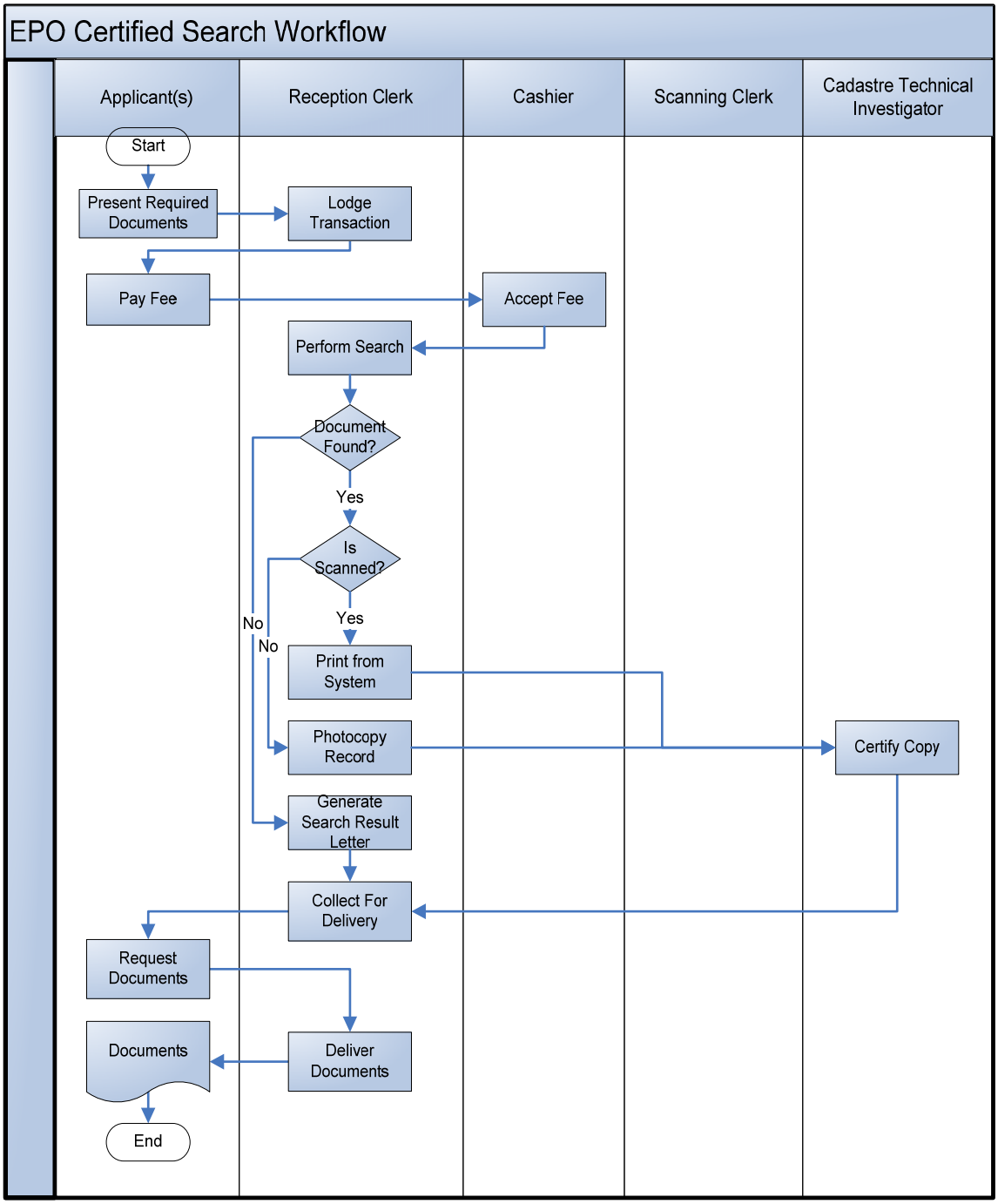


Figure 6. EPO Certified Search Workflow

2.6 SYSTEM USE CASES

The primary use cases implemented by ICRS are as follows:

- Process EPBDS Initiated Transaction
- Manage Appointments
- Modify Appointments
- Enter Survey Data
- Process Survey Data
- Maintain PIM
- Create PID
- Generate MF
- Review Survey
- Submit Transaction
- Collect Fee
- Index and Scan
- Verify Transaction
- Deliver Documents
- Conduct Search

The following sections provide description of use cases for all ICRS registration modules in details.

2.6.1 PROCESS EPBDS INITIATED TRANSACTION

EFS, Task 2 – Registration	
Use Case	Process EPBDS Initiated Transaction
Level	Proposed
Summary	System obtains EPBDS initiated transactions and routes them to the appropriate stage.
Actor	ICRS
Preconditions	ICRS System is activated. EPBDS has sent one or more transaction to ICRS.
Post Conditions	Transactions sent by EPBDS have been routed to the appropriate stage.

Primary Scenario	
Actor	**System**
	1. Select first transaction from a queue. 2. Checks the transaction status. 3. If transaction is not an EPBDS finalized transaction, if the transaction has not previously come through ICRS or survey work was not performed, and if the transaction unit is not for a strata unit, the transaction is flagged for the Appointment stage. 4. Assign CTID to new transaction. 5. The transaction edits are saved.

Secondary Scenarios

1. At step 3, if transaction is not an EPBDS finalized transaction, and if transaction has previously come through ICRS or survey work was performed, the transaction is flagged for the Editor stage. The transaction edits are saved.
2. At step 3, if transaction is not an EPBDS finalized transaction, and if transaction has not previously come through ICRS or survey work was not performed, and if the transaction is for a strata unit, check if a floor plan has been provided. If a floor plan has been provided, the transaction is flagged for the Editor stage. The transaction edits are saved.
3. At step 3, if transaction is not an EPBDS finalized transaction, and if transaction has not previously come through ICRS or survey work was not performed, and if the transaction is for a strata unit, check if a floor plan has been provided. If a floor plan has not been provided, the transaction is flagged for the Appointment stage. The transaction edits are saved.
4. At step 3, if transaction is not an EPBDS finalized transaction, and if transaction has not previously come through ICRS or survey work was not performed, and if the transaction is for a strata unit, and if a floor plan has been provided, the Editor will have to wait for the floor plan to reach the EPO via dedicated courier.
5. At step 3, if transaction is an EPBDS finalized transaction, the transaction is flagged for the Finalized stage. The transaction edits are saved.

Exception Scenarios

1.

Notes and Definitions

1. Assigning CTID is needed to ensure system will be able to handle several queues from different MROs in the future. This CTID will work as EPO internal transaction sequence for both incoming MRO and Applicants initiated survey transactions.
2. EPBDS finalized transaction is a transaction that requires survey work and which has been processed and finalized at the MRO, thereby triggering ESA to commit all earlier edits that were kept in a temporary state.
3. A transaction that has previously come through ICRS is a transaction that involves survey work which was initiated by an applicant and for which the applicant later went to the MRO and successfully lodged a transaction which was then routed to ICRS.

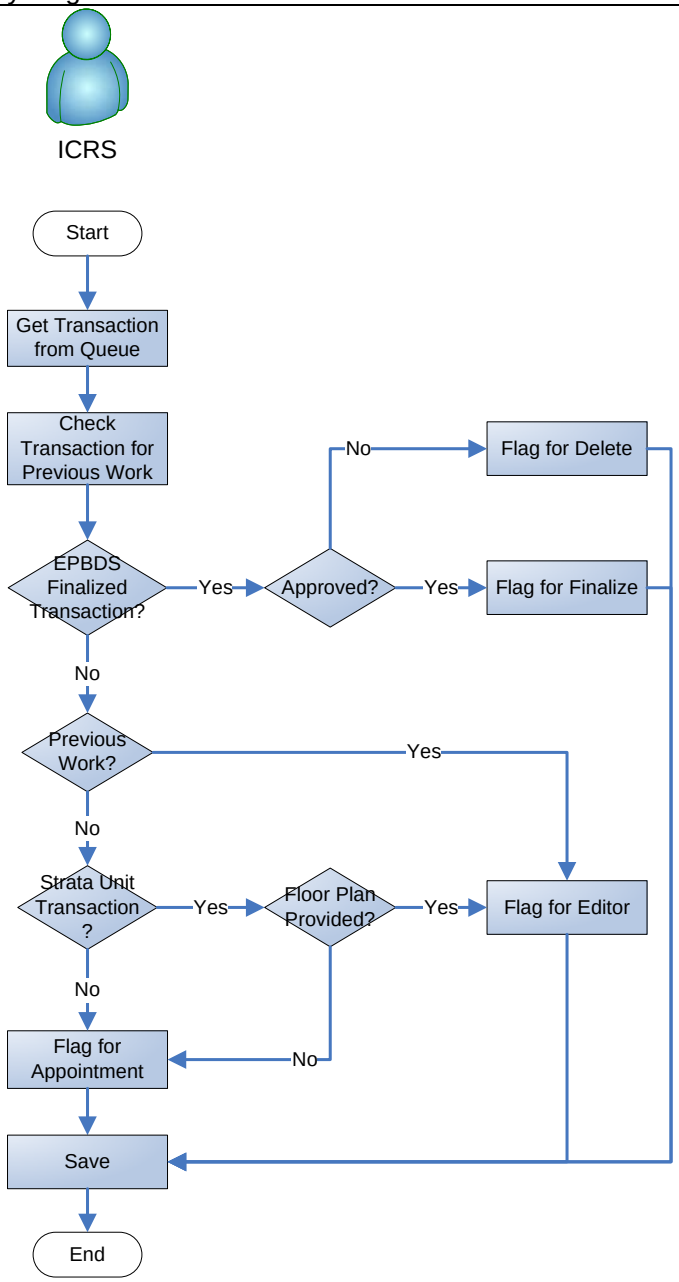


Figure 7. Process EPBDS Initiated Transaction Use Case

2.6.2 MANAGE APPOINTMENTS

EFS, Task 2 – Registration	
Use Case	Manage Appointments
Level	Proposed
Summary	Transactions requiring field survey work are reviewed to estimate required time and appointment with applicant requested or agreed on.
Actor	EPO Representative in MRO, EPO Scheduler/Surveyor
Preconditions	ICRS System is activated. Transactions have been routed to the ESA Engineer or to the EPO Surveyor.
Post Conditions	Appointment has been agreed on and set or there has been no agreement or request for appointment has been sent to the Applicant.

Primary Scenario	
Actor	**System**
1. Select first transaction from a queue flagged for the Appointment stage. 2. Estimate time required for survey. 3. If Applicant is not present, requests contact information.	4. Returns Applicant contact information.
5. Contact Applicant based on type of contact information. 6. If contacting by phone or in person, discuss/review possible schedule and agree on appointment. 7. Enter appointment date and time, and comments including location of meeting.	8. The transaction is flagged for the survey stage (Appointment Set). 9. The transaction edits are saved.

Secondary Scenarios

1. At step 3 if the Applicant is present, discuss possible schedule and agree on appointment.
2. At step 5, if the Applicant contact information type is a postal or email address, the transaction flag is unchanged and any transaction edits are saved.
3. At step 6, if no agreement is reached on appointment, the transaction flag is unchanged and any transaction edits are saved.
4. If the Applicant contacts or comes to the EPO to set or modify a previously set survey appointment, the Applicant provides a transaction number or other information is used to conduct a search in order to find the transaction. An appointment is then set, or the previously set appointment is modified, or no appointment is set. The transaction flag is changed as necessary and any transaction edits are saved.

Exception Scenarios

1.

Notes and Definitions

1. Estimation for time required for survey is a manual process, based on an assessment of location, site conditions, size, and other factors.
2. Applicant and ESA Engineer or EPO Surveyor must agree on where to meet, depending on transportation and other logistical arrangements.
3. Contacting the Applicant is performed and managed using other tools, and not the ICRS system.

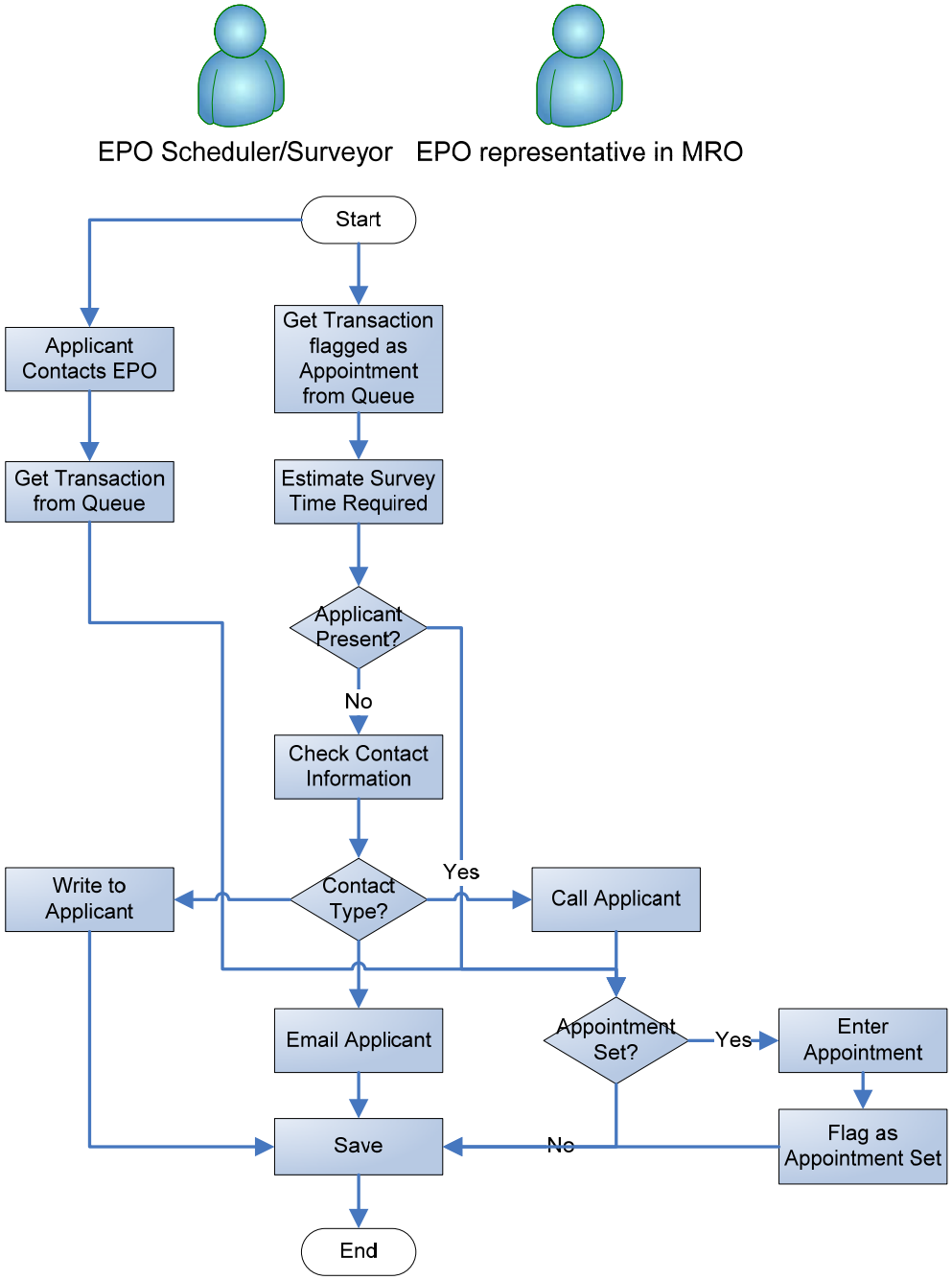


Figure 8. Manage Appointments

2.6.3 MODIFY APPOINTMENTS

EFS, Task 2 – Registration	
Use Case	Modify Appointments
Level	Proposed
Summary	A transaction with a previously set appointment is retrieved and the appointment is modified.
Actor	EPO Representative in MRO, EPO Scheduler/Surveyor
Preconditions	ICRS System is activated. Appointment has been set.
Post Conditions	Appointment has been modified or Applicant has been requested to contact EPO for appointment modification.

Primary Scenario	
Actor	**System**
1. Enter transaction number or use other information to conduct a search in order to find the transaction.	2. Get the transaction from the queue.
3. If Applicant is not present, requests contact information.	4. Returns Applicant contact information.
5. Contact Applicant based on type of contact information. 6. If contacting by phone or in person, discuss/review possible schedule and agree on appointment. 7. Enter appointment date and time, and comments including location of meeting.	8. The transaction is flagged for the survey stage (Appointment Set). 9. The transaction edits are saved.

Secondary Scenarios

1. At step 3 if the Applicant is present, discuss possible schedule and agree on appointment.
2. At step 5, if the Applicant contact information type is a postal or email address, the transaction flag is changed to Appointment and transaction edits are saved.
3. At step 6, if no agreement is reached on appointment, the transaction flag is changed to Appointment and transaction edits are saved.

Exception Scenarios

1.

Notes and Definitions

1. Applicant and ESA Engineer or EPO Surveyor must agree on where to meet, depending on transportation and other logistical arrangements.
2. Contacting the Applicant is performed and managed using other tools, and not the ICRS system.

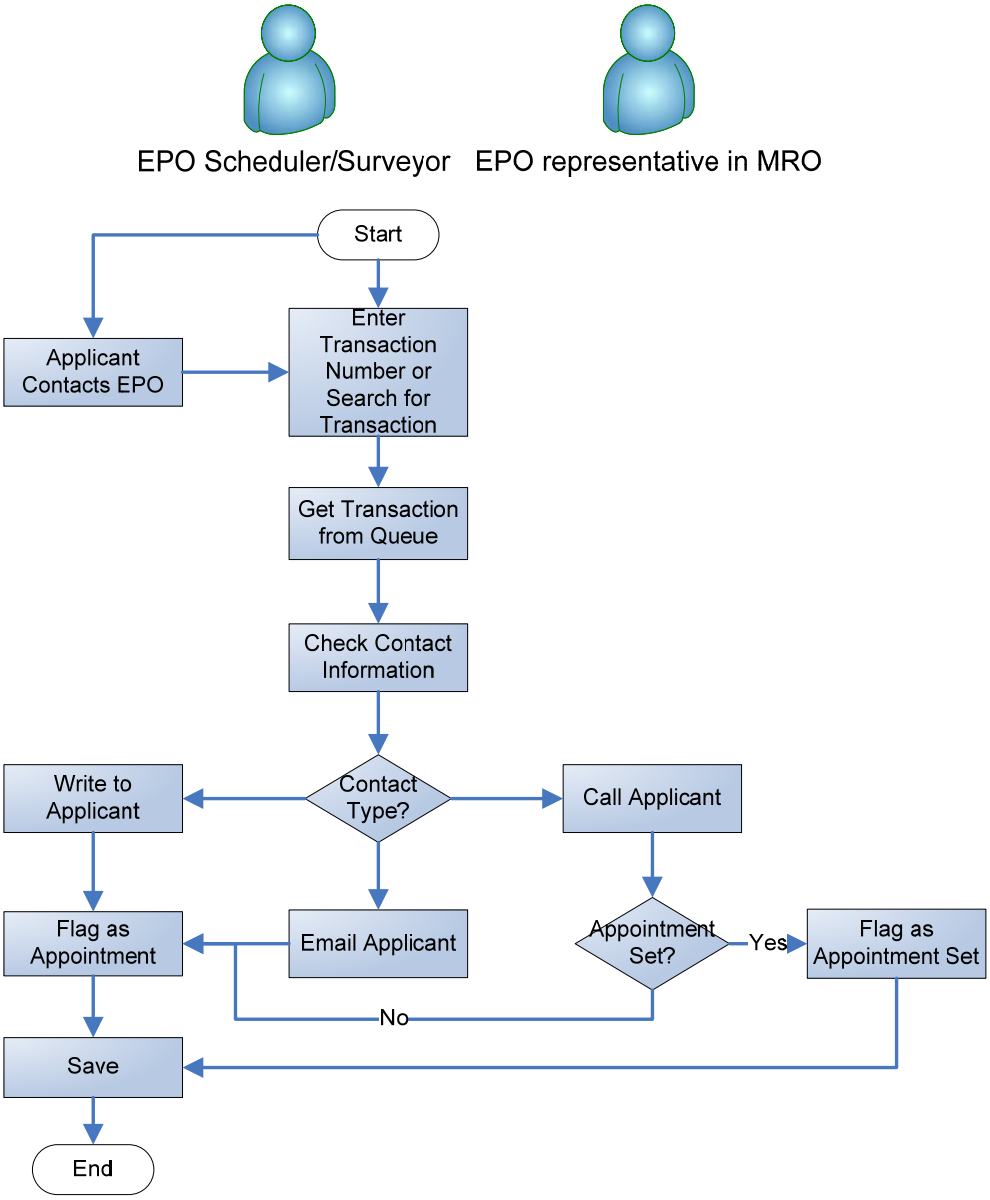


Figure 9. Modify Appointments

2.6.4 ENTER SURVEY DATA

EFS, Task 2 – Registration	
Use Case	Enter Survey Data
Level	Proposed
Summary	Following completion of the survey basic information is entered and the raw survey data is uploaded for later use by the editor.
Actor	EPO Surveyor
Preconditions	ICRS System is activated. Survey has been completed.
Post Conditions	Basic survey data has been entered, raw survey data has been saved to a system-maintained location, and transaction has been moved to next stage.

Primary Scenario	
Actor	**System**
1. Enter transaction number or use other information to conduct a search in order to find the transaction.	2. Get the transaction from the queue.
3. Enter the basic information.	4. Save basic information. 5. Open/enable survey data upload window/tool.
6. Identify and select all survey folders and/or files for uploading.	7. Save all folders and/or files to system defined folder that is specific to transaction. 8. The transaction is flagged for the edit stage (Surveyed). 9. The transaction edits are saved.

Secondary Scenarios

1.

Exception Scenarios

1.

Notes and Definitions

1. Basic information to be entered includes survey date, time, names of persons present, comments, location information other than that already embedded in the PID, and all other information other than the PID itself and the raw survey data.

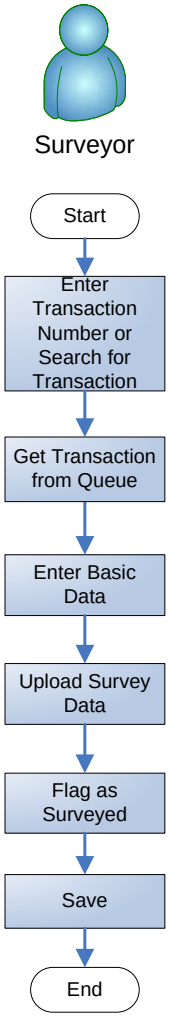


Figure 10. Enter Survey Data

2.6.5 PROCESS SURVEY DATA

EFS, Task 2 – Registration	
Use Case	Process Survey Data
Level	Proposed
Summary	Import raw survey data and convert to GIS cadastral format.
Actor	EPO Editor
Preconditions	ICRS System is activated. Basic survey data has been entered, raw survey data has been saved to a system-maintained location, and transaction has been moved to the editing stage.
Post Conditions	Survey data has been processed, property cadastre information has been saved in temporary form, and transaction has been moved to the next editing stage.

Primary Scenario	
Actor	**System**
	1. All transactions are filtered for those that are flagged as Surveyed.
2. Select a transaction.	3. Retrieve all information including system defined folder for specific transaction containing raw survey data.
4. Use available drafting and edit tools to process raw survey data and prepare GIS cadastral representation of property.	5. Save processed survey data to temporary file. 6. The transaction is flagged for the next edit stage (Survey Processed). 7. The transaction edits are saved.

Secondary Scenarios 1.
Exception Scenarios 1.
Notes and Definitions 1.

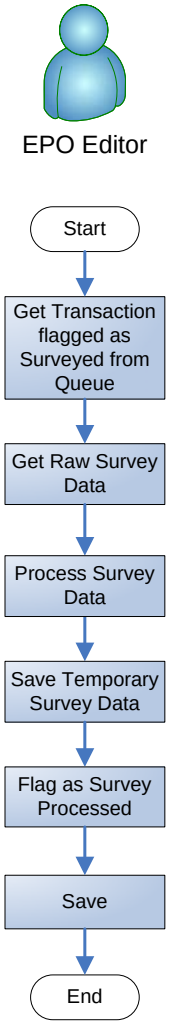


Figure 11. Process Survey Data

2.6.6 CREATE PID

EFS, Task 2 – Registration	
Use Case	Create PID
Level	Proposed
Summary	If necessary a PID has been created.
Actor	EPO Editor
Preconditions	ICRS System is activated. Survey data has been processed, and transaction has been moved to the PID creation stage.
Post Conditions	PID has been created, and transaction has been moved to the next editing stage.

Primary Scenario	
Actor	**System**
	1. All transactions are filtered for those that are flagged as Survey Processed.
2. Select a transaction.	3. Retrieve all information including property in GIS cadastral format.
4. If PID not yet assigned to property, place cursor in middle of property.	5. If property is a parcel, using GIS spatial tools, compare location to Governorate feature class and populate first digit of PID. 6. Using GIS spatial tools, compare location to City feature class and populate second digit of PID. 7. Using GIS spatial tools, compare location to Section feature class and populate third, fourth, and fifth digits of PID. 8. Using GIS spatial tools, compare location to Block feature class and populate sixth digit of PID. 9. Using GIS spatial tools, find all parcels in block that already have a PID and check which is the highest parcel number (seventh digit). 10. Add one to this value and populate seventh digit of PID. 11. Save PID to the transaction. 12. The transaction is flagged for the next edit stage (PIM Assigned). 13. The transaction edits are saved.

Secondary Scenarios

1. At step 5, if property is a strata unit, using GIS spatial tools find parcel at that location and obtain its PID. System will then perform a relate query to obtain all registered strata units on that parcel and check which has the highest value. Add one to this value and assign as PID and save to the transaction. The transaction is flagged for the next edit stage (PIM Assigned) and transaction edits are saved.

Exception Scenarios

1.

Notes and Definitions

1.

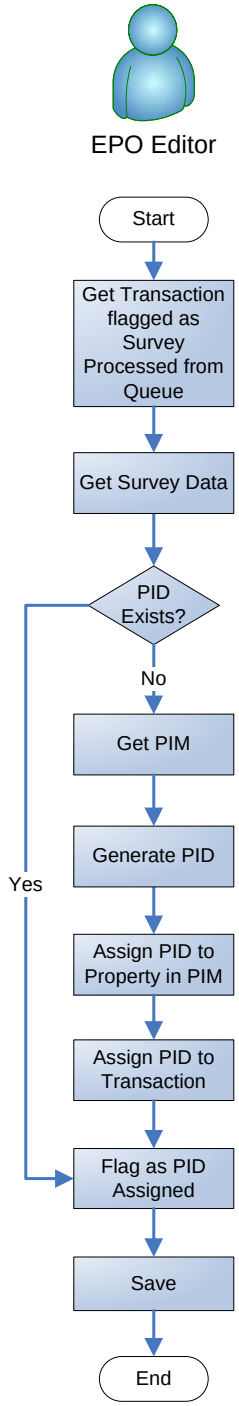


Figure 12. Create PID

2.6.7 GENERATE SURVEY PLAN "MUTATION FORM"

EFS, Task 2 – Registration	
Use Case	Generate Mutation Form
Level	Proposed
Summary	Populate mutation form template with previously entered and created data, and enter in any additional information to create temporary mutation form.
Actor	EPO Editor
Preconditions	ICRS System is activated. PID has been created, and transaction has been moved to the Temporary Mutation Form generating stage.
Post Conditions	Temporary Mutation Form has been created, and transaction has been moved to the next stage.

Primary Scenario	
Actor	**System**
	1. All transactions are filtered for those that are flagged as PID Assigned.
2. Select a transaction.	3. Retrieve all information including system defined folder for specific transaction containing raw survey data. 4. Retrieve GIS cadastral property information. 5. Retrieve PIM. 6. Open Mutation Form template. 7. Populate Mutation Form template with available information.
8. Use available information to complete any missing information. 9. Click on Finish.	10. Save Mutation Form to temporary file. 11. The transaction is flagged for the next stage (Edited). 12. The transaction edits are saved.

Secondary Scenarios 1.
Exception Scenarios 1.
Notes and Definitions 1.

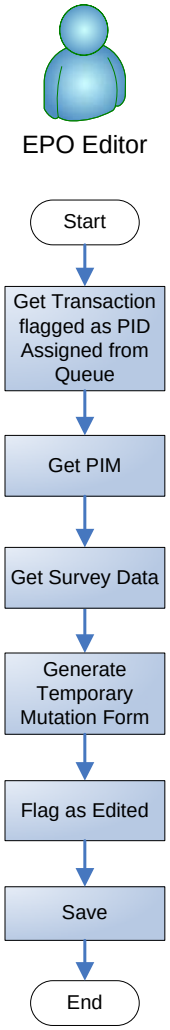


Figure 13. Generate Survey Plan "Mutation Form"

2.6.8 REVIEW SURVEY

EFS, Task 2 – Registration	
Use Case	Review Survey
Level	Proposed
Summary	Review all available survey material and outputs and in case of any problems route the transaction to the relevant party for further action.
Actor	EPO Cadastre Technical Investigator
Preconditions	All editing activities have been completed (for EPBDS initiated transactions) or raw survey data has been processed (for applicant initiated transactions).
Post Conditions	All survey related work has been reviewed and transaction has either been moved to next stage if there are no problems or has been returned to an earlier stage if problems have been found.

Primary Scenario	
Actor	**System**
	1. All transactions are filtered for those that are flagged as Edited.
2. Select a transaction.	3. Retrieve all information including system defined folder containing raw survey data, PIM, and temporary Mutation Form.
4. Review all material and determine if there are any problems. 5. No problems are found.	6. If the transaction is an EPBDS initiated transaction, the transaction is flagged as Completed. 7. The transaction is sent to EPBDS. 8. The transaction edits are saved.

Secondary Scenarios

1. At step 5 if no problems are found and the transaction is not an EPBDS initiated transaction, the transaction is flagged as Reviewed and the transaction edits are saved.
2. At step 5 if problems are found with the original survey work and the transaction is not an EPBDS initiated transaction, comments are added to explain the review conclusions and to clarify whether the problem is in the survey work itself or the basic survey data, after which the transaction is flagged as Appointment Set and the transaction edits are saved.
3. At step 5 if problems are found with the survey data processing and the transaction is not an EPBDS initiated transaction, comments are added to explain the review conclusions and to clarify whether the problem is in the survey data processing or the PIM editing, after which the transaction is flagged as Surveyed and the transaction edits are saved.
4. At step 5 if problems are found relating to the Applicant and the transaction is not an EPBDS initiated transaction, a Pending Letter is drafted and the transaction is flagged as Pending and the transaction edits are saved.
5. At step 5 if problems are found relating to the Applicant and the transaction is an EPBDS initiated transaction, a Pending Letter is drafted and the transaction is flagged as Pending. The transaction is sent to EPBDS, and transaction edits are saved.

Exception Scenarios

1.

Notes and Definitions

1. When a transaction for a parcel is completed, the ICRS sends a data stream to the EPBDS consisting of the following: EPBDS transaction number, ICRS transaction number, PID, calculated area, boundary description (dimensions), survey date, property address, Survey Plan "Mutation Form" number, neighboring PIDs.
2. When a transaction for a strata unit is completed, the ICRS sends a data stream to the EPBDS consisting of the following: EPBDS transaction number, ICRS transaction number, PID, declared area, floor number, apartment number, survey date, property address, floor plan number.

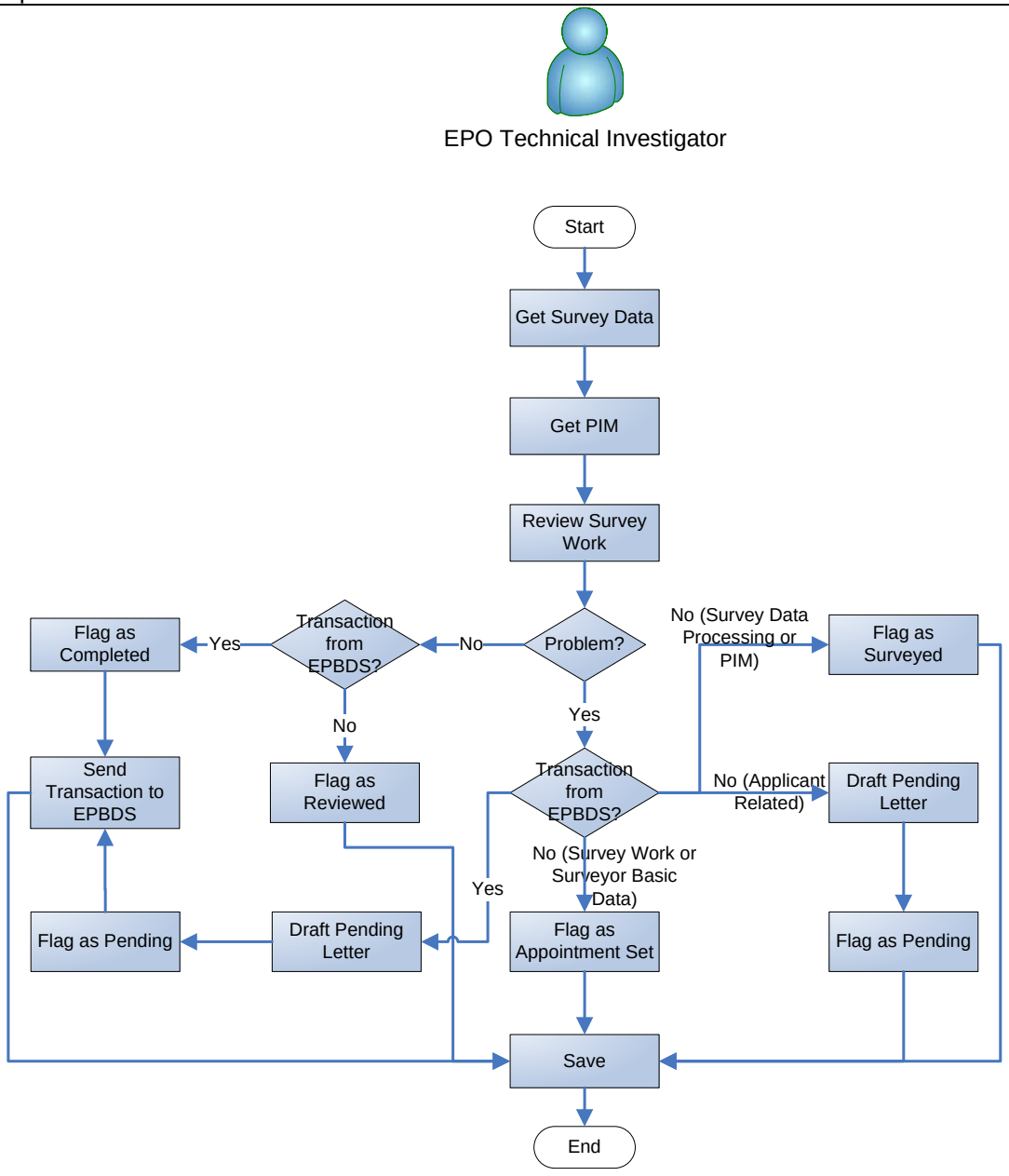


Figure 14. Review Survey

2.6.9 COMMIT SURVEY DATA

EFS, Task 2 – Registration	
Use Case	Commit Survey Data
Level	Proposed
Summary	Commit temporary GIS cadastral format survey data to database, update property objects and other supporting objects in PIM, commit PID, save final Mutation Form, and close transaction.
Actor	EPO Editor
Preconditions	ICRS System is activated. EPBDS has notified ICRS that is has finalized the deed.
Post Conditions	Temporary property cadastre information has been committed to the cadastre database, PIM has been updated, PID has been committed, Final Mutation Form has been saved, and transaction has been closed.

Primary Scenario	
Actor	**System**
	1. All transactions are filtered for those that are flagged as Finalize.
2. Select a transaction.	3. Retrieve all information including system defined folder for specific transaction containing temporary property cadastre information.
4. Use available tools to commit temporary data to GIS cadastral database.	5. Save GIS cadastral database. 6. Retrieve all information including property in GIS cadastral format
7. Use available drafting and edit tools to update parcel or building feature class using GIS cadastral representation of property. 8. If necessary, update adjacent properties. 9. If necessary, update other feature classes such as streets.	10. Save edited feature classes. 11. Assign PID to parcel object in parcel feature class. 12. Retrieve Temporary Mutation Form. 13. Save as Final Mutation Form. 14. The transaction is flagged as Committed. 15. Close transaction.

Secondary Scenarios

1. At step 11, if property is a strata unit, commit PID.

Exception Scenarios

1.

Notes and Definitions

1.

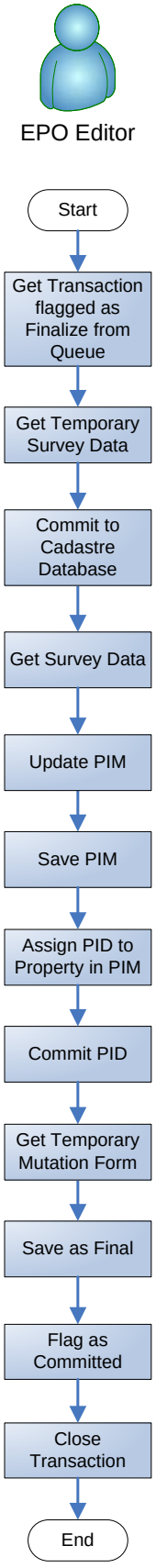


Figure 15. Commit Survey Data

2.6.10 DELETE

EFS, Task 2 – Registration	
Use Case	Delete
Level	Proposed
Summary	Delete temporary GIS cadastral format survey data, delete temporary Mutation Form, and close transaction.
Actor	EPO Editor
Preconditions	ICRS System is activated. EPBDS has notified ICRS that is has rejected the transaction.
Post Conditions	Temporary property cadastre information has been deleted, temporary Mutation Form has been deleted, and transaction has been closed.

Primary Scenario	
Actor	**System**
	1. All transactions are filtered for those that are flagged as Delete.
2. Select a transaction.	3. Retrieve all information.
4. Click on Delete.	5. Return Warning window.
6. Click on Confirm.	7. The transaction is flagged as Cancelled. 8. Close transaction.

Secondary Scenarios 1.
Exception Scenarios 1.
Notes and Definitions 1.

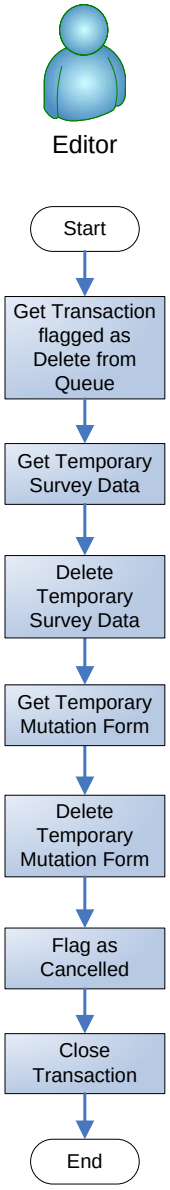


Figure 16. Delete

2.6.11 SUBMIT TRANSACTION

EFS, Task 2 – Registration	
Use Case	Submit Transaction
Level	Proposed
Summary	Creates a new transaction record in the system and moves the transaction to the cashiering stage for payment. A previously rejected transaction may be relodged and accepted for payment.
Actor	EPO Clerk
Preconditions	ICRS System is activated.
Post Conditions	Transaction with a transaction number assigned in temporary state. Invoice for the transaction is created in the Cashiering sub-system.

Primary Scenario	
Actor	**System**
1. Starts Submit Transaction Module.	2. Open Transaction Module.
3. Selects *Lodgment* method. 4. Select type of transaction.	5. Shows transaction parameters. 6. assign next available CTID
7. Record this assigned CTID on the application form 8. Index supporting documents provided by Applicant.	9. Stores information regarding supporting documents. 10. Shows form for entering information regarding Applicant.
11. Enters information regarding Applicant of selects Applicant from a list of applicants.	12. Stores applicant information.
13. Enters remaining parameters for transaction. 14. Click on Proceed.	15. Check if transaction type is Search or Certified Search. 16. If the transaction type is not Search or Certified Search, returns to the screen.
17. Reviews transaction information and supporting documents. 18. If there are no problems, click on No Objection.	19. Shows amount to be paid for the transaction. 20. Create fees invoice with fees details.
21. If the Applicant wishes to continue, runs *Create Invoice* command.	22. Creates Invoice in the Cashiering sub-system, locked for processing by the EPO Cashier. 23. Shows Invoice No. created in the Cashiering sub-system.
24. Click on Print.	25. Prints 2 copies of Invoice.
26. Signs both copies of Invoice; Applicant does the same. 27. Gives one copy to Applicant. Second copy is attached on top of all submitted documents and application. 28. Close transaction.	29. The transaction is flagged as Lodged. 30. The transaction edits are saved.

Secondary Scenarios

1. At step 3, select *Relodgment* method and then select the transaction from the list of rejected transactions. EPO Clerk then can change the transaction type, modify indexing of supported documents, and modify applicant information. The System creates a new Invoice for the relodged transaction.
2. At step 14, if the transaction type is Search or Certified Search, System shows amount to be paid for the transaction.
3. At step 16, if there are any problems, the EPO Clerk can type in the nature of the problem and clicks on Objection. The System creates and prints a Rejection Report. The EPO Clerk provides the Rejection Report to the Applicant. The aborted transaction is saved to a list of rejected transactions.

Exception Scenarios

1. At any time, the EPO Clerk can cancel the transaction lodgment and save the results. In the workflow the transaction stays at the Submit Application stage.
2. At any time, the EPO Clerk can cancel the transaction lodgment without saving the results. Information on the transaction is removed from the System. The Invoice, if created, is voided in the Cashiering sub-system.

Notes and Definitions

1. Relodgment is the subsequent lodgment of a previously rejected transaction. Relodgment assumes that additional/corrected documents have been substituted for those which did not pass verification. The Intake Module creates a pending locked Invoice in the Cashiering sub-system. The Lock is removed from the Invoice only after Intake Module has received the transaction.

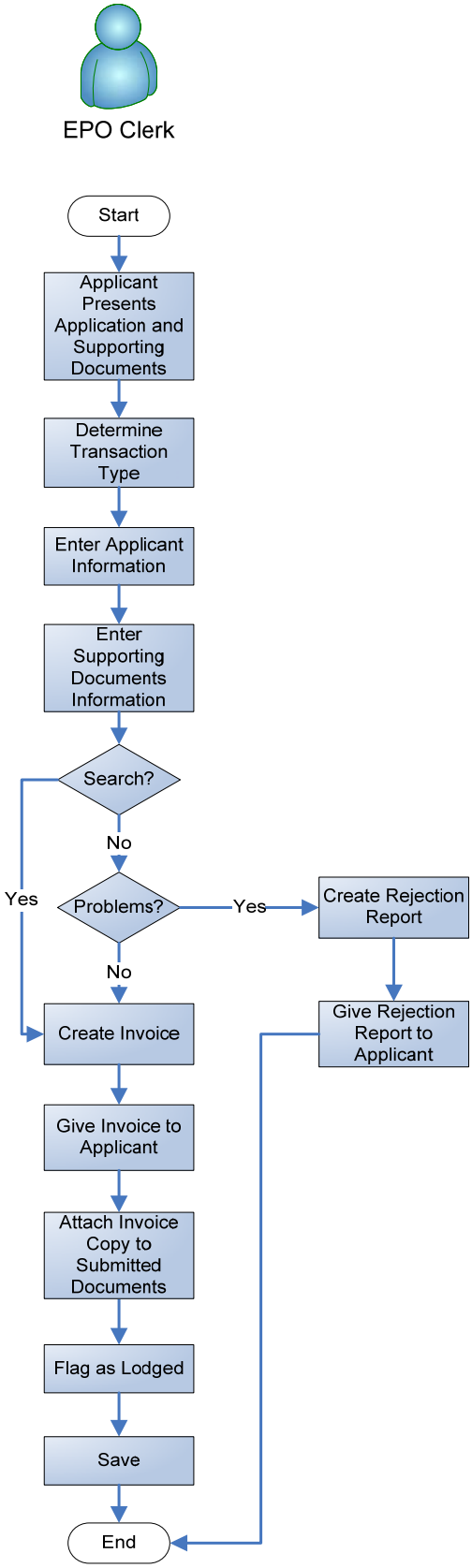


Figure 17. Submit Request

2.6.12 COLLECT FEE

EFS, Task 2 – Registration	
Use Case	Collect Fee
Level	Proposed
Summary	Select the Invoice from the list of pending invoices and collect payment from the Applicant.
Actor	EPO Cashier
Preconditions	ICRS System is activated. Pending Invoice is created by the Submit Transaction. Cash Register is open for processing payments.
Post Conditions	Invoice is paid. Cashiering Receipt is printed.

Primary Scenario	
Actor	**System**
1. Applicant presents Invoice. 2. Selects Invoice from the list of pending Invoices.	3. Shows POS screen with selected Invoice details: All parameters and amount to be paid.
4. Accepts payment from the Applicant in any tender type – cash, checks. 5. Enter payment details on computer. 6. Commit payment.	7. Prints Cashiering Receipt. 8. Clears the POS screen. 9. Automatically checks status of Invoice. If it is paid moves transaction to the next stage in the workflow.
10. Gives printed Cashiering Receipt to the Applicant.	

Secondary Scenarios

1. At step 4 before accepting payment the EPO Cashier can edit the amount. Manually edited fees are marked in the Cashiering database to be highlighted in reports.

Exception Scenarios

1. If EPO Cashier voids an Invoice in the Cashiering sub-system, the corresponding transaction is automatically cancelled.

Notes and Definitions

1.

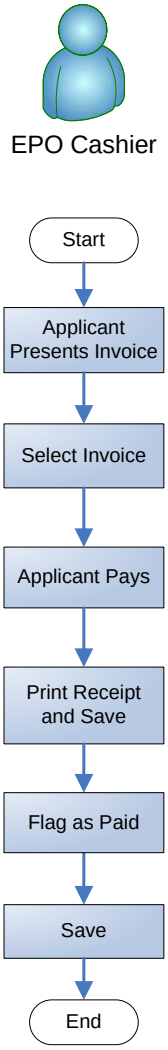


Figure 18. Collect Fee

2.6.13 INDEX AND SCAN

EFS, Task 2 – Registration	
Use Case	Index and Scan
Level	Proposed
Summary	Scan and index documents related to the current transaction.
Actor	EPO Scanning Clerk
Preconditions	ICRS System is activated. Transaction is at Scanning Incoming documents stage. Transaction list in the scanning system contains list of documents to scan.
Post Conditions	All documents from the transaction list have been scanned and committed to the Document Imaging database. Transaction has moved to the next stage in workflow.

Primary Scenario	
Actor	**System**
1. Selects transaction that is flagged as Paid (at Scan Documents stage in the queue).	2. Highlights transaction in the registration queue.
3. Runs *Scanning Module*.	4. Displays list of documents to scan at this stage.
5. Selects document from transaction list. 6. Indexes each document with additional attributes, if any. 7. Scans the paper documents and attaches them to the current document. Attaches digital documents, if any, to the current document. 8. Clicks on Save.	9. Commits the document to the scanning sub-system. 10. Checks in the Document Imaging database that all documents from task list have been processed. 11. If yes, flags the transaction as Indexed and moves transaction to the next stage in the workflow. If no, returns to the *Scanning Module* screen.
12. Repeats the same process for the other documents in the transaction list.	13. Flags the transaction as Indexed and moves transaction to the next stage in the workflow.
14. Closes Scanning Module.	

Secondary Scenarios

1. At step 4 if all documents from the transaction list were scanned before, when the scanning client clicks the transaction at scanning stage the ICRS displays the message that all documents have been scanned already and moves transaction to the next stage.
2. The Transaction can automatically be moved to the next stage after documents are scanned without involvement of the EPO Scanning Clerk.

Exception Scenarios

1. Transaction can be forcibly moved to the next stage without scanning the documents.

Notes and Definitions

1.

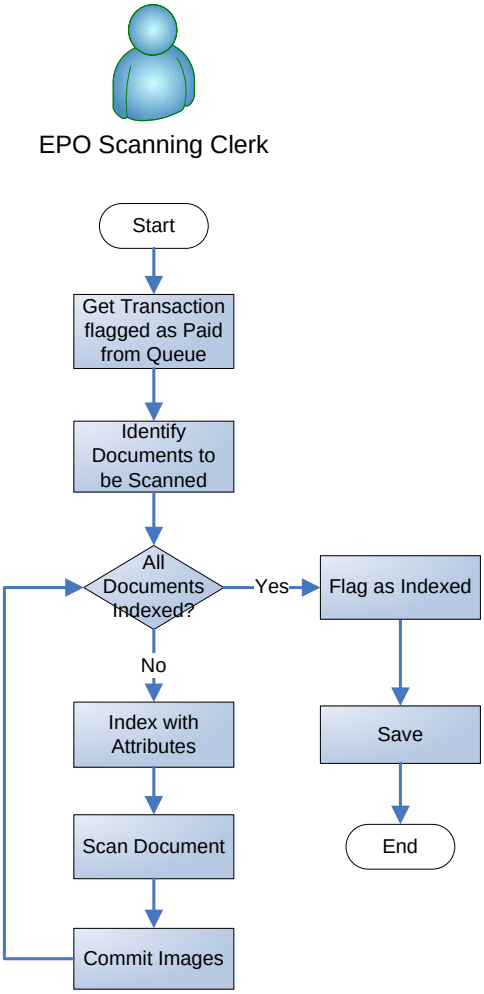


Figure 19. Index and Scan

2.6.14 VERIFY TRANSACTION

EFS, Task 2 – Registration	
Use Case	Verify Transactions
Level	Proposed
Summary	Verification of the validity of the transaction and submitted supporting document before survey work has been conducted.
Actor	EPO Cadastre Technical Investigator
Preconditions	ICRS System is activated. Transaction is at the verification stage. Supporting documents have been indexed and scanned.
Post Conditions	Transaction proceeds to the next stage (to set appointment).

Primary Scenario	
Actor	**System**
1. Select transaction from a queue flagged for the review stage (flagged as Indexed).	2. Returns all transaction information, including scanned documents and indexed fields.
3. Review the transaction and check if there are any problems. 4. If no problems are found, accept the transaction.	5. The transaction is flagged for the appointment setting stage (Appointment). 6. The transaction edits are saved.
7. If problems are found, draft a Pending Letter. 8. Defer the transaction.	9. The transaction is flagged as Pending.
10. Checks the Applicant contact information.	11. Returns Applicant contact information.
12. Contact Applicant based on type of contact information. 13. If contacting by phone or in person, discuss/review problems. 14. Add relevant notes	15. The transaction edits are saved.

Secondary Scenarios

1. At step 8, if problems are found to be very serious or if this is a transaction that was previously deferred as pending and no solution has been found, a Rejection Letter is drafted. The transaction is flagged as Rejected, and any transaction edits are saved.
2. At step 14, if the Applicant contact information type is a postal or email address, any transaction edits are saved.

Exception Scenarios

1.

Notes and Definitions

1. Contacting the Applicant is performed and managed using other tools, and not the ICRS system.

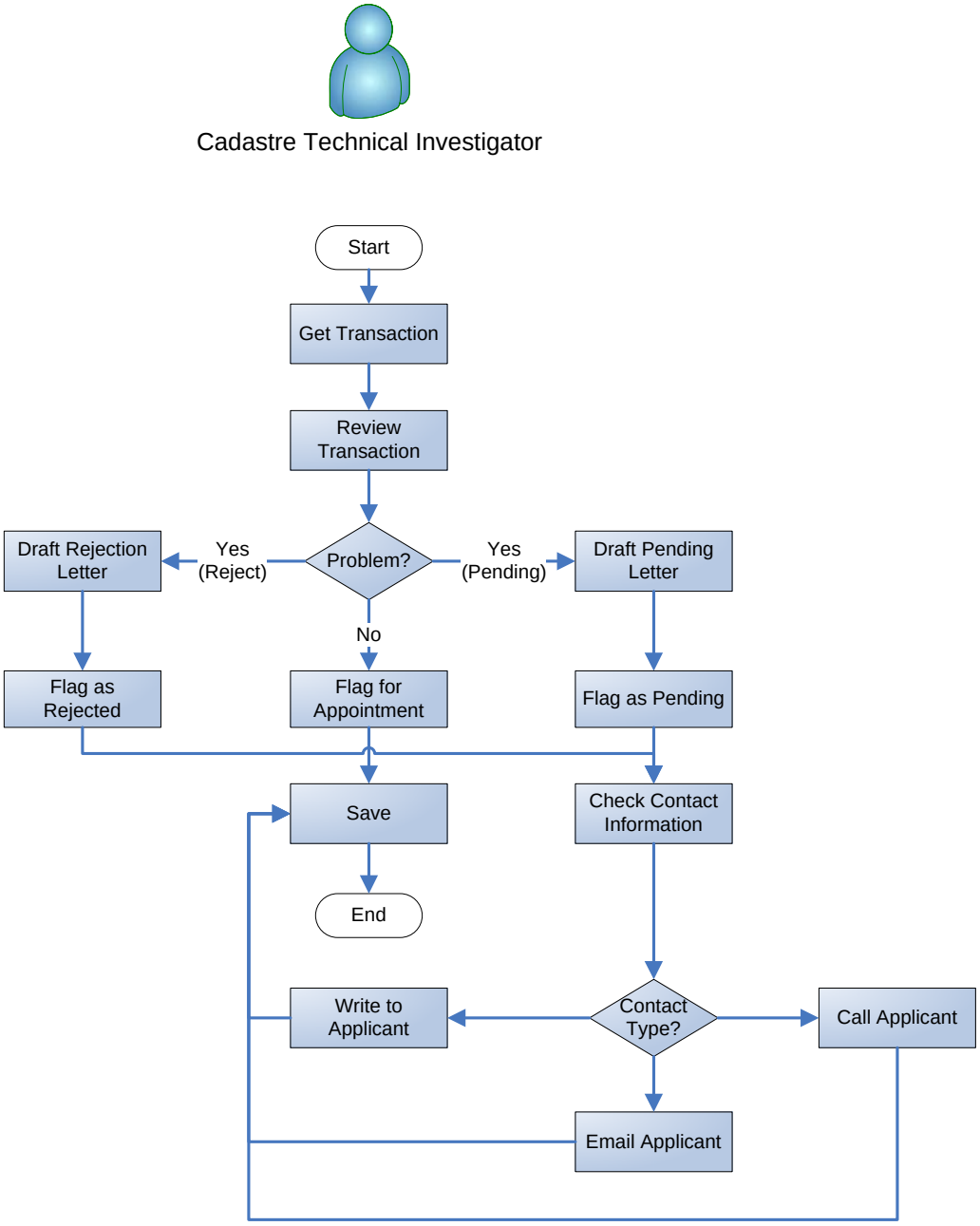


Figure 20. Verify Transaction

2.6.15 DELIVER DOCUMENTS

EFS, Task 2 – Registration	
Use Case	Deliver Documents
Level	Proposed
Summary	Deliver to the Applicant supporting and outgoing documents created during the cadastre survey or as a result of a certification or search process.
Actor	EPO Reception Clerk
Preconditions	ICRS System is activated. Transaction is at Completed stage.
Post Conditions	Processing of transaction is finished. Transaction comes to the End stage.

Primary Scenario	
Actor	**System**
1. Applicant presents Receipt or provides transaction number. 2. EPO Reception Clerk enters transaction number.	3. Returns transaction.
4. Checks if transaction is completed. 5. If transaction is completed, click on Generate delivery receipt.	6. Generates a delivery receipt.
7. Click on Print.	8. Prints two copies of delivery receipt.
9. Gives two copies of delivery receipt to Applicant. 10. Applicant signs one copy of delivery receipt and returns it to EPO reception Clerk. 11. Click Finish.	12. The transaction is flagged as Delivered. 13. Any transaction edits are saved.

Secondary Scenarios

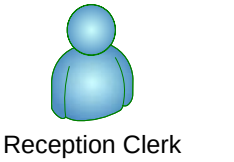
1. At step 6, if the transaction is not flagged as Completed, EPO Clerk clicks on Cancel. The transaction flag is unchanged and the transaction is closed.

Exception Scenarios

1. If the EPO Reception Clerk clicks on Finish without first generating the delivery receipt, the transaction flag is unchanged and the transaction is closed.

Notes and Definitions

1.



Reception Clerk

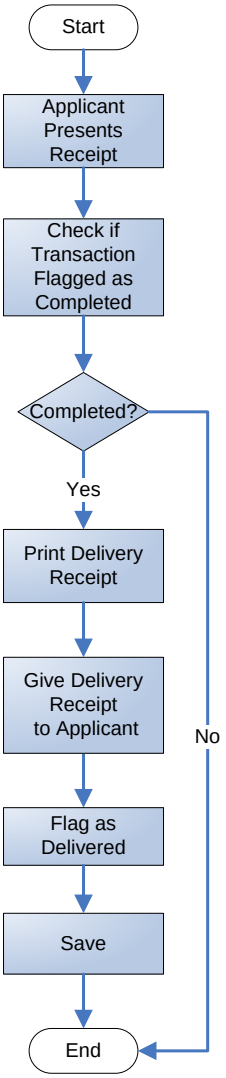


Figure 21. Deliver Documents

2.6.16 CONDUCT SEARCH

EFS, Task 2 – Registration	
Use Case	Conduct Search
Level	Proposed
Summary	Enter search parameters and view or print results.
Actor	Any EPO ICRS user
Preconditions	ICRS System is activated.
Post Conditions	Search result are viewed on screen or printed.

Primary Scenario	
Actor	**System**
1. Start Search module. 2. Enter search parameters.	3. Run search. 4. Show results.
5. Review results and determine if results are satisfactory. 6. If results are satisfactory, decide whether print out is needed. 7. If print out is needed, click on Print.	8. Print results. 9. Return to previous window.
10. Click on Clear.	11. Return to blank Search module window.

Secondary Scenarios

1. At step 5, if results are no satisfactory, user may decide to start a new search or refine results or modify search parameters.
2. If results are not satisfactory and a search is not being repeated, the System checks if the transaction type is a Search or Certified Search. If the transaction type is a Search or Certified Search, the System will generate a Search Result Letter. If the transaction type is neither a Search nor Certified Search, the system returns to blank Search module window.

Exception Scenarios

1.

Notes and Definitions

1. Searches conducted by any EPO ICRS user may be on transactions, PIDs, PIM, applicant lists, mutation forms, invoices, and all other objects.

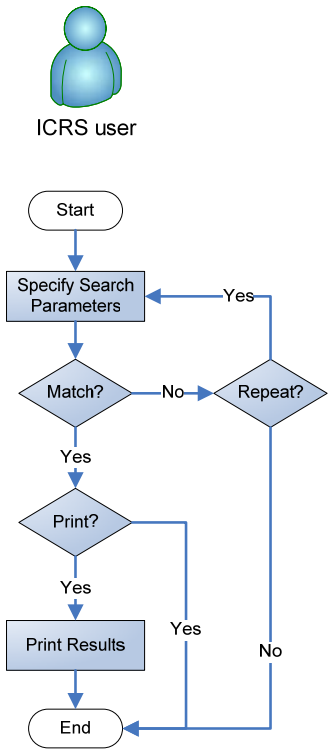


Figure 22. Conduct Search

2.7 GENERAL SYSTEM FUNCTIONAL REQUIREMENTS

The following section represents the general requirements for the system.

2.7.1 USER INTERFACE REQUIREMENTS

No.	Description	Required	Details/Comments
2.7.1.1	System should fully support Arabic language	MAN	This includes GUI, system generated documents and reports, on-line help and user manuals.
2.7.1.2	The system must provide online help.	MAN	Help function must be accessible from all ICRS modules
2.7.1.3	The online help in the system should be context-sensitive.	MAN	Help content depends on from what module help function is initiated.
2.7.1.4	All error messages produced by the system must be meaningful, so that they can be appropriately acted upon by the users who are likely to see them.	MAN	Error message should contain two parts: (1) error description, (2) recommendation to address the issue.
2.7.1.5	The system must provide end user and administrator functions which are easy to use and intuitive throughout (as may be assessed by a panel of typical users).	MAN	Access to the administrative function is matter of user management.
2.7.1.6	The system should follow “Microsoft Official Guidelines for User Interface Developers and Designers”	DES	http://msdn.microsoft.com/library/default.asp?url=/library/en-us/dnwue/html/ch14a.asp

2.7.2 DATA CONVERSION

Since EFS has initiated a separate activity for preparation of Property Index Maps which will be used to populate the Cadastre GeoDatabase, the ICRS system must support data conversing/loading from the delivered PIM into the designed Cadastre GeoDatabase.

Please refer to Annex 4, Egypt Deed registration system Property Index Mapping technical specifications and guidelines.

No	Description	Required	Details/Comments
2.7.2.1	The system must support data conversion/loading from delivered PIM layers and related attribute tables.	MAN	According to the new defined GeoDatabase model, the system will support loading PIM data into this new model

No	Description	Required	Details/Comments
2.7.2.2	The system must support converting the x and y coordinates tabular data into geographic points.	MAN	This is needed to create control stations' points features accurately based on their surveyed coordinates.
2.7.2.3	The system should support generation of a detailed loading log reports.	REQ	To support better data loading mechanism, the system should generate conversion log report including information about: The number of records accessed, the number of features/objects successfully loaded, number of failed import features/objects, preferably with Ids of the failed objects.

2.7.3 REPORTING

The system will generate needed reports based on a predefined template according to the following requirements.

No	Description	Required	Details/Comments
General Requirements			
2.7.3.1	All reports must be generated in non editable format.	MAN	This will insure that reports represents the system extract
2.7.3.2	The system must provide ability to generate reports from the predefined templates.	MAN	
2.7.3.3	Each report must contain data and time of printing, name of office where printed, name of user who printed.	MAN	
2.7.3.4	The system should allow Administrators to restrict users' access to report groups.	REQ	
2.7.3.5	The system should allow generating staff list report.	MAN	List of users registered in the system, including their login, name and group membership.
2.7.3.6	The system should allow generating staff activity report for the specified period.	MAN	Report shows all transactions processed by users over specified period.

No	Description	Required	Details/Comments
2.7.3.7	The system should allow generating report with list of pending transactions with their ageing, grouped by transaction type.	REQ	This will help EPO staff decide on clearing ageing temporarily surveys.
2.7.3.8	The system must allow generating Committed transaction report for the specified period, grouped by transaction type.	MAN	
2.7.3.9	The system must allow generating Detailed Committed transactions report for the specified period grouped by membership group (unit).		
2.7.3.10	The system must allow generating Detailed Committed transactions report for the specified period.	MAN	
Property Reports			
2.7.3.11	The system must allow the user to generate Parcel Information Report	MAN	The system will support generating report with the parcel attributes according to a predefined template.
2.7.3.12	The system must allow the user to generate Parcel History Report	MAN	The system will support generating report with the parcel history chain according to a predefined template.
2.7.3.13	The system will support recursive property report for parcel and its strata units	MAN	According to user selection of a parcel (if it holds), user should have the choice to print associated strata units.
2.7.3.14	The system must allow the user to generate Strata unit Report using PID.	MAN	
Job Reports			
2.7.3.15	The system must allow the user to generate jobs reports for Number of Jobs in a certain Status in a specified period.	MAN	The system shall display the number of jobs at the chosen state. eg. number of jobs (canceled, in progress, finished) in a specified period
2.7.3.16	The system must allow the user to generate jobs reports for Number of finalized Jobs in a certain period by a certain employee.		The system shall display the number of finished jobs within a specified unit in the specified period of time
2.7.3.17	The system must allow the user to generate jobs reports for Number of finalized Jobs in a certain period by a certain unit.		The system shall display the number of finished jobs by a specified employee in the specified period of time

No	Description	Required	Details/Comments
2.7.3.18	The system must allow the user to generate jobs reports for Number of current Jobs in a certain unit.		The system shall display the number of current jobs within a specified unit.
2.7.3.19	The system must allow the user to generate jobs reports for Number of current Jobs in a certain priority.		The system shall display the number of current jobs with a specified priority.

2.7.4 GENERAL ADMINISTRATION

No	Description	Required	Details/Comments
2.7.4.1	The system will supporting adding new users by the Administrator	MAN	
2.7.4.2	The system will supporting adding new users' groups by the Administrator	MAN	
2.7.4.3	The system must allow a user to be a member of more than one group.	MAN	
2.7.4.4	The system must allow only Administrators to set up user profiles and allocate users to groups.	MAN	
2.7.4.5	The system must allow Administrators, in a controlled manner and without undue effort, to retrieve, display and re-configure systems parameters and choices made at configuration time.	MAN	
2.7.4.6	The cadastre and survey information must be managed in a centralized storage.	MAN	In order to avoid data redundancy and double data capture.
2.7.4.7	The system should provide centralized storage for reports and other documents templates.	MAN	

2.7.5 ACCESS AND SECURITY

No	Description	Required	Details/Comments
2.7.5.1	The system shall restrict access to any of the system modules and to the RDBMS without user authentication.	MAN	
2.7.5.2	The system should support Windows based authentication.	REQ	
2.7.5.3	The system should support Native authentication.	MAN	
2.7.5.4	All users' edits to the RDBMS must be tracked through RDBMS auditing trail	REQ	
2.7.5.5	The system must allow the Administrator to limit access to the job and its stages to	MAN	

No	Description	Required	Details/Comments
	specified users or user groups.		
2.7.5.6	The system must allow the Administrator to limit access to the document classes to specified users or user groups.	MAN	
2.7.5.7	The system must allow the Administrator to set up the user profile access settings which determine which the document classes and functions the user has access to. The attributes of the profile will: • prohibit access to the system without an accepted authentication mechanism (like password) attributed to the user profile; • restrict user access to specific document classes; • restrict user access to specific functions; • restrict access to specific transactions. • allocate the user to a group or groups.	MAN	
2.7.5.8	The system must allow the Administrator to set up the group access settings which determine which the objects and functions the group has access to. The attributes of the profile will: • restrict group access to certain job types. • restrict group access to certain workflow stages. • restrict group access to specific document classes; • restrict user access to specific functions; • restrict access to specific transactions etc.	MAN	
2.7.5.9	The system must allow changes to security attributes for groups or users (such as access rights, security level, privileges, password allocation and management) to be made only by Administrators.	MAN	
2.7.5.10	The Administrator should be able to search audit trail for specified events.	REQ	
2.7.5.11	The authorization rules must also apply on interfaces to foreign (external) systems.	MAN	

2.7.6 BACKUP, RECOVERY AND REPLICATION

No	Description	Required	Details/Comments
2.7.6.1	The system should provide semi-automated back-up facilities, and features to rebuild forward using restored back-ups and audit trails, while retaining system integrity.	MAN	In other words, the system should include functionality to recreate the records and metadata to a known status, using a combination of restored back-ups and audit trails.
2.7.6.2	The system must provide automated backup and recovery procedures that allow for regular backup of entire database, imagery data and administrative settings.	MAN	Back up functionality may be implemented with use of third party tools.
2.7.6.3	The system must provide recovery and rollback facilities in the case of system failure or update error, and must notify Administrators of the results.	MAN	
2.7.6.4	The system must allow the Administrator to schedule backup routines by: • specifying the frequency of backup, • allocating storage media, system or location for the backup (e.g. off line storage, separate system, remote site).	MAN	
2.7.6.5	The system must allow only the Administrator to restore from previous backups. Full integrity of the data must be maintained after the restore.	MAN	

2.8 WORKFLOW MANAGEMENT FUNCTIONAL REQUIREMENTS

The Workflow Management Coalition (WfMC) – an international association for developing workflow standards and inter-working of different workflow systems – defines workflow as

> *The automation of a business process, in whole or part, during which documents, information or tasks are passed from one participant to another for action, according to a set of procedural rules.*

In this definition, a "participant" can be a user, a work group (i.e. a team), or a software application.

2.8.1 WORKFLOW ENGINE

No.	Description	Required	Details/Comments
2.8.1.1	The system workflow engine must support workflows which consist of a number of steps and stages.	MAN	
2.8.1.2	The system must not practically limit the number of workflows which can be defined.	MAN	System must be delivered with preconfigured workflows according to the improved workflow section.
2.8.1.3	The system should not practically limit the number of stages in each workflow.	MAN	The number of the workflow stages is dependant on the workflow associated scenario.
2.8.1.4	The system workflow engine should provide conditional flows depending on user input or system data.	REQ	
2.8.1.5	The system workflow engine should allow users to interrupt a flow (i.e. to suspend it) temporarily in order to be able to attend to other work.	MAN	"Interrupted" flow stays at the stage where it was interrupted.

2.8.2 JOB ANATOMY CONCEPT

The system should support handling the transactions based on a Job anatomy concept, where the system will trigger the workflow engine to initiate the corresponding workflow and create a job instant within the database.

No.	Description	Required	Details/Comments
2.8.2.1	The system will create a job and assign it a unique number through out its life span	MAN	
2.8.2.2	Each job will be based on a workflow according to its type.	MAN	

No.	Description	Required	Details/Comments
2.8.2.3	Users accessibility to create certain job should be defined according to the user managements rules set by the system administrators	MAN	
2.8.2.4	Users will be able to access only jobs that are assigned to them.	MAN	

2.8.3 JOB QUEUING

The system will support job queuing by allowing the users to transfer/assignment of jobs between different users/units within ESA EPO as well as allowing each user/unit to retrieve their assigned jobs.

No.	Description	Required	Details/Comments
Job Transfer			
2.8.3.1	The system should manage the jobs in queues which can be accessed by users.	MAN	
2.8.3.2	The system must provide a function to alert a user that a job have been sent to the user's electronic "in tray" for attention and specify the action required.	DES	Alerts are only generated when specific job is assigned to the user
2.8.3.3	The system must allow the transfer of jobs from Supervisor to employee	MAN	The system will enable the unit supervisor to transfer the job to one of his unit's employees by displaying a list of the unit's employees to choose from.
2.8.3.4	The system must allow the transfer of jobs to unit supervisor	MAN	The system will enable the user to transfer his current job to his supervisor for feedback or verification.
2.8.3.5	The system must allow the supervisor to transfer jobs to another unit	MAN	The system will support the transfer of the job from one unit to another to enable the automated cadastre workflow procedure.
2.8.3.6	The system must allow the user to add transfer remarks/comments	MAN	The system will enable the user to add his own comments and remarks while performing any of the above mentioned transfer.

No.	Description	Required	Details/Comments
2.8.3.7	The system must allow the transfer of jobs from one employee to another employee	REQ	The system will support the automated transfer of jobs between the different users of the same unit.
Retrieve assigned jobs			
2.8.3.8	The system must allow the supervisor to retrieve the jobs assigned to the unit	MAN	The system will enable the unit supervisor to retrieve the list of his currently active jobs from the Database.
2.8.3.9	The system must allow each user to retrieve the jobs assigned to him/her	MAN	The system will enable user to retrieve the list of his currently active jobs from the GeoDatabase.
2.8.3.10	The system must provide possibility to filter list of jobs in the queue.	MAN	By date, number range, transaction type, status, user name.
2.8.3.11	The system must allow participants to view queues of jobs assigned to them and select items to be worked on.	MAN	
Job Assignment			
2.8.3.12	The SYSTEM must allow the user to assign job to current user	MAN	The system will enable the user (with certain privilege) to select jobs of his unit active jobs queue and assign it to his current jobs.

2.8.4 JOB MONITORING

Monitor all the jobs that entered the system and generate statistical reports on any of the jobs information

No.	Description	Required	Details/Comments
2.8.4.1	System should display Job Transfer History	MAN	The system will support displaying the job movements/transfer between the different users/units with the duration taken for processing the job.

No.	Description	Required	Details/Comments
2.8.4.2	The system must record the progress of a transaction through a workflow so that users can determine the status of a transaction in the process.	MAN	Tracking information on progressing information through workflow must contain the following information: date/time, come-in/come-out, to/from stage, duration of stay at stage, name of user processed transaction at each stage,
2.8.4.3	The system should allow users to view jobs according to their Status	MAN	The system will support display of all the current active jobs classified according to their status "In progress/ Suspended/ Closed/ Rejected".
2.8.4.4	The system should allow users to view jobs according to their cadastre transaction type	MAN	The system will support display of all the current active jobs classified according to their transaction type "Subdivision/ Consolidation/ Demarcation ".
2.8.4.5	The system should allow users to view jobs according to their location administrative area	REQ	The system will support displaying the current active jobs within a administrative area
2.8.4.6	The system should allow users to view jobs within a time period	REQ	The system will support displaying the current active jobs within a certain time period as defined by the user.
2.8.4.7	The system should allow users to view jobs classified according to their priority.	REQ	The system will support displaying the current active jobs classified by their priority (normal, urgent)

2.8.5 UNITS MONITORING

No.	Description	Required	Details/Comments
2.8.5.1	The system should allow users to display the unit jobs	MAN	The system will support display of a certain unit's current active jobs
2.8.5.2	The system should allow users to display the unit jobs within a time period	MAN	The system will support display of a certain unit's jobs within a certain time period

2.8.6 USERS MONITORING

No.	Description	Required	Details/Comments
2.8.6.1	The system must allow the administrator to display the jobs for each user	MAN	The system will support display of a certain user's current active jobs
2.8.6.2	The system must allow the administrator to display the jobs for each unit	MAN	The system will support display of a certain user's current active jobs within unit.
2.8.6.3	The system must allow the administrator to display the jobs for each user within a time period	MAN	The system will support display of a certain user's jobs within a certain time period

2.8.7 JOB ADMINISTRATION

The system will support administrating the job by defining its priority or canceling the job.

No.	Description	Required	Details/Comments
2.8.7.1	The system must allow the supervisor to cancel any active job	MAN	The system will support canceling the job and maintain the related parcels(s) "if any" separately within the GeoDatabase as canceled parcels.
2.8.7.2	The system should include the ability to prioritize items in queues. (set jobs as urgent or as normal)	REQ	The system will push the urgent job at the top of the job queue and support ordering of the urgent job

2.9 AUTOMATION FUNCTIONAL REQUIREMENTS

The following section contains the needed automation functional requirements to support the pre-configuration of the system with the proposed workflows as in **section 2.5**. The development of these functional requirements must adhere to the previous two sections "General System Requirements and Workflow Management Requirements"

2.9.1 CADASTRE IDENTIFIERS NUMBERING

The system must support generation of needed cadastre identifiers according to the following specifications.

No.	Description	Required	Details/Comments
2.9.1.1	Each property object will be assigned a unique identifier number generated and provided by ESA.	MAN	

No.	Description	Required	Details/Comments
2.9.1.2	Property identifier will be unique not only within particular office's database but throughout the entire country.	MAN	This is achieved through the proposed schema.
2.9.1.3	Supported property unit may include one or more of the following types of property objects: • Single land parcel • Single strata unit. Refer to Please refer to Appendix 5 "EFS proposed PID schema"	MAN	
2.9.1.4	The system will maintain a unique identifier for each administrative object according to EFS numbering schema.	MAN	
2.9.1.5	This system will support spatial validation rules between the administrative objects as well as the properties, restricting features overlapping.		
2.9.1.6	Each transaction must have a unique sequential number or unique cadastre Transaction Identifier (CTID). CJID cannot be changed over life of the cadastre job in ESA.	MAN	CTID is an alphanumeric value based on sequential number/ per year / province.
2.9.1.7	At the creation of the property associated mutation form, the system will assign a unique number for the mutation form.	MAN	Mutation form number is an alphanumeric value based on sequential number/ per year / province.
2.9.1.8	Number generation rules for all objects generated from within the ICRS must be configured in the system.	REQ	

2.9.2 CASHIERING AND FEE COLLECTION

Requirements for the cashiering module of the system are gathered in this section.

No.	Description	Required	Details/Comments
2.9.2.1	The system must have cashiering module to provide fee collection management.	MAN	Cashiering module may be a standalone module/software integrated with the system.
2.9.2.2	The system must provide "standard" POS functionality for work with cash drawer	MAN	This includes open day, close day, commissioning of cash drawer content, reconciliation.
2.9.2.3	The system must allow configuring fee schedule expressed by formulas.	MAN	Formulas can include integer, float, look up, currency, Boolean, date/time, and text arguments that can be used in fee calculation.

No.	Description	Required	Details/Comments
2.9.2.4	The system must define distribution of calculated fee by defined accounts	MAN	Automatic calculation of the fee must include managing calculated amount by accounts defined in the chart of accounts.
2.9.2.5	Depending on type of transaction and parameters entered the system must automatically calculate fee for cadastre.	MAN	Fee calculated is defined type of transaction and parameters of transaction *only*.
2.9.2.6	Versioning of fee schedule must be supported	DES	When fee schedule changes, previous version of the fee schedule must be archived.
2.9.2.7	Manually corrected amount must be marked for following reflection in the cashiering reports.	MAN	Reports must clearly mark *all* manually corrected payments.
2.9.2.8	The system must generate a receipt at the time the payment is accepted.	MAN	A unique number is assigned to the receipt.
2.9.2.9	The system must provide functionality enabling the re-printing of a receipt if required.	MAN	Reprinted receipt must be clearly different from printed on commitment of payment.
2.9.2.10	The system must have refunding function.	MAN	If a document is rejected and registration is not further pursued by the client.
2.9.2.11	The system must support concurrent work with several cash registers.	MAN	Different cash registers can serve different registration in the registration office.
2.9.2.12	The following tender types must be supported: checks, cash, debit or credit cards.	MAN	Use of each tender type must be configurable.
2.9.2.13	The system must work on standard cashiering hardware	DES	This includes cash drawer, receipt printer, display screen, barcode scanner.
2.9.2.14	The system must have function to imprint lodgment package with payment information	MAN	Imprinting registration package provides additional control that lodgment passed through cashier.
2.9.2.15	The system must export General Ledger in standard exchange formats.	MAN	As CSV or XML.
2.9.2.16	Partial payments should be supported	DES	System must print partially paid invoices

2.9.3 DATA ENTRY/INDEXING

No.	Description	Required	Details/Comments
2.9.3.1	The system must implement data entry functions (indexing of required information) through the use of standard Windows forms with controls like text fields, dropdown menus, checkboxes, etc.	MAN	
2.9.3.2	The system must support initiation of needed data entry screen based on the type of cadastre job selected	MAN	Subdivision would require different parameters other then consolidation, same applies for strata units operations
2.9.3.3	All data entry fields must be associated with validation rules.	MAN	For example, a request for subdivision shouldn't be for an area part larger then original parcel.
2.9.3.4	System must initiate the data entry fields that reference values from the data base in a list (combo, list box or tree view, appropriate choice should be made based on the list nature)	MAN	This is necessary to ensure accurate referential data , e.g. selecting parcel block based on existing blocks in the Database

2.9.4 DOCUMENT MANAGEMENT

No.	Description	Required	Details/Comments
2.9.4.1	The system must provide ability to scan/process all required incoming (supporting) paper documents and link them to the property and/or transaction.	MAN	Scanned documents are stored in the Documents Images database.
2.9.4.2	The system must provide ability to store and process all required outgoing (i.e. survey plan) paper documents and link them to the property and/or transaction.	MAN	Outgoing documents generated from the System are scanned after they are signed and sealed.
2.9.4.3	The system must provide functionality to auto-rotate pages.	MAN	On/off setting in the system
2.9.4.4	The system must provide functionality to automatically identify and remove blank pages.	MAN	On/Off setting in the system
2.9.4.5	User must have ability to adjust brightness and contrast of the images.	MAN	Applicable to non-black/white images.
2.9.4.6	The system must provide functionality to automatically/manually rotate scanned pages.	MAN	

No.	Description	Required	Details/Comments
2.9.4.7	The system must provide functionality to automatically/manually crop scanned pages.	REQ	
2.9.4.8	The system must support automatic de-skew of scanned pages.	MAN	Automatic alignment of the pages for the documents rotating during scanning.
2.9.4.9	The system must support automatic de-speckle of scanned pages.	MAN	Automatic removal of the “dust” from the scanned pages.
2.9.4.10	The system should provide option to imprint transaction number and/or time/date stamp on each document page.	REQ	
2.9.4.11	The system should support annotation. Annotation will be either a mask to hide sensitive information or comment (note). Annotations should be vector objects.	MAN	
2.9.4.12	Annotations must be traceable to the author, and stored as an overlay to the original image (i.e., the original image is not modified).	MAN	
2.9.4.13	The system must provide functionality to fill-in selected document area with specified color.	REQ	
2.9.4.14	The system must support scanning devices compliant with TWAIN standard.	MAN	
2.9.4.15	The system must support storing/reading of bi-tonal images in TIFF v6 image format with Group IV facsimile compression.	MAN	
2.9.4.16	The system should provide option to store scanned document as multi-page TIFF.	DES	
2.9.4.17	The system should provide option to store scanned document as multi-page PDF.	DES	
2.9.4.18	The ICRS must provide an option to set up default format and compression parameters, to be used for storing scanned document copies.	MAN	
2.9.4.19	Images should be sorted and grouped under document they belong to.	MAN	
2.9.4.20	The system must allow user to export/import selected documents.	REQ	

No.	Description	Required	Details/Comments
2.9.4.21	The system should support attachments. Attachment is any electronic file stored within document object together with its scanned pages.	REQ	
2.9.4.22	The system must support document versioning.	MAN	For example, if one of the document pages was rescanned, system must create new version and link it to previous.
2.9.4.23	The system should be capable of managing versions of an electronic document as separate but related entities, while maintaining the link between them.		
2.9.4.24	The system Should allow creation of new version only from last document version.		
2.9.4.25	The system should be able to restrict users (groups) to viewing: • only the latest version of a document; • all or selected versions of a document; • versions that have been captured or registered as records; choice to be made at configuration time.		

2.9.5 SCHEDULING FIELD SURVEY

The system will support scheduling field survey for requests

No.	Description	Required	Details/Comments
Schedule New Appointment			
2.9.5.1	Display the current available surveyors.	MAN	The system will enable the supervisor to view the currently available surveyors
2.9.5.2	The Scheduling module should have tools to pull up the contact information for a particular survey transaction, and should ensure that any schedule is linked to that survey transaction.	MAN	Tools should allow for schedules to be changed, and/or reassigned to other EPO staff than the one originally assigned to.
2.9.5.3	Display the surveys scheduled information for the current surveyor.		The system will enable the supervisor to view the currently scheduled surveys information (time , data, parcels to be surveyed)

No.	Description	Required	Details/Comments
2.9.5.4	The system must support retrieval and display of all survey schedules/ per area / per day	MAN	This is needed to help the scheduler decide on survey job assignment
2.9.5.5	Assigning survey job to Surveyor(s)	MAN	The system will enable the supervisor to select from the list of surveyors within ESA and record the selection as chosen surveyor(s).
2.9.5.6	Assigning survey job date & time	MAN	The system will support assigning date & time for field survey (based on the displayed information for the current scheduled surveys.)
2.9.5.7	Notify other organizations that should be present in the survey	MAN	The system will allow the user to create a list of organizations or persons that should attend the survey, including the applicant, and method of informing them (by phone, email, mail…etc)
Cancel Appointment			
2.9.5.8	Cancel scheduled survey appointment	MAN	The system will allow the supervisor to cancel a specific survey schedule and add the cancellation reason for this survey.
Re-schedule Appointment			
2.9.5.9	Check Cancellation reasons	MAN	The system will allow the supervisor to review the cancellation reason of pre-scheduled surveys.
2.9.5.10	Re-schedule survey appointment	MAN	The system will allow the supervisor to re-schedule canceled survey.
2.9.5.11	Add rescheduling fees	MAN	If the survey was canceled by the client side, extra fees must be added and paid before proceeding in the next survey.

2.9.6 FIELD SURVEY

No.	Description	Required	Details/Comments
Field Survey preparations			
2.9.6.1	Getting Control Stations	MAN	The system will support locating and getting the coordinates of the nearest geodetic control stations to the selected urban parcel.
2.9.6.2	Getting Adjacent Parcels Beacons	MAN	The system will support locating and getting the coordinates and description of the adjacent parcel(s) beacons to the selected urban parcel.
2.9.6.3	In case of surveying property units in a building, the system must allow getting the information of the building in which the property is located.	MAN	The system will support the user with the needed information about the building and common (shared) parts.
2.9.6.4	In case this is the first property to be surveyed in the building, the SYSTEM will support the user to survey the parcel, building, common parts, and the property.	MAN	The system will notify the user with a list of entities to be surveyed according to the case.
Export & Import Survey data			
2.9.6.5	Creating & Printing Survey Sketch:	MAN	See section of "Generated document from the system,"
	Export Prepared Data	MAN	The system will support exporting data for field survey in a compatible format with the used survey instruments.
2.9.6.6	Insert Survey information	MAN	The system will support inserting general information and remarks after the field survey (parcel description, neighbor description, extra remarks….)

No.	Description	Required	Details/Comments
2.9.6.7	Import Surveyed Data	MAN	The system will support uploading data collected from field survey according to the output format from survey instrument. Survey points are created and updated from these measurements through a set of computations. The survey points can be linked to features.
Survey Computations			
2.9.6.8	COGO Computations The system will support COGO computations as per the following: 1. Simple Computations 2. Intersection Computations 3. Circular curve computations 4. Station and Offset computations 5. COGO Traverse	MAN	
2.9.6.9	TPS Computations. The system will support TPS computations as per the following: 1. Processing a single TPS setup using: A. Tachometry B. Free station computation 2. Processing multiple TPS setups using: A. Traverse computation B. Least square adjustment. C. Typing measurements from a field book (based on the Resection)	MAN	
2.9.6.10	Computation Report The system will support reporting all the computations and checking actions done by the user during the process of the case	MAN	
Survey Data Processing			

No.	Description	Required	Details/Comments
2.9.6.11	Applying validation on the proposed beacons	MAN	The system will allow the validation of the new proposed beacon (no intersection with old beacons, verify that the beacons doesn't fall in another registered parcel area…) based on ESA regulation
2.9.6.12	Creating Beacons	MAN	The system will support creating new beacons from the surveyed point in the field survey.
2.9.6.13	Assigning new beacon number	MAN	The system will assign automatically new number for the newly created beacon depending on the next free number.
2.9.6.14	Applying validation on the new parcels		The system will allow the validation of the new parcels (no intersection with registered parcel, checking parcel area….) based on ESA regulation.
2.9.6.15	Creating Urban parcels	MAN	The system will support creating new urban parcels from a defined beacons list and allocating its new parcel number by getting the next free parcel number from database.
2.9.6.16	Assigning new parcel number	MAN	The system will automatically assign new number for the newly created parcel based on the regulation (see sec. 3.3.1 Cadastre Identifier Number)
2.9.6.17	Creating urban property	MAN	The system will allow the user to create new urban properties depending on field measurements, and allocate its info (ID, Address … etc)

No.	Description	Required	Details/Comments
2.9.6.18	Display summary of the completed transaction	MAN	The system will display summary of the created parcel and beacons data (number, location, area…..)

2.9.7 SPATIAL DATA PROCESSING

No.	Description	Required	Details/Comments
Generating Mutation Form			
2.9.7.1	Generate the Mutation Form by property no	MAN	The system will enable the user to automatically generate Mutation Form through the GeoDatabase using the property number PID
2.9.7.2	Generate the required Mutation Form by Request Number	MAN	The system will enable the user to automatically generate required Mutation Form through the GeoDatabase using the property corresponding request number.
Print the Mutation Form			
2.9.7.3	Adjusting the Mutation Form	MAN	The system will allow the user to adjust the Mutation Form information and layout based on pre-designed template.
2.9.7.4	Review and approve Mutation Form	MAN	The system will allow the authenticated user to review and approve the prepared Mutation Form before printing it.
2.9.7.5	Printing the reviewed Mutation Form	MAN	The system will support searching of the reviewed Mutation Form and print it on the pre-designed template.
Print the Mutation Form through web services			
2.9.7.6	The system must authenticate the user and check for his authority to print	REQ	The system will check the user-name and password of the user in order to permit him to print the Mutation Form
2.9.7.7	The system must allow the user to print the prepared and reviewed Mutation Form	REQ	The system will support preparing Mutation Form based on pre-designed standard templates.

2.9.8 LEGALIZATION

No.	Description	Required	Details/Comments
Enter registered deed data			
2.9.8.1	Send Approved Mutation Form to registry	MAN	After approving the Mutation Form, the system will send a stream of digital data extracted from the Mutation Form to the registry.
2.9.8.2	Receive legalized parcel information from registry	MAN	The system will allow communication with the registry office to receive information of the newly legalized parcel.
2.9.8.3	According to received registration results (approved/ rejected), the system must update the property status either as registered or canceled.	MAN	More details about adjusting temporary/active/history is found in the history tracking subsection

2.9.9 HISTORY TRACKING

The system will support history tracking for parcels/strata units' subdivisions and consolidations

No.	Description	Required	Details/Comments
2.9.9.1	The system must support tracking cadastre properties parents tracks (history chain) though chains of subdivision and consolidations	MAN	
2.9.9.2	The system must support updating parcels/strata units' history chain data	MAN	Upon parcels/strata units' subdivision or consolidation the system will automatically log in the child and parent property into the GeoDatabase. The shape of the old parcel will be pushed to the history layer.
2.9.9.3	The system must support retrieving parcels/strata units' history chain data	MAN	The system will support tracking the history of any parcel taking into consideration all the previous survey actions.
2.9.9.4	The system must support navigating spatial view of the parcels history chain	MAN	The user will be able to navigate and view spatial shape of the parcel through its history chain

2.9.10 QUERY AND SEARCH

The system will support query and search for all the cadastre layers based on predefined search options.

No	Description	Required	Details/Comments
General Requirements			
2.9.10.1	The system must utilize browsing mechanism that provides graphical or other display browsing techniques for easy navigation in search results returned to user.	MAN	
2.9.10.2	The system should allow users to refine (i.e. narrow) searches.	MAN	
2.9.10.3	System must restrict user access to certain search types based on administrators setting to user privileges.	REQ	Users should be given search permission to support only their role needs, free search to GeoDatabase shouldn't be permitted
2.9.10.4	The system must provide for “wild card” searching that allows for forward, backward and embedded expansion.	MAN	
2.9.10.5	The system must allow the text contents of records to be searchable.	MAN	
2.9.10.6	System must provide hyperlinks in search results in order to allow quick navigation to related records.	MAN	For example searching for parcel history, the user should be able to click on any of the parent parcels and retrieve it’s spatial display along with attribute data.
2.9.10.7	System must provide ability to search for scanned documents copies based on document type, number, transaction number etc.	MAN	
Web Access			
2.9.10.8	The system must have web access module to provide search and browsing functionality.	MAN	
2.9.10.9	The system web access module must work over secured connection.	MAN	
2.9.10.10	The system web access module must support viewing of images.	MAN	
2.9.10.11	The system must restrict user access to viewing images based on their group settings. This includes: • restrict image viewing • restrict image viewing without	REQ	

No	Description	Required	Details/Comments
	annotations • show images without annotations		
2.9.10.12	To support the ICRS investigations, the following search must be support by the system: o General purpose queries to view all available cadastral information (Property Index Maps, Mutation Forms, Property Identifiers, etc.); o The ICRS should allow the user to find a particular parcel on a Property Index Map and then obtain a tabular listing of all properties associated with that parcel. o For the selected parcel, system should display relationship of properties in question with state land, public utilities, and other types of land use; o Comparison of property transaction details against merge or subdivision conditions.	MAN	
2.9.10.13	Fee-based public search results should contain: ▪ The full names of all owners and their share of the property. ▪ The PID. ▪ A graphical representation of the parcel including easements, showing the parcel limits, boundary point codes, adjacent property PIDs, north arrow, and scale. This graphical representation should be system generated. ▪ The computed area of the parcel. This area should be system generated. ▪ The location of the parcel, including the governorate, city, section, and block, all expressed in words (i.e. Not code). This text should be system generated. ▪ The date the parcel was last surveyed. The text should be system generated.	REQ	
2.9.10.14	The system must provide ability for users to search and print for pending transaction and see its status.	MAN	

No	Description	Required	Details/Comments
2.9.10.15	The system should provide ability for authorized users to search and print property information.	REQ	
2.9.10.16	The system must restrict search of property by owner's name for non-authorized users.	MAN	
2.9.10.17	The system should provide ability for authorized users to search and print committed transaction information.	REQ	
Search for parcel			
2.9.10.18	The system must allow the user to search for parcel by PID	MAN	The system will enable the user to query/search for parcel through the GeoDatabase using the parcel number
2.9.10.19	The system must allow the user to search for parcel by CTID or RTID Number	MAN	The system will enable the user to query/search for parcel through the GeoDatabase using the parcels corresponding transaction number.
2.9.10.20	The system must allow the user to search for parcel by deed number	MAN	The system will enable the user to query/search for parcel through the GeoDatabase using the corresponding deed number.
2.9.10.21	The system must allow the user to search for parcel by Parent parcel number	MAN	The system will enable the user to query/search for parcel through the GeoDatabase using parent parcel number.
Search for Geodetic control station			
2.9.10.22	The system must allow the user to search for Geodetic control station by Station Name	MAN	The system will enable the user to query/search for Geodetic control station through the GeoDatabase using the station name.
2.9.10.23	The system must allow the user to search for Geodetic control station by Station ID	MAN	The system will enable the user to query/search for Geodetic control station through the GeoDatabase using the station ID
2.9.10.24	The system must allow the user to search for Geodetic control station by Coordinate Boundary	MAN	The system will enable the user to query/search for Geodetic control station through the GeoDatabase using a user defined coordinate boundary.

No	Description	Required	Details/Comments
Search for Job			
2.9.10.25	The system must allow the user to search for job by job number	MAN	The system will enable the user to query/search for the job through the GeoDatabase using the job number.
2.9.10.26	The system must allow the user to search for job by Surveyor name	MAN	The system will enable the user to query/search for the job through the GeoDatabase using the surveyor name.
2.9.10.27	The system must allow the user to search for job by Request No.	MAN	The system will enable the user to query/search for the job through the GeoDatabase using the related survey records No.
2.9.10.28	The system must allow the user to search for job by Submission date	MAN	The system will enable the user to query/search for the job through the GeoDatabase using the job submission date.
2.9.10.29	The system must allow the user to search for job by Editor Name	MAN	The system will enable the user to query/search for the job through the GeoDatabase using the name of the employee that edited the survey results
Search for Roads			
2.9.10.30	The system must allow the user to search for roads by road/street name	MAN	The system will enable the user to query/search for roads through the GeoDatabase using the road name. The system should display and zoom to the road on map.
Search for Surveyor			
2.9.10.31	The system must allow the user to search for surveyor by surveyor number (id)	MAN	The system will enable the user to query/search for surveyors through the GeoDatabase using the Surveyor Number.
2.9.10.32	The system must allow the user to search for surveyor by surveyor name	MAN	The system will enable the user to query/search for surveyors through the GeoDatabase using the Surveyor Name.
Search for transaction			

No	Description	Required	Details/Comments
2.9.10.33	The system must allow the user to search for transaction by CTID number or RTID number	MAN	The system will enable the user to query/search for transaction through the GeoDatabase using the CTID number. This should be linked to searching for transaction in EPBDS registry web services by RTID number.
2.9.10.34	The system must allow the user to search for transaction by Related cadastre objects "Parcel/Strata unit"	MAN	
2.9.10.35	The system must allow the user to search for transaction applicant information	MAN	

2.10 INTEGRATION WITH REGISTRY SYSTEM "EPBDS"

The Integrated Registry Cadastre System depends highly in its daily operation on accessing information from the registry system EPBDS. Similarly, during daily activities, the EPBDS needs to interact with the ICRS when information on cadastral objects is required.

The integration between the two systems will be based on Service-Oriented Architecture through using collection of Web Services that communicate with each other to fulfill the business process between the two systems. At the ICRS end, a set of ***Cadastre*** web services will be developed to support needed accessibility to the cadastre data to EPBDS. Similar at the EPBDS end, a set of ***Registry*** web services will be developed to support accessibility of registry and transactions database to ICRS.

The figure shows proposed information flow that must be supported by EPBDS and ICRS system.

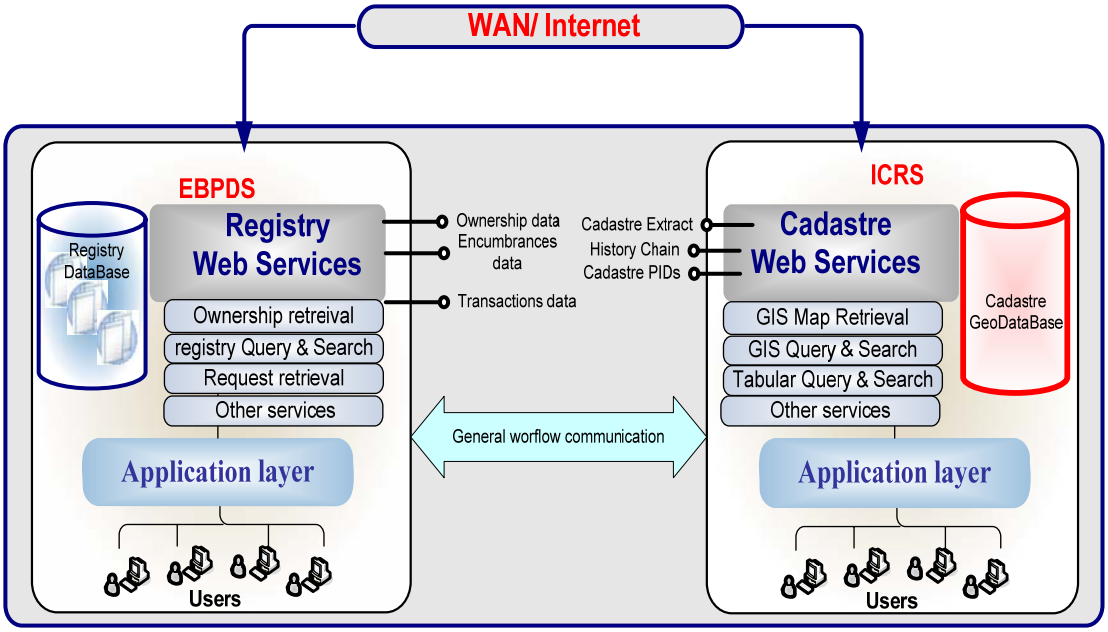


Figure 23. EPBDS-PCS Communication Diagram

The table below contains minimum functions to be supported by EPBDS and ICRS systems to implement said communication.

Table 6. EPBDS- ICRS Communication Requirements

No.	Description	Required	Details/Comments
2.10.1.1	The ICRS must provide functionality to integrate with EPBDS on workflow level.	MAN	EPBDS will be holding the registration transaction until receiving needed cadastre information from ICRS.
2.10.1.2	ICRS must support receiving cadastre request from	MAN	Using Web service, EPBDS must have the option to send a request to

No.	Description	Required	Details/Comments
	EPBDS and accordingly initiate the request.		ICRS for initiating a cadastre service procedure.
2.10.1.3	ICRS must support EBPDS to request cadastre property history chain	MAN	Registration clerk will need to validate the subdivision and consolidation chains for the property under registration, respond should include parents' properties PID, area, and retire date in sequence ordered by date.
2.10.1.4	ICRS must support EBPDS to retrieve mutation form extracts based on either: Mutation form number or property PID	REQ	When requested by the EPBDS, the ICRS should send the digital contents of a Mutation Form.
2.10.1.5	ICRS must support sending investigation notifications to EPBDS concerning the received request (in case of investigation is done in the cadastre side)	REQ	In case some information or attachments for the request is missing, EPBDS must receive investigation comments form the cadastre system.
2.10.1.6	The ICRS must enable EBPDS to query and acquire cadastre information about property.	MAN	For example, Registration Clerk can send requested to the ICRS to ensure that PID supplied by the applicant is valid (exists).
2.10.1.7	ICRS must be able to connect EPBDS and retrieve the main request information needed to initiate a cadastre service.	MAN	Request type Cadastre Transaction type *"EPBDS should have support all the kind of cadastre request (Subdivision, Merging, Transaction on whole property ….etc)"* Property(s) identifier Property (s) address Applicant name Property area (subdivision case) Property extra information Extra remarks
2.10.1.8	ICRS must be able to connect to EPBDS and access latest imagery information for the scanned request attachments.	MAN	After scanning the request attachments. EPBDS must send it to the cadastre system along with the main request information.
2.10.1.9	The ICRS must be able to connect to EPBDS and retrieve the correction updates concerning sent comments.	MAN	Update the request information based on the comment requested by the cadastre system.
2.10.1.10	The ICRS must be able to connect to EPBDS and	MAN	EPBDS must inform the cadastre system that the registration process

No.	Description	Required	Details/Comments
	retrieve the information on the completion of the transaction registration.		of a certain request is completed (either successfully registered or rejected)
2.10.1.11	The ICRS must be able to connect to EPBDS and retrieve information concerning the transaction status.	MAN	This information must include the owner name, extra owner information, deed number, deed date, and legal Property area.
2.10.1.12	The ICRS must be able to connect to EPBDS for retrieval of cadastre property registration information.	MAN	Legal information (owner information, legal area, deed information), encumbrances "if any"
2.10.1.13	All previously stated interaction between EPBDS and the ICRS must be secured.	MAN	To completely assure the security of the transfer data.

2.11 SOFTWARE SYSTEM ATTRIBUTES

2.11.1 SYSTEM MODELING AND DOCUMENTATION

No.	Description	Required	Details/Comments
2.11.1.1	The system modeling and design must be based on Unified Modeling Language (UML).	MAN	
2.11.1.2	All documentation listed below must be provided in Microsoft Word Format.	MAN	
2.11.1.3	System Design Technical documentation must be provided.	MAN	English Language
2.11.1.4	Installation and Administration documentation, must be provided	MAN	English Language
2.11.1.5	User Manual documentation, covering step-by-step explanation of how to use the system functionalities.	MAN	Arabic Language

2.12 DATA REQUIREMENTS

Section describes how the software product will process and store the data elements and logical data groupings.

2.12.1 DATA CATALOGUE

Below is a minimal required list of attributes to be stored in the cadastre GeoDatabase. These attributes does not cover system specific data (e.g. date/time when property was added in the system or date/time of last modification) or data for workflow management and fee calculation.

This list is subject for reviewing/updating because of expected changes in Egypt regulatory legislation:

Minimum spatial entities:

1. Governorate
2. City
3. Section
4. Block
5. Parcel
6. Beacons
7. Building
8. Geodetic stations
9. Street annotations

Related entities:

10. Strata unit
11. Survey Details
12. Property Address
13. Supported Document
14. Person Identification Document
15. Power of Attorney
16. Party (natural)
17. Party (juridical)
18. Party Address

The following table includes needed attributes for these entities.

No.	Attribute name	Mandatory	Details/Comments
	Governorate		
2.12.1.1	Governorate Number	Y	
2.12.1.2	Governorate name	Y	
	City		
2.12.1.3	Governorate Number	Y	The ID of the governorate the City

No.	Attribute name	Mandatory	Details/Comments
			belong to
2.12.1.4	City number	Y	
2.12.1.5	City name	Y	
	Section		
2.12.1.6	Governorate Number	Y	
2.12.1.7	City Number	Y	
2.12.1.8	Section Number	Y	
2.12.1.9	Section name	Y	
	Block		
2.12.1.10	Governorate Number	Y	
2.12.1.11	City Number	Y	
2.12.1.12	Section Number	Y	
2.12.1.13	Block Number	Y	
2.12.1.14	Block name/description	N	
	Parcel		
2.12.1.15	Cadastre PID	Y	System generated according to proposed PID schema
2.12.1.16	Parcel Number	Y	
2.12.1.17	Block number	Y	
2.12.1.18	City Number	Y	
2.12.1.19	Governorate ID	Y	
2.12.1.20	Calculated Area	Y	
2.12.1.21	Creation date	Y	
2.12.1.22	Retirement date	N	
2.12.1.23	Mutation Form ID	Y	
2.12.1.24	Parcel use	Y	e.g. residential, commercial, industrial.
2.12.1.25	Parcel type	N	e.g. private, public, service area
2.12.1.26	North boundary	N	
2.12.1.27	South boundary	N	

No.	Attribute name	Mandatory	Details/Comments
2.12.1.28	East boundary	N	
2.12.1.29	West boundary	N	
2.12.1.30	Description	N	
2.12.1.31	Legal Area	Y	
2.12.1.32	Status	Y	Active, temporary (not registered), historical "subdivided/ consolidated"
	Beacons		
2.12.1.33	Beacon ID	Y	
2.12.1.34	Parcel PID	Y	Link to the parcel
2.12.1.35	Easting	Y	
2.12.1.36	Northing	Y	
2.12.1.37	Elevation	Y	
	Building		
2.12.1.38	Building name	N	
2.12.1.39	Parcel PID	Y	Link to the parcel
2.12.1.40	Floors	N	For buildings – number of floor
2.12.1.41	Address	Y	Link to unit address
	Geodetic stations		
2.12.1.42	Station ID	Y	
2.12.1.43	Easting	Y	
2.12.1.44	Northing	Y	
2.12.1.45	Elevation	Y	
2.12.1.46	Description	Y	
	Annotations		
2.12.1.47	Name	Y	
	Strata Unit		
2.12.1.48	Strata PID	Y	System generated according to proposed PID schema

No.	Attribute name	Mandatory	Details/Comments
2.12.1.49	Parcel PID	Y	Link to the parcel
2.12.1.50	Calculated Area	Y	
2.12.1.51	Creation date	Y	
2.12.1.52	Number of Floor	N	
2.12.1.53	Legal Area	Y	Unit area according to document
2.12.1.54	North boundary	Y	
2.12.1.55	South boundary	Y	
2.12.1.56	East boundary	Y	
2.12.1.57	West boundary	Y	
2.12.1.58	Description		
	Survey Details		
2.12.1.59	CJID number	Y	Link to cadastre job
2.12.1.60	Property type	Y	Parcel / strata unit
2.12.1.61	Property PID	Y	Link to Strata unit or parcel
2.12.1.62	Date	Y	
2.12.1.63	Time	Y	
2.12.1.64	Attendees	N	
2.12.1.65	Surveyor ID	Y	Responsible Surveyor
2.12.1.66	Description		
2.12.1.67	Status	Y	Scheduled, canceled, done, failed
2.12.1.68	Comments	N	Extra information for the survey
2.12.1.69	Property use	Y	e.g. residential, commercial, industrial.
2.12.1.70	Property type	Y	e.g. private, public, service area
2.12.1.71	North boundary	Y	
2.12.1.72	South boundary	Y	
2.12.1.73	East boundary	Y	
2.12.1.74	West boundary	Y	
	Party (natural)		
2.12.1.75	First name	Y	First name

No.	Attribute name	Mandatory	Details/Comments
2.12.1.76	Second name	Y	Second name
2.12.1.77	Third name	Y	Third name
2.12.1.78	Forth name	Y	Forth name
2.12.1.79	Date of birth	Y	Date of birth
2.12.1.80	Gender	Y	Gender
2.12.1.81	National Identification Number	Y	National Identification Number
2.12.1.82	Citizenship	Y	Citizenship
2.12.1.83	Nationality	N	Nationality
2.12.1.84	Address	Y	Link to person's contact address
2.12.1.85	Document	Y	Link to identification document
	Party (juridical)		
2.12.1.86	Name	Y	
2.12.1.87	Role	Y	owner, lessee, applicant etc.
2.12.1.88	Legal form	Y	
2.12.1.89	Identification Number	Y	
2.12.1.90	Address	Y	Link to person's contact address
2.12.1.91	Document	Y	Link to identification document
	Supported Document		
2.12.1.92	Document type	Y	transfer agreement, lease agreement, will etc.
2.12.1.93	Document number	Y	document number
2.12.1.94	Issue date	Y	date when document was issued
2.12.1.95	Issued by	N	name of authority which issues/approved document – for example it may be name of notary office
2.12.1.96	Primary	Y	flag to indicate is document primary in application or not. Primary document is document which proves(establishes) right
	Person Identification		

No.	Attribute name	Mandatory	Details/Comments
	Document		
2.12.1.97	Document type	Y	Passport or national ID card or driver license.
2.12.1.98	Document number	Y	
2.12.1.99	Issue date	Y	
2.12.1.100	Issued by	Y	Authority issued the document
	Property Address		
2.12.1.101	Governorate name	Y	
2.12.1.102	City name	Y	
2.12.1.103	Area name	Y	
2.12.1.104	Street Address	N	Street name, building number, apartment number
2.12.1.105	ZIP	N	Postal code
2.12.1.106	Description	N	For those who do not have address
	Party Address		
2.12.1.107	Country	Y	
2.12.1.108	Governorate name	Y	
2.12.1.109	City name	Y	
2.12.1.110	Area name	Y	
2.12.1.111	Street Address	Y	
2.12.1.112	ZIP	N	
2.12.1.113	Description	N	
2.12.1.114	Telephone	N	
2.12.1.115	Mobile	N	
2.12.1.116	Note	N	

3 DESIGN CONSTRAINTS

Constraints are grouped into three areas covering software, hardware and user interfacing.

3.1 SOFTWARE DESIGN CONSTRAINTS

It should be noted that according the agreement between EFS and MSAD, the Database and GIS platform requirement here within has been harmonized based on MSAD urban title system architecture.

No	Description	Required	Details/Comments
3.1.1.1	The ICRS must be compatible with Windows 2003 R2 Server.	MAN	
3.1.1.2	The ICRS must be compatible with Windows XP Professional or Windows Vista.	MAN	
3.1.1.3	The ICRS must be implemented on IBM DB2 Platform.	MAN	
3.1.1.4	The ICRS must be implemented on ESRI ArcGIS platform	MAN	

3.2 HARDWARE DESIGN CONSTRAINTS

3.2.1 HARDWARE REQUIREMENTS AND ENVIRONMENT

This subsection defines the hardware interface requirements for the ICRS.

No	Description	Required	Details/Comments
3.2.1.1	The EPBDS Applications will be run on Intel compatible platform.	MAN	
3.2.1.2	The EPBDS must support POS printers through the ESC/POS protocol	MAN	Required for Cashiering applications

The details for the proposed hardware for the Cairo Province Office can be found in the *Annex 3: Hardware Equipment for the ICRS*. Annex provides list of the equipment actual for consideration in this document – target servers, workstations and peripherals for functioning of the ICRS.

3.3 USER INTERFACE CONSTRAINTS

3.3.1 USER CHARACTERISTICS

For details see section "System Users and Roles" above in the document.

4 ANNEXES

This section contains the following:

- Samples of documents to be generated from ICRS system, samples include official documents only;
- Layout of Cairo Province office with location of working spaces of the ICRS staff;
- Hardware equipment for the ICRS;
- Egypt deed registration system property index mapping technical specifications and guidelines
- Proposed land parcel and property identification system for registration of deeds (Sigueal El-Shaksi)

4.1 ANNEX 1: SAMPLES OF DOCUMENTS TO BE GENERATED BY THE ICRS SYSTEM

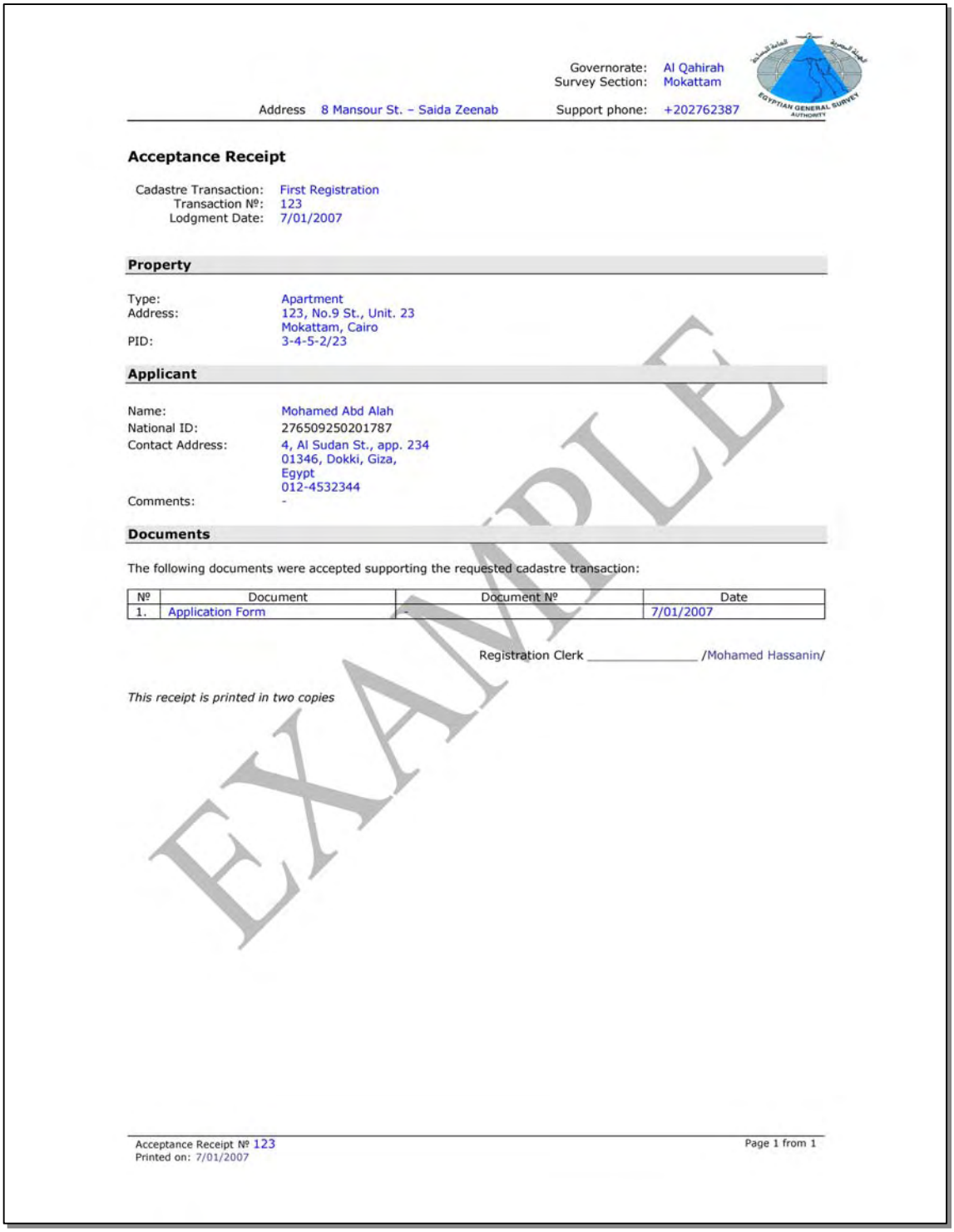
The following are samples of the documents that should be generated from the ICRS. Other documents could be added during system development. Also the design of the documents is preliminary and will be subject to changes according to system development.

Please note that all documents will be finally used only in Arabic and these examples are shown in English/Arabic only for preview purposes only.

Text, shown in black is text of the template itself.

Text, shown in blue, is text that will be inserted automatically by the system.

4.1.1 ACCEPTANCE RECEIPT



Governorate: Al Qahirah
Survey Section: Mokattam
Address 8 Mansour St. – Saida Zeenab Support phone: +202762387

Acceptance Receipt

Cadastre Transaction: First Registration
Transaction №: 123
Lodgment Date: 7/01/2007

Property

Type: Apartment
Address: 123, No.9 St., Unit. 23
Mokattam, Cairo
PID: 3-4-5-2/23

Applicant

Name: Mohamed Abd Alah
National ID: 276509250201787
Contact Address: 4, Al Sudan St., app. 234
01346, Dokki, Giza,
Egypt
012-4532344
Comments: -

Documents

The following documents were accepted supporting the requested cadastre transaction:

№	Document	Document №	Date
1.	Application Form	-	7/01/2007

Registration Clerk _____ /Mohamed Hassanin/

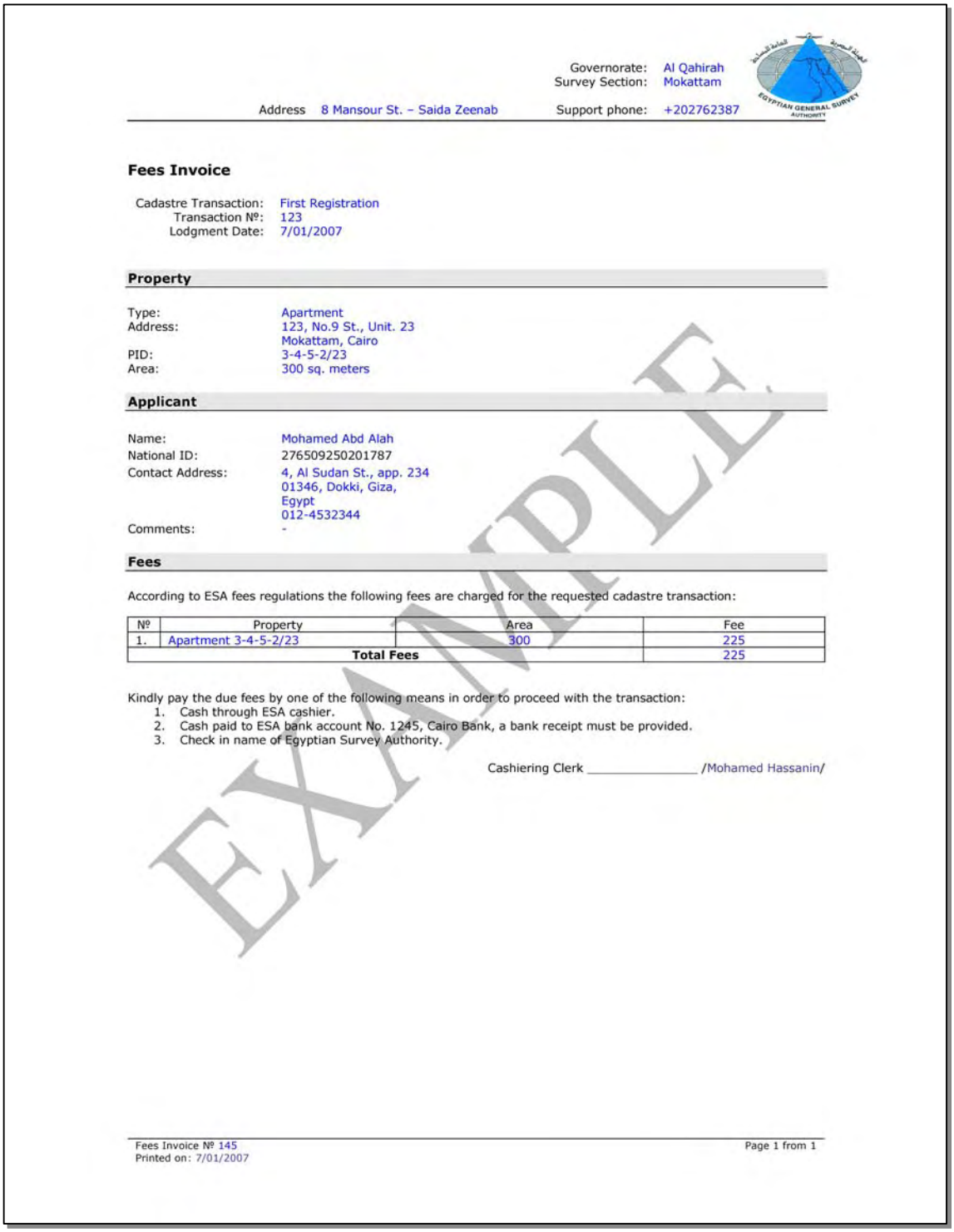
This receipt is printed in two copies

EXAMPLE

Acceptance Receipt № 123
Printed on: 7/01/2007
Page 1 from 1

Figure 24 Example of Acceptance Receipt

4.1.2 FEES INVOICE



Governorate: Al Qahirah
Survey Section: Mokattam
Address 8 Mansour St. – Saida Zeenab Support phone: +202762387

Fees Invoice

Cadastre Transaction: First Registration
Transaction №: 123
Lodgment Date: 7/01/2007

Property

Type: Apartment
Address: 123, No.9 St., Unit. 23
Mokattam, Cairo
PID: 3-4-5-2/23
Area: 300 sq. meters

Applicant

Name: Mohamed Abd Alah
National ID: 276509250201787
Contact Address: 4, Al Sudan St., app. 234
01346, Dokki, Giza,
Egypt
012-4532344
Comments: -

Fees

According to ESA fees regulations the following fees are charged for the requested cadastre transaction:

№	Property	Area	Fee
1.	Apartment 3-4-5-2/23	300	225
	Total Fees		225

Kindly pay the due fees by one of the following means in order to proceed with the transaction:
1. Cash through ESA cashier.
2. Cash paid to ESA bank account No. 1245, Cairo Bank, a bank receipt must be provided.
3. Check in name of Egyptian Survey Authority.

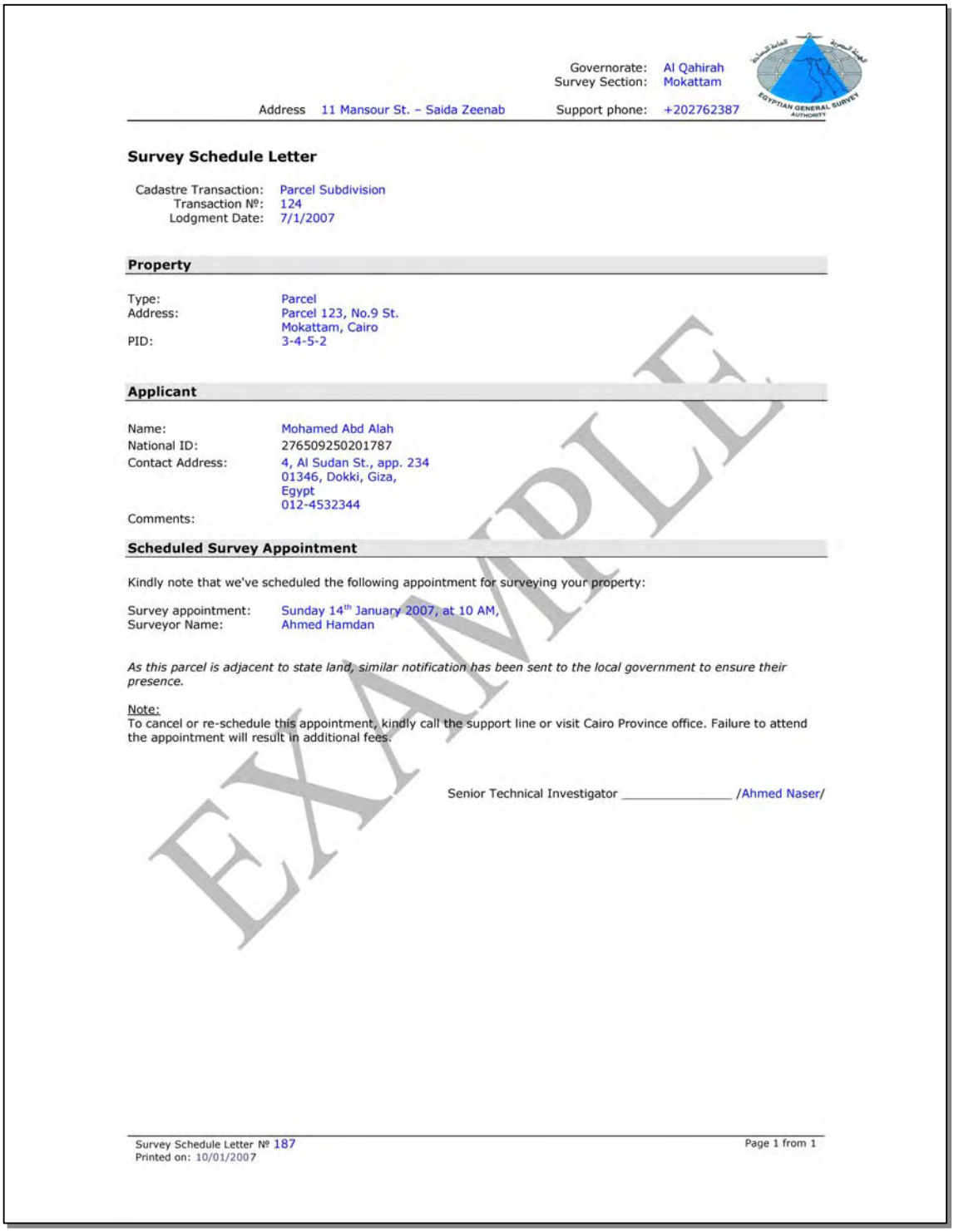
Cashiering Clerk _____ /Mohamed Hassanin/

Fees Invoice № 145
Printed on: 7/01/2007
Page 1 from 1

EXAMPLE

Figure 25 Example of Fees Invoice

4.1.3 SURVEY SCHEDULE LETTER



Governorate: Al Qahirah
Survey Section: Mokattam

Address 11 Mansour St. – Saida Zeenab Support phone: +202762387

Survey Schedule Letter

Cadastre Transaction: Parcel Subdivision
Transaction №: 124
Lodgment Date: 7/1/2007

Property

Type: Parcel
Address: Parcel 123, No.9 St. Mokattam, Cairo
PID: 3-4-5-2

Applicant

Name: Mohamed Abd Alah
National ID: 276509250201787
Contact Address: 4, Al Sudan St., app. 234 01346, Dokki, Giza, Egypt 012-4532344
Comments:

Scheduled Survey Appointment

Kindly note that we've scheduled the following appointment for surveying your property:

Survey appointment: Sunday 14th January 2007, at 10 AM,
Surveyor Name: Ahmed Hamdan

As this parcel is adjacent to state land, similar notification has been sent to the local government to ensure their presence.

Note:
To cancel or re-schedule this appointment, kindly call the support line or visit Cairo Province office. Failure to attend the appointment will result in additional fees.

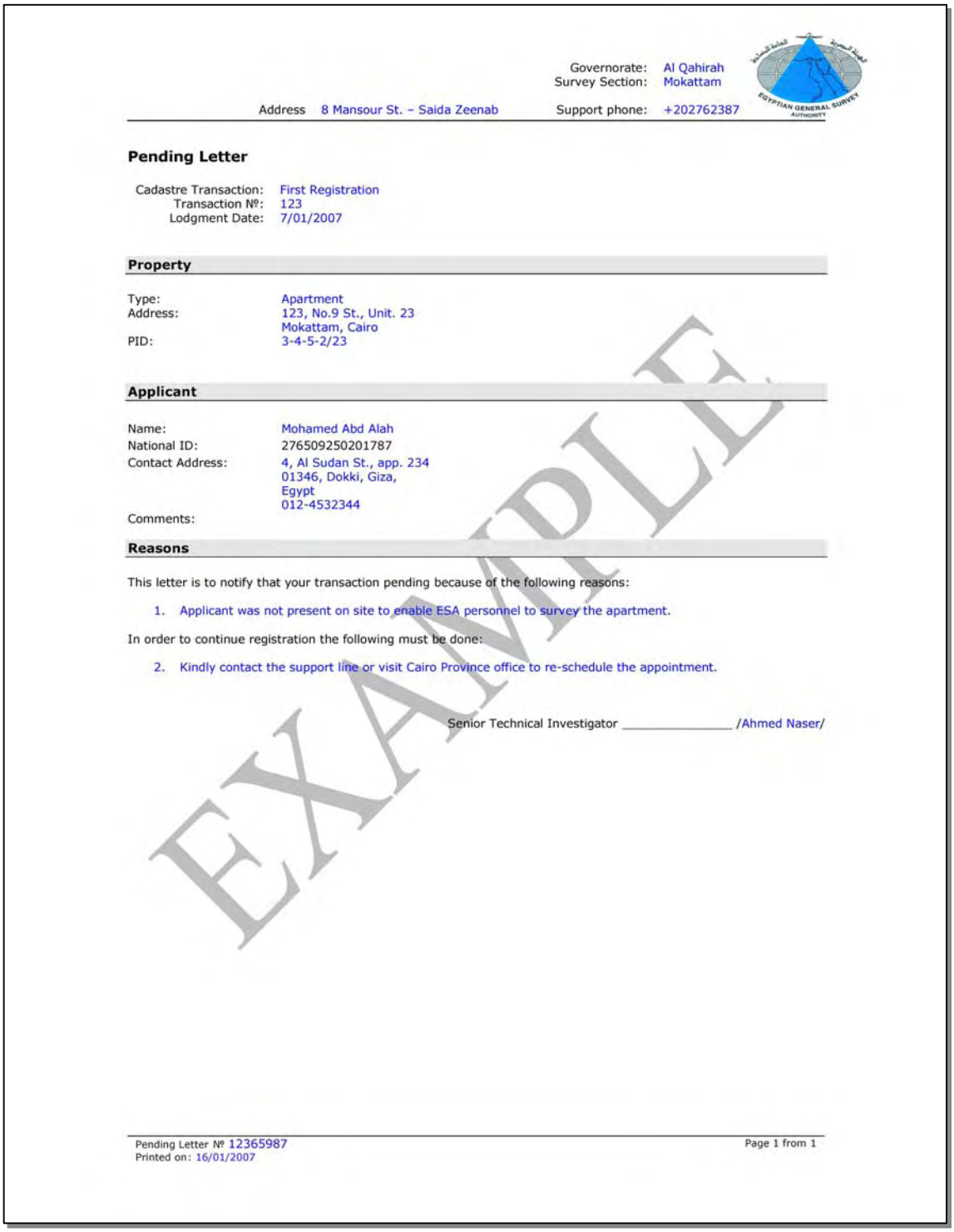
Senior Technical Investigator _____ /Ahmed Naser/

Survey Schedule Letter № 187
Printed on: 10/01/2007

Page 1 from 1

Figure 26 Example of Survey Schedule Letter

4.1.4 PENDING LETTER



Governorate: Al Qahirah
Survey Section: Mokattam
Address 8 Mansour St. – Saida Zeenab
Support phone: +202762387

Pending Letter

Cadastre Transaction: First Registration
Transaction №: 123
Lodgment Date: 7/01/2007

Property

Type: Apartment
Address: 123, No.9 St., Unit. 23
Mokattam, Cairo
PID: 3-4-5-2/23

Applicant

Name: Mohamed Abd Alah
National ID: 27650925020178 7
Contact Address: 4, Al Sudan St., app. 234
01346, Dokki, Giza,
Egypt
012-4532344
Comments:

Reasons

This letter is to notify that your transaction pending because of the following reasons:

1. Applicant was not present on site to enable ESA personnel to survey the apartment.

In order to continue registration the following must be done:

2. Kindly contact the support line or visit Cairo Province office to re-schedule the appointment.

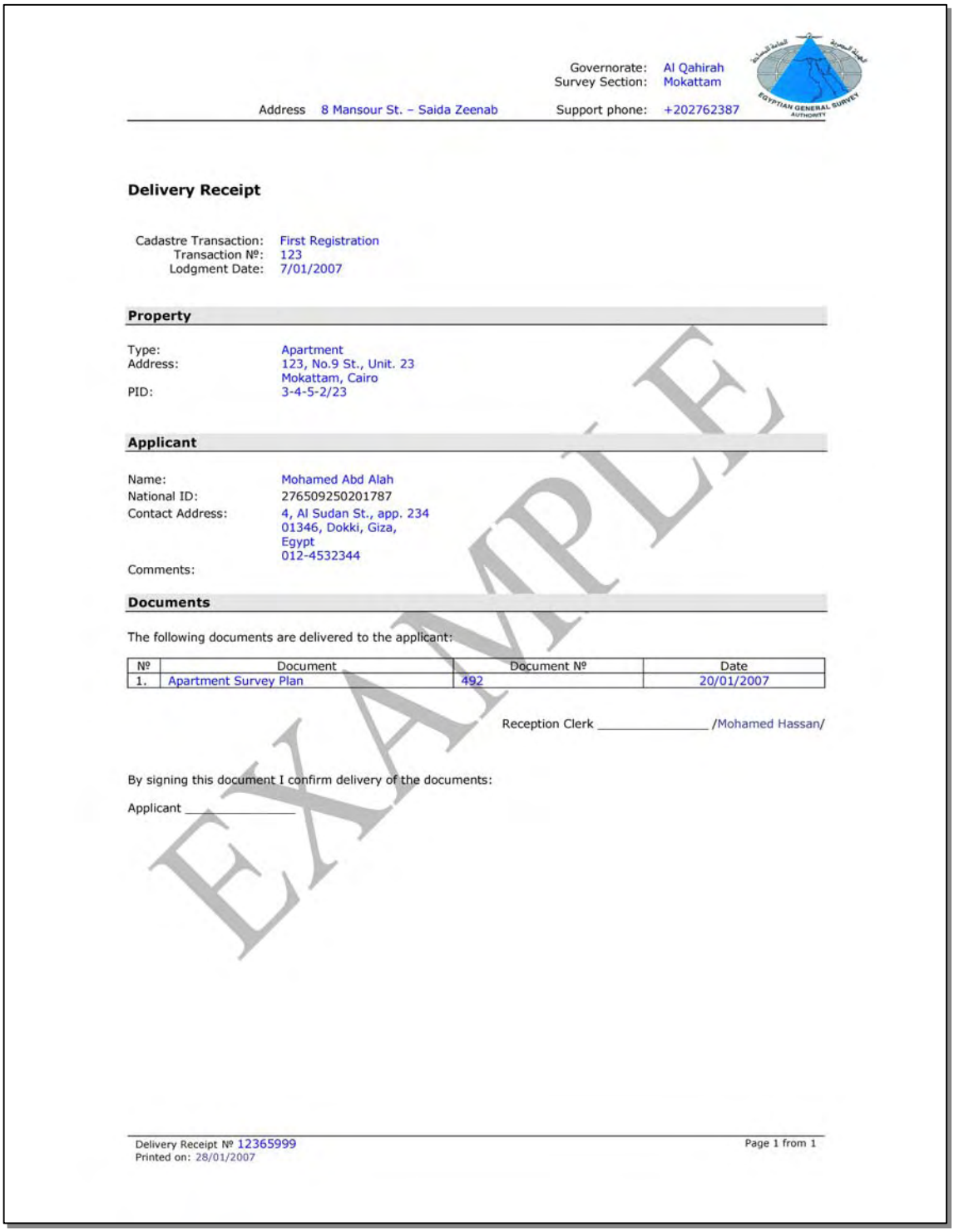
Senior Technical Investigator _____ /Ahmed Naser/

Pending Letter № 12365987
Printed on: 16/01/2007
Page 1 from 1

EXAMPLE

Figure 27 Example of Pending Letter

4.1.5 DELIVERY RECEIPT



Governorate: Al Qahirah
Survey Section: Mokattam
Address 8 Mansour St. – Saida Zeenab
Support phone: +202762387

Delivery Receipt

Cadastre Transaction: First Registration
Transaction №: 123
Lodgment Date: 7/01/2007

Property

Type: Apartment
Address: 123, No.9 St., Unit. 23
Mokattam, Cairo
PID: 3-4-5-2/23

Applicant

Name: Mohamed Abd Alah
National ID: 276509250201787
Contact Address: 4, Al Sudan St., app. 234
01346, Dokki, Giza,
Egypt
012-4532344
Comments:

Documents

The following documents are delivered to the applicant:

№	Document	Document №	Date
1.	Apartment Survey Plan	492	20/01/2007

Reception Clerk _____ /Mohamed Hassan/

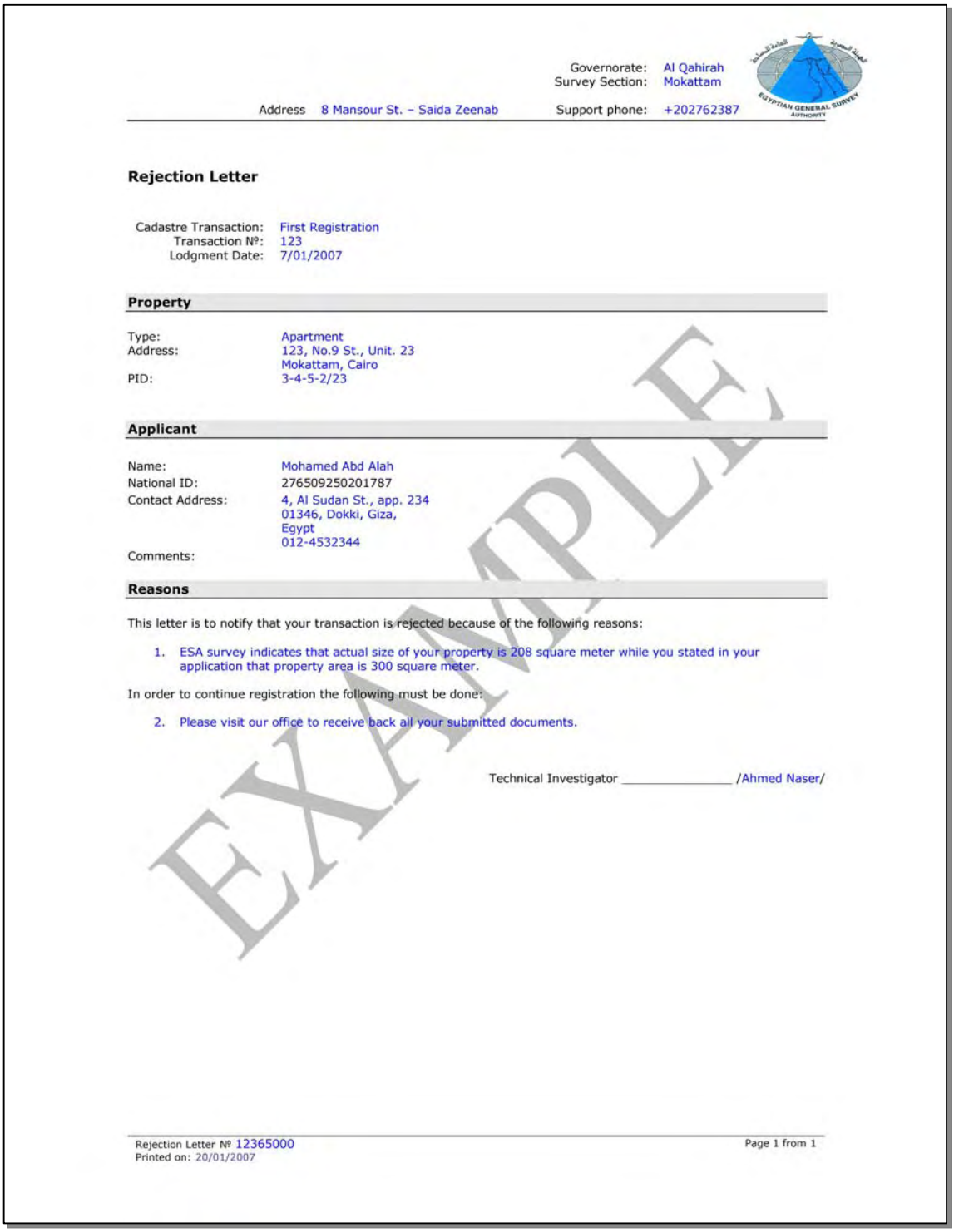
By signing this document I confirm delivery of the documents:

Applicant _____

Delivery Receipt № 12365999
Printed on: 28/01/2007
Page 1 from 1

Figure 28 Example of Delivery Receipt

4.1.6 REJECTION LETTER



Governorate: Al Qahirah
Survey Section: Mokattam
Address 8 Mansour St. – Saida Zeenab
Support phone: +202762387

Rejection Letter

Cadastre Transaction: First Registration
Transaction №: 123
Lodgment Date: 7/01/2007

Property

Type: Apartment
Address: 123, No.9 St., Unit. 23
Mokattam, Cairo
PID: 3-4-5-2/23

Applicant

Name: Mohamed Abd Alah
National ID: 276509250201787
Contact Address: 4, Al Sudan St., app. 234
01346, Dokki, Giza,
Egypt
012-4532344
Comments:

Reasons

This letter is to notify that your transaction is rejected because of the following reasons:

1. ESA survey indicates that actual size of your property is 208 square meter while you stated in your application that property area is 300 square meter.

In order to continue registration the following must be done:

2. Please visit our office to receive back all your submitted documents.

Technical Investigator _____ /Ahmed Naser/

EXAMPLE

Rejection Letter № 12365000
Printed on: 20/01/2007
Page 1 from 1

Figure 29 Example of Rejection Letter

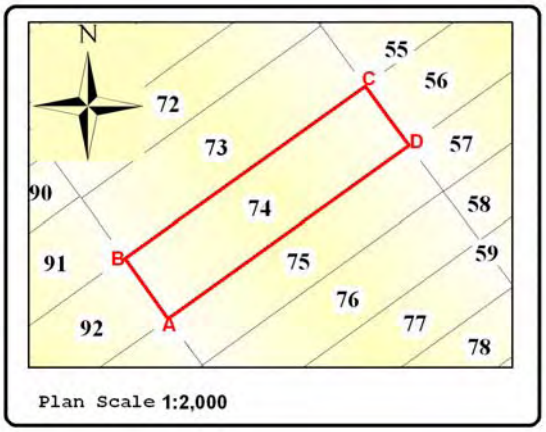
4.1.7 SURVEY PLAN

Survey Plan

Transaction Nº:	12365487	Governorate:	Cairo
Date:	7/01/2007	Registration Office:	Moqattam
Cadastre Nº:	124	Survey Section:	Moqattam

Property Information

PID Number:
Full Address: 4, Al Sudan St., Dokki, Giza,
Section: 2
Block: 15
Survey Plan No.: 723
Survey Plan Creation Date: 20-01-2006
Area (Ms): 452.32
Original Survey Plan No.:
Property Description:



Property Layout diagram

Sides	Dimension
AB	
BC	
CD	
DA	

Servitude Data:

Survey Date: _____ /
Surveyor Name: _____ /
Supervisor Approval: _____ /

Figure 30 Example of Survey Plan

4.2 ANNEX 2: CAIRO PROVINCE OFFICE PROPOSED LAYOUT

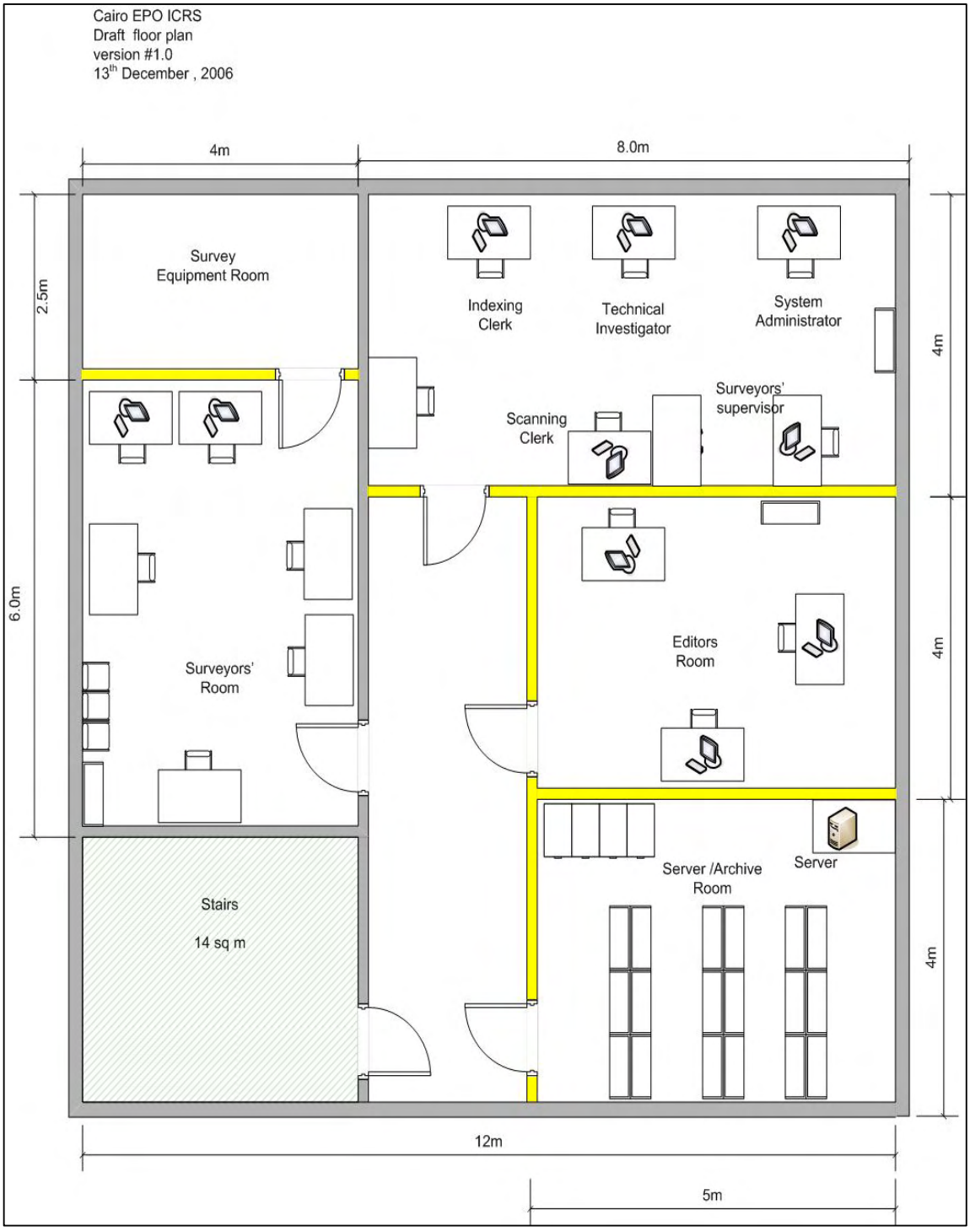


Figure 31 Proposed layout for Cairo Province Office

4.3 ANNEX 3: HARDWARE EQUIPMENT FOR THE ICRS

The proposed ICRS will be operating on the following recommended hardware "equivalent/higher configuration". It should be noted that according the agreement between EFS and MSAD, the hardware requirement here within has been harmonized based on MSAD urban title system hardware configurations. The procurement of the hardware will be provided by EFS.

Server Equipment

No	Item	Parameters	Qty
1	Network Rack Server	CPU: 1x Pentium Xeon 3.4 GHz 800 FSB 2M RAM: 4 x 1GB ECC Registered HDD: 2 x 146 SAS 15K ppm Hot Swap RAID: SAS 1 External SCSI Apapter: Ultra 320 68pin LVD LAN: Dual 1 Gbps Ethernet adapter (copper) Media: DVD Redundant Power Supply No OS Preinstalled	1
2	Database Rack Server	CPU: 2 x Dual Core Intel Xeon (Model 5150: 2.66GHz 2x2MB L2 Cache) RAM: 6 x 1GB DDR2 ECC Registered HDD: 6 x 146 Gb SAS 10K ppm Hot pluggable RAID Controller for SAS RAID-5 support Hot plug drive cage LAN: Dual 1 Gbps Ethernet adapter (copper) Media: 1 x DVD-+RW drive External SCSI Apapter: Ultra 320 68pin LVD Power: 2 x Power supply Hot plug Server remote management software Keyboard, Mouse No OS Preinstalled	1
3	External tape storage	External VXA-2 SCSI Tape Drive; 80 GB native storage capacity 160 Gb compressed	1

- **Workstation Equipment**

No	Item	Parameters	Qty
1	General workstation	CPU: 1x Intel Core 2 Duo IV 2.13 GHz (Model E6400) RAM: 3 x 512 Mb PC2-5300 SDRAM HDD: 1 x 160 Gb SATA 7200 rpm Video: 64 RAM (PCIe, DVI-I) LAN: 1 x 1 Gbps Ethernet adapter Media: DVD Monitor: TFT 17" 1280x1024, Tco 99 USB Keyboard, USB Optical Wheel Mouse	5
2	Cadastre Workstation	CPU: 1x Pentium IV 3.06 GHz HT RAM: 2 x 1 Gb PC2-5300 SDRAM HDD: 1 x 160 Gb SATA 7200 rpm Video: 128 RAM (PCIe, DVI-I) LAN: 1 x 1 Gbps Ethernet adapter Media: DVD Monitor: TFT 19" 1280x1024, Tco 99 USB Keyboard, USB Optical Wheel Mouse	9
3	Scanning Station	CPU: 1x Pentium IV 3.06 GHz HT	1

No	Item	Parameters	Qty
		RAM: 2 x 1 Gb PC2-5300 SDRAM HDD: 1 x 160 Gb SATA 7200 rpm Video: 128 RAM (PCIe, DVI-I) LAN: 1 x 1 Gbps Ethernet adapter External SCSI Adapter: Ultra SCSI 68pin LVD Media: DVD Monitor: TFT 19" 1280x1024, Tco 99 USB Keyboard, USB Optical Wheel Mouse	

- **Peripherals**

No	Item	Parameters	
1	A3 flatbed duplex Scanner with ADF	Resolution: 600 x 1200 Optical, Capacity: 30 ppm minimum Connectivity: Ultra SCSI 68pin	1
2	Copier	A3/A4 B&W copier up to 20 ppm Copy Resolution: 600 x 600 dpi	1
3	Cashier Printer w/ cash drawer set	Receipt printing, slip imprinting, RS-232 or bi-directional interfaces, with cash drawer	1
4	A4 B&W Laser Printer	1200 x 1200 dpi up to 21 ppm (A4) duplex support Interfaces: USB, LAN ready Capacity: 10000 pages per month	2
5	Large Format Inject Printer	Color Inkjet Printer; 3- to 24.6-in wide sheets, 24-in rolls; 1200 x 600 dpi USB; Network Ready (Jet Direct) Input tray, manual single-sheet feed, rear path (minimum A2, maximum A1 oversize), roll feed through rear path Stand and feeder included	1
6	A3 B&W Laser Duplex Printer	1200 x 1200 dpi 20 ppm duplex printing USB, LAN ready Capacity: 65000 pages per month	1
7	Telephone	programmable buttons fixed buttons: Intercom, Conference, Flash/Recall, Auto Answer/Mute, Redial, Hold, Transfer, Speakerphone	2
8	Telephone station	3 Line x 8 Extension Room-to-room intercom Room Monitor Conferencing	1

4.4 ANNEX 4: EGYPT Deed REGISTRATION SYSTEM PROPERTY INDEX MAPPING TECHNICAL SPECIFICATIONS AND GUIDELINES

4.5 APPENDIX 5: PROPOSED LAND PARCEL AND PROPERTY IDENTIFICATION SYSTEM FOR REGISTRATION OF DEEDS (SIGUEAL EL-SHAKSI)