


Anthony Ford, Damien McDevitt, Stephanie McDonough,  
Jonathan Memoli, Sean Tu  
Department of Systems and Enterprises  
Professor Darian Muresan, Professor Douglas Neary




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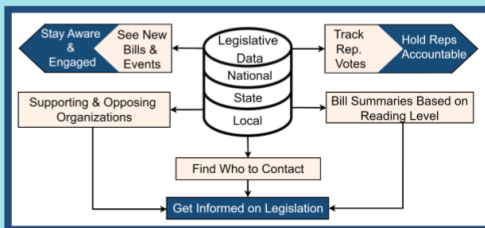
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# LegisLoop

by

Anthony Ford, Damien McDevitt, Stephanie McDonough, Jonathan Memoli, Sean Tu

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May 3, 2025

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Date	Updates
4/25/2025	ALF: <ul style="list-style-type: none"><li>Added new <a href="#">Section A.1</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li></ul>
4/18/2025	SAM: <ul style="list-style-type: none"><li>Added new <a href="#">Section A.2</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li></ul>
4/11/2025	SAM: <ul style="list-style-type: none"><li>Added new <a href="#">Section A.3</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li><li>Added new sequence diagrams and updated activity diagrams in <a href="#">Section 8.2</a>.</li></ul>
4/4/2025	SAM/ALF: <ul style="list-style-type: none"><li>Bumped <i>reqkFunctional<sub>2</sub></i> to <i>Could-have</i></li><li>Added new <a href="#">Section A.4</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li></ul> SJT: <ul style="list-style-type: none"><li>Updated Use Case Diagram.</li></ul>
3/28/2025	ALF: <ul style="list-style-type: none"><li>Added new <a href="#">Section A.5</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li></ul>
3/14/2025	SAM: <ul style="list-style-type: none"><li>Added new <a href="#">Section A.6</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li></ul>
3/7/2025	ALF: <ul style="list-style-type: none"><li>Added new <a href="#">Section A.7</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li></ul>

Date	Updates
2/28/2025	JMM: <ul style="list-style-type: none"> <li>• Added new <a href="#">Section A.8</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li> </ul> SJT <ul style="list-style-type: none"> <li>• Added <a href="#">5.1.5</a> to Chapter 6.</li> <li>• Added preliminary operating cost analysis to <a href="#">5.1.5</a>.</li> </ul>
2/21/2025	SAM: <ul style="list-style-type: none"> <li>• Updated <a href="#">ClassDiagramFrontEnd</a> (<a href="#">Figure 8.2</a>).</li> <li>• Added new <a href="#">Section A.9</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li> </ul>
2/18/2025	ALF: <ul style="list-style-type: none"> <li>• Updated <a href="#">ClassDiagramBackEnd</a> (<a href="#">Figure 8.1</a>).</li> <li>• Updated <a href="#">ActivityDiagramUCIdentifyRepresentatives</a> (<a href="#">Figure 8.3</a>).</li> </ul> SJT: <ul style="list-style-type: none"> <li>• Updated use cases in references column of <a href="#">5.3</a>.</li> </ul>
2/14/2025	SAM, JMM, ALF: <ul style="list-style-type: none"> <li>• Added new <a href="#">Section A.10</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li> </ul> SJT, DCM: <ul style="list-style-type: none"> <li>• Updated requirements <a href="#">reqkFunctional<sub>1</sub></a>, <a href="#">reqkFunctional<sub>2</sub></a>, and <a href="#">reqkSystem<sub>1</sub></a>.</li> </ul>
2/7/2025	ALF, JMM: <ul style="list-style-type: none"> <li>• Added new <a href="#">Section A.11</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li> </ul>
1/31/2025	SAM: <ul style="list-style-type: none"> <li>• Added new <a href="#">Section A.13</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li> <li>• Added new <a href="#">Section A.12</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li> </ul>
12/17/2024	JMM: <ul style="list-style-type: none"> <li>• Added new new chapter Prototype Demo (<a href="#">Chapter 9</a>).</li> </ul>
12/13/2024	SAM: <ul style="list-style-type: none"> <li>• Added new <a href="#">Section A.14</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li> </ul>

Date	Updates
12/05/2024	SAM: <ul style="list-style-type: none"> <li>• Added new <a href="#">Section A.15</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li> <li>• Updated Class Diagram to reflect correct Logical View (<a href="#">Chapter 8</a>).</li> <li>• Added Stakeholder Table to improve understanding of stakeholders. [5]</li> <li>• Updated Budget to reflect itemized breakdown for necessary tools to develop LegisLoop. [3]</li> <li>• Updated Project Milestones and Key Deliverables. [3]</li> <li>• Added Approval Table to reflect project charter deliverables. [2]</li> <li>• Updated Key Constraints format to table to expand and add more detail as to what each constraint is. [2]</li> </ul>
11/19/2024	SAM: <ul style="list-style-type: none"> <li>• Added new <a href="#">User Personas Section 7.1</a> to chapter User Interface Design (<a href="#">Chapter 7</a>).</li> <li>• Added new <a href="#">UI Design Section 7.3</a> to chapter User Interface Design (<a href="#">Chapter 7</a>).</li> <li>• Added new <a href="#">Section A.16</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li> </ul>
11/14/2024	JMM: <ul style="list-style-type: none"> <li>• Added new <a href="#">Section A.17</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li> </ul>
11/12/2024	JMM, ALF: <ul style="list-style-type: none"> <li>• Added new Chapter System Architecture (<a href="#">Chapter 8</a>).</li> </ul>
11/7/2024	JMM: <ul style="list-style-type: none"> <li>• Added new <a href="#">Section A.18</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li> </ul>
10/31/2024	SAM: <ul style="list-style-type: none"> <li>• Added new <a href="#">Section A.19</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li> </ul> ALF: <ul style="list-style-type: none"> <li>• added <a href="#">ClassDiagramBackEnd (Figure 8.1)</a> to <a href="#">Section 8.1</a>.</li> </ul>
10/24/2024	SAM: <ul style="list-style-type: none"> <li>• Added new <a href="#">Section A.20</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li> </ul>
10/22/2024	SAM: <ul style="list-style-type: none"> <li>• Added new chapter Use Cases (<a href="#">Chapter 6</a>).</li> <li>• added <a href="#">Table 6.1</a>.</li> <li>• added section Use Case Details (<a href="#">Section 6.3</a>).</li> </ul>

Date	Updates
10/17/2024	SAM: <ul style="list-style-type: none"> <li>Added new <a href="#">Section A.21</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li> </ul>
10/10/2024	SAM: <ul style="list-style-type: none"> <li>Added new <a href="#">Section A.22</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li> <li>Updated Acceptance Criteria in <a href="#">5.2</a>.</li> </ul>
10/8/2024	SAM: <ul style="list-style-type: none"> <li>Define Acceptance criteria for requirements in <a href="#">5.2</a>.</li> </ul>
10/7/2024	ALF: <ul style="list-style-type: none"> <li>Break User Requirements Table <a href="#">5.2</a> into multiple tables.</li> </ul>
10/3/2024	SAM: <ul style="list-style-type: none"> <li>Added new <a href="#">Section A.23</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li> </ul>
10/01/2024	SAM: <ul style="list-style-type: none"> <li>Updated Development Plan to include Risk Assessment and Mitigation Plan (<a href="#">Chapter 3</a>).</li> <li>Added new <a href="#">Section 3.8</a> to chapter Development Plan.</li> <li>Added new <a href="#">Table 3.1</a> to subsection Risk Management (<a href="#">Section 3.8</a>).</li> <li>Added new <a href="#">Table 3.2</a> to subsection Risk Management (<a href="#">Section 3.8</a>).</li> </ul>
09/30/2024	SAM: <ul style="list-style-type: none"> <li>Updated Development Plan (<a href="#">Chapter 3</a>).</li> </ul>
09/26/2024	SAM: <ul style="list-style-type: none"> <li>Updated Development Plan (<a href="#">Chapter 3</a>).</li> <li>Added new <a href="#">Section A.24</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li> </ul>
09/24/2024	SAM: <ul style="list-style-type: none"> <li>Added a new chapter Development Plan (<a href="#">Chapter 3</a>).</li> </ul>
09/18/2024	SAM: <ul style="list-style-type: none"> <li>Added new <a href="#">Section A.25</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li> </ul>
09/17/2024	SAM: <ul style="list-style-type: none"> <li>Added a new chapter Introduction (<a href="#">Chapter 1</a>).</li> <li>Added a new chapter Team Declaration (<a href="#">Chapter 2</a>).</li> <li>Added a new chapter Weekly Reports (<a href="#">Chapter A</a>).</li> <li>Added new <a href="#">Section A.26</a> to chapter Weekly Reports (<a href="#">Chapter A</a>).</li> </ul>

Date	Updates
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Table 1: Document Update History

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# Chapter 1

## Introduction – *A. Ford, D. McDevitt, S. McDonough, J. Memoli, S. Tu*

### 1.1 Anthony Ford

I'm a fourth year Software Engineering Student at Stevens, minoring in Mechatronics. I run the software and electrical teams for our RockSat-C program with NASA. I love landscape photography and cooking. Specifically, I've been experimenting with microlandscapes and landscape astrophotography. Last summer I interned at a cellular communications company, working on electrical designs, simulations and implementations. More of my work can be found at <https://aleef.dev>.

### 1.2 Stephanie McDonough

I am a fourth year Software Engineering student, pursuing a masters in Systems Engineering with a software systems concentration. I have some industry experience as a software engineer in web and mobile app development at Lockheed Martin and Zebra Technologies. I have also done research and wrote a paper in software and systems integration, determining how data visualization impacts strategic decision making. In my free time I like to read, paint, listen to music and play volleyball.

### 1.3 Jonathan Memoli

I'm a fourth year Software Engineering student at Stevens. Last summer I interned at MoneyLion working on expanding the back end infrastructure for their investment products. On campus, I worked as a tutor for the academic support center for 2 years and am also a technical lead for Stevens Blueprint this upcoming year. In my free time I like to exercise, go skiing, and play video games.

### 1.4 Sean Tu

I am a fourth year Electrical Engineering major pursuing a concentration in Power Engineering. At Stevens, I worked on research in the Mechanical Engineering department pertaining noise and oscillating systems. I've also interned at a cloud computing company called ZT Systems as an

Electrical Engineer, as well as a building design company called AMA Group. My interests include everything music, literature, and puns.

## **1.5 Damien McDevitt**

I'm finishing up my fourth year as an Electrical Engineering major at Stevens. I've been pursuing a Mechatronics minor as well. I've worked as a researcher at the Stevens SAS Drone lab and had the opportunity last summer to work at Turner Construction Company. I spend my free time cooking, baking, and staying active in the gym.

# Chapter 2

## Team Declaration – *A. Ford, D. McDevitt, S. McDonough, J. Memoli, S. Tu*

### 2.1 Team Details

**Team Name:** LegisLoop

**Team Members:**

- Anthony Ford
- Damien McDevitt
- Stephanie McDonough
- Jonathan Memoli
- Sean Tu

**Mission Statement:** For American citizens who want to engage with public issues facing their communities, Legisloop is a centralized, one-stop web platform that improves transparency, informs citizens, and fosters productive public engagement. Unlike the current online landscape where information is confusing to understand and social networks are polarized, our platform provides an accessible, time-efficient, and trustworthy way for citizens to discuss policy and get the necessary information they need to take action.

**Key Drivers:**

- **Distrust:** Americans have endured decades of distrust and are dissatisfied with government's performance in a modernized world.
- **Transparency:** Outside of the loud and bashful elections of the national government, most government actions happen behind the scenes, where only the knowledgeable can find details on these processes.
- **Involvement:** Many Americans are not involved with their local legislation and elections, tending to only pay attention and vote during the larger presidential ones.

- **Impact:** Even after knowing what laws are being passed, many Americans likely struggle to understand what the bill actually means or how it might impact them.
- **Market:** Many of the current popular political platforms like X can incentivize spreading misleading topics for the purpose of engagement.

### Key Constraints:

Dimension	Constraint	Driver	Degree of Freedom
Automation	Application must operate completely automated from the developer's standpoint.	Minimize developer intervention to ensure scalability and efficiency.	Developers can manually intervene only for critical updates or bugs.
Information Accuracy	Information sources must be government-based or independently verified.	Ensure users have access to accurate and reliable data.	Third-party data can be used if independently vetted and verified.
Legal Compliance	Platform must comply with local laws and government regulations.	Operate within all applicable legal frameworks.	Compliance may vary based on region, requiring localization adjustments.
Political Neutrality	Platform must be bipartisan and not show news sources with misinformation.	Maintain public trust by ensuring neutrality and avoiding bias.	Allow users to flag misinformation, which is then independently reviewed.
Non-Persuasion	Platform must not be used to manipulate votes or opinions.	Foster informed and unbiased civic engagement.	Advocacy and information sharing are allowed, but persuasive campaigns are prohibited.
Data Privacy	User data must be securely stored and comply with privacy regulations (e.g., GDPR).	Protect user data and ensure trust in the platform's security.	Implement encryption and compliance frameworks, but allow anonymized analytics.
Platform Accessibility	Platform must cater to diverse user demographics, including varying literacy levels.	Increase accessibility for all users, regardless of technical expertise.	Provide customizable reading levels and multilingual support.
Technology Stack	Technologies must be reliable, scalable, and cost-effective.	Use modern, maintainable technologies to support growth.	Technology choice may evolve based on project needs and budget constraints.

<b>Dimension</b>	<b>Constraint</b>	<b>Driver</b>	<b>Degree of Freedom</b>
Quality of Sources	Information must be curated to exclude sources flagged for misinformation.	Build a reputation as a trusted source for civic information.	Partner with external fact-checking organizations if needed.
Deployment Scope	Platform must initially focus on U.S. legislation before expanding globally.	Deliver a functional platform tailored to the U.S. legislative process.	Expand to other countries once the U.S. platform demonstrates success.
Cost	Budget constraints must be adhered to without compromising key features.	Deliver a high-quality platform within available resources.	Adjust non-critical features or timelines to align with budget constraints.
Scalability	Platform must scale to handle increased user traffic during election seasons.	Support large user bases without degradation in performance.	Implement elastic cloud infrastructure to manage traffic spikes.
User Engagement	Platform must provide clear, actionable pathways for user interaction.	Encourage informed civic participation and feedback.	Offer forums, polls, and feedback tools within clearly defined parameters.

## 2.2 Project Proposal

Our mission is to create an online platform where [citizens](#) can easily connect to their representatives in order to increase transparency about policies being enacted on their behalf.

We believe this will come through tools to easily identify both local and federal bills being proposed that may have an effect on the user, ways to more easily understand and parse through bills, ways to communicate the interests of the constituency to politicians, and access to detailed information on politicians and their previous and planned work.

## 2.3 Approvals

<b>Role</b>	<b>Name and Signature</b>	<b>Date</b>
Development Lead	Anthony Ford	10/1/2024
Buildmaster	Jonathan Memoli	10/1/2024
Architect and Test Lead	Stephanie McDonough	10/1/2024
User Advocate	Damien McDevitt	10/1/2024
Designer	Sean Tu	10/1/2024
Faculty Advisor	David Darian Muresan	10/1/2024
Business Advisor	Douglas Neary	10/1/2024

# Chapter 3

## Development Plan – *A. Ford, D. McDevitt, S. McDonough, J. Memoli, S. Tu*

### 3.1 Introduction

The development of our citizen to politician platform will be lenient in continuity to the initial design; new ideas and user-interface design will be welcomed and encouraged. Through the Crystal Clear design process, we will have continuous development and osmotic communication.

### 3.2 Roles and Responsibilities

1. Development Lead: Anthony Ford
2. Buildmaster: Jonathan Memoli
3. Architect: Stephanie McDonough
4. Developers: Anthony Ford, Damien McDevitt, Stephanie McDonough, Jonathan Memoli, Sean Tu
5. Test Lead: Stephanie McDonough
6. Testers: Damien McDevitt, Stephanie McDonough, Sean Tu
7. Documentation: Anthony Ford, Damien McDevitt, Stephanie McDonough, Jonathan Memoli, Sean Tu
8. Documentation Editor: Stephanie McDonough
9. Designer: Sean Tu
10. User advocate: Damien McDevitt
11. Risk Management: Stephanie McDonough
12. System Administrator: Anthony Ford
13. Modification Request Board: Sean Tu, led by Damien McDevitt
14. Customer Representative: City of Hoboken
15. Customer responsible for acceptance testing: Damien McDevitt & Sean Tu

## 3.3 Method

For our tech stack, we have decided on using the React.js framework for the frontend and Spring Boot for the backend. Spring boot is a robust backend framework based on Java, which most of the developers are already familiar with. React allows for quickly building client-side web components that can be reused throughout the application. Spring Boot also allows for easy development of object oriented RESTful APIs with good community support.

We will be using Crystal Clear development process.

### 3.3.1 Software

1. Languages: HTML + JS + CSS Frontend, Java Backend
2. Operating Systems: App Platform on DigitalOcean
3. Software packages/libraries: Spring Boot 3.3.4, Node.js 20.11.0

### Code Conventions

1. Tab character width
2. Double Quotes
3. [Standard naming conventions](#) for Java packages
4. [Standard naming conventions](#) for React Framework
5. Code should be run though an automated linter for general spacing rules: ESLint.

### 3.3.2 Review Process

1. We will require code reviews for every change. We will have a minimum of 2 reviewers for each change.
2. The reviews will be informal code reviews which involves reading through the code and making observations about structure, logic and potential issues.
3. Any issues that are uncovered will be handled by the developer who originally made the changes, with help from team members if needed.

### 3.3.3 Build Plan

1. Code repository will be on GitHub with main branch protection. Revisions must be made by opening a pull request and getting approval from at least two other developers.
2. Continuous integration:
  - JUnit for backend tests
  - Maven for building the project
  - ESLint for code style

- GitHub Actions to run builds and check packages
  - Docker and DigitalOcean for deploying and hosting our platform
3. Regularity of the builds - When changes are made to the main branch, or the team has decided to deploy a new version of the project skeleton.
  4. Deadlines for the builds – A new build should be completed by the end of each Friday with the planned changes for the week.
  5. Multiplicity of builds - Builds should be made on feature branches for testing purposes. The main branch build will be stored and versioned on our repository’s GitHub container registry.
  6. Regression test process – see test plan.

### 3.3.4 Modification Request Process

1. MR tool: GitHub Issue Board
2. Decision process: 3/4 of the remaining members

## 3.4 Virtual and Real Workspace

We will be using Zotero to manage online resources to point to for our project’s purpose and direction. Initial planning documents will also be done on Google Docs. GitHub’s issues and issue boards will be used to track requirements and any bugs/enhancements that are necessary for the application.

## 3.5 Communication Plan

### 3.5.1 Heartbeat Meetings

Our weekly heartbeat meetings will occur on Mondays at 11am. All members converged to this time based on comparing schedule availability. The agenda is as follows:

- Previous work completed from last meeting
- Work to be completed this week
- Review issues and risks

### 3.5.2 Status Meetings

Status Meetings will occur every other Monday in addition to our weekly Heartbeat meeting. This meeting will be to review the overall status of LegisLoop to ensure no part of the project falls behind.

### 3.5.3 Issues Meetings

If an issue arises, the team member will address the problem at the next heartbeat meeting with the team.

## 3.6 Timeline and Milestones

### 3.6.1 Milestone Overview

Milestones will be completed on a biweekly structure:

- 09/19/2024: Team Declaration
- 10/03/2024: Development Plan
- 10/17/2024: Project Concept Development
- 10/31/2024: Project Concept Development-hardening
- 11/14/2024: Project Preliminary Design
- 12/05/2024: Project Preliminary Design-hardening

We will also give demonstrations (one each month) to provide updates on LegisLoop progress:

- October 2024: Project Mission Statement and Development Plan
- November 2024: Project Concept Proposal
- December 2024: Project Semester Review
- February 2025: Preliminary Design Review
- March 2025: Detailed Design & Process Review
- April 2025: Project Alpha Release
- May 2025: Project Beta Release & Expo

### 3.6.2 Project Milestones and Key Deliverables

Event or Deliverable	Target Date	Responsibility
Team Declaration	September 19	All Team Members
Development Plan	October 3	Stephanie McDonough (Lead), All Team Members
Project Concept Development	October 17	Jonathan Memoli (Lead), All Team Members
October Demonstration: Project Mission Statement and Development Plan	October 19	All Team Members
Project Concept Development Hardening	October 31	Damien McDevitt (Lead), All Team Members
November Demonstration: Project Concept Proposal	November 21	All Team Members
Project Preliminary Design	November 14	Sean Tu (Lead), All Team Members
Project Preliminary Design Hardening	December 5	Anthony Ford (Lead), All Team Members
December Demonstration: Project Semester Review	December 12	All Team Members
Finalized Prototype	April 12	Stephanie McDonough, Jonathan Memoli
Final Platform Deployment	May 9	Anthony Ford (Lead), All Team Members
Senior Innovation Expo Presentation	May 9	All Team Members

## 3.7 Testing Policy/Plan

### Unit Testing:

1. JUnit and Mockito are the two main testing frameworks to be used for backend unit testing. This will be primarily for testing service and controller class functionality.

### Integration Testing:

1. JUnit and MockMVC will be used for testing REST controller classes and database interactions.

### User Testing:

1. Team members will continue to use the application during development.
2. Any bugs found or suggested quality of life changes will be uploaded to the repository as a GitHub issue.

## 3.8 Risks

Risks will be managed using a Risk Assessment and Mitigation Plan. Nine risks have been identified, described and a plan has been put in place to mitigate the risk. The risks were then mapped to a risk matrix based on their likelihood and impact of that risk occurring.

Risk ID	Risk	Description	Probability	Severity	Actions to Mitigate Risk
rskCOMM	Communication Issues	Lack of communication between potential stakeholders, or between team members.	3	1	Establish a meeting schedule used to address project progress, stakeholder engagement and project management.
rskCOST	Cost Overruns	Budget for software maintenance was falsely estimated and more resources are required to develop and maintain the product.	2	2	Create a budget with 30% margin of safety to prevent cost overruns.
rskSCOPE	Scope Creep	Project scope changes and more features and requirements are added, which can lead to higher costs and delayed delivery.	3	3	Cut features that are not necessary for initial release and document future features or requirements for future development and implementation.
rskPROD	Poor Productivity	Long working timeline can lead to lower productivity towards the end of the project.	4	3	Do small 2 week sprint cycles for milestones to make project components more modular and easy to develop.
rskENGAGE	Low Engagement from End Users	Our product may not be effectively marketed or wanted by the target population, rendering it useless.	4	5	Conduct customer interviews and interview potential stakeholders to identify need + requirements for end product.
rskMANAGE	Poor Management	Poor communication and interaction among team members + Poor risk management.	2	3	Establish communication method among members and have frequent and easy meetings + identify risks at beginning of process.
rskTIME	Missed Deadlines	Milestone deliverables are not met, production is delayed and feature components are not developed on time.	3	4	Estimate amount of effort for each feature and requirement, and amount of work each team member can provide in 2 week sprint cycle; allocate manageable work for each milestone.
rskSECURE	Security + Lack of Reliability	Tech stack is not sufficient for effective and safe software development - improper tools are used in software development.	2	4	Identify tech stack with extensive research at beginning of project process to make sure tools being used are secure and effective.
rskQUAL	Low Quality Code	Bad software architecture + lack of programming experience can lead to low quality, disorganized code (not easily scalable).	2	3	Creating coding standards for software developers + use coding best practices.

Table 3.1: Risk Assessment and Mitigation Plan

<b>Probability</b>	5 Almost Certain					
	4 Likely			rskPROD		rskENGAGE
	3 Moderate	rskCOMM		rskSCOPE	rskTIME	
	2 Unlikely		rskCOST	rskMANAGE, rskQUAL	rskSECURE	
	1 Rare					
		1 Insignificant	2 Minor	3 Significant	4 Major	5 Severe
				<b>Impact</b>		

Table 3.2: Risk Matrix

## 3.9 Assumptions

### Labor Assumptions:

1. Five working members is sufficient to complete all development tasks at least two weeks before the Senior Innovation Expo (May 9th).
2. The team will meet at least once per week outside of Engineering Design VII and VIII class time to complete work.
3. Working within the Fall and Spring semester will be enough to complete all development tasks.

### Outcomes and Stakeholder Assumptions:

1. Citizens will want to use our platform to learn about politics.
2. Creating an online platform for political engagement will result in an increase political engagement for users.
3. Increases in political engagement will be in a manner that positively impacts well being.

### Financial Assumptions

1. Using a margin of safety of 30 percent below our maximum budget of \$700 is a safe enough framework to prevent us from going over budget.

## 3.10 Distribution List

- All team members
- Professor Darian Muresan
- Professor Douglas Neary
- City of Hoboken contact

## 3.11 IRB Protocol

Our project does not need IRB application. Refer to

[https://sit.instructure.com/courses/67496/pages/irb-information?module\\_item\\_id=1960974](https://sit.instructure.com/courses/67496/pages/irb-information?module_item_id=1960974)

## 3.12 Required Resource and Budget

**Total Budget:** \$700 (for entire project)

**Expected Costs:**

- Monthly Hosting Cost: \$42. This is the cost of a CPU-Optimized digital ocean server.
- API Cost: \$60. This is the cost to use Read Easy.ai API for 3 months.

# Chapter 4

## User Stories – *A. Ford, D. McDevitt, S. McDonough, J. Memoli, S. Tu*

Story ID	Role	Goal	Gain
usUNDERSTAND	Citizen	Understand what my government representatives do	Be a more informed voter
usIDENTIFY	Citizen of my local municipality	Easily identify my local representatives	Understand who's forming local policies
usRELEVANT	Citizen interested in specific areas of policy	Easily find bills relevant to my interests in one place	Stay informed on issues I care about
usSHAREHIST	Government representative	Record and share my actions	Inform my constituency about enacted policies
usVOTE	Participatory voter	Be notified about votes, town halls, and political events	Be more engaged with my community
usEXPRESSION	Citizen that wants my voice to be heard	Express support or opposition to different policies	Ensure my representatives know my opinions
usNEWS	Citizen	See relevant, audited news articles	Stay informed about current events
usPOLL	Government representative	Poll the public on issues and policies	Better represent my constituency
usSUMMARIZE	Ordinary citizen	Have bills reduced to short excerpts	Easily comprehend important information
usSELFHIGHLIGHT	Policy-maker	Highlight/emphasize points in my bills	Help citizens digest my ideas
usOTHERHIGHLIGHT	Politician	Highlight/emphasize points in bills I can vote on	Help citizens understand my position
usMONEY	Citizen who cares about fiscal policy	See the flow of money in government visually	Better understand where tax dollars go
usHIST	Citizen	See a politician's voting history	Evaluate consistency in their stance
usLEARN	Citizen who cares about validity	Learn more about political information encountered	Understand its context and accuracy
usDEMYSTIFY	Lay person	Have policy information converted into non-technical language	Better understand policies
usENDORSE	Corporation or organization	Publicly endorse or reject pending bills	Make my stance clear

Story ID	Role	Goal	Gain
usSEARCH	Citizen	search for bills and representatives	find information or people I am interested in learning more about
usDISCUSS	Citizen	discuss public issues in a non-polarized and non-toxic community	online engagement feels productive and rewarding

Table 4.1: User Stories

# Chapter 5

## Requirements – *A. Ford, D. McDevitt, S. McDonough, J. Memoli, S. Tu*

### 5.1 Stakeholders

#### 5.1.1 Customers

- Citizens
- News Outlets
- Educational + academic entities
- Municipal, state and national governing bodies
- Members of city with voting eligibility
- Non-Profit Advocacy Groups

#### 5.1.2 Sponsors

- Stevens Institute of Technology

#### 5.1.3 Engineering and Technical Persons

- Anthony Ford
- Damien McDevitt
- Stephanie McDonough
- Jonathan Memoli
- Sean Tu

## 5.1.4 Regulators

- Federal Election Commission
- City/County Councils
- Public Records Offices
- Federal Communication Commission

## 5.1.5 Market Research and Projections

**User Market Size:** Our market is constrained to United States citizens. More specifically, 253 million Americans use social media [1], which represents the total number of users that can realistically use our product. Our serviceable addressable market is further narrowed to the 32% of Americans who pay “very close” attention to political news.[2] Finally, our early adopters in our SOM that we can realistically target within the next election cycle (4 years) will be 5% of our SAM users, or 4 million users.

Overall, our user market size is estimated using the following:

- **TAM:** 253 million Americans that use social media
- **SAM:** 80 million Americans that use social media and pay very close attention to politics
- **SOM:** 4 million Americans that LegisLoop can realistically capture within the next 4 years

LegisLoop has two primary revenue streams:

1. Ad Space
2. Subscriptions

**Ad ARPU:** The average revenue per user (ARPU) of reddit in the United States is approximately \$21 with negligible revenue from subscriptions.[3] Reddit is the most comparable social media platform to our forum-based community, which will serve as a reference for the long-term ARPU we could capture.

**Subscription Revenue:** 16% of Americans pay for a news subscription.[4] In addition, the average news subscription in North America costs between \$10-\$15 per month.[5] Subscriptions such as Reddit Premium and Khan Academy’s educational subscription cost \$4 per month. LegisLoop’s subscriptions offer both the educational and informational benefits of News Sources on top of the community perks of Reddit Premium. Thus, Legisloop prices subscriptions competitively at \$4 per month.

### TAM, SAM and SOM:

#### TAM Calculation

Assuming:

- \$20 long-term ad ARPU
- 253 million users
- \$4 monthly subscription
- 15% pay for subscription

$$\mathbf{TAM} = \$20 \times (253 \text{ million users} - 38 \text{ million ad-free}) + \$48 \times 38 \text{ million subscribers} = \mathbf{\$6.1 \text{ billion}}$$

### SAM Calculation

Assuming:

- Conservative \$15 ad ARPU (25% margin of safety)
- 80 million users
- \$4 monthly subscription
- 4% of users pay for a subscription

$$\mathbf{SAM} = \$15 \times (80 \text{ million users} - 3.3 \text{ million ad-free}) + \$48 \times 3.3 \text{ million subscribers} = \mathbf{\$1.3 \text{ billion}}$$

### SOM Calculation

Assuming:

- Conservative \$10 ad ARPU (50% margin of safety)
- 4 million users
- Negligible subscription revenue

$$\mathbf{SOM} = \$10 \times 4 \text{ million users} = \mathbf{\$40 \text{ million}}$$

### **Cost Estimates:**

Annual operating cost per user for other companies:

- Reddit: \$120mil / 97.2mil DAU[6] = \$1.23/user
- Twitter: \$2bil[7] / 250mil DAU[8] = \$8/user

We are likely slightly less lean than Reddit, but overall operational costs are much closer to Reddit than Twitter.

### **Cost Contribution Comparison:**

- **Media Type:** Similar to Reddit's since we primarily use text-based content
- **Real-Time Updates/APIs:** Are less realtime than Twitter, but may have higher costs associated with APIs
- **Content Moderation:** Our depolarizing algorithms and user-base type should result in less content moderation costs, but we won't have cost-free community moderators like Reddit
- **Engineering Development:** Our development may be more technically involved than Reddit, since we are creating a specialized platform for public and engagement. However, LegisLoop will still be less costly than Twitter since they develop through more modalities
- **Ad Serving:** Ad serving will likely be more primitive than twitter and Reddit, which means our costs in this area will be lower than both of them. This cuts into our ARPU, but that has been accounted for in the revenue section.

Assuming the following weights to each factor's contribution to the difference in costs between Twitter and Reddit:

- Media Type: 35%
- Infrastructure/APIs: 30%
- Content Moderation: 15%
- Engineering and Development: 10%
- Ad serving: 10%

The difference between Twitter's annual \$8 cost per user and Reddit's \$1.25 cost per user would be ( $8 - 1.25 = \$6.75$ ):

- Media Type: \$2.36
- Infrastructure/APIs: \$2
- Content Moderation: \$1
- Engineering and Development: \$0.68
- Ad serving: \$0.68

We can estimate our cost per user as =  $\$1.25 + 0.25 * \$2$  infrastructure +  $0.25 * \$1$  content moderation +  $0.5 * \$0.68$  engineering and development -  $0.25 * \$0.68$  ad serving = **\$2.17**. per user annually.

We can also use a 100% margin of safety from Reddit's cost per user and put our cost of revenue at **\$2.5** per user annually.

Assuming an ARPU of \$10-20, this puts our long-term gross margins between 75-87%.

### 5.1.6 Competitors

- [Congress.gov](#) along with State Legislative Sites
- [Tyler Technologies](#)
- [Granicus](#)
- [CitizenLab](#)
- [A Starting Point](#)
- [Govtrack](#)
  - Very similar to our proposed concept
  - No summary
  - No visualizations
  - Poor filter quality
- [LegEx](#)
  - Bill movement viewer

### 5.1.7 Stakeholder Table

Stakeholder	Major Benefits	Attitudes	Win Conditions	Constraints
Citizens	Can quickly access relevant public and political information in an accessible manner	Are supportive of the project; some are very passionate about the idea and want to see an improvement in how citizens engage in public issues	Is more informed about issues facing their community and are more likely to engage civically than before.	Limited time
News Outlets	Audience's consumption is affected by use of the Legisloop platform; more factual and policy-focused content is promoted as LegisLoop adoption rises.	Attitudes vary based on the mission and goals of different organizations. Many will be neutral and unaffected; some actors within these organizations care about promoting informative information spaces and will have positive sentiments.	Legisloop brings traffic to their website	Potentially concerned about competition if people spend more time on Legisloop.
Educational and Academic Entities	Provides a resource for students to explore public and civic issues.	Attitudes are positive due to a shared mission of promoting education and literacy.	Students knowledge on public issues are comparatively higher than other students not using the Legisloop platform in a statistically significant way.	May want a more structured curriculum for educating students on civic issues compared to the exploratory format provided by Legisloop
Municipal, State, and National Governing Bodies	Constituents make informed decisions, which helps governing bodies align with citizen's interests.	Attitudes are mixed- since Legisloop increases transparency, different representatives and policymakers will have varying attitudes depending on how it affects themselves and their community.	Legisloop users have 1) higher levels of public than non-users and 2) are comparatively more informed on public issues, which contributes to measurably more aligned policy outcomes.	Engagement needs to be productive and enhance policy decisions.

Stakeholder	Major Benefits	Attitudes	Win Conditions	Constraints
Non-Profit Advocacy Groups	Citizens are more informed about public issues and upcoming events, which helps advocacy groups reach out to them more easily.	Likely supportive but cautious of potential biases in the platform's tools.	Fair representation of their causes, effective outreach tools, and minimal barriers to entry.	Cost of participation or concerns about equity in representation.
Stevens Institute of Technology	Adds a pro-social project to the Stevens ecosystem.	Supportive, with a focus on ensuring the project's academic and practical success.	Successful prototype for the platform and the project has positive expected outcomes.	Budget limitations, ethical guidelines, and alignment with academic goals.
Project Developers	Professional growth, real-world impact, and validation of their technical and design decisions.	Highly invested but slightly stressed by high expectations and resource constraints.	Meeting user needs requirements, adherence to project timelines, and promising results for promoting public engagement.	Limited development time, budgetary constraints, and technical challenges in implementing algorithms for depolarization and transparency.

## 5.2 Key Concepts

- **Political Engagement:** citizen engagement which attempts to influence the political process.
- **Public Engagement:** engagement that involves citizens in public decisions that affect them.
- **Civic Engagement:** actions looking to improve someone's community, including volunteering.
- **Thick Engagement:** public engagement, typically performed in groups, that is proactive and engages with an issue on multiple levels. [9]
- **Thin Engagement:** more convenient forms of public engagement that allow individuals to express their opinions and affiliations. [9]
- **Conventional Engagement:** government officials organize meetings with citizens such as with council meetings. [9]
- **Voter Turnout:** The election participation rate.
- **Politician:** Any person involved with and holding office in politics.
- **Policymaker:** A person who is responsible formulating policies and writing up bills.
- **Depolarizing Algorithm:** An algorithm designed to connect people in a network in such a way that has a depolarizing effect on the network.

- **Similar People Different Views Bridging Algorithm (SPDV-B)**: The algorithm prioritizes interactions between people whose political views differ but share similar interests and demographics. Research shows that encouraging interactions between people of opposing partisan sides can reduce polarization by avoiding echo-chamber effects. Experimental research also indicates that pairing people with different political views but shared non-political features can help promote consensus. The effect of bridging is stronger for people with higher open-mindedness.
- **E-I Index**: The number of inter-partisan interactions minus intra-partisan interactions, divided by their sum.
- **Neutral Promotion Algorithm**: Promotes neutral nodes of the network to partisan users. Neutral promotion is more effective compared to bridging algorithms for stubborn people.

### 5.3 Requirements Table

Requirement	Priority	References
<p><b>User Requirement 1 (reqUserIdentify)</b> <i>Users shall easily identify their local representatives so that they are aware of who is voting on policies. [10]</i></p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> <ul style="list-style-type: none"> <li>– <i>The application is able to accurately determine the user’s location.</i></li> <li>– <i>Local representatives can be filtered and searched for based on location.</i></li> <li>– <i>Representative information has its own page.</i></li> </ul> </li> </ul>	Must-have	<i>US_IDENTIFY, UC<sub>1</sub></i>
<p><b>User Requirement 2 (reqUserDisplay)</b> <i>Government representatives shall have their votes on bills and legislation displayed to the public on their profiles. [11] [12]</i></p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> <ul style="list-style-type: none"> <li>– <i>City, state, and federal officials will have their voting history recorded in a log and it will be available to view on their respective pages.</i></li> <li>– <i>Users can filter votes based on time.</i></li> </ul> </li> </ul>	Must-have	<i>US_HIST, UC<sub>4</sub></i>

Requirement	Priority	References
<p><b>User Requirement 3 (reqUserSummary)</b> <i>Searchable bills and legislation shall be summarized when they are added to the website so that it can be digested in a reasonable amount of time. [13] [14]</i></p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> <ul style="list-style-type: none"> <li>– <i>Legislation will be summarized in a way that does not change the meaning and without injecting bias.</i></li> </ul> </li> </ul>	Must-have	<i>US<sub>SUMMARIZE</sub>, UC<sub>3</sub></i>
<p><b>User Requirement 4 (reqUserHighlight)</b> <i>Policy makers should be able to highlight important areas of bills. [11]</i></p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> <ul style="list-style-type: none"> <li>– <i>Users can select any bill marked by a official and be see highlighted text as well as its source.</i></li> <li>– <i>Policymaker and politician highlights will be displayed in different colors.</i></li> <li>– <i>Users can filter markings of specific policy-makers.</i></li> </ul> </li> </ul>	Would-have	<i>US<sub>SELFHIGHLIGHT</sub>, US<sub>OTHERHIGHLIGHT</sub>, UC<sub>6</sub></i>
<p><b>User Requirement 5 (reqUserLearn)</b> <i>Users shall be able to learn more about political information to understand context and accuracy. [15]</i></p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> <ul style="list-style-type: none"> <li>– <i>Bills will have a section about related news articles where users can learn more.</i></li> <li>– <i>If a bill was previously rejected, the old bill will be linked under the new one.</i></li> </ul> </li> </ul>	Would-have	<i>US<sub>LEARN</sub>, UC<sub>7</sub>, UC<sub>1</sub></i>

Requirement	Priority	References
<p><b>User Requirement 6 (reqUserTranslate)</b> <i>Searchable bills shall have political jargon translated into non-technical language so that users can select their preferred level of reading. [13] [14]</i></p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> <ul style="list-style-type: none"> <li>– <i>In a given bill, the user can view a simplified version of the bill where jargon is converted into plain language with vocabulary accessible to their level.</i></li> <li>– <i>Users can choose between four reading levels: "unedited", "moderate-read" (8th grade level), "easy-read" (5th grade), and "1 page" [16]</i></li> </ul> </li> </ul>	Should-have	<i>US_DEMYSTIFY, UC3</i>
<p><b>User Requirement 7 (reqUserEndorse)</b> <i>Corporations and organizations shall be able to publicly endorse or reject pending bills so that the public knows what their stance is. [11]</i></p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> <ul style="list-style-type: none"> <li>– <i>A table of approving and disapproving bodies is visualized below the bill.</i></li> </ul> </li> </ul>	Could-have	<i>US_ENDORSE, UC3</i>
<p><b>User Requirement 8 (reqUserSearchHigh)</b> <i>Users shall be able to search for bills of interest on the state and national level. [15]</i></p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> <ul style="list-style-type: none"> <li>– <i>Keywords can be typed into a search bar, and bills containing those keywords will appear in a feed.</i></li> <li>– <i>Filters based on date and location can be used to refine the search.</i></li> </ul> </li> </ul>	Should-have	<i>US_SEARCH, UC5</i>

Requirement	Priority	References
<p><b>User Requirement 9 (reqUserSearchLocal)</b> <i>Users shall be able to search for bills of interest on the local level. [15]</i></p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> <ul style="list-style-type: none"> <li>– <i>Keywords can be typed into a search bar, and bills containing those keywords will appear in a feed.</i></li> <li>– <i>Filters based on date and location can be used to refine the search.</i></li> </ul> </li> </ul>	Would-have	<i>US<sub>SEARCH</sub>, UC<sub>5</sub></i>
<p><b>User Requirement 10 (reqUserExpression)</b> <i>Users shall have an outlet to express their opinions about policies to their representatives. [15]</i></p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> <ul style="list-style-type: none"> <li>– <i>The representative’s page will display the email and phone number of the representative.</i></li> <li>– <i>The application will provide users an email message template to a representative.</i></li> </ul> </li> </ul>	Should-have	<i>US<sub>EXPRESSION</sub>, UC<sub>1</sub></i>
<p><b>User Requirement 11 (reqUserCommunity)</b> <i>The user shall be able make posts, as well as comment and like existing posts in a feed. [17] [18] [19] [20] [21] [22] [23]</i></p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> <ul style="list-style-type: none"> <li>– <i>The application displays posts from other users with shared location in order based on a depolarization algorithm</i></li> <li>– <b>Post:</b> <i>Users 1, 2, and 3 create a post. User 4 sees the posts in order of the depolarization algorithm.</i></li> <li>– <b>Interact:</b> <i>User 1 creates a post. User 2 can like the post and add a comment.</i></li> </ul> </li> </ul>	Should-have	<i>US<sub>DISCUSS</sub> UC<sub>8</sub></i>

Requirement	Priority	References
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Table 5.2: User Requirements Table

Requirement	Priority	References
<p><b>Functional Requirement 1 (reqFunctionalLegislation)</b>  <i>The landing page shall show at least 10 past and upcoming legislation relevant to the users' selected areas of interest. [15]</i></p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> <ul style="list-style-type: none"> <li>– At least 3 upcoming and 3 historical legislative pieces are displayed</li> <li>– At least 1 city, 1 state, and 1 national legislative piece are displayed</li> <li>– If the user is not logged in or they have not selected areas of interest, top-viewed articles should be displayed in accordance with the previous criteria</li> <li>– Only legislation that made it past committee will be displayed</li> </ul> </li> </ul>	Must-have	<i>US<sub>RELEVANT</sub>, UC<sub>5</sub></i>
<p><b>Functional Requirement 2 (reqFunctionalNews)</b> <i>Each bill shall display 3 relevant, audited news articles. [15]</i></p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> <ul style="list-style-type: none"> <li>– Bills have a learn more section that contains these relevant articles.</li> <li>– The News API results will be filtered for news articles that only come from a curated list of reliable news sources (to be determined)</li> </ul> </li> </ul>	Could-have	<i>US<sub>NEWS</sub>, UC<sub>3</sub></i>

Requirement	Priority	References
<p><b>Functional Requirement 3 (reqFunctionalPoll)</b> <i>The platform should provide government officials the ability to poll the public on issues and policies. [15]</i></p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> <ul style="list-style-type: none"> <li>– <i>Polls can be created by government officials and are able to accurately track individual user responses.</i></li> </ul> </li> </ul>	Would-have	<i>US POLL</i>

Table 5.3: Functional Requirements Table

Requirement	Priority	References
<p><b>Business Requirement 1 (reqBusinessIntent)</b> <i>The actions and intentions of government representatives will be clear and easy to understand so that users can make more informed decisions. [13]</i></p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> <i>Users can see a timeline of representatives actions on their profile page, and can see the collection of supporters and opposition in a bill page.</i></li> </ul>	Must-have	<i>US UNDERSTAND, UC<sub>4</sub></i>
<p><b>Business Requirement 2 (reqBusinessTransparent)</b> <i>Increase transparency of legislative and fiscal proceedings in government. [11] [12]</i></p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> <i>Process of legislative and fiscal happenings will be visualized on a timeline.</i></li> </ul>	Should-have	<i>US MONEY, UC<sub>2</sub></i>

Requirement	Priority	References
<p><b>Business Requirement 3 (reqBusinessAvailability)</b>  <i>Increase reliability and availability of government information to all communities. [11]</i></p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> <i>Users will have access to bills based on their location and relevant news publications.</i></li> </ul>	Should-have	<i>US LEARN, UC5</i>
<p><b>Business Requirement 4 (reqBusinessDepolarize)</b> <i>The system will have a depolarizing effect on the community and lower use of toxic language. [17] [18] [19] [20] [21] [22] [23]</i></p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> <ul style="list-style-type: none"> <li>– <i>The user will be exposed to posts from people with neutral and different opinions from them, which has a depolarizing effect</i></li> <li>– <i>Posts will be limited to by municipal and state locations, which will encourage more repeated interactions</i></li> <li>– <i>In a simulation of 30 AI LLM agents profiled based on demographics of the American National Election Study, measured toxic language using Perspective API is less than 0.1, and E-I interpartisan likes is greater than -0.5</i></li> </ul> </li> </ul>	Could-have	<i>US DISCUSS, UC8</i>

Table 5.4: Business Requirements Table

Requirement	Priority	References
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Requirement	Priority	References
<p><b>Quality Requirement 1 (reqQualityRobust)</b> System should be robust to handle high traffic from government representatives, citizens, and organizations, especially during election times.</p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> At deployment, the system should be able to handle 100 concurrent connections</li> </ul>	Would-have	<i>US UNDERSTAND</i> , <i>UC<sub>1</sub></i> , <i>UC<sub>2</sub></i> , <i>UC<sub>3</sub></i> , <i>UC<sub>4</sub></i> , <i>UC<sub>5</sub></i> , <i>UC<sub>7</sub></i>
<p><b>Quality Requirement 2 (reqQualityScalable)</b> System should be scalable in <math>O(n)</math> to handle more areas of legislation and increasing amounts of users.</p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> The system should be deployable in two parallel instances</li> </ul>	Would-have	<i>US UNDERSTAND</i> , <i>UC<sub>1</sub></i> , <i>UC<sub>2</sub></i> , <i>UC<sub>3</sub></i> , <i>UC<sub>4</sub></i> , <i>UC<sub>5</sub></i> , <i>UC<sub>7</sub></i>

Table 5.5: Quality Requirements Table

Requirement	Priority	References
<p><b>System Requirement 1 (reqSystemVote)</b> The system shall alert voters about relevant upcoming elections, registration deadlines, and mail-in ballot registration deadlines to increase voter participation and public engagement.</p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> <ul style="list-style-type: none"> <li>– Given the user’s location, a notification should be generated for every election and policy that the user is eligible to vote on</li> <li>– The user must be able to suppress the notifications temporarily or indefinitely</li> </ul> </li> </ul>	Should-have	<i>US VOTE</i> , <i>UC<sub>5</sub></i>

Requirement	Priority	References
<p><b>System Requirement 2 (reqSystemMoney)</b> <i>The system shall track the flow of money in our government so that users are more aware of how their taxes are being spent. [12]</i></p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> <ul style="list-style-type: none"> <li>– <i>An overall breakdown of the money (to be) moved by each piece of legislation should be provided in a Sankey Chart, or similar visualization</i></li> <li>– <i>A per-person breakdown of the money (to be) moved by each piece of legislation should be provided in numerical format</i></li> </ul> </li> </ul>	Would-have	<i>US MONEY, UC<sub>2</sub></i>
<p><b>System Requirement 3 (reqSystemHistory)</b> <i>The system shall track politician’s voting histories to show patterns in their political views. [11]</i></p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> <i>Logs of politicians voting history matched with legislation will be recorded and visualized.</i></li> </ul>	Must-have	<i>US HIST, UC<sub>4</sub></i>

Requirement	Priority	References
<p><b>System Requirement 4 (reqSystemAlgorithm)</b> <i>The system shall display posts based on an adaptive depolarizing algorithm [17] [18] [19] [20] [21] [22] [23]</i></p> <ul style="list-style-type: none"> <li>• <b>Acceptance Criteria:</b> <ul style="list-style-type: none"> <li>– <i>The algorithm will take inputs (user location, political alignment, interests, demographics, open-mindedness) and output an order to recommend posts based on a depolarizing algorithm</i></li> <li>– <i>The algorithm will combine similar people, different views bridging (SPDV-B) and neutral promotion (NP) algorithms.</i></li> <li>– <i>Adaptive Algorithm: Weighting of NP will increase with stubbornness</i></li> </ul> </li> </ul>	Should-have	<i>US DISCUSS, UC8</i>

Table 5.6: System Requirements Table

## 5.4 Business Objective

Our primary goal for LegisLoop is to enhance civic engagement by providing a user-friendly, accessible platform that improves citizens’ understanding of governmental processes and fosters informed, constructive discussions. By focusing on measurable success criteria such as user acquisition, engagement metrics, and depolarization measurement, we aim to make political information easier to access and comprehend. Key factors influencing success include ensuring data quality and reliability, implementing scalable infrastructure to handle peak traffic during elections, and incorporating regular user feedback to refine features and improve usability. To measure depolarization, we will conduct sentiment surveys to assess shifts in user attitudes, track the diversity of content users engage with, and analyze discussions for reduced polarization over time using a polarity scoring algorithm. With these strategies in place, we propose a deployment date of April 12th, before the Senior Innovation Expo and allowing us to demonstrate a polished, impactful platform to potential stakeholders.

# Chapter 6

## Use Cases – A. Ford, D. McDevitt, S. McDonough, J. Memoli, S. Tu

This chapter presents the use case diagrams that satisfy the requirements.

### 6.1 Table of Use Cases

To prevent gold-plating all use cases must be mapped to at least one requirement. If there are any use cases that don't have a requirement, then the use case should be removed. A table to keep track of this mapping is shown next.

Use Case	Requirements	Name and Description
<i>UC<sub>1</sub></i>	<i>reqkUser<sub>1</sub>, reqkUser<sub>5</sub>, reqkQuality<sub>1</sub></i>	<a href="#">ucIdentifyRepresentatives</a> is a use case describing how users can find and view their representatives on a municipal, state, and national level.
<i>UC<sub>2</sub></i>	<i>reqkSystem<sub>2</sub></i>	<a href="#">ucTaxDollar</a> is a use case describing how users can view a breakdown of their tax dollars on a municipal, state, and national level.
<i>UC<sub>3</sub></i>	<i>reqkUser<sub>3</sub></i>	<a href="#">ucReadLegislation</a> is a use case describing how users can read legislation, and choose to read it at a different comprehension level or read the summary.
<i>UC<sub>4</sub></i>	<i>reqkUser<sub>2</sub>, reqkSystem<sub>3</sub>, reqkBusiness<sub>1</sub></i>	<a href="#">ucRepresentativeVotes</a> is a use case describing how users can view and parse through the voting decisions a representative by timeframe and subject.
<i>UC<sub>5</sub></i>	<i>reqkSystem<sub>1</sub>, reqkFunctional<sub>1</sub>, reqkUser<sub>8</sub>, reqkUser<sub>9</sub></i>	<a href="#">ucUpcomingEvents</a> is a use case describing how users are alerted to elections/bills as well as how users can search for bills based on their location and political subjects of interest.
<i>UC<sub>6</sub></i>	<i>reqkUser<sub>4</sub></i>	<a href="#">ucHighlight</a> is a use case describing how policymaker users can highlight sections of bills they want to emphasize, and how how users can see these annotations.
<i>UC<sub>7</sub></i>	<i>reqkUser<sub>5</sub></i>	<a href="#">ucLearnMore</a> is a use case describing how users can learn more about relevant issues surrounding the bill by being presented with articles.
<i>UC<sub>8</sub></i>	<i>reqkUser<sub>11</sub>, reqkBusiness<sub>4</sub>, reqkSystem<sub>4</sub></i>	<a href="#">ucEngageCommunity</a> is a use case describing how users can engage in a social media-like platform with a depolarizing algorithm

Use Case	Requirements	Name and Description
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Table 6.1: Use Cases Table

## 6.2 Use Case Diagrams

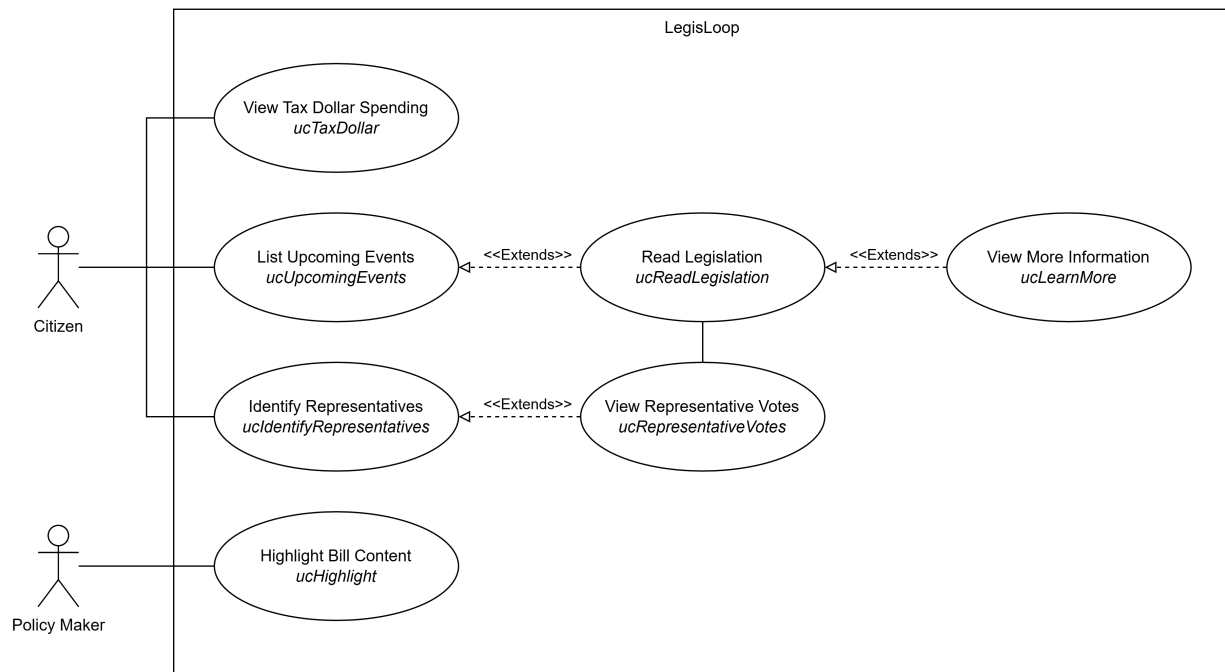


Figure 6.1: Main Use Case Diagram.

## 6.3 Use Case Details

Table 6.2: Use Case Identify Representatives

<b>Use Case 1 (ucIdentifyRepresentatives)</b> <i>User identifies local representatives.</i>
<b>Requirements:</b> <i>reqkUser<sub>1</sub>, reqkUser<sub>5</sub>, reqkQuality<sub>1</sub></i>
<b>Diagrams:</b> <i>UseCaseDiagram (Figure 6.1), ActivityDiagramUCIdentifyRepresentatives (Figure 8.3)</i>
<b>Description:</b> The user searches for their local representatives based on the user's location.
<b>Primary actors:</b> User
<b>Secondary actors:</b> None.
<b>Preconditions:</b> None
<b>Main flow:</b> <ol style="list-style-type: none"> <li>1. User clicks the Search button.</li> <li>2. The search button expands into a box with a location button.</li> <li>3. If the user clicks and accepts the permission dialog for location. <ol style="list-style-type: none"> <li>3.1. Send the location to the server.</li> </ol> </li> <li>4. If the user submits a location string <ol style="list-style-type: none"> <li>4.1. If the string cannot be parsed by the reverse geo-encoder. <ol style="list-style-type: none"> <li>4.1.1. Display an error message to the user.</li> </ol> </li> <li>4.2. If the string is parsed to a location, send the location to the server.</li> </ol> </li> <li>5. A 3-tier list is returned to the user for municipal, state, and national representatives.</li> </ol>
<b>Postconditions:</b> None.
<b>Alternative flows:</b> None.

Table 6.3: Use Case Tax Dollar

<b>Use Case 2 (ucTaxDollar)</b> <i>User views tax dollar spending.</i>
<b>Requirements:</b> <i>reqkSystem<sub>2</sub></i>
<b>Diagrams:</b> <i>UseCaseDiagram (Figure 6.1), ActivityDiagramUCTaxDollar (Figure 8.7)</i>
<b>Description:</b> The user wants to see how their tax dollars are being used and what legislation is impacting this.
<b>Primary actors:</b> User
<b>Secondary actors:</b> None.
<b>Preconditions:</b> 1. User has entered their location.
<b>Main flow:</b> 1. After entering their location, the user can click on a finances page. 2. The page will have three tiers of finances for municipal, state, and federal. 3. Various graphs will be present to the user that show percentages of tax dollars being spent. 4. The user can toggle different types of relevant graphs (histogram, pie chart, etc.) 5. User can also view relevant legislation on each of the tiers to provide additional information about how many tax dollars each is using.
<b>Postconditions:</b> None.
<b>Alternative flows:</b> None.

Table 6.4: Use Case Read Legislation

<b>Use Case 3 (ucReadLegislation)</b> <i>User reads legislation.</i>
<b>Requirements:</b> <i>reqkUser<sub>3</sub></i>
<b>Diagrams:</b> <i>UseCaseDiagram (Figure 6.1), ActivityDiagramUCTaxDollar (Figure 8.7)</i>
<b>Description:</b> The User reads bills and legislation, and can choose to read the summary of the bill instead.
<b>Primary actors:</b> User
<b>Secondary actors:</b> None.
<b>Preconditions:</b> 1. Legislation added to LegisLoop. 2. Bill added to LegisLoop.
<b>Main flow:</b> 1. User selects a bill or piece of legislation. 2. User chooses to read bill at different reading level. 2.1. User reads bill at more digestable reading comprehension level. 2.2. User selects to summarize legislation. 2.3. User reads summarized legislation.
<b>Postconditions:</b> None.
<b>Alternative flows:</b> None.

Table 6.5: Use Case Representative Votes

<b>Use Case 4 (ucRepresentativeVotes)</b> <i>User sees a representative's votes</i>
<b>Requirements:</b> <i>reqkUser<sub>2</sub>, reqkSystem<sub>3</sub></i>
<b>Diagrams:</b> <i>UseCaseDiagram (Figure 6.1), ActivityDiagramUCRepresentativeVotes (Figure 8.4)</i>
<b>Description:</b> The user sees a timeline of a representative's voting decisions on their profile.
<b>Primary actors:</b> User
<b>Secondary actors:</b> None.
<b>Preconditions:</b> None.
<b>Main flow:</b> <ol style="list-style-type: none"> <li>1. The User clicks on the representative's profile page.</li> <li>2. The page shows a timeline of the of bills the representative voted on, with their decision to support or oppose clearly delineated.</li> <li>3. The user can type specific subject matters in a search bar they are interested in. <ol style="list-style-type: none"> <li>3.1. The timeline is updated with irrelevant legislation filtered out.</li> </ol> </li> <li>4. The user types start date and end date in a second and third search bar. <ol style="list-style-type: none"> <li>4.1. The timeline is updated to only show legislation from the inputed start date to end date</li> </ol> </li> <li>5. The user can click on legislation to be directed to a page with the bill.</li> </ol>
<b>Postconditions:</b> <b>Main flow:</b> <ol style="list-style-type: none"> <li>1. If the user clicked on a bill in the timeline, they are directed to a page with the bill.</li> </ol>
<b>Alternative flows:</b> <ol style="list-style-type: none"> <li>1. User clicks on a page for a specific bill.</li> <li>2. If the bill has been voted on, any representatives that have voted for or against this bill will be displayed on the page.</li> </ol>

Table 6.6: Use Case Upcoming Events

<b>Use Case 5 (ucUpcomingEvents)</b> <i>User can see upcoming federal and state legislation/elections</i>
<b>Requirements:</b> <i>reqkSystem<sub>1</sub>, reqkFunctional<sub>1</sub>, reqkUser<sub>8</sub>, reqkUser<sub>9</sub></i>
<b>Diagrams:</b> <i>UseCaseDiagram (Figure 6.1), ActivityDiagramUCUpcomingEvents (Figure 8.5)</i>
<b>Description:</b> The home page of the system will show users relevant elections and bills based on their locations and interest.
<b>Primary actors:</b> User
<b>Secondary actors:</b> None.
<b>Preconditions:</b> None
<b>Main flow:</b> <ol style="list-style-type: none"> <li>1. User opens the application.</li> <li>2. Federal legislation and elections will be displayed.</li> <li>3. If the user does not input their location: <ol style="list-style-type: none"> <li>3.1. No other bills/elections will be displayed</li> </ol> </li> <li>4. The user is prompted to input their location or navigates to the appropriate field.</li> <li>5. Any elections relevant to the user's location are displayed</li> <li>6. User then inputs preferences for legislation they want to see.</li> <li>7. A list of legislation is displayed to the user based on filter criteria.</li> </ol>
<b>Postconditions:</b> None.
<b>Alternative flows:</b> None.

Table 6.7: Use Case Highlight

<b>Use Case 6 (ucHighlight)</b> <i>Policymakers highlight sections of bills</i>
<b>Requirements:</b> <i>reqkUser<sub>4</sub></i>
<b>Diagrams:</b> <i>UseCaseDiagram (Figure 6.1), ActivityDiagramUCHighlight (Figure 8.8)</i>
<b>Description:</b> The policymaker user can highlight sections of bills they want to emphasize, and those annotations are displayed on the user's end.
<b>Primary actors:</b> Policymaker user
<b>Secondary actors:</b> None.
<b>Preconditions:</b> 1. The user is logged into a policymaker account.
<b>Main flow:</b> <ol style="list-style-type: none"> <li>1. After landing on the page of a bill, the policymaker sees a "highlight button".</li> <li>2. If the button is clicked, the screen will turn to "highlight mode", and two buttons "oppose" and "support" will appear.</li> <li>3. If the "oppose" or "support" button is clicked, the color of their highlights will change from yellow to red or green respectively.</li> <li>4. The policymaker highlights text they want to emphasize.</li> <li>5. If the policymaker clicks a "finish button", a confirmation message will be displayed with a "cancel" and "commit changes" button.</li> <li>6. If the "cancel" button is clicked, they will return to highlight mode.</li> <li>7. If the policymaker clicks "commit changes", their highlights will be displayed to other users**</li> <li>8. When a user is on the page of a bill, they see a "view highlights" button.</li> <li>9. If the "view highlights" button is clicked, the user will see all the highlights that policymakers have annotated on a bill.</li> <li>10. If the user hovers over a highlighted region of the bill, they can see which policymaker was responsible for the highlight.</li> <li>11. On the side, a list of policymakers that annotated the bill are displayed.</li> <li>12. If the user clicks an icon on the side of the policymaker's name, their annotations are blocked from view.</li> <li>13. If the user clicks on the policymaker's name, they are directed to the policymaker's profile.</li> </ol>
<b>Postconditions:</b> None.
<b>Alternative flows:</b> None.

Table 6.8: Use Case Learn More

<b>Use Case 7 (ucLearnMore)</b> <i>Users shall be able to learn more about political information.</i>
<b>Requirements:</b> <i>reqkUsers</i>
<b>Diagrams:</b> <i>UseCaseDiagram (Figure 6.1)</i>
<b>Description:</b> The user is given the option to learn more about the issue surrounding a piece of legislation from a display of articles.
<b>Primary actors:</b> User
<b>Secondary actors:</b> None.
<b>Preconditions:</b> None.
<b>Main flow:</b> <ol style="list-style-type: none"> <li>1. The user clicks on a page to read the bill.</li> <li>2. The user sees an option to "learn more", and is presented with an organized collection of articles based on the issues relevant to the bill.</li> <li>3. If the user clicks on one of these articles, they are directed to the article.</li> </ol>
<b>Postconditions:</b> None.
<b>Alternative flows:</b> None.

Table 6.9: Use Case First

<b>Use Case 8 (ucEngageCommunity)</b> <i>User interacts with a social network.</i>
<b>Requirements:</b> <i>reqkUser<sub>11</sub>, reqkBusiness<sub>4</sub>reqkSystem<sub>4</sub></i>
<b>Diagrams:</b> Figure <a href="#">UseCaseDiagram</a> ( <i>Figure 6.1</i> )
<b>Description:</b> The user can post, like, and comment in a depolarizing social media feed.
<b>Primary actors:</b> User1, User2
<b>Secondary actors:</b> User2
<b>Preconditions:</b> 1. Users share a location. 2. User’s political alignment, interests, demographics, and open-mindedness are known.
<b>Main flow:</b> 1. User1 clicks an icon to create a new post. 2. User1 selects one of three choices for the geography level: local, state, or national. 3. User1 is brought to a page with a text box. 4. User1 types inputs content. 5. User1 Clicks a post icon. 6. If User2 shares geography level location with User1, User1’s post is displayed on User2’s feed based on depolarizing algorithm. 7. If User2 clicks the like button on the post, the displayed like counter goes up by 1. 8. User2 clicks on the post. 9. User2 types a comment in the text box and clicks a button to post it. 10. Both User1 and User2 can see User2’s comment.
<b>Postconditions:</b> None.
<b>Alternative flows:</b> None.

# Chapter 7

## User Interface Design – A. Ford, D. McDevitt, S. McDonough, J. Memoli, S. Tu

### 7.1 User Personas

#### 7.1.1 Busy Ben

- A full time worker and parent of three.
- Wants to engage with community issues but lacks time.
- Relies on friends and news for voting decisions.

#### 7.1.2 Lay Liam

- A newcomer to politics after watching debates online.
- Struggles to find clear, digestible information.
- Overwhelmed by complex policies and political jargon.

#### 7.1.3 Disillusioned Diana

- A passionate citizen frustrated by online toxicity.
- Avoids politics due to polarization and algorithmic bias.
- Seeks a constructive, policy-focused community.

#### 7.1.4 Curious George

- A politically engaged individual.
- Actively follows news, debates, and participates in primaries.
- Strongly supports candidates based on policy alignment.

## 7.2 Customer Interviews

The entire interview is conducted in person and is organized into two phases:

1. **Inquiry Interview:** Gather information about the participant's level of public engagement, attitudes, and knowledge.
2. **Process Interview:** Observe them gather information on a specific candidate for the purpose of voting.

### 7.2.1 Inquiry Interview

Ask the participant the following questions in a discussion format. Encourage elaboration.

#### Election Questions

- Did you vote in this election?
- Which candidates and/or ballot initiatives did you research, if any?
- If you didn't research any candidates/ballot initiatives, why?
- What information is important for you to be confident in your decision to vote for a candidate?
- Were you satisfied and confident in your level of research when voting for a candidate? Why or why not?
- What are the largest barriers in getting the information you need to feel informed?

#### Non-Election Questions

- To what extent do you stay informed or participate in public issues in your local community (ie. attending town hall meetings, learning about community issues).
- Do you know who your local representative is?
- What types of information do you care to know about in politics, your local community, and elections?

### 7.2.2 Process Interview

- Ask the participant if there was position of office or ballot initiative in the 2024 election they did not research or wanted to do more research on for the purpose of voting.
- Ask the participant to find a copy of their ballot, and help guide them if they take more than 5 minutes. Take note of the time taken to find this ballot and whether they required assistance.
- After deciding on an office position or ballot initiative, ask them to research the candidates they are considering while commentating their thoughts out loud.
- The interviewers should refrain from interfering too heavily with the research process, but should ask questions intermittently.

### 7.2.3 Interview #1

- **Name:** Christopher Magsino
- **Role:** [Busy Ben](#)
- **Feedback:** Chris, a 21-year-old NJ voter, prioritized affordability, climate change, crime, and gun control in the 2025 elections. He focused primarily on the presidential race, with limited research conducted a week prior. While he emphasized issues like immigration, the economy, and abortion rights, he overlooked local races except for a rent control proposition. Time constraints and a lack of in-depth knowledge hindered his preparation. Chris values candidates' personalities, history, and stances, regretting not delving deeper.
  - Struggled with identifying the correct candidate and navigating resources effectively.
  - Used direct candidate websites, Ballotpedia, and Congress.gov to evaluate policies, voting history, and personal statements from candidates.
  - Relied on emotional resonance (e.g., immigrant background) and key survey responses when clarity on policy specifics was in question he sought hard data on tax credits and searched to understand the legislative progress of initiatives.
- **Key Takeaways:**
  - Users benefit from side-by-side summaries of candidates' stances on key issues, making it easier to compare them at a glance.
  - Providing clear, jargon-free explanations of policies and terms (e.g., tax credits, green initiatives) helps users who may not have prior knowledge.
  - Ensure all statistics and claims are sourced, building trust and reducing skepticism about the validity of information.
- **Relevant Requirements:** [reqUserIdentify](#) (*reqkUser<sub>1</sub>*), [reqUserDisplay](#) (*reqkUser<sub>2</sub>*), [reqUserSummary](#) (*reqkUser<sub>3</sub>*), [reqUserLearn](#) (*reqkUser<sub>5</sub>*), [reqUserTranslate](#) (*reqkUser<sub>6</sub>*)

## 7.3 User Interface Design

The current UI includes the following features pictured below:

- **Navigation Bar:** Easy access to different sections of the platform.
- **Legislative Explorer:** Search and filter bills based on topics and interests.
- **Legislative Feed:** Browse latest proposals & updates in real time.
- **Legislation Overview:** View simplified summaries and key points of bills.
- **Real Legislative Documents:** Access official, full-text versions of bills and laws.
- **Representative Finder:** Locate your local, state, and federal representatives.
- **Legislative Activity Tracker:** View decisions, proposals, and voting records in one timeline.
- **Connect Page:** Join discussions and share perspectives with other users.

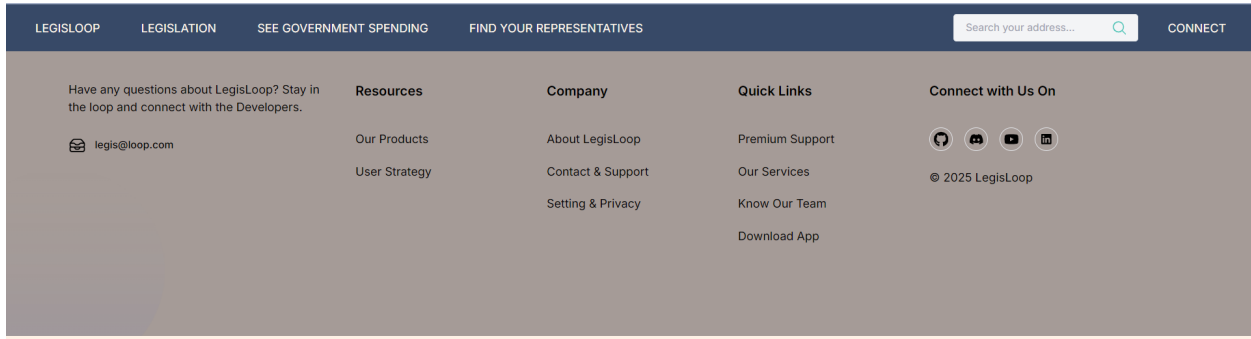


Figure 7.1: NavBar + Footer Design

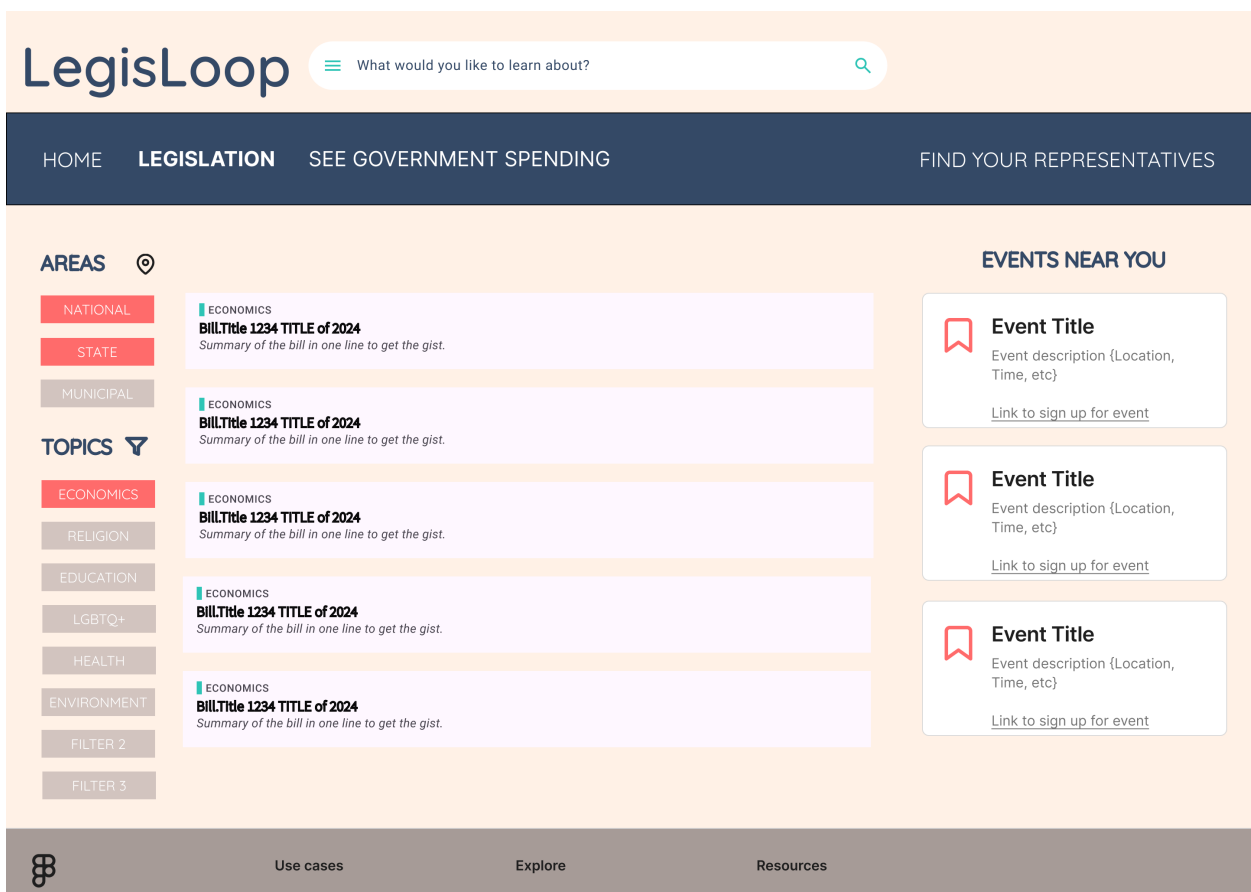


Figure 7.2: Landing Page Design

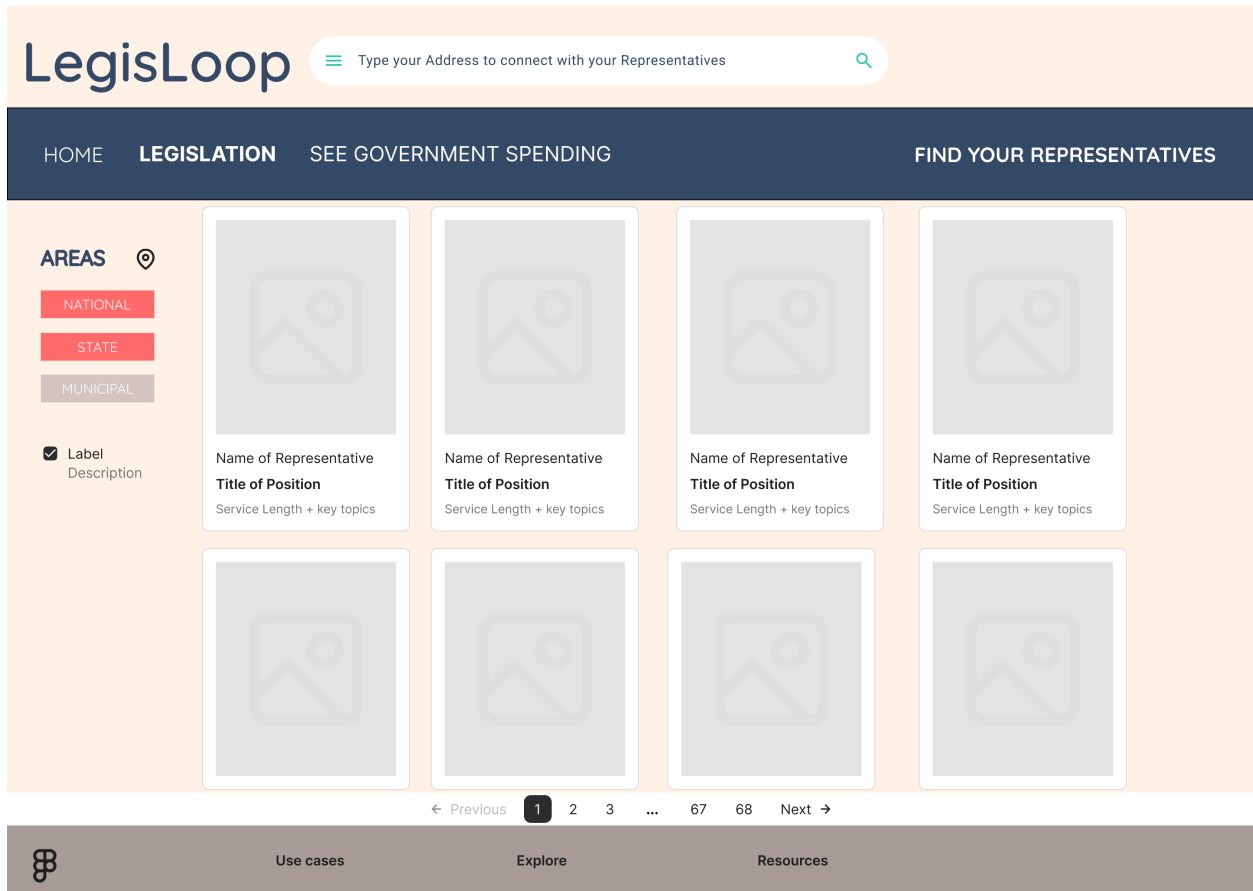


Figure 7.3: Find Representatives Page Design

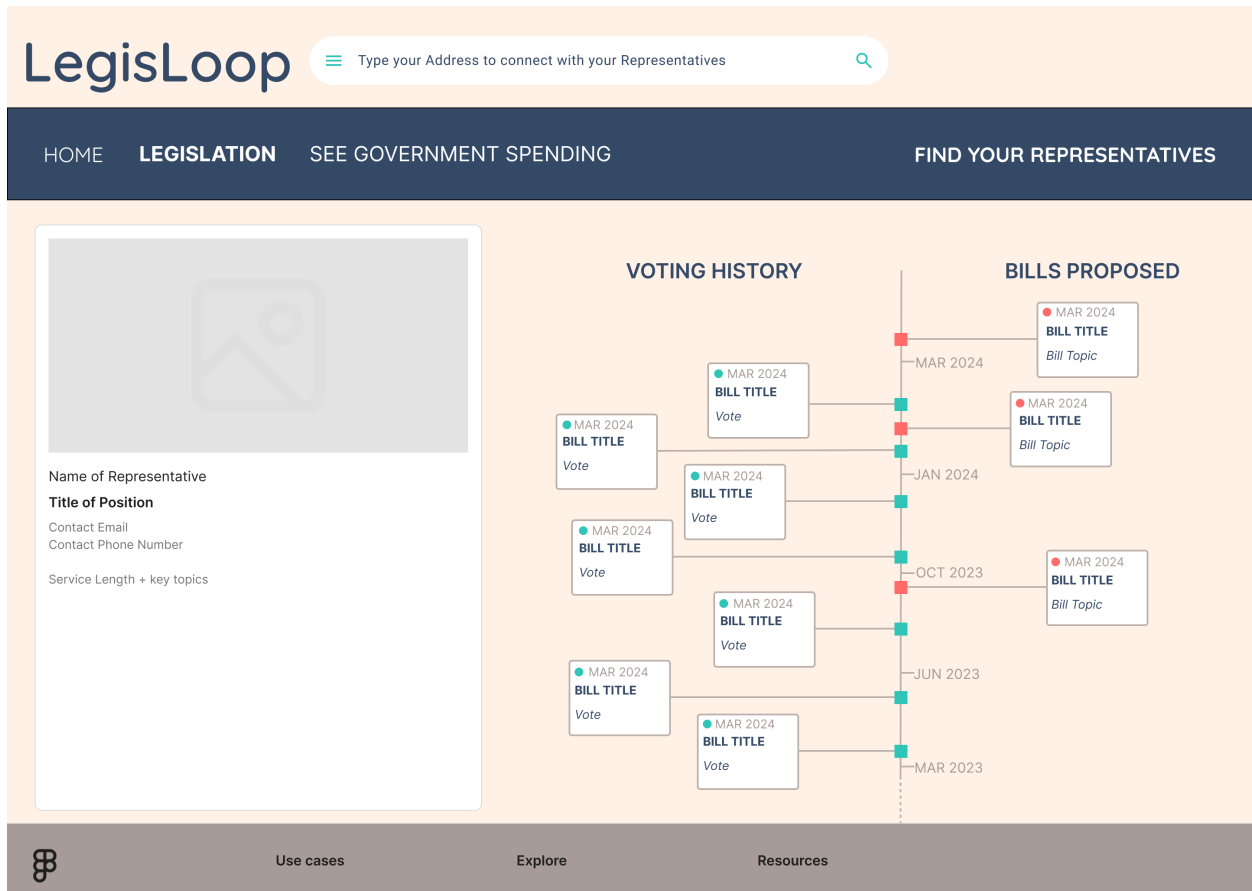


Figure 7.4: Representative Profile Page Design

**LegisLoop** What would you like to learn about?

HOME LEGISLATION SEE GOVERNMENT SPENDING FIND YOUR REPRESENTATIVES

## Votes

**Representative 1**  
Vote

**Representative 2**  
Vote

**Representative 3**  
Vote

**Representative 4**

Lorem ipsum odor amet, consectetur adipiscing elit. Torquent vivamus tortor ante augue nostra sem. Ultricies proin condimentum rutrum, nec neque risus. Facilisis hendrerit consectetur nam, magna auctor massa. Vehicula adipiscing nec auctor cursus eleifend massa aliquam. In pellentesque himenaeos nostra a nunc eget efficitur suspendisse penatibus. Laoreet enim sodales curabitur leo eros cubilia. Nostra vestibulum sed habitat suspendisse auctor donec. Maecenas porttitor dignissim urna magnis morbi sit quisque accumsan.

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### Reading Level

Un-edited

Moderate-read

Easy-read

1-page

Economic Focused

Summarize

Use cases Explore Resources

Figure 7.5: Legislation Page Design

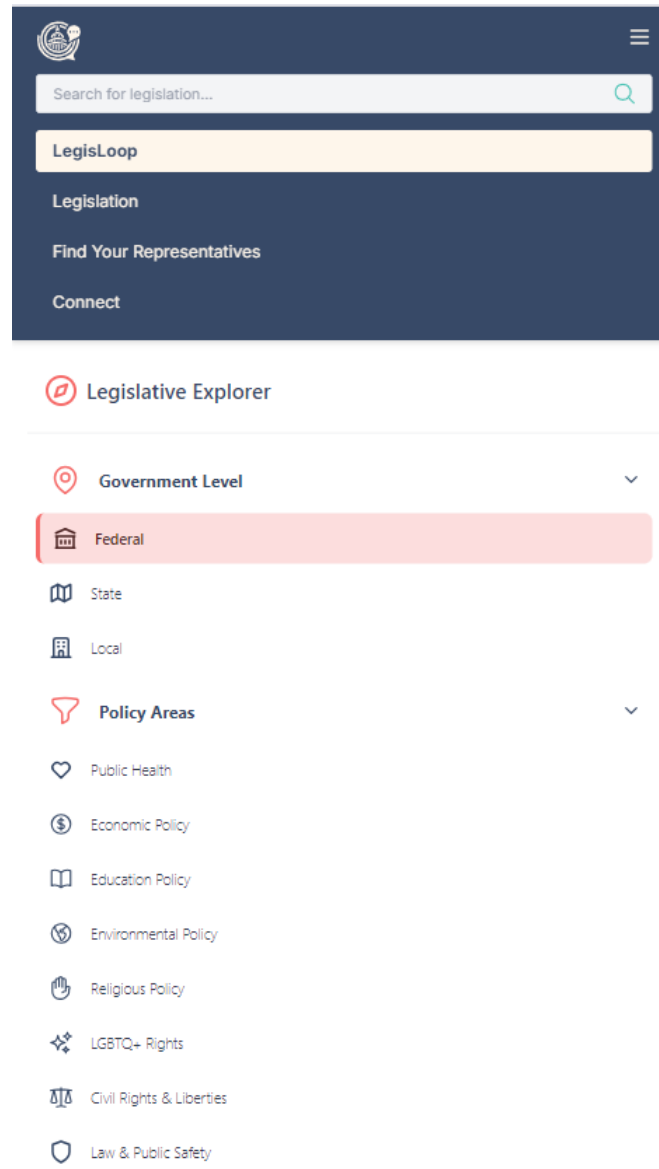


Figure 7.6: Navigation Bar and Legislative Explorer

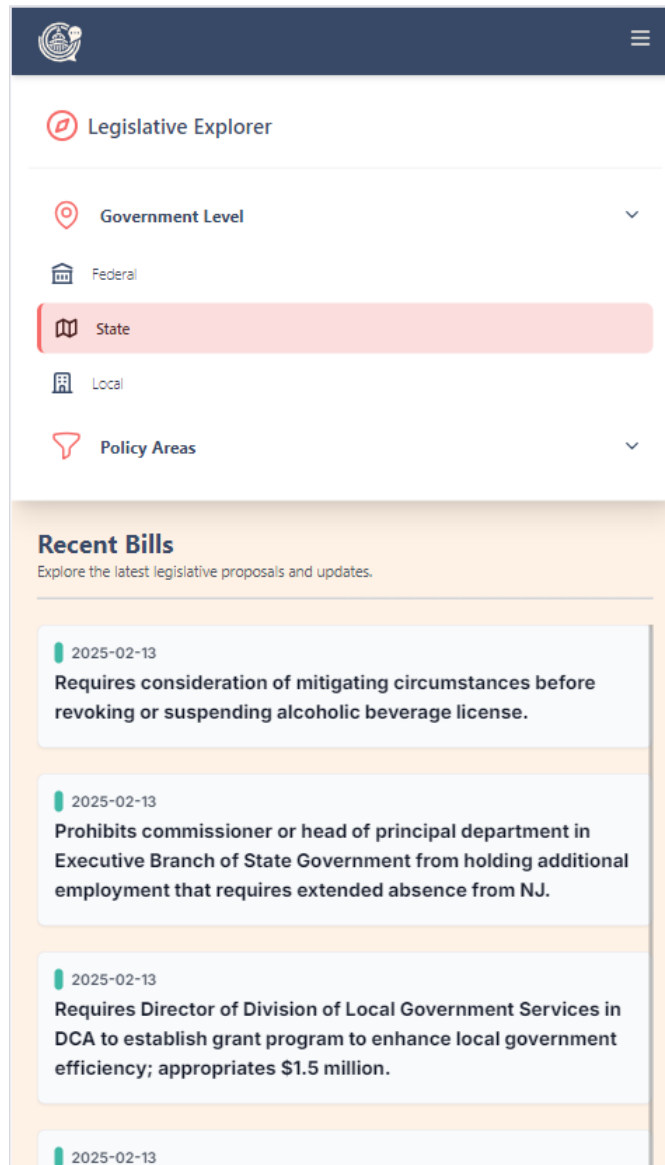
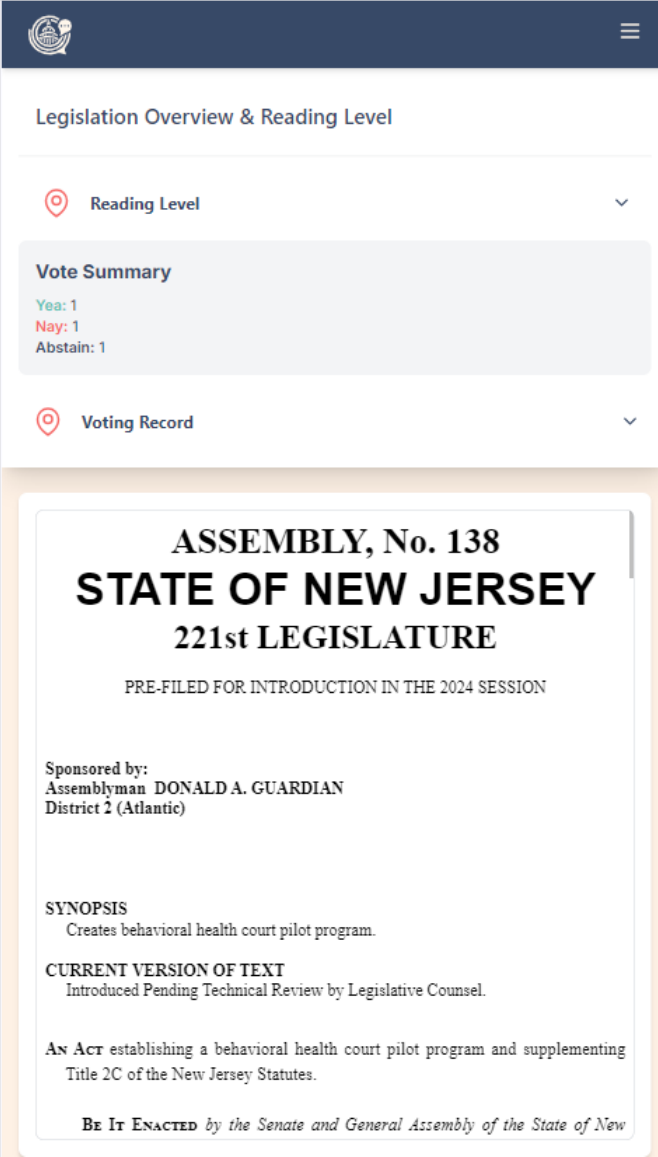


Figure 7.7: Legislation Feed



Legislation Overview & Reading Level

Reading Level

**Vote Summary**  
Yea: 1  
Nay: 1  
Abstain: 1

Voting Record

**ASSEMBLY, No. 138**  
**STATE OF NEW JERSEY**  
**221st LEGISLATURE**

PRE-FILED FOR INTRODUCTION IN THE 2024 SESSION

Sponsored by:  
Assemblyman DONALD A. GUARDIAN  
District 2 (Atlantic)

**SYNOPSIS**  
Creates behavioral health court pilot program.

**CURRENT VERSION OF TEXT**  
Introduced Pending Technical Review by Legislative Counsel.

**AN ACT** establishing a behavioral health court pilot program and supplementing Title 2C of the New Jersey Statutes.

**BE IT ENACTED** by the Senate and General Assembly of the State of New

Figure 7.8: Legislation Document Viewer

The image shows a web application interface for finding legislators. At the top is a dark blue header with a logo on the left and a menu icon on the right. Below the header is the title "Legislator Finder" with a red location pin icon. There are two dropdown menus: "Select Location" and "Select Government Level". The "Select Location" dropdown is currently set to "New Jersey". Below the dropdowns is a grid of 10 representative cards, each with a name, title, district, and party affiliation.

Name	Title	District	Party
Annette Quijano	Rep - 3128	District HD-020	D
Benjie Wimberly	Sen - 13700	District SD-035	D
Yvonne Lopez	Rep - 19555	District HD-019	D
William Moen	Rep - 21499	District HD-005	D
Gerard Scharfenberger	Rep - 21530	District HD-013	R
Victoria Flynn	Rep - 23072	District HD-013	R
John Allen	Rep - 25125	District HD-032	D
Gary Schaer	Rep - 3064	District HD-036	D
Jay Webber	Rep - 3086	District HD-026	R
Eliana Marin	Rep - 16067	District HD-029	D

Figure 7.9: Representative Finder

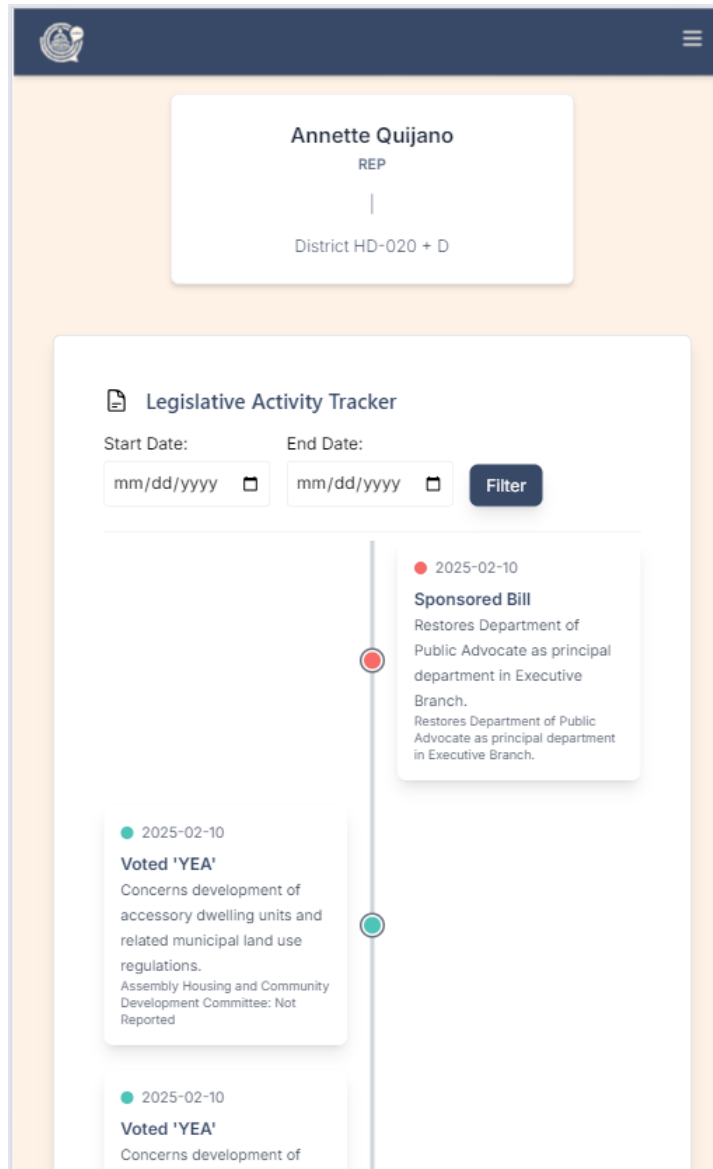


Figure 7.10: Legislative Activity Tracker

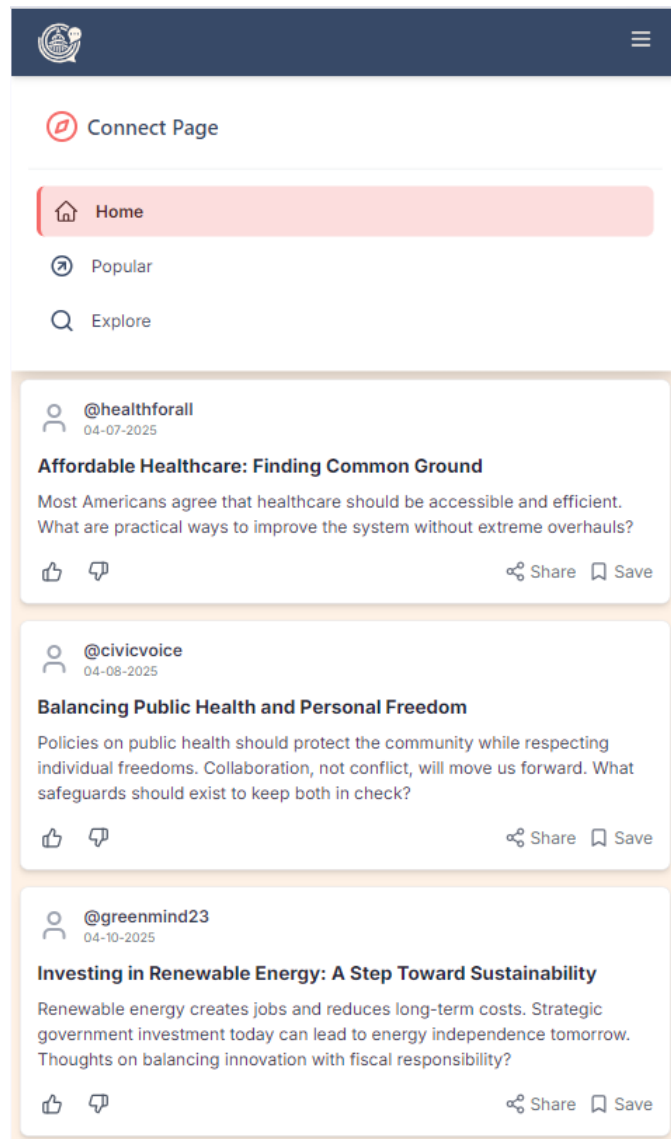


Figure 7.11: Connect Page



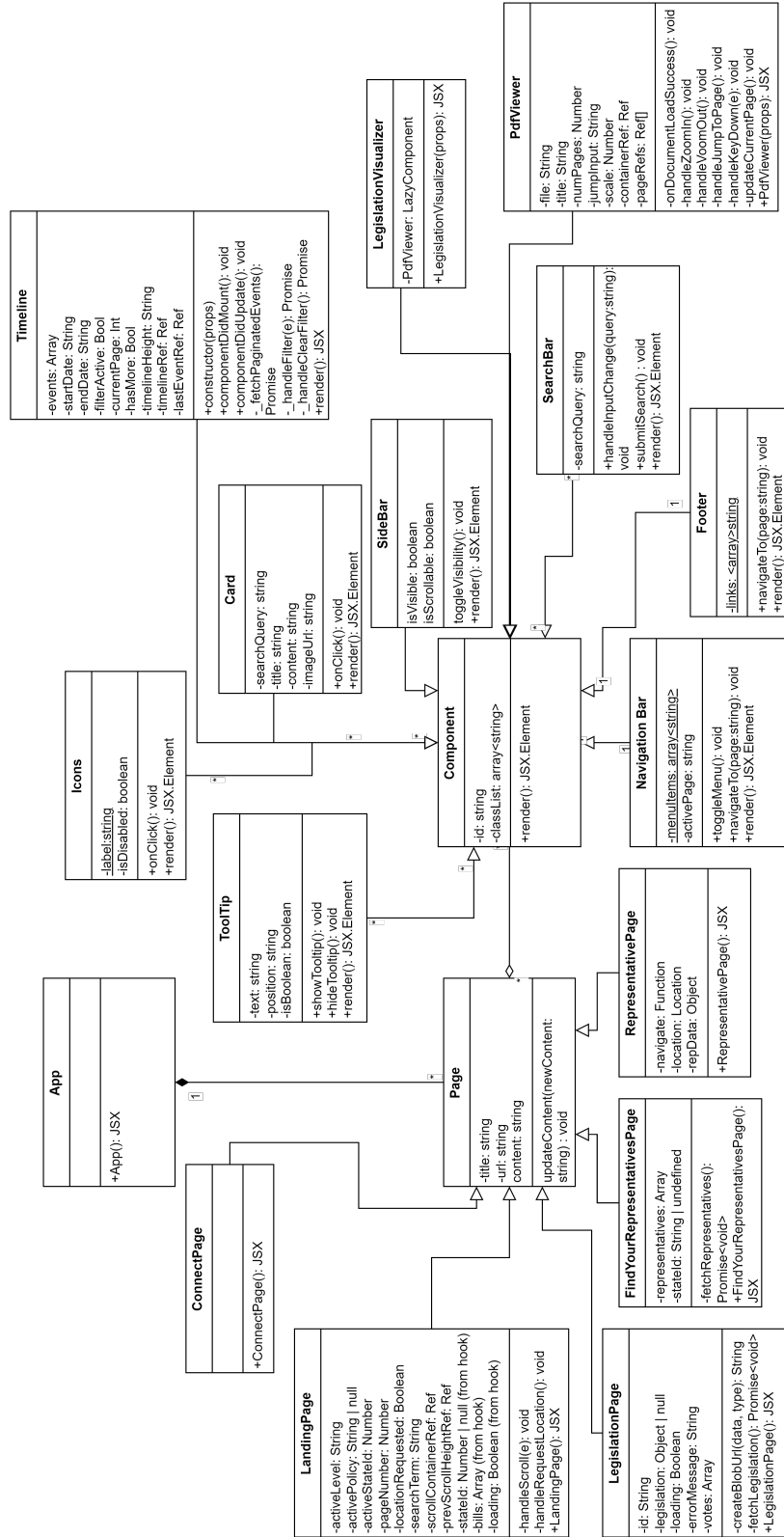


Figure 8.2: Front-end Class Diagram.

## 8.2 Process View – S. Tu, A. Ford, J. Memoli

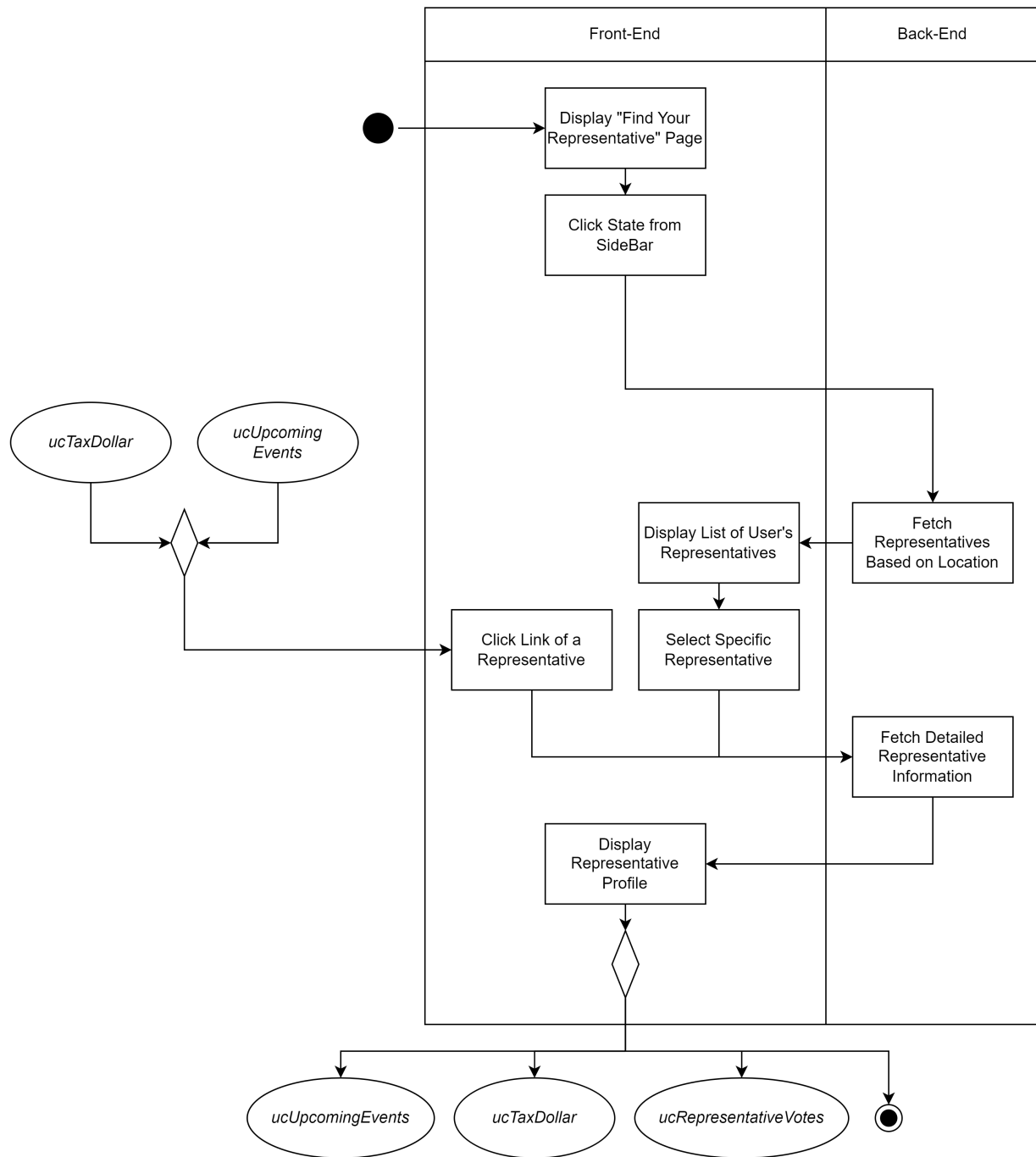
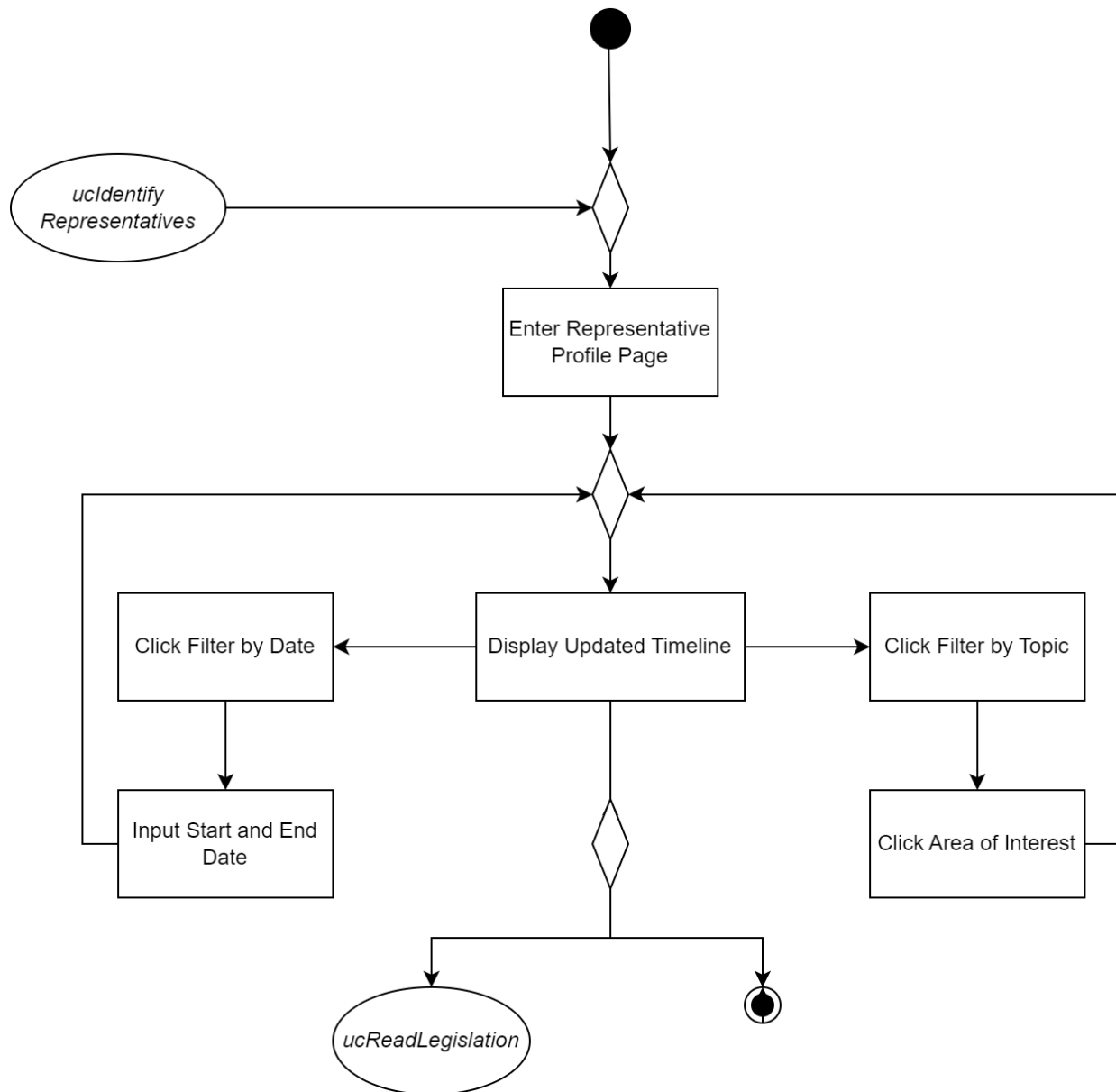


Figure 8.3: Activity Diagram for *ucIdentifyRepresentatives* ( $UC_1$ )

Figure 8.4: Activity Diagram for *ucRepresentativeVotes* (UC<sub>4</sub>)

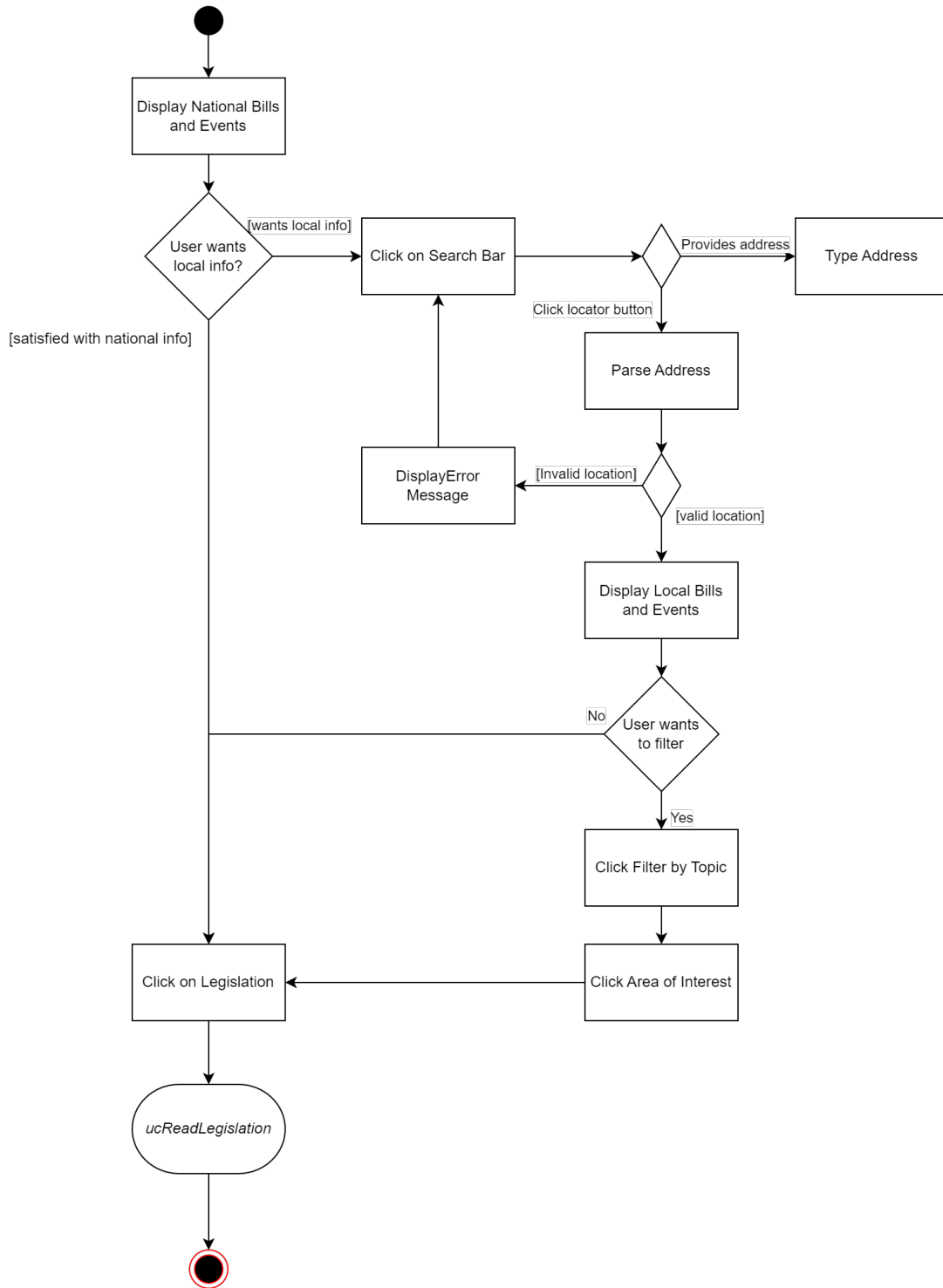
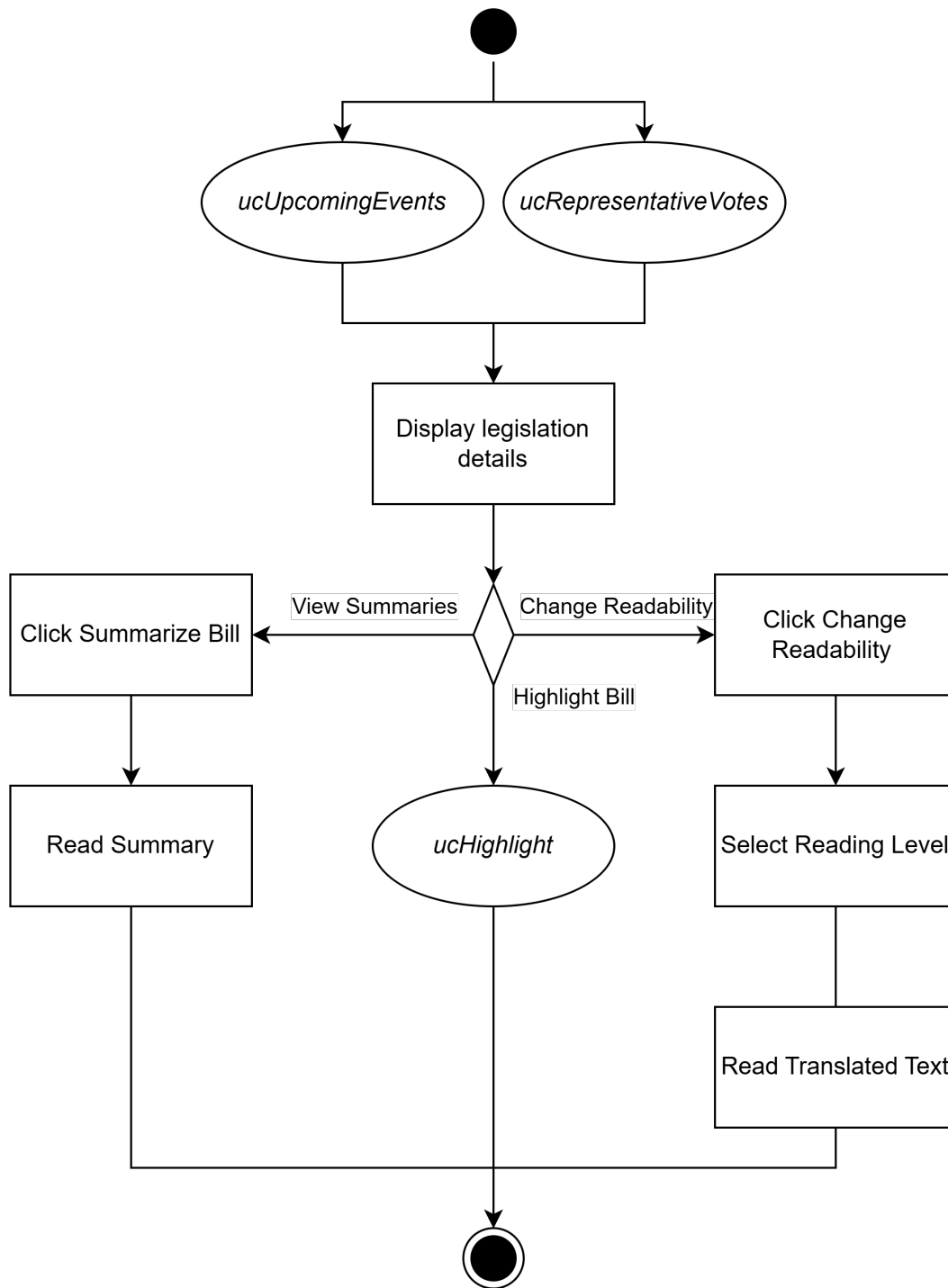


Figure 8.5: Activity Diagram for *ucUpcomingEvents* (*UC<sub>5</sub>*)

Figure 8.6: Activity Diagram for *ucReadLegislation* ( $UC_3$ )

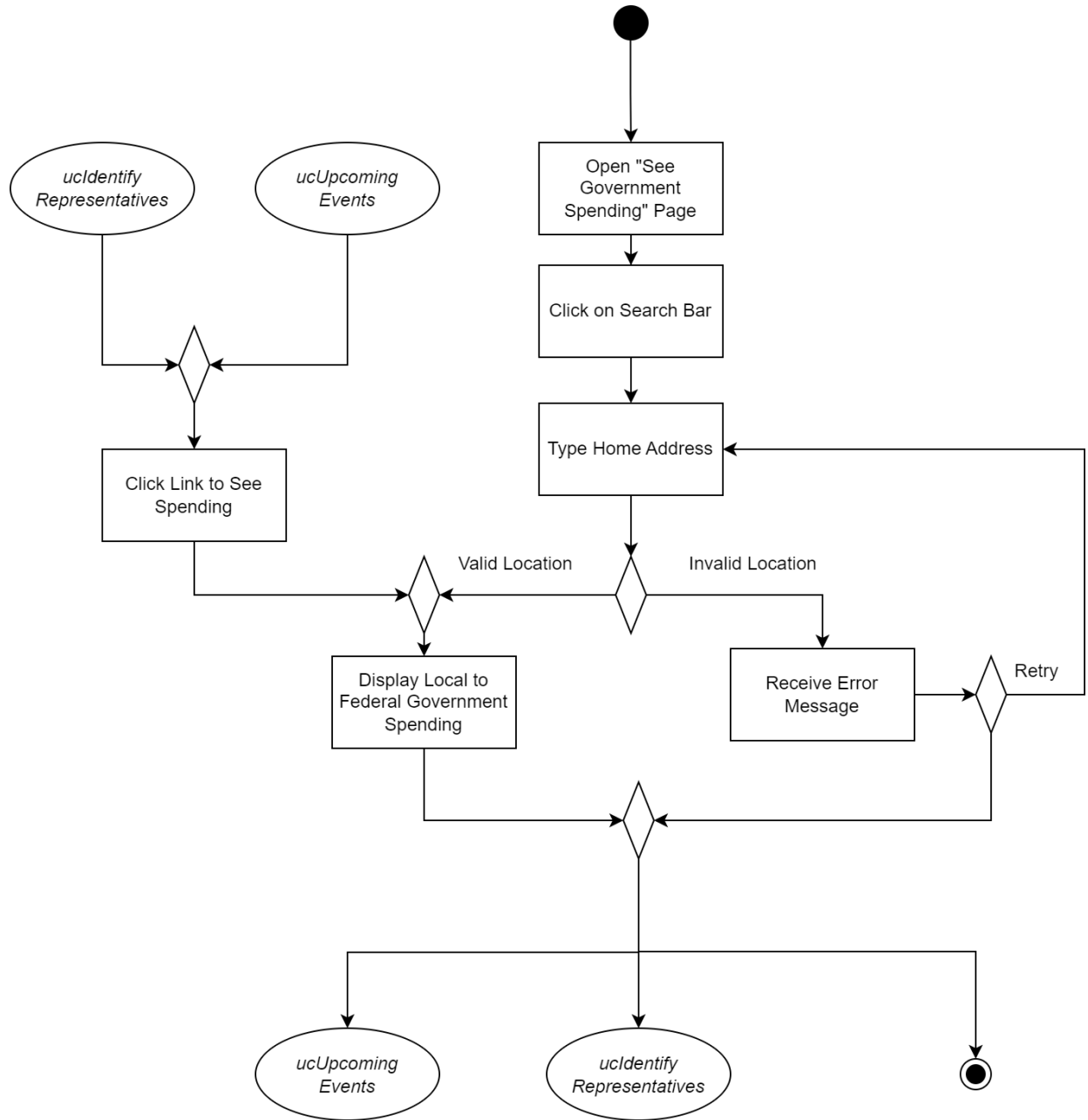
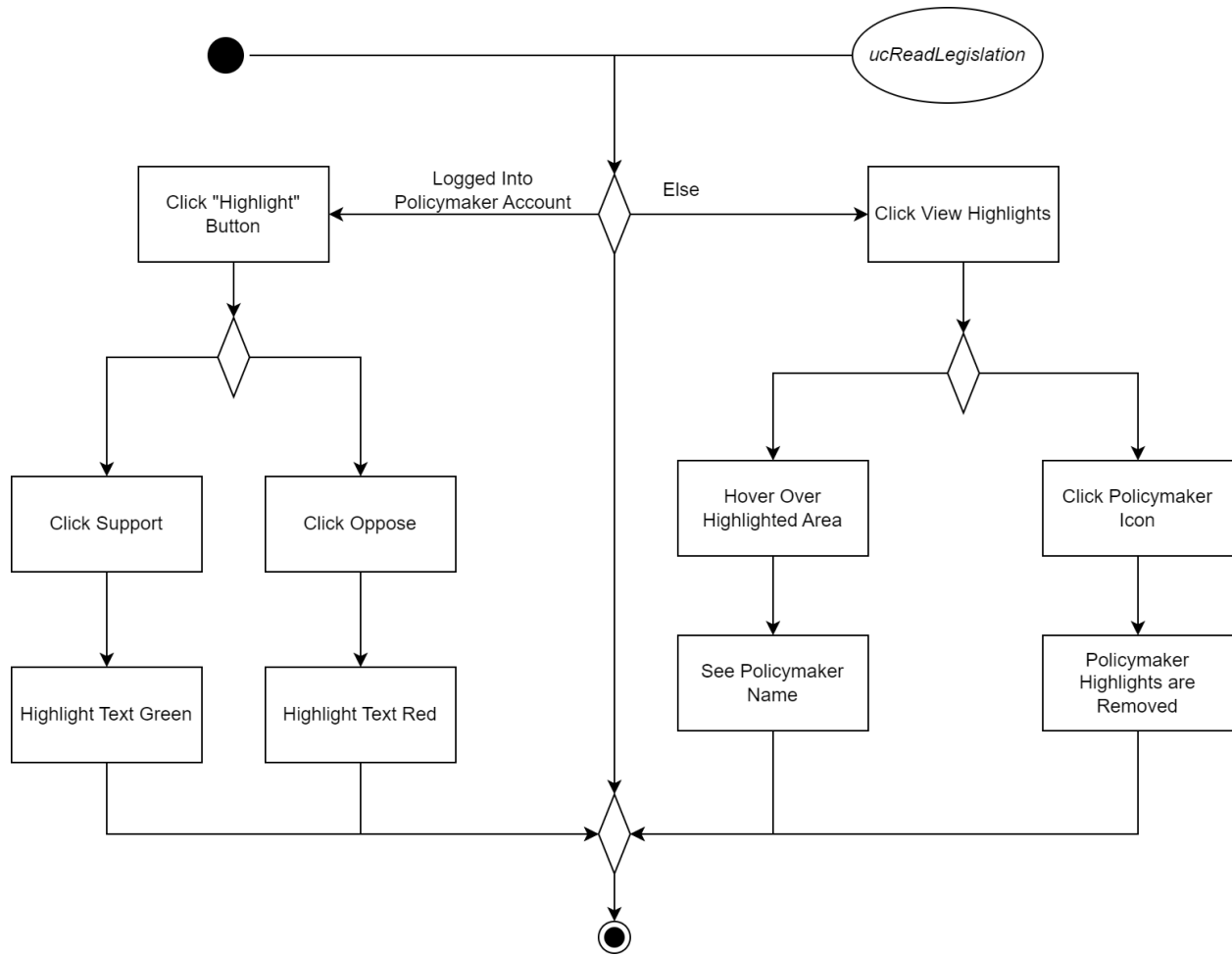
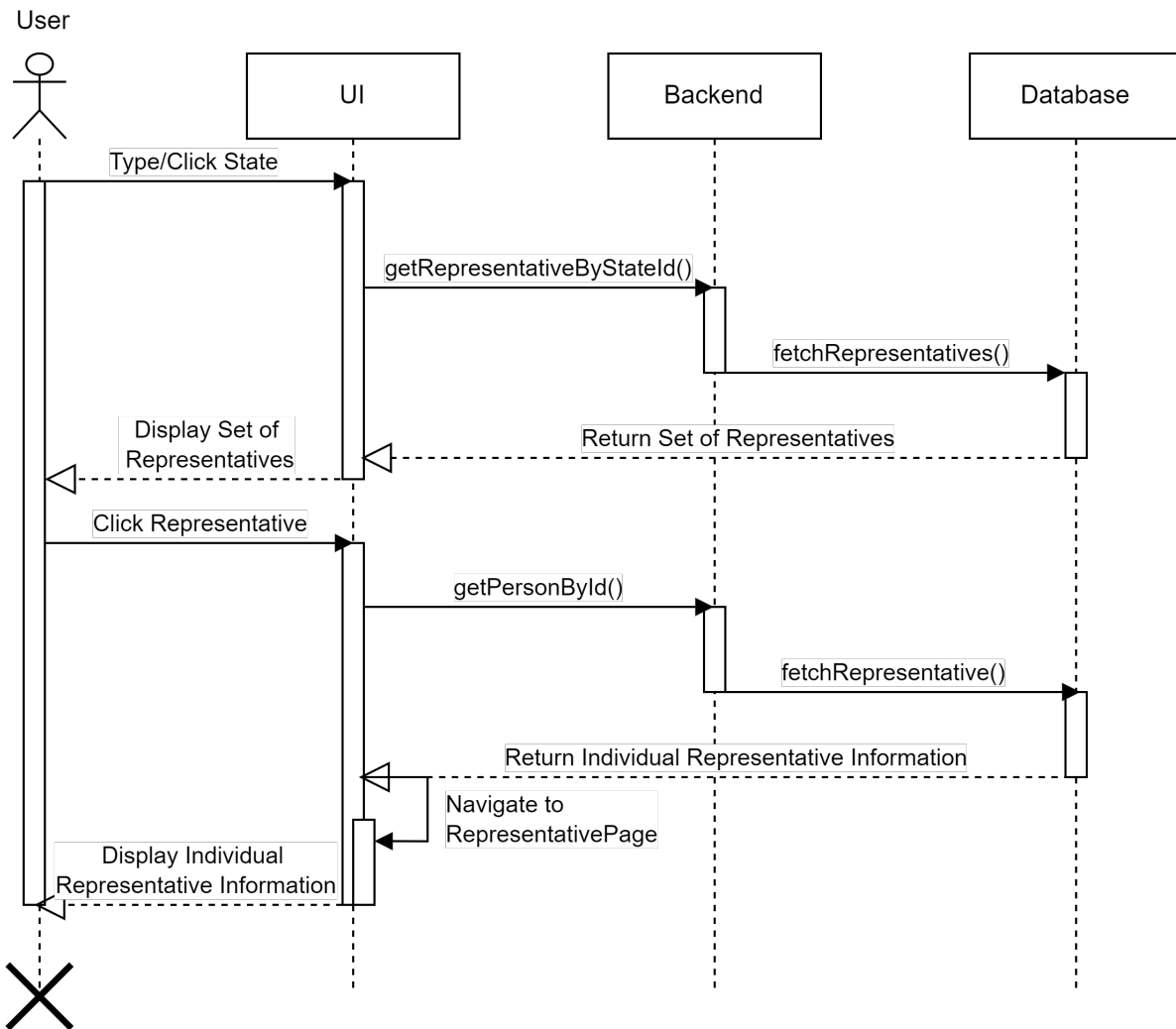


Figure 8.7: Activity Diagram for *ucTaxDollar* ( $UC_2$ )

Figure 8.8: Activity Diagram for *ucHighlight* ( $UC_6$ )

Figure 8.9: Sequence Diagram for `ucIdentifyRepresentatives (UC1)`

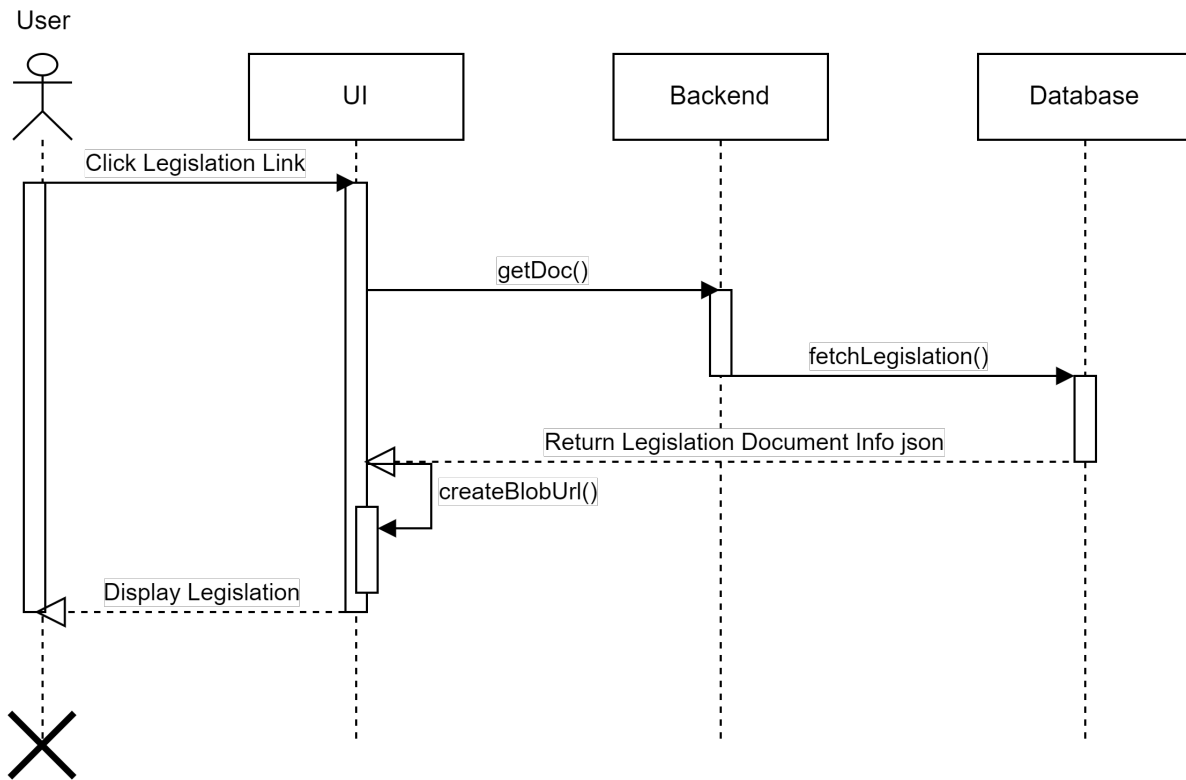


Figure 8.10: Sequence Diagram for `ucReadLegislation (UC3)`

### 8.3 Development View – J. Memoli

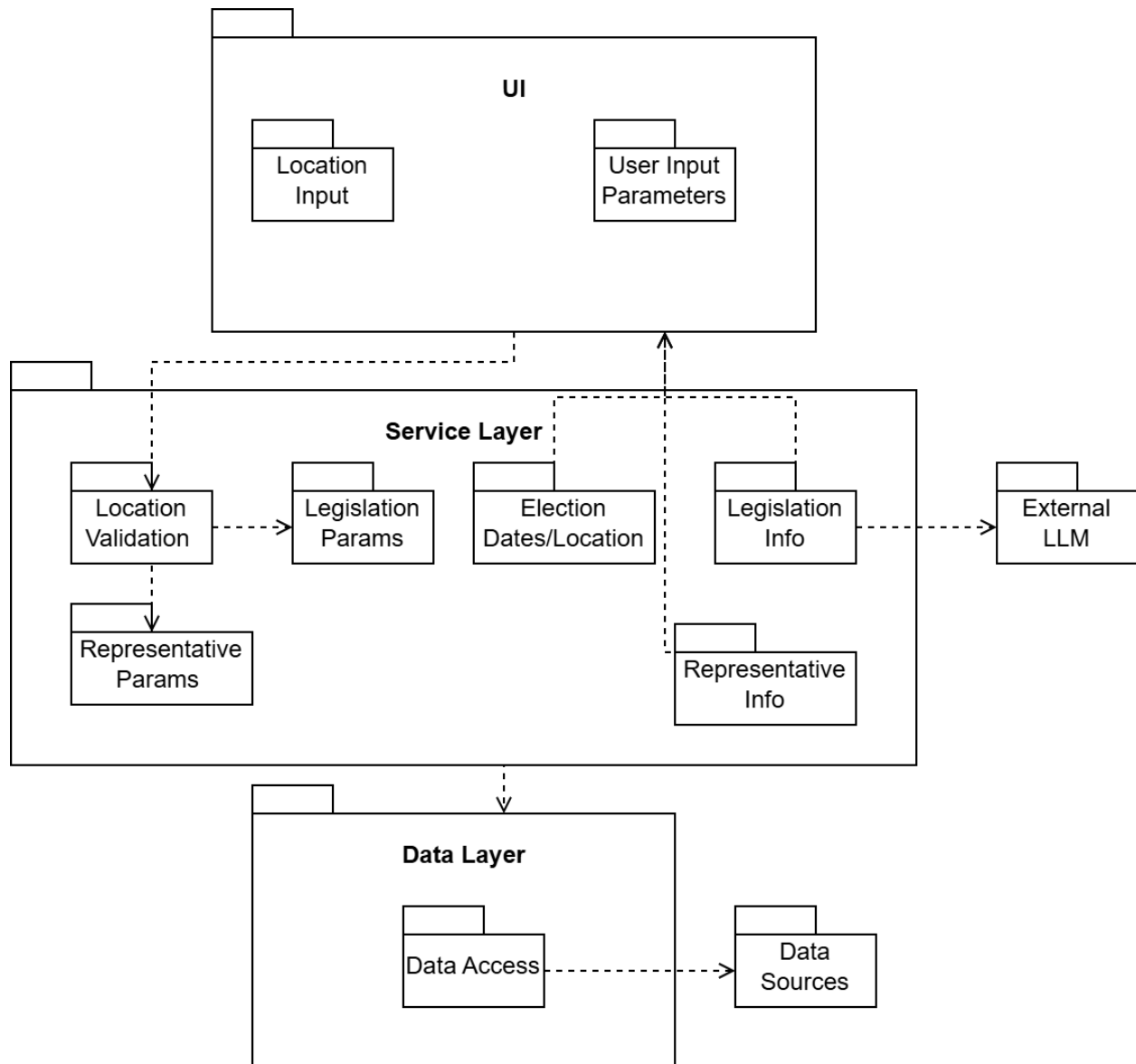


Figure 8.11: Package Diagram of System Layers

### 8.4 Physical View – A. Ford

The system will require a significant amount of data from external, reliable sources to operate. The following sources of data have been identified and labeled in the [DeploymentDiagram](#) ([Figure 8.12](#)).

- **LegiScan** offers: raw law and bill text, along with representatives, bill sponsors, and voting histories.
  - Raw law and bill text in both pdf and html/text formats.

- A list of current representatives, along with their party, and district.
- More information about different laws/bills including titles, descriptions, voting histories, and endorsements.
- **Governance Project** offers:
  - Elected officials at the federal, state, and county levels of government, as well as U.S. territories and most major cities.
  - Officials' names, the offices they hold, party affiliation for partisan offices, contact information, websites, and social media handles.
- **Google Civic Information** offers data regarding elections.
- **Open Civic Data** offers a schema and repertoire for labeling government bodies from the national to city level.
- **GovInfo** offers raw law and bill text.
- **ReadEasy AI** offers the ability to summarize text by age/reading level.

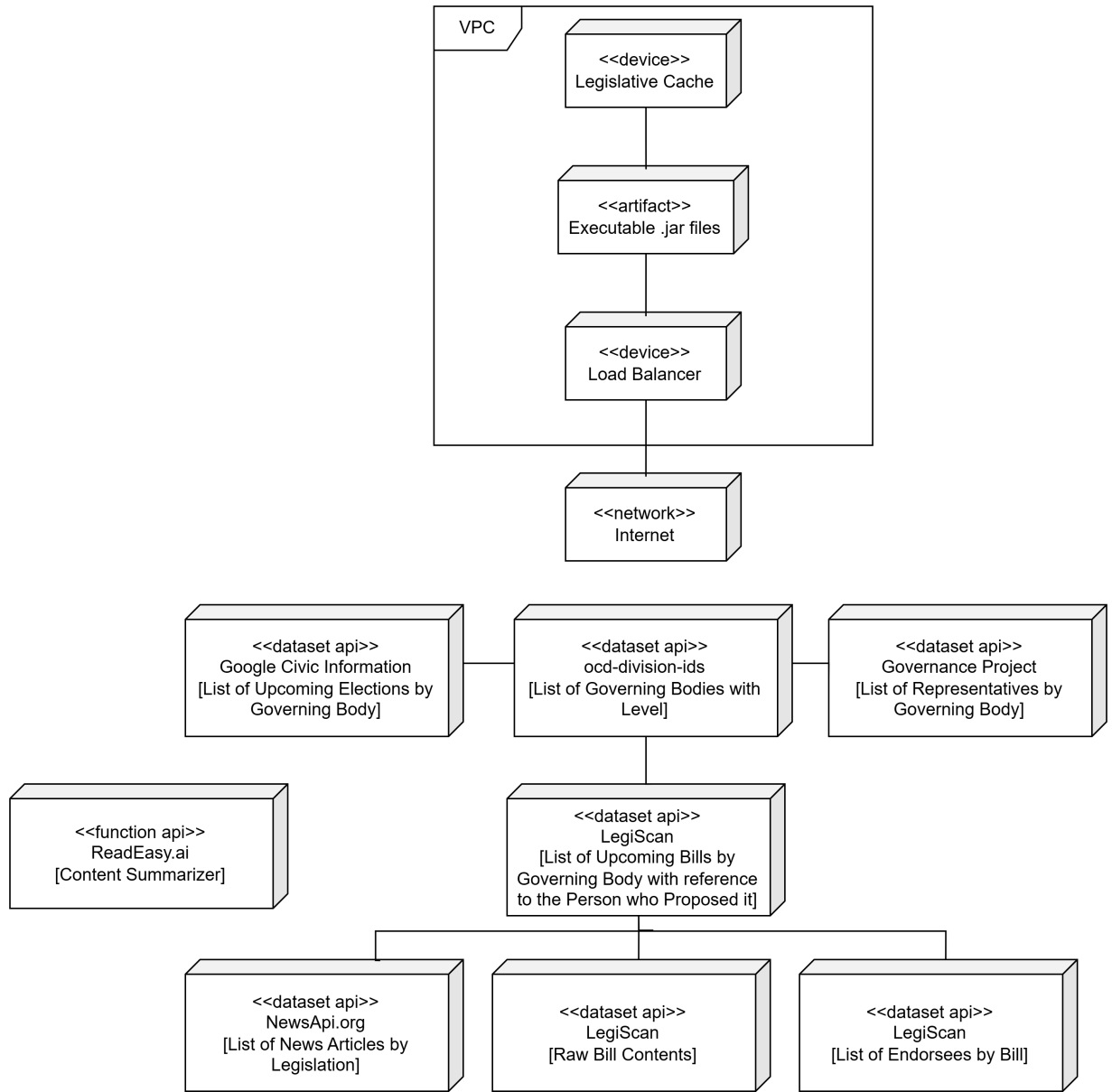


Figure 8.12: Deployment Diagram of Data Sources

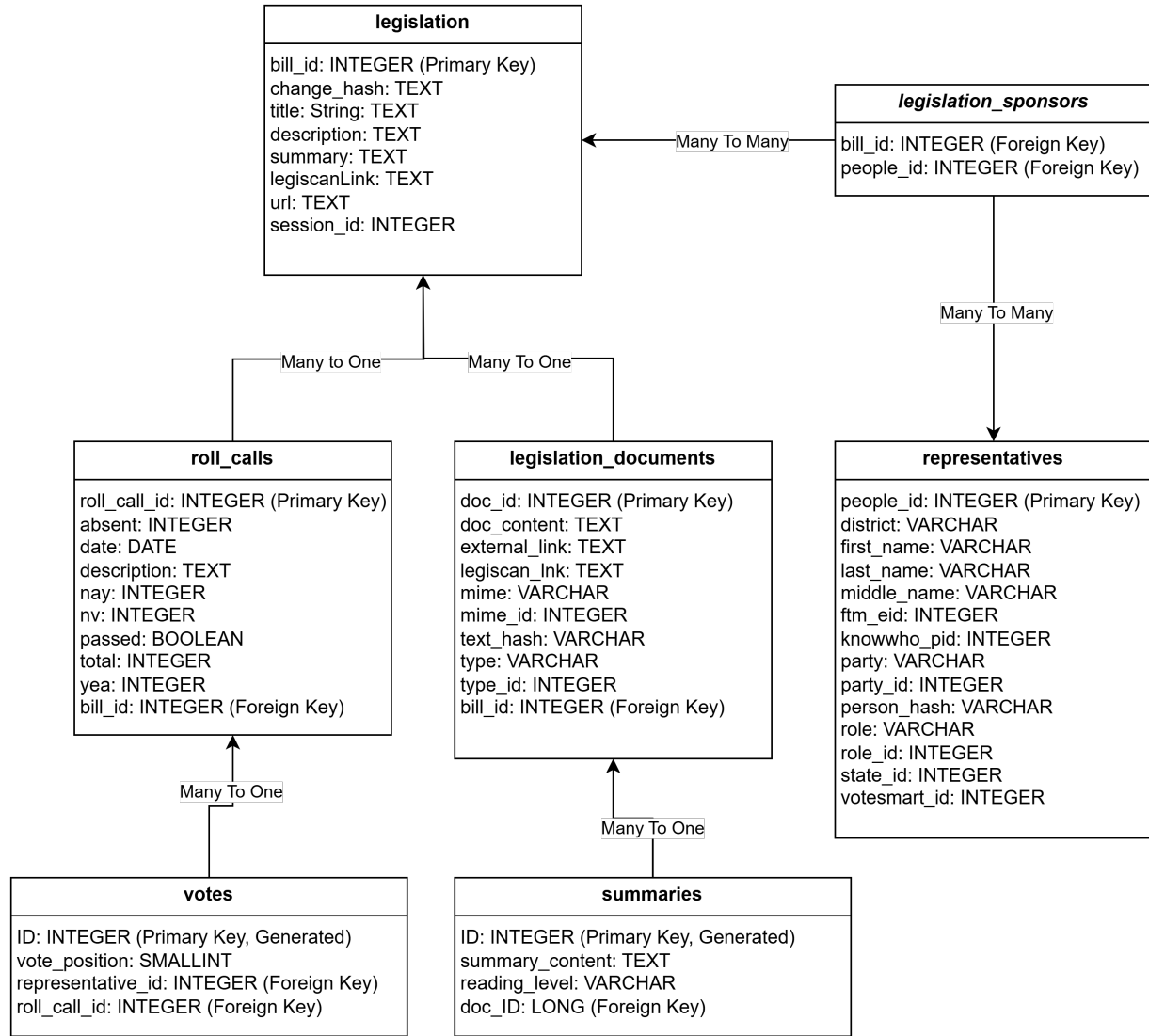


Figure 8.13: Diagram of Database Relationships

# Chapter 9

## Prototype Demo – *J. Memoli*

### 9.1 Tech Stack

For the initial implementation of Legisloop, we established the core infrastructure for both the frontend and backend. The frontend is built using React, while the backend is implemented in Spring Boot. Both components are containerized using Docker, with individual Dockerfiles defining the containerization process. To enhance development, we created a Docker Compose file to manage the orchestration of these containers and so the entire application could easily be spun up.

From a functional standpoint, we established a basic connection between the frontend and backend. This includes a feature where the frontend automatically fetches the names of the team members from the backend via an API request. Additionally, the backend can query the NewsAPI.org service to retrieve news articles, demonstrating our ability to interact with external APIs.

### 9.2 Testing

For testing the application locally, we integrated Swagger UI into the Spring Boot backend. Swagger UI provides an interactive API interface, allowing developers to test endpoints directly through a web interface. This simplifies the process since developers don't have to worry about making requests through Curl or Postman. Swagger also provides additional information about each of the endpoints, such as how a sample response from each endpoint would be formatted if successful.

We also implemented unit tests for the backend as part of our development workflow. Even though there is not much that currently needs to be tested, we implemented were able to show that testing framework is correctly set up and functioning as intended.

### 9.3 Continuous Integration

For continuous integration, the main tool that we used is GitHub actions. Our pipeline currently includes workflows to test the React frontend build, validate the Spring Boot backend build, and run backend unit tests on every pull request. This ensures that all proposed changes are thoroughly tested before being merged and also provides immediate feedback to the developer who makes the pull request.

The last automated workflow that we set up builds and pushes Docker images for both the frontend and backend to the repository's container registry. This workflow is triggered on every push to the main branch,

ensuring that the latest versions of the application are always available for deployment. These images can be used to track versions of our application and will be used in setting up a continuous deployment pipeline.

# Appendix A

## Weekly Reports

### A.1 Weekly Report 2.13 (4/25/2025) *-ALF*

#### A.1.1 Past Week Progress

This past week, the backend team hammered in summaries and easy-reading levels. The front-end team finalized the mobile-device accessibility. Answers have been written for the Ansary Pitch comments.

#### A.1.2 Next Week Plans

Next week the programming team will work to remove bugs in the bug tracker and implement frontend-backend connection for reading summaries. Preparation for the Innovation Expo will continue.

#### A.1.3 Action Items

- Frontend-backend connection for reading summaries
- Usability Testing.
- Defect workoff.

#### A.1.4 Issues and Risks

- None at this time

### A.2 Weekly Report 2.12 (4/18/2025) *-SAM*

#### A.2.1 Past Week Progress

This past week, our team has primarily focused on refining and recording our project pitch for the Ansary Competition Semi Finals. Technical progress has primary been put on pause until next week. The backend team pushed initial search bar functionality for code review. The poster and executive summary was also revised and improved.

## A.2.2 Next Week Plans

Next week the frontend team will complete making the website mobile, as well as continue usability testing and fixing bugs. The backend team will continue working on reading summary requirements, and making the performance of the website better.

## A.2.3 Action Items

- Search Bar functionality.
- Usability Testing.
- ReadEasy.AI implementation.
- Defect workoff.

## A.2.4 Issues and Risks

- News API has restricted access, limited the timeline of news we can search for. This feature has been pushed down in priority.

# A.3 Weekly Report 2.11 (4/11/2025) –SAM

## A.3.1 Past Week Progress

This past week, the backend and frontend team has worked together to finalize connecting legislation documents and legislation information from the database to the UI. We deployed release s3.2.0 that allows the user to view legislation by recent federal and state bills (called by accessing the user's location). Sequence diagrams were created to visualize the data transfer process from the user call, through the UI and backend, to the database and back to the user. Some usability testing was conducted and a few bugs were identified, with one bug being completely fixed that front-end pages push a 404 error on refresh. A new nginx configuration was introduced to fix frontend routing direct links. A demo and pitch was delivered this week, one explaining our current process and the other describing our problem, solution and business model. The frontend team is about 90% complete with making the website user friendly on mobile devices. The backend team also was able to access and create new legislation summaries based on reading levels using ReadEasy.AI API. The searchbar functionality is currently being worked on as well.

## A.3.2 Next Week Plans

Next week the frontend team will complete making the website mobile, as well as continue usability testing and fixing bugs. The legislation page will be removed from the navigation bar because it no longer makes sense in the flow of data. The backend team will continue working on reading summary requirements, and making the performance of the website better. Searchbar functionality will also be completed this week to allow users to search for bills based on topic.

### A.3.3 Action Items

- Search Bar functionality.
- Usability Testing.
- ReadEasy.AI implementation.
- Defect workoff.

### A.3.4 Issues and Risks

- News API has restricted access, limited the timeline of news we can search for. This feature has been pushed down in priority.

### A.3.5 Issue Tracking

The issue tracking for this project is being tracked on Jira.

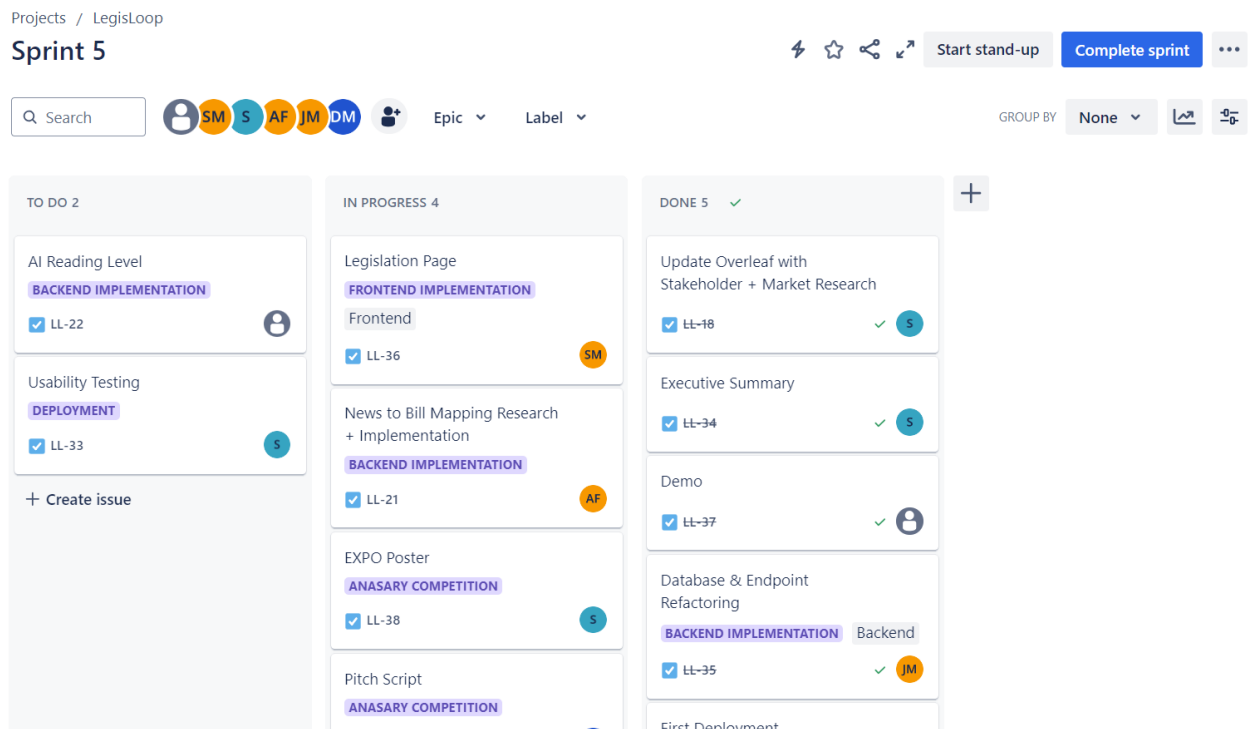


Figure A.1: Sprint 7 Jira Kanban Board

### A.3.6 Current UML View

The UML in 8.2 has had some changes with additions of sequence diagrams, and some changes in the flow of data in activity diagrams.

## A.4 Weekly Report 2.10 (4/4/2025) –SAM, JMM

### A.4.1 Past Week Progress

This past week, the backend team has been working on connecting the data to the front-end, including new API end-points of which the front-end can access. Bills are now displayed on the landing page. Legislation documents were added to initialization. A domain (<https://legisloop.net>) was purchased and a database on DigitalOcean was deployed. Changes were made to the Docker configuration to be more similar to production build config. The Legislation page has been completed and the total website structure has been reworked to be responsive to different screen sizes. The government spending page was removed from the navbar. The news feature has been pushed down in priority.

### A.4.2 Next Week Plans

Next week the frontend team will complete connecting the endpoints to getting legislation documents to the legislation page. In addition to this, the links and additional pages in the footer will be updated and government spending page will be removed from the nav bar to narrow the scope of the project to stay on schedule. The backend team will continue working on refreshing data for the database, and adding endpoints for the frontend as needed. Additionally, the frontend and backend will be further connected to push legislation to the UI.

### A.4.3 Action Items

- Connect backend to legislation page.
- Search Bar functionality.
- Complete footer information.

### A.4.4 Issues and Risks

- Implementation of AI generated summary/reading level is more technically challenging than initially anticipated. Potentially might cut scope down if deemed not feasible in this time constraint.
- News API has restricted access, limited the timeline of news we can search for. This feature has been pushed down in priority.

### A.4.5 Issue Tracking

The issue tracking for this project is being tracked on Jira.

### A.4.6 Current UML View

The UML in 8.1 has had no changes.

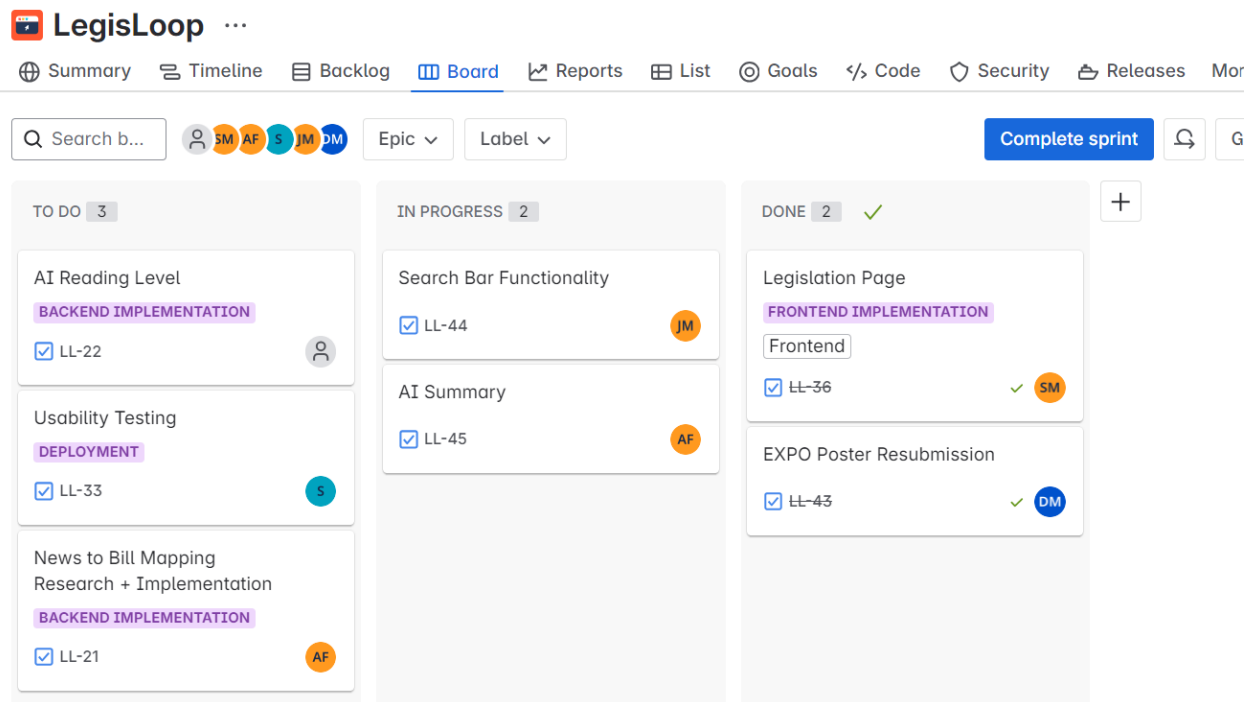


Figure A.2: Sprint 6 Jira Kanban Board

## A.5 Weekly Report 2.9 (3/28/2025) –SAM, ALF, JMM

### A.5.1 Past Week Progress

This past week, the backend team has been working on connecting the data to the front-end, including new API end-points of which the front-end can access. Successful connection of data to a Representative’s timeline was achieved. A domain (<https://legisloop.net>) was purchased and a database on DigitalOcean was deployed. The Legislation page has been drafted with a custom sidebar.

### A.5.2 Next Week Plans

Next week the frontend team will complete the legislation visualization page, making sure both html and pdf formats are accepted. In addition to this, the links and additional pages in the footer will be updated and government spending page will be removed from the nav bar to narrow the scope of the project to stay on schedule. The backend team will continue working on refreshing data for the database, and adding endpoints for the frontend as needed. An initial deployment of the site will also be made before the next demo presentation. Additionally, the frontend and backend will be further connected to push legislation to the UI.

### A.5.3 Action Items

- Connect backend to landing page.
- Complete Legislation Page.

- Search Bar functionality
- Initial deployment.
- News to Legislation connection

## A.5.4 Issues and Risks

- Implementation of AI generated summary/reading level is more technically challenging than initially anticipated. Potentially might cut scope down if deemed not feasible in this time constraint.

## A.5.5 Issue Tracking

The issue tracking for this project is being tracked on Jira.

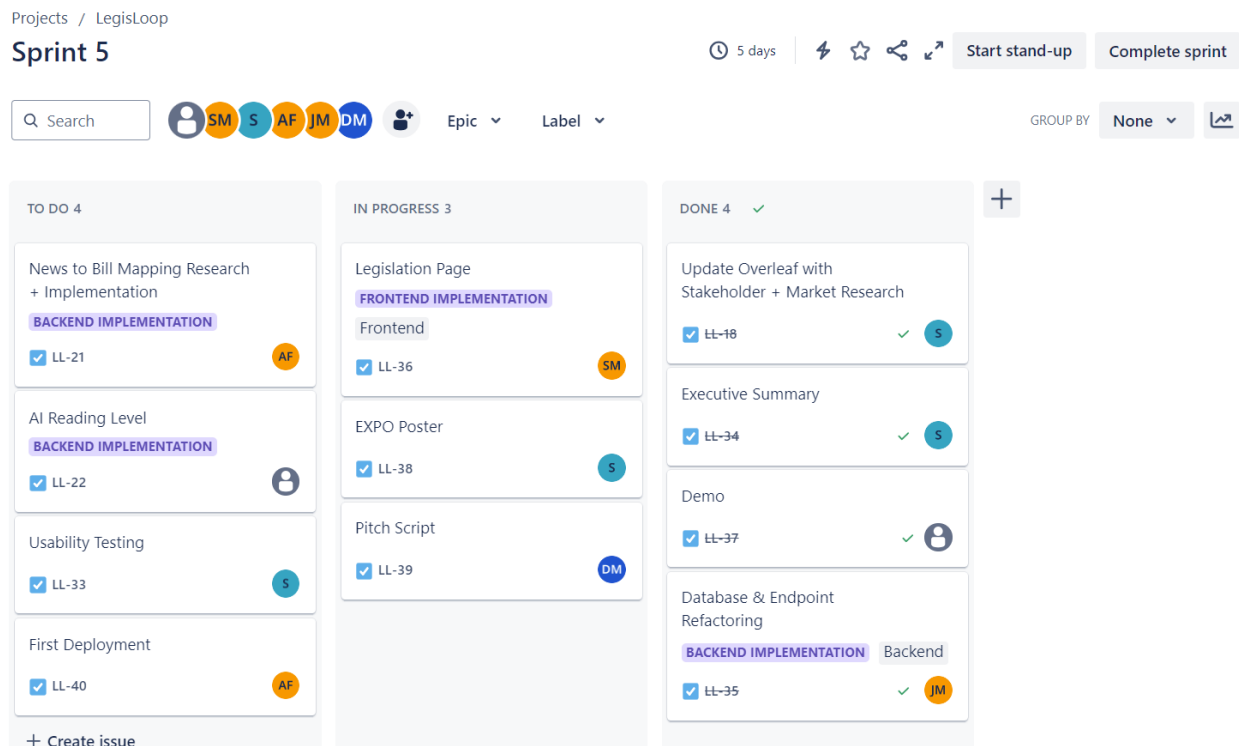


Figure A.3: Sprint 5 Jira Kanban Board

## A.5.6 Current UML View

The UML in 8.1 has one change which is the addition of a database diagram. This is meant to visualize the relationships between the different tables that we currently have implemented.

## **A.6 Weekly Report 2.8 (3/14/2025) –SAM, JMM**

### **A.6.1 Past Week Progress**

This past week, the backend team has been working on a major refactor of the services for the API. Additionally, the API routes for the front-end are being created. A way to refresh and discover new data to update the database is also being worked on. The legislation page is about 75 percent implemented. Additional market research on the "call to action" was conducted. An executive summary for LegisLoop has been completed.

### **A.6.2 Next Week Plans**

Next week the frontend team will continue building the legislator page. The backend team will continue working on refreshing data for the database, and adding endpoints for the frontend as needed. Additionally, the frontend and backend will begin to get connected to push real data to the UI.

### **A.6.3 Action Items**

- Connect frontend and backend.
- Complete Legislation Page
- Refactor Frontend.

### **A.6.4 Issues and Risks**

- Implementation of AI generated summary/reading level is more technically challenging than initially anticipated. Potentially might cut scope down if deemed not feasible in this time constraint.

### **A.6.5 Issue Tracking**

The issue tracking for this project is being tracked on Jira and Github Projects.

### **A.6.6 Current UML View**

The UML in 8.1 has one change which is the addition of a database diagram. This is meant to visualize the relationships between the different tables that we currently have implemented.

## **A.7 Weekly Report 2.7 (3/7/2025) –ALF**

### **A.7.1 Past Week Progress**

This past week, the backend team has been working on having the database maintain itself as new information becomes available. Additionally, the API routes for the front-end are being created. No work was done on the front-end. Additional market research on the "call to action" was conducted. An abstract for LegisLoop was created.

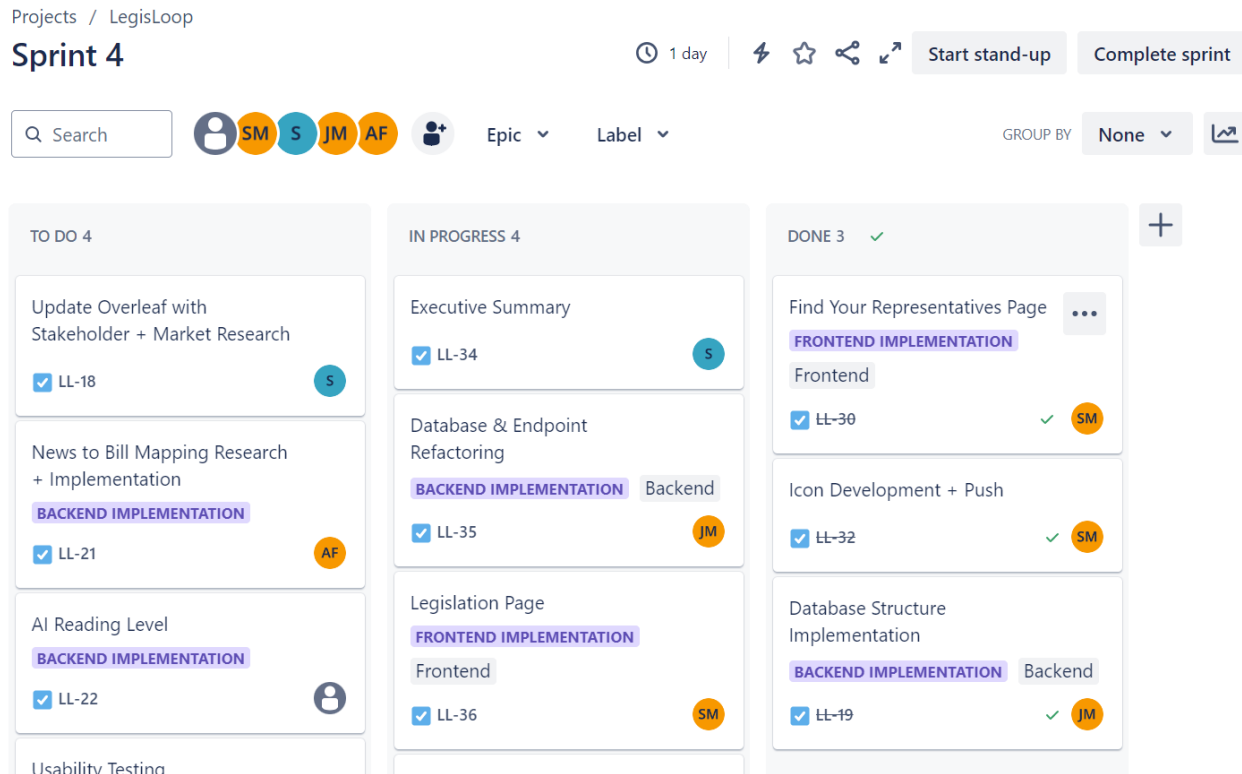


Figure A.4: Sprint 4 Jira Kanban Board

## A.7.2 Next Week Plans

Next week, the team will complete a major refactor of the services for the API. News will begin to be implemented with legislation. The frontend team will also continue building the legislator page.

## A.7.3 Action Items

- Refactor the Services

## A.7.4 Issues and Risks

- Implementation of AI generated summary/reading level is more technically challenging than initially anticipated. Potentially might cut scope down if deemed not feasible in this time constraint.

## A.7.5 Current UML View

The UML in 8.1 has not undergone too many changes besides the addition of an initialization class and controller which will be responsible for populating the database.

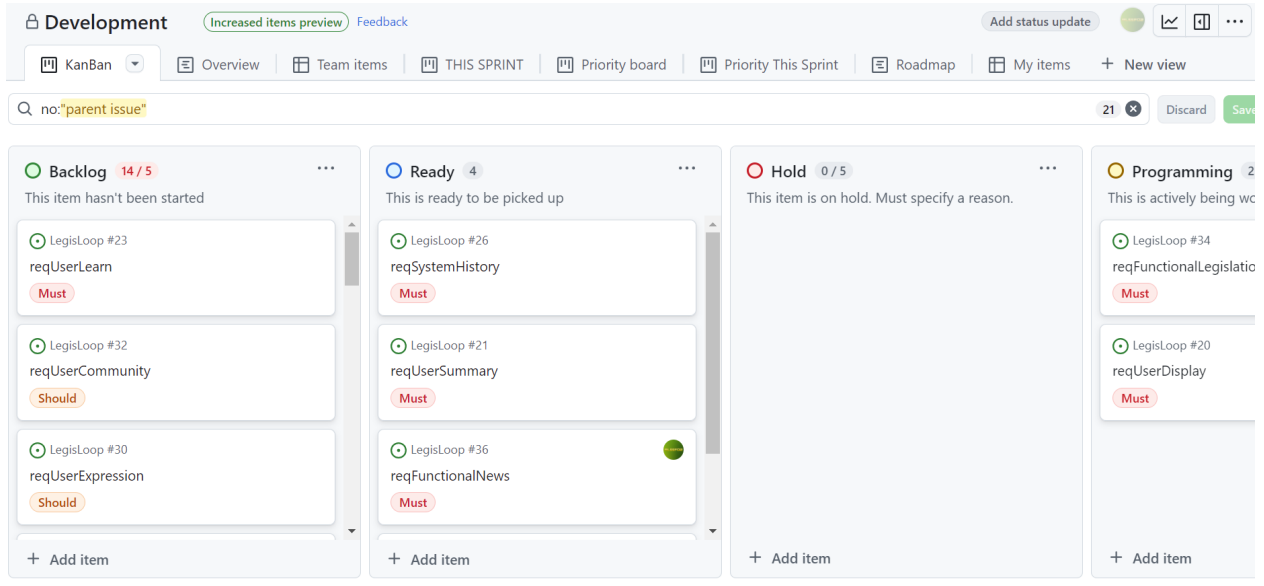


Figure A.5: Sprint 4 Github Project Kanban Board

## A.8 Weekly Report 2.6 (2/28/2025) –JMM

### A.8.1 Past Week Progress

This past week, the backend team has been working on designing and implementing a database that can store any data that is fetched from the Legiscan API. The database is currently operational, has all the appropriate tables/columns and has been included in the docker configuration. The team has also begun implementing a way to populate the database automatically. The frontend team has created an icon for the website, as well as the Find Your Representatives, Representative, and Connect Pages. The team has also formulated an executive summary of our project to further outline the problem statement and business model of our project.

### A.8.2 Next Week Plans

Next week, the team will finish implementing a pipeline to populate the database as well as functionality to check the database for existing information before querying the Legiscan API. The frontend team will also continue building out pages of the UI.

### A.8.3 Action Items

- Continue frontend development.
- Finish database initialization functionality.

## A.8.4 Issues and Risks

- Implementation of AI generated summary/reading level is more technically challenging than initially anticipated. Potentially might cut scope down if deemed not feasible in this time constraint.
- Categorization of legislation may also have to be done with AI.

## A.8.5 Current UML View

The UML in 8.1 has not undergone too many changes besides the addition of an initialization class and controller which will be responsible for populating the database.

## A.9 Weekly Report 2.5 (2/21/2025) – SAM, JMM, ALF

### A.9.1 Past Week Progress

For the past week, our team has been working on both front-end and back-end programming. The Landing Page has been fully reviewed and merged into the git repo. The Individual Representative Page is in progress, and awaiting review. The full team gave a demo on current progress and requirement updates, showcasing both backend end point functionality and current frontend development. Class and activity diagrams have been updated to reflect current system architecture.

### A.9.2 Next Week Plans

For the next week, the team will continue modular development: Front end team will finish find your representatives page and possibly spending page. The individual representative page will be reviewed by the rest of the team to be merged into the repo. The backend team will continue database implementation. A logo will be developed and added to the website for brand recognition.

### A.9.3 Action Items

- Continue frontend development.
- Continue database structure.

### A.9.4 Issues and Risks

- Implementation of AI generated summary/reading level is more technically challenging than initially anticipated. Potentially might cut scope down if deemed not feasible in this time constraint.

### A.9.5 Current UML View

The UML in 8.1 reflects the current use of LegiScan as the primary source of information. Also see new frontend class diagram.

## A.10 Weekly Report 2.4 (2/14/2025) – SAM, JMM, ALF

### A.10.1 Past Week Progress

For the past week, our team has been working on both front-end and back-end programming. The front-end Footer, searchbar and NavBar are being worked on. The backend team has finished integrating Legiscan with bills, laws, and representatives. The business team met with political science Professor Michael Kowal, who confirmed the validity of our requirements and priority. Requirements were updated. Market research was done on revenue and costs, and TAM, SAM, and SOM were calculated.

### A.10.2 Next Week Plans

For the next week, the team will put together a demo to display current progress and prototype. The front-end will continue to be worked on as well, with at least one page being completed by the demo. The backend team will wrap up Legiscan API integration and will move to data-storage implementation. The class diagram will also continue to be modified as progress continues. A refinement of requirements will also be completed to align with our stakeholder meeting.

### A.10.3 Action Items

- Continue frontend development.
- Conduct market research on how much consumers are willing to pay
- Finish LegiScan implementation
- Plan database structure

### A.10.4 Issues and Risks

- After speaking with Stevens IT, we have come to find that setting up a hosting machine on Stevens' servers could pose some issues. We might not be able to expose our site to the general public, and setting up the server could take as long as late March or April. We may have to pivot to AWS if IT is unable to meet all of our requirements.

### A.10.5 Current UML View

The UML in [8.1](#) reflects the current use of LegiScan as the primary source of information.

## A.11 Weekly Report 2.3 (2/7/2025) – JMM, ALF

### A.11.1 Past Week Progress

For the past week, our team has been working on both front-end and back-end programming. The front-end [Navigation Bar \(NavBar\)](#) is being worked on. A Java wrapper for the LegiScan API is in progress. Our back-end structure should be simplified by using LegiScan as our main source of data.

### A.11.2 Next Week Plans

For the next week, the back-end team plans to finish integrating the LegiScan API and begin working on a method of storing responses for less overhead on repeat calls. The front-end will continue to be worked on as well, with at least one page being completed by the end of the week.

### A.11.3 Action Items

- Continue learning React
- Continue looking for stakeholders
- Conduct market research on how much consumers are willing to pay
- Finish LegiScan implementation
- Plan database structure

### A.11.4 Issues and Risks

- After speaking with Stevens IT, we have come to find that setting up a hosting machine on Stevens' servers could pose some issues. We might not be able to expose our site to the general public, and setting up the server could take as long as late March or April. We may have to pivot to AWS if IT is unable to meet all of our requirements.

### A.11.5 Current UML View

The UML in [8.1](#) reflects the current use of LegiScan as the primary source of information.

## A.12 Weekly Report 2.2 (1/31/2024) – SAM

### A.12.1 Past Week Progress

For the past week, our team has updated the Jira board to reflect new issues and current progress. The frontend development team has been familiarizing themselves with React coding practices and principles, while the backend team has testing API compatibility and integration. We updated our class diagram to include news events and front end classes.

### A.12.2 Next Week Plans

We plan to create CRC cards to define our classes' responsibilities and then map class responsibility to actions in activity diagrams. We also plan to start Sprint 2 which includes starting front end development and backend deployment. We also would like to acquire a stakeholder to make our project more substantial as a business.

### A.12.3 Action Items

- Create CRC cards
- Finish learning React
- Find and acquire a stakeholder

### A.12.4 Issues and Risks

- Could have communication issues with potential stakeholders.
- We may miss sprint deadlines as we add more issues per sprint as we come up with new things to address outside of the scope of the project.

### A.12.5 Kanban Sprint 1 Progress

We are keeping track of issues and progress on JIRA kanban boards. See the figure for more details.

### A.12.6 Current UML View

The current UML figure being worked on is the Class diagram in System Architecture Section. See the logical views.

## A.13 Weekly Report 2.1 (01/23/2025) – SAM

### A.13.1 Past Week Progress

For the past week, we have defined our sprint work for the next couple months. Below is the breakdown:

- **S1 (1/20-2/2):**
  - **Frontend Team:** Learn React, Steph finalizes Design & Architecture.
  - **Backend Team:** Use SwaggerUI to test all API implementation and compatibility.
  - **Whole Team:** Finish defining all classes.
- **S2 (2/3-2/16):**
  - **Frontend Team:** Build landing page + commonly used components.
  - **Backend Team:** Understand Deployment & environmental variables and be live on the internet (buy domain).
- **S3 (2/17-3/2):**
  - **Frontend Team:** Representative Profile page.
  - **Backend Team:** Database.
- **S4 (3/3-3/16):**

Projects / LegisLoop

### Sprint 1

Frontend team familiarizes themselves with React, backend team tests API implementation and compatability.

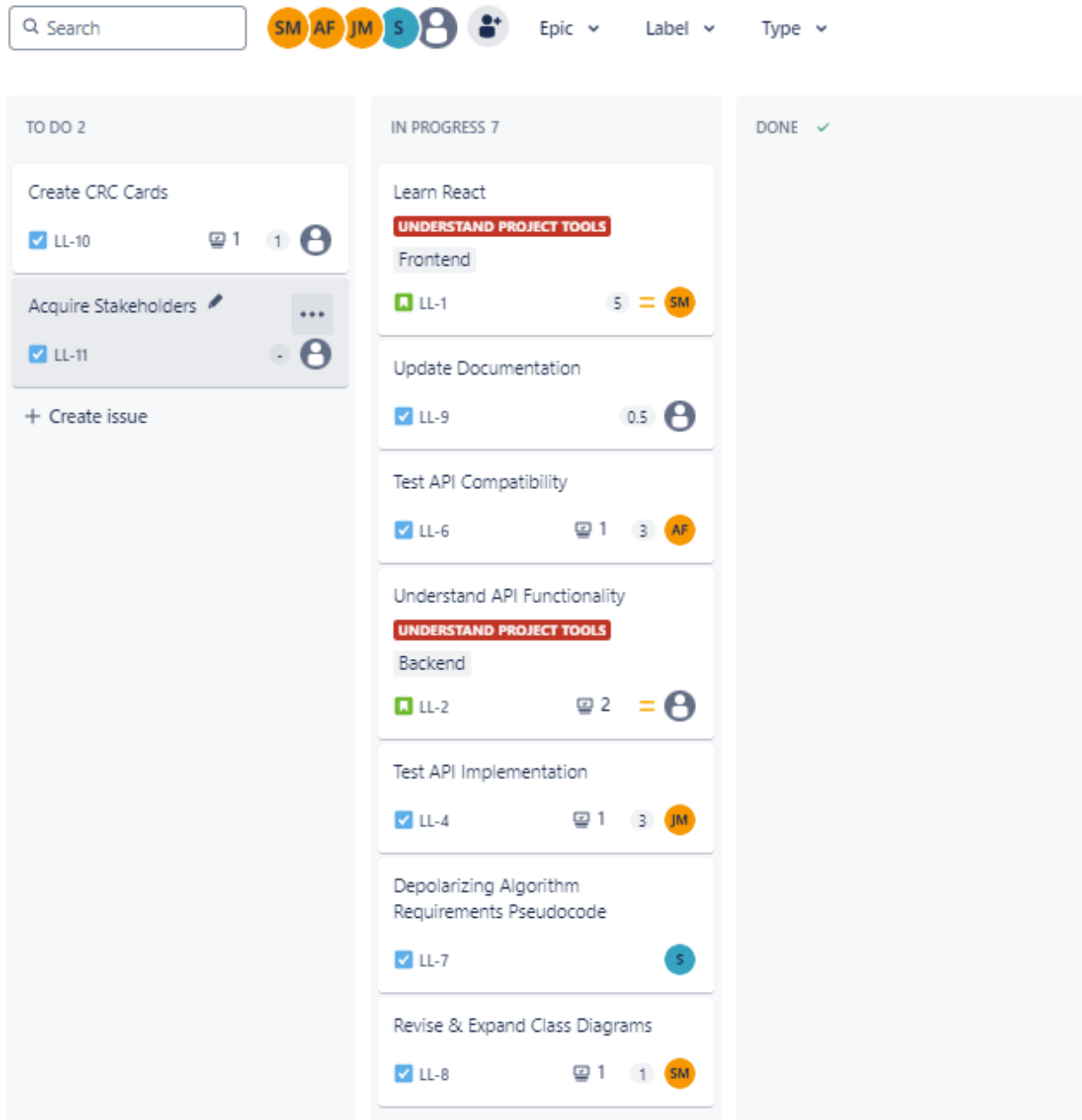


Figure A.6: Sprint 1 Kanban Board

- **Frontend Team:** Find Representatives page.
- **Backend Team:** AI Reading Level + Summary.
- **S5 (3/17-4/6):**
  - **Frontend Team:** Legislation Page.
  - **Backend Team:** Construct custom API calls.
- **S6 (4/7-4/20):**
  - **Frontend Team:** Communication Page + testing.
  - **Backend Team:** Testing and bug fixes.
- **S7 (4/21-5/5):**
  - **Frontend Team:** Overflow + testing.
  - **Backend Team:** testing and bug fixes.

We also set up a JIRA project to keep track of tasks and stories as we work on LegisLoop. We completed code reviews and reflected on current class structure.

### A.13.2 Next Week Plans

Readjust class diagrams to reflect API classes and front end classes. Start learning React and understand API functionality and compatibility.

### A.13.3 Action Items

- Learn React.
- Write Code.
- Update Class Diagrams.

### A.13.4 Issues and Risks

- Lack of marketability

## A.14 Weekly Report 13 (12/13/2024) – SAM

### A.14.1 Past Week Progress

For the past week, our team has prepared a live demo of our walking skeleton, deployment process and versioning. We did some additional work to our figma prototype.

### A.14.2 Next Week Plans

We hope to add all customer interviews to our documentation.

### **A.14.3 Action Items**

- Update customer interviews.

### **A.14.4 Issues and Risks**

- Team members stretching time allocation among all classes for final projects and exams.

## **A.15 Weekly Report 12 (12/06/2024) – SAM**

### **A.15.1 Past Week Progress**

For the past week, our team has completed a project charter and solidified the data sources that we will be using. We also ensured that our current walking skeleton runs on docker on different machines, which was a successful process. We also updated some documentation to add more detail, and fixed some diagrams to reflect our project details.

### **A.15.2 Next Week Plans**

For the next week, we plan to record our demo of the walking skeleton, our deployment process, and versioning. We also hope to start developing code and finalize the UI design on our figma prototype. We also hope to add all customer interviews to our documentation.

### **A.15.3 Action Items**

- Record Demo
- Improve and Finalize UI design
- Update customer interviews.

### **A.15.4 Issues and Risks**

- Team members stretching time allocation among all classes for final projects and exams.

## **A.16 Weekly Report 11 (11/21/2024) – SAM**

### **A.16.1 Past Week Progress**

For the past week, our team has been working on our milestone presentation. We presented our preliminary design and received feedback on our value and UI design. We completed a surface level prototype of our UI design on figma. A few customer interviews have been completed to find the current pain points users have in politically engaging scenarios.

### **A.16.2 Next Week Plans**

Our plans for next week are to now test the usability of our UI prototype in customer interviews, as well as start expanding on our walking skeleton. We also will modify our UI to have a mobile version to increase accessibility and availability.

### **A.16.3 Action Items**

- Customer interviews
- Data source finalization
- UX testing

### **A.16.4 Issues and Risks**

- Lack of consumer interest in our project

## **A.17 Weekly Report 10 (11/14/2024) – JMM**

### **A.17.1 Past Week Progress**

For the past week, our team has been working on our milestone presentation, and reworking some of our activity diagrams to be more readable. Some members of our team have also been conducting customer interviews to make sure that the consumer base for our project is interested in what we have to offer. We have also been working on an early CI pipeline for the project skeleton, which will have automatic compile checks, Docker builds, and unit testing.

### **A.17.2 Next Week Plans**

Our plans for next week are to finish the Figma design for the front end, finish our milestone presentation, and finalize our skeleton. Once the skeleton has been finalized, we can begin evaluating the data sources we have found so far to better understand how to aggregate the data we need. We also plan on conducting more customer interviews.

### **A.17.3 Action Items**

- Customer interviews
- Milestone presentation
- Finalize Skeleton

### **A.17.4 Issues and Risks**

- Lack of consumer interest in our project

## **A.18 Weekly Report 9 (11/7/2024) – JMM**

### **A.18.1 Past Week Progress**

For the past week, our team has been working towards the next milestone by continuing to refine our project idea and create diagrams. So far we have made significant progress on or completed the following diagrams: Package Diagram, Class Diagram, Deployment Diagram, Activity Diagram. Making the value proposition for IDE 401 has also resulted in our team thinking more about how we can possibly make money off our service, as well as what more unique value we could bring to customers. More progress has been made on the walking skeleton, with there now being Docker, React.js, and Tailwindcss integration.

### **A.18.2 Next Week Plans**

Next week we plan to finish the diagrams for the next milestone, and finish the walking skeleton by adding automatic unit testing and Docker builds to our CI pipeline. We also plan on researching LLMs that we can use to summarize bills easier. We will also start developing our Figma UI since we did not get to start it this week.

### **A.18.3 Action Items**

- Finalize Project Skeleton
- Start designing Figma UI
- Research LLMs for bill summaries
- Review and finalize diagrams

### **A.18.4 Issues and Risks**

- Project does not bring enough unique value
- Data might be difficult to acquire from some sources

## **A.19 Weekly Report 8 (10/31/2024) – SAM**

### **A.19.1 Past Week Progress**

For the past week, our team has designed our class diagram to map our back end components. We also worked more on our walking skeleton. More research was done looking at how we can increase civic engagement on a digital platform in a meaningful way. We also met with the political science professor and decided to narrow the scope of our project to cover national and a single state government use case in our final deliverable.

### **A.19.2 Next Week Plans**

Next week we plan to do more diagrams and continue expanding on our walking skeleton.

### **A.19.3 Action Items**

- Continue research on civic engagement.
- Design Activity Diagram
- Design Package and Activity Diagrams / modules
- Finalize Project Skeleton
- Start designing UI using Figma

### **A.19.4 Issues and Risks**

- Workload of other classes impeding on productivity for this project.

## **A.20 Weekly Report 7 (10/24/2024) – SAM**

### **A.20.1 Past Week Progress**

For the past week, our team has met with Nora Martinez from the City of Hoboken to further define the scope of our project. We gathered that our current project perspective and mission aligned with our stakeholder's needs. We also started modeling use cases in diagrams and tables, further refined our requirements. We prepared for our project specification presentation and delivered our presentation to the class. Our Requirements, Use Cases and Glossary have been updated to reflect weekly progress.

### **A.20.2 Next Week Plans**

Next week we plan to do more diagrams and start expanding on our walking skeleton.

### **A.20.3 Action Items**

- Meet with professor from political science department at Stevens.

### **A.20.4 Issues and Risks**

- Workload of other classes impeding on productivity for this project.

## **A.21 Weekly Report 6 (10/17/2024) – SAM**

### **A.21.1 Past Week Progress**

For the past week, our team has prepared for our meeting with the City of Hoboken, preparing questions and project proposal to pitch the CoH representative.

### **A.21.2 Next Week Plans**

Next week we plan to structure our architecture and starting constructing UML diagrams.

### **A.21.3 Action Items**

- Review acceptance criteria.
- Finalize initial requirements.

### **A.21.4 Issues and Risks**

- Lack of communication from stakeholders.
- Workload of other classes impeding on productivity for this project.

## **A.22 Weekly Report 5 (10/10/2024) – SAM**

### **A.22.1 Past Week Progress**

For the past week, our team has further refined requirements, separating them into user, functional, business, system, and quality requirements. We made plans with the City of Hoboken representative to meet next Friday to talk about our project. We added acceptance criteria to requirements, updated key concepts and found more papers to continue research on potential market value. We also contacted Professor McCormack to talk about LegisLoop and any requirements we may have missed from a political science perspective. Our walking skeleton has been built.

### **A.22.2 Next Week Plans**

Next week we plan to structure our architecture and starting constructing UML diagrams.

### **A.22.3 Action Items**

- Review acceptance criteria.
- Finalize initial requirements.
- Establish meeting time with CoH and Prof. McCormack.

### **A.22.4 Issues and Risks**

- Lack of communication from stakeholders.

## **A.23 Weekly Report 4 (10/3/2024) – JMM**

### **A.23.1 Past Week Progress**

For the past week, our team has refined our first list of requirements based on our user stories. We also finished our development plan by adding a more detailed risk table, build/testing plans, and assumptions. We also gave our first demo presentation on Thursday, where we described our project, development plan, and some of our initial requirements.

### **A.23.2 Next Week Plans**

For the next week, we will continue to refine our list of requirements, and hopefully meet with the City of Hoboken to get their input on possible requirements. We will also create our GitHub repository and get the boilerplate code of our project set up so that we can start development soon.

### **A.23.3 Action Items**

- Refine Requirements.
- Reach out to the City of Hoboken again if necessary.
- Set up GitHub repository.

### **A.23.4 Issues and Risks**

- Lack of communication from/with the City of Hoboken (stakeholder).
- Lack of familiarity with some aspects of our current tech stack.

## **A.24 Weekly Report 3 (9/27/2024) – *Stephanie McDonough***

### **A.24.1 Past Week Progress**

For the past week, our team has set up a lane of communication with the City of Hoboken to plan a meeting with a representative to gather requirements and hopefully obtain a customer. We also wrote the development plan: established roles and responsibilities, defined our tech stack, scheduled a meeting plan, itemized any risks and assumptions.

### **A.24.2 Next Week Plans**

For the next week, requirements will be further refined and grouped based on their order of importance to LegisLoop functionality and purpose. We will deliver our first demo, outlining our idea and current progress.

### **A.24.3 Action Items**

- Refine Requirements.
- Finish Demo Presentation.

### **A.24.4 Issues and Risks**

- Lack of communication from/with the City of Hoboken (stakeholder).
- Tyler Technologies as a competitor.

## **A.25 Weekly Report 2 (9/20/2024) – Stephanie McDonough**

### **A.25.1 Past Week Progress**

For the past week, our team has met to define the scope and mission statement of our project. The name of our project has been determined: LegisLoop. We have also contacted the City of Hoboken with our goal and what we hope to gain out of a partnership with the local government. We began to refine our system requirements using MoSCoW prioritization. A Zotero group has been made and utilized to keep track of any articles and references found for market and product research. Our manual has been updated to reflect our work and progress.

### **A.25.2 Next Week Plans**

For the next week, we plan to define individual roles and responsibilities. Requirements will be further refined and grouped based on their characteristics (ex. functional or business requirements). Hopefully will have second exchange with City of Hoboken to further grasp the use cases for our system.

### **A.25.3 Action Items**

- Continue market research + product research.
- Refine requirements.

### **A.25.4 Issues and Risks**

- Lack of communication from/with the City of Hoboken (stakeholder).
- Inexperienced team members learning Latex, GitHub and basic source control systems.

## **A.26 Weekly Report 1 (09/12/2024) – Stephanie McDonough**

### **A.26.1 Past Week Progress**

For the past week, our team has brainstormed a multitude of ideas that we may be interested in pursuing for the project. Our initial fundamental requirements for the project were that the idea must be new, cool, and have a positive impact. We were able to reach a conclusion of a project after meeting with 2 electrical engineers who pitched an idea that met the previous requirements listed.

### **A.26.2 Next Week Plans**

For the next week, we will meet with our full team to delegate roles, flesh out the idea and start writing requirements. We will also start researching any additional information necessary for this project.

### **A.26.3 Action Items**

Not Applicable.

**A.26.4 Issues and Risks**

Not Applicable.

# Glossary

**citizen** A member of the American constituency, able and legal to vote. [5](#), [94](#)

**civic engagement** Actions looking to improve someone's community, including volunteering. [21](#)

**conventional engagement** Government officials organize meetings with citizens such as with council meetings. [21](#)

**could-have** This defines the third highest priority requirement. The system could implement all of the tasks, requirements, or anything that is marked this way, but if resources are limited, it can be left out of the current and next version. Build in two versions from now. [iv](#), [24](#), [26](#), [28](#)

**Depolarizing Algorithm** An algorithm designed to connect people in a network in such a way that has a depolarizing effect on the network. [21](#)

**E-I Index** The number of inter-partisan interactions minus intra-partisan interactions, divided by their sum. [22](#)

**must-have** This defines the first highest priority requirement. All of the tasks, requirements, or anything that is marked this way are build in the current version. [22](#), [23](#), [26](#), [27](#), [30](#)

**NavBar** Navigation Bar. [81](#)

**Neutral Promotion Algorithm** Promotes neutral nodes of the network to partisan users. Neutral promotion is more effective compared to bridging algorithms for stubborn people. [22](#)

**policy maker** A person who is responsible formulating policies and writing up bills. [21](#)

**political engagement** [Citizen](#) engagement which attempts to influence the political process. [21](#)

**politician** Any person involved with and holding office in politics. [21](#)

**public engagement** Engagement that involves [citizens](#) in public decisions that affect them. [21](#), [95](#)

**should-have** This defines the second highest priority requirement. The system should implement all of the tasks, requirements, or anything that is marked this way, but if resources are limited, it can be left out of the current version. Build in next version. [24](#), [25](#), [27](#), [28](#), [29](#), [31](#)

**Similar People Different Views Bridging Algorithm (SPDV-B)** The algorithm prioritizes interactions between people whose political views differ but share similar interests and demographics. Research shows that encouraging interactions between people of opposing partisan sides can reduce polarization by avoiding echo-chamber effects. Experimental research also indicates that pairing people with different political views but shared non-political features can help promote consensus. The effect of bridging is stronger for people with higher open-mindedness. [22](#)

**thick engagement** [public engagement](#), typically performed in groups, that is proactive and engages with an issue on multiple levels. *see* [public engagement](#), [21](#)

**thin engagement** more convenient forms of [public engagement](#) that allow individuals to express their opinions and affiliations. *see* [public engagement](#), [21](#)

**voter turnout** The election participation rate. [21](#)

**would-have** This defines the lowest priority requirement. The system would like to implement all of the tasks, requirements, or anything that is marked this way, but only if resources are available. It can be left out of all future versions. [23](#), [25](#), [27](#), [29](#), [30](#)

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