Software Requirements

Introduction

Objectives

The following high-level objectives of the Dispute Resolution Engine are defined:

1. Automate the Dispute Resolution Process
2. Automated Mediator Assignment
3. Scalability in Handling High Volumes of Disputes
4. Equitable Access and Availability
5. Human Intervention and Compliance
6. User-Friendly Interface
7. Support and Guidance for Users
8. Analytical Tools for Mediators
9. Efficiency and Cost-Effectiveness
10. Comprehensive Documentation Management
11. Neutrality and Bias Reduction
12. Tracking Online Transactions and Contracts

Functional Requirements

Core Requirements

1. Two-Party Engagement

    1. User Registration:
        1. Handles account creation for disputing parties.
        2. Manages authentication and authorization.
        3. Includes profile management for each party.
    2. Dispute Submission and Viewing:
        1. Interface for parties to submit their dispute details.
        2. Interface for parties to browse their active diputes.
        3. Form and document upload functionality for evidence and statements.
    3. Evidence Management:
        1. Secure storage and retrieval of submitted evidence.
        2. Metadata tagging and organization of evidence for easy access.

2. Mediator(s) Assignment

    1. Mediator Data Store:
        1. Stores information on mediators, including expertise, availability, and historical performance.
    2. Assignment Algorithm: (See Wow Factor 3 for AI-driven suggestions)
        1. Logic for matching mediators to disputes based on type, expertise, and availability.
        2. Includes load balancing to ensure fair distribution of cases among mediators.
    3. Availability Management:
        1. Tracks and updates mediator availability in real-time.
        2. Syncs with mediator schedules and appointment systems.

3. Dispute Resolution Workflow

    1. Workflow Engine: (See Wow Factor 2 for Customizable Workflows)
        1. Manages the progression of disputes through defined stages (submission, mediation, resolution, etc.).
        2. Configurable timelines and automated advancement through stages.
    2. Notification System:
        1. Sends alerts and reminders to parties and mediators about upcoming deadlines, sessions, and required actions.
        2. Supports multiple methods such as email, SMS, etc.
    3. Action Checklist:
        1. Provides a detailed checklist of required actions for each party at each stage.
        2. Tracks completion status and compliance with required steps.

4. Secure Communication Channel

    1. Encrypted Messaging:
        1. Real-time messaging system for parties and mediators.
        2. End-to-end encryption to ensure message confidentiality.
    2. Document Exchange:
        1. Secure document upload and download capabilities.
        2. Encryption for all documents in transit and at rest.
    3. Access Control:
        1. Role-based access control to ensure only authorized users can access specific messages and documents.

5. Natural Language Processing

    1. Document Processing:
        1. Extracts text from submitted documents.
        2. Converts scanned documents to text using OCR (Optical Character Recognition) if needed.
    2. Summary Generation:
        1. Uses NLP techniques to summarize dispute statements and evidence.
        2. Highlights key points and relevant information for mediators.
    3. Sentiment Analysis:

1. Analyzes the tone and sentiment of submitted statements to provide additional context.

6. Analytics Profiling

   1. Case Outcomes Analysis:
      1. Tracks and records the outcomes of resolved disputes.
      2. Generates statistics on success rates, resolution times, and more.
      3. Archives resolved disputes for future reference.
   2. Mediator Performance:
      1. Compiles data on mediator effectiveness and case history.
      2. Provides insights into mediator strengths and areas for improvement.
   3. Reporting Tools:
      1. Dashboards and visualizations for mediators and lawyers to explore case data.

7. Universal Dispute Creator

   1. Domain Configuration:
      1. Allows customization of dispute parameters for different fields or domains.
      2. Supports templates and presets for common dispute types.
   2. Integration Layer:
      1. Interfaces with external systems and databases to import/export dispute data.
      2. Supports APIs and data exchange standards for interoperability.

Optional Requirements

1. Resolution Support Tools

   1. Settlement Option Generator:
      1. Interactive tool to propose potential settlement options based on dispute details and historical data.
      2. Includes templates and customizable options for various types of disputes.
   2. Dispute Nuance Analyzer:
      1. Uses AI to analyze and highlight key nuances and complexities of the dispute.
      2. Provides insights and suggestions to mediators based on the analysis.
   3. Guidance System:
      1. Provides step-by-step guidance to mediators for conducting mediation sessions.
      2. Includes best practices, tips, and checklists to ensure effective mediation.

2. Resolution Archive

   1. Secure Storage:
      1. Ensures data integrity and prevents unauthorized access.
   2. Search and Retrieval: (See Wow Factor 1 for Advanced Analytics)
      1. Provides a powerful search engine to query archived disputes.
      2. Supports advanced search filters based on dispute type, resolution outcome, date, involved parties, and other criteria.
   3. Audit Trail:
      1. Maintains a comprehensive audit trail of access and modifications to archived disputes.
      2. Ensures compliance with legal and regulatory requirements for data retention and auditing.

Wow Factors

1. Advanced Analytics

   1. Comprehensive Analytics Engine
      1. Aggregates data from resolved disputes.
      2. Uses statistical analysis and machine learning to identify trends, commonalities, and anomalies in dispute resolution processes.
      3. Generates visual reports and dashboards that provide actionable insights for mediators, legal professionals, and system administrators.
      4. Supports predictive analytics to forecast dispute outcomes and identify factors that influence successful resolutions.

2. Customizable dispute resolution workflows.

   1. Dynamic Workflow Designer
      1. Provides a user-friendly interface for designing workflows with swappable elements.
      2. Supports the creation of multiple workflow templates for different types of disputes and user roles.
      3. Enables customization of each step in the workflow, including timelines, required actions, notifications, and approval processes.
      4. Integrates with the core workflow engine to ensure seamless execution of custom workflows.

User Stories

Some users of the system will be known as *concerned parties*. These concerned parties have very similar needs, however they may fall into two main categories depending on how a dispute is initiated:

- **Complainants:** Users that wish to initiate a dispute process with another user
- **Respondants:** Users with whom a dispute process has been initiated by a complainant

It is worth noting that *concerned parties* only refer to complainants and respondents, i.e. they do not include the other user types detailed below.

Concerned Parties

As a Concerned party I want to manage my contact details so that I am reachable in the event of a dispute

As a Concerned party I want to be notified of an update in a dispute I am involved in so that I am well-informed of the status of the dispute.

As a Concerned Party, I want to be look at an archive of previously resolved cases such that I can clearly see how

As a Concerned Party, I want to search the archive for disputes related to my case, such that I can get a sense of precedence

As a Concerned Party, I want to group similar disputes together, such that I can find patterns between similar disputes

As a Concerned Party, I want to be see the time taken for a dispute to be resolved such that I can estimate how long certain disputes will take.

As a Concerned Party, I want to view the events of previously resolved dispute to get a better sense of the flow of a dispute.

Complainant

As a Complainant I want to initiate a dispute so that I can begin resolving the dispute

As a Complainant I want to upload documents to provide evidence to justify a dispute

As a Complainant I want to talk privately to Mediator so that I can discuss the dispute in more depth

As a Complainant I want to upload documents to refute counter-evidence provided by the Respondant so that both parties are in agreement of the evidence at hand

Respondent

As a Respondant I want to receive a notification about the dispute so that I can begin resolving the dispute

As a Respondant I want to upload documents to refute evidence provided by Complainant

As a Respondant I want to challenge an appointed mediator to ensure that the dispute process remains unbiased.

As a Respondant I want to be notified when a dispute is submitted against me so that I can provide a response to the complainant.

Experts/Mediators

As a Mediator I want to be assigned a dispute so that I can begin mediation

As a Mediator I want to see the documents provided by the Complainant and Respondant so that I can ensure due course was followed

As a Mediator I want to customise the workflow of the dispute so that I can ensure the fairest way to hear from both Parties

As a Mediator I want to see cultural information of each party so that I can be more sensitive to the Parties

As a Mediator I want to be able to deny an assignment to a dispute when there is a conflict of interest so that the dispute remains unbiased.
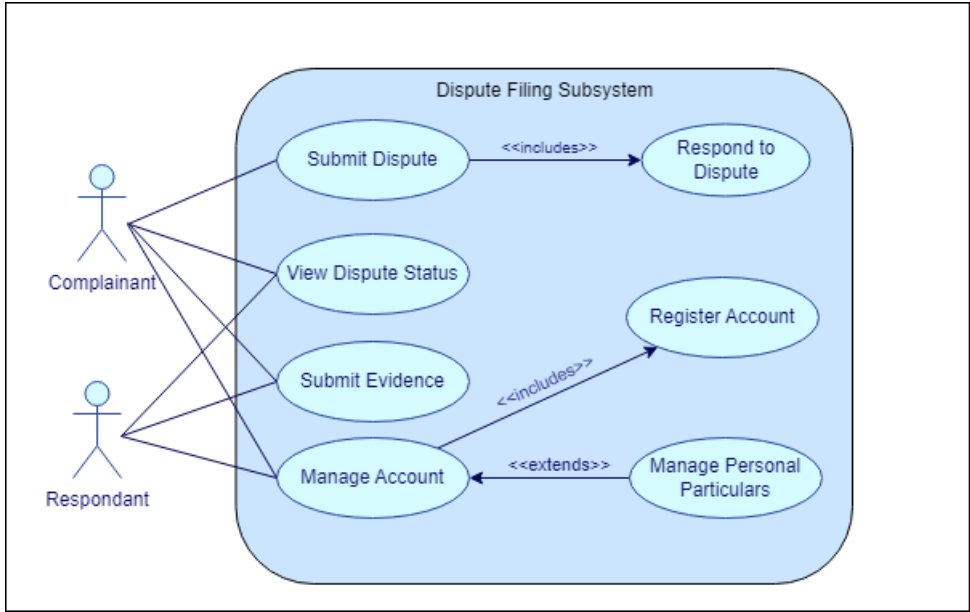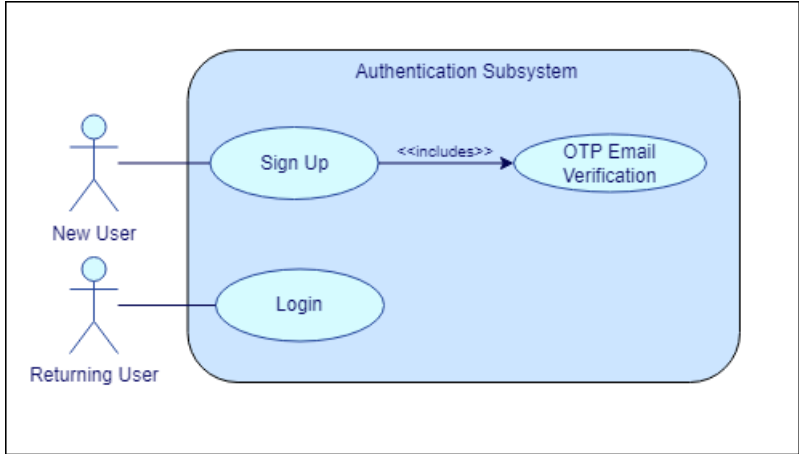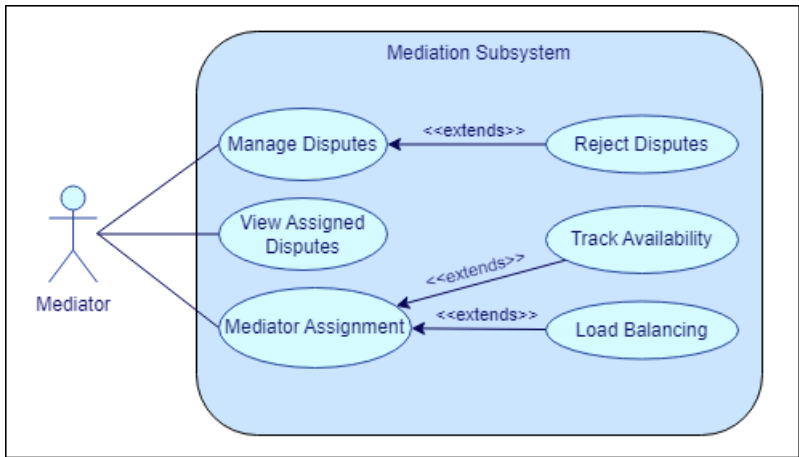
Organisation Owner

As an organisation owner I want to create an organisation so that I can manage that organisation

As an organisation owner I want to specify a set of workflows for my organisation so that all disputes follow due process

As an organisation owner I want to specify pools of experts so that a mediator is correctly chosen based on their expertise

As an organisation owner I want to see all ongonig disputes so that I am well informed of them

Admin

As an administrator, I want to be able to change the state of a workflow so that I can accommodate for exceptional circumstances

As an administrator, I want to be able to change the deadline of a workflow state so that I can allow for leniency in time frames

As an administrator, I want to be able to create workflows so that I can cater for different dispute resolution methods.

As an administrator, I want to be able to review expert objections so that I can determine whether they are substantive

As an administrator, I want to be able to see all created disputes so that I can get an overview of what disputes are being filed

As an administrator, I want to be able to see all open tickets so that I can have an overview of what tickets are getting opened.

As an administrator, I want to be able to respond to an open ticket to communicate with the user that filed the ticket

As an administrator, I want to be able to manually change the tags of a dispute so that I can ensure that the tags are correctly assigned

As an administrator, I want to be able to see a monthly report of disputes filed so that I can get insights into the dispute resolution process over time.

As an administrator, I want to be able to see all workflow definitions in the system so that I can view them and possibly edit them.

As an admin I want to see the available mediators at any given point so that I can manage the active mediators

As an admin I want to manage expert pools so that I can mediators are correctly assigned

As an admin I want to manage organisations so that I can ensure they are structured correctly

Appendix

Mediation Subsystem

- Mediator → Manage Disputes
- Manage Disputes ←<<extends>>— Reject Disputes
- Mediator → View Assigned Disputes
- Mediator → Mediator Assignment
- Track Availability —<<extends>>→ Mediator Assignment
- Load Balancing —<<extends>>→ Mediator Assignment

Authentication Subsystem

- New User → Sign Up
- Sign Up —<<includes>>→ OTP Email Verification
- Returning User → Login

Dispute Filing Subsystem

- Complainant / Respondant → Submit Dispute
- Submit Dispute —<<includes>>→ Respond to Dispute
- View Dispute Status
- Submit Evidence
- Manage Account —<<includes>>→ Register Account
- Manage Account ←<<extends>>— Manage Personal Particulars

Quality Requirements

1. Reliability

The Dispute Resolution Engine must maintain high uptime due to the nature of the services we provide. Clients should have continuous access to the system to ensure they can respond promptly to time-sensitive communications. A reliable system with high uptime not only benefits our clients but also increases our throughput.

Stimulus Source	Stimulus	Response	Response Measure	Environment	Artifact
System Users/Clients	Attempt to access the Dispute Resolution Engine	The system should maintain high uptime to ensure continuous access	99.9% system uptime, fewer than 1 hour of downtime per year	Production environment	Dispute Resolution Engine

2. Scalability and Performance

Scalability and performance go hand-in-hand in this system. Disputes are common occurrences and it is expected that the Dispute Resolution Engine (DRE) must be capable of handling many cases simultaneously, as well as multiple active users, per case, at any given time. Performance is essential for scalability. A system that performs well for each user can scale more effectively.

Stimulus Source	Stimulus	Response	Response Measure	Environment	Artifact
System Users/Clients	High volume of disputes and multiple active users per case	The system should handle multiple cases simultaneously and perform efficiently for each user	System supports 1000 concurrent users and 500 disputes without performance degradation	Production environment	Dispute Resolution Engine

3. Usability

The Dispute Resolution Engine is designed to be user-friendly. It aims to enable easy navigation through simple and intuitive user interfaces. This ensures that users can operate the system effectively without extensive training or technical knowledge. This is crucial for a platform that is intended to accommodate users from a wide range of domains.

Stimulus Source	Stimulus	Response	Response Measure	Environment	Artifact
System Users/Clients	Attempt to navigate and use the system	The system should provide a simple and intuitive user interface requiring minimal training	Lighthouse reports above 90/100, average request responses under 2 seconds		
Production environment	Dispute Resolution Engine				

4. Security

The Dispute Resolution Engine will handle sensitive information regularly. In addition to user credentials, participants in disputes will expect a high level of confidentiality when exchanging information. This is mainly due to documented evidence or communications that can contain exploitable or otherwise sensitive information. Therefore, a fundamental requirement of the Dispute Resolution Engine is to ensure the protection of both the personal and dispute-related information of our clients.

Stimulus Source	Stimulus	Response	Response Measure	Environment	Artifact
Malicious actors/Unauthorised users	Attempt to access sensitive information	The system should ensure the protection of personal and dispute-related information	Dispute activity to be logged for auditability. Minimizing attack vectors that could bypass access controls. Implementing secure policies for all incoming requests.	Production environment	Dispute Resolution Engine

5. Maintainability

The Dispute Resolution Engine must be easy to update and extend. It is essential that expansion of the system allows for the addition of new legal processes, dispute types, and other features. This will ensure that the system remains relevant and up-to-date with the latest legal requirements and dispute resolution practices.

Stimulus Source	Stimulus	Response	Response Measure	Environment	Artifact
Development Team	Requirement to update or extend the system	The system should allow for easy addition of new legal processes, dispute types, and other features	Frontend uses a component library, backend API is fully extensible with trivial addition/removal of endpoints	Development environment	Dispute Resolution Engine