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(Digi-Law Firm)Legal Firm Information Management system

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ABSTRACT

Law is one of the biggest industries in Kenya. The importance of lawyers and law firms in the contemporary society cannot be underestimated. The Latin adage that a man is a wolf to man gives the tip of what the world would have become in the absence of lawyers and law firms. Everyone should have equal access to justice as it is the constitution of Kenya. Law firms are important in the sense that they help the general population to ensure that they have fair access to justice they are seeking. Law firms are a society's gateway to justice their population is entitled to.

Coupled with the weight of expectant Kenyans in the Legal field, a myriad of pending or undecided cases, some even 'lost' or missing, some available but illegible, smart solutions needed to be developed to cure the thirst of the country's over-reliance on manual bureaucratic processes to a more modern Techno-advance process albeit 'simple' and user friendly.

Law firms in Kenya have large volumes of data locked away in old files and difficult to any way meaningful. Digitizing this data would allow firms to use the data in new cases in a myriad of ways. It can be used to link case together and therefore predict the possible outcomes and processes required for new cases.

Today's law firms cannot stay competitive without case and document management technology to help them organize all their client data in a centralized way. There is need to create a seamlessly integrated solution that brings comprehensive financial and practice management together with a full-featured document management system. Through this, lawyers and legal staff can operate a more effective, productive and profitable law practice.

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1.0. INTRODUCTION

1.1. Background Information

The work of legal practitioners involves a high level of documentation and information processing, storage, and retrieval. The information intensiveness of a lawyer's responsibility is such that tools and technologies that would speed up the documentation, management and information handling are not only important but professionally necessary. The value of accuracy, correctness, completeness, relevance and timeliness are characteristics of information which ICT systems do generate to meet lawyer's information needs. Documentation is a cardinal aspect of the legal institution responsibilities. The legal process is undoubtedly documentation-intensive. Whether in drafting agreements for clients, or legislative drafting or litigations and preparing writs. Because the volume of legal materials is rapidly increasing, the number of random and meaningless association made on the keyword search increases, hence, this has proved to be an inefficient means of retrieving information.

The legal system is essential to maintain stability and order in the society. Law firms in any civilized society settle fundamental human rights, disputes and clashes. A legal practitioner in Kenya is a barrister as well as a solicitor whose primary duties are; advocacy, litigation, counseling, preparation of legal document, etc. A lawyer defends his client (s) in the court of law by applying the principles of law to the evidence available, by providing relevant facts. Lawyers enlighten the public of their constitutional rights and ensure that people are not deprived of their fundamental human rights such as freedom of association, speech, opinion, religion etc.

Because the volume of legal materials is rapidly increasing, the number of random and meaningless association made on the keyword search increases, hence, this has proved to be an inefficient means of retrieving information. There was an observation that, 'the impact of improved access to legal materials by modern legal information systems is weakened by the exponential growth in the quantity of materials.' This give rise to the development of the Artificial Intelligence (AI) techniques and Expert system (EM) to emulate the substantial legal jobs performed by the legal expert and to provide solutions to all legal problems, as would a real life expert. There is a suggestion that other information retrieval systems are only good for text representation while artificial intelligence can include knowledge representation.

1.2. Problem Statement and Justification

1.2.1. Problem Statement

Law firms in Kenya use hard copy case files in their day to day operations. Important client records, that lawyers rely on daily, typically are managed by being archived in a filing cabinet that can take up valuable office space. These filing cabinets are not secure, so maintaining secure client records is a challenge. In addition, the retrieval of these documents by employees can be a time consuming, grueling process, especially if a document has been misfiled. The use of manual filing

makes it difficult for the law firm to list all the cases it is handling, linking all the files associated with the case matter, showing case dates and linking the clients with the case matters.

Secondly, law firms in Kenya currently use manual billing system. When a client comes to seek for counsel, he/she is required to pay cash directly to the cashier or to queue in the bank to make the payment. At the core of every successful law practice is efficient legal billing system. Time and easy legal billing process eliminate the tedious aspects of time tracking, billing and invoicing with simple, straight forward approach.

Thirdly, in the current situation, law firms in Kenya use a manual human resource system to assign staff to different cases. It is always a challenge to track performance of staff, attendance, workforce analysis, and scheduling through assigning attorneys and support staff to specific roles within the law firm.

1.2.2. Project Justification

The move from paper to electronic forms is a vital step in the evolution of a modern organization nervous system. Once in place, a digital nervous system is easy to build on. Easy to build web pages are everything needed for eliminating internal paper forms. Streamlining administration of justice and internal processes is an important way to improve the overall efficiency in law firms. The benefit to the litigant public is that the members of staff spend less time shuffling papers and more time attending to the needs of the litigant public.

In a nut shell, this law firm management information system will have the following modules:

- Case Managent whereby it will list all the cases, describe all the cases, give case dates, list all files associated with a given case and to link cases with clients.
- A min HR module that handles each staff allocation to each case to handle in a medium sized law firm
- A financial module to handle payments and credits for each case
- Use historic data for predictive analysis. Digitized law firm data would allow the law firm to use the data in a myriad of ways. With this system, different cases will be linked together and therefore predict the possible outcomes and the process required for new cases. The system will also analyze past cases to predict the probability of the firm handling similar cases in future.

1.3. Goal and Objectives

1.3.1. Goal

To develop a medium sized law firm information management system that is used digitized case files instead of hard copy case files that are used at the moment. The system's core function will be to perform case management that involves listing all cases, descriptions and case dates. The system should have mini Human Resource that shows each staff assigned each case to handle. The system to be built will have a financial module that should handle payments and credits for each case.

1.3.2.   Objectives
1.3.2.1.   Research Objectives

- To research how Kenya law firms work
- To research on the effects of using hard copy legal cases files in law firms
- To research on Case Managent in Kenyan medium sized law firms
- To research the applicability of artificial intelligence in law

1.3.2.2.   System Development Objectives

- To develop a platform for efficient legal case management: List all cases, Case descriptions, Case dates.
- To develop a financial module that supports payments and credits for each case.
- To develop a platform that assists law firms to locate all files associated with all the cases based on clients.
- To develop a Human Resource Module for a medium sized law firm that assigns each staff to a given case to handle.
- Electronic paper trail. To develop a system that supports digital case files.

1.4.   Project scope

The deliverables of this project is a tested, functional and usable web application of medium sized law firm Information Managent information system. It will consist of the following functional elements:

- Case management – It will list all the cases, describe all the cases, give case dates
- A module to list all files associated with the cases and the clients.
- A financial module to handle payments and credits for each case.
- A mini Human Resource module that shows each staff assigned each case to handle in a medium sized law firm.
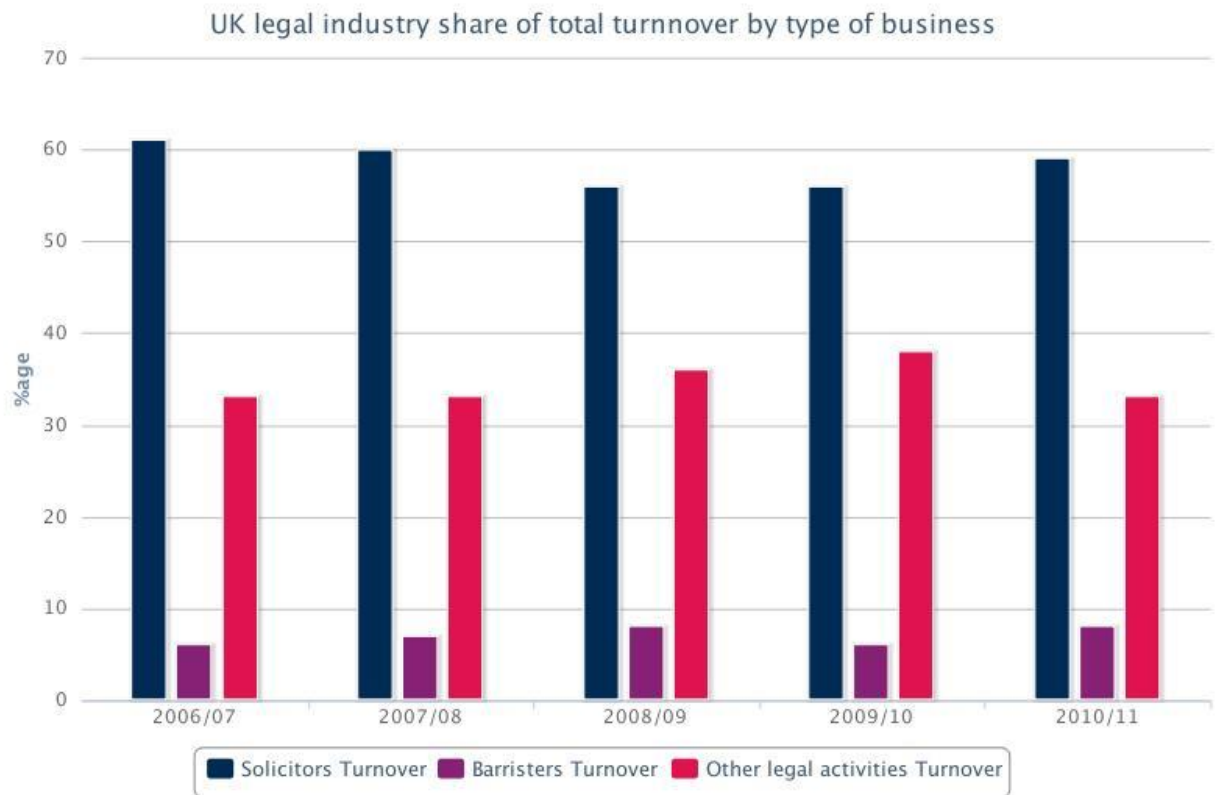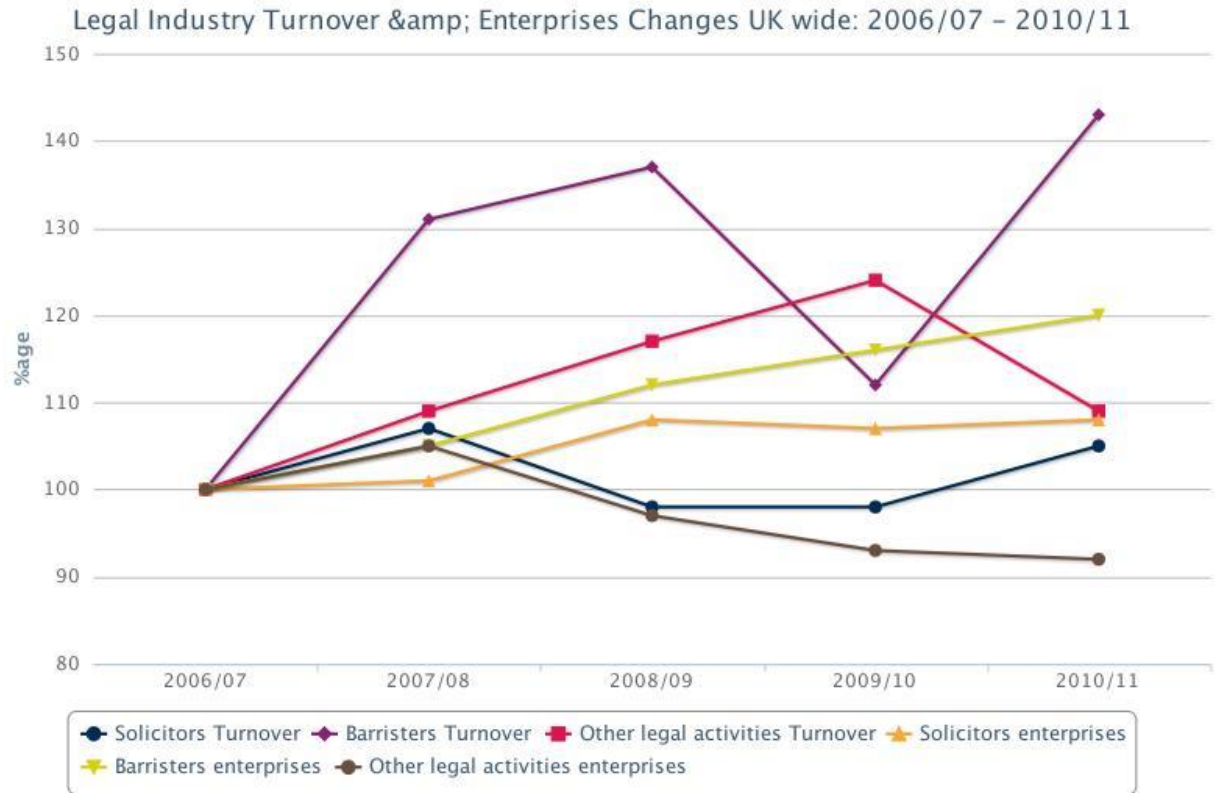
2.0. LITERATURE REVIEW

2.1. Introduction

This chapter reviews on law firms, how they manage cases, human resources management, financial management, case files handling and the already existing legal cases management systems for law firms.

2.2. About Law Firms

A law firm is a business entity formed by one or more lawyers to engage in the practice of law. In another definition, a law firm is an association of lawyers who practice law under a specific firm name (USLEGAL Definitions). The services of lawyers are needed in almost all human endeavors such as banks, insurance, companies, government institution etc. The primary service rendered by a law firm is to advise clients (individuals or corporations) about their legal rights and responsibilities, and to represent clients in civil or criminal cases, business transactions, and other matters in which legal advice and other assistance are sought. Legal services are an important consideration for any individual or business owners who often face a number of legal hurdles.

Traditionally, the law firms were partnerships. Currently, the law firms organized in a variety of ways, depending on the jurisdiction in which the firm practices. Sole proprietorships, general partnerships, professional corporations, Limited Liability Company, professional association, Limited Liability Company and limited liability partnerships are some of the common arrangements. Many law firms have a hierarchical structure. The partners supervise the senior associates who in turn supervise their junior associates. The law firm also employ the paralegals to help them. The associates are usually employed on a track to partnership. Looking at the number of individual authorized persons over time shows large increases for solicitors and barristers, with falls in the number of trademark attorneys. However this fall may be a result of changes in dual registrations between trademark and patent attorneys. The biggest increase is solicitors working in-house.

Legal Industry Turnover & Enterprises Changes UK wide: 2006/07 – 2010/11

Legend: Solicitors Turnover, Barristers Turnover, Other legal activities Turnover, Solicitors enterprises, Barristers enterprises, Other legal activities enterprises

UK legal industry share of total turnnover by type of business

Legend: Solicitors Turnover, Barristers Turnover, Other legal activities Turnover

Fig 1. Legal turnover

2.3. Law Firms in Kenya

Law firms in Kenya are ordinarily named after the members or partners establishing the firms. Most law firms are either a sole proprietorship or a partnership. Most partnerships in Kenya are established under the Partnership Act No 16 of 2012. A sole proprietorship is registered under the Registration of Business Names Act CAP 499.

The rule 12 of the Advocates Practice Rules provides that "No advocate shall practice under any name or the name of a past or present members of the firm". Lately, there has been quite a number of consultancies offering legal services in Kenya. Currently there is no standard regulated way of formalizing the engagement of advocates as compared to jurisdictions such as the United Kingdom where the Client Care Letter is mandatory. Generally, a client will first meet an advocate and, depending on the nature of legal work, they will come to an agreement on the scope of work to be done and the fee to be paid for such work. Recently firms dealing with international clients have adopted the practice of preparing an engagement letter which sets out the nature and scope of the work to be done, the mode of billing, the partner/associate in charge and the systems for informing the client of the matter's progress. Law firms are advised to insist on this practice as a way of formalizing the engagement of the law firm's services and to be clear on the terms of engagement.

Fees chargeable by advocates are regulated under the Advocates (Remuneration) Order (**the Order**) which prescribes the range of minimum fees to be charged for certain classes of work. Advocates are not to charge below such a fee as this would be deemed to be undercutting, which is prohibited. However, there is no ceiling on the amount of fees that may be charged. The fee over and above that which is provided under the Order must be agreed upon between the advocate and the client. Therefore, the fee quoted by a firm for a particular type of work would depend on the type of law firm, the experience/seniority of the advocate engaged and the type, value and complexity of work to be done among other factors. For classes of work (such as commercial contracts and employment matters) where no fees are prescribed in the Order, an advocate will quote fees based on the type, value and complexity of the matter.

2.4. Legal Information needs of Law Firms in Kenya

According to a case study done by Japhet Otike, Graham Matthews, (2000) "Legal information needs of lawyers in Kenya: a case study", Library Management, Vol. 21 Iss: 5, pp.241 – 252 in the University of Loughborough, 1994-1998, Lawyers operate in an information-intensive environment. Everything they do, whether providing legal advice, representing a client in court, or drafting a legal document requires information. Uche (1981, p. 45) observes that the lawyer probably ranks second to the historian as the leading user of information. Lawyers' constant reference to information is certainly the main reason for lawyers calling themselves special people – anyone who has been close to them will have heard them addressing each another as "learned friend". There must be something in their claim, because unlike a scientist, a lawyer has no laboratory equipment and no experiments to conduct. She/he is highly dependent on information

produced in various forms. A lawyer's work is demanding both in time and effort. Anything less than perfection is likely to negatively affect the outcome of a court decision or influence a legal argument. The resultant court decisions have a significant effect on the people involved, and to some extent, the administration of justice. Lawyers are some of the busiest professionals. Ademola (1994, p. xviii) observes:

The legal profession is a highly book-reading consumption profession. In my household, I observed the difference between members of my family who are in the sciences and medical profession, and those who are in the law. The lawyers have no time for any worthwhile recreation, they are always with one case or another. Those who are in other professions can continue to talk to you till midnight or thereafter when they are not wanted in the hospital or laboratories.

The importance of information to a lawyer is reiterated by Bello (1994, p. ix). He argues that books are the tools of trade of the legal profession. Thus, of all the professions, law has the largest collection of books because a well-stocked reference law library is important to the lawyer, as well as to the judge in the administration of justice. A lawyer will always make a poor submission if he does not refer to legal authorities, and a judgment will not be as rich without referring to previously decided cases as authorities. It is further observed that a lawyer is better off without a wig and gown, as he may still make a living as a solicitor, legal executive, or as an advocate appearing before those courts that carry on happily without robes. But with no library he would be sharing the fate of a blind man holding a driving license (Jegede, 1994, p. xii).

2.5. Law Firms and ICT

According to an article done by the Law society of Kenya on **Why Law Firms Should Embrace ICT**, Mr. Eugene Nyamunga, Advocate argues that ICT is important in client billing, case and file management. He further says that ICT cannot be ignored in the modern legal profession as it is also useful in performance appraisal, budgeting, task management, accounting and human resource. It is important to store data and back up and proposed enhanced security by automated backups in multiple locations. Lawyers should also look at ICT as research tool following advantages that include easy access to legal reference materials. In the article, it is argued that Electronic books and law reports do not wear or fade compared to hard copies and are also flexible and easily available. The future outlook between interaction of ICT and Law Firms is the virtual law firm. **Virtual firms** are organized business entities which primarily do not utilize the central office to house advocates and permanent staff but relies on technology. The article further says that ICT cannot be ignored by modern law firms in an increasingly shrinking global village and challenging legal profession.

Lawyers and legal advisors' use of computers is virtually universal. In Spain, the use of computers is now at 99% (Ministry of Industry-Reds.es 2004). The practice of law is in its core the provision of specialized knowledge and services in a variety of ways. This knowledge is

acquired from internalizing valuable information gathered during legal studies, legal research and legal experience. The processing of information to knowledge is a personal, subjective process emerging from previous experiences and current events (Roos, et al., 1997:25). With the advent of sophisticated technologies such as today's information and communication technologies (ICTs) the amount and accessibility of data and information have proliferated exponentially. Several studies have shown that in the most recent year's advances in the ICTs are transforming the methods that lawyers use to access, retrieve and process information in order to deliver legal services to clients (Archbold, 1998:3-5, 73-74; Taljaard, 1988:5; Van der Merwe, 2000:265-269). So, for example, is having a personal computer or the availability of computers for use at the law firm and access to a network not only becoming a critical tool in a variety of aspects of legal practice (Deya, 2001), but it is also becoming commonplace in countries with an established information infrastructure (Gottschalk, 2002a).

The use of technology in legal practice includes a variety of so-called back-office functions, such as accounting, billing and record-keeping, to more traditional lawyering tasks such as document creation, litigation support, computerized legal information searching and information distribution (Granat, 2001; Platt, 2001a:407-409; Singh,et al., 2002). In short, as Katsh perceived in 1994: The functions and possibilities of the new information technologies are enabling lawyers to become increasingly productive and more effective and efficient in their practice and research

In the information era legal practitioners are confronted by the recognition that, not only is the ability to access the right information when it is needed extremely important, but also that the expectations about response times are changing greatly. Lawyering in the information era further comprises being focused on the goal of using information efficiently and profitably with sensitivity to the fact that as one uses information electronically one is also creating new informational by-products that not only can have great value, but can also create problems if left unmanaged. This comes down to the point that having timely access to the right information and supplying the right information quickly is more important than ever before (Katsh, 1995:173-174). It also means that responding to client needs efficiently requires sharing information electronically with clients, colleagues, consultants, acquaintances and/or experts. Excellence in legal practice and in legal research, being the particular concern of this study, may thus nowadays also include the exploitation of links to managed digital legal information organized by experts in the field of managing digital information.

2.6. Information and Knowledge management in Law firms
Law is a knowledge intensive industry with at its core the provision of specialized knowledge and services in a variety of ways. Fundamentally, the business that lawyers are in is the sale of their knowledge (Kay, 2002; Lamont, 2002). Knowledge is acquired from internalizing valuable information gathered during legal studies, legal research and legal experience through years of practice. It is important to distinguish between information gathering and legal research. The first involves getting hold of relevant data and turning this data into information ready for potential application; and the latter involves turning relevant information into knowledge to be applied to an actual situation. This chapter will focus on information and knowledge management (IKM), which concerns both the processes of information gathering and legal research.

In this age of information abundance, lawyers face a multitude of information sources in printed and electronic format and an exponential increase in the amount of information they must digest. Lawyers cannot risk missing a critical piece of information. The information they require must be accurate and authentic and they must be able to access the information in a timely fashion. With a large percentage of data and information being created, disseminated and stored electronically, electronic measures lie at the heart of information and knowledge capture and exploitation in the legal domain (Jeffries, 1999; Katsh, 1995:173-174; Susskind, 1996:46). This chapter firstly surveys alternative definitions of information and knowledge with a brief discussion on the distinctions between data, information and knowledge. It then considers the nature of knowledge and the approaches to knowledge management (KM) after which it tries to offer an extensive view of KM in the law firm.

2.7. Case Management in Law Firms

When people talk about legal case management, they may also use the terms matter management or practice management. In the Kenyan context, case Managent is done manually using hard copy files. Since the beginning of the office technology boom in the 1980's lawyers have been accused of being Luddites, fearful and reluctant to adopt modern technology. Lawyers are often compared unfavorably in this arena to accountants and even doctors. A more objective view of lawyers demonstrates that they will adopt effective technology with enthusiasm when the tools are appropriate for the professional tasks that they face.

Successful lawyers are rightly reluctant to abandon the personal working habits and tools that produced their successes. Lawyers are well supported with clerical staff because their time is valuable. Technology innovations must fit into the pattern of their work with seamless ease. It is almost always easier, faster and more "productive" to delegate to support staff any new effort that interferes with the lawyer's time-tested means of working.

Abraham Lincoln famously said, "A lawyer's time and advice are his stock in trade." Lincoln's statement, made two centuries ago, describes practicing law in the modern paperless state, said Benjamin Yale, author of *The Paperless Office*, in his new book. "Time becomes more relevant and more valuable, as it is not just time, but better-quality time," Yale wrote. A paperless practice, he contends, allows a lawyer to move with "less effort, greater speed and more focus".

Flexible case and matter management is essential to deliver efficient, effective and responsive legal services that will maintain customer loyalty, contain costs, optimize the use of resources and, as a result, maintain profitability.

2.8. MACHINE LEARNING AND LAW

Because machine learning has been successfully employed in a number of complex areas previously thought to be exclusively in the domain of human intelligence, this question is posed: to what extent might these techniques be applied within the practice of law? 52 We have seen that machine learning algorithms are often able to build useful computer models of complex phenomena frequently by detecting patterns and inferring rules from data. More generally, we have seen that machine learning techniques have often been able to produce "intelligent" results in complex, abstract tasks, often not by engaging directly with the underlying conceptual substance of the information, but indirectly, by detecting proxies and patterns in data that lead to useful results. Using these principles, this Part suggests that there are a subset of legal tasks often performed manually today by attorneys, which are potentially partially automatable given techniques such as machine learning, provided the limitations are understood and accounted for.

I emphasize that these tasks may be partially automatable, because often the goal of such automation is not to replace an attorney, but rather, to act as a complement, for example in filtering likely irrelevant data to help make an attorney more efficient. Such a dynamic is discussed below in the case of automation in litigation discovery document review. There, the machine learning algorithms are not used to replace (nor are they currently capable of replacing) crucial attorney tasks such as of determining whether certain ambiguous documents are relevant under uncertain law, or will have significant strategic value in litigation. Rather, in many cases, the algorithms may be able to reliably filter out large swathes of documents that are likely to be irrelevant so that the attorney does not have to waste limited cognitive resources analyzing them. Additionally, these algorithms can highlight certain potentially relevant documents for increased attorney attention. In this sense, the algorithm does not replace the attorney but rather automates certain typical "easy-cases" so that the attorney's cognitive efforts and time can be conserved for those tasks likely to actually require higher-order legal skills.

2.8.1. Legal Predictions

Machine learning algorithms have been successfully used to generate predictive models of certain phenomena. Some of these predictive capabilities might be useful within the practice of law.
The ability to make informed and useful predictions about potential legal outcomes and liability is one of the primary skills of lawyering.54 Lawyers are routinely called upon to make predictions in a variety of legal settings. In a typical scenario, a client may provide the lawyer with a legal problem involving a complex set of facts and goals.55 A lawyer might employ a combination of judgment, experience, and knowledge of the law to make reasoned predictions about the likelihood of outcomes on particular legal issues or on overall issue of liability, often in contexts of considerable legal and factual uncertainty.56 On the basis of these predictions and other factors, the lawyer might counsel the client about recommended courses of action.
The ability to generally assess the likelihood of legal outcomes and relative levels of risk of liability in environments of considerable legal and factual uncertainty is one of the primary value-added functions of a good lawyer. As a general matter, attorneys produce such estimations by employing professional judgment, knowledge, experience, training, reasoning and utilizing other cognitive skills and intuitions.57 However, as Daniel Katz has written, such prediction of likely legal outcomes may be increasingly subject to automated, computer-based analysis.

2.8.2. Document Classification and Clustering

The practice of law is intertwined with the production, analysis, and organization of text documents. These include written legal opinions, discovery documents, contracts, briefs, and many other types of written legal papers. Outside of law, machine learning algorithms have proven useful in automatically organizing, grouping, and analyzing documents for a number of tasks.72 This Subpart will explore two machine learning methods that may be relevant to the automated analysis and organization of legal documents:

1) Document classification; and
2) Document clustering

2.8.2.1. Automated Document Classification

In a document classification task, the goal of a machine learning algorithm is to automatically sort a given document into a particular, pre-defined category. Often such classification is based upon the document's text and other document features.

2.8.2.2. Classification of Litigation Docket Documents

Core documents associated with a lawsuit might include the complaint, multiple party motions and briefs, and the orders and judgments issued by the court. In a complicated court case, there may be several hundred documents associated with the case. However, obscured within such collections of hundreds litigation docket documents, there may be a few especially important documents—such as the active, amended complaint—that might be crucial to access, but difficult to locate manually. Electronic court dockets can become very lengthy, up to several hundred entries long. A particular important document—such as the active, amended complaint—may be located, for example, at entry 146 out of 300. Finding such an important document within a larger collection of less important docket entries often can be difficult.

The task of finding and organizing core case documents can be thought of as a document classification task. Analogous to the spam filtering example, a machine learning algorithm may be trained to learn the telltale characteristics that indicate that a particular document is a complaint rather than, say, a party motion. Such an algorithm could be trained to automate classifications of the documents based upon features such as the document text and other Meta information such as the descriptive comments from the clerk of the court. Thus, key electronic court documents could be automatically identified as "complaints," "motions," or "orders," by machine learning algorithms, and parties could more easily to locate important docket documents thanks to such automated classification.

2.8.3. Clustering and Grouping of Related Documents

In clustering, a machine learning algorithm attempts to automatically group items that are similar in some way on the basis of some common characteristic that the algorithm has detected. In other words, the algorithm attempts to automatically detect hidden or non-obvious relationships between documents that would not otherwise be easily discoverable, and group such related documents together.

2.9. Types of Law Firms

Law firms come in a variety of shapes and sizes, ranging from single-attorney law practices to multi-state, multi-staffed legal organizations. In addition, law firms in the U.S. are generally

equipped to handle nearly every legal challenge facing individuals, small businesses, and large corporations.

Depending on your legal issue, there are a variety of law firms to choose from, generally broken down by size, type of practice, (for example, litigation, criminal defense, or transactional), location, or legal topic (like personal injury law, family law or tax law.) While there is no one-size-fits all solution to solving legal problems, choosing the right law firm can make the difference between a successful outcome and missed opportunity. Knowing which law firm to hire will depend on a number of factors - including your finances, geographical location, personal work preferences, and your specific legal challenge or need.

Below is a summary of the various types of law firms available in most areas.

2.9.1. Solo Law Firms
As the name suggests, solo law firms are run by a single lawyer. These "solo practitioners" typically handle general legal matters on a variety of topics -- ranging from personal injury law to family law, but may also specialize in one particular area of law, like patent law. There are several benefits to working with a solo law firm, especially if you have a single legal issue to resolve or if you are looking at ways to reduce costs. Generally, solo law practices are less expensive than their larger legal counterparts, and they often have the flexibility to hire outside staff such as paralegals and legal experts - to help lower costs and/or assist with special tasks. They can also provide more one-on-one personal attention since the attorney would be working on your case usually single-handedly.

On the other hand, solo law firms may lack extensive experience or resources - especially if the attorney is a recent law graduated who recently decided to "hand up their shingle" or has limited access to fee based legal resources and data.

2.9.2. Small Law Firms
Small law firms, also referred to as "boutique" law firms, generally employ from two to ten attorneys -- often allowing the lawyers an opportunity to collaborate with other lawyers on complicated or related legal matters. Because of the close-knit circle of lawyers in small law firms, these firms often have the "feel" of solo law firms - such as having close one-on-one attention - but may also allow for representation on a broader range of legal topics.

2.9.3. Large Law Firms
Large law firms, also known as "full-service" firms, can range in size from several dozens of lawyers and employees, to several thousands of employees including lawyers, paralegals, administrative staff, human resource specialists, librarians and other staff - and can exist in multiple cities, states and even countries. Large law firms specialize in all areas of the law and typically have big legal departments, such as corporate, employment, and real estate groups.

Additionally, large law firms are able to handle most types of legal work, including business transactions (like mergers and acquisitions), large scale litigation, and criminal defense matters

(especially "white-collar crimes".) Moreover, the typical client of a large law firm is a company, organization, or other high-stake entity, but may also represent individuals with legal issues spanning multiple practice areas.

2.9.4. Litigation vs. Transactional Law Firms
Law firms are sometimes broken down by the type of legal services they offer. For example, a law firm might only focus on litigation, representing clients in court cases -- or it can focus on transactional matters involving heavy paperwork relating to disputes over money, property, and insurance.

Lawyers typically do not cross over practice areas within a law firm, however. For instance, lawyers who are trained to represent clients in court hearing and at trials typically stay within this type of practice for the duration of their career. Similarly, transactional attorneys who handle corporate and other drafting-intense work may never see the inside of a courtroom.

2.9.5. Criminal Law Firms
Law firms specializing in criminal defense against crimes such as securities fraud, DUI and other crimes often focus on representing private clients who can afford their own criminal defense attorney (as opposed to being represented by a public defender.) A person facing criminal charges will often hire a criminal defense lawyer to assist them in all stages of the criminal process to help reduce the serious penalties often associated with criminal charges.

Moreover, because of the nature of what's at stake in criminal proceedings, lawyers who work within criminal defense law firms are usually very skilled and knowledgeable about the laws and procedures, and often have relationships with local attorneys and judges. While the cost of hiring a criminal defense law firm will vary - based on the law firm's experience, track record and location, for example - it is probably wise to speak with a variety of criminal lawyers in your area to represent you in any criminal proceedings.

2.9.6. Law Firms by Practice Area
In addition to size, location, and type of practice, law firms can be broken down by legal topic area. These "practice areas" refer to the types of legal issue you may be facing, or alternatively, the area of law an attorney's practice lies.

2.10. Similar Systems
Currently, there is one similar system that is being built in Kenya. It is regarded as one of the best law firm management software in Kenya even if it is not ready yet. However, there are several systems which have been built in international level to support law firm operations.

2.10.1. SheriaSoft.
SheriaSoft is a law firm management software that is being built in Kenya to support Kenyan law firms. It is valued to cost law firms 80000.00 KES for the professional edition and 30,000 KES for the light edition.

### 2.10.2. Clio (https://www.goclio.com).
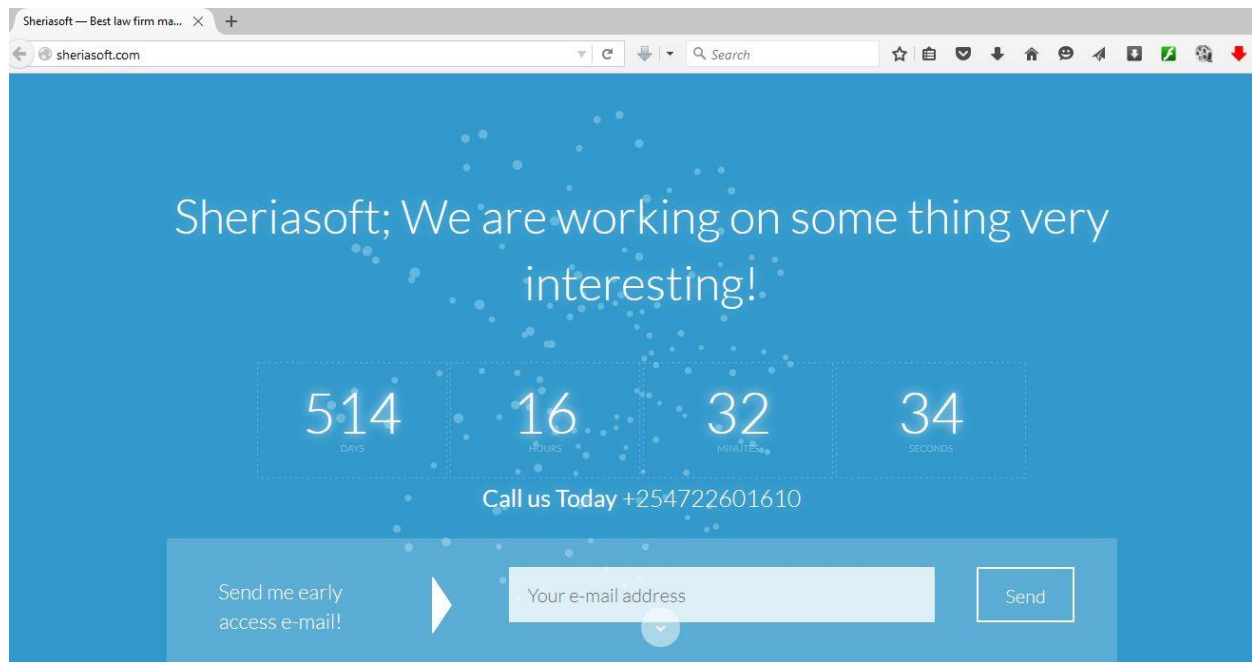
It is an SME law firm management software that helps law firms to manage their document automation, Bank grade security, Billing, calendars, trust accounting, and time tracking.

2.10.3. Captora (https://www.captorra.com)
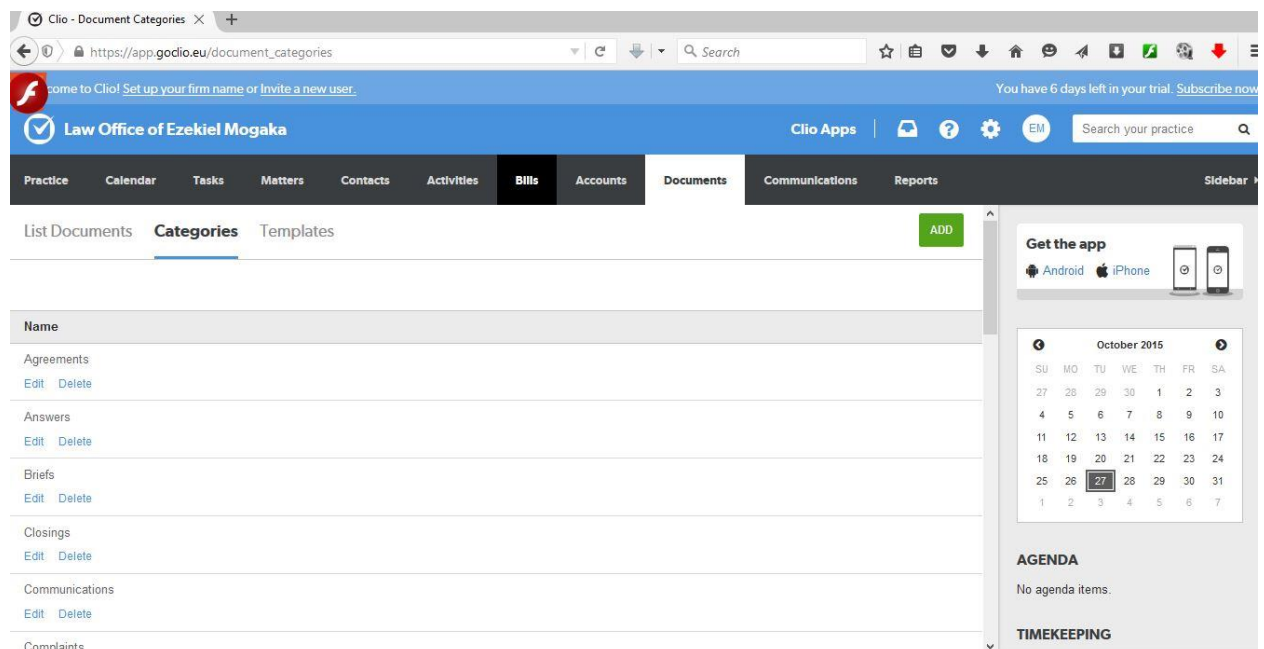
Captorra is designed to assist law firms not only on the case intake process but also to increase the conversion rate of intake of cases. Firms often focus so much time and energy on making phone ring, but once it rings they lack the tools to intake the files accurately and more importantly increase the conversion rates from calls to cases. Their product covers the following areas:

- Case/matter intake management
- Lead conversion - increasing client's conversion rates and the lead engagement module is the main reason. The system eliminate any entry of lead data ad stop the breakage immediately.
- Referral management - tracking referrals and get paid for them. Captorra has a referral management module which can automate the sending and follow up on referred out cases.
- Dashboards and reporting
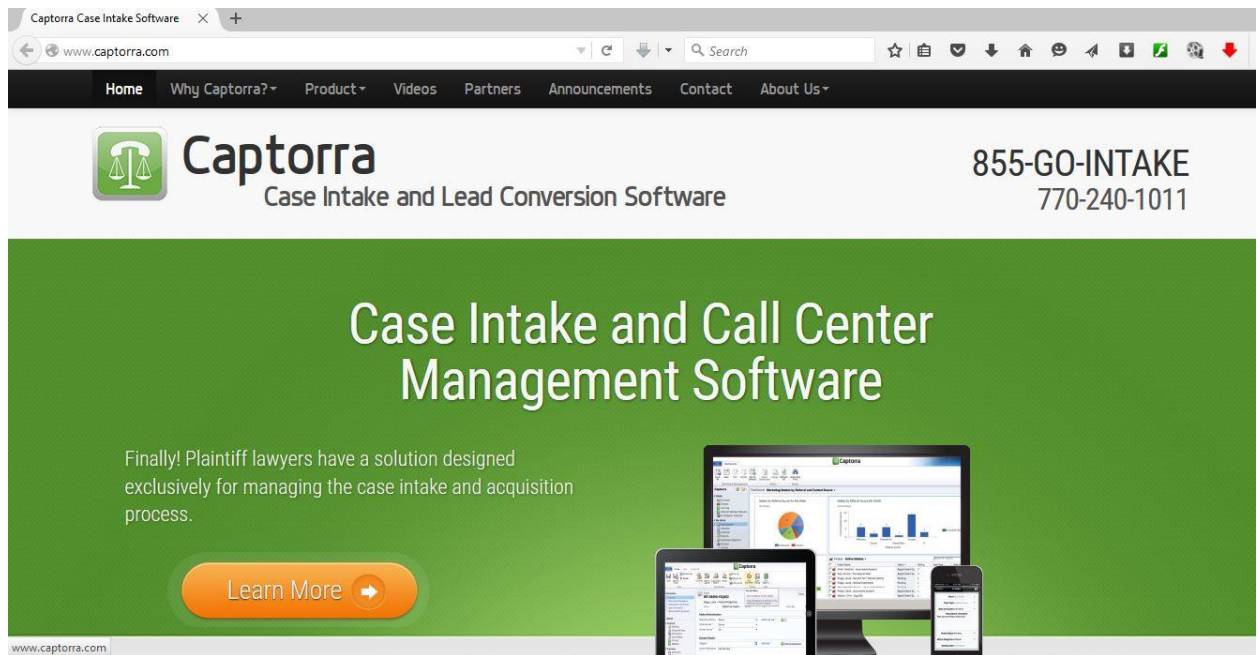
2.10.3. ProLaw Law Firm Business Management Software.

As part of Thomson Reuters Elite's complete end to end enterprise business management solution, ProLaw is meant to streamline and automate processes, maintain and improve profitability by connecting the four major areas of firm investment:
- Business development
- Risk management
- Client and matter management
- Financial management

It is integrated with Westlaw research and court rules for better practice.

3.0. APPROACH AND METHODOLOGY

3.1. APPROACH

The system will be a three tier web application. This architecture provides the following benefits:

- **Scalability** – Each tier can scale horizontally.
- **Performance** - Because the Presentation tier can cache requests, network utilization is minimized, and the load is reduced on the Application and Data tiers. If needed, you can load-balance any tier.
- **Availability** - If the Application tier server is down and caching is sufficient, the Presentation tier can process Web requests using the cache.

An MVC (Model View Controller) approach will be used to develop the system because of the benefits outline above.
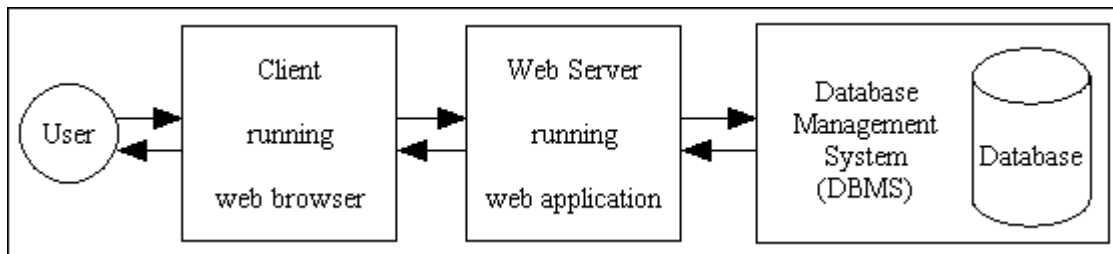
Python Django framework is an MVC framework will be used to develop the web application. It has the following parts:

- Presentation logic - the user interface (UI) which displays data to the user and accepts input from the user. In a web application this is the part which receives the HTTP request and returns the HTML response.
- Business logic - Handles data validation, business rules and task-specific behavior. It essentially plays the role of bringing together the three layers of the three tier web architecture. While technically processing the various inputs and selections received by the clients it plays the role of interaction with the vast database present in the third tier. The middle or the second tier in the three tier web architecture contains the web server, the web scripting language and the scripting language engine. The Web server most often processes the HTTP requests and formulates reciprocation in the scripting language running on the scripting engine. This tier has the technical efficiency to deal and comprehend the dynamic content and built-in libraries that accentuates the faster access of the database to extract results.
- Data Access logic - communicates with the database by constructing SQL queries and executing them via the relevant API. This complex application layer consists of the application logic while exchanging data in between tiers in the three tier Web Application, making the top tier mostly a thin client or a browser. The first

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tier is therefore the data server, providing clients an application server with all the necessary data that it may require in order to function.

3.2. METHODOLOGY

3.2.1. Overview

The suitable software development methodology for this project will be *Incremental Development*. In this methodology, various methods are acceptable for combining linear and iterative systems development methodologies, with the primary objective of each being to reduce inherent project risk by breaking a project into smaller segments and providing more ease-of-change during the development process. It therefore incorporates series of mini-Waterfalls. The basic idea behind this method is to develop a system through repeated cycles (iterative) and in smaller portions at a time (incremental), allowing software developers to take advantage of what was learned during development of earlier parts or versions of the system. Learning comes from both the development and use of the system, where possible key steps in the process start with a simple implementation of a subset of the software requirements and iteratively enhance the evolving versions until the full system is implemented. At each iteration, design modifications are made and new functional capabilities are added.

The procedure itself consists of the initialization step, the iteration step, and the Project Control List. The initialization step creates a base version of the system. The goal for this initial implementation is to create a product to which the user can react. It should offer a sampling of the key aspects of the problem and provide a solution that is simple enough to understand and implement easily. To guide the iteration process, a project control list is created that contains a record of all tasks that need to be performed. It includes such items as new features to be implemented and areas of redesign of the existing solution. The control list is constantly being revised as a result of the analysis phase.
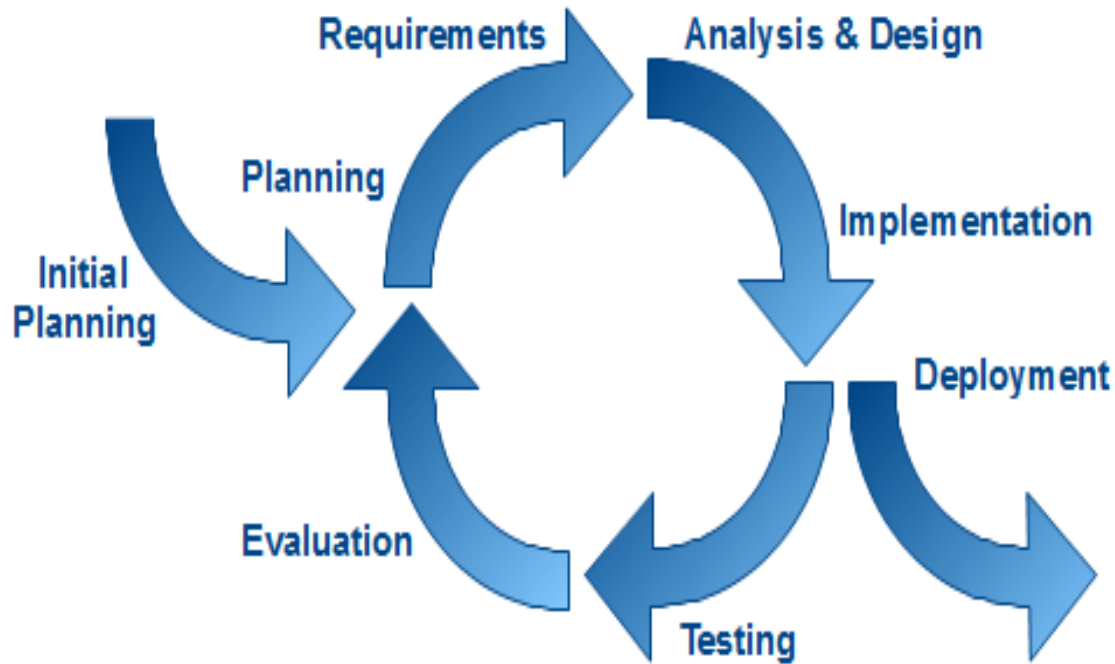
Incremental approach diagram

There will be incremental development right from the core of the platform (bottom layer), towards the font-end (top layer). However, some of the developments will overlap or make use of program stubs for testing purposes. Testing and documentation shall be inherent in every stage of development.

Why incremental approach?

- After each iteration, regression testing should be conducted. During this testing, faulty elements of the software can be quickly identified because few changes are made within any single iteration.
- 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 product.
- Customer can respond to features and review the product for any needful changes.
- Initial product delivery is faster and costs lower.

3.2.2. Testing and Evaluation

Testing will be an inherent part of every stage in development. There will be validation and verification of the deliverables at every stage. Test plans against which the system will be tested will be developed during the requirement engineering stage.

For the modules and the final application, the metrics that will be tested here mainly will be validity, correctness, performance and scalability. Since it will be a bottom-up development approach, both black-box and white-box testing shall be employed.

3.2.3. Development and Testing environment

Development of the following software resources which are free and open-source, and therefore readily available:

- Operating System (Linux Ubuntu 14.04)
- Integrated Development Environment (IDE) tool – PyCharm
- LAMP (Linux Apache MySQL PHP) Server
- Django, a Python framework
- Git for version control
- GanttProject for project management

3.2.4. Project Activity Plan

Activity	Duration	Start Date	End Date	Deliverables
Project Research and project proposal	3 weeks	2/10/2015	22/10/2015	Project proposal
Requirements gathering	2 weeks	19/10/2015	30/10/2015	Requirements document
System design	4 weeks	30/10/2015	26/11/2015	Data and system models
Implementation	18 weeks	16/11/2015	30/03/2016	Working system
System Testing	3 weeks	15/03/2016	10/04/2016	Correctly working system
Documentation	3 weeks	23/03/2016	14/04/2016	System documentation
User testing	2 weeks	01/04/2016	14/04/2016	User acceptable system

Project Gantt Chart

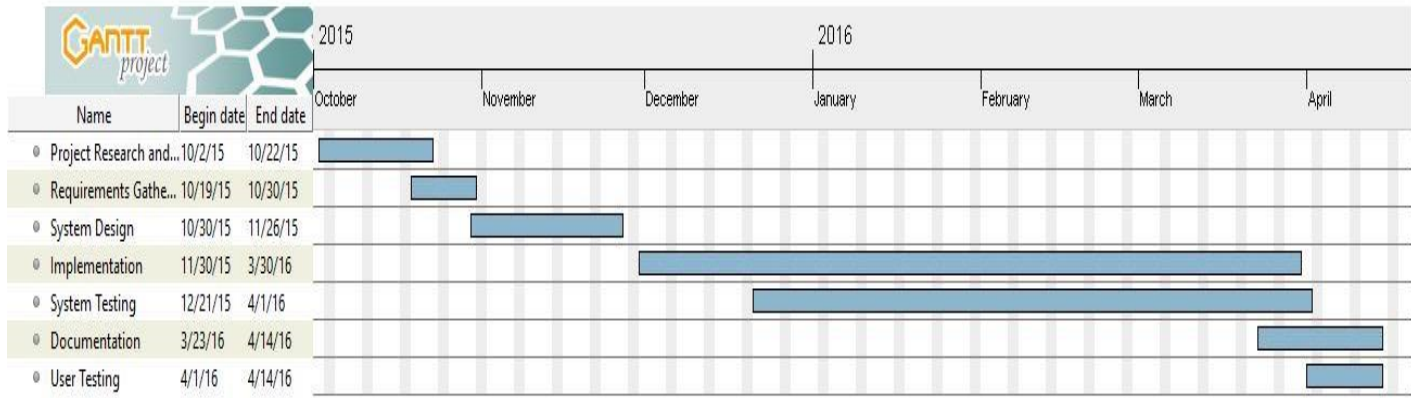| Name	Begin date	End date
Project Research and...	10/2/15	10/22/15
Requirements Gathe...	10/19/15	10/30/15
System Design	10/30/15	11/26/15
Implementation	11/30/15	3/30/16
System Testing	12/21/15	4/1/16
Documentation	3/23/16	4/14/16
User Testing	4/1/16	4/14/16

Fig 1.2, project Gantt chart

REFERENCES

- Japhet Otike, Graham Matthews, (2000) "Legal information needs of lawyers in Kenya: a case study", Library Management, Vol. 21 Iss: 5, pp.241 – 252
- Vincent Syracuse et al., *E-Discovery: Effects of Automated Technologies on Electronic Document Preservation and Review Obligations*, INSIDE COUNSEL (Dec. 18, 2012), http://m.insidecounsel.com/2012/12/18/e-discovery-effects-of-automated-technologies-on-e. RUI XU &DON WUNSCH, CLUSTERING 2–6 (2008).
- Harry Surden, Machine Learning and Law (2010).
- John Markoff, *Armies of Expensive Lawyers, Replaced by Cheaper Software*, N. Y. TIMES (Mar. 4, 2011), http://www.nytimes.com/2011/03/05/science/05lega
- Morris and Gayle Myers, former staff lawyers at the Law Society of British Columbia,(June,2006) "Opening and maintaining client files".
- C.C. Kuhlthau, S.L. Tama, (2001),"Information search process of lawyers: a call for 'just for me' information services",
- Journal of Documentation, Vol. 57 Iss 1 pp. 25-43 http://dx.doi.org/10.1108/EUM0000000007076
- Atul Ashokbhai Bhatt, (2014),"Information needs, perceptions and quests of law faculty in the digital era", The Electronic
- Library, Vol. 32 Iss 5 pp. 659-669 http://dx.doi.org/10.1108/EL-11-2012-0152
- Stephanie Ellis, Stephann Makri, Simon Attfield, (2014),"Keeping up with the law: investigating lawyers' monitoring behaviour", New Library World, Vol. 115 Iss 7/8 pp. 292-313 http://dx.doi.org/10.1108/NLW-03-2014-002.
- Kelvin B. Asige, SEAFARER SUBJECT GUIDE Q&A KENYA, August 2013