AI FOR JUSTICE - Bringing Data into the Sri Lankan Courtroom

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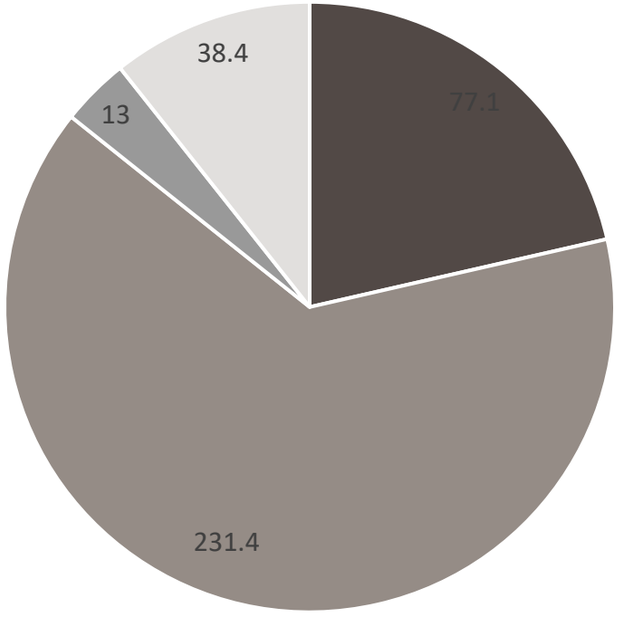
WHY ?

Despite the rising availability of data on people's experiences with justice, institutions around the world still have a long way to go to ensure justice for all.

As a recent report by the World Justice Project estimates, five billion people have unmet justice needs globally.

- 1.5 billion people cannot obtain justice for civil, administrative, or criminal justice problems.
- 4.5 billion people are excluded from the opportunities the law provides.
- 253 million people live in extreme conditions of injustice.

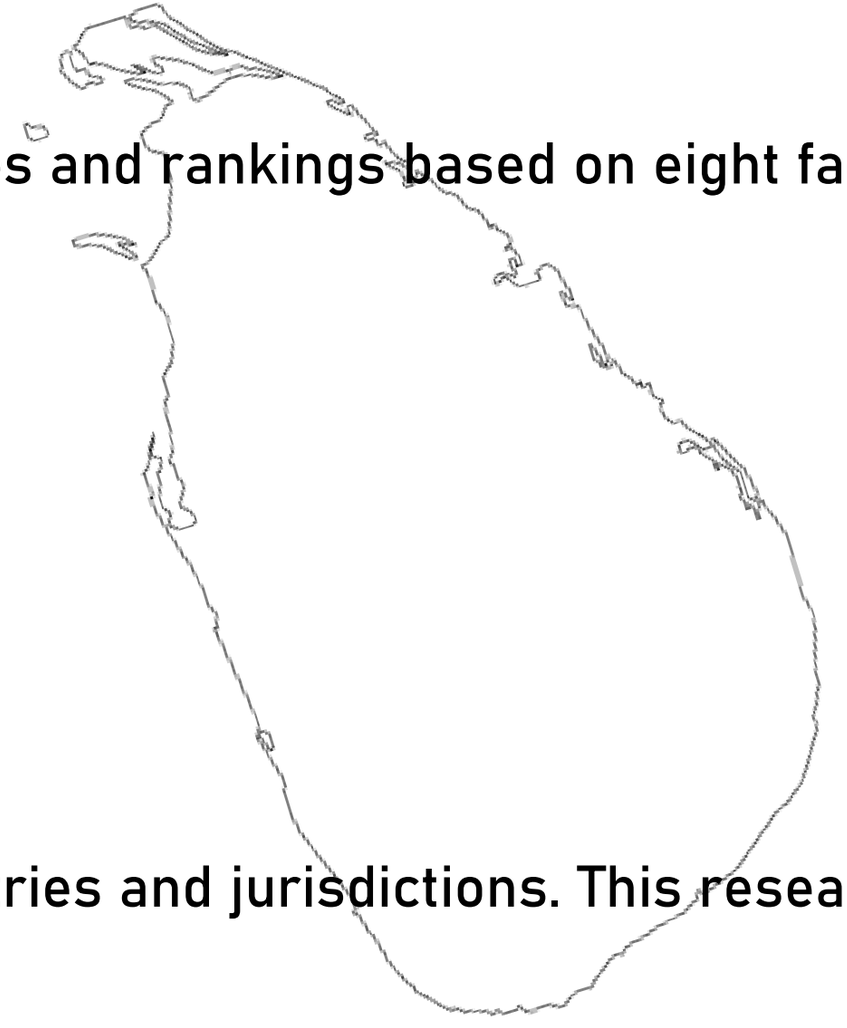
World Justice Project



- People cannot obtain justice for civil, administrative, or criminal justice problems.
- People are excluded from the opportunities the law provides.
- People live in extreme conditions of injustice.
- People who met their justice.

When viewed in the aggregate, these figures amount to 5.1 billion people – or approximately **two-thirds of the world's population** – who face at least one of these justice issues, with many confronted by multiple injustices

Sri Lanka



The WJP Rule of Law Index 2021 provides scores and rankings based on eight factors:

- Restraints on Government Powers
- Absence of Corruption
- Open Government
- Fundamental Rights
- Order and Security
- Regulatory Enforcement
- Civil Justice
- Criminal Justice

It paints a picture of the rule of law in 139 countries and jurisdictions. This research places Sri Lanka 76th out of 139 nations.

Sri Lanka

Sri Lanka's law index value is 0.50, which is lower than the global law index average value of 0.56.

Sri Lanka	0.50	-0.02	76	3 ▼

Overall Score	Regional Rank	Income Rank	Global Rank
0.50	2/6	8/35	76/139

Score Change	Rank Change
-0.02 ▼	-3 ▼

Sri Lanka

Sri Lanka's average values for all the sub-sectors considered for determining this overall average value are lower than the global average values for that.

Also, the overall average value for Sri Lanka is decreasing from 2015 to 2021.

	Factor Score	Score Change	Regional Rank	Income Rank	Global Rank
Constraints on Government Powers	0.54	-0.02	3/6	7/35	69/139
Absence of Corruption	0.49	0.02	1/6	2/35	61/139
Open Government	0.52	0.01	2/6	5/35	64/139
Fundamental Rights	0.53	-0.01	1/6	7/35	76/139
Order and Security	0.56	-0.15*	4/6	31/35	127/139
Regulatory Enforcement	0.50	0.02	2/6	9/35	72/139
Civil Justice	0.45	0.00	2/6	21/35	103/139
Criminal Justice	0.43	-0.01	2/6	7/35	73/139

* Indicates statistically significant change at the 10 percent level

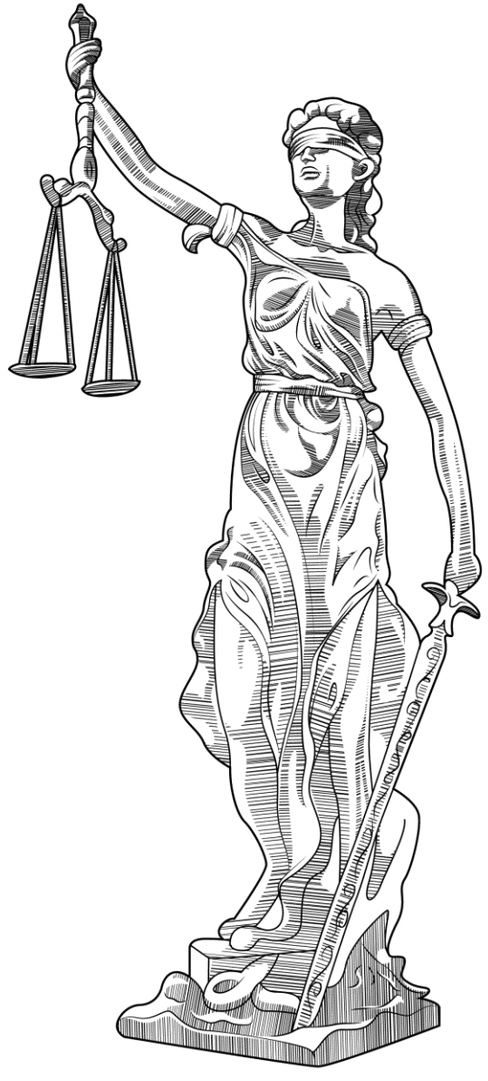
Low Medium High

Sri Lanka

- According to this data, public trust in the justice and judicial system of the island is decreasing due to the distance of social justice from the public.

- Its real social impact will be disastrous, and the society that emerges from it will be more unstable, problematic, confused, and dangerous.

- A developing country like Sri Lanka, which has suffered a severe economic crisis, will not be able to bear the emergence of such a society and its consequences.



Sri Lanka

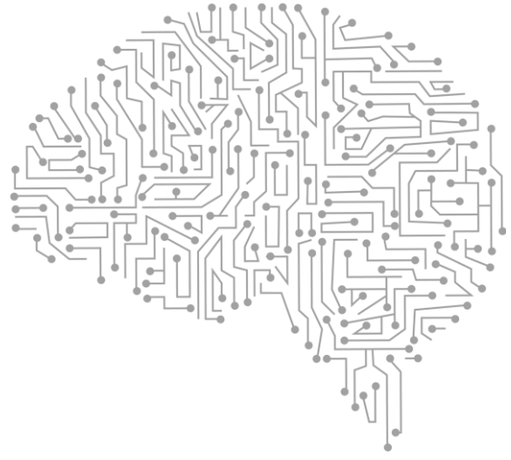
- A number of economics research papers show that the economic growth of a country is directly affected by its legal system/rule of law.

- Also, the economic growth of a country is directly related to all its social issues like poverty, hunger, corruption, etc.

Therefore, there is a dire need to create a more efficient, accurate, and transparent judicial system in Sri Lanka.

HOW ?

While AI's potential in fields such as **healthcare, retail and e-commerce, food technology, banking and financial services, logistics and transportation, travel, real estate, entertainment and gaming,** and **manufacturing** is already widely explored, we started to look at what data has in store for jurisdictional institutions.



HOW ?

- Judiciary and Judicial institutions often had great inertia in adopting new technologies, and AI is one of them. Not only is AI able to improve access to justice, but it also contributes to the base of peaceful and inclusive societies by making institutions more accountable and effective.

- It does so through different applications that help courts as well as citizens on all levels to make processes less complex, more transparent, more efficient, more accurate, impartial, inclusive, and more reliable.

- According to a study from 2020, AI could have a positive impact on 58% of the targets in SDG 16 “Peace, Justice and strong institutions”.

TEAM

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Research Co-Supervisor

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TEAM

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STAKEHOLDERS

The justice system thus created should lead to good governance and betterment of society and followings can be identified as the stakeholders of the proposed system.

The public
Judges
Lawyers
Court personnel
Victims
Accused
Law students and Law Academics

STAKEHOLDERS

- All these stakeholders are directly or indirectly linked to the justice system and there is no **common support system** to help all of them carry out their responsibilities more accurately, efficiently, and impartially.

- We have identified the key issues that the public, judges, lawyers, justice organizations, court workers, and law students and legal scholars face in the existing court system, the support they need to make the court system better, and the support we can provide through **AI technology.**

EXISTING SOLUTIONS

- **Lithuania** uses AI creatively for citizen services to have a positive impact on their well-being. (Public Administration)

- **Germany**, specifies in its AI strategy that decisions and the appraisal of information will continue to be conducted by the staff of law enforcement authorities to maintain accountability and responsibility. (Criminal Case handling)

- **Estonia,** to tackle the growing complexity of court cases from the local to the European Union level, Estonia already embraces AI as a key solution to predict the results of processes and discover new patterns.

EARLIER APPROACHES

Deep Learning Algorithm for Judicial Judgment Prediction Based on BERT

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A Predictive Performance Comparison of Machine Learning Models for Judicial Cases

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Predicting Judicial Decisions of Criminal Cases from Thai Supreme Court Using Bi-directional GRU with Attention Mechanism

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Artificial Intelligence in Law

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Predicting Judicial Decisions: A Statistically Rigorous Approach and a New Ensemble Classifier

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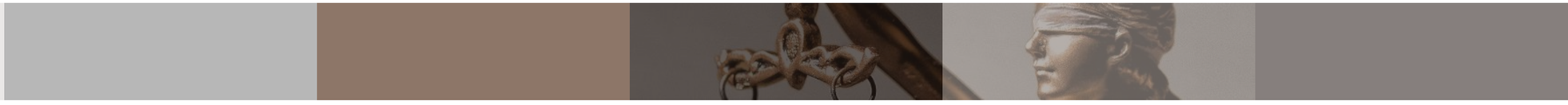
RESEARCH PROBLEM

- While we should strive to increase the efficiency of the judicial system, we should also keep in mind the essential element of justice. In the eyes of citizens: they depend on trust and confidence in the functioning of the system.

- Thus, the question we must answer in our journey towards improved justice systems is: How can the institutions of judicial processes be made more accessible, accountable, and efficient for citizens?

- Also, the approach here must be human-centric: as a game changer for the work of courts, administration, and police, AI must be implemented in the service of citizens.



OUR SOLUTION

Our aim is to develop a web platform where all these identified stakeholders can get the necessary support.

The website will be a common platform for all these stakeholders to get the legal assistance they need and enhance the existing justice system.

A local platform to bring data to the Sri Lanka courtroom.

OUR APPROACH

01

Intelligent automation of juridical processes

Standard processes like managing cases and validating documents take time for law enforcement authorities, given the vast amount and complexity of information. AI applications such as Natural Language Processing (NLP), automated decision-making, or visual processing can support authorities through intelligent case management or cognitive document processing and enable authorities to enhance their efficiency and transparency.

OUR APPROACH

02

Data-supported help for judges in decision-making processes

Judges need to take sensible decisions based on insights they analyze themselves. This makes decision-making processes lack in-depth context and more vulnerable to biases. Through advanced and predictive analytics, decision-making in courts can be supported by AI as a source of information analysis, as an instrument for the performance review of measures, and as means of optimizing administrative processes.

OUR APPROACH

03

Data-supported help for Lawyers in case-handling processes

Lawyers must be extremely aware and attentive to the case they are handling. This is very important to give justice to their clients i.e., the public. Through advanced and predictive analytics, AI can support case handling as a source of information analysis, for performance review of proceedings, and as a tool for determining the likelihood of winning or losing a case.

OUR APPROACH

04

Interaction with citizens

When confronted with juridical processes, citizens often have difficulties navigating the legal system and may have inquiries that take time to be answered. Through citizen-guiding chatbots and FAQ assistants, AI can provide information, answer questions and even help with requests to make law enforcement as transparent and explainable as possible, thus revolutionizing the way that citizens interact with police, courts, and other authorities.

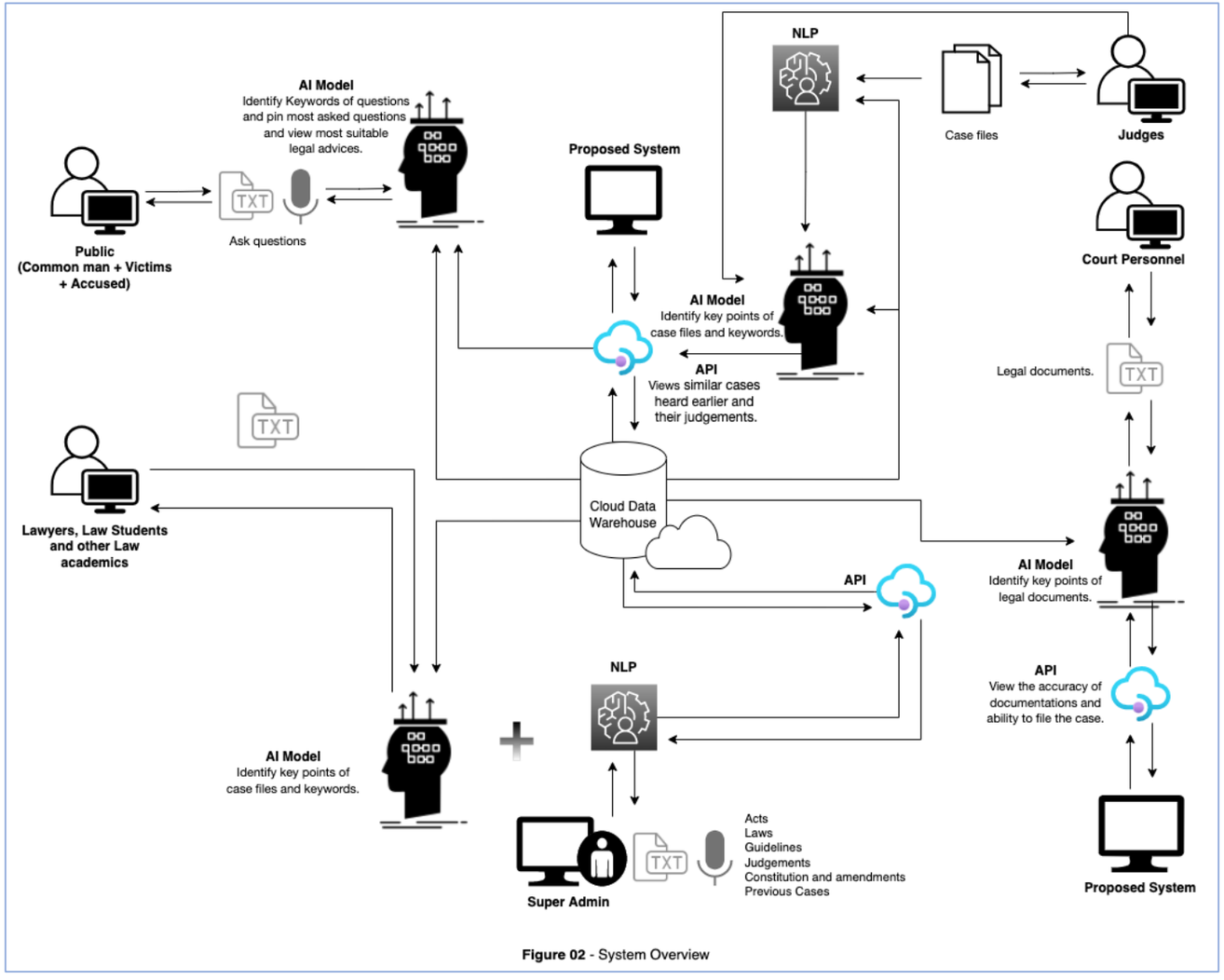


Figure 02 - System Overview

OBJECTIVES

Main Objective

- The main objective of this is to propose a well-functioning and accessible justice system, which is a prerequisite for sustainable development in the country, using new dimensions of AI technologies and thereby creating a more accessible, accountable, efficient, and impartial justice system for all citizens of the island.

OBJECTIVES

Sub Objectives

- To create and propose a system where people can get an idea of their legal problems before going to a lawyer or get the advice, they need by knowing other people's related legal problems and their legal background and experience.
- Assisting attorneys to automatically analyze their cases and generate quick cross-borders. Thereby creating opportunities for lawyers to provide better service to their clients and thereby helping to move the case for a more correct and fair decision in the trials.
- Assisting judges to automatically analyze their cases and study the facts of other previous trials similar to those trials. thereby helping the judge to take the case for a more accurate and fair decision.
- Propose and create an automated letter analysis system that enables court employees and the public to perform more accurate and proactive legal actions in filing lawsuits and other legal processes.

AI FOR JUSTICE – Predicting Court Decisions in Sri Lankan Judiciary.

SEDARAHETTI S. T. K. (IT18187892)

RESEARCH QUESTION

- In Sri Lanka, AI tools are not used to deliver judgments. Despite various solutions, delays in judgments, and imprecise and biased judgments are still increasing. Therefore, an emergency solution should be implemented with immediate effect, as problems arise that lead to enormous social and commercial hazards.

METHODOLOGY

- The human-Centered Design Methodology will be used by way of the prototyping method and a participatory method to find the design and then code it as an AI solution.

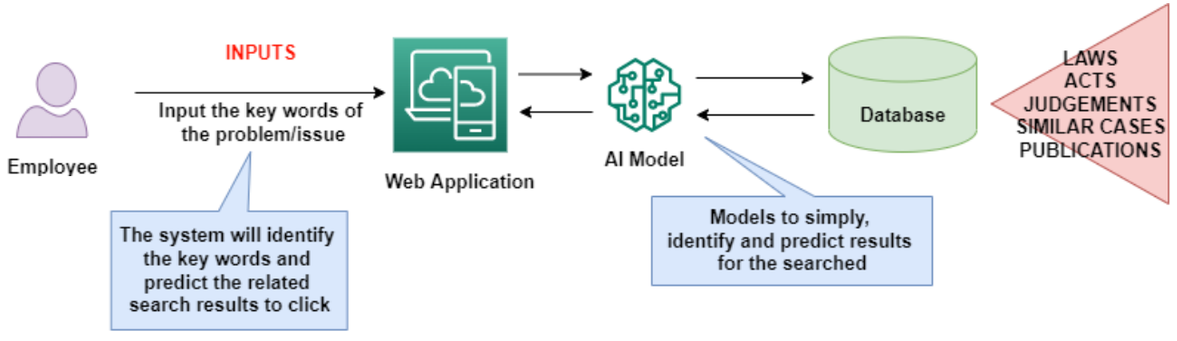
- This is a systematic study of the prediction of case judgments based solely on the textual content of cases heard by the Supreme Court of Sri Lanka on fundamental rights.

- Here, a binary classification task is created, and using textual contents extracted from a case as its inputs, the output is to obtain the actual judgment based on whether a clause of the Constitution of Sri Lanka has been violated or not.

METHODOLOGY

- In this research, the formal facts of a case are used as its predictive factor. This is consistent with the theory of legal realism, which suggests that judicial decision-making is significantly influenced by the stimulus of facts.

- Furthermore, this solution adheres to privacy-by-design principles in Sri Lanka to preserve privacy.



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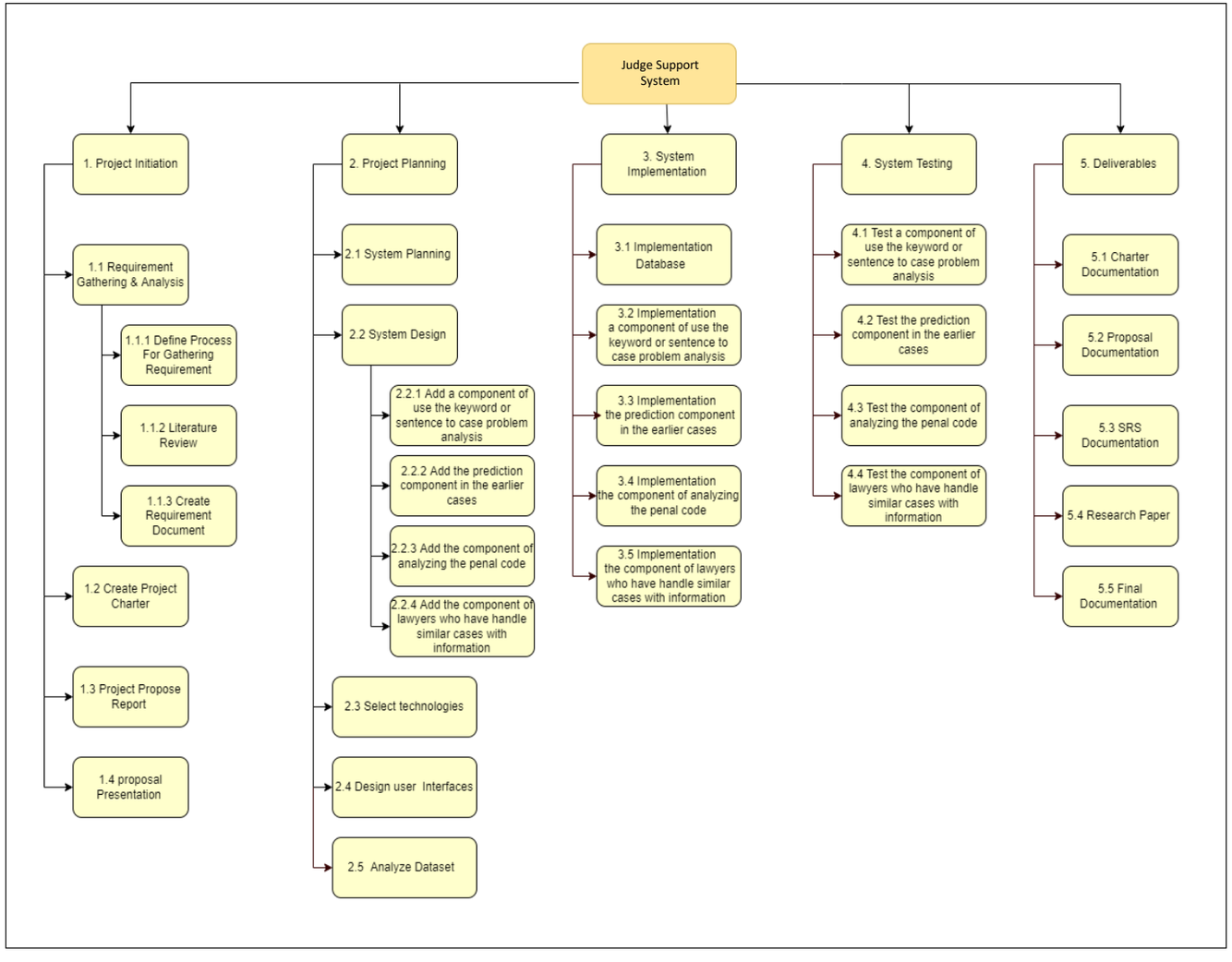
Judge Support System
1. Project Initiation
1.1 Requirement Gathering & Analysis
1.1.1 Define Process For Gathering Requirement
1.1.2 Literature Review
1.1.3 Create Requirement Document
1.2 Create Project Charter
1.3 Project Propose Report
1.4 proposal Presentation
2. Project Planning
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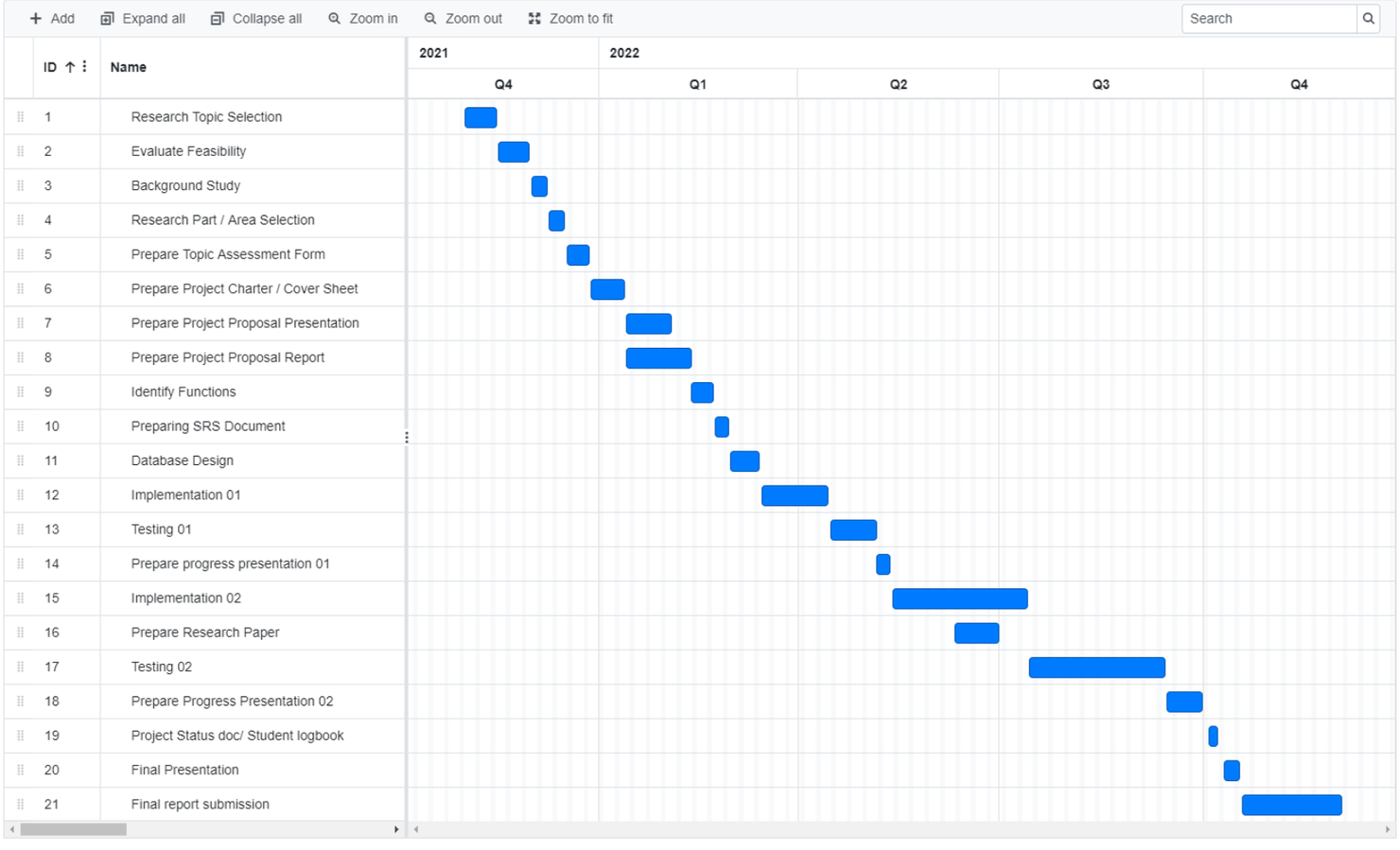
5. Deliverables
5.1 Charter Documentation
5.2 Proposal Documentation
5.3 SRS Documentation
5.4 Research Paper
5.5 Final Documentation

GANTT CHART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2 Evaluate Feasibility
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6 Prepare Project Charter / Cover Sheet
7 Prepare Project Proposal Presentation
8 Prepare Project Proposal Report
9 Identify Functions
10 Preparing SRS Document
11 Database Design
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13 Testing 01
14 Prepare progress presentation 01
15 Implementation 02
16 Prepare Research Paper
17 Testing 02
18 Prepare Progress Presentation 02
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20 Final Presentation
21 Final report submission

IT18013474

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Citizen Support System

Background

People are don’t know about the law

People are don’t know they are violated or not.

People are cannot understand judgments

If people are violated? Some people are don’t know what about they do next?

Research gap and questions

- peoples face many difficulties, at their environments. They often do not have any knowledge regarding their rights. Many of them are silent because they are either incapable of seeking legal advice or are afraid to do so. Sometimes they do not know how to contact a good lawyer to get support?

- Most of the systems are in as a desktop system.

- No solution to analyze and provide support.

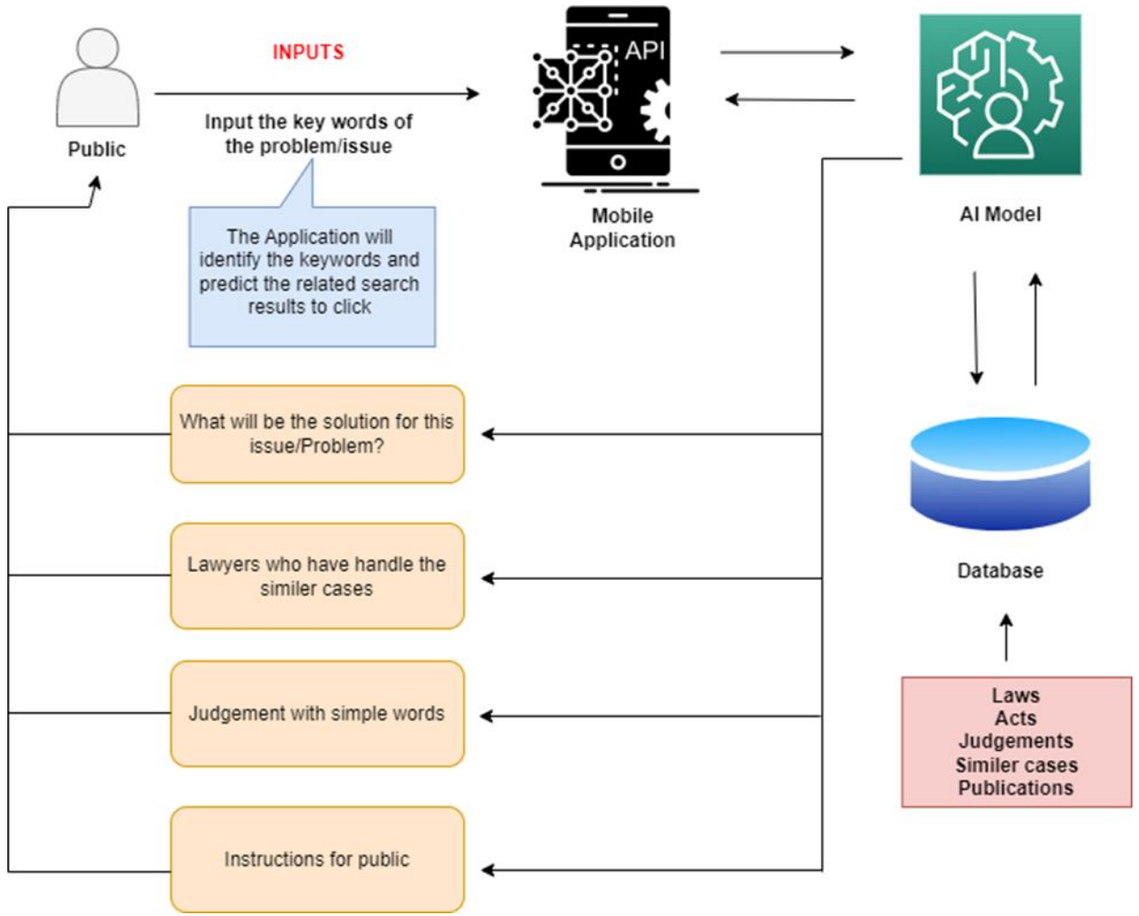
Research gap and questions

Research	Technologies	Identify the problem and develop argument	Predict that person is violated or not	Giving instructions for public	Suggest previous judgments in simple words	User friendly interfaces
MOBILE APP TO PROVIDE A RELIABLE LEGAL ADVISORY SERVICE FOR THE CLIENTS IN SRI LANKA	Android OS, IONIC platform, PHP, typescript and MySQL	Yes	No	No	No	Yes
Artificial intelligence and machine learning based legal application: the state-of-the-art and future research trends	Artificial Intelligence and Machine Learning	Yes	No	No	No	No
Legal decision support systems in Cuba	Artificial Intelligence, Soft Computing, Big data, and Open Data.	Yes	No	No	No	No
In Our Mobile app (AI FOR JUSTICE - Bringing Data into the Sri Lankan Courtroom)	Flutter	Yes	Yes	Yes	Yes	Yes

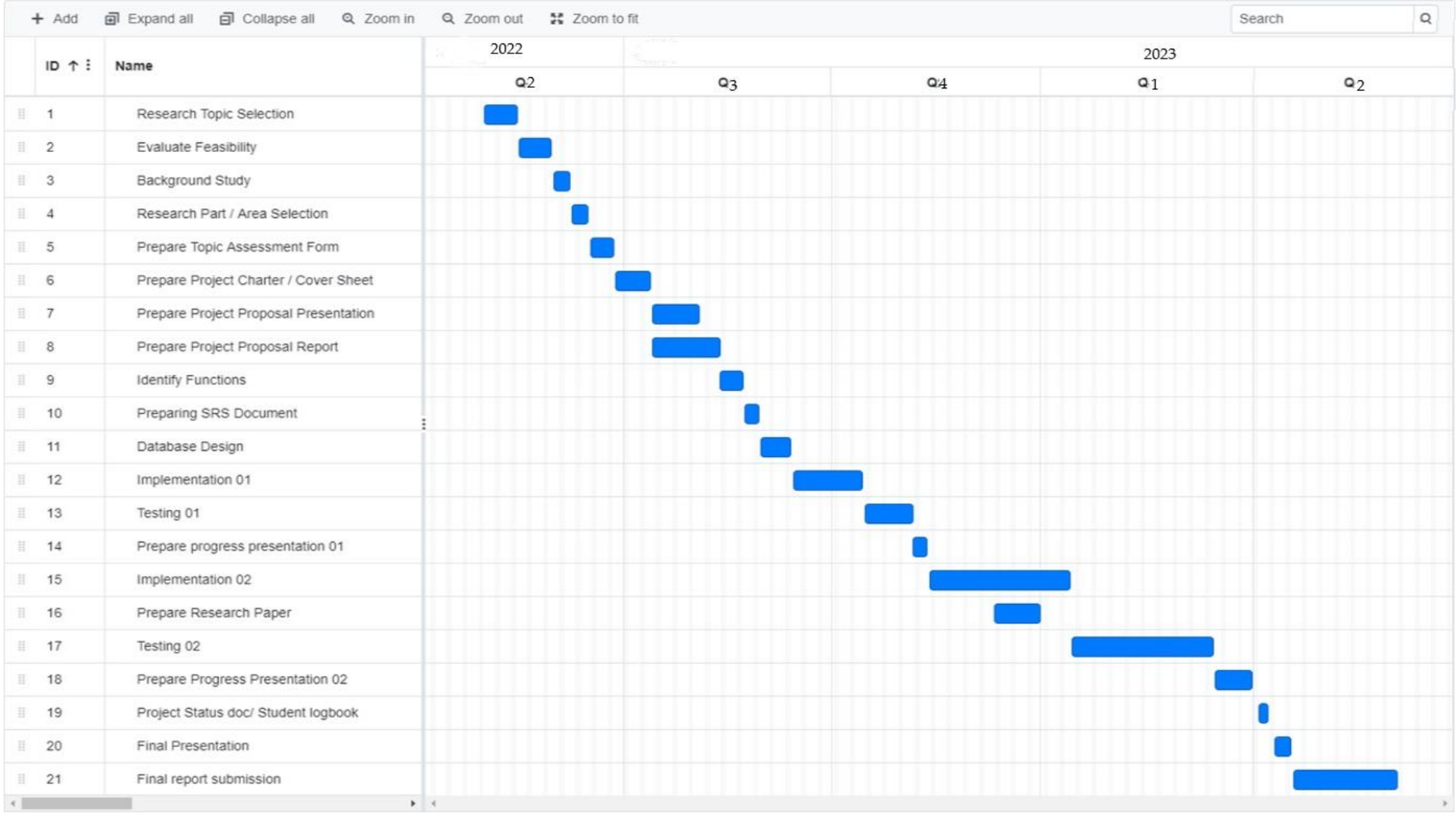
Objectives

Guide	Guide the public to understand their rights and responsibilities, provide them legal support when necessary, and connect them to a suitable lawyer.
Reduce	Reduce the percentage of person that unaware of their rights and that are not willing to take legal actions.
Save	Save the time and money of clients that are spending on unqualified lawyers.
Encourage	Encourage the percentage of the workforce to stand for their rights.

Methodology



Gantt Chart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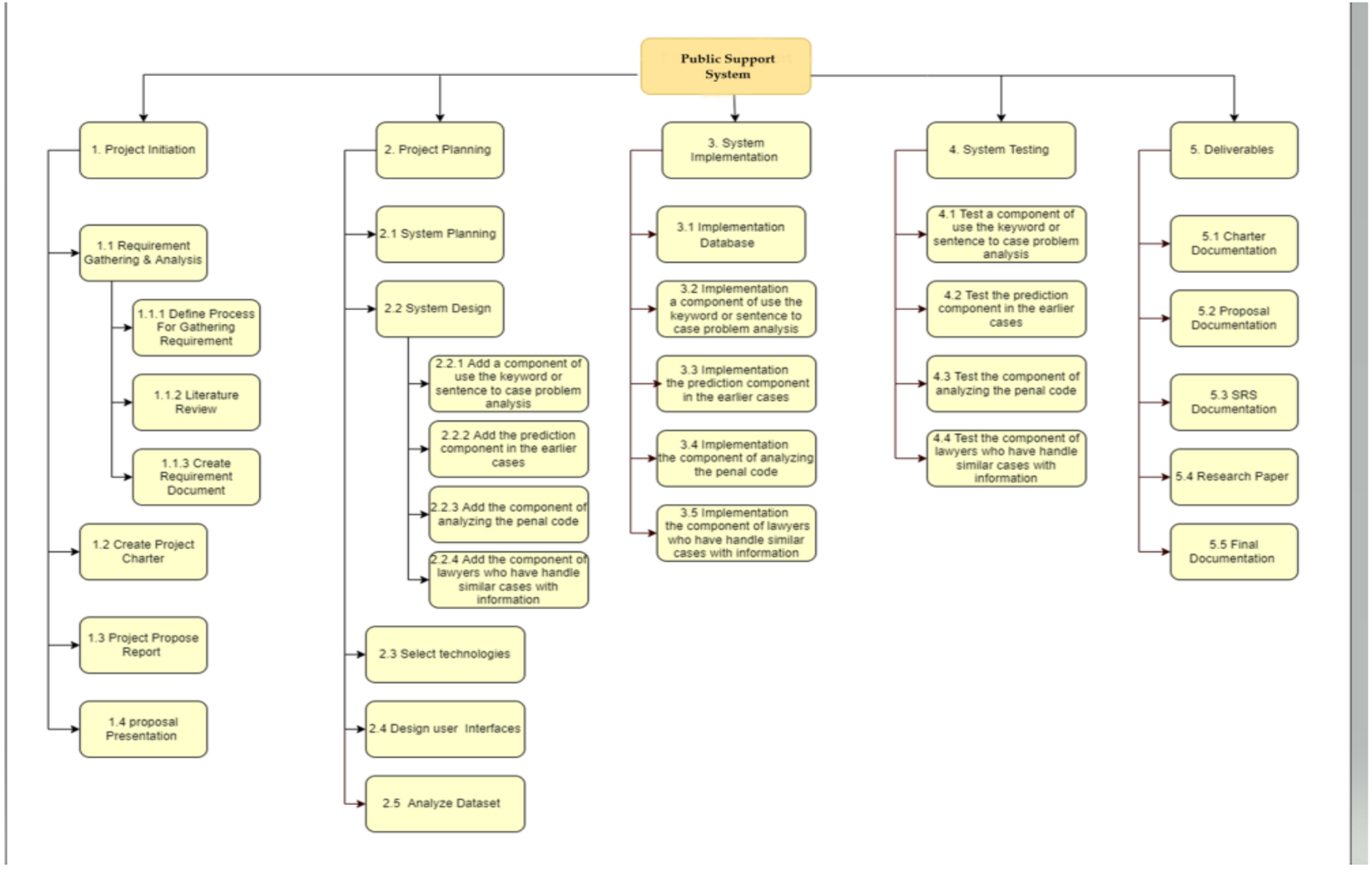
- **WBS**


Public Support System
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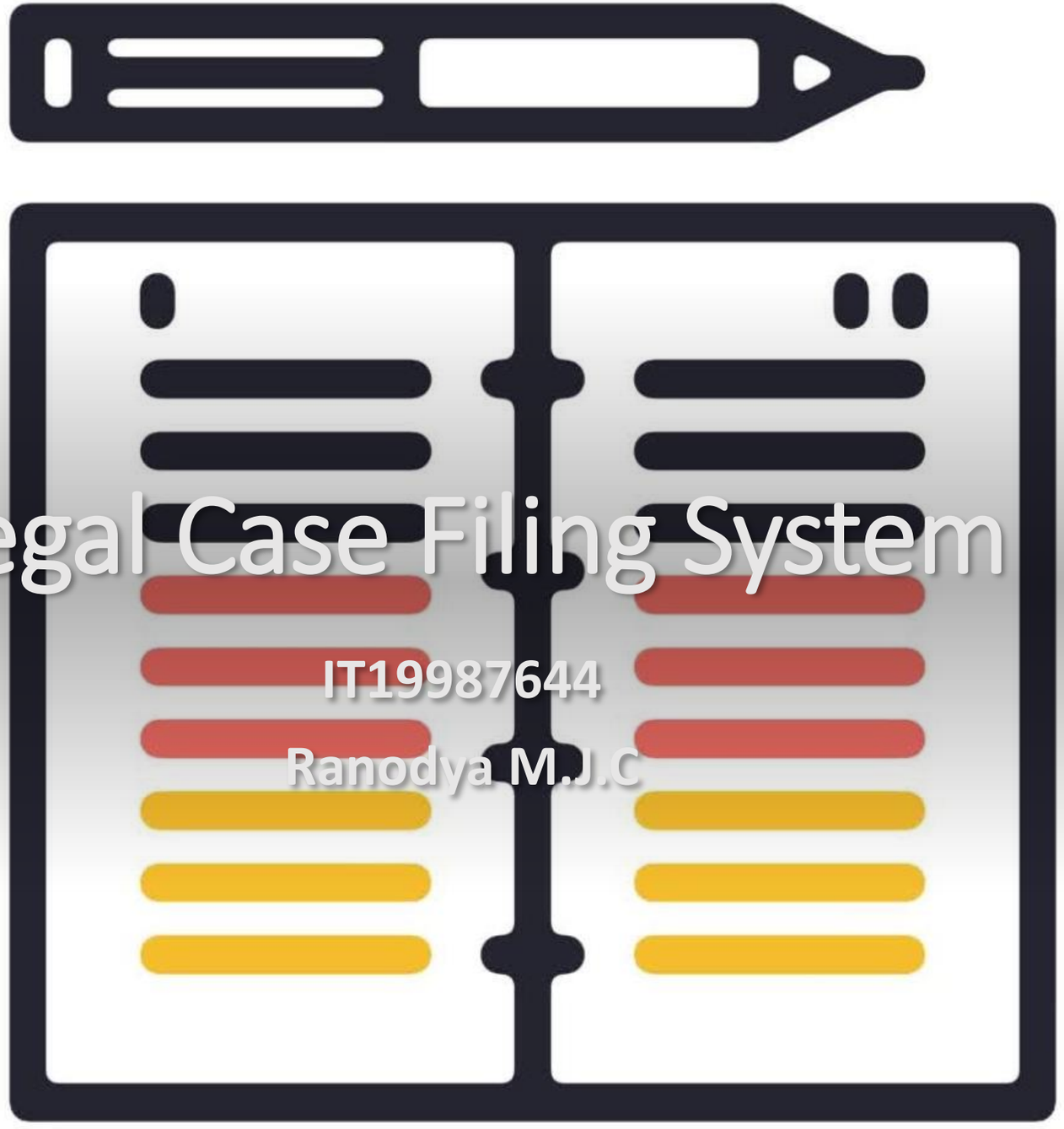
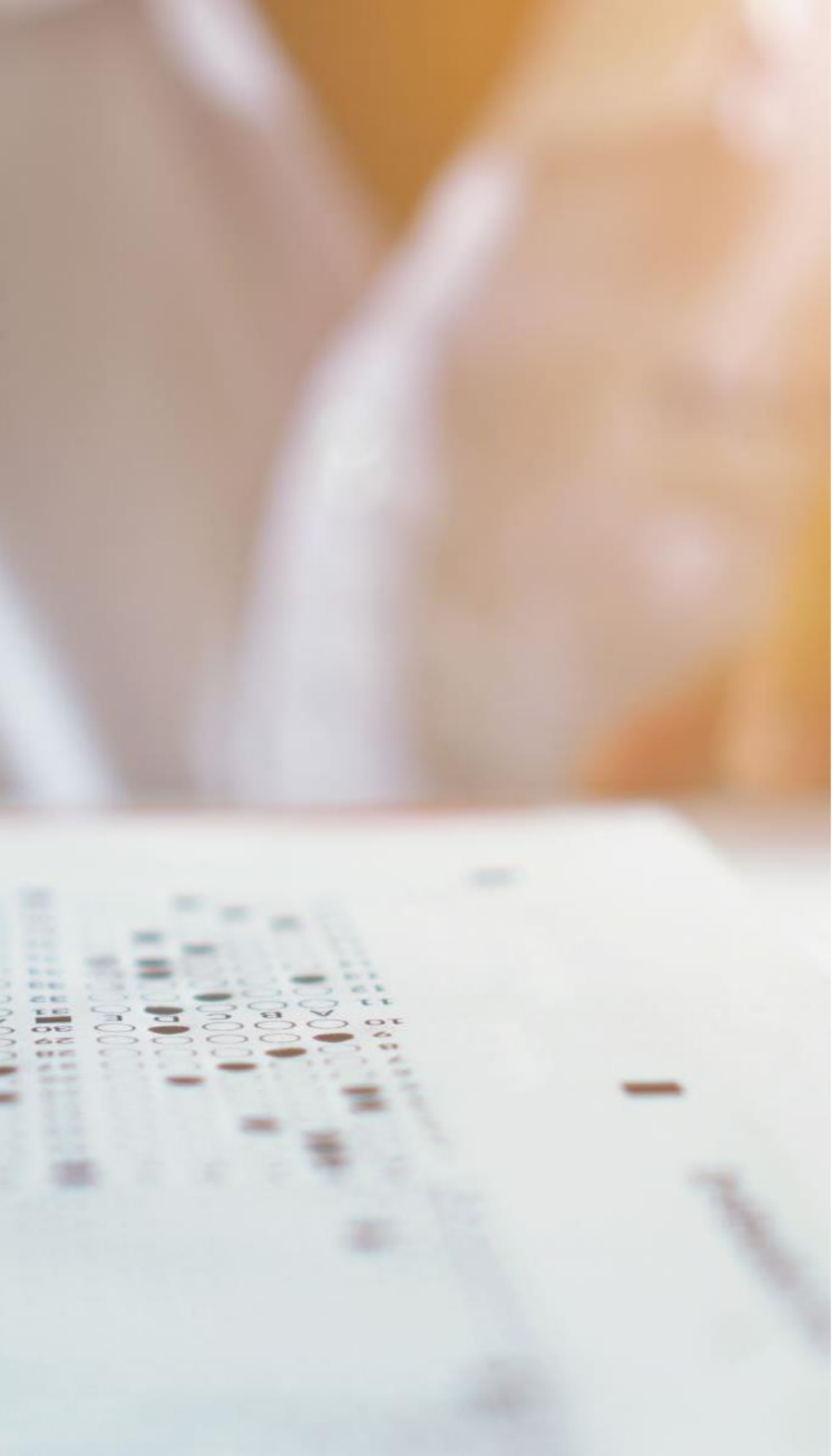


Legal Case Filing System

IT19987644

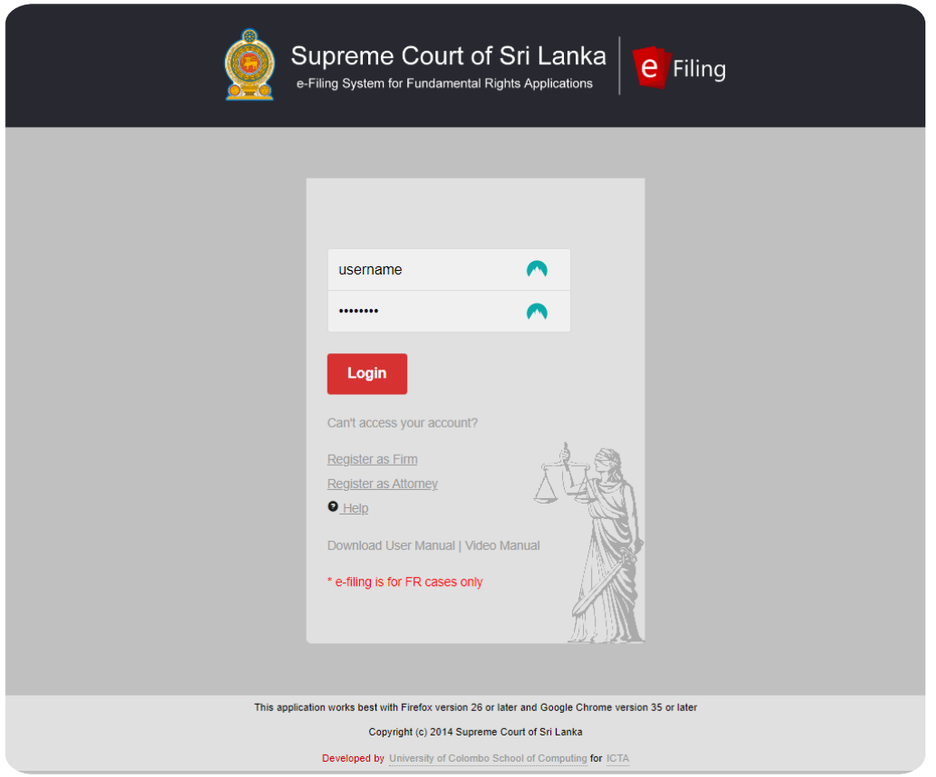
Ranodya M.J.C



Research Question

Case filing is the initial step in getting justice through the court system. All the cases that are filed are not accepted. There are a significant number of dismissed cases. Moreover, since the dismissal of cases is determined at a hearing, it takes a considerable amount of time for the parties involved to learn that their cases were dismissed. Therefore, in order for a case to be dismissed, it must proceed through each phase until its hearing. This leads to the squandering of money, time, and other resources such as human labor.

So, how can we reduce the number of cases that are dismissed due to issues in filing the cases while saving time and other resources?



Research Gap

How may difficulties in submitting cases be identified during the filing process?

How should relevant documents and agreements be reviewed, validated, and located?

How should the user be guided in correctly filing the case?

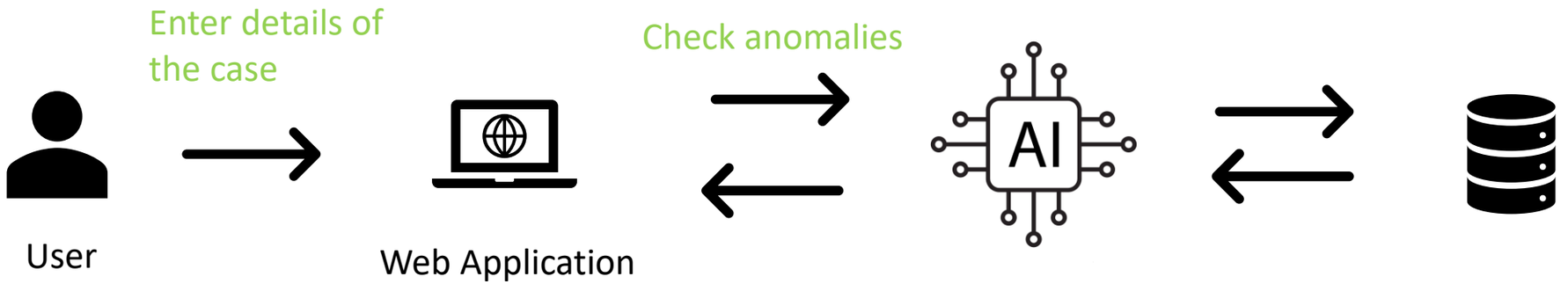
Objectives

Reduce the time it takes to deliver justice due to legal case filing delays.

Allow court staff and authorities in charge of filing cases to file lawsuits and validate documents in a more accurate and proactive manner.

Reduce the waste of money and other resources, such as human labor.

Methodology



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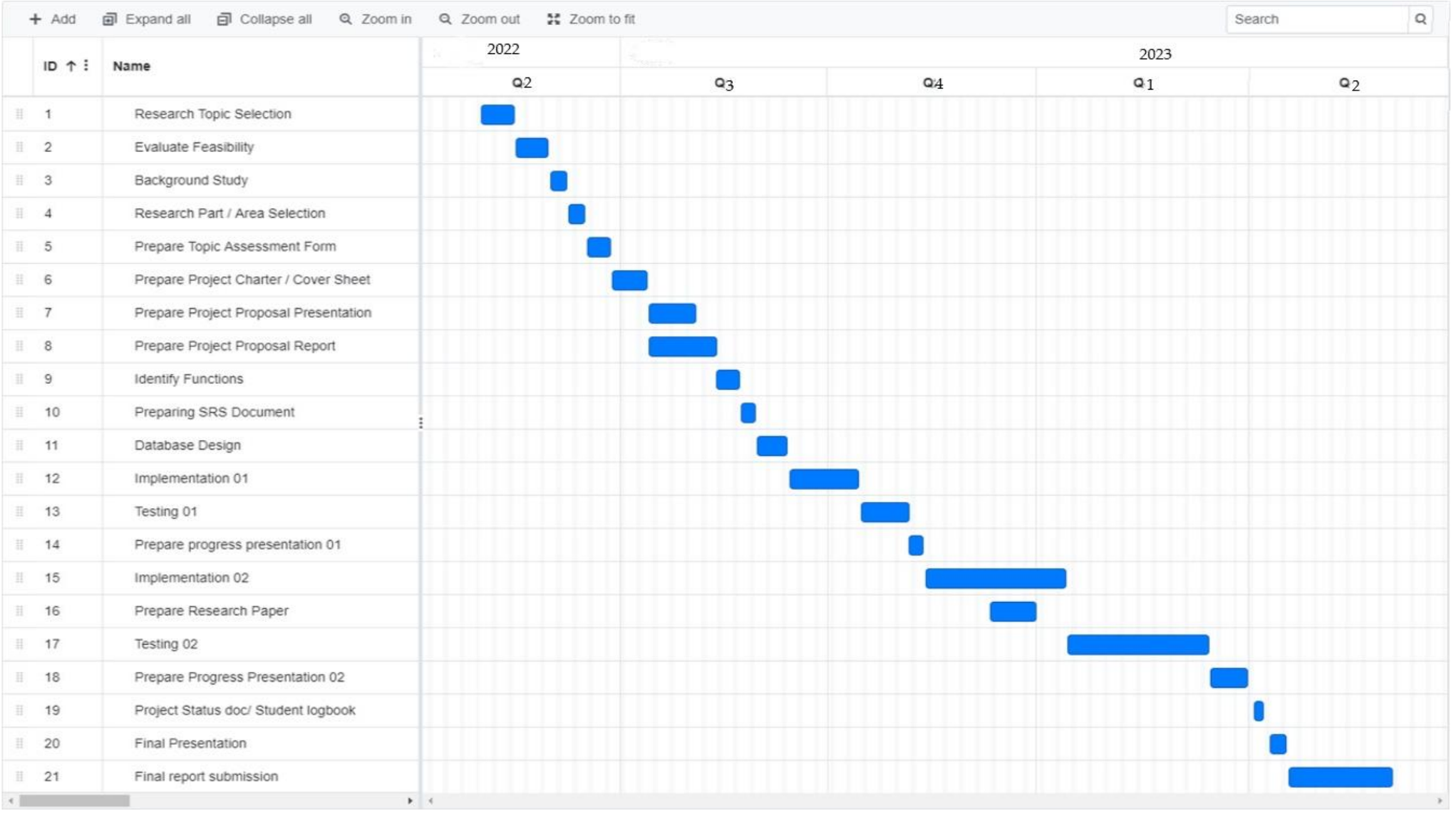
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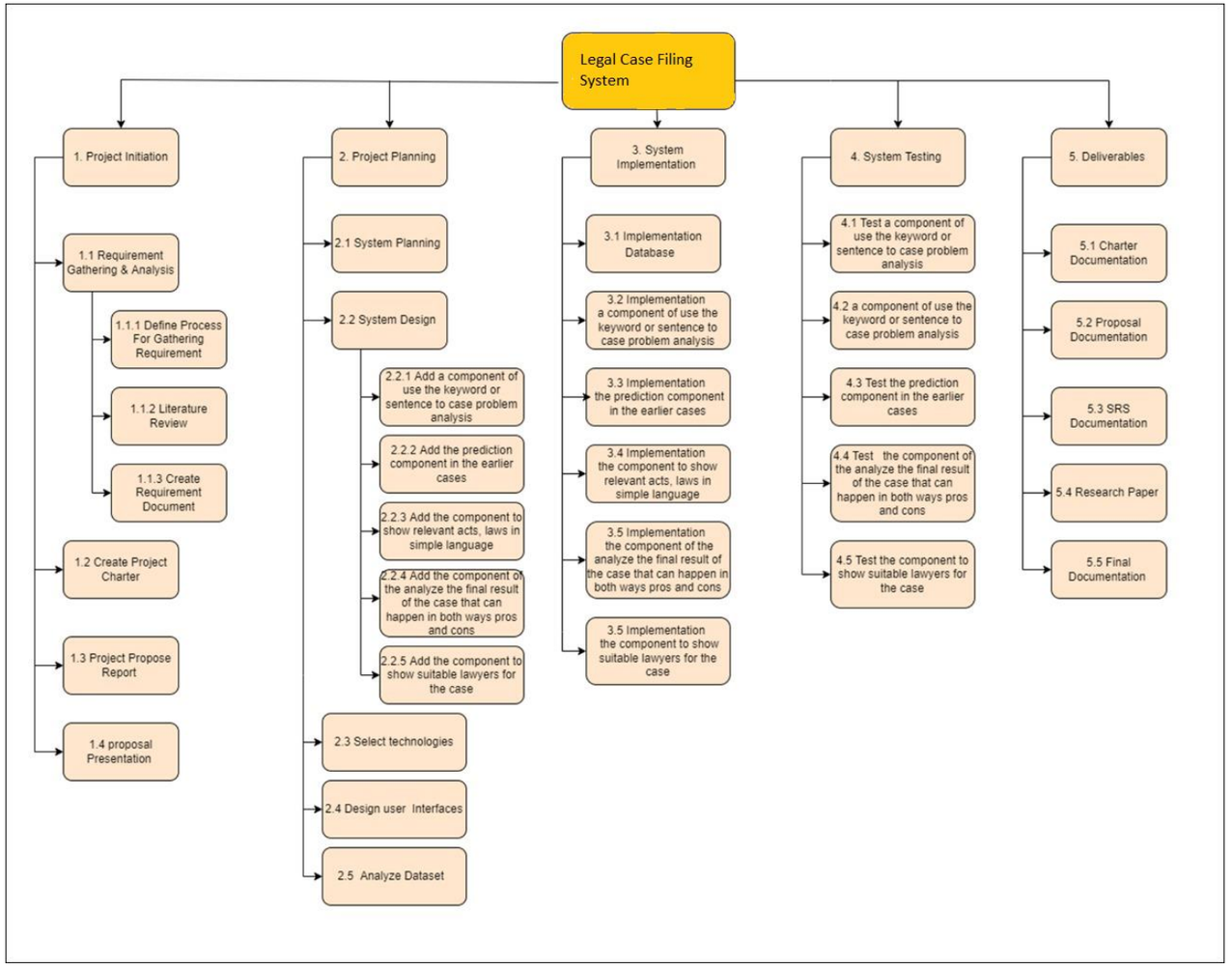
21 Final report submission

Work Break Down Structure



Lawyer Assisting System

- De Silva E.A.A
- IT19991054

Information Systems Engineering

Research Question

- Lawyers don't have a system which can analysis previous cases , case related documents and predict the possibility of a win in a certain law case.
- The related documents also are not in one place and lawyers needs lot of time to find them and that delays to hear a law.

Research Gap

- "Black box Justice":Robot Judges and AI-based Judgement Processes in China's Court System

Nu wang

- Advancing Artificial Intelligence to Combat Escalating Cyberspace Human Rights Violations in Africa

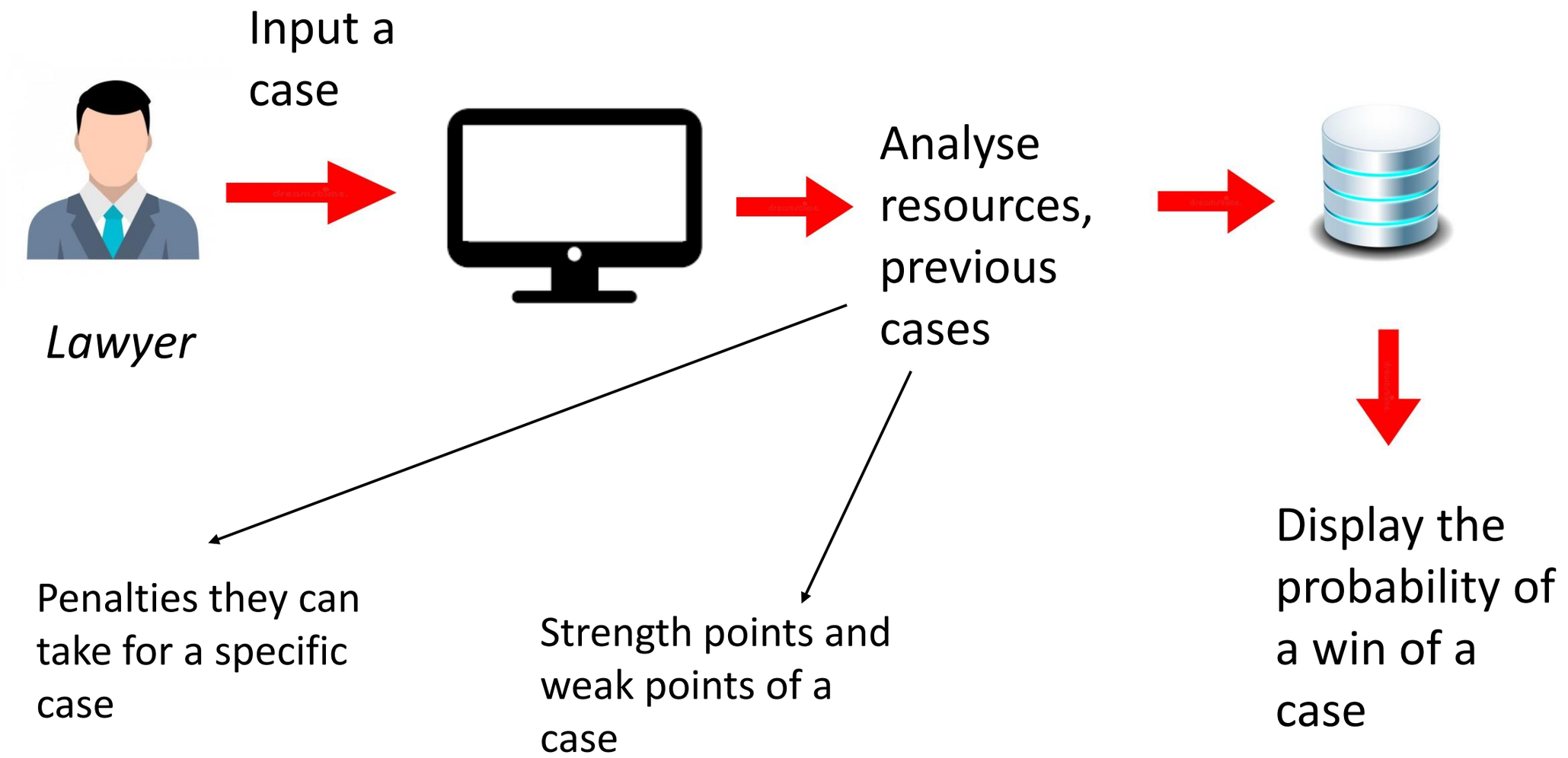
Phumzile NOMNGA1 , Ndiyakholwa NGQULU

- How to develop the possibility winning possibility of a case?
- How to develop arguments?
- No solution to analyze and provide support.

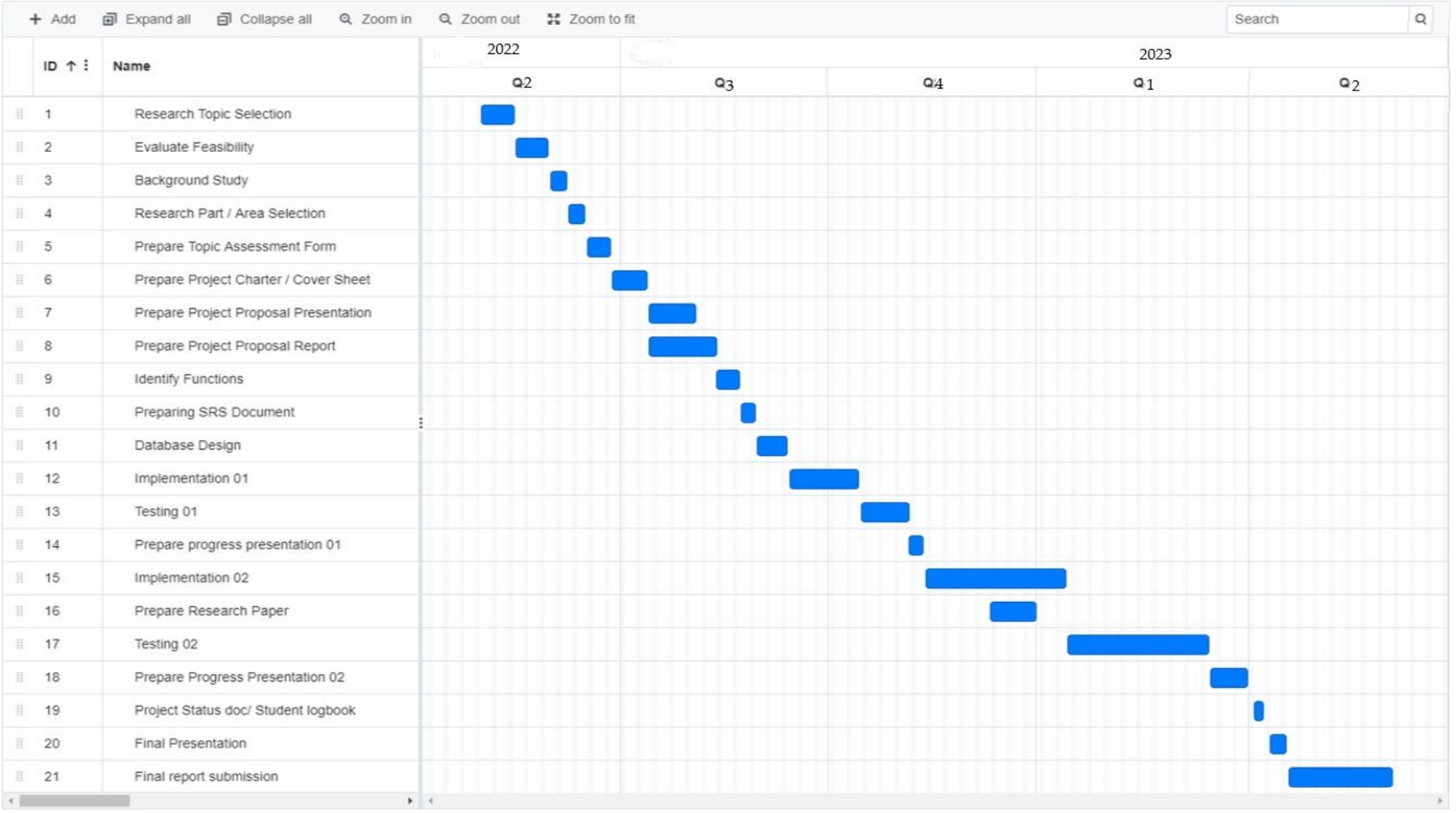
Objectives

- ***Main objective Of the function.***
- Assist lawyers to analyze their cases automatically and generate the percentage of win.
- Save the time and energy of lawyers spending on analyzing cases manually.
- supply reading materials for lawyers.
- Share the knowledge among the community.

Methodology



Gantt Chart


Add
Expand all
Collapse all
Zoom in
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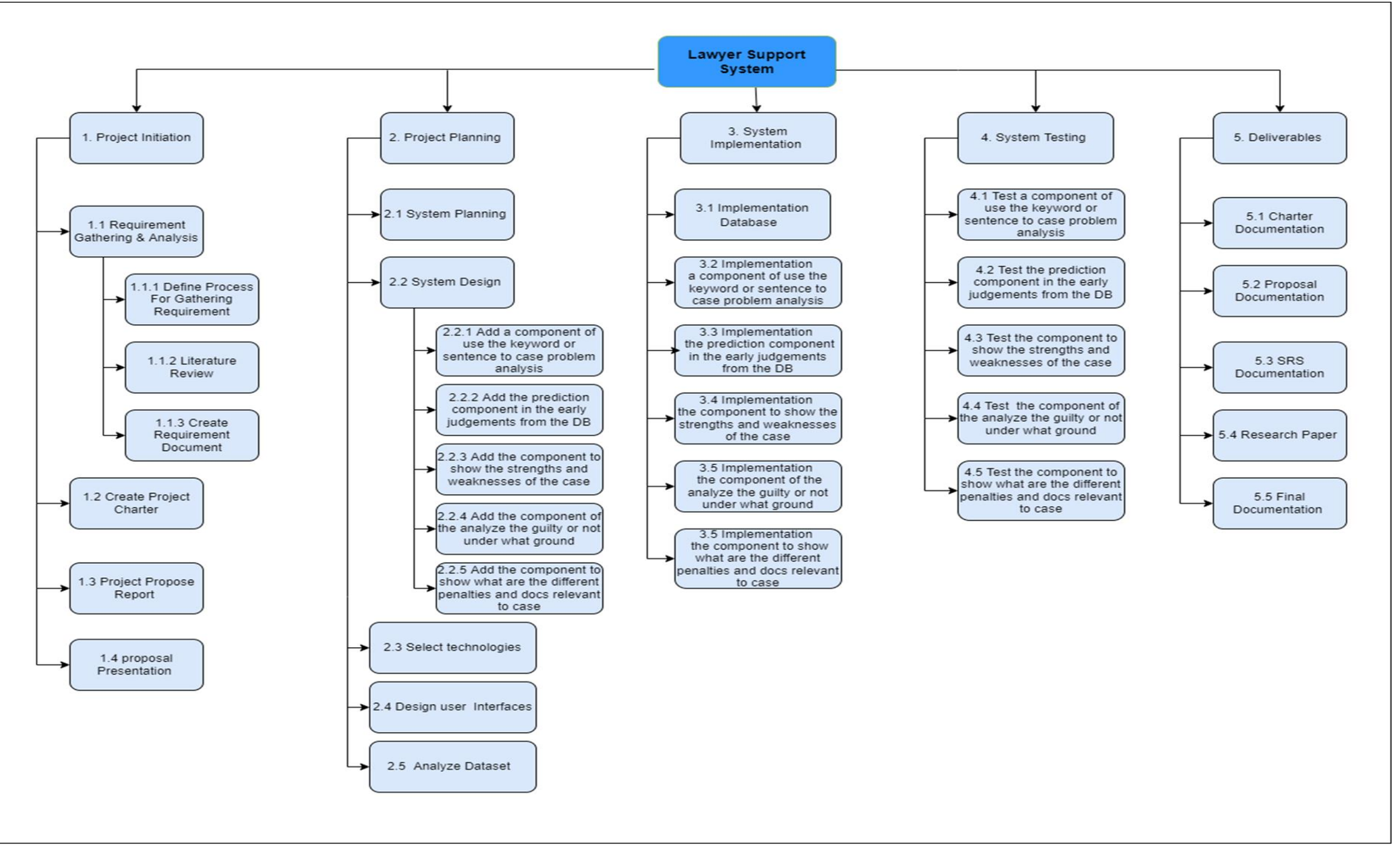
Search
ID
Name
2022
2023
Q2
Q3
Q4
Q1
Q2
1 Research Topic Selection
2 Evaluate Feasibility
3 Background Study
4 Research Part / Area Selection
5 Prepare Topic Assessment Form
6 Prepare Project Charter / Cover Sheet
7 Prepare Project Proposal Presentation
8 Prepare Project Proposal Report
9 Identify Functions
10 Preparing SRS Document
11 Database Design
12 Implementation 01
13 Testing 01
14 Prepare progress presentation 01
15 Implementation 02
16 Prepare Research Paper
17 Testing 02
18 Prepare Progress Presentation 02
19 Project Status doc/ Student logbook
20 Final Presentation
21 Final report submission

WBS


Lawyer Support System
1. Project Initiation
1.1 Requirement Gathering & Analysis
1.1.1 Define Process For Gathering Requirement
1.1.2 Literature Review
1.1.3 Create Requirement Document
1.2 Create Project Charter
1.3 Project Propose Report
1.4 proposal Presentation
2. Project Planning
2.1 System Planning
2.2 System Design
2.2.1 Add a component of use the keyword or sentence to case problem analysis
2.2.2 Add the prediction component in the early judgements from the DB
2.2.3 Add the component to show the strengths and weaknesses of the case
2.2.4 Add the component of the analyze the guilty or not under what ground
2.2.5 Add the component to show what are the different penalties and docs relevant to case
2.3 Select technologies
2.4 Design user Interfaces
2.5 Analyze Dataset
3. System Implementation
3.1 Implementation Database
3.2 Implementation a component of use the keyword or sentence to case problem analysis
3.3 Implementation the prediction component in the early judgements from the DB
3.4 Implementation the component to show the strengths and weaknesses of the case
3.5 Implementation the component of the analyze the guilty or not under what ground
3.5 Implementation the component to show what are the different penalties and docs relevant to case
4. System Testing
4.1 Test a component of use the keyword or sentence to case problem analysis
4.2 Test the prediction component in the early judgements from the DB
4.3 Test the component to show the strengths and weaknesses of the case
4.4 Test the component of the analyze the guilty or not under what ground
4.5 Test the component to show what are the different penalties and docs relevant to case
5. Deliverables
5.1 Charter Documentation
5.2 Proposal Documentation
5.3 SRS Documentation
5.4 Research Paper
5.5 Final Documentation

THANK YOU!