ONLINE ASSET MANAGEMENT SYSTEM

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A PROJECT PROPOSAL SUBMITTED TO THE FACULTY OF LIBRARY INFORMATION SCIENCE AND TECHNOLOGY IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE IN BACHELOR OF APPLIED COMPUTER SCIENCE AT KISII UNIVERSITY

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# DECLARATION AND APPROVAL

**STUDENT`S DECLARATION**

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the dissertation contains no material previously published or written by another person except where due reference is made in the dissertation itself.

ABUCHERI WITNESS DERRICK

IN14/20279/13

Sign: ………………………………… Date: ………………………………...

**SUPERVISOR’S APPROVAL**

This project proposal has been submitted for examination with my approval as university supervisor

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Sign: …………………………………. Date: …………………………………

# DEDICATION

I dedicate this work to my loving parents for their financial support and advice, my fellow classmates for their motivation and encouragement and to all my friends who helped me throughout the proposal writing period

# ACKNOWLEDGMENT

I would like to take this opportunity to thank the Almighty God for His guidance and the far He has taken me and also to acknowledge my supervisor Mr.Okemwa for his continuous, tireless guidance and supervision throughout the entire project proposal writing period. I also acknowledge my parents for boosting me financially to cater for the all costs incurred. May God bless you all.

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# ABSTRACT

With the advent of ever evolving technology, every institution, organization, government agencyand state corporationneeds a proper way of managing its asset information efficiently, and managing it the right way cuts down maintenance costs and also saves time.

­This research project is aimed at developing an online asset management system, that will be used by institutions to maintain and keep records of assets, their condition, their location and the user’s assigned and enable quick access to the asset information. The system will also provide a real-time tracking platform where a user can keep track if his or her asset has been repaired. The system will also allow an inventory of all available assets to be taken online, where the assets status, whether working or not, is updated. The system will also allow transfer of an asset from one location to another for a specific use. The system will also provide a detailed asset profile (Asset history). The system will also help user’s to accurately track an asset’s purchasing and depreciation history and view the asset’s repair and maintenance records online.

To implement the Asset Management System, Hyper Text Markup Language (HTML), Java Script, JQUERY, and PHP Preprocessor Hypertext (PHP), and MySQL as database have to be used.

# CHAPTER ONE

**Introduction**

## 1.1 Background of the Study

An asset is a resource or property having a monetary or economic value, possessed by an individual or entity, which is capable of producing some future economic benefit. Assets are generally brought in businesses to benefit from them and to increase the value of a business. Assets are classified into different types based on their convertibility to cash; use in business or on basis of their physical existence.

Asset Management is a systematic approach of maintaining, upgrading, and operating physical assets cost effectively. It combines engineering principles with sound business practices and economic theory, and it provides tools to facilitate a more organized, logical approach to decision making. Thus, asset management provides a framework for handling both short- and long-range planning. (FHWA 1999). It is a systematic process of deploying, operating, maintaining, upgrading, and disposing of assets cost-effectively. Managing assets allows one­­­ to get maximum value from the use of the assets, right-size IT inventory, and optimize inventory purchase decisions and strategies. Asset management provides one the means to achieve complete visibility into his or her IT infrastructure inventory, helping him or her gain an in-depth understanding of: what systems and equipment exist where components reside, how they are used, what they cost, when were they added to the inventory, when their warranty expires, whether they have an expiry date­­, and how they impact IT and business services (Vinod Mohan, 2013). This level of visibility into asset details will help organizations improve infrastructure efficiency and performance, and minimize related overhead expenses. All organizations, in one way or the other, perform Asset Management. It’s important to implement Asset Management practices intelligently, in order to achieve IT operational efficiency, financial accountability of asset purchase, simpler auditing and compliance, and long-term asset manageability and maintenance. Every business, institution or organization therefore needs a proper way of keeping its asset records as they play a key role in the business or organization’s success.

According to a survey by an author (Brianna Aris, 2016) on local government professionals on the state of their organization’s asset management, Aris says her findings reveal that a poor asset management culture is systemic throughout many councils.

In Kenya, institutions, organizations and government parastatals are facing a difficult time in identifying and tracking of their assets. For instance, during my attachment period at West Pokot County government, I noticed that the County government did not have a proper record keeping system for monitoring and managing its assets. The records on the asset information are still being kept as physical documents then stored in files. This makes it difficult to retrieve information about a specific asset due to the technical manner in which the information is stored.

West Pokot County is also incurring a lot of losses in terms of assets which are being embezzled by some of the officers working at the county. Some officers at the county are misusing the county’s assets for their own personal good. Some use the devices assigned to them for office use for their own personal gain, for example, some use the camera meant for the media team to take photos of their families and friends during vacation.

West Pokot County is also losing its assets due to fraud as some assets are assigned to users or leased for use without the records being noted. Assets assigned wrongfully this way cannot be accounted for in case they get lost or get damaged when being used, thus being losses to the county.

West Pokot County also faces a challenge during inventory taking, the inventory is taken manually, the asset information is recorded on printed papers then after all the inventories have been taken, the information is then fed into MS Excel manually then printed. This process is tiresome and also prone to entry errors such as spelling errors and wrong entries.

West Pokot County also faces a challenge of keeping history of the asset’s information such as the asset’s repair history and warranty information.

## 1.2 Statement of The Problem

The current system being used at West Pokot County is inefficient as it leads to a significant loss of the county’s funds in terms of assets lost through fraud and corruption. The asset records are also vulnerable to getting damaged or getting lost as they are kept as physical documents in physical files. A lot of time is also wasted in retrieving the asset records especially when the records are poorly kept.

This current system also does not provide asset reporting and alerting for example being able to receive alerts on asset warranty and lease expiration, and this leads to some warranties expiring unused or a lease expiring without being notified. The current system also does not provide asset tracking as one should be able to identify and track change in the location of assets, increase or decrease of the number of assets, track assignment status and user information. This calls for a need to develop a system which will be efficient in maintaining asset information.

## 1.3 Objectives

### **1.3.1 General** **Objective**

To develop an online asset management system to keep and maintain asset records for assets available in an institution.

### 1.3.2 Specific Objectives

1. To investigate the existing system so as to determine the system requirements.
2. To design and develop a user friendly online asset management system.
3. To test and validate the developed system

## 1.4 Scope of The Research

The scope of my research is West Pokot county government, in particular the asset management system by the ICT department.

## 1.5 Justification

A variety of Asset management software products exist in the market which can be used to manage IT equipment efficiently. But often these Asset management software products do not always fulfill all the IT requirements of an organization. For example, most of the Asset management software products available in the market manage hardware and software assets quite well but fail to offer real time access to the asset information, offer real time tracking of an asset’s location, fail to keep properly inventory records about the assets’ condition.

The proposed online Asset management system is set to address the core aspects surrounding the overall management of asset records in institutions. It is not only designed to simplify the process but also to provide an avenue in which accountability, efficiency, reliability, availability and security can be achieved in the management process. Efficiency and effectiveness is in regard to speed in generation of reports, file organization, editing of recorded information, utilizing the available resources like printing and storage of data at centralized database hence ease retrieval of data. Security is enhanced by use of password and privileges allocation which is assigned to each user of the system. Reliability is upheld by making information available online for easy retrieval and access at any given time from anywhere.

# CHAPTER TWO

**LITERATURE REVIEW**

## 2.1 Introduction

Technology is advancing very fast and due to these advancements, there is need to cope up with them. ICT plays a key role in every country’s economic development.

Over the last decade, Kenya has experienced substantial growth in ICT, with the period between 2013 and 2014 seeing up to 8.4 percent improvement in this sector (Ogutu, 2015).

“Since 2000, Kenya’s economy has grown at an average of 3.7 percent. Without I CT, this growth would have been at 2.8% and per capita income would have stagnated” (Ogutu, 2015). During the first decade of the 21st century, ICT was responsible for the growth of approximately one-quarter of Kenya’s GDP.

Kenya has been ranked among the top 5 African countries with the fastest growth in telecommunications, infrastructure and mobile money innovations (Ogutu, 2015). The engine behind the rapid growth has been mobile telephony which has caused a mobile revolution in the country. Mobile penetration in Kenya is currently at 82.6 per cent with 33.6 million subscribers, proving that the mobile phone is an important tool in transforming lives.

ICT plays a large role in our day-to-day lives, addressing challenges facing Kenyans in general. Particular sectors such as finance, health, education, agriculture and the government are quickly embracing technology for dissemination of information, enhancement of service delivery and to reach their customers more effectively and efficiently.

The financial inclusion agenda in Kenya has borne positive results with 2 out of 3 adult Kenyans being part of the formal financial ecosystem. The growth of MPESA in the country has driven change in the business model of most financial institutions in the country. Mobile money agents represent three quarters of the total financial access points in Kenya and are a major driver in bringing financial access points closer to the population.

In the health sector, ICT is used to provide health tips and improve access by the general public to quality health care. ICT is also used to improve procurement and distribution of medicine and medical supplies, as well as monitor and encourage attendance of mothers at ante-natal and post-natal clinics, particularly among pastoral communities.

In education, ICT enables more children to affordably access learning content. This area has huge potential for growth in enabling online education and facilitating massive and open online content.

The agriculture sector is also rapidly adopting the use of ICT. Already, ICT is being used to monitor distribution of fertilizers and to disseminate information to farmers on how to increase yields and access markets through the use of mobile devices (Cespedes, 2013). The government has identified the potential of ICT in deriving the economy and has embarked on several transformative ICT initiatives. The launch of Huduma Centers as one-stop shops that aim to provide a wide range of services demonstrate how ICT can be leveraged to substantially improve public service delivery.

The private sector in partnership with the government has also played a critical role in driving some of the projects including use of mobile payment platforms to collect government revenue such as e-citizen and e-jiji payments. The digital economy holds huge potential for growth, so ICT will be expected to play an increasing role in affording opportunities to the youth of the country to play an active role in the sector.

## 2.2 ICT and Devolution

The devolved system of government that Kenya adopted after the March 2013 general election holds a lot of promise to unlock the country’s economic, social and political fortunes which have been stifled by a centralized system of government since independence. Devolution main goal is to result in equitable development in all parts of Kenya, and has in the last two years delivered encouraging results in many counties.

Each of the 47 county governments in Kenya is one way or another embracing ICT in its day to day activities and this is aimed at improving services rendered to the common Kenyan. The Meru County government for instance, has embarked on a programme of integrating ICT in delivery of services, through installation of ICT infrastructure in the departments and this is aimed at faster delivery of services such as business licensing, payments and land management.

ICT is being embraced by some county governments to improve service delivery to the citizens, fight corruption and mange resources.

## 2.3 Overview of the existing System.

West Pokot County government has yet to fully embrace ICT in its day to day operations despite having appropriate ICT infrastructure in place. A manual record keeping system currently exists. A lot of time is used in retrieval of records, it’s hard to maintain and update information in this system too.

## 2.4 Related Systems.

### 2.4.1 Nimbus Software

Nimbus software is suited to managing a wide variety of IT equipment like servers, network services, switches, routers, emails and graphical display. Nimbus software is rather sophisticated. At West Pokot County government, the IT-maintenance need is more on hardware like CPU, memory, monitors, drives, printers etc and software like operating system, Microsoft office, antivirus etc.

### 2.4.2 ManageSoft

ManageSoft tracks and analyzes software and hardware assets with reduced IT costs and improved IT service levels. ManageSoft however lacks the ability to support heterogeneous networking in Mac environment and input non-PC data such as information on telephone system, office material manually into the inventory database.

### 2.4.3 Syslist

Syslist can quickly search the organization’s inventory for useful information such as serial numbers, IP addresses or a list of PCs with a given software type installed. Unlike ManageSoft, Syslist is uniquely built to accommodate non-PC data such as, information on telephone system, office material manually into the inventory database. While Syslist does support Unix and Linux environment, it does not support heterogeneous networking in Mac environment.

## 2.5 The Proposed System

Online Asset Management System is a web based asset management aimed at solving the asset management problem at West Pokot County.

It combines all the concepts of the above related systems and fill in all the gaps had been created

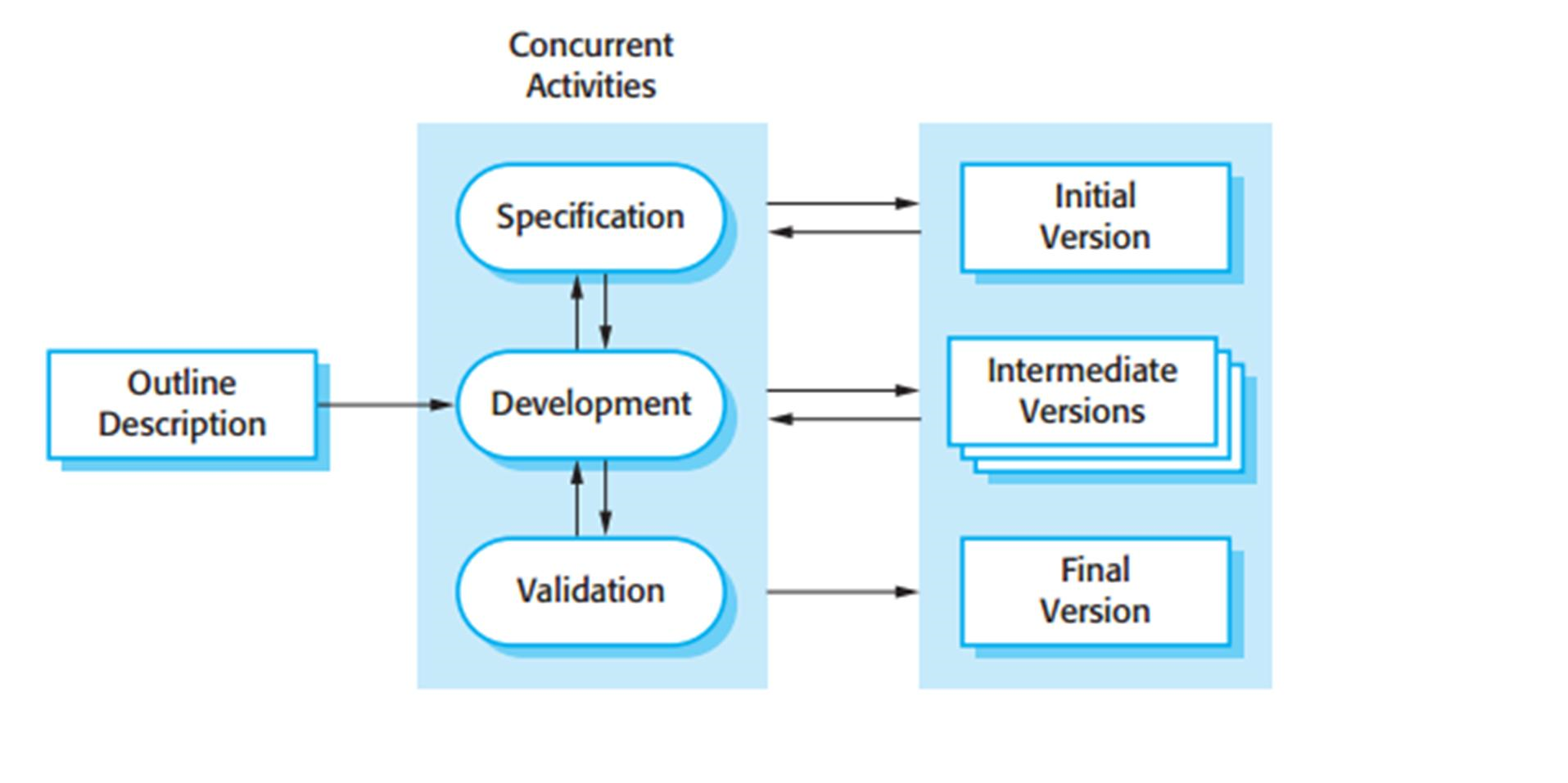
by the present manual system. How does it fill?

1. It is a responsive web based application thus will be accessed by any device (Smartphone, tablet or computer) with internet connectivity from anywhere at any given time of day or night.
2. Storing, tracking, modifying and maintenance of the asset records will be simple.
3. Cases of corruption will reduce drastically as the asset management process is automated handled by a system and everything is recorded, analyzed and stored in databases for future reference.
4. The asset records will be secure and readily available as they will be stored in the cloud.

# CHAPTER THREE

## METHODOLOGY

## 3.1 System development methodology

The proposed system will be developed using incremental process model. This is because it allows gradual development, as mistakes are being corrected and evaluation can be done at initial stages of development, and new functionalities can be defined for later increments.

Incremental methodology has various benefits which include; First, after each iteration, regression testing should be conducted. During this, testing faulty elements of the system can be quickly identified because few changes are made within any single iteration. Second, it is generally easier to test and debug than other methods of software development because relatively smaller changes are made during each iteration. This allows for more targeted and rigorous testing of each element within the overall system. Incremental has limitations too, as additional functionality is added to the product, problems may arise related to the system architecture which were not evident in earlier prototypes or first stages

## 3.2 Analysis and Design Tools

### 3.2.1 System Analysis Tools

#### 3.2.1.1 Interviewing

Interviewing will be used as the data collection technique since the researcher will be able to get the information about the challenges encountered during the asset records management process from the people in charge like the ICT director and other employees.

#### 3.2.1.2 Observation

The researcher will also use observation as a data technique as he/she will be able to learn how the whole asset management record keeping system is done at West Pokot County.

### 3.2.2 System Design Tools

#### 3.2.2.1 Flow charts­­

Flow charts will be used to show the flow of data within the system. Flow charts are easy to draw and interpret because they are straight forward. They can be used to model the flow of data as the user key in data. Though, flowcharts are useful in efficient coding, debugging and analysis of a program, drawing flowchart in very complicated in case of complex programs and often ignored.

#### 3.2.2.2 Use case diagrams

Shows representation of a user's interaction with the system, depicting specification and association relationships. A use case diagram can portray the different types of users of a system and the various ways that they interact with the system. This type of diagram is typically used in conjunction with the textual use case and will often be accompanied by other types of diagrams as well.

#### 3.2.2.3 Sequence diagrams

A sequence diagram is an interaction diagram that shows how processes operate with one another and in what order. It is a construct of a message sequence chart. It shows object interactions arranged in time sequence. It depicts the objects and classes involved in the scenario and the sequence of messages exchanged between the objects needed to carry out the functionality of the scenario. Sequence diagrams are typically associated with use case realizations in the Logical View of the system under development. A sequence diagram shows, as parallel vertical lines (lifelines), different processes or objects that live simultaneously, and, as horizontal arrows, the messages exchanged between them, in the order in which they occur. This allows the specification of simple runtime scenarios in a graphical manner.

#### 3.2.2.4 Component diagrams

Component diagrams are particularly useful with larger teams. The initial architectural modeling effort focuses on identifying the initial architectural landscape for the system. UML component diagrams are great for doing this as they enable you to model the high-level software components, and more importantly the interfaces to those components. Once the interfaces are defined, it makes it much easier to organize the development effort between sub teams. There is need to evolve the interfaces to reflect new requirements or changes to the design as the project progresses.

## 3.3 System Implementation Tools/Techniques

This is a collection of all the hardware and software resources necessary for the development of the proposed system.

**Hardware Requirements:** Core i3 processor, 4GB RAM, 500GB Hard Disk.

**Front End:** HTML5, CSS3, JQUERY, JavaScript, Bootstrap.

**Back End:** PHP 7.0. MySQL

**Text Editors:** Atom, Visual Studio Code

**IDE**: Adobe Dreamweaver CC 2015

## 3.4 System Testing and Validation

System verification and validation involves the reviews and walkthroughs that the researcher will use. Testing and validation of the online asset management system will involve the following methodologies:

### 3.4.1 Unit Testing

Each component/unit of the developed system will be tested separately, the user module, administrator module.

### 3.4.2 Incremental integration testing

Continuous testing of the system will be done as new functionality is added. The various aspects of the system’s functionality will be made independent enough to work separately before all parts of the system are completed.

### 3.4.3 Regression testing:

This involves re-testing the system after fixes or modification are made on the system. The developed system will be tested after new modifications are made

### 3.4.4 Security Testing:

The system will be tested to determine how well it protects against unauthorized internal or external access to ensure maximum security.

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# APPENDICES

## Appendix (I): Project Gant Chart

|  |  |  |
| --- | --- | --- |
| Length in days | 5 | 30 |
| Idea generation |  |  |
| Proposal writing |  |  |

## Appendix (ii): Estimated budget for the project

|  |  |
| --- | --- |
| ITEM | COST(KES) |
| Materials, Services and Expendables  Printing (Proposal)  Stationery (3 Pens and Papers)  Photocopying cost  1 Flash Disk and 5 CDs  Modem  Bundles | 1000.000  200.00  200.00  700.00  2000.00  2000.00 |
| Laptop | 45,000.00 |
| Miscellaneous | 1000.00 |
| **TOTALS** | 52,100.00 |