

STRATHMORE UNIVERSITY

FACULTY OF INFORMATION TECHNOLOGY

PROJECT PROPOSAL

**KENYA REVENUE AUTHORITY LICENSE MANAGEMENT SYSTEM**

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# 1.0 INTRODUCTION

## 1.1 BACKGROUND INFORMATION

The **Kenya Revenue Authority** (KRA) was established by an Act of Parliament, Chapter 469 of the laws of Kenya, which became effective on 1st July 1995. The Authority is charged with the responsibility of collecting revenue on behalf of the Government of Kenya. The organization is managed by a board of directors and it runs its operations like a private enterprise.

KRA is divided into five regions namely:

* Rift Valley Region
* Western Region
* Southern Region
* Northern Region
* Central Region

Since the inception of KRA, revenue collection has continued to grow while professionalism in revenue administration has been enhanced. However, a number of processes remain manual and KRA is yet to operate as a fully integrated organisation. The KRA introduced the Revenue Administration Reform and Modernisation Program (RARMP) which commenced in 2004/05 with the objective of transforming KRA into a modern, fully integrated and client-focused organization. RARMP has seven key projects namely:

1. Customs Reforms & Modernization Project
2. Domestic Taxes Reform & Modernization Project
3. Road Transport Reform & Modernisation Project
4. Investigation & Enforcement Reform & Modernisation Project
5. KRA Infrastructure Development Project
6. KRA Business Automation Project
7. Human Resource Revitalisation Project

This project has led to the realization of several computerized systems for automating some services of the authority. Two key systems are:

1. Vehicle Management System

This system facilitated automation of vehicle registration and reduced time for processing logbooks.

1. Driving License Management System

This system maintains driver licenses and records. This has improved data integrity of the databases.

Under RARMP the organization plans to implement smart card driving licences

The project has also faced significant challenges such as:

• Human resource issues like remuneration, skills and integrity.

• Lack of sufficient funding.

## Licenses and their renewal processes

The road transport department is involved the following tasks:

* Motor vehicle registration
* Licensing
* Collection of traffic revenue
* Licensing of vehicle dealers’
* Licensing of drivers and conductors
* Licensing of driving schools and conductors
* Transfer of ownership

1. **Driver Licensing**

The following details are stored about the license holder:

* Name and title of license holder
* License number (unique)
* Certificate of competency number
* Date driving test was taken
* Where driving test was taken
* Address of license holder
* Interim license number
* Date interim license was issued
* Classes of vehicles license holder is licensed to drive

When renewing the driving licenses, the teller will key in the license number which will bring up the license holder’s profile. The teller will then select the preferred renewal duration of the license holder. This can be either:

* One year which costs Kshs 700 or
* Three years which costs Kshs 1800

1. **Motor vehicle registration**

This license shows ownership of the vehicle. It is issued after the vehicle owner is issued with appropriate number plates for his vehicle. It has three important contents namely:

1. Signature of an authorized officer
2. Stamp impression against the authorized officer’s signature
3. Seal of the registrar of motor vehicles

Motor vehicle registration takes place in four towns in the country which are Nairobi, Kisumu, Mombasa and Nakuru. There are two types of registration that one can apply for:

1. New registration of locally assembled/imported vehicles
2. Re-registration of ex-diplomatic vehicles and auctioned vehicles

The registration procedure is as follows:

1. Lodging and receiving of documents by the receiving officer who verifies them
2. The details of the documents are recorded in a register
3. The approving officer compares the document and printout
4. Registration number is issued serially
5. The number plates are then issued to the vehicle owner.

The following fees are paid here:

1. Transfer fees
2. Number plate fees
3. Road safety fund
4. Registration fee
5. **Driving schools’ licenses**

Applicants must be over 25 years old and apply on prescribed form 5. They must indicate the following details:

* Full name and address of the driving school
* School curriculum
* Fees charged
* Physical location of the school
* Details of the vehicles
* Registration numbers
* Type of vehicle
* Year of manufacture

The driving schools must be inspected every six months. The licenses are valid for twelve months

The license costs Kshs 11000

1. **Driving instructors’ licenses**

This license is valid for two years. It is renewable at a fee of Kshs 375 but after fresh testing.

Details that are needed of renewal of this license include the following:

* Certificate of competency
* Copy of driving license
* Copy of national identity card
* Two passport size photos
* Application form 2

1. **PSV licenses and badges**

for the drivers of the PSVs, they have to fulfill these requirements:

* They have to be over 24 years
* They should possess a valid license with class A or J
* They should have a certificate of good conduct from the Central Investigations Department

For the conductors, they have to fulfill similar requirements but the age limit in this case is lowered to 18 years. The conductors also don’t have to possess a driving license.

Renewal of the license costs Kshs 700 and is valid for a year. To renew the license, one has to have the following documents:

* Copy of driving license for the drivers
* Copy of the national identity card
* Certificate of good conduct
* Form XVI from KRA

Badges are issued to drivers with four years experience. However they are car-specific. They cost Kshs 300.

1. **Transfer and Duplicate Logbooks**

Transfer of ownership of a vehicle can happen in the event of:

* Sale
* Donation
* Succession
* Auction

1. **Transport Licensing Board(TLB)**

This license is issued only to public service vehicles. Requirements for TLB include:

* Original and copy of vehicle logbook
* Original and copy of speed governance compliance certificate
* Original and copy of vehicle inspection report
* Original and copy of vehicle identity certificate
* Copy of ID of applicant

TLB issues either short term licenses or road service licenses.

1. **Dealers’ License section**

## Traffic revenue

This is defined by KRA as income paid by taxpayers in respect of taxes and fees for various services rendered in relation to the transport industry.

This revenue is collected through:

* Cash receipting system
* Simba system
* Others

The Simba system is mostly used for collecting these payments that are related to registration of motor vehicles:

* Registration fees
* Road safety fund
* Transfer fees
* Number plates’ fees

Reconciliation of the funds that are raised:

* Daily station returns
* Manual cashbooks
* Bank advices
* Bank statements
* Revenue reports from the Simba system/ CBS

The following diagram depicts how the revenue raised moves in the system:

Commercial banks

Central Bank of Kenya

Direct banking

RTD/KRA offices

## 1.2 PROBLEM STATEMENT

Since 1954, about 2.7 million drivers have been licensed. In addition, there are approximately 650,000 to 700,000 motorized modes of transportation (i.e. all types of vehicles) in Kenya. The Road Transport Department so far licenses about 7,000 cars yearly.

The RTD deals with several types of licenses. These licenses are:

* Driver licenses
* Motor Vehicle registration
* Driving schools’ registration
* Driving instructors’ licenses
* PSV licenses and badges
* Transfer and duplicate logbooks
* Dealers’ license section
* Transport Licensing Board

We have observed over time that renewal of licenses at KRA centres is a long and tasking process. One has to make the trip to the nearest centre to get their licenses renewed. Many Kenyans need to renew their licenses at any one time and therefore there is always a huge crowd of people at the centres at a go. This poses a huge problem because the process of renewal becomes time-wasting. In addition, the personnel posted at the few centres become overwhelmed with the large amount of work presented to them.

The main reason we want to undertake this project is to provide Kenyans with a faster and convenient way in which they can renew their licenses. the rate at which KRA is automating its services is slow compared to the rate at which the country is embracing I.T. services. We therefore want to undertake this project in a bid to help the organization speed up its automation.

## 1.3 PROPOSED SOLUTION

We propose to implement two systems that will be integrated. We shall develop a mobile system and a web-based system that will facilitate renewal of licenses remotely. The public will thus opt out of travelling to the KRA centres to renew their licenses.

The proposed mobile application and online system will allow the users to renew their licenses in a convenient way and allow personnel to easily view and edit vehicle data.

## 1.4 OBJECTIVES

By the end of the project, we hope to have achieved the following objectives:

* Create a convenient way for the public to renew their licenses
* Reduce the amount of human traffic in the KRA centres

## 1.5 FUNCTIONAL SUBSYSTEM OBJECTIVES

The proposed system should be able to:

* Allow the user to access the system online.
* Allow users to renew their licenses online and via a mobile application.
* Allow the personnel to easily view and edit vehicle details.
* Generate reports.

# LITERATURE REVIEW

**E-government**

E-government means different things to different people. E-government generally involves using ICTs to transform both back-end and front-end government processes and provide services, information and knowledge to all government customers, that is the public, businesses, government employees and other government agencies. e-Government uses a range of information technologies, such as the Wide Area Networks, Internet, and Mobile Computing, to transform government operations in order to improve effectiveness, efficiency, service delivery and to promote democracy.

E-government can thus be segmented into what are known as primary delivery models; the relationship between government and citizens (G2C), electronic interactions between government agencies and private businesses (G2B), relationship between governmental organizations (G2G), and the relationship between government and its employees (G2E).

**E-government in Kenya**

The eGov website in Kenya is meant facilitate all Government of Kenya agencies to get up-to-date and authoritative eGov information & resources to assist them achieve their ministry's/department’s eGov goals, as well as all Kenyans and others to stay abreast with on-goings of eGov in Kenya.

The achievement of e-Government in Kenya has been a key priority of the Kenyan government towards the realization of national development goals and objectives for Wealth and Employment Creation, as stipulated in the Kenya Vision 2030.  
  
The Government of Kenya established the e-Government Programme in June 2004. It has since then committed itself towards achieving an effective and operational e-Government to facilitate better and efficient delivery of information and services to the citizens, promote productivity among public servants, encourage participation of citizens in Government and empower all Kenyans.

Kenya is the first country in Africa to launch a national open data initiative(Kenya Open Data Initiative-KODI).

The goal of **opendata.go.ke** is to make core government development, demographic, statistical and expenditure data available in a useful digital format for researchers, policymakers, ICT developers and the general public.

Currently, there are over 160 datasets including the complete 2009 census, national budget data, nation and county public expenditure data, information on health care and school facilities. This data is available to all for commercial or non-commercial use.

**Developments that affect e-government**

* Kenya Transparency and Communications Infrastructure Project

($114 million World Bank IDA loan through Ministry of Information and Communications). This project comprises: e-government applications starting with E-procurement and Land Information Systems, the creation of e-government services access points called digital villages, bandwidth expansion and broadband network support for Universities and Colleges through KENET, support for Business Process Outsourcing (ICT sector) and the newly created Kenya ICT board to oversea the project.

* 5,000 KM national optical fiber backbone funded by the government.
* The East African Marine Optical Fiber

**Regulatory Regime In Kenya**

• Kenya Communications Act 1998

– No duopoly in fixed or mobile services

– Unified Licensing Framework (ULF)

– Communications -> ICT Act limitations

• Kenya Communications Regulations 2001

– Dominant operator has not yet been announced

– Safaricom has over 80% market share – problem?

• Kenya ICT (Amendment) Act 2008

– Assented on December 30, 2009

– Recognition of e-transactions – important for e-government

* Introduces broadcasting & content regulation

**Growth of fixed and mobile telephony**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| YEAR | FIXED SUBSCRIBERS/  CONNECTIONS | FIXED WIRELESS | MOBILE SUBSCRIBERS | COMBINED TELEDENSITY |
| 2004/05 | 299252 | 0 | 4611970 | 14% |
| 2007/08 | 252615 | **284513** | 12933653 | 37% |

**Growth of Internet Users in Kenya**

Due to lack of funds there are no demand-side statistics available.

There are 80% leased lines in Nairobi and Mombasa. The fibre cables in place are not in use.

In 2007, Internet Market study estimated 2.7 million users from a supply side. Mobile service provider, Safaricom has 3G in Nairobi and Mombasa and GPRS is available countrywide from all the operators.

It is therefore evident that the number of internet users have increased.

**Money transfer growth in Kenya**

Mobile money tranfer in Kenya was launched by the two main mobile operators in the country: Airtel (Previously Zain) (17%) and Safaricom (80%)

• Safaricom M-Pesa money transfer

It is a business scheme that Increase the data Average Revenue Per User (ARPU).

The P2P transactions eaned Ksh 20 billion in September from about Ksh 1 billion in September 2007.

As at September 2008 there were 4.14 million registered MPESA users and 4,230 agents.

• Zain launched ZAP on 16/02/2009. The Sokotele service was introduced before M-PESA failed

**Citizen access to e-government services**

* Cyber cafes and institutional access to Internet

These have limited penetration and they are mostly limited to urban areas.

* Mobile SMS and Internet access

This is the most convenient means of internet access, especially with the declining prices of mobile devices with internet access capabilities. The SMS service is very popular.

* Digital villages are still under construction under the Kenya ICT Board & Ministry of Information and Communications. Their funding is through the Kenya Transparency and Communications Project and the Public Private Partnership framework (PPP).

**Citizen’s perception survey**

*Source: Network Information Systems*

**Survey tool administered 395 Respondents in the following areas:**

* **Knowledge of E-Government services**
* **Access to E-Government Services**
* **Use of mobile phones**
* **Frequency of access**
* **Responses to communication**

Citizen’s awareness

Email interactions with government

**Access to E-Government Services**

Review methodology and results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Connected | Transactional | Interractive | Enhanced | Emerged |
| 0 | 0 | 4 | 30 | 39 |

**Government Services accessed through mobile phones**

|  |  |
| --- | --- |
|  | Series 1 |
| KNEC results | 30.4 |
| E-Bills | 18.3 |
| Voters registration | 26.9 |
| Loan status | 2.6 |
| Clarification on policy issues | 4.2 |
| Water bills | 1 |
| E-banking | 1.9 |

**Readiness of e-government infrastructure**

Current situation:

The key areas of focus are:

* Network infrastructure
* Access network
* Backbone network
* Backend applications
* Human capacity and organizational structure

E-government internal network infrastructure

• Access Network infrastructure

There has been increased access to PCs in all ministries. There are established local area networks at Ministry headquarters in Nairobi and in some provinces

• Backbone network infrastructure

In place is the Optical fiber-based Government Common Core Network (GCCN) that interconnects all HQ buildings under implementation. There is a large Data Center under construction as well as a National Fiber Network to all district HQs in Kenya.

**Government network infrastructure challenges**

• Procurement

The procurement process is bureaucratic and slow.

End-user software and hardware not centralized (lack of economies of scale)

• Quality of network infrastructure

There are very low internet speeds and limited network management

There is also a lack of redundancy (a fall back in case of system failure).

• Inadequate availability and support

As a result of poor technical support, many officers turn to other solutions such as yahoo or Gmail accounts instead of designated accounts.

Examples of Backend

**Examples of Backend Applications deployed**

• HR system (IPPD) being used to process payroll for all ministries, Kenya police, TSC and many government agencies

• Financial system (IFMIS) has been implemented in most of the ministries

• Kenya Ports Authority ERP and Waterfront system

• Immigration Department ERP – Mobile tracking of passport applications

• Kenya Revenue Authority System – online filing of tax returns is mandatory

• Higher Education Loans Board ERP – graduates can track loan repayments

**Backend applications challenges**

* Slow implementation, especially for parent ministries

Only 27% of projects implemented on schedule

* Only 40% implemented within budget
* Technical support for applications is available only at headquarters. It is limited at the provincial level; therefore there is no end-user support.
* Inadequate change management strategies in place

**Human Capacity strengths**

* There is an ICT secretary position and a Directorate of E-government in the Office of the President
* ICT officers are in each ministry and government department
* There is a new scheme of service for ICT professional staff administered by DEG.
* Improved user support.
* PS and ICT officers champions in each ministry.

**Human capacity challenges**

Human capacity challenges

• Retention problems

Remuneration- The salaries are not matched to qualifications and training

• Limited managerial experience among ICT officers

The managers may be techies or entry-level staff

• Limited Technical Experience of ICT professionals and as a result they have limited capacity to solve complex network or applications problems

* Inadequate number of ICT professionals

**Emerging fixed/ mobile e-government services**

• Ministry of Education

– Kenya National Examination Services

– Education MIS

• Kenya Revenue Authority & Kenya Ports Authority

• Immigration department

– Passport control

– Mobile checking of passport

• Ministry of Finance

* Financial system

However, other key ministries such as Agriculture and Tourism do not have these services.

**Motivations of e-government**

• Vision 2030 aim

– A globally competitive and prosperous nation with a high quality of life by 2030

• Vision 2030 ICT sector MTP Vision

– Kenya becomes an information and

knowledge based society

• National ICT policy vision

* A prosperous ICT-driven Kenyan society

• E-Government vision

– To be an efficient, results-oriented and citizen-centred public sector and one of the top rated

e-governments in Africa and globally

• Draft E-government strategy 2008 – 2012

– To follow from 2004-2007

Con

**Conclusions**

• Internal e-government infrastructure and backend applications are the main challenge

– PCs and LANs are easy to set up while IFMIS and IPPD took 10 years to develop

• Public-Private Partnerships in developing applications is not smooth yet

• E-leadership capacity limited

– change management is lacking

# 3.0 METHODOLOGY

**HTML 5**

Mobile web refers to the use of internet-connected applications from your mobile device.

The Mobile Web primarily utilizes lightweight pages to deliver content to mobile devices. Many new mobile browsers are moving beyond these limits by supporting a wider range of Web formats, including variants of HTML commonly found on the desktop Web

It is easier to use HTML 5 to create mobile web applications because of the following reasons:

**Interactivity**   
  
The biggest advantage of HTML5 is that the functionality is built into the browser. Web Developers have been increasingly trying to create applications which display fluid animations, stream video, play music and integrate with Social Network sites such as Twitter and Facebook. In most cases they could only provide these things by learning and applying add-on tools included Flex, Flash or Silverlight or building complex javascript tools. This increased the complexity and the time it took to develop the Web Applications. HTML5 changes this with DOM and HTML support, (without the plugins and 3rd party programs) for video and audio embedding, high-quality drawings, charts and animation and many other types of rich content demanded by users.

**Cleaner Code**

HTML5 will enable developers to use cleaner code, we can remove most div tags and replace them with new  structural elements.

**Greater Consistency**

As websites adopt the new HTML5 elements we will see far greater consistency in terms of the HTML used to code a web page on one site compared to another.  This will make it far easier for web designers and web developers to immediately grasp how a web page is structured even if they are brand new to it.

**Improved Semantics**

As the elements used to code a web page are standardized, using the new HTML5 elements, the semantic value of every web page will increase.  As it will be easy to see which parts of the page are headers, nav, footers, aside, etc. and most importantly know what their meaning and purpose is in a machine readable format.

**Improved Accessibility**

With HTML5 it should be possible for assistive technologies to expand on the features they can offer their users as they can immediately build up a more detailed understanding of the structure of a page by looking at the HTML5 elements it contains.

**Geolocation**

The new HTML5 geolocation APIs make location, whether generated via GPS or other methods, directly available to any HTML5-compatible browser-based application. A good example is the Google Latitude for the iPhone. This is a pure Web App not a platform-dependent iPhone application.

**Client-side database**

HTML5 provides a new SQL-based database API that can be used for storing data locally, that is client side. You get fully defined and structured database storage. This allows a developer to save structured data client-side using a real SQL database. It is not a permanent database, but enables you to store structured data, temporarily. The data can be accessed to support the web application and it can even be accessed when the client is disconnected for a short period of time. This database can be used to store e-mails or shopping cart items for an online shopping site.

**Offline Application Cache**

An offline application HTTP cache that can be used to make sure applications are available even when the user is disconnected from their network. All browsers have a cache but they have been very unreliable for delivering whole pages and applications. Mostly the browser would not cache the page properly and so you would be unable to view the page when you disconnected from the Internet. HTML5 provides a smart solution by allowing a developer can specify the files that the browser should cache while online. So, even if you reload the page from the cache when you are offline, the complete page will still load correctly.

**Smarter forms**

HTML5 offers enhanced forms with improvements to text inputs, search boxes and other fields and provides better controls for validating data, focusing, interaction with other page elements on the page and various other improvements.

**Sharper focus on Web application Requirements**

HTML5 is aimed at making it easier to build search front-ends, wikis, real-time chat, drag-and-drop tools, discussion boards and many other modern web elements into any site, and have them work more efficiently

HTML can be used to design and build your mobile Web site. Here is a step by step guide to doing this:

1. To make things easy, you will need Adobe Creative Suite 3 which has Adobe Device Central and Dreamweaver CS3.
2. Launch Dreamweaver CS3. From the Create New option, click on More..
3. Choose HTML from the Page Type button then publish out with the use of the XTHML Mobile 1.0 profile which can be found beneath Doc Type.
4. You can now begin to code your HTML-based mobile Website. It is best that you go for a simple HTML design which is more focused on great content than all the other design perks. There are a number of online sources that can help you with the fine details of HTML coding for mobile Web sites. Try searching for these on Google.
5. Once you are done with the coding, you may want to test the mobile Web site you have built. You do not test it within the browser. Choose "Preview in Browser" then click on Adobe Device Central from the resulting menu. This changes your interface from a desktop to a mobile.
6. In Adobe Device Central, try to choose a target device (look at the Available Devices panel found on the left of the screen) which through which the mobile cards will be displayed. You have the option to choose them manually, or you can build a custom device profile which contains all the possible devices that you wish to support.
7. As soon as you are finished, your code can be loaded and rendered on the devices you have chosen.

**USSD Codes**

USSD stands for Unstructured Supplementary Service Data. This is a protocol used by GSM cellular phones to communicate with the service providers’ computer.

USSD can be used for:

* WAP browsing
* Prepaid callback service
* Mobile-money service
* Menu-based information service
* Location-based content services

USSD will allow you to request information in short codes or menus from the network via your cellphone.

**Advantages of USSD Services**

* Extremely low cost
* Real-time
* Fast and responsive
* Interactive navigation
* Consumer driven
* Can be used as payment method
* Automated response
* Allows for mass-usage

**Disadvantages of USSD Services**

* Little in the way of aesthetics
* Messages cannot be saved or forwarded
* USSD codes aren’t as memorable as other Common Short Codes (CSC)
* Not always reliable due to session-based timeouts

**J2ME**

J2ME stands for Java to Micro Edition. This is a version of JAVA that is used to create mobile applications. It is aimed for small and memory constrained devices.

J2ME advantages include

* improved security
* consistency of applications across platforms and devices,
* superior user interfaces with graphics,
* the ability to function off-line out of wireless coverage,
* peer-to-peer networking
* no licensing expenses needed for the SDK, which means that anyone can create an application and market it
* the J2ME platform allows one to write portable applications

Proposed Modules

# 4.0 PROJECT SCHEDULE

|  |  |  |
| --- | --- | --- |
| ACTIVITY | DURATION | DATES |
| Preliminary Investigations | 1 month | 1ST AUGUST-30TH AUGUST |
| Problem Analysis | 2 weeks | 5TH SEPT-16TH SEPT |
| Requirements Analysis | 2 weeks | 19TH SEPT-30TH SEPT |
| Decision Analysis | 3 weeks | 17TH OCT-4TH NOV |
| Design | 1 week | 7TH NOV-11TH NOV |
| Construction | 4 months | November, December, January, February |
| Evaluation | 1 month | March |

# 5.0 REFERENCES

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