Adventist University of Central Africa

Information Technology

Software Engineering

THE BRIDGE TO LEGAL HELP SYSTEM

A Final Year Project Proposal Submitted in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Information Technology

In

Software Engineering

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ABSTRACT

The Bridge to Legal Help System aims to address inefficiencies in Rwanda's legal sector by introducing an AI-powered platform to enhance legal service accessibility and delivery processes. Currently, legal services rely on manual matching methods, limited consultation options, and physical document handling, leading to delayed responses, resource mismanagement, and reduced access to justice. The system's advanced capabilities for lawyer-client matchmaking, virtual consultations, and multilingual support are designed to modernize these outdated practices, improving efficiency and effectiveness for both legal professionals and citizens.

The platform addresses key gaps in existing solutions, such as the absence of real-time matching tools and virtual consultation capabilities in resource-constrained settings. Unlike systems that require extensive physical infrastructure, the Bridge to Legal Help System focuses on leveraging AI and digital technologies, making it a cost-effective alternative. By targeting these shortcomings, the system empowers legal professionals and citizens with accessible services to overcome geographical barriers, optimize resource use, and reduce operational delays that often hinder Rwanda's legal service delivery.

The Bridge to Legal Help System will be developed using an agile methodology, ensuring iterative enhancements and user feedback integration throughout the project lifecycle. Data on legal needs and service delivery patterns will be used to train AI models, while a scalable, cloud-based architecture will ensure widespread accessibility. The final system will provide dynamic legal matchmaking tools, secure document management features, and comprehensive multilingual support. These advancements aim to promote justice, improve legal service processes, and significantly boost access to legal assistance in Rwanda.

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INTRODUCTION

Background

Access to legal services remains a significant challenge in Rwanda, contributing substantially to the justice gap and affecting the majority of the population. Despite its pivotal role, the legal sector faces numerous challenges stemming from inefficient service delivery systems. Currently, most legal assistance relies on physical presence and manual processes, which hinder the ability to reach citizens in remote areas. This reliance on traditional methods not only delays critical legal support but also reduces overall access to justice, limiting the sector's potential to ensure equal rights protection and strengthen rule of law.

One of the key challenges in the current system is the lack of accessible legal professionals for effective consultation and representation. Citizens and legal aid organizations are often forced to rely on limited resources, which fails to address immediate needs such as urgent legal advice, document preparation, or representation in court. These gaps lead to service mismanagement, including overconcentration of legal professionals in urban centers and delays in connecting clients with appropriate expertise. Additionally, language barriers and complex procedures due to inadequate support mechanisms exacerbate the inefficiencies, leaving citizens ill-equipped to navigate the legal system effectively.

Addressing these issues is critical for achieving equitable access to justice and ensuring legal protection for all Rwandans. Modernizing legal service delivery through technology-driven solutions can bridge the gap between traditional systems and emerging needs. By incorporating AI-powered matching, virtual consultations, and multilingual support, Rwanda's legal sector can improve accessibility, enhance service delivery, and strengthen public confidence in the justice system. These advancements will empower citizens to assert their rights and position Rwanda as a leader in innovative legal service provision.

Problem Statement

Access to legal services in Rwanda remains severely constrained despite their critical importance in ensuring justice and protecting citizens' rights. Despite the legal system's fundamental role in maintaining social order and equality, legal service delivery continues to rely heavily on physical presence and traditional methods. This reliance leads to inefficiencies in matching clients with appropriate legal professionals, conducting consultations, and managing case documentation, limiting the sector's ability to serve all populations equitably in an increasingly digital environment. These challenges are particularly problematic in a service area that requires timely intervention to protect rights and resolve disputes effectively.

A major issue in the current system is the lack of dynamic tools for connecting citizens with legal resources. Underserved populations depend on limited local options and word-of-mouth referrals, which do not account for specialized expertise needs or accessibility requirements. This traditional approach often results in service misalignment, such as inappropriate legal representation, language barriers between clients and lawyers, and poor distribution of legal resources across geographical areas. These inefficiencies translate into delayed justice, increased costs, and reduced trust in the legal system, making it difficult for citizens to fully exercise their legal rights.

In addition, geographical barriers exacerbate these inefficiencies. Without digital consultation options, citizens in remote areas cannot access timely legal advice, document preparation assistance, or representation. The manual document handling system also creates delays in case processing and information sharing, leaving vulnerable populations without critical legal protection. Addressing these issues requires a technology-driven solution that can integrate AI-powered matching to improve service delivery, reduce accessibility barriers, and optimize legal resource allocation.

The persistence of traditional processes, inefficiencies in legal service distribution, and the absence of multilingual support underscore the urgent need for modernization in Rwanda's legal sector. Introducing a data-driven system with virtual consultation capabilities will empower citizens and legal professionals to connect effectively, reduce justice delays, and enhance access to legal services. By addressing these gaps, Rwanda can foster a more equitable and efficient legal system that supports its governance and social development goals.

Project Justification

By incorporating AI-powered technologies for legal service matching and delivery, the proposed system aims to address the accessibility barriers that currently plague legal consultation, representation, and case management processes in Rwanda. Artificial intelligence algorithms will be utilized to analyze legal needs, match clients with appropriate professionals, and facilitate virtual consultations, offering seamless access to citizens regardless of their location. This shift from traditional, in-person processes to digital service delivery will help reduce geographical barriers, prevent justice delays, and improve overall legal service efficiency.

For citizens, the system offers significant benefits by increasing access to legal expertise and enabling efficient dispute resolution. Accurate lawyer-client matching and multilingual support will allow individuals to connect with appropriate legal professionals for their specific needs, regardless of language preferences or location constraints. By optimizing the delivery of legal services through virtual consultations and secure document management, the system reduces travel costs and time investments, contributing to enhanced access to justice and legal protection for Rwanda's diverse communities.

At the institutional level, the system equips legal professionals and organizations with streamlined tools to support efficient case management and broader client reach. This enhanced capability will improve the timeliness and effectiveness of legal interventions, enabling practitioners to serve more clients effectively across geographical boundaries. By aligning with Rwanda's justice sector transformation goals, the system also contributes to the country's broader objectives of equitable governance and rule of law enhancement.

Objectives

General Objective

The general objective of this project is to develop an automated legal assistance platform that leverages AI technology to enhance accessibility to legal services in Rwanda. By utilizing advanced matching algorithms and virtual communication tools, the system will address barriers in legal service delivery, consultation, and document management, which currently hinder justice

accessibility across the country. This initiative aims to provide seamless connectivity between citizens and legal professionals, enabling timely, informed legal assistance. The proposed system will serve as a transformative tool, aligning with national efforts to modernize legal services and achieve equitable access to justice. Through this, it seeks to enhance service delivery, reduce geographical limitations, and ensure better legal resource distribution across Rwanda.

Specific Objectives

- **Utilize AI for Legal Service Matching**: Develop and implement artificial intelligence models that analyze client needs and professional expertise to provide accurate matches between citizens and legal professionals. These matches will enable clients to connect with appropriate legal assistance, optimize consultation scheduling, and improve overall legal service access. The models will focus on minimizing misalignment and increasing match precision across diverse legal specializations.
- **Enable Virtual Consultation Capabilities**: Create a system that ensures efficient delivery of legal services through secure video conferencing and real-time chat features. By integrating digital communication tools, the system will facilitate remote consultations, minimizing travel requirements and improving accessibility. For example, the system will connect clients in remote areas with urban-based lawyers or determine specific expertise needs based on case analysis, ensuring legal assistance is delivered precisely where it is needed.
- **Implement Secure Document Management**: Design a comprehensive document handling module that securely stores and shares legal documentation between clients and professionals. The module will generate accessible, organized case files for efficient collaboration. These digital repositories will highlight relevant precedents, case progress, and deadlines, empowering stakeholders to manage legal processes swiftly and accurately without the need for physical document exchanges.
- **Provide Multilingual Support Tools**: Develop features that accommodate Rwanda's linguistic diversity by offering interfaces in Kinyarwanda, English, and French. This includes adapting legal terminology to local contexts or translating complex legal concepts into accessible language. The multilingual tools will be user-friendly, offering both citizens

and legal professionals an intuitive interface to communicate effectively and achieve better understanding regardless of language preferences.

- **Establish Comprehensive Legal Resources Library**: Create an accessible repository of legal information, including laws, regulations, procedures, and self-help materials to empower citizens with knowledge before and during formal legal assistance. This library will enhance legal literacy, support informed decision-making, and complement professional services with educational resources that strengthen Rwanda's legal awareness and citizen empowerment.

Scope

The project focuses on developing an AI-powered platform designed to enhance legal service accessibility through intelligent matching, virtual consultations, and secure document management. By leveraging cutting-edge technology, the system will provide lawyer-client matching, remote consultation capabilities, and multilingual support. These features will enable citizens to access legal assistance regardless of location, reduce geographical barriers, and improve service delivery while equipping legal professionals with tools for expanded reach and efficient case management.

The system will include a user-friendly interface with a centralized platform for seamless legal service access. It will support two primary user groups: citizens seeking legal assistance and legal professionals. Citizens will benefit from personalized matching with appropriate legal expertise and convenient virtual consultations, while legal professionals will gain access to expanded client reach and streamlined case management tools.

The project scope is limited to digital platform solutions, meaning it will not include reforms to court procedures, legislative interventions, or legal advocacy training. Additionally, the system will not feature legal policy development or judiciary system modifications, as its primary focus is on service delivery enhancement rather than structural reform. However, future expansions could integrate these functionalities to further support legal system transformation efforts.

By focusing on accessibility tools and virtual service delivery mechanisms, the system will provide a scalable foundation for optimizing legal assistance while allowing room for future enhancements based on evolving justice sector needs.

LITERATURE REVIEW

Existing Works

Several digital platforms have been developed that utilize AI and virtual consultations to enhance legal service accessibility. Case studies from countries like Kenya and India demonstrate how technology can significantly improve legal assistance reach, optimize service delivery, and support equitable access to justice.

These solutions often rely heavily on complex digital infrastructure for comprehensive service delivery. While effective, the high cost and implementation requirements of these systems make them less suitable for developing nations such as Rwanda, where infrastructure and financial constraints are prevalent.

Gaps Addressed

The proposed Bridge to Legal Help System addresses the limitations of existing solutions by:

1. Cost-Effective Approach:

- Focuses on AI-powered matching and virtual consultations without the need for costly physical infrastructure.

2. Localized Implementation:

- Designed for resource-constrained environments, making it accessible and practical for Rwanda's legal sector.

3. Data-Driven Service Enhancement:

- Provides multilingual support and secure document management for clients and legal professionals to optimize service delivery, overcome language barriers, and facilitate efficient case handling.

This innovative approach ensures that advanced legal service technologies are accessible to citizens and stakeholders in Rwanda without the financial and technological barriers posed by complex systems developed for different contexts.

PROPOSED SOLUTION

Overview of the Solution

The proposed solution is an AI-powered platform designed to modernize legal service delivery in Rwanda by addressing inefficiencies in accessibility, consultation, and document management. This system leverages artificial intelligence to provide accurate lawyer-client matching, virtual consultation capabilities, and optimized legal resource allocation. By integrating both expertise matching and digital communication tools, the solution enables dynamic legal service access, empowering citizens and legal professionals to connect effectively that improve service delivery and justice accessibility.

The core functionality of the system lies in its ability to analyze client needs, including case types, language preferences, and location constraints. Using advanced AI algorithms, the tool generates appropriate matches with legal professionals that allow for the creation of adaptive consultation schedules tailored to specific legal needs and geographical constraints. This capability ensures that citizens are better connected to relevant expertise, reducing barriers associated with distance, language, and specialization requirements. Additionally, the AI matching tool supports virtual consultations, which assists citizens in accessing timely legal advice without physical travel, thereby improving service accessibility and response times.

The system also incorporates a centralized document management framework that reduces reliance on physical documentation processes. Through secure digital storage and sharing capabilities, stakeholders such as clients and legal professionals can access case-related information for ongoing collaboration and case tracking. This digital approach not only minimizes the risk of document loss or damage but also ensures timely and accurate information exchange, facilitating rapid case progression in response to client needs. Furthermore, by analyzing service delivery patterns, the tool aids in optimizing the allocation of legal resources, expertise, and consultation schedules, ultimately reducing access barriers for citizens.

In addition, the solution emphasizes linguistic inclusivity and educational support to accommodate a diverse range of users, from rural communities to urban populations. The multilingual interface presents legal information through accessible formats and multiple languages, making it easy to

understand and act upon legal advice. The inclusion of a comprehensive legal resources library ensures the system remains informative and supportive, catering to citizens who may lack basic legal knowledge. By prioritizing accessibility and education, the tool supports Rwanda's justice transformation goals while ensuring inclusivity and practical usability for all stakeholders.

In summary, the proposed solution bridges the gap between traditional, location-dependent legal services and modern digitally-enabled practices. By harnessing the power of AI, it equips citizens with convenient tools to access legal assistance and empowers legal professionals with expanded reach for service delivery. This transformative system will significantly contribute to improving Rwanda's legal service accessibility and justice equity.

System Design

The system will feature a centralized architecture with AI algorithms for matchmaking, a secure database for document storage, and real-time communication modules. UML diagrams and flowcharts will illustrate data flow and user interactions.

The diagram of the Bridge to Legal Help System

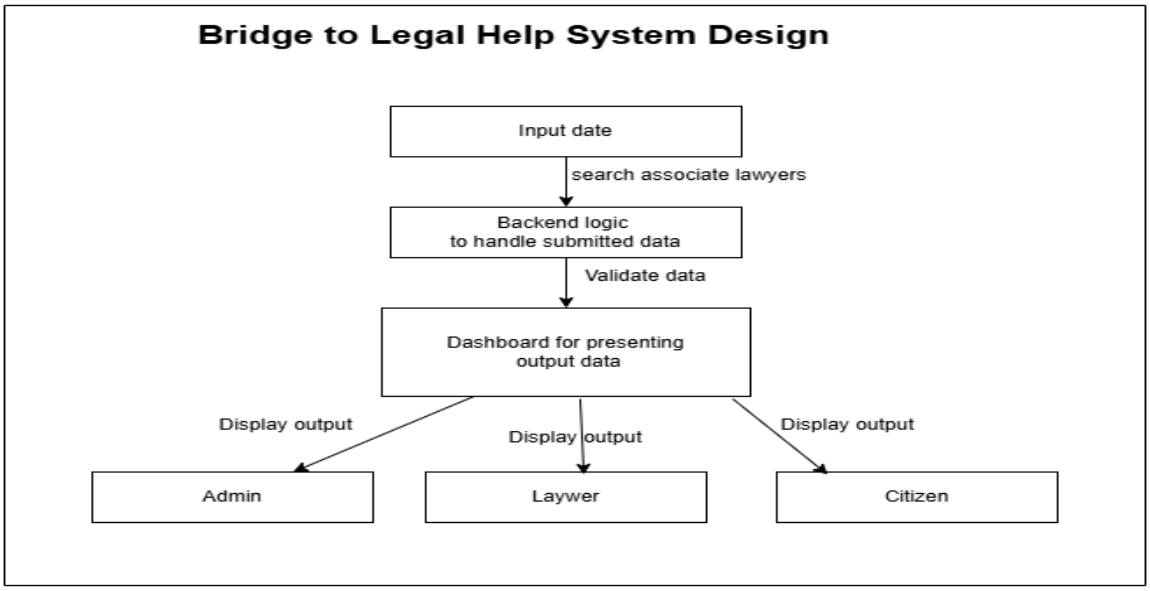

Figure 1: System Design

Key Features

- **AI-Powered Legal Matchmaking:** Matches clients with professionals based on expertise and case type.
- **Virtual Consultations:** Enables live video and chat with legal experts.
- **Document Management:** Allows secure document sharing.
- **Legal Resources Library:** Offers templates, FAQs, and articles.
- **Multilingual Support:** Provides access in multiple languages.
- **User Feedback System:** Facilitates reviews and ratings of legal professionals.

METHODOLOGY

Development Approach

The Agile methodology has been selected for this project due to its adaptability, iterative development approach, and focus on stakeholder collaboration. Agile is a project management and software development methodology that divides the development process into small, manageable iterations called sprints. This approach allows for the continuous delivery of functional system components, frequent stakeholder feedback, and the flexibility to accommodate evolving requirements.

The dynamic nature of the legal service sector in Rwanda, characterized by diverse user needs and varying case complexities, makes Agile the most suitable choice for developing the Bridge to Legal Help System. By enabling real-time adjustments and improvements, Agile ensures that the platform remains responsive to both technical challenges and practical user demands.

The Agile methodology divides the project into smaller iterations, commonly referred to as sprints, each lasting two to four weeks. Each sprint will deliver a functional component of the system, starting with the development of the AI-powered matching module. This iterative process ensures that core functionalities, such as lawyer-client matching and virtual consultation tools, are tested and refined before moving to subsequent features like document management and multilingual support. Stakeholder feedback will be gathered at the end of every sprint to assess the functionality and usability of delivered components.

A core feature of the Agile approach is its focus on cross-functional collaboration between the development team, legal professionals, and potential users. Regular meetings and review sessions will foster communication, allowing for real-time adjustments to the system. For example, if users encounter accessibility challenges with the interface, the design can be iteratively refined based on their input. This collaborative feedback loop ensures that the system meets practical requirements and aligns with the expectations of all users.

Additionally, the Agile methodology emphasizes testing and validation throughout the development lifecycle. Continuous integration and delivery pipelines will be set up to test matching algorithms, ensuring that lawyer-client pairing is appropriate and effective. Testing will not only validate the functionality but also enhance the system's security and performance by identifying and addressing vulnerabilities or usability issues promptly. This process minimizes risks and guarantees a high-quality end product.

By adopting the Agile methodology, the development process will remain flexible and responsive to feedback, ensuring that the system evolves to meet user needs effectively. This iterative approach will help deliver a robust, user-friendly platform that drives improved access to legal services in Rwanda's justice sector. The emphasis on collaboration and testing will ensure that the Bridge to Legal Help System is practical, reliable, and scalable for widespread adoption.

Tools and Technologies

JavaScript: An interpreted computer programming language is called JavaScript (JS). It was first included in web browsers to allow client-side scripts to manage the browser, interact with the user, communicate asynchronously, and change the content of documents that were shown.

Cascading style sheets, or CSS, are used to format web page layouts. Text styles, table sizes, and other features of Web pages that were previously limited to being described in a page's HTML can now be defined using them. Changing the style of several pages at once is made simple with CSS. In 2010, Petrini et al.

ReactJS: React, often referred to as **React.js or ReactJS**, is a JavaScript library known for its flexibility and efficiency in creating interactive user interfaces (UIs) for both web and native applications. With its **component-based architecture**, developers can create UI elements like buttons or search bars, which can then be reused throughout an application. This not only streamlines the development process but also enhances maintainability.

MySQL is a tool for developing software that is used to create databases as collections of data. A database's main function is to hold and retrieve relevant data. (Nichols and Vaughan, 2013) A free and open-source cross-platform web server solution stack package called XAMPP (Cross-Platform (X), Apache (A), MySQL (M), PHP (P), and Perl (P) was created by Apache Friends. Its main components are the Maria DB database, the Apache HTTP Server, and interpreters for scripts written in the PHP and Perl programming languages.

Python: Guido van Rossum created this interpreted, object-oriented, high-level programming language with dynamic semantics. 1991 saw its initial release. The name "Python" is a reference to the British comedy troupe Monty Python and is meant to be simple and enjoyable. Due to its reputation as a beginner-friendly language, Python has displaced Java as the most popular beginning language. This is because it takes care of a lot of the complexity for the user, freeing them up to concentrate on understanding programming ideas rather than specifics.

Django: Django is a high-level Python web framework that makes it possible to create safe, enduring websites quickly. Django, which was created by seasoned developers, handles a lot of the headaches associated with web development, freeing professionals to concentrate on creating your app rather than having to start from scratch. It offers excellent documentation, a vibrant and active community, free and open-source software, and a wide range of alternatives for both free and commercial support.

VS Code also known as Visual Code Studio is a source-code editor developed by Microsoft for Windows, Linux, and macOS. Embedded Git, snippets, intelligent code completion, debugging support, and syntax highlighting are a few of the features. The theme, keyboard shortcuts, options, and extensions that offer more functionality may all be changed by users.
React JS: React allows you to construct user interfaces from discrete elements known as components. Make your own React components, such as the Like Button, Video, and Thumbnail. Next, incorporate them into whole sites, screens, and applications.

Data Collection

Data Sources The development of the Legal Services Access and Analytics Platform (LSAAP) relies on comprehensive data sets to deliver accurate insights and legal assistance. Data will be sourced primarily from the Ministry of Justice database and other reliable national legal repositories. The key types of data to be collected include:

- Historical Legal Case Data: Detailed records of case outcomes, processing times, legal precedents, and procedural patterns over several years.
- Legal Services Performance Reports: Data on case resolution rates, client satisfaction, legal practice efficacy, and resource allocation.

Data Collection Process The legal case data will be retrieved through secure connections to the Ministry of Justice's centralized database, while legal services performance data will be gathered through collaboration with legal institutions and law firms. Regular updates will ensure the system remains accurate and responsive to changing legal landscapes.

Data Preprocessing To ensure that the collected data is clean, consistent, and suitable for analysis, the following preprocessing steps will be applied:

- **Data Cleaning:** Removing duplicates, handling missing or erroneous entries, and normalizing data formats.
- **Data Transformation:** Structuring data to fit machine learning model requirements.
- **Data Splitting:** Dividing the dataset into training and testing sets to optimize the predictive model's performance and validate accuracy.

Data Utilization The preprocessed data will be integrated into machine learning algorithms to identify patterns and trends in legal proceedings and service delivery performance. Key use cases include:

- **Predictive Analytics:** Forecasting case outcomes and predicting resource requirements to support legal planning and resource allocation.
- **Decision Support:** Enhancing operational efficiency by providing actionable insights based on historical and predicted legal data.

By following this structured data collection and processing approach, the system will provide robust and reliable analytics tailored to the specific challenges of Rwanda's legal landscape. This will empower legal professionals and policymakers with actionable insights for better decision-making.

Testing and Validation

Testing Strategy

1. Functional Testing

- **Objective:** To assess the system's predictive accuracy and functionality.
- **Approach:**
    - Simulated scenarios will be run using historical legal case and service data.
    - Predictions for case outcomes, processing times, and resource needs will be compared with actual outcomes to measure the model's performance.
    - Key metrics such as prediction error rates and response times will be evaluated.

2. Usability Testing

- **Objective:** To ensure the system is user-friendly and meets the needs of citizens and legal stakeholders.
- **Approach**:
    - Feedback will be gathered from both citizens and legal professionals.
    - Key aspects to be tested include interface design, ease of navigation, and the relevance of displayed information.
    - Results will guide iterative refinements to improve system usability and accessibility.

3. Performance Testing

- **Objective:** To ensure the system remains stable and efficient under varying data loads and conditions.
- **Approach**:
    - Stress testing with large datasets will simulate real-world usage scenarios.
    - Performance benchmarks such as system uptime and response rates will be evaluated.

Validation Against Requirements

- **Objective:** To confirm the accuracy and reliability of system recommendations and predictions.
- **Approach**:
    - Comparisons will be made between the system's outputs and expert opinions from legal specialists.
    - Historical data will be used to validate predictions and recommendations.
    - Experts will assess the system's practical applicability for decision-making in legal operations.

WORK PLAN AND TIMELINE

The project will use a Work Breakdown Structure (WBS) approach to organize and manage tasks efficiently. This method divides the project into major phases such as Initiation, Requirements Analysis, System Design, Development, Testing, Deployment, and Evaluation. Each phase includes detailed sub-tasks to ensure clarity and accountability.

The timeline will outline specific milestones for each phase, helping track progress and meet deadlines. Dependencies and review checkpoints will be established to avoid delays and ensure alignment with project goals. This structured approach ensures systematic execution and successful delivery of the AI-powered legal services platform.

Tasks and Milestones

- **Requirement Analysis – Month 1:** This phase involves gathering and analyzing the needs of all stakeholders, including legal professionals, citizens, and relevant government entities. Activities will include conducting interviews, focus group discussions, and surveys to understand expectations and challenges. The output will be a comprehensive requirement specification document outlining both functional and non-functional needs of the platform
- **System Design – Month 2:** Based on the requirements, the system architecture will be designed in this phase. It will include wireframes, user interface mockups, database schema, and the overall technical framework of the platform. The goal is to create a scalable, user-friendly, and secure system that can support legal matchmaking, virtual consultations, document handling, and multilingual access.
- **Development – Month 3 to Month 5**: The development phase will bring the design to life through actual coding and integration. Key components to be developed include the AI-powered matchmaking engine, video conferencing and chat modules, secure document management system, and multilingual interface. Continuous testing will occur during this period to ensure that each module functions as intended.
- **Testing – Month 6**: This critical phase will involve rigorous testing to verify the platform's performance, usability, and security. Techniques such as unit testing, system testing,

integration testing, and user acceptance testing (UAT) will be applied. Feedback from pilot users will be collected to identify and fix bugs or usability issues before deployment.

- **Deployment – Month 7**: In this final phase, the fully tested and validated platform will be launched for public use. Deployment will include hosting the platform on a secure server, configuring user access levels, and ensuring that all support services are in place. Training materials and user guides will also be provided to facilitate smooth adoption by both legal professionals and the general public.

Timeline

A Gantt chart will outline the timeline for each task and milestone.

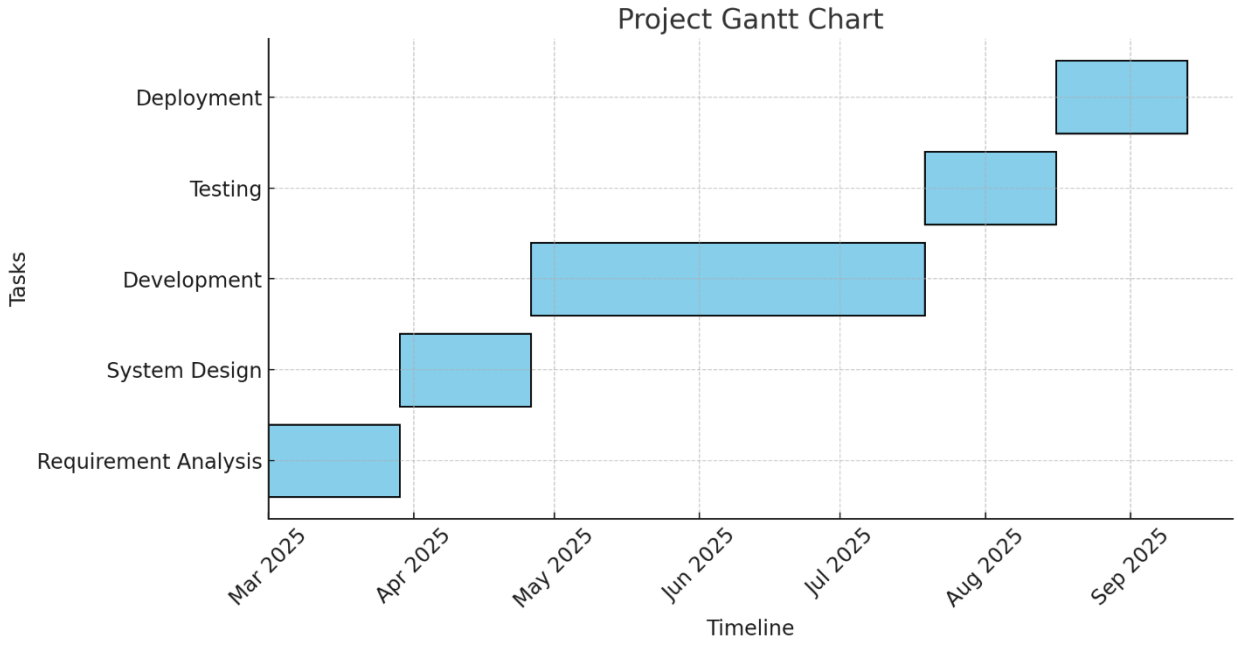

Figure 2: Work and Timeline

EXPECTED OUTCOMES

Final Deliverables

The Legal Services Access and Analytics Platform (LSAAP) will provide the following key deliverables:

1. Digital Legal Matchmaking Platform:

- An AI-powered solution for connecting citizens with appropriate legal professionals based on case type, location, and specific needs.
- Provides seamless virtual consultations to ensure legal support is accessible regardless of geographical constraints.

2. Efficient Case Management System:

- Secure document management and real-time communication features for streamlined legal case handling.
- Enables legal professionals to optimize client intake, case tracking, and document sharing while reducing administrative burdens.
- Supports workflow automation to minimize paperwork and accelerate case resolution.

3. Comprehensive Legal Resources Library:

- Multilingual access to laws, regulations, rights, and legal procedures information.
- Provides AI-driven preliminary legal guidance to empower users before professional consultation.
- Enhances legal literacy and knowledge accessibility for diverse linguistic backgrounds.

By delivering these outcomes, LSAAP will significantly contribute to Rwanda's legal transformation, enhancing accessibility, efficiency, and decision-making in the legal services sector.

Limitations

Despite the many advantages of the LSAAP system, there are several limitations that must be addressed. One of the primary challenges is the system's dependence on accurate historical legal case data. For the machine learning models to generate reliable predictions, the data used for training must be comprehensive and accurate. Inaccurate or incomplete historical data could affect the accuracy of the legal recommendations, leading to potential misguided advice or poor decision-making. Thus, ensuring that the data used for the system is accurate, up-to-date, and consistently available is critical to the project's success.

Another limitation is the potential resistance to adoption, especially from legal professionals who may be unfamiliar with advanced technologies or hesitant to adopt new systems. Many legal practitioners in Rwanda rely on traditional methods, and introducing a technology-driven solution might face initial pushback due to concerns about usability, training, and the perceived complexity of the system. To overcome this, extensive training and support will be necessary, and the system must be designed to be intuitive and user-friendly. Ensuring that legal professionals understand the benefits of the system and can easily adopt it is vital for the project's long-term success.

Finally, the effectiveness of the system depends on continuous access to real-time data, including case updates and legal service metrics. Any disruptions in data availability or quality could impact the system's ability to provide accurate forecasts and insights. In areas with limited connectivity or infrastructure, maintaining a consistent flow of real-time data might be challenging. Addressing these connectivity and infrastructure issues will be crucial for ensuring that the system remains functional and effective, especially in remote regions. The project's success will therefore be contingent not only on the technology but also on the support infrastructure surrounding it.

CONCLUSION

The Legal Services Access and Analytics Platform (LSAAP) represents a significant leap forward in modernizing Rwanda's legal sector. By incorporating machine learning and predictive analytics, LSAAP provides a forward-thinking solution that addresses critical challenges faced by citizens and legal professionals. With its ability to facilitate connections between clients and lawyers, predict case outcomes, and optimize resource usage, the system will enable more informed decisions, thereby reducing uncertainty and improving access to justice. This data-driven approach will allow for better alignment with national goals of legal access, equitable justice, and social development, by equipping stakeholders with the tools needed to adapt to dynamic legal conditions.

Furthermore, LSAAP will empower the Ministry of Justice and other legal bodies with real-time insights into resource allocation and performance trends. With more accurate and timely data, these organizations can improve policy formulation and response to emerging legal issues. This capability is crucial in a country like Rwanda, where access to justice plays such a pivotal role in societal development. The automated case management and predictive insights generated by the system will not only help legal professionals optimize their operations but also allow policymakers to craft strategies that are both efficient and adaptable to social challenges. By bridging the gap between data collection and actionable intelligence, the system will support long-term strategic planning.

Ultimately, the successful implementation of LSAAP is expected to enhance Rwanda's legal resilience and support the achievement of its Vision 2050 goals. By fostering greater productivity, reducing case backlogs, and promoting equitable access to legal services, the system will contribute to the overall transformation of the legal sector. LSAAP will help move the country towards a more advanced, tech-driven legal system that can keep pace with global trends and challenges, improving citizens' access to justice and ensuring a stable, fair legal framework for the nation. Through this project, Rwanda can serve as a model for other developing nations seeking to modernize their legal operations and achieve social development through innovation.

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APPENDICES

Data collection Letter

Adventist University of Central Africa

P.O. Box 2461 Kigali, Rwanda | www.auca.ac.rw | info@auca.ac.rw

Faculty of Information Technology

May 05, 2025

TO: FIXLEX LAW CHAMBERS

Dear Sir/Madam,

Re: Request for Data Collection

The bearer **MUHORAKEYE Honnette's** is a student of Adventist University of Central Africa in the Faculty of Information Technology, major in Software Engineering and she is working on a dissertation entitled: **"THE BRIDGE TO LEGAL HELP SYSTEM."**

The purpose of this letter is to request for your permission to allow her to collect data in your organization.

Any assistance given to her will be highly appreciated.

Yours sincerely;

Mr. NSHUNGUYE Justin
HOD| Information Management
Tel: +250 788419808
Email: justin.nshunguye@auca.ac.rw

Case Study Organization Approval Letter

FixLex Law Chambers
Attorneys & Legal Consultants

TO THE ADVENTIST UNIVERSITY OF CENTRAL AFRICA (AUCA)

Date: 9/12/2024

Dear Sir/Madam,

Re: Recommendation regarding Ms. MUHORAKEYE Honnette's project.

We would like to recommend Ms. MUHORAKEYE Honnette's project entitled "The Bridge to Legal Help System". The project is designed to transform how citizens connect with legal professionals especially advocates by addressing the limitations of traditional advocate referral services. Ms. MUHORAKEYE Honnette project introduces advanced solutions, including AI-powered recommendations based on case types and user preferences, a mobile-friendly design for broader accessibility, and real-time communication tools like live chat and video conferencing to streamline interactions.

Ms. MUHORAKEYE Honnette's project is a solution to a big problem for people who need services of advocates in Rwanda. We therefore give Ms. MUHORAKEYE Honnette our highest recommendation for the aforementioned project. Any assistance that can be rendered to her will be greatly appreciated.

For further information, please feel free to contact us at jptuyishime@fixlexlaw.com/tuyishimelaw@gmail.com or (+250)788309815.

Yours faithfully,

Me Jean Pierre Tuyishime
Managing Partner
P.o Iradukunda Fabrice

FIXLEX
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Current System Analysis

Adventist University of Central Africa

THE BRIDGE TO LEGAL HELP SYSTEM

CASE STUDY: FIXLEX LAW CHAMBERS(FLC)

A topic for a final year project, submitted to the faculty of Information Technology for approval

By

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#24690

Majoring in

Software Engineering

December, 2024

PART I

IS-AS PROCESS MODEL

Introduction

Legal services have been a critical component of Rwanda's judicial system, contributing substantially to governance and serving over 70% of the population. Rwanda's legal sector has relied on traditional service methods and manual case management systems, which have evolved minimally despite technological advancements in other industries.

Rwanda's legal system operates through three main business models: individual practice, law firm-based services, and public legal aid initiatives. Individual practice represents the most common model, where solo practitioners manage cases with limited resources and technology. Law firm-based services bring together multiple legal professionals to share resources and expertise. This study focuses primarily on the individual practice model as it constitutes over 80% of Rwanda's legal service activities.

Individual legal practitioners face numerous challenges: reliance on manual processes for case management and client tracking, dependence on precedent rather than data-driven analysis, inefficient resource allocation, and slow information flow between legal professionals and policymakers. These challenges prove especially problematic in the face of changing legal landscapes. The inefficiencies collectively reduce service quality, increase operational costs, and limit access to justice.

The proposed Legal Services Access and Analytics Platform (LSAAP) aims to modernize this traditional model by introducing predictive analytics and data-driven decision-making capabilities that are currently absent in the sector.

Modeling the Current Legal Services Access and Analytics Platform (LSAAP)

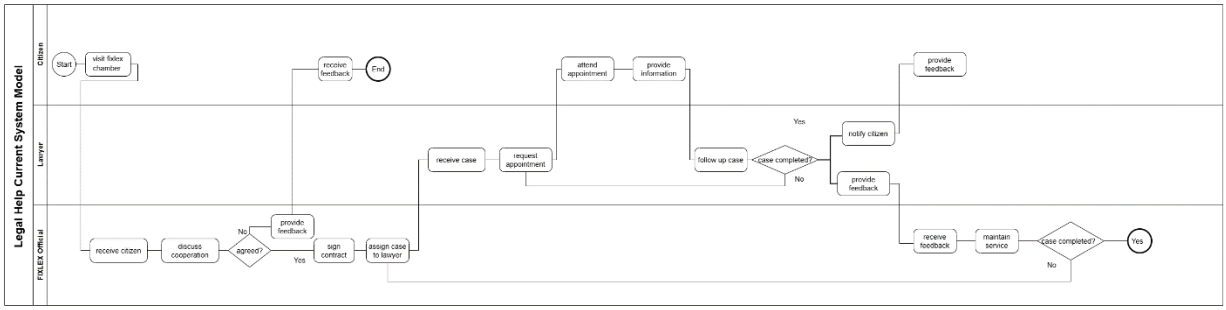

Figure 3: Current System Model

1st Step: The process begins when a citizen visits the intake chamber of the legal help system.

2nd Step: The intake official receives the citizen seeking legal assistance.

3rd Step: The intake official discusses cooperation options and potential legal services with the citizen.

4th Step: A decision point is reached regarding whether the citizen and legal service agree to proceed:

- **If No agreement is reached:** The intake official provides feedback to the citizen on alternative options or why services cannot be provided.
- **If yes, agreement is reached:** The process continues to the next step.

5th Step: Upon agreement, the citizen signs a contract for legal services.

6th Step: The case is assigned to an appropriate lawyer for handling.

7th Step: The lawyer receives the case and reviews the details.

8th Step: The lawyer requests an appointment with the citizen to discuss the case further.

9th Step: The citizen attends the scheduled appointment with the lawyer.

10th Step: The lawyer provides information and legal advice during the appointment.

11th Step: After the meeting, the lawyer follows up on the case by performing necessary legal work.

12th Step: The lawyer evaluates whether the case is completed:

- **If Yes (case completed):** The lawyer notifies the citizen about the completion.
- **If No (case ongoing):** The process continues with further legal work.

13th Step: For completed cases, the client provides feedback on the services received.

14th Step: Meanwhile, the lawyer may maintain service and handle ongoing aspects of cases not yet completed.

15th Step: For ongoing cases, another decision point evaluates if the case is now completed:

- **If Yes:** The process concludes.
- **If No:** The lawyer continues to maintain service until completion.

16th Step: For completed cases, the intake official receives feedback from the client for quality improvement.

PART II

PROBLEM WITH THE

Performance

Throughput:

- The current system lacks clear metrics for case throughput, potentially causing backlogs during high-demand periods.
- Assignment of cases to lawyers appears linear without prioritization mechanisms for urgent legal matters.

Response Time:

- The workflow doesn't specify timeframes for key steps like initial appointment scheduling or case follow-ups.
- Multiple handoffs between intake officials and lawyers may introduce delays in case processing.

Information

Input:

- Case intake appears to rely on in-person visits, limiting accessibility for citizens with mobility constraints or those in remote locations.
- No apparent mechanism for preliminary case screening or documentation standardization is visible in the workflow.

Output:

- Feedback loops exist but seem disconnected from systemic improvements.
- The process doesn't indicate how case outcomes and legal advice are documented or standardized.

Storage:

- No indication of how case information is stored, shared, or secured between intake officials and lawyers.
- The system lacks visible integration between client records and case management systems.

Economics

- Resources may be inefficiently allocated with separate intake and lawyer consultations for matters that could be resolved at initial contact.
- The process doesn't indicate cost structures or financial assessment for citizens seeking assistance.

Control

- Case tracking appears fragmented across different roles (intake official, lawyer) without a unified monitoring system.
- Quality control seems reactive (based on feedback) rather than proactive throughout the case handling process.

Efficiency

- Multiple appointments and handoffs may create unnecessary steps for straightforward legal matters.
- The workflow doesn't indicate how similar cases are recognized for potential standardized responses.

Service

- The feedback mechanism exists but appears disconnected from service improvements.
- No clear escalation path is shown for cases where citizens are dissatisfied with services provided.