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# COMP90082-2023-SM1-Digital-Health

## Project Description

Our team is working on the development of a cutting-edge platform designed to enhance the analysis of clinical documentation in the digital health area. The primary objective of this platform is to determine whether medications prescribed to patients are appropriate by normalizing free-text clinical notes and mapping them to canonical clinical terms.

The platform's primary function is to simplify the process of associating free-text descriptions, which generally explain the reasoning behind prescribing specific medications, onto a Universal Indication List (UIL), which serves as a subset of the broader standardized knowledge base of clinical terms called SNOMED CT.

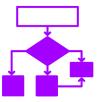
The platform features the integration of a human-in-the-loop system, which allows for manual review and correction of the mapping results. This feedback will be used to continuously enhance the platform's accuracy and performance.

This curation feature will further streamline the mapping process, ensuring that the most relevant and commonly used clinical terms are easily accessible for healthcare professionals and researchers.

## Overview

Agile Methodology	Scrum
Status	Sprint 2 (Development Sprint)
Team Location	Melbourne, Australia
Team representative's Email	<a href="mailto:doncd@student.unimelb.edu.au">doncd@student.unimelb.edu.au</a>

## Important Pages

		
Github	Backlog	Timeline
		
Figma	Architecture	Meetings
		
Trello	Development	Demonstration

## Motivation, mission and vision

Due to the fact that extracting information from free-text clinical notes could be very difficult, our platform could be used to help medical researchers

- map the short texts into a certain category and view them
- manually curate the incorrect or unrecognised mapping result
- feed corrections back to improve the system
- download the mapping results

We hope that our final product could be officially deployed and used by our client to help real-world medical researchers.

## Client



Daniel Capurro

Email: [dcapurro@unimelb.edu.au](mailto:dcapurro@unimelb.edu.au)

## Client Goals

- Developing a platform that will assess if a medication has been appropriately prescribed to a patient.
- Set up and customise a platform that will allow a human-in-the-loop to manually review the results of the mapping, make corrections, and feed these back to re-train the system.

## Supervisor



Mauro Mello Jr

Email: [mauro.mellojr@unimelb.edu.au](mailto:mauro.mellojr@unimelb.edu.au)

Daniel is a Medical Doctor, trained in Internal Medicine, and hold a PhD in Biomedical and Health Informatics from the University of Washington in Seattle. He is the Deputy Director of the Centre for Digital Transformation of health where he co-leads the Digital health Validitron (a pipeline to validate digital health innovations in a way similar to what happens with drugs and vaccines) and the Data Science stream.

Extensive experience in Information Systems and Information Technology (since 1978) and tertiary education (since 1982). The fields are involved with Business and management, Consulting activities, Project management activities and IT and systems development methodologies.

## Meet the team



Kunxi (Quincy) Sun

Email: [kunxis@student.unimelb.edu.au](mailto:kunxis@student.unimelb.edu.au)

Role: Product Owner

Responsibility:

- Ensures the team delivers the most value to Daniel
- Backend, Design, Operation



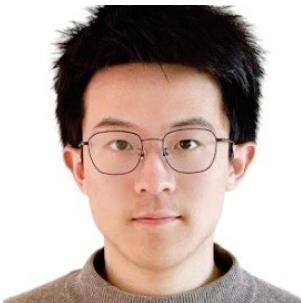
Chenyang (Peter) Dong

Email: [doncd@student.unimelb.edu.au](mailto:doncd@student.unimelb.edu.au)

Role: Scrum Master

Responsibility:

- Responsible for ensuring that the Scrum framework is followed
- Frontend, Backend



Hanyi (Henry) Gao

Email: [hanyig1@student.unimelb.edu.au](mailto:hanyig1@student.unimelb.edu.au)

Role: Development Team Member

Responsibility:

- Implements the system
- Frontend, Testing, Design



Yulai (Ricardo) Luo

Email: [yulail1@student.unimelb.edu.au](mailto:yulail1@student.unimelb.edu.au)

Role: Development Team Member

Responsibility:

- Implements the system
- Frontend, Backend, UX



Yue (Molly) Fei

Email: [yffei@student.unimelb.edu.au](mailto:yffei@student.unimelb.edu.au)

Role: Development Team Member

Responsibility:

- Implements the system
- Frontend, Backend, UX

## Recent space activity



**Chenyang Dong**

Demonstration updated less than a minute ago • [view change](#)

Product Backlog updated a minute ago • [view change](#)

COMP90082-2023-SM1-Digital-Health updated 4 minutes ago • [view change](#)

**Hanyi Gao**

## Space contributors

- [Chenyang Dong](#) (less than a minute ago)
- [Hanyi Gao](#) (13 hours ago)
- [Yue Fei](#) (15 hours ago)
- [KUNXI SUN](#) (15 hours ago)
- [Ricardo Luo](#) (1 day ago)
- ...



Demonstration updated about 14 hours ago • [view](#)  
[change](#)



**Chenyang Dong**  
Technique Detail updated about 15 hours ago • [view](#)  
[change](#)

# Requirements

## Table of Content

Title	Creator	Modified
Product Backlog	Chenyang Dong	a minute ago
Background	Chenyang Dong	yesterday at 5:57 PM
User Stories and Acceptance Criteria	KUNXI SUN	yesterday at 10:14 AM
Use Cases	Chenyang Dong	29 Apr, 2023
Personas	Chenyang Dong	29 Apr, 2023
Motivational Model	Chenyang Dong	29 Apr, 2023
Non-Functional Requirements	Chenyang Dong	29 Apr, 2023
Milestones	Ricardo Luo	28 Apr, 2023
Functional Requirements	Chenyang Dong	28 Apr, 2023
Project Scope	KUNXI SUN	28 Apr, 2023
Digital Prototype	Chenyang Dong	02 Apr, 2023

# **Background**

## **1 Clinical Documentation Analysis**

### **1.1 Importance of Clinical Documentation**

Clinical documentation is a critical component of healthcare, as it serves as a record of a patient's medical history, diagnosis, treatment, and care. Accurate and comprehensive documentation enables healthcare providers to make informed decisions and facilitate effective communication among team members. Additionally, clinical documentation plays a crucial role in various areas such as medical research, quality improvement initiatives, and billing or reimbursement processes.

### **1.2 Challenges in Extracting Information from Free-Text Clinical Notes**

Free-text clinical notes are widely used in medical practice, as they allow clinicians to describe complex cases efficiently. However, extracting structured and actionable information from these notes is a challenging task. Natural language processing (NLP) techniques can be used to analyze and process free-text clinical notes. However, variations in terminology, abbreviations, and linguistic structures can lead to inaccuracies and inconsistencies when mapping the extracted information to standardized medical terms.

## **2 SNOMED CT**

### **2.1 A Brief Overview of SNOMED CT**

SNOMED CT (Systematized Nomenclature of Medicine - Clinical Terms) is a comprehensive, multilingual clinical terminology system designed for the global healthcare community. It enables the consistent representation of clinical information across different systems and facilitates interoperability between healthcare providers. SNOMED CT includes over 350,000 clinical concepts, each with a unique identifier, and supports mapping to other coding systems like ICD-10.

### **2.2 Benefits of Mapping Clinical Terms to SNOMED CT**

Mapping clinical terms to SNOMED CT offers several benefits:

1. Enhanced data consistency and accuracy, as it enables a standardized representation of clinical concepts.
2. Improved communication and understanding among healthcare professionals.
3. Facilitation of medical research and data analytics by providing a common language for data sharing and comparison.
4. Streamlined billing and reimbursement processes through standardized coding.

## **3 Universal Indication List (UIL)**

### **3.1 A Brief Overview of UIL:**

The Universal Indications List (UIL) is a SNOMED CT coded list that standardizes indications for antimicrobial drug use and infections.

### **3.2 Development of UIL:**

The UIL was developed and is maintained by the National Centre for Antimicrobial Stewardship - Guidance Group (Melbourne Health, Australia) in line with the Implementation Plan for Australia's National Antimicrobial Resistance Strategy.

### **3.3 Applications of UIL:**

The UIL can be used in various clinical systems, including electronic medical records (EMR), electronic medication management (EMM) systems, auditing tools (e.g. NAPS), and antimicrobial stewardship approval systems (e.g. Guidance).

### **3.4 Customization of UIL:**

While primarily designed for the Australian healthcare setting, the UIL can be customized for use in other countries.

### **3.5 Benefits of UIL:**

The UIL promotes interoperability, seamless data flow between clinical systems, and standardization of local and national reporting. This facilitates audits, clinical research, benchmarking, and surveillance.

## 4 Ontoserver

### 4.1 Overview of Ontoserver

Ontoserver is a terminology server developed by CSIRO that provides a wide range of features to support the use of clinical terminologies, such as SNOMED CT, in healthcare applications. It allows for the storage, management, and querying of clinical terms and supports mapping between different terminologies. Ontoserver can be deployed locally and tuned to specific data sets, offering flexibility and adaptability to various healthcare contexts.

### 4.2 Features and Capabilities

Ontoserver provides several features and capabilities, including:

1. Terminology storage and management: Efficiently store and manage large terminologies such as SNOMED CT.
2. Mapping: Perform mapping between different terminologies and code systems.
3. Querying: Retrieve and search clinical terms using advanced query capabilities.
4. Customization: Customize the server to suit specific healthcare applications and requirements.
5. FHIR Standard and Syndication: Ontoserver implements the FHIR (Fast Healthcare Interoperability Resources) standard, ensuring seamless integration with other FHIR-compliant clients and systems.

### 4.3 Licensing

- Within Australia, email [help@digitalhealth.gov.au](mailto:help@digitalhealth.gov.au) to request a (free) Ontoserver licence. ADHA will then arrange authorisation for your [quay.io](#) account
- Elsewhere, email [ontoserver-support@csiro.au](mailto:ontoserver-support@csiro.au) to discuss licensing terms (both evaluation and production licences are available for single and multiple instances with no limit on the number of users). Once the licence is established, CSIRO will register your [quay.io](#) account name to enable access to their repository
- Note: The license is provided for either individual or organisation. University of Melbourne holds an active license, if you would like to use the license from Unimelb, please contact who is responsible for the Ontoserver license at Unimelb.

### 4.4 Deployment and Customization

Ontoserver can be deployed locally, providing the flexibility to tailor the server to a specific use case. It can be deployed using Docker, enabling easy integration with existing virtual machines and making it a reusable component in a text analytics pipeline. Customization options include tuning the server to a specific dataset, enhancing performance, and adapting the server to support additional terminologies or features.

For technical documentation: <https://ontoserver.csiro.au/site/technical-documentation/ontoserver-technical-documentation/>

## 5 Security and Privacy in Healthcare Data

### 5.1 Data Protection and Compliance

When working with sensitive healthcare data, it is crucial to ensure that the platform adheres to strict data protection and privacy regulations such as HIPAA (Health Insurance Portability and Accountability Act) in the United States or GDPR (General Data Protection Regulation) in the European Union. These regulations are designed to protect patient's personal and medical information from unauthorized access and misuse.

### 5.2 Secure Data Storage and Transmission

To maintain the integrity and confidentiality of healthcare data, it is essential to implement robust security measures for data storage and transmission. This includes encrypting data at rest and in transit, using secure authentication methods, and regularly monitoring and auditing system activities. By incorporating best practices for data security, the platform can help protect sensitive information while still enabling valuable insights and analysis.

# **Project Scope**

## **1 SNOMED CT knowledge base**

- Understand the hierarchical structure, concepts, relationships, and terminology used in SNOMED CT.
- Learn how to query the SNOMED CT knowledge base and navigate its structure.
- Keep up to date with changes, updates, and new releases of the SNOMED CT knowledge base.

## **2 Ontoserver integration**

- Research and select an appropriate Ontoserver implementation that fits your requirements.
- Set up and configure Ontoserver, including necessary hardware and software components.
- Understand and utilise the Ontoserver API for querying and integrating SNOMED CT data into your system.

## **3 Symptom to UIL mapping**

- Develop or use existing algorithms and tools to accurately match symptom data to UIL terms.
- Handle possible ambiguities or variations in symptom descriptions.
- Develop a process for extracting and presenting disease names based on matched SNOMED CT terms.
- Allow user to download the mapping result.

## **4 Result curating and system improving**

- Establish metrics for evaluating the mapping results.
- Conduct testing with real-world data and compare results against a gold standard or expert-reviewed data.
- Allow user to accurate the mapping result to continuously optimise the mapping tool to improve performance and address any identified issues.

## **5 User interface and experience**

- Design a user-friendly web interface for entering symptom data and displaying terms of UIL

## **6 Documentation and training**

- Create comprehensive documentation outlining the system's architecture, features, and API usage.
- Develop user guides, tutorials, or other training materials to assist users in understanding and utilising the system effectively.

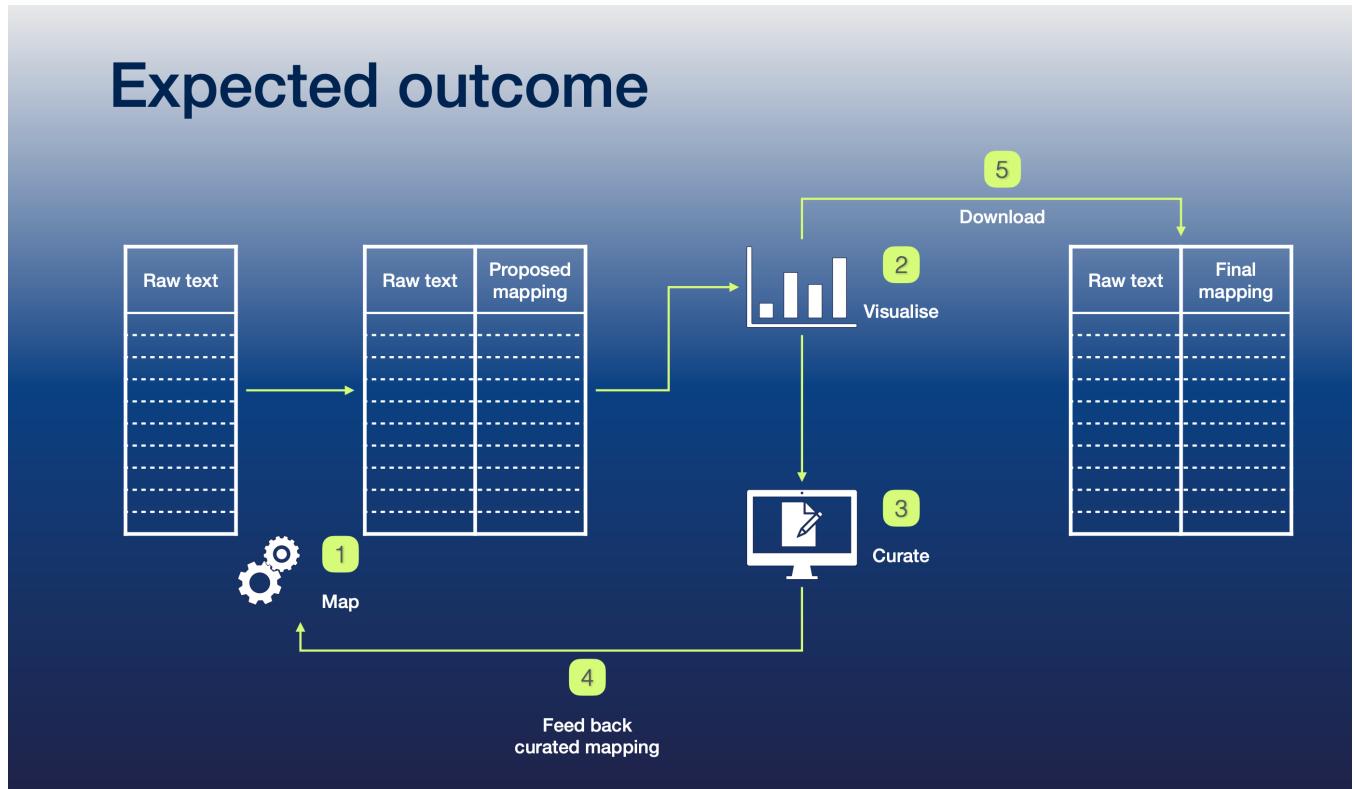
## **7 Project maintenance and updates**

- Update the system as necessary to accommodate new versions or updates of the UIL and SNOMED CT knowledge base.

# Functional Requirements

## 1 Expected Outcome

- The expected outcome of the system with five core functions are presented by client



## 2 Text Input and Processing

- The system must accept free-text clinical text input from medical researchers.
- The system must process and analyze the input text or file to identify relevant terms and phrases.

## 3 Mapping Terms to Categories

- The system must map identified terms to one or multiple categories based on a universal indication list.
- The system must allow users to review and adjust the selected category.

## 4 Integration with Mapping Tool

- The system must integrate with a mapping tool such as Ontoserver.
- The system must be able to send input text to the mapping tool and receive mapped categories and confidence levels.

## 5 Downloading Mapping Results

- The system must provide an option for users to download the mapping results.
- The system must generate a report containing history mapping and mapped categories for future reference.

## 6 Visualization

- The system must provide a user-friendly interface for curating.
- The system must display the mapping performance.

- The system must display the performance history of mapping.

## 7 Versioning

- The system must provide a user-friendly interface for the admin user to select the previous version to restore.
- The system should allow the admin user to view the restored version and the terms that were restored, to ensure that the correct version was rolled back.
- The system should also update the mapping history to reflect the rollback and the restored version.

## 8 User Authentication and Authorization

- The system must provide user authentication to ensure secure access to the mapping tool.
- The system must identify the user who curates the mapping results.
- The system may support role-based access control to manage user permissions and access to specific features.

# Non-Functional Requirements

Version	Description	Date
2.0.0	1. Add more detail into security concern 2. Add QoS non functional requirements	25 Apr 2023
1.0.0	1. Basic non-functional requirements	23 Mar 2023

## Version 2.0.0

### 1 QoS Non-Functional Requirements:

#### 1.1 Responsiveness

- The platform should respond to user interactions within 2 seconds under normal load conditions, ensuring a smooth user experience.
- For computationally intensive tasks like mapping tasks, the platform should provide progress updates and complete tasks within a reasonable time frame.
- The platform should have a monitoring system to track performance metrics and detect any potential issues early.

#### 1.2 Accuracy

- The system should incorporate advanced algorithms to increase the accuracy of mapping input data to categories and curating them.
- User curation should lead to further improvement in accuracy, with a target of 99% accuracy after multiple rounds of curation.

#### 1.3 Scalability

- The system should be designed to handle a growing number of users, teams, and mapping tasks without significant performance degradation.
- The infrastructure should be easily expandable to accommodate the increasing workloads and storage needs.
- The platform should utilize cloud-based solutions to ensure flexibility in scaling up or down as needed.

#### 1.4 Usability

- The user interface should be designed with a focus on ease of use, minimizing the learning curve for healthcare professionals and researchers.
- The system should provide clear instructions, tooltips, and context-sensitive help to guide users through complex tasks.
- The platform should offer customization options to accommodate the preferences and requirements of different user groups.

#### 1.5 Security

As we embark on the development of our medication assessment system, it is essential to recognize the importance of addressing security concerns from the project's inception. Ensuring the confidentiality, integrity, and availability of sensitive medical data is critical to the success of our platform and the trust of our users. By thoroughly examining potential security risks and implementing appropriate countermeasures, we can establish a robust and secure foundation for our system, adhering to industry standards and regulatory requirements.

##### 1.5.1 Authentication and authorisation

- Ensure that only authorized users have access to the system and its features by implementing robust authentication mechanisms (e.g., strong passwords, multi-factor authentication).
- Implement role-based access control to grant appropriate permissions to different user roles (e.g., researchers, administrators).

##### 1.5.2 Secure APIs

- Ensure that any APIs are secure and follow best practices for authentication, data privacy, and data protection.

##### 1.5.3 Data Protection and Privacy

- Safeguard sensitive data of patients and medical professionals, such as medical histories, diagnoses, and prescription information, in compliance with relevant privacy regulations (e.g., HIPAA, GDPR).
- Follow the principle of data minimization by collecting only the data needed for the project.

##### 1.5.4 Secure Software Development Practices

- Implement security best practices throughout the development lifecycle, including code reviews, security testing, and vulnerability assessments

### **1.5.5 Backup and disaster recovery**

- Establish regular backups and a disaster recovery plan to minimize data loss and system downtime in the event of a security incident or system failure.

## **2 Compliance Requirements (Standards):**

### **2.1 Data Privacy Regulations**

- The platform must implement robust access controls, data encryption, and secure data storage practices to comply with HIPAA or GDPR requirements.
- Regular security audits and vulnerability assessments should be conducted to identify and address potential threats.
- The platform should have a robust backup and recovery strategy to protect against data loss or corruption.

## **3 Architectural Constraints (SOA Principles):**

### **3.1 Modularity**

- The system should be divided into distinct modules (e.g., user management, mapping tasks, curation) that can be developed, tested, and deployed independently.

### **3.2 Reusability**

- Common functionalities (e.g., authentication, logging, data validation) should be implemented as shared services or libraries that can be used across the system.
- APIs should be created to facilitate secure access and communication between different components and services.

### **3.3 Interoperability:**

- The system should use standard data formats (e.g., JSON, XML) and communication protocols (e.g., REST, GraphQL) to facilitate integration with external systems and data sources.
- The system should support various data formats, such as CSV, JSON, and XML, to facilitate data import and export.

## **4 Development Constraints (Process):**

### **4.1 Agile Development**

- The project should follow an Agile development process, such as Scrum or Kanban, to support iterative development, continuous improvement, and adaptability to changing requirements.
- Regular feedback from stakeholders and users should be incorporated into the development process to ensure the platform meets their needs and expectations.

### **4.2 Continuous Integration & Deployment**

- The development process should include automated build, test, and deployment pipelines to ensure consistent quality and faster delivery of new features and improvements.
- Code should be frequently merged into the main branch to minimize integration issues.

### **4.3 Code Quality**

- The development team should follow coding best practices and conventions to maintain high-quality code.
- Test-driven development should be adopted to ensure comprehensive test coverage and reduce the likelihood of defects.
- Regular code reviews should be conducted to identify and address potential issues and improve the overall code quality.

### **4.4 Documentation**

- The development team should provide clear and comprehensive documentation for the system, including technical specifications, user guides, and API documentation.
- Documentation should be regularly updated to reflect changes and improvements in the platform, ensuring that it remains a reliable source of information for stakeholders and users.

### **4.5 Version Control**

- The development team should use a version control system (e.g., Git) to track code changes, manage branching and merging, and maintain a history of project development.

---

# Version 1.0.0

## Usability:

- The system must provide an intuitive and user-friendly interface for medical researchers.
- The system must include clear documentation, tooltips, and help resources for users to understand its mapping features and functionalities.

## Performance:

- The system must process and map clinical text within a reasonable time frame to support efficient research workflows.
- The system should maintain its performance even when dealing with complex or large input data sets from diverse clinical sources in the future.

## Scalability:

- The system should accommodate an increasing number of users and data without degrading performance.
- The system may be designed with a modular architecture to support future enhancements, such as integration with additional mapping tools or clinical databases.

## Availability:

- The system must be highly available to minimize downtime and support user access at all times.
- The system must include monitoring and alerting mechanisms to detect and address potential issues.

## Reliability:

- The system must ensure data integrity and consistency in processing and storing clinical text and mapping results.
- The system must provide error handling and recovery mechanisms to minimize disruptions in case of failures.

## Security:

- The system must follow industry-standard security practices to protect sensitive data and user information.
- The system must undergo regular security audits and vulnerability assessments to identify and address potential risks.

## Maintainability:

- The system must be easy to maintain, with well-organized code, documentation, and version control.
- The system must provide mechanisms for easy troubleshooting, bug fixes, and feature updates.

## Compliance:

- The system must comply with all relevant industry standards, guidelines, and data privacy and security regulations.
- The system must maintain proper records and documentation to demonstrate compliance with regulatory requirements.

# Motivational Model

Version	Description	Date
2.0.0	1. Fix some tempo in goal model 2. Add Do-Be-Feel-Who list	23 Mar 2023
1.0.0	1. A basic goal model	15 Mar 2023

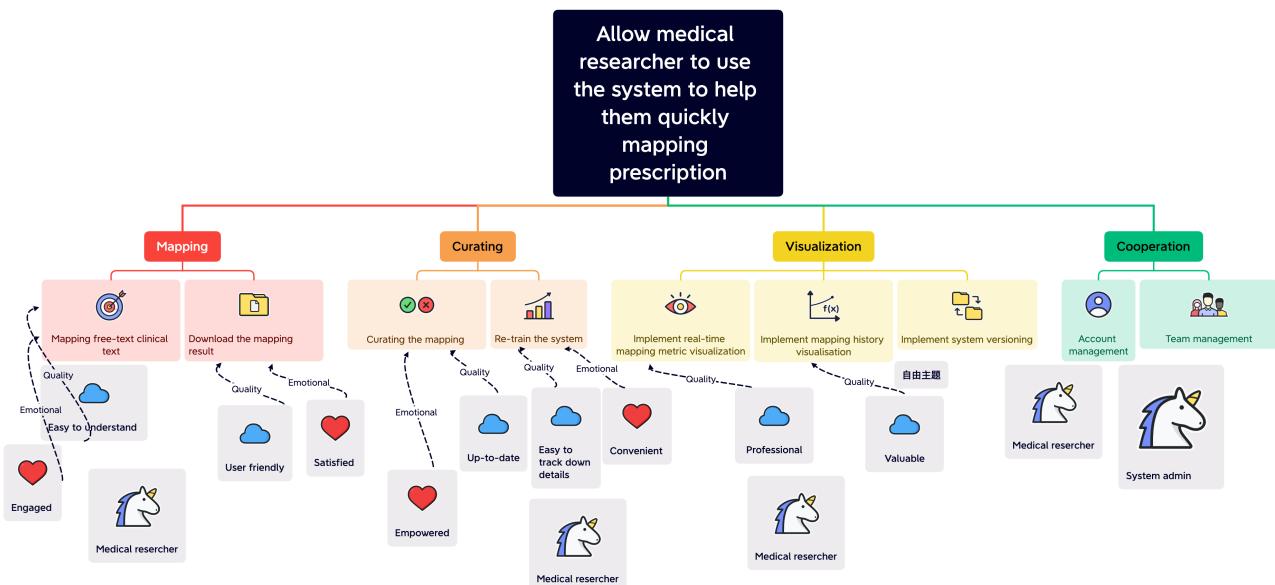
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## Version 2.0.0

### Do-Be-Feel-Who List

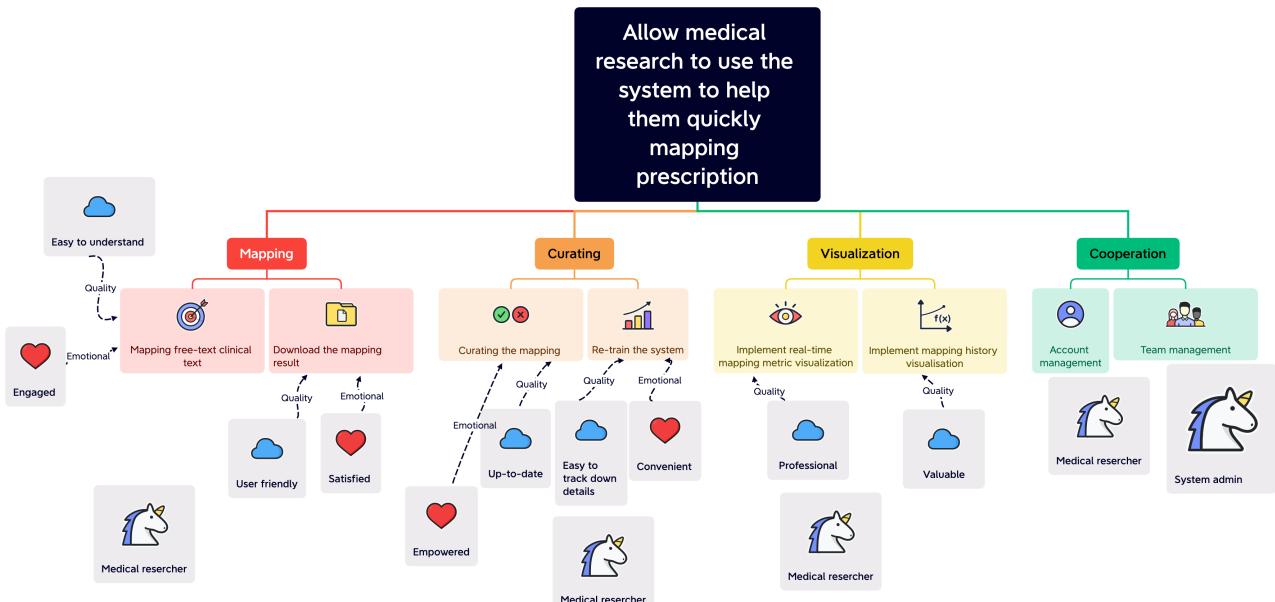
Do(Functional Goal)	Be (Quality Goal)	Feel(Emotional Goal)	Who(Roles)
Map the free-text clinical text	Easy to understand	Engaged	Medical researcher
Download the mapping results	User friendly	Satisfied	System Admin
Curate the incorrect mapping results	Up-to-date	Empowered	
Re-train the system use the curated data	Easy to track down details	Convenient	
Implement real-time mapping metric visualisation	Professional		
Implement mapping history visualisation	Mapping results should be valuable		
Implement system versioning			
Account management			
Team management			

### Custom Goal Model



Presented with xmind

## Version 1.0.0



Presented with xmind

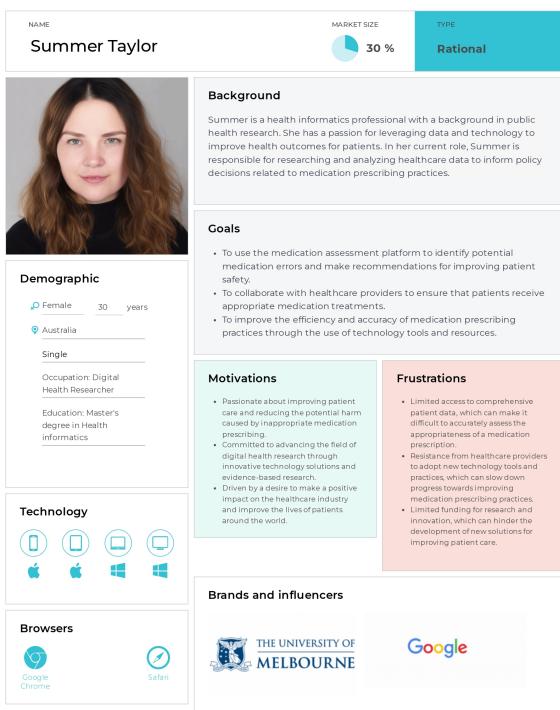
# Personas

## Versions

Version	Description	Date
2.0.0	1. Add persona analysis as justification for personas	23 Apr 2023
1.0.0	1. Three basic Personas for the sprint 1 submission	23 Mar 2023

## Version 2.0.0

PROJECT: Digital Health PERSONA: Summer Taylor



The persona canvas for Summer Taylor includes the following sections:

- NAME:** Summer Taylor
- MARKET SIZE:** 30 %
- TYPE:** Rational
- Background:** Summer is a health informatics professional with a background in public health research. She has a passion for leveraging data and technology to improve health outcomes for patients. In her current role, Summer is responsible for researching and analyzing healthcare data to inform policy decisions related to medication prescribing practices.
- Demographic:**
  - Gender: Female, 30 years
  - Location: Australia
  - Status: Single
  - Occupation: Digital Health Researcher
  - Education: Master's degree in Health Informatics
- Goals:**
  - To use the medication assessment platform to identify potential medication errors and make recommendations for improving patient safety.
  - To collaborate with healthcare providers to ensure that patients receive appropriate medication treatments.
  - To improve the efficiency and accuracy of medication prescribing practices through the use of technology tools and resources.
- Motivations:**
  - Passionate about improving patient care and reducing the potential harm caused by inappropriate medication prescribing.
  - Committed to advancing the field of digital health research through innovative technology solutions and evidence-based research.
  - Driven by a desire to make a positive impact on the healthcare industry and improve the lives of patients around the world.
- Frustrations:**
  - Limited access to comprehensive patient data, which can make it difficult to accurately assess the appropriateness of a medication prescription.
  - Resistance from healthcare providers to adopt new technology tools and practices, which can slow down progress in improving medication prescribing practices.
  - Limited funding for research and innovation, which can hinder the development of new solutions for improving patient care.
- Brands and influencers:**
  - THE UNIVERSITY OF MELBOURNE
  - Google
- Technology:** Icons for various devices including smartphone, tablet, laptop, and desktop.
- Browsers:** Icons for Google Chrome and Safari.

## Persona Analysis

### Summer Taylor

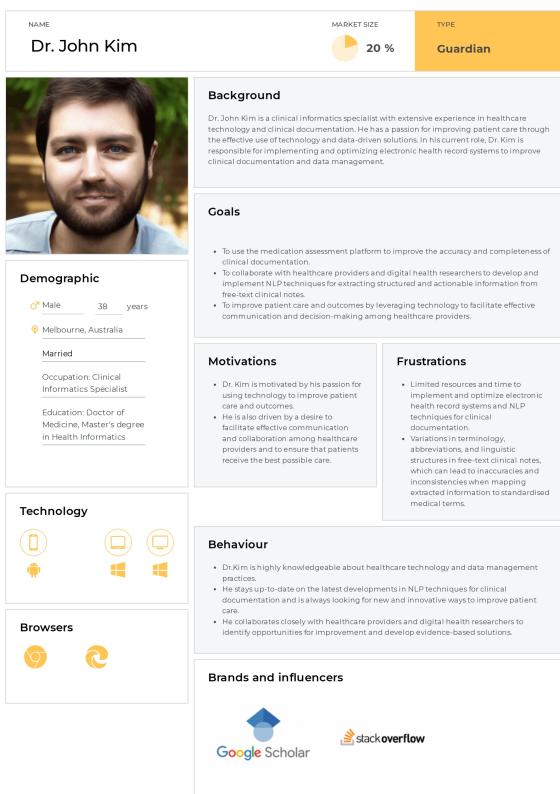
Summer's goals involve using the medication assessment platform to identify potential medication errors, collaborating with healthcare providers, and improving efficiency and accuracy in medication prescribing practices through technology. By focusing on these goals in the system design, the development team can create a tool that enhances patient safety, facilitates collaboration, and streamlines the medication prescribing process.

Summer's motivations, including passion for improving patient care, commitment to advancing digital health research, and a desire to make a positive impact on the healthcare industry, guide the development team in building a system that meets the needs of medical researchers and healthcare providers while driving innovation and enhancing patient care.

Addressing Summer's frustrations, the system design should prioritize providing comprehensive access to patient data, encouraging the adoption of technology tools among healthcare providers, and exploring ways to secure funding for research and innovation. By tackling these challenges, the development team can create a system that overcomes barriers to improved patient care and supports the advancement of the healthcare industry.

In summary, by considering Summer Taylor's goals, motivations, and frustrations, the development team can validate the system design and create a tool that meets the unique needs of medical researchers and healthcare providers, ultimately leading to better patient care and enhanced healthcare outcomes.

## Persona Analysis



## Dr. John Kim

By considering Dr. John Kim's goals, motivations, and frustrations, the development team can validate the system design and create a tool that caters to the needs of clinical informatics specialists, improving patient care and outcomes.

Dr. Kim's goals include using the medication assessment platform to enhance the accuracy and completeness of clinical documentation, collaborating with healthcare providers and digital health researchers to develop and implement NLP techniques, and leveraging technology to improve patient care and decision-making. By addressing these goals in the system design, the development team can create a tool that streamlines clinical documentation, fosters collaboration, and facilitates effective communication and decision-making among healthcare providers.

Dr. Kim's motivations, such as his passion for using technology to improve patient care and his desire to facilitate effective communication and collaboration among healthcare providers, guide the development team in creating a system that not only meets the needs of clinical informatics specialists but also promotes better patient care and outcomes.

By addressing Dr. Kim's frustrations, the system design should prioritize optimizing electronic health record systems and NLP techniques, even with limited resources and time, and tackle variations in terminology, abbreviations, and linguistic structures to minimize inaccuracies and inconsistencies. By overcoming these challenges, the development team can create a system that supports clinical informatics specialists in their pursuit of improved patient care and enhanced healthcare outcomes.

In summary, by considering Dr. John Kim's goals, motivations, and frustrations, the development team can validate the system design and create a tool that meets the unique needs of clinical informatics specialists, ultimately leading to better patient care and improved healthcare outcomes.

## Persona Analysis

### Kelly Underwood

By considering Kelly Underwood's goals, motivations, and frustrations, the development team can validate the system design and create a tool that caters to the needs of PhD students in clinical medicine, ultimately helping them advance their research and improve patient care.

<b>NAME</b>	<b>MARKET SIZE</b>	<b>TYPE</b>								
Kelly Underwood	15 %	Idealist								
<b>Background</b> Kelly is a PhD student at Cambridge University, where she specializes in clinical medicine. Kelly's current research focuses on the accuracy of clinical medicine and the potential for future improvements. She needs a tool to provide data and improvement measures.										
<b>Goals</b> <ul style="list-style-type: none"> <li>Get data on the error rate of clinicians' prescriptions on our platform</li> <li>Find ways to reduce the error rate of prescriptions</li> <li>Obtain the above data to support her PhD project research</li> </ul>										
<b>Demographic</b> <p>  Female    27 years   United Kingdom   Married            Occupation: PhD student in Clinical Medicine            Education: PhD in Clinical Medicine program in the University of Cambridge, Master's degree of Clinical Medicine in the University of Cambridge         </p>	<b>Motivations</b> <p>When she pursued her research in clinical medicine, she discovered that many doctors were prescribing the wrong medication to their patients. As a result, she wants a system that could assess whether medications were being prescribed appropriately to patients in order to understand why and fix the problem.</p> <p>Our system can help her with a lot of things. For example, it helps her to simply determine whether a prescription is appropriate or not. And, it can also help her see tabulated data about the prescription in some databases.</p>	<b>Frustrations</b> <p>Some physicians' notes are meaningless and cannot be valid data. It is troublesome to eliminate these data.</p>								
<b>Technology</b>	<b>Chart</b> <table border="1"> <thead> <tr> <th>Data Type</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Valid data</td> <td>50</td> </tr> <tr> <td>Invalid data</td> <td>35</td> </tr> <tr> <td>Very valid data</td> <td>15</td> </tr> </tbody> </table>	Data Type	Percentage	Valid data	50	Invalid data	35	Very valid data	15	<b>Brands and influencers</b>  <a href="#">UNIVERSITY OF CAMBRIDGE</a> <a href="#">Study at Cambridge</a> <a href="#">About the University</a>  <a href="#">School of Clinical Medicine</a>
Data Type	Percentage									
Valid data	50									
Invalid data	35									
Very valid data	15									
<b>Browsers</b>										

Kelly's goals include obtaining data on the error rate of clinicians' prescriptions, finding ways to reduce prescription error rates, and using this data to support her PhD research project. By addressing these goals in the system design, the development team can create a tool that provides valuable insights into prescription error rates and assists in identifying potential solutions.

Kelly's motivations, such as her passion for understanding and addressing the issue of inappropriate medication prescribing, guide the development team in creating a system that meets her needs and supports her research efforts. By offering features that help her easily assess prescription appropriateness and access relevant data, the platform can significantly contribute to her research.

Addressing Kelly's frustrations, the system design should focus on filtering out meaningless physician notes and ensuring that the data used in her research is valid and reliable. By developing features that help identify and eliminate such data, the development team can create a system that streamlines Kelly's research process and enhances the quality of her findings.

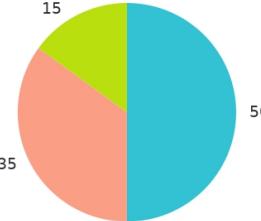
In summary, by considering Kelly Underwood's goals, motivations, and frustrations, the development team can validate the system design and create a tool that meets the unique needs of PhD students in clinical medicine, ultimately contributing to improved patient care and the advancement of clinical medicine research.

## Version 1.0.0

NAME <b>Summer Taylor</b>	MARKET SIZE  <b>30 %</b>	TYPE <b>Rational</b>
	<p><b>Background</b></p> <p>Summer is a health informatics professional with a background in public health research. She has a passion for leveraging data and technology to improve health outcomes for patients. In her current role, Summer is responsible for researching and analyzing healthcare data to inform policy decisions related to medication prescribing practices.</p>	
<b>Demographic</b>	<p><input checked="" type="radio"/> Female      30 years</p> <p><input type="checkbox"/> Australia</p> <p>Single</p> <p>Occupation: Digital Health Researcher</p> <p>Education: Master's degree in Health informatics</p>	
<b>Technology</b>	<ul style="list-style-type: none"> <li></li> <li></li> <li></li> <li></li> <li></li> <li></li> <li></li> <li></li> </ul>	
<b>Browsers</b>	 Google Chrome  Safari	
	<b>Motivations</b>	<b>Frustrations</b>
	<ul style="list-style-type: none"> <li>Passionate about improving patient care and reducing the potential harm caused by inappropriate medication prescribing.</li> <li>Committed to advancing the field of digital health research through innovative technology solutions and evidence-based research.</li> <li>Driven by a desire to make a positive impact on the healthcare industry and improve the lives of patients around the world.</li> </ul>	<ul style="list-style-type: none"> <li>Limited access to comprehensive patient data, which can make it difficult to accurately assess the appropriateness of a medication prescription.</li> <li>Resistance from healthcare providers to adopt new technology tools and practices, which can slow down progress towards improving medication prescribing practices.</li> <li>Limited funding for research and innovation, which can hinder the development of new solutions for improving patient care.</li> </ul>
	<b>Brands and influencers</b>	
	 	

NAME <b>Dr. John Kim</b>	MARKET SIZE 20 %	TYPE <b>Guardian</b>
	<b>Background</b>  Dr. John Kim is a clinical informatics specialist with extensive experience in healthcare technology and clinical documentation. He has a passion for improving patient care through the effective use of technology and data-driven solutions. In his current role, Dr. Kim is responsible for implementing and optimizing electronic health record systems to improve clinical documentation and data management.	
<b>Demographic</b>  Male 38 years Melbourne, Australia  Married  Occupation: Clinical Informatics Specialist  Education: Doctor of Medicine, Master's degree in Health Informatics	<b>Goals</b>  <ul style="list-style-type: none"><li>To use the medication assessment platform to improve the accuracy and completeness of clinical documentation.</li><li>To collaborate with healthcare providers and digital health researchers to develop and implement NLP techniques for extracting structured and actionable information from free-text clinical notes.</li><li>To improve patient care and outcomes by leveraging technology to facilitate effective communication and decision-making among healthcare providers.</li></ul>	
<b>Technology</b>  	<b>Motivations</b>  <ul style="list-style-type: none"><li>Dr. Kim is motivated by his passion for using technology to improve patient care and outcomes.</li><li>He is also driven by a desire to facilitate effective communication and collaboration among healthcare providers and to ensure that patients receive the best possible care.</li></ul>	<b>Frustrations</b>  <ul style="list-style-type: none"><li>Limited resources and time to implement and optimize electronic health record systems and NLP techniques for clinical documentation.</li><li>Variations in terminology, abbreviations, and linguistic structures in free-text clinical notes, which can lead to inaccuracies and inconsistencies when mapping extracted information to standardised medical terms.</li></ul>
<b>Browsers</b>  	<b>Behaviour</b>  <ul style="list-style-type: none"><li>Dr. Kim is highly knowledgeable about healthcare technology and data management practices.</li><li>He stays up-to-date on the latest developments in NLP techniques for clinical documentation and is always looking for new and innovative ways to improve patient care.</li><li>He collaborates closely with healthcare providers and digital health researchers to identify opportunities for improvement and develop evidence-based solutions.</li></ul>	
	<b>Brands and influencers</b>  	



NAME <b>Kelly Underwood</b>	MARKET SIZE 15 %	TYPE <b>Idealist</b>								
	<p><b>Background</b></p> <p>Kelly is a PhD student at Cambridge University, where she specializes in clinical medicine. Kelly's current research focuses on the accuracy of clinical medicine and the potential for future improvements. She needs a tool to provide data and improvement measures.</p>									
<b>Demographic</b>	<b>Motivations</b>	<b>Frustrations</b>								
<ul style="list-style-type: none"> <li>📍 Female      27 years</li> <li>📍 United Kingdom</li> <li>Married</li> <li>Occupation: PhD student in Clinical Medicine</li> <li>Education: PhD in Clinical Medicine program in the University of Cambridge, Master's degree of Clinical Medicine in the University of Cambridge</li> </ul>	<p>When she pursued her research in clinical medicine, she discovered that many doctors were prescribing the wrong medication to their patients. As a result, she needed a platform that could assess whether medications were being prescribed appropriately to patients in order to understand why and fix the problem.</p> <p>Our platform can provide Kelly with a lot of help. For example, it helps her to simply determine whether a prescription is appropriate or not. And, it can also help her see tabulated data about the prescription in some databases.</p>	<p>Some physicians' notes are meaningless and cannot be valid data. It is troublesome to eliminate these data.</p>								
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# User Stories and Acceptance Criteria

**mapping taskNote:** All of these user stories are not generated by ChatGPT.

Version ID	Description	Date
2.0.0	<ol style="list-style-type: none"> <li>1. Add ID to each user story</li> <li>2. Split all user stories</li> <li>3. Add specific priority</li> <li>4. Add acceptance criteria</li> <li>5. Add note to the each user story to explain the priority</li> <li>6. Update some user stories with better descriptions</li> <li>7. Change 'view other users' previous mapping task' into 'US0003: View mapping task history' under 'Epic 1 - Map free-text clinical text' which includes viewing tasks of their own and others in the team.</li> <li>8. Delete 'filter the mapping history by date range' and 'filter the mapping history by user', instead keep them into decomposed tasks in US0003: View mapping task history</li> <li>9. Merge "view the possible categories on each mapped item" and "see a list of category options while curating the data" into US0005: View Category Options for Mapped Items</li> <li>10. Merge "re-train the system using the curated data" and 'curate the incorrect mapping results by correcting the data' into 'US0006: Curate Mapping Result'</li> <li>11. According to new requirement, add "US0007: Update the Version of UIL"</li> </ol>	21 Apr 2023
1.0.0	Basic user stories with epic, stakeholders, size, priority and story point	23 Mar 2023

## Version 2.0.0 - User Stories and Acceptance Criteria

### Introduction

The user stories is listed as cards, with user story id, user story title, acceptance criteria, estimated story point, size estimation, priority rank, MoSCow priority, and a brief description about the priority.

### User story card example

The following table provide an example about the user story which will be present in the following sections.

Note that the acceptance criteria is demonstrated in the Given-When-Then (GWT) format which is a structure used in Behavior-Driven Development (BDD) to describe and test software features. It consists of three parts: setting the context (Given), specifying the action or event (When), defining the expected outcome (Then) and additional description of the previous three parts (And). GWT helps ensure clear communication and shared understanding among team members.

<User story ID>: <User Story Title>	
<b>User story</b>	<b>As</b> <stakeholder> <b>I want to &lt;&gt;</b> <b>So that &lt;&gt;</b>
<b>Acceptance criteria</b>	Given <> AND...(optional) When <> AND...(optional) Then <> AND...(optional)
<b>Story point</b>	<Fibonacci story point: 0, 1, 2, 3, 5, 8, 13>
<b>Size estimation</b>	<User story size: S, M, L, XL>
<b>Priority</b>	<Priority rank: 1, 2, 3, ...., No. of user stories>
<b>MoSCow Priority</b>	One of (Could have, Should have, Must have)

Note	<Priority description>
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## Epic 1 - Map free-text clinical text

US0001: Map short text into the terms of UIL(universal indication list)		US0002: Download the mapping result	US0003: View mapping task history
User story	<p><b>As a medical researcher</b></p> <p>I want to map the short text into certain or multiple categories in a universal indication list</p> <p>So that I do not need to map the text manually</p>	<p><b>User story</b></p> <p><b>As a medical researcher</b></p> <p>I want to download the mapping results</p> <p>So that I can save the mapping history and view it in the future</p>	<p><b>User story</b></p> <p><b>As a medical researcher</b></p> <p>I want to view my own and team members' previous mapping tasks</p> <p>So that I can review the mapping results and performance</p>
Acceptance criteria	<p>Given there is an input box or a file uploader on the mapping webpage</p> <p>When I access the mapping webpage as a medical researcher</p> <p>Then I should see a user-friendly interface that allows me to enter a short text or upload a file of short free text describing a symptom or indication, and a button or option to submit the text for mapping processing.</p>	<p><b>Acceptance criteria</b></p> <p>Given I am a medical researcher who has completed a mapping process on the webpage</p> <p>When I review the displayed mapping results, Then I should see a "Download" button or option on the webpage, And when I click the "Download" button or option</p> <p>Then the system should generate a downloadable file containing the mapping results</p> <p>And the file should be in a commonly used format, such as CSV or Excel, And the download process should initiate, allowing me to save the file to my local storage or device.</p>	<p><b>Acceptance criteria</b></p> <p>Given I am a medical researcher who wants to view the mapping history of myself and other team members</p> <p>When I am logged in and visit history section of the mapping tool's interface</p> <p>Then I should see a list of mapping tasks which I can review mapping history and performance</p> <p>And the option or button should be easy to locate and use.</p>
Story point	8	3	5
Size estimation	XL	S	L
Priority	1	2	7
MoSCoW Priority	Must have	Must have	Must have
Note	This is the core functionality of the system, which enables users to automate the mapping process, saving time and effort.	Providing users with the ability to download and save their mapping results helps them maintain a historical record and facilitates future reference.	Viewing previous tasks of own and others in the team fosters collaboration, knowledge sharing, and helps maintain quality standards.

## Epic 2 - Curate the mapping and re-train the system

US0004: Identify Results Status in Mapping Process	US0005: View Category Options for Mapped Items	US0006: Curate Mapping Result
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User story	<p><b>As a medical researcher (curator)</b></p> <p><b>I want to</b> easily identify the status of the mapping process for each raw text input</p> <p><b>So that</b> I can quickly determine if further curation or review is needed</p>	<p><b>As a medical researcher (curator)</b></p> <p><b>I want to</b> see a list of category options while curating the data</p> <p><b>So that</b> I can choose the correct category for the incorrect mapping or unmapped items</p>	<p><b>As a medical researcher (curator)</b></p> <p><b>I want to</b> review and curate the failed-mapping result or mapping results of raw text to SNOMED-CT into UIL</p> <p><b>So that</b> I can have more accurate mapping result and give feedback to the system and improve it</p>
Acceptance criteria	<p>Given I am a medical researcher (curator) who has completed a mapping task</p> <p>When I review the displayed mapping results for different scenarios (e.g., no mapping, single or multiple mappings, previously curated mappings)</p> <p>Then I can see the relevant information (e.g., concept, similarity /confidence score, status)</p>	<p>Given I am a medical researcher (curator) who has completed a mapping process on the webpage</p> <p>When I review the displayed mapping results and identify an incorrect mapping or unmapped items</p> <p>Then I should see an option to view a list of category options for them, such as a dropdown menu, search bar, or button</p> <p>And when I interact with the option to view category options, Then the system should display a list of available categories from the universal indication list that I can choose from.</p>	<p>Given I am a medical researcher (curator) reviewing a failed-mapping result or successful mapping result on SNOMED-CT</p> <p>When I identify an appropriate mapping to a UIL concept</p> <p>Then I can manually curate the result using a drop-down menu with UIL entries and provide feedback to the system for improvement.</p>
Story point	5	3	5
Size estimation	M	M	M
Priority	3	4	5
MoSCoW Priority	Must have	Must have	Must have
Note	<p>By providing an easy-to-use interface for reviewing mapping results under various scenarios, medical data curators can quickly identify inaccuracies and make necessary corrections.</p>	<p>Providing category options during curation improves the user experience and facilitates more accurate mapping corrections.</p>	<p>Allowing users to curate data and provide feedback is essential for refining the system's performance and improving its mapping capabilities.</p>

US0007: Retrain the system from curating	
User story	<p><b>As a medical researcher (curator)</b></p> <p><b>I want to</b> re-train the system using the curated data</p> <p><b>So that</b> I can make the system have a better mapping performance in the future</p>

US0008: Update the Version of UIL	
User story	<p><b>As an admin user</b></p> <p><b>I want to</b> update the UIL to the latest version</p> <p><b>So that</b> I can access the most up-to-date term for curation</p>

<b>A cc e pt a n ce cr it er ia</b>	<p>Given the system has received curated data from one or more medical researchers (curators)</p> <p>When the system undergoes a re-training process</p> <p>Then it should incorporate the curated data into the re-training process to improve the mapping performance</p> <p>And the system should update its algorithms and knowledge base to better align with the curated data. And the improved mapping performance should be reflected in future mapping processes.</p>	<b>A c c e p t a n c e c r i t e ria</b>	<p>Given the system is running and the user has the necessary permissions, and the new UIL file is in a compatible format with the existing system</p> <p>When the user initiates the UIL update process, and the system verifies the integrity of the new UIL and ensures that it is not corrupted during the update process, and the system provides a backup option for the old UIL, and the system verifies the compatibility of the updated UIL</p> <p>Then the system should prompt the user to provide the new version of the UIL, display a confirmation message to the user indicating that the update process has been completed successfully</p>
<b>St or y p oi nt</b>	5	<b>S t or y p o int</b>	5
<b>Si ze es ti m at ion</b>	L	<b>S iz e es ti m a ti on</b>	M
<b>Pr io rity</b>	6	<b>P ri o ri ty</b>	8
<b>M o S C o w Pr io rity</b>	Must have	<b>M o S C o w Pr i o ri ty</b>	Must have
<b>N ote</b>	Continuously refining the system based on user feedback is key to ensuring it remains relevant and useful over time.	<b>N o te</b>	It is considered high-priority to make sure the user of the system access the most up-to-date information contained in the UIL they would like to identify for the mapping.

### Epic 3 - Implement mapping metric visualization

**US0009: Have a dashboard to display the mapping metrics**

**US0010: View the successful mapping rate and the number of mapped items**

**US0011: View the overall confidence**

User story	<p><b>As a medical researcher</b></p> <p><b>I want to</b> have a dashboard to display the mapping metrics for a mapping task</p> <p><b>So that</b> I can review and analyze mapping results</p>	<p><b>Use r story</b></p> <p><b>I want to</b> view the successful mapping rate and the number of mapped items in a dashboard</p> <p><b>So that</b> I can assess the performance of the system on the current mapping task</p>	<p><b>Use r story</b></p> <p><b>I want to</b> view the overall confidence in a dashboard</p> <p><b>So that</b> I can assess the performance of the system on the current mapping task</p>
Acceptance criteria	<p>Given I am a medical researcher who wants to review and analyze mapping results</p> <p>When I review the mapping metric dashboard on the mapping result page</p> <p>Then I should see an button to display a metric dashboard</p> <p>And when I click the button to access the dashboard, then the dashboard should be displayed, showing the mapping metrics for current task.</p>	<p>Given I am a medical researcher who has accessed the dashboard on the mapping result page</p> <p>When I review the mapping metric dashboard</p> <p>Then I should see the successful mapping rate, represented as a percentage or ratio of successful mappings to total mappings</p> <p>And I should see the total number of mapped items, indicating the volume of data that has been processed</p>	<p>Given I am a medical researcher who has accessed the dashboard on the mapping result page</p> <p>When I review the mapping metric dashboard</p> <p>Then I should see the overall confidence, represented as an average or median confidence score across all successful mappings</p> <p>And the overall confidence should be displayed in a clear and understandable format, such as a text summary or graphical representation</p>
Story point	8	5	3
Size estimation	L	S	S
Priority	9	14	15
Must SCow Priority	Must have	Should have	Should have
Note	Offering metric analytics allows users to make informed decisions and monitor the system's performance.	Providing performance metrics enables users to evaluate the system's effectiveness and make informed decisions about its usage.	Providing an overall confidence metric helps users understand the system's performance and trust in the mapping results.

US0012: View the Specific Performance On Each Category	
User story	<p><b>As a medical researcher</b></p> <p><b>I want to</b> view the specific performance of each category</p> <p><b>So that</b> I can know the system performance among different categories</p>
Acceptance criteria	<p>Given I am a medical researcher who has accessed the mapping history</p> <p>When I review the displayed mapping results</p> <p>Then I should see specific performance metrics for each category, such as successful mapping rate, average confidence score, and number of mapped items</p>

US0013: View the Proportion of Each Category	
User story	<p><b>As a medical researcher</b></p> <p><b>I want to</b> view the proportion of each category</p> <p><b>So that</b> I can know the distribution of different categories</p>
Acceptance criteria	<p>Given I am a medical researcher who has accessed the mapping history</p> <p>When I review the displayed mapping results</p> <p>Then I should see the proportion of each category, represented as a percentage or ratio of mapped items within that category to the total number of mapped items</p>

<b>Story point</b>	5
<b>Size estimation</b>	M
<b>Priority</b>	16
<b>MoSCow Priority</b>	Could have
<b>Note</b>	Offering category-specific performance data helps users identify areas for improvement and make targeted adjustments.
<b>Story point</b>	5
<b>Size estimation</b>	S
<b>Priority</b>	17
<b>MoSCow Priority</b>	Could have
<b>Note</b>	Displaying category distribution information helps users identify trends and understand the data they are working with.

## Epic 4 - Implement mapping history visualization

<b>US0014: Visualize Mapping Performance History</b>		<b>US0015: Rollback to Earlier System Version</b>	
<b>User story</b>	<b>As a medical researcher</b>  <b>I want to</b> visualize the history of the mapping performance  <b>So that</b> I can measure the mapping quality	<b>User story</b>	<b>As an admin user</b>  <b>I want to</b> roll back to the earlier (default) version of the mapping system  <b>So that</b> I can restore the default behaviour of the system
<b>Acceptance criteria</b>	Given I am a medical researcher who wants to visualize the history of the mapping performance  When I access a dedicated section or page on the mapping tool's interface  Then I should see a visual representation of the mapping performance over time, such as a line chart, bar chart, or other appropriate visualization.	<b>Acceptance criteria</b>	Given I am an admin user who wants to rollback to an earlier version (default) of the system  When I access the mapping history performance page  Then I should see the available version restore button  And the version restoring should be easy to locate and use.
<b>Story point</b>		<b>Story point</b>	5
<b>Size estimation</b>	XL	<b>Size estimation</b>	M
<b>Priority</b>	11	<b>Priority</b>	12
<b>MoSCow Priority</b>	Must have	<b>MoSCow Priority</b>	Should have

<b>Note</b>	Visualizing the performance history allows users to track progress and identify trends over time.
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<b>Note</b>	Providing version rollback capabilities ensures admins can maintain system stability and performance in case of problematic updates.
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## Epic 5 - Manage account

US0016: Account Login	
<b>User story</b>	<b>As a medical researcher</b> <b>I want to</b> log in to my account <b>So that</b> I can be identified by the system for curating.
<b>Acceptance criteria</b>	Given I am a medical researcher who wants to log in to my account  When I visit the mapping tool's website or application  Then I should see a login page or button allowing me to access the login interface  And the login page or button should be easy to locate and use.
<b>Story point</b>	3
<b>Size estimation</b>	S
<b>Priority</b>	10
<b>MoSCow Priority</b>	Must have
<b>Note</b>	User authentication ensures a secure environment and allows for personalized experiences.

US0017: Edit Personal Information	
<b>User story</b>	<b>As a medical researcher</b> <b>I want to</b> edit my personal information <b>So that</b> I can update my roles and responsibilities.
<b>Acceptance criteria</b>	Given I am a medical researcher who wants to edit my personal information  When I am logged in to my account and visit the user profile or settings section of the mapping tool's interface  Then I should see an option or button to edit my personal information  And the option or button should be easy to locate and use.
<b>Story point</b>	2
<b>Size estimation</b>	S
<b>Priority</b>	18
<b>MoSCow Priority</b>	Could have
<b>Note</b>	Allowing users to edit their personal information helps maintain up-to-date user profiles and improves collaboration.

US0018: Add New User Account	
<b>User story</b>	<b>As an admin user</b> <b>I want to</b> add an account to the system <b>So that</b> I can give other people access to the system.
<b>Acceptance criteria</b>	Given I am a medical researcher who wants to add an account to the system  And I have the necessary permissions to manage user accounts  When I visit the account management section or page on the mapping tool's interface  Then I should see an option or button to add a new account  And the option or button should be easy to locate and use.
<b>Story point</b>	5
<b>Size estimation</b>	M
<b>Priority</b>	13
<b>MoSCow Priority</b>	Should have
<b>Note</b>	Adding new accounts enables collaboration and helps scale the system to accommodate more users.

## Epic 6 - Manage team

US0019: Add Member to Team	
<b>User story</b>	<b>As an admin user</b> <b>I want to</b> add the account to a team <b>So that</b> I can let people on the same team work together.

US0020: Remove Member from Team	
<b>User story</b>	<b>As an admin user</b> <b>I want to</b> delete a member from a team <b>So that</b> I can remove a member's privileges in a team

<b>Access criteria</b>	Given I am a medical researcher who wants to add an account to a team  And I have the necessary permissions to manage team membership  When I visit the team management section or page on the mapping tool's interface  Then I should see an option or button to add a new member to the team	<b>Access criteria</b>	Given I am a medical researcher who wants to delete a member from a team  And I have the necessary permissions to manage team membership  When I visit the team management section or page on the mapping tool's interface  Then I should see an option or button to remove an existing member from the team  And the option or button should be easy to locate and use.
<b>Story point</b>	1	<b>Story point</b>	1
<b>Size estimation</b>	S	<b>Size estimation</b>	S
<b>Priority</b>	19	<b>Priority</b>	20
<b>MoSCow Priority</b>	Could have	<b>MoSCow Priority</b>	Could have
<b>Note</b>	Team-based collaboration features help organize users and facilitate more efficient collaboration.	<b>Note</b>	Enabling user management within teams ensures proper access control and maintains the integrity of the system.

## Version 1.0.0 - User Story

Epic	As a	I want to	So That	Size Estimation	MoSCow Priority	Story point
Map free-text clinical text	medical researcher	map the short text into certain or multiple categories in a universal indication list	I do not need to map the text manually.	L	must have	5
		download the mapping results	I can save the mapping history and view it in the future.	S	should have	3
		view the possible categories on each mapped item	I can make decisions about the most appropriate category for the term.	M	must have	5
Curate the mapping and re-train the system	medical researcher (curator)	identify the unrecognized result	I can ensure that the mapping result is accurate and complete.	M	must have	5
		filter the possible incorrect mapping result by the confidence range	I can judge the possible incorrect mappings by myself.	M	must have	8
		curate the incorrect mapping results by correcting the data	I can give feedback to the system and retrain it.	M	must have	3
		see a list of category options while curating the data	I can choose the correct category for the incorrect mapping.	S	should have	1
		re-train the system using the curated data	I can make the system have a better mapping performance in the future.	L	must have	5
		test the updated system	I can ensure that the mapping is improved.	M	could have	5
Implement real-time mapping metric visualization	medical researcher	have a real-time dashboard to display the mapping metrics	I can review and analyze mapping results.	L	must have	8

		view the successful mapping rate and number of mapped items	I can assess the performance of the mapping tool accurately.	S	should have	5
		view the overall confidence	I can know the performance of the system.	S	should have	3
		view the specific performance of each category	I can know the system performance among different categories.	M	could have	5
		view the proportion of each category	I can know the distribution of different categories.	S	could have	5
Implement mapping history visualization	medical researcher	visualize the history of the mapping performance	I can measure the mapping quality	XL	must have	8
		filter the mapping history by date range	I can quickly find the mapping history	S	could have	1
		filter the mapping history by user	I can quickly find the mapping history of a specific team member	S	could have	1
	admin user	rollback to earlier version	I can choose the system version with better performance	M	could have	5
Manage account	medical researcher	login to my account	I can be identified by the system for curating.	S	must have	3
		edit my personal information	I can update my roles and responsibilities.	S	could have	2
	admin user	add an account to the system	I can give other people access to the system.	S	should have	1
Manage team	medical researcher	view other users' previous mapping task	I can check their mapping results and performance.	M	should have	3
		add the account to a team	I can let people on the same team work together.	S	could have	1
	admin user	delete a member from a team	I can remove a member's privileges in a team.	S	could have	1

# Use Cases

Version	Description	Date
2.0.0	1. Based on the <a href="#">MRFF NCAS mapping tool requirements</a> provided by Vlada on April 27, 2023.	24 Apr 2023
1.0.0	1. Basic use cases	23 Mar 2023

## Version 2.0.0

### Use Case 1: Map Free-Text clinical text to UIL category if no SNOMED CT concepts are mapped

#### Rationale:

A medical researcher wants to map the short clinical text into a universal indication category, automating the process and reducing manual effort for their research.

#### Preconditions:

1. User has available account.
2. A universal indication list is available and integrated with the system.
3. A tool to map raw text into SNOMED CT concept is available and integrated with the system.

#### Steps:

1. The user inputs the clinical text or upload a file with multiple clinical text into the system, and there will be three cases
  - a. The map tool match the clinical text into SNOMED CT concepts, but no concepts are matched.
    - i. Output of the mapping tool:
      1. Matched term: NULL
      2. Score: NULL
      3. Status: Fail
      4. Source: NULL
  - b. The map tool match the clinical text into SNOMED CT concepts, and there is only one concept is matched.
    - i. Output of the mapping tool:
      1. Matched term: if the SNOMED CT concept ID is in UIL, then set term to *UIL category*, otherwise, set source to *SNOME D-CT concept*
      2. Score: <confidence score>
      3. Status: <Success>
      4. Source: if the SNOMED CT concept ID is in UIL, then set source to *UIL*, otherwise, set source to *SNOMED-CT*
  - c. The map tool match the clinical text into SNOMED CT concepts, and there are multiple concepts are matched.
    - i. Select the SNOMED CT concept with the highest score.
    - ii. Output of the mapping tool:
      1. Matched term: if the SNOMED CT concept ID is in UIL, then set term to *UIL category*, otherwise, set source to *SNOME D-CT concept*
      2. Score: <confidence score>
      3. Status: <Success>
      4. Source: if the SNOMED CT concept ID is in UIL, then set source to *UIL*, otherwise, set source to *SNOMED-CT*

### Use Case 2: Curate the mapping result into UIL category

#### Rationale

Based on the use case 1, the mapping system may incorrectly classify the clinical text into wrong UIL category(even only classified into SNOMED CT concept but no UIL category), so the mechanism is designed to provide a way for the user to review and curate the unrecognised and possible incorrect mappings so that the system can learn from mapping result and improve its accuracy over time.

#### Preconditions

1. User has available account.
2. The system has successfully process a map task and generate a set of preliminary mappings.

## Steps

1. The user successfully login
2. The user click into the map task to view its details.
3. The module displays the text that was mapped, along with the mapping term(could be none), confidence score(could be none), status(reviewed /success/fail), and source(SNOMED-CT/UIL)
4. The user can select any clinical text(no matter what ststatus: mapped success, reviewed, or fail) to change its mapped term into other UIL category from a dropdown menu
5. Then the status will change to reviewed.
6. When the user is finished reviewing and curating the mappings, they can submit their changes to the system, or they can save it to continue review next time.

## Postconditions

1. The system uses the curated data to retrain its model, in order to improve the accuracy of future mappings.

## Use Case 3: Visualise the history of the mapping performance

### Rationale:

This is one of the key functional requirements of the project. Medical researchers need the system to show the historical mapping performance so that they can measure if the system is improving its accuracy.

### Preconditions:

1. User has available account.
2. The system have the mapping short text into terms implemented
3. The user has at least one mapping result
4. (Optional)The system can be retrained by curating the mapping results manually.

### Steps:

1. The user successfully login
2. The user clicks the mapping history button on the side navigation bar

### Alternative Paths:

- If the user has no mapping result before, the page will show empty
- If the user does not have permission to watch the mapping history, then the user cannot see the performance

## Postconditions:

- The user can see the overall training time
- The user can see the current curate rate and mapping failure rate
- The user can see the performance change over time

## Use Case 4: Filter the mapping history/task by user and date range

### Rationale:

This is a simple filter use case that allows the user to retrieve the mapping task of a specific person so that the team members.

### Preconditions:

1. User has available account.
2. The user is in a workspace
3. The user has access to see other user's mapping
4. Other user has mapping result

### Steps:

1. The user successfully login
2. User clicks the page go to the mapping tasks, so the user can see a list of mapping task
3. The user can filter those mapping task by selecting the date and users

### Alternative Paths:

- If the workspace does not have any mapping history, the mapping history page will be a blank page

### **Postconditions:**

- The user can filter the mapping history in the order of date
- The user can filter the mapping history of specific users

## Use Case 5: A medical research wants to view team members mapping tasks.

### **Rationale:**

A medical researcher wants to view team members mapping tasks so that they can help each other to curate the mapping.

### **Preconditions:**

1. User has available account.
2. User is in a workspace
3. The username and password entered are accurate and matched.
4. Other team members have mapping history.

### **Step:**

1. The user successfully login
2. The system prompts the user to log in successfully and jumps to the main page.
3. The user can view all members' mapping task in workspace mapping task page.

### **Alternative Path:**

1. If there are no mapping tasks for other users, the system will display an empty screen.

### **Postconditions:**

- After the user has viewed other users' previous mapping tasks, the user can make corrections to other users' mapping results.

## Use Case 6: Perform account profile edit

### **Rationale:**

A medical researcher wants to edit personal information

### **Preconditions:**

1. User has available account.
2. The username and password entered are accurate and matched.
3. The system holds the user's personal information.

### **Steps:**

1. The user successfully login
2. The system prompts the user to log in successfully and jumps to the main page.
3. The user enters the profile page.
4. The system displays the user's personal information.
5. The user modifies personal information and submits it.

### **Alternative Paths:**

1. If the user enters an incorrect or mismatched username and password, the system will ask the user to re-enter it.
2. If the user's modified personal information does not match the rules, the system will ask the user to re-enter it.

### **Postconditions:**

- After the user has viewed other users' previous mapping tasks, the user can make corrections to other users' mapping results.

## Use Case 7: Adding team member to workspace by admin

### **Rationale:**

An admin user wants to add an account to the current workspace, as also deleting a member from a workspace.

### **Preconditions:**

1. User has available account.
2. The system shows that the admin user has logged in successfully.
3. The system provides functions for the workspace.

### **Steps:**

1. The user successfully login
2. The admin user clicks the add user button in the workspace to invite member.
3. The admin user enters the user's email and submits it, and the user's status shows *Pending*.
4. The system send a invitation email to the email with a invitation link.
5. The invited user click the invitation link in email, and then the invited user will be redirected to a page to sign up with personal information.
6. By clicking the submit button on sign up page, the invited person will be invited to the workspace.
7. The invited person status will shows *Active*.

### **Postconditions:**

- A user will be invited to the workspace

## Use Case 8: Admin can allow the system to restore the default behaviour of the mapping tool

### **Rationale:**

The medical researchers wants to restore the default behaviour of the mapping tool, but this operation should only be done by admin account.

### **Preconditions:**

1. User has available account.

### **Steps:**

1. The admin successfully login
2. The admin user create a new workspace.

### **Postcondition:**

The admin user successfully restore a default version of the mapping tool, and can switch back to previous version anytime.

## Use Case 9: Download mapping result

### **Rationale:**

The medical researchers wants to download the mapping result from a mapping tasks.

### **Preconditions:**

1. User has available account.
2. The workspace of the user has a successfully mapped task.

### **Steps:**

1. The user successfully login.
2. The user go to the mapping task page.
3. The user click any successfully mapped task to go to the task detail.
4. The user click download button to download result.

### **Postcondition:**

The user will receive an excel file with mapping result will be downloaded.

# Version 1.0.0

## Use Case 1: Map Free-Text Clinical Text to Categories

### Rationale:

A medical researcher wants to map the short clinical text into certain or multiple categories in a universal indication list, automating the process and reducing manual effort.

### Preconditions:

1. The user has access to the clinical text mapping system.
2. A universal indication list is available and integrated with the system.
3. The clinical text to be mapped is provided in a suitable format.

### Steps:

1. The user inputs the free-text clinical text into the system.
2. The system processes the text and identifies possible categories from the universal indication list.
3. The system presents the suggested categories to the user.
4. The system maps the clinical text to the selected categories.
5. The user has the option to download the mapping results to save the mapping history and view it in the future.
6. The user can view the possible categories for each mapped item, allowing them to make decisions about the most appropriate category for the term.

### Alternative Paths:

1. If the system is unable to suggest appropriate categories, the user can manually search for and select categories from the universal indication list.
2. If the user needs to review or change the mapped categories later, they can access the mapping history and make updates.

### Postcondition:

The clinical text is successfully mapped to one or multiple categories in the universal indication list, and the user can download the results and view possible categories for each mapped item.

## Use Case 2: Curate the Mapping Results

### Rationale

The purpose of this module is to provide a mechanism for the user to correct any misclassifications made by the system when mapping free-text clinical data to different categories. The module is designed to provide a way for the user to review and curate the unrecognized and possible incorrect mappings so that the system can learn from this feedback and improve its accuracy over time.

### Preconditions

1. The user has access to the clinical text that needs to be mapped.
2. The system has already processed the clinical text and generated a set of preliminary mappings.
3. The system has identified at least one original text that fails to be mapped to a certain category or the user has identified at least one mapping that they believe to be incorrect.

### Steps

1. The module displays a list of the mappings that the users believe to be incorrect by filtering the confidence range or the mapping status.
2. The module displays the text that was mapped, along with the current mapping and the confidence score for that mapping.
3. The user can review the text and the current mapping, and can then choose to either correct the mapping or leave it unchanged.
4. If the user chooses to correct the mapping, the module displays a list of categories that the text could be mapped to.
5. The user selects the correct category from the list, and the module updates the mapping accordingly.
6. The user can repeat steps 2-7 for any other mappings that they believe to be incorrect.
7. When the user is finished reviewing and curating the mappings, they can submit their changes to the system.
8. The system uses the curated data to retrain its model, in order to improve the accuracy of future mappings.

### Alternative Paths

1. If the user does not identify any mappings that they believe to be incorrect, they can simply close the module without making any changes.
2. If the user encounters any technical issues or errors while using the module, they can contact technical support for assistance.

### Postconditions

1. The mappings have been reviewed and curated by the user, with any incorrect mappings corrected and any missing mappings added.
2. The curated data has been submitted to the system for retraining the mapping model.
3. The system has been improved with the curated data, leading to increased accuracy in future mappings.

## Use Case 3: Real-Time Dashboard for Clinical Text Mapping Metrics

### Rationale:

The real-time dashboard module is designed to provide stakeholders with a visual representation of the mapping performance in real time. It allows users to monitor the accuracy and efficiency of the mapping process, and make any necessary adjustments to improve the system's performance.

### Preconditions:

- The clinical text mapping system is up and running.
- The real-time dashboard module is installed and connected to the mapping system.
- There is a database containing the mapping metrics data.

### Steps:

1. Open the real-time dashboard module and log in.
2. The dashboard displays the overall mapping metrics, including the successful mapping rate and the number of mapped items.
3. The dashboard also displays the overall confidence level of the system in mapping the text.
4. Users can click on a specific category to view the performance of the mapping tool for that category.
5. The dashboard displays the proportion of each category in the mapped items.
6. Users can apply filters to view the mapping history by user or date range.
7. If the mapping performance is unsatisfactory, users can click on the specific category to view the individual items that were mapped incorrectly.
8. Users can manually correct the mapping for any incorrect items and update the mapping system with the new data.
9. The mapping system will re-train the machine learning model based on the corrected mapping data.
10. The user can download the mapping metrics data for further analysis.

### Alternative Paths:

- If the mapping system is not running or the real-time dashboard module is not connected, an error message will be displayed.
- If the user does not have the necessary permissions, they will not be able to access the real-time dashboard module.
- If there are no incorrectly mapped items, the correction step (steps 7 and 8) will not be necessary.

### Postconditions:

- The real-time dashboard module displays the mapping metrics data, allowing users to monitor the accuracy and efficiency of the mapping system.
- Users can manually correct any incorrectly mapped items, and feed them back into the system to improve the accuracy of the mapping tool.
- The mapping system re-trains the machine learning model based on the corrected mapping data.
- The mapping metrics data can be downloaded for further analysis.

## Use Case 4: Visualise the history of the mapping performance

### Rationale:

This is one of the key functional requirements of the project. Medical researchers need the system to show the historical mapping performance so that they can measure if the system is improving its accuracy.

### Preconditions:

- Medical researchers have accounts of the system
- The system have the mapping short text into terms implemented
- The user has at least one mapping result
- (Optional)The system can be retrained by curating the mapping results manually.

### Steps:

1. The user successfully logs in the system
2. The user clicks the mapping history button on the side navigation bar

### Alternative Paths:

- If the user has no mapping result before, the page will show empty
- If the user does not have permission to watch the mapping history, then the user cannot see the performance

### **Postconditions:**

- The user can see the overall training time
- The user can see the current curate rate and mapping failure rate
- The user can see the performance change over time

## Use Case 5: Filter the mapping history by user and date range

### **Rationale:**

This is a simple filter use case that allows the user to retrieve the mapping history of a specific person so that the team members can follow up with other team members' mapping

### **Preconditions:**

- The User successfully login
- The user is in a team
- The user has access to see other user's mapping
- Other user has mapping result

### **Steps:**

1. User login
2. User clicks the mapping history button on the side navigation bar, so the user can see a list of mapping history
3. The list shows the latest mapping history on the top
4. The user can filter those mapping histories by selecting the date and other users

### **Alternative Paths:**

- If the team does not have any mapping history, the mapping history page will be a blank page
- If the user does not allow to see the mapping history, then the user cannot see any mapping history

### **Postconditions:**

- The user can filter the mapping history in the order of date
- The user can filter the mapping history of specific users

## Use Case 6: Perform account operations for a medical researcher

### **Rationale:**

A medical researcher wants to log in to the account, edit personal information, and then view other users' previous mapping tasks.

### **Preconditions:**

1. Users have available accounts.
2. The username and password entered are accurate and matched.
3. The system holds the user's personal information.
4. Other users have mapping history.

### **Steps:**

1. The user enters the login interface of the system.
2. The user enters a username and password.
3. The user clicks the login button.
4. The system prompts the user to log in successfully and jumps to the main interface.
5. The user enters the account interface.
6. The system displays the user's personal information.
7. The user modifies personal information and submits it.
8. The user enters the History Stats screen.
9. The system displays other users' previous mapping tasks.

### **Alternative Paths:**

1. If the user enters an incorrect or mismatched username and password, the system will ask the user to re-enter it.
2. If the user's modified personal information does not match the rules, the system will ask the user to re-enter it.
3. If there are no mapping tasks for other users, the system will display an empty screen.

## **Postconditions:**

- After the user has viewed other users' previous mapping tasks, the user can make corrections to other users' mapping results.

## **Use Case 7: Perform account operations for an Admin User**

### **Rationale:**

An admin user wants to add an account to the system, add the account to a team, and then delete a member from a team.

### **Preconditions:**

1. The admin user enters the correct and matching username and password on the login screen.
2. The system shows that the admin user has logged in successfully.
3. The system provides functions for the team.

### **Steps:**

1. The admin user clicks the Create User button.
2. The system displays the Create User interface.
3. The admin user enters the user's information and submits it.
4. The system shows that the user has been created successfully.
5. The admin user enters the user interface of the created user.
6. The admin user adds the user to a team.
7. The system displays that the user joined the team successfully.
8. The admin user enters the team interface and selects a user.
9. The admin user clicks the Remove User button.
10. The system shows that the user was successfully removed from the team.

### **Alternative Paths:**

1. If the user information entered does not match the rules, the admin user needs to re-enter the information.
2. If the user wants to join a team that does not exist, the admin user needs to create a team first.
3. If the team that the user wants to join is full, the user will not be able to join.

## **Postconditions:**

- Users on the same team will be able to start collaborating on mapping.

## **Use Case 8: Admin Rollback Version of Mapped Categories**

### **Rationale:**

The admin user wants to rollback the versioning of mapped categories to a previous version in case of errors or inconsistencies in the current mapping.

### **Preconditions:**

1. The admin user has access to the clinical text mapping system.
2. The mapping system has previous versions of the mapped categories available.

### **Steps:**

1. The admin user logs into the mapping system.
2. The admin user accesses the mapping history and identifies the previous version of the mapped categories that they wish to restore.
3. The admin user selects the previous version to restore.
4. The system restores the selected version and replaces the current mapping with the restored version.
5. The system updates the mapping history to reflect the rollback and the restored version.

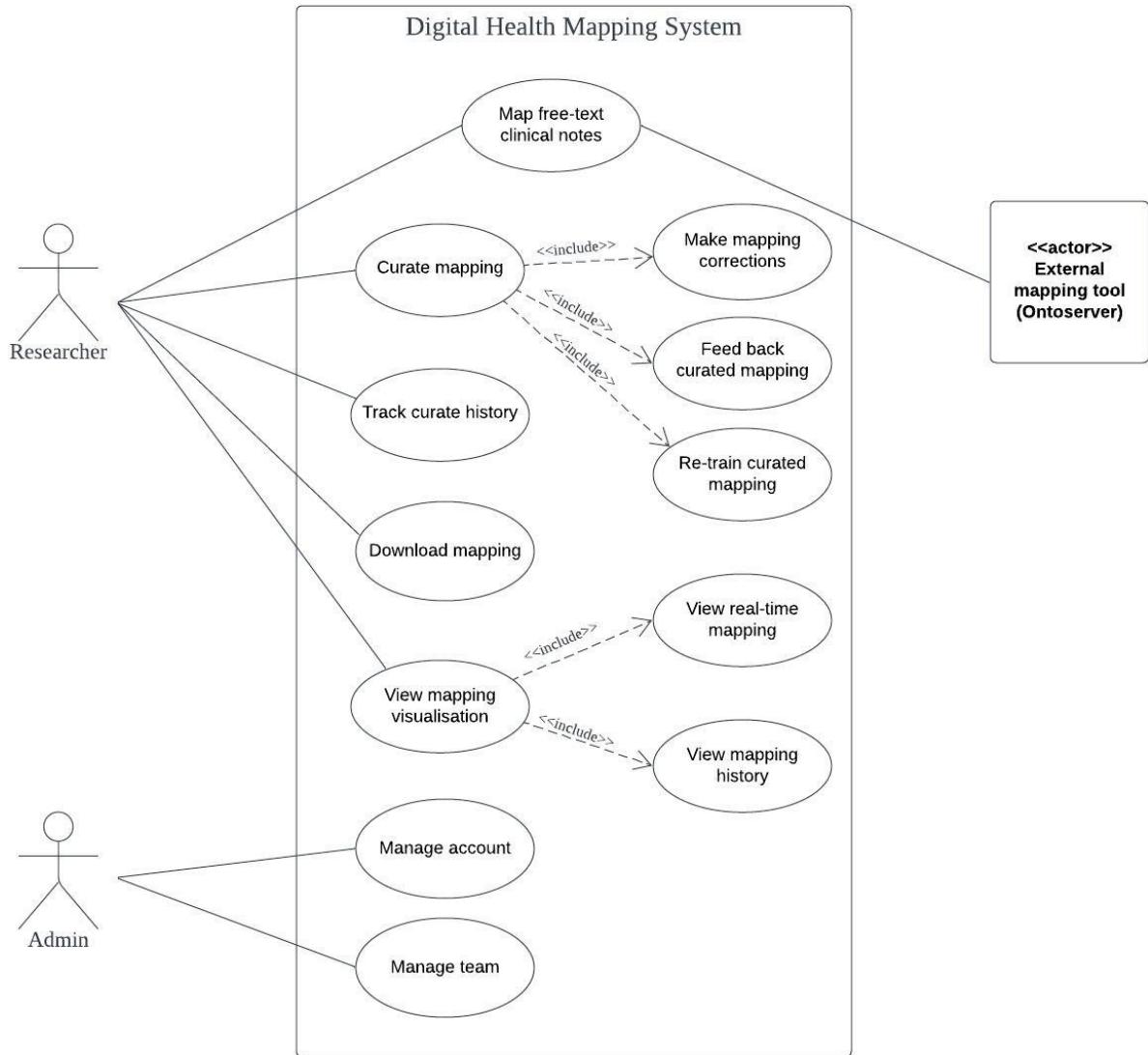
### **Alternative Paths:**

1. If the admin user is unsure about which version to restore, they can preview the previous versions and their mapping results before selecting one to restore.
2. If the admin user encounters errors or inconsistencies in the restored version, they can repeat the rollback process and select a different version to restore.

### **Postcondition:**

The admin user successfully rolls back the version of mapped categories to a previous version in the mapping system, and the system updates the mapping history to reflect the rollback and the restored version.

## Overall Use Case Diagram



# Product Backlog

Version ID	Description	Date
2.0.0	1. Add table to clearly show the product backlog 2. Align with <a href="#">User Stories and Acceptance Criteria</a> modified by new requirements	21 Apr 2023
1.0.0	Basic product backlog using user story map framework	23 Mar 2023

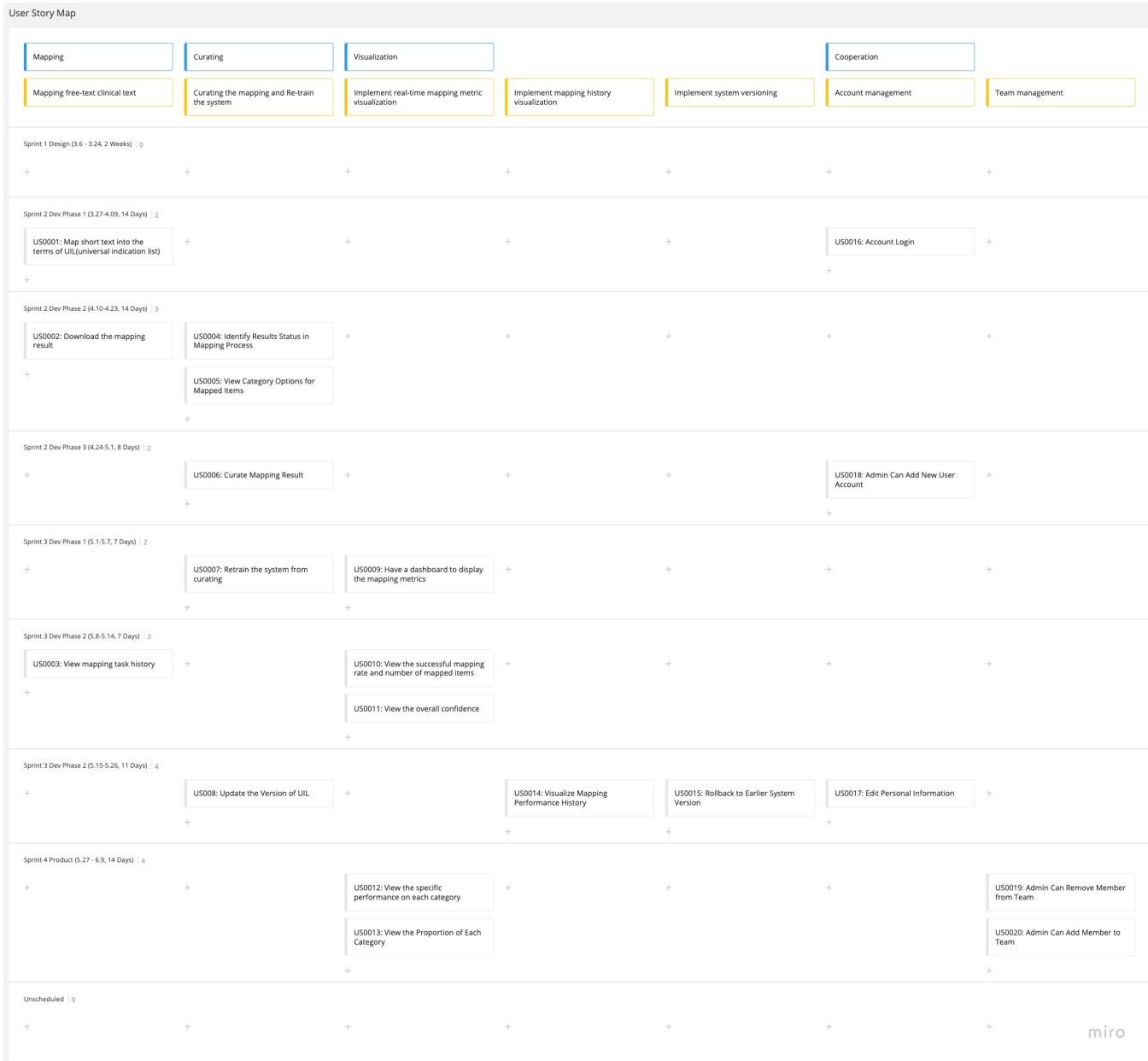
## Version 2.0.0

### Table View

Epic	Feature	StoryID	Priority	User	Story/Scenario	Estimate	MoSCoW Priority	Story Point
Epic 1 - Map free-text clinical text	Map short text into the terms of UIL(universal indication list)	US0001	1	Medical Researcher	<b>As a medical researcher</b> <b>I want to</b> map the short text into certain or multiple categories in a universal indication list <b>So that</b> I do not need to map the text manually	XL	Must Have	8
	Download Mapping Results	US0002	2	Medical Researcher	<b>As a medical researcher</b> <b>I want to</b> download the mapping results <b>So that</b> I can save the mapping history and view it in the future	S	Must Have	3
	View mapping task history	US0003	7	Medical Researcher	<b>As a medical researcher</b> <b>I want to</b> view my own and team members' previous mapping task <b>So that</b> I can review the mapping results and performance	L	Must	5
Epic 2 - Curate the mapping and re-train the system	Identify Results Status in Mapping Process	US0004	3	Medical Researcher (Curator)	<b>As a medical researcher (curator)</b> <b>I want to</b> easily identify the status of the mapping process for each raw text input <b>So that</b> I can quickly determine if further curation or review is needed	M	Must Have	5
	View Category Options for Mapped Items	US0005	4	Medical Researcher (Curator)	<b>As a medical researcher (curator)</b> <b>I want to</b> see a list of category options while curating the data <b>So that</b> I can choose the correct category for the incorrect mapping or unmapped items	M	Must Have	3
	Curate Mapping Result	US0006	5	Medical Researcher (Curator)	<b>As a medical researcher (curator)</b> <b>I want to</b> review and curate the failed-mapping result or mapping results of raw text to SNOMED-CT into UIL <b>So that</b> I can give feedback to the system and improve it	M	Must Have	5
	Retrain the system from curating	US0007	6	Medical Researcher (Curator)	<b>As a medical researcher (curator)</b> <b>I want to</b> re-train the system using the curated data <b>So that</b> I can make the system have a better mapping performance in the future	L	Must Have	5
	Update the Version of UIL	US0008	8	Admin user	<b>As an admin user</b> <b>I want to</b> update the UIL to the latest version <b>So that</b> I can access the most up-to-date term for curation	M	Must have	5

Epic 3 - Implement mapping metric visualization	Have a dashboard to display the mapping metrics	US0009	9	Medical Researcher	<b>As a medical researcher</b>  <b>I want to</b> have a dashboard to display the mapping metrics for a mapping task  <b>So that</b> I can review and analyze mapping results	L	Must Have	8
	View the successful mapping rate and number of mapped items	US0010	14	Medical Researcher	<b>As a medical researcher</b>  <b>I want to</b> view the successful mapping rate and number of mapped items in a dashboard  <b>So that</b> I can assess the performance of the system on current mapping task	S	Should Have	5
	View Overall Confidence	US0011	15	Medical Researcher	<b>As a medical researcher (curator)</b>  <b>I want to</b> view the overall confidence in a dashboard  <b>So that</b> I can assess the performance of the system on current mapping task	S	Should Have	3
	View Specific Performance of Each Category	US0012	16	Medical Researcher	<b>As a medical researcher</b>  <b>I want to</b> view the specific performance of each category  <b>So that</b> I can know the system performance among different categories	M	Could Have	5
	View Proportion of Each Category	US0013	17	Medical Researcher	<b>As a medical researcher</b>  <b>I want to</b> view the proportion of each category  <b>So that</b> I can know the distribution of different categories	S	Could Have	5
Epic 3 - Implement mapping history visualization	Visualize Mapping Performance History	US0014	11	Medical Researcher	<b>As a medical researcher</b>  <b>I want to</b> visualize the history of the mapping performance  <b>So that</b> I can measure the mapping quality	XL	Should Have	8
	Rollback to Earlier System Version	US0015	12	Admin User	<b>As a admin user</b>  <b>I want to</b> rollback to earlier (default) version of the mapping system  <b>So that</b> I can restore the default behaviour of the system	M	Should Have	5
Epic 4 - Manage account	Account Login	US0016	10	Medical Researcher	<b>As a medical researcher</b>  <b>I want to</b> login my account  <b>So that</b> I can be identified by the system for curating.	S	Must Have	3
	Edit Personal Information	US0017	18	Medical Researcher	<b>As a medical researcher</b>  <b>I want to</b> edit my personal information  <b>So that</b> I can update my roles and responsibilities.	S	Could Have	2
	Add New User Account	US0018	13	Admin User	<b>As a medical researcher</b>  <b>I want to</b> add an account to the system  <b>So that</b> I can give other people access to the system.	M	Should Have	5
Epic 5 - Manage team	Add Member to Team	US0019	19	Admin User	<b>As a medical researcher</b>  <b>I want to</b> add the account to a team  <b>So that</b> I can let people on the same team work together.	S	Could Have	1
	Delete Member from Team	US0021	20	Admin User	<b>As a medical researcher</b>  <b>I want to</b> delete a member from a team  <b>So that</b> I can remove a member's privileges in a team	S	Could Have	1

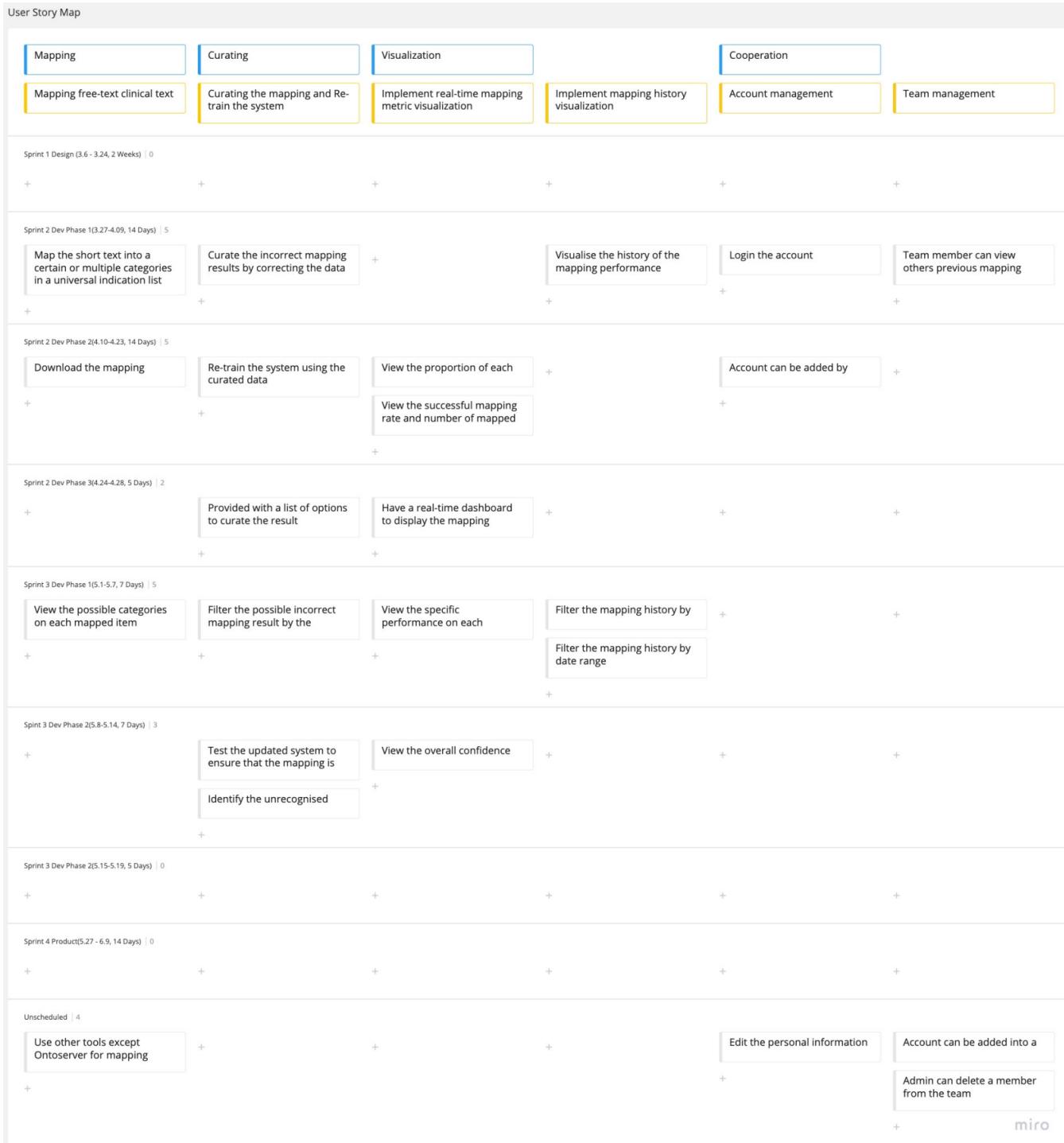
## User Story Map Framework



miro

## Version 1.0.0

### User Story Map Framework



# Milestones

## Sprint 1 - Design Sprint

There are four milestones during the development of our sprint 1, each of which took us a week to accomplish.

Sprint 1 is the design sprint, which means that the design and plan of the project are the core of this period.

Milestones	Date	Completed artifacts
Milestone1	From February 27th to March 5th	<ul style="list-style-type: none"><li>• Role assignments during the inception</li><li>• Technologies being considered include deployment platform</li><li>• Contact Client</li></ul>
Milestone2	From March 6th to March 12th	<ul style="list-style-type: none"><li>• User Stories</li><li>• Initial system architecture</li><li>• Functional &amp; Non-functional Requirements</li></ul>
Milestone3	From March 13th to March 19th	<ul style="list-style-type: none"><li>• Product Backlog on Trello</li><li>• The motivational model</li><li>• Development Environment Plan</li><li>• Github initialization</li></ul>
Milestone4	From March 20th to March 26th	<ul style="list-style-type: none"><li>• Digital Prototype</li><li>• Product Backlog</li><li>• Reviews of Tasks</li><li>• Personas</li><li>• Sprint 2 and sprint3 Roles Assignment</li></ul>

## Sprint 2 - Development

There are four milestones during the development of our sprint 2, each of which took us a week to accomplish.

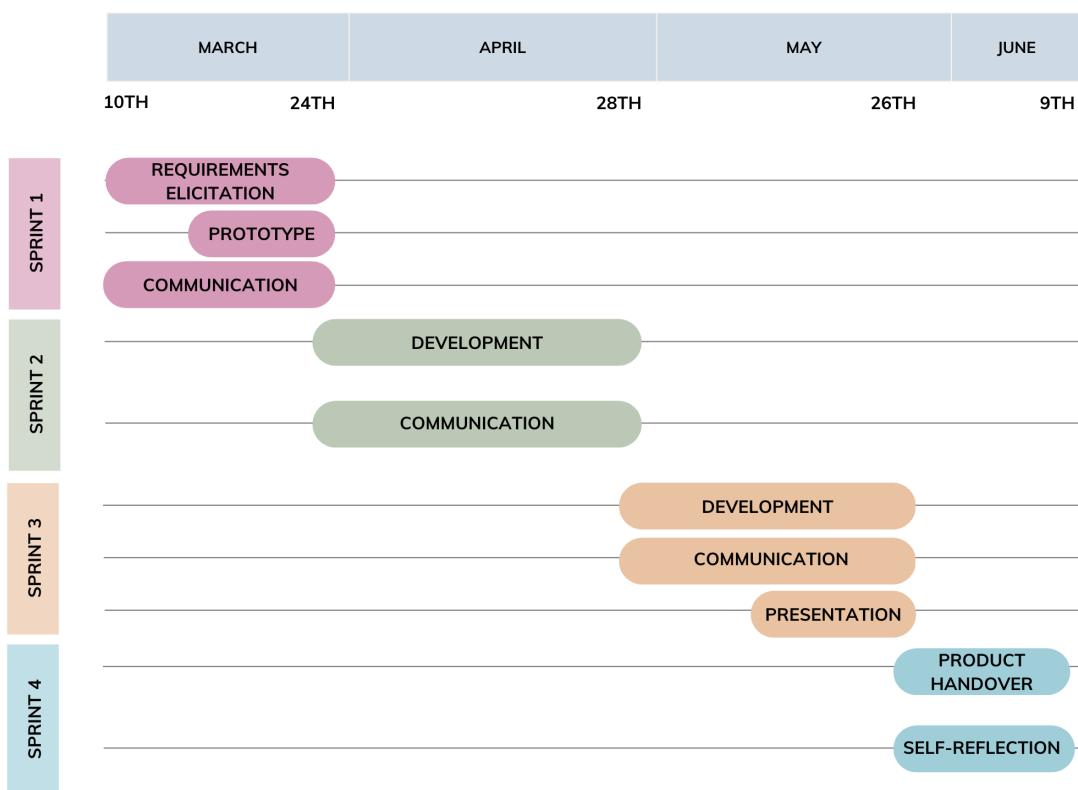
The days from April 10 to April 16 are during the Non-teaching period of the university.

Sprint 1 is the development sprint, which means that the implementation of the user stories is the core of this period.

Milestones	Date	Completed artifacts
Milestone1	From March 27 to April 2	<ul style="list-style-type: none"><li>• Account Login</li><li>• Modify the sprint 1 confluence documentation</li><li>• Auto deployment using scripts</li></ul>
Milestone2	From April 3th to April 9th	<ul style="list-style-type: none"><li>• Map short text into the terms of UIL(universal indication list)</li><li>• Add on Ontoserver Licensing information on the Confluence page</li></ul>
Milestone3	From April 17th to April 23rd	<ul style="list-style-type: none"><li>• Identify Unrecognized Results in Mapping Process</li></ul>
Milestone4	From April 24th to May 1st	<ul style="list-style-type: none"><li>• Download Mapping Results</li><li>• Write and organize all documents on the Confluence</li><li>• Successful submission</li></ul>

# Timeline

Title	Creator	Modified
Sprint 3 - Development	Ricardo Luo	yesterday at 12:38 AM
Sprint 2 - Development	Ricardo Luo	yesterday at 12:38 AM
Sprint 1 - Design Sprint	Chenyang Dong	yesterday at 12:36 AM
Sprint 4 - Product	Chenyang Dong	30 Mar, 2023



# Sprint 1 - Design Sprint

Title	Creator	Modified
<a href="#">Sprint 1 - Review</a>	Chenyang Dong	yesterday at 10:43 PM
<a href="#">Sprint 1 - Plan</a>	Chenyang Dong	yesterday at 10:40 PM

# Sprint 1 - Plan

## 1 Sprint goals

- To build a substantial foundation for the project by producing critical design including user stories, product backlog, and digital prototype.
- Compose the functional and non-functional requirements of the project.
- Decompose the requirements into user stories.
- Provide a digital prototypes to client.
- Assign roles for team members.

## 2 Roles and Responsibility

- [Role Assignment](#)

## 3 Task Planning

- Contact Client
- User Stories
- Initial system architecture
- Development Environment Plan
- Summarise Functional & Non-functional Requirements
- The motivational model
- Role assignments during the inception
- Meeting minutes all the time
- Technologies being considered include deployment platform
- Personas
- Product Backlog on Trello
- Github initialization
- Reviews of Tasks on Trello
- Digital Prototype
- Sprint 2/3 Role Assignment

# Sprint 1 - Review

## 1 Introduction

- Date: from 27 Feb 2023 to 24 Mar 2023
- Sprint Name/Number: Sprint 1 - Design Sprint
- Attendees (Team members, Product Owner, Scrum Master, stakeholders):
  - Clients: Daniel Capurro, Vlada Rozova, Mike Conway
  - Supervisor: Mauro Mello Jr
  - Team members: Kunxi (Quincy) Sun, Chenyang (Peter) Dong, Hanyi (Henry) Gao, Yue (Molly) Fei, Yulai (Ricardo) Luo

## 2 Sprint Goals

- Compose the [functional](#) and [non-functional](#) requirements of the project.
- Decompose the requirements into [user stories](#) and [acceptance criteria](#).
- Provide a [digital prototypes](#) to client.
- Assign [roles](#) for team members.

## 3 Completed Work

Task	Complete?	Comment
Contact Client	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"><li>• <a href="#">Communication with Clients</a></li></ul>
User Stories	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"><li>• <a href="#">User Stories and Acceptance Criteria</a></li></ul>
Initial system architecture	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"><li>• <a href="#">Architecture</a></li></ul>
Development Environment Plan	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"><li>• <a href="#">Server configuration</a></li></ul>
Summarise Functional & Non-functional Requirements	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"><li>• <a href="#">Functional Requirements</a></li><li>• <a href="#">Non-Functional Requirements</a></li></ul>
The motivational model	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"><li>• <a href="#">Motivational Model</a></li></ul>
Role assignments during the inception	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"><li>• <a href="#">Sprint 1 - Plan</a></li></ul>
Meeting minutes all the time	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"><li>• <a href="#">Meetings</a></li></ul>
Technologies being considered include deployment platform	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"><li>• <a href="#">Technique Detail</a></li></ul>
Personas	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"><li>• <a href="#">Personas</a></li></ul>
Product Backlog on Trello	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"><li>• <a href="#">Trello (Join by Invitation Link)</a></li></ul>

Github initialization	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>• <a href="#">Github</a></li> </ul>
Reviews of Tasks on Trello	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>• <a href="#">Trello (Join by Invitation Link)</a></li> </ul>
Digital Prototype	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>• <a href="#">Digital Prototype</a></li> </ul>
Sprint 2/3 Role Assignment	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> <li>• <a href="#">Sprint 2 - Plan</a></li> <li>• <a href="#">Sprint 3 - Plan</a></li> </ul>

## 4 Incomplete Work

- User stories or tasks not completed during the sprint:  
None
- Explain the reasons for not completing the work and any related challenges:  
None

## 5 Metrics

- Total number of story points completed:  
None
- Total number of story points planned:  
None
- Velocity (completed story points / planned story points):  
None
- Burndown chart (if applicable):  
None
- There are no story points completed in the design sprint.

## 6 Stakeholder Feedback

### 6.1 Stakeholder's feedback and suggestions for improvement:

- Our client suggested that we could develop more mapping ideas and methods.
- Our supervisor suggested that we should focus more on the documentation for the first sprint instead of the code.

### 6.2 How the feedback will be addressed in future sprints:

- In response to our client's suggestion, we decided to research more technical papers on mapping to get inspiration
- In response to our supervisor's suggestion, we decided to add more details to the Confluence pages.

## 7 Next Steps

### 7.1 Plan for the next sprint:

- The next sprint is the development sprint, which means that we will focus more on coding.
- The planned user stories which will be implemented in sprint 2 are:

US0001, US0002, US0004, US0006, US0007, US0019 and US0021

## 7.2 Adjustments needed based on the sprint review feedback:

- We planned to read more papers for finding a more accurate and efficient mapping approach.
- And we will continue to do detailed documentation.

## 7.3 Schedule the next sprint planning meeting:

- We plan the sprint 2 planning meeting on 24 Mar 2023.

# 8 Closing Remarks

## 8.1 Final thoughts or comments on the sprint and the review from team members and stakeholders:

- **Team members:**

Teamwork is vital and we need more meetings to thoroughly understand each other's perspectives. At the moment, we are working well together as a team and we hope that the sprint will be the same afterward!

# Sprint 2 - Development

Title	Creator	Modified
<a href="#">Sprint 2 - Plan</a>	Chenyang Dong	yesterday at 10:47 PM
<a href="#">Sprint 2 - Review</a>	Chenyang Dong	yesterday at 10:46 PM
<a href="#">Sprint 2 - Backlog</a>	Chenyang Dong	yesterday at 1:24 AM

# Sprint 2 - Plan

## 1 Sprint Goals

- Enable efficient and accurate mapping of short text into the terms of the Universal Indication List (UIL) by developing a mapping system, allowing for account login and management, and providing category options for mapped items

## 2 Roles and Responsibility

- [Role Assignment](#)

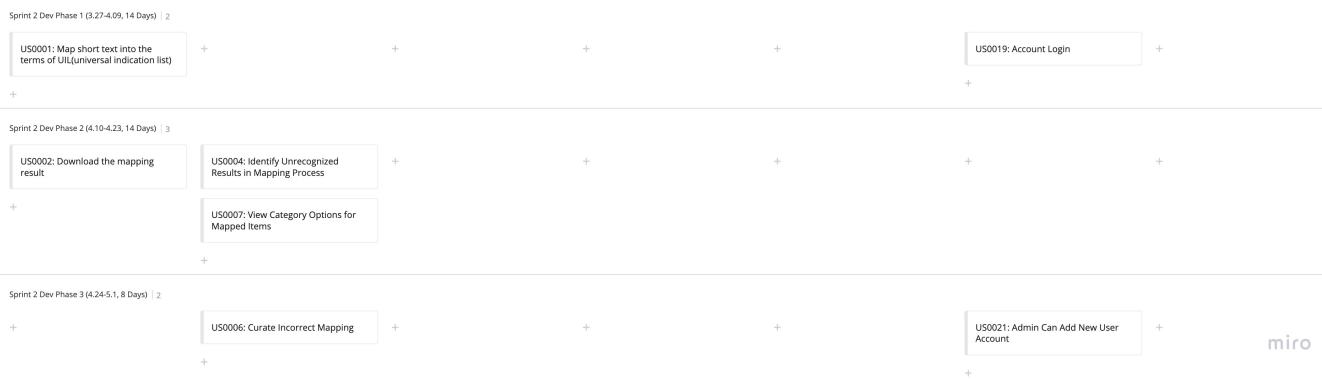
## 3 Planning

### 3.1 Techniques to use

- Backend: Python Flask, Nginx, Gunicorn, Docker, Ansible
- Frontend: React, HTML, JS, CSS, Ant Design
- Database: MongoDB
- Mapping tool: Ontoserver and other potential alternatives
- [Technique Detail](#)

### 3.2 Backlog with Phase Plan

*Table view of backlog in [Sprint 3 - Review](#)*



## 4 Infrastructure for Continuous Integration

- [Team Development Cloud Server configuration](#)

# Sprint 2 - Backlog

## Table View

Feature	StoryID	Story/Scenario	MoSCoW Priority	Story Point	Subtask [Estimate]	Status	Assigned To	Due Date	Comment
Map short text into the terms of UIL(universal indication list)	US0001	<b>As a medical researcher</b>  <b>I want to</b> map the short text into certain or multiple categories in a universal indication list  <b>So that</b> I do not need to map the text manually	Must Have	8	<input checked="" type="checkbox"/> Implement the single text mapping user interface [1 hour]  <input checked="" type="checkbox"/> Implement the CSV file mapping user interface with a browse button [1 hour]  <input checked="" type="checkbox"/> Create a function for submitting short text and retrieving mapped categories using the Ontoserver API [1 hour]	DONE DONE DONE	Hanyi Gao Hanyi Gao Hanyi Gao	09 Apr 2023 09 Apr 2023 09 Apr 2023	Due to complexity of this function, change of mapping requirements and and recent notice that the deployment environment does not allow constant use of external endpoints, our progress was impacted.  New approach is going to be experimented to combine with existing mapping tool to fulfill the requirements in the next sprint.
Download Mapping Results	US0002	<b>As a medical researcher</b>  <b>I want to</b> download the mapping results  <b>So that</b> I can save the mapping history and view it in the future	Must Have	3	<input checked="" type="checkbox"/> Develop the 'Download' button user interface for the input CSV file [1 hour]	DONE	Hanyi Gao	23 Apr 2023	
					<input type="checkbox"/> Develop a secure API endpoint to retrieve the mapping results for the input CSV file [3 hours]	TO DO	Chenyang Dong	23 Apr 2023	Delayed to next sprint due to being blocked by mapping result.
					<input type="checkbox"/> Create API endpoint for retrieving mapping results [2 hours]	TO DO	Chenyang Dong	23 Apr 2023	

						<input type="checkbox"/> Connect the 'Download' button to the API endpoint to trigger the file download [1 hour]	TO DO	Hanyi Gao	23 Apr 2023	
Identify Results Status in Mapping Process	US0004	As a medical researcher (curator)  <b>I want to</b> easily identify the status of the mapping process for each raw text input  <b>So that</b> I can quickly determine if further curation or review is needed	Must Have	5		<input checked="" type="checkbox"/> Implement the unrecognized results user interface by adding mapping status for the result [2 hours]	DONE	Hanyi Gao	23 Apr 2023	Modified after change of output requirements of four different scenarios.  2023-04-14 Change of Mapping Requirements
Curate Mapping Result	US0006	As a medical researcher (curator)  <b>I want to</b> review and curate the failed-mapping result or mapping results of raw text to SNOMED-CT into UIL  <b>So that</b> I can give feedback to the system and improve it	Must Have	5		<input checked="" type="checkbox"/> Implement the curation user interface [1 hour]	DONE	Hanyi Gao	28 Apr 2023	
						<input type="checkbox"/> Create API endpoint for submitting curated data [1 hour]	TO DO	Chenyang Dong	28 Apr 2023	Approach to make curation improve the system TBD depends on the method finally used
View Category Options for Mapped Items	US0005	As a medical researcher (curator)  <b>I want to</b> see a list of category options while curating the data  <b>So that</b> I can choose the correct category for the incorrect mapping or unmapped items	Must Have	3		<input checked="" type="checkbox"/> Develop the category options dropdown user interface [1 hour]	DONE	Hanyi Gao	23 Apr 2023	Different level of category options according to UIL.
						<input checked="" type="checkbox"/> Add functionality to handle medical researchers' category selections [2 hours]	DONE	Hanyi Gao	23 Apr 2023	After Selecting from the UIL, the mapping status will become 'Reviewed'
Account Login	US0016	As a medical researcher  <b>I want to</b> login my account  <b>So that</b> I can be identified by the system for curating.	Must Have	3		<input checked="" type="checkbox"/> Develop the login user interface based on the approved design [1 hour]	DONE	Hanyi Gao	09 Apr 2023	With email and password
						<input checked="" type="checkbox"/> Develop a secure API endpoint for user authentication [1 hour]	DONE	KUNXI SUN	09 Apr 2023	
						<input checked="" type="checkbox"/> Implement input validation on the front-end [1 hour]	DONE	Hanyi Gao	09 Apr 2023	
						<input checked="" type="checkbox"/> Connect front-end login to the authentication API [2 hours]	DONE	Hanyi Gao	09 Apr 2023	
Add New User Account	US0018	As an admin user  <b>I want to</b> add an account to the system  <b>So that</b> I can give other people access to the system	Should Have	5		<input type="checkbox"/> Develop the 'Add New User' user interface [1 hour]	IN PROGRESS	Ricardo Luo	28 Apr 2023	
						<input type="checkbox"/> Create API endpoint for sending email invitations [1 hour]	IN PROGRESS	Ricardo Luo	28 Apr 2023	

					<input type="checkbox"/> Connect the 'Add New User' UI to the email invitation API [1 hour]	TO DO	Ricardo Luo	28 Apr 2023
					<input type="checkbox"/> Implement email-sending functionality [2 hours]	IN PROGRESS	Ricardo Luo	28 Apr 2023

# Sprint 2 - Review

This sprint review note is the discussion result based on the [Sprint 2 Review Meeting](#).

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## 1 Introduction

- Date: from 27 Mar 2023 to 01 May 2023
- Sprint Name/Number: Sprint 2 - Develop sprint
- Attendees (Team members, Product Owner, Scrum Master, stakeholders):
  - Clients: Daniel Capurro, Vlada Rozova, Mike Conway
  - Supervisor: Mauro Mello Jr
  - Team members: Kunxi (Quincy) Sun, Chenyang (Peter) Dong, Hanyi (Henry) Gao, Yue (Molly) Fei, Yulai (Ricardo) Luo

## 2 Sprint Goals

- Enable efficient and accurate mapping of short text into the terms of the Universal Indication List (UIL) by developing a mapping system, allowing for account login and management, and providing category options for mapped items

## 3 Completed Work

- Finished user stories:
  - US0004: Identify Results Status in Mapping Process
  - US0005: View Category Options for Mapped Items
  - US0016: Account login
  - US0018: Add New User Account
- CI/CD: Script to auto-deploy services: gateway, map, auth, web, MongoDB and the ChatGPT code review.
- System testing for all finished features
- Deployment

## 4 Incomplete Work

- Incomplete user stories:
  - US0001: Map short text into the terms of UIL(universal indication list)

Reason: Due to the complexity of this function, [change of mapping requirements](#) and [recent notice that the deployment environment does not allow constant use of external endpoints](#), our progress was impacted. A new approach is going to be experimented with to combine with the existing mapping tool to fulfill the requirements in the next sprint.

- US0002: Download the mapping results  
Reason: Delayed to the next sprint due to being blocked by the mapping approach.
- US0006: Curate Mapping Result  
Reason: Delayed to the next sprint as well due to being blocked by the mapping approach.

## 5 Metrics

- Total number of story points completed: 16
- Total number of story points planned: 30
- Velocity (completed story points / planned story points): 0.53

## 6 Stakeholder Feedback

- Stakeholder's feedback and suggestions for improvement:
  - Clients suggest that we can develop our own algorithm as well as look into MedCAT since the requirements change.
  - Clients suggest that we could catch up on the current sprint and adjust to the next sprint as soon as possible.
  - The supervisor suggest that we could create a more organised timeline and urge each member to complete the corresponding tasks on time.
- How the feedback will be addressed in future sprints:
  - We accept the client's advice and plan to develop our own algorithm while also continuing to develop MedCAT.
  - We aim to complete our delayed work as soon as possible and will incorporate risk management into the upcoming sprints.

## 7 Reflection

- Over-relying on one approach and wasting too much time on Ontoserver(The mapping tool) cause the following issues:
  - Deploying Ontoserver in Australia and out of Australia is different, but the production environment will be in Australia so figuring out how to deploy Ontoserver in and out of Australia is quite a waste of effort.
  - One of the team members is in China which makes him unable to deploy Ontoserver locally.
  - Team didn't realise the risk of disability by using third-party tools such as Ontoserver.
- Lose communication with clients about the SRE(production environment).
- Could have done a better job with risk management, such as tracking the production environment, and managing risk of using Ontoserver as the only mapping tool.
- Tasks on Trello should be assigned to the person with a due date ---- Scrum master could manage the project progress by tracking the team member's tasks.
- Team members unfamiliar with the techniques used in this project ---- can be solved to have more pair programming on Zoom.
- Lack of regular weekly team meetings ---- can be solved to hold regular team meetings.

## 8 Decision and Next Steps

- Better risk management:
  - Currently we only specify the risk with description and progress update on Trello with a due date
  - In the following sprint, risk response strategy could be documented to help with responding the risk
- Regular internal team meeting, everyday on 9pm
- Regular pair programming: can be held by all team members, and can be held by 2-3 people
- Better task management: task assign to a person with due dates and scrum master track team member's task
- Plan for the next sprint:
  - Finish the core user stories by using MedCAT or a self-implemented algorithm at the beginning of 15 days.
  - Implement GitHub Actions to do CI/CD.
  - Decide to use MedCAT or a self-implemented mapping algorithm.
- Adjustments needed based on the sprint review feedback:
  - The team organises a meeting for about one to two hours every day to implement tasks together
  - Every team member spends more time on the project
- Move on sprint 3 planning meeting after sprint 2 review meeting

## 9 Closing Remarks

### 9.1 Final thoughts or comments on the sprint and the review from team members and stakeholders:

- **Team members:**

Our team believes that we urgently need to accelerate our progress. Due to some technical difficulties and unexpected changes, our sprint 2 is not progressing as expected. In our next sprint, we need to keep the lessons of sprint 2 in mind. We need to prepare multiple alternatives. If a development solution fails, we need to start a new one soon to save time.

- **Stakeholders:**

Although our team spent a lot of time trying out the mapping approach in sprint 2, our current product is still good and we are not behind in our development.

# Sprint 3 - Development

Title	Creator	Modified
<a href="#">Sprint 3 - Plan</a>	<a href="#">Chenyang Dong</a>	yesterday at 11:06 PM
<a href="#">Sprint 3 - Backlog</a>	<a href="#">Chenyang Dong</a>	yesterday at 11:03 PM

# Sprint 3 - Plan

## 1 Sprint Goal

- Complete the remaining user stories from sprint 2
- Finish major user stories in the first 15 days (mapping, curate, visualise and download)
- Additionally, if possible, implement optional features in product backlogs.

## 2 Roles and Responsibility

- [Role Assignment](#)

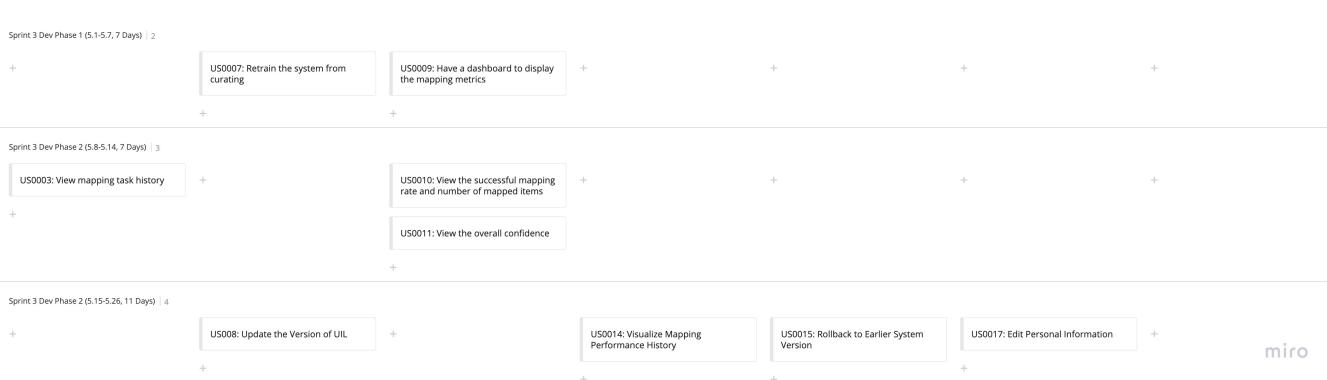
## 3 Planning

### 3.1 Tasks details

- Implement user stories: Use the first 15 days of the next sprint to implement the following user stories
  - Mapping function: Finish these core user stories by using MedCAT or a self-implemented algorithm.
  - Visualisation: Follow the requirements from the client to implement the front-end pages.
  - Curate:
- Testing: Use the rest of the sprint to do testing and implement additional trivial user stories.
- CI/CD: implement GitHub Actions to do CI/CD (combine with the current Ansible script which is used for handover-deploy)

### 3.2 User stories map

Table view of backlog in [Sprint 3 - Backlog](#)



### 3.3 Addition tasks/rules

- Better risk management:
  - Currently, we only specify the risk with a description and progress update on Trello with a due date
  - In the following sprint, the risk response strategy could be documented to help with responding to the risk
- Regular internal team meeting, every day at 9 pm
- Regular pair programming: can be held by all team members, and can be held by 2-3 people
- Better task management: task assigned to a person with due dates and scrum master track team member's task

# Sprint 3 - Backlog

## Table View

Feature	StoryID	Story/Scenario	MoSCoW Priority	Story Point	Subtask [Estimate]	Status	Assigned To	Due Date	Comment
Map short text into the terms of UIL(universal indication list) [From Sprint 2]	US0001	<b>As a medical researcher</b>  <b>I want to</b> map the short text into certain or multiple categories in a universal indication list  <b>So that I</b> do not need to map the text manually	Must Have	8	<input type="checkbox"/> Preprocess the raw text [1 hour]	IN PROGRESS	Yue Fei	07 May 2023	Not required if MedCAT is finally selected
					<input type="checkbox"/> Map the short text into certain or multiple categories in SNOMED CT [3 hours]	IN PROGRESS	Chenyang Dong	14 May 2023	Unique preprocessing guide for clinical terms  Custom algorithm and MedCAT implementing at the same time
					<input type="checkbox"/> Further match the mapping result from SNOMED CT into UIL [2 hours]	IN PROGRESS	Hanyi Gao	14 May 2023	Based on current assumption from client, this is easy to implement. However, by observing the UIL, the assumption might change in the future when it is confirmed.
Download Mapping Results [From Sprint 2]	US0002	<b>As a medical researcher</b>  <b>I want to</b> download the mapping results  <b>So that I</b> can save the mapping history and view it in the future	Must Have	3	<input type="checkbox"/> Develop a secure API endpoint to retrieve the mapping results for the input CSV file [3 hours]	TO DO	Chenyang Dong	07 May 2023	
					<input type="checkbox"/> Create API endpoint for retrieving mapping results [2 hours]	TO DO	Chenyang Dong	07 May 2023	
					<input type="checkbox"/> Connect the 'Download' button to the API endpoint to trigger the file download [1 hour]	TO DO	Hanyi Gao	07 May 2023	
View mapping task history	US0003	<b>As a medical researcher</b>  <b>I want to</b> view my own and team members' previous mapping task  <b>So that I</b> can review the mapping results and performance	Must	5	<input type="checkbox"/> Create a backend API for fetching mapping task history	TO DO	Chenyang Dong	14 May 2023	
					<input type="checkbox"/> Develop a frontend component for displaying mapping task history (card style)	TO DO	Hanyi Gao	14 May 2023	

					<input type="checkbox"/> Integrate the frontend component with the backend API  <input type="checkbox"/> Implement search and filtering functionalities (by date range or user) for mapping task history	TO DO	Hanyi Gao	14 May 2023	
					<input type="checkbox"/> Create a backend API endpoint to gather and store curated data for submitting [1 hour]	TO DO	TBD	26 May 2023	
Curate Mapping Result [From Sprint 2]	US0006	<b>As a medical researcher (curator)</b>  <b>I want to</b> review and curate the failed-mapping result or mapping results of raw text to SNOMED-CT into UIL  <b>So that I can give feedback to the system and improve it</b>	Must Have	5	<input type="checkbox"/> Create a function to update the downloadable data with the curated mapping results	TO DO	Chenyang Dong	14 May 2023	
Retrain the system from curating	US0008	<b>As a medical researcher (curator)</b>  <b>I want to</b> re-train the system using the curated data  <b>So that I can make the system have a better mapping performance in the future</b>	Must Have	5	<input type="checkbox"/> Collect curated data from via the API created in US0006  <input type="checkbox"/> Create a backend API for retraining the system  <input type="checkbox"/> Adapt the system's training algorithm to incorporate the curated data	TO DO	TBD	14 May 2023	
Update the Version of UIL	US0025	<b>As an admin user</b>  <b>I want to</b> update the UIL to the latest version  <b>So that I can access the most up-to-date term for curation</b>	Must Have	5	<input type="checkbox"/> Develop the interface to allow uploading a format-compatible file of the new UIL version  <input type="checkbox"/> Develop a version comparison tool  <input type="checkbox"/> Communicate the UIL version update or display the version of UIL on the interface	TO DO	Yue Fei	19 May 2023	
Add New User Account [From Sprint 2]	US0021	<b>As a medical researcher</b>  <b>I want to</b> add an account to the system  <b>So that I can give other people access to the system</b>	Should Have	5	<input type="checkbox"/> Develop the 'Add New User' user interface [1 hour]	IN PROGRESS	Ricardo Luo	07 May 2023	

						<input type="checkbox"/> Create API endpoint for sending email invitations [1 hour]	<span style="background-color: #2e7131; color: white; padding: 2px 5px;">IN PROGRESS</span>	Ricardo Luo	07 Apr 2023	
						<input type="checkbox"/> Connect the 'Add New User' UI to the email invitation API [1 hour]	<span style="background-color: #d9e1f2; color: #555; padding: 2px 5px;">TO DO</span>	Ricardo Luo	07 May 2023	
						<input type="checkbox"/> Implement email-sending functionality [2 hours]	<span style="background-color: #2e7131; color: white; padding: 2px 5px;">IN PROGRESS</span>	Ricardo Luo	07 May 2023	
Have a dashboard to display the mapping metrics	US0010	<b>As a medical researcher</b>  <b>I want to</b> have a dashboard to display the mapping metrics for a mapping task  <b>So that</b> I can review and analyze mapping results	Must Have	8		<input type="checkbox"/> Develop the interface of data visualization components	<span style="background-color: #d9e1f2; color: #555; padding: 2px 5px;">TO DO</span>	Hanyi Gao	07 May 2023	Component of the dashboard in US0010
						<input type="checkbox"/> Integrate the dashboard with the mapping system	<span style="background-color: #d9e1f2; color: #555; padding: 2px 5px;">TO DO</span>	TBD	14 May 2023	
View the successful mapping rate and number of mapped items	US0011	<b>As a medical researcher</b>  <b>I want to</b> view the successful mapping rate and number of mapped items in a dashboard  <b>So that</b> I can assess the performance of the system on current mapping task	Should Have	3		<input type="checkbox"/> Determine the calculations for the successful mapping rate and the number of mapped items	<span style="background-color: #d9e1f2; color: #555; padding: 2px 5px;">TO DO</span>	TBD	14 May 2023	Component of the dashboard in US0010
						<input type="checkbox"/> Develop the data visualization component for successful mapping rate and number of mapped items	<span style="background-color: #d9e1f2; color: #555; padding: 2px 5px;">TO DO</span>	TBD	14 May 2023	
View the overall confidence	US0012	<b>As a medical researcher (curator)</b>  <b>I want to</b> view the overall confidence in a dashboard  <b>So that</b> I can assess the performance of the system on current mapping task	Should Have	5		<input type="checkbox"/> Determine the calculation or aggregation method for the overall confidence	<span style="background-color: #d9e1f2; color: #555; padding: 2px 5px;">TO DO</span>	TBD	14 May 2023	Component of the dashboard in US0010
						<input type="checkbox"/> Develop the data visualization component for the overall confidence metric	<span style="background-color: #d9e1f2; color: #555; padding: 2px 5px;">TO DO</span>	TBD	14 May 2023	
Visualize Mapping Performance History	US0015	<b>As a medical researcher</b>  <b>I want to</b> visualize the history of the mapping performance  <b>So that</b> I can measure the mapping quality	Must Have	8		<input type="checkbox"/> Create a backend API for fetching overall mapping performance data	<span style="background-color: #d9e1f2; color: #555; padding: 2px 5px;">TO DO</span>	TBD	19 May 2023	Component required to be further confirmed
						<input type="checkbox"/> Develop a data visualization component for overall mapping performance	<span style="background-color: #d9e1f2; color: #555; padding: 2px 5px;">TO DO</span>	TBD	19 May 2023	

					<input type="checkbox"/> Connect the overall mapping performance visualization to the backend API	<b>TO DO</b>	TBD	26 May 2023	
Rollback to Earlier System Version	US0018	<b>As a admin user</b> <b>I want to</b> rollback to earlier (default) version of the mapping system <b>So that I can restore the default behaviour of the system</b>	Should Have	5	<input type="checkbox"/> Identify and store the default version of the mapping system	<b>TO DO</b>	TBD	19 May 2023	From requirement of clients, the system should be able to restore to default version.
					<input type="checkbox"/> Create a backend API for triggering the rollback process	<b>TO DO</b>	TBD	26 May 2023	
					<input type="checkbox"/> Develop a frontend component for initiating the rollback process	<b>TO DO</b>	TBD	19 May 2023	
					<input type="checkbox"/> Implement user authentication and authorization for admin users	<b>TO DO</b>	TBD	26 May 2023	

# Development

Title	Creator	Modified
APIs	KUNXI SUN	27 Apr, 2023
Digital Prototype	Chenyang Dong	02 Apr, 2023

# APIs

Based on the user stories, to implement maintainable and extendable system architecture, we split the system into five modules. Each of them represents a Flask application in Docker container.

Module	APIs	Description
Authentication Service	<ol style="list-style-type: none"><li>1. User Login</li><li>2. User Logout</li><li>3. User forget password</li><li>4. User reset password</li><li>5. User Register &lt;FOR DEVELOPER TEST ONLY&gt;</li></ol>	
Map Service	<ol style="list-style-type: none"><li>1. Create a map task</li><li>2. Get detail of a map task</li><li>3. Delete a map task</li><li>4. Get mapped items of a map task</li><li>5. Update(Curate) the category of a mapped item in map task</li></ol>	
UIL Service	<ol style="list-style-type: none"><li>1. Create a new UIL category</li><li>2. Get details of a category</li><li>3. Update a category</li><li>4. Delete a category</li><li>5. Get the UIL list of a version</li></ol>	
Common Service	<ol style="list-style-type: none"><li>1. Create a Team</li><li>2. Add team member into a team</li><li>3. Delete a team member from a team</li><li>4. Change owner of a team</li><li>5. Update permission of a team member</li><li>6. Send a email</li><li>7. Upload a file</li><li>8. Update SNOMED CT version</li></ol>	
Gateway Service	<ol style="list-style-type: none"><li>1. Redirect requests</li></ol>	

# Digital Prototype

## Log in

The login screen features a header with three dots and the URL 'mapping.com'. Below it is a title 'Mapping' in blue. A 'Log in' form contains fields for 'Username' (Kunxi Sun) and 'Password' (represented by a series of asterisks). There is a 'Forgot password?' link and a large blue 'Log In' button.

## Main

The main interface has a header with three dots and 'mapping.com'. On the left is a sidebar with 'Mapping' in blue, 'Main' (selected), 'History Stats', and 'Account'. The main area shows 'Select the Mode' with 'Inference' (radio button selected) and 'Training'. A large input field says 'Drag your file here or [Browse](#)'. Below it is a text input field with placeholder 'Or input a short text for test'. At the bottom, 'Mapping Result:' shows 'Term 1'. The top right shows a profile icon for 'Daniel' with 'Your profile' and 'Sign out' options.

## Inference Mode

mapping.com

## Mapping

- Main
- History Stats
- Account

Inference Training

Original Text Mapping Category

Perianal abscess 1	Some Category 1
???????????????	-
Perianal abscess 1	Some Category 1
Perianal abscess 1	Some Category 1
Perianal abscess 1	Some Category 1
Perianal abscess 1	Some Category 1
Perianal abscess 1	Some Category 1
Perianal abscess 1	Some Category 1
???????????????	-

< 1 2 3 4 5 ... 60 >

Export

Daniel

mapping.com

## Mapping

- Main
- History Stats
- Account

Inference Training

Original Text Mapping Category

Perianal abscess 1	Some Category 1
???????????????	-
Perianal abscess 1	Some Category 1
Perianal abscess 1	Some Category 1
Perianal abscess 1	Some Category 1
Perianal abscess 1	Some Category 1
Perianal abscess 1	Some Category 1
Perianal abscess 1	Some Category 1
Perianal abscess 1	Some Category 1
???????????????	-

< 1 2 3 4 5 ... 60 >

Do you confirm to export the CSV file?

Export

Daniel

## Training Mode

mapping.com

## Mapping

- Main
- History Stats
- Account

Inference Training

Mapping Status Confidence Range 90% Filter Reset

Original Text	Mapping Category	Curated Category	Mapping Status	Confidence	Actions
Perianal abscess 1	Some Category 1	Some Category 2	Success	79%	<input type="button" value="Edit"/> <input type="button" value="View"/>
???????????	-	● not yet curated	Fail	-	<input type="button" value="Edit"/>
Perianal abscess 1	Some Category 1	Body lice	Success	48%	<input type="button" value="Save"/> <input type="button" value="Cancel"/>
a very very very long t...	Some Category 1	Bone and Joint	Success	65%	<input type="button" value="Edit"/> <input type="button" value="View"/>
Perianal abscess 1	Some Category 1	Skin	Success	75%	<input type="button" value="Edit"/> <input type="button" value="View"/>
Perianal abscess 1	Some Category 1	Eye	Success	79%	<input type="button" value="Edit"/> <input type="button" value="View"/>
Perianal abscess 1	Some Category 1	Dental	Success	79%	<input type="button" value="Edit"/> <input type="button" value="View"/>
Perianal abscess 1	Some Category 1	Urinary tract	Success	79%	<input type="button" value="Edit"/> <input type="button" value="View"/>
Perianal abscess 1	Some Category 1	Body lice	Success	79%	<input type="button" value="Edit"/> <input type="button" value="View"/>
Perianal abscess 1	Some Category 1	Acre	Success	65%	<input type="button" value="Edit"/> <input type="button" value="View"/>
Perianal abscess 1	Some Category 1	Body lice	Success	75%	<input type="button" value="Edit"/> <input type="button" value="View"/>
Perianal abscess 1	Some Category 1	Cellulitis	Success	79%	<input type="button" value="Edit"/> <input type="button" value="View"/>
Perianal abscess 1	Some Category 1	Dermatitis	Success	79%	<input type="button" value="Edit"/> <input type="button" value="View"/>
Perianal abscess 1	Some Category 1	Erysipelas	Success	79%	<input type="button" value="Edit"/> <input type="button" value="View"/>

Re-train

< 1 2 3 4 5 ... 60 >

Daniel

**Mapping**

Inference Training

Mapping Status: Select Confidence Range: 80%

Original Text	Mapping Category	Curated Category	Mapping Status	Confidence	Actions
Perianal abscess 1	Some Category 1	Some Category 2	Success	79%	
?????????	-	Some Category 2	Success	48%	
Perianal abscess 1	Some Category 1	Some Category 3	Success	65%	
Perianal abscess 1	Some Category 1	Some Category 3	Success	79%	
Perianal abscess 1	Some Category 1	Some Category 3	Success	79%	
Perianal abscess 1	Some Category 1	Some Category 3	Success	79%	

Re-train 1 2 3 4 5 ... 60 >

**Do you confirm to retrain the System?  
Please check you have curated all the data**

**Cancel Confirm**

**Mapping**

Inference Training

Mapping Status: Select Confidence Range: 80%

Original Text	Mapping Category	Curated Category	Mapping Status	Confidence	Actions
Perianal abscess 1	Some Category 1	Some Category 2	Success	68%	
?????????	-	Some Category 2	Success	13%	
Perianal abscess 1	Some Category 1	Some Category 3	Success	8%	
Perianal abscess 1	Some Category 1	Some Category 3	Success	7%	
Perianal abscess 1	Some Category 1	Some Category 3	Success	4%	
Perianal abscess 1	Some Category 1	Some Category 3	Success	3%	
Perianal abscess 1	Some Category 1	Some Category 3	Success	2%	

Re-train

**View Detail**

Original Text: Perianal abscess 1  
Mapped Category: Term 1

Confidence

Category

**Mapping**

Inference Training

Mapping Status: Select Confidence Range: 80%

Original Text	Mapping Category	Curated Category	Mapping Status	Confidence	Actions
Perianal abscess 1	Some Category 1	Some Category 2	Success	325	
?????????	-	Some Category 2	Success	55	
Perianal abscess 1	Some Category 1	Some Category 3	Success	85.52%	
Perianal abscess 1	Some Category 1	Some Category 3	Success	67.62%	
Perianal abscess 1	Some Category 1	Some Category 3	Success	24%	
Perianal abscess 1	Some Category 1	Some Category 3	Success	21%	
Perianal abscess 1	Some Category 1	Some Category 3	Success	11%	
Perianal abscess 1	Some Category 1	Some Category 3	Success	8%	
Perianal abscess 1	Some Category 1	Some Category 3	Success	5%	
Perianal abscess 1	Some Category 1	Some Category 3	Success	1%	

Re-train

**Overall Performance**

Total Mapping Text: 380

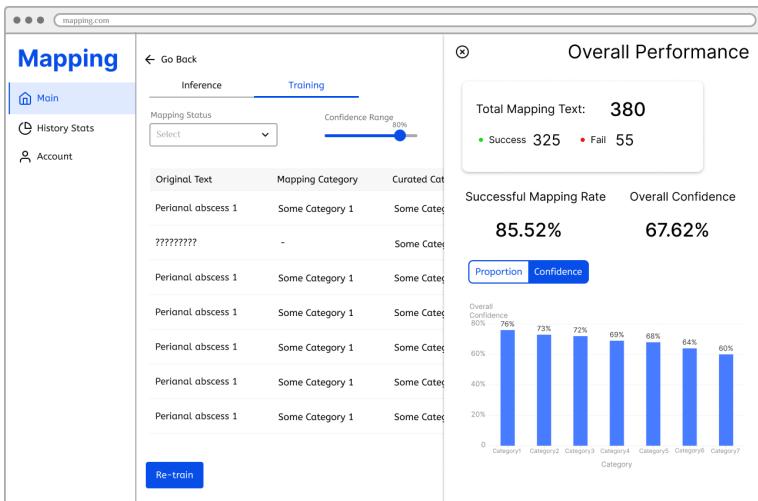
Success 325 Fail 55

Successful Mapping Rate: 85.52% Overall Confidence: 67.62%

Proportion Confidence

Proportion of Each Category

- Category 4: 1%
- Category 5: 5%
- Category 2: 8%
- Category 7: 11%
- Category 3: 21%
- Category 1: 24%
- Category 6: 30%



## Retrain History

**Retrain History**

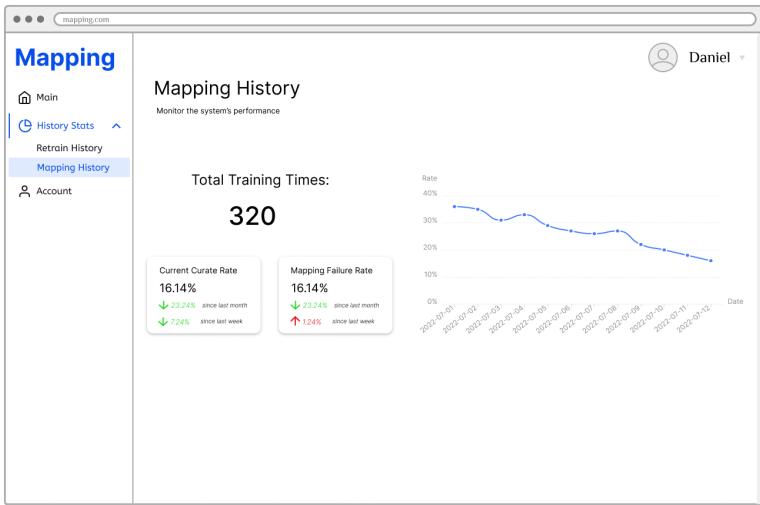
Mapping ID	Retrained By	Retrained At	Curate Number	Actions
1	Daniel	2023-03-18 13:37	8	🔗
2	Daniel	2023-03-18 13:37	10	🔗
3	Daniel	2023-03-18 13:37	10	🔗
4	Daniel	2023-03-18 13:37	10	🔗
5	Daniel	2023-03-18 13:37	10	🔗
6	Daniel	2023-03-18 13:37	10	🔗
7	Daniel	2023-03-18 13:37	10	🔗
8	Daniel	2023-03-18 13:37	10	🔗

**Curating Details**

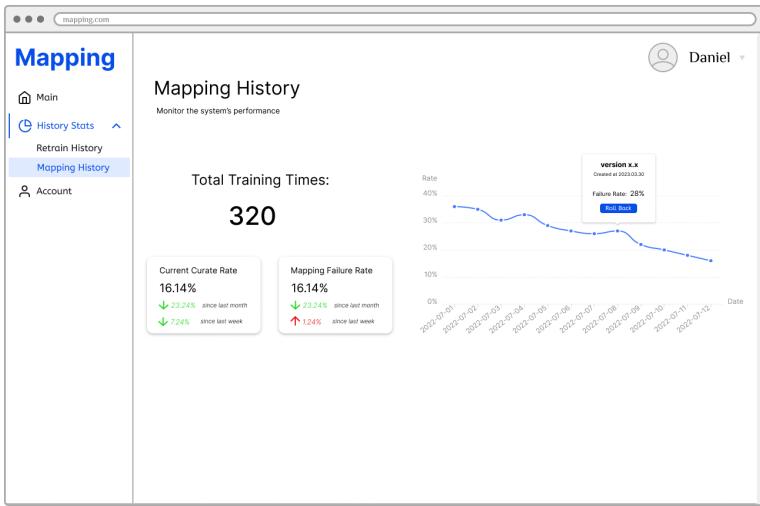
Curated By Daniel at 2023-03-18 13:37  
The total number of curation is 8

Curation ID	Original Text	Mapped Category	Curated to
1	Perianal abscess 1	Category 1	Category 4
2	?????????????	-	Category 4
3	Perianal abscess 1	Category 1	Category 4
4	Perianal abscess 1	Category 1	Category 4
5	Perianal abscess 1	Category 1	Category 4
6	Perianal abscess 1	Category 1	Category 4
7	Perianal abscess 1	Category 1	Category 4
8	Perianal abscess 1	Category 1	Category 4

## Mapping History



## Mapping Versioning (Admin only)



## Profile

mapping.com

## Mapping

- Main
- History Stats
- Account**

### Edit Profile



First Name	Last Name
Hanyi	Gao
Username	
Hanyigl	
Email	
Hanyigl@student.unimelb.edu.au	

**Update Details**

**Change Password**

mapping.com

## Mapping

- Main
- History Stats
- Account**

### Edit Profile



First Name	Last Name
Hanyi	Gao
Username	
Hanyigl	
Email	
Hanyigl@student.unimelb.edu.au	

**Change Password**

Current Password	*****
New Password	*****
Confirm Password	*****

**Cancel** **Update**

**Update Details**

**Change Password**

## Team Management (Admin only)

mapping.com

## Mapping

- Main
- History Stats
- Account
- Team Management**

**Add Member**

**Daniel**

**All members**

	Name	User Group	Last Login	Role
	XXXX XXX	CURATE	2022-12-12 12:00	OWNER
	XXXX XXX	RESERCH/ CURATE	2022-12-12 12:00	MEMBER
	XXXX XXX	RESERCH/ NORMAL	2022-12-12 12:00	MEMBER
	XXXX XXX	RESERCH/ NORMAL	2022-12-12 12:00	MEMBER
	XXXX XXX	NORMAL	2022-12-12 12:00	MEMBER
	XXXX XXX	-	2022-12-12 12:00	MEMBER

**+ New User Group**

**Not Allocated**

**Research Group**

**Curate Group**

**Normal User**

# Architecture

## 4+1 Architecture Models

To make the system clear to the user and other developers, we include many diagrams to introduce this product in the following views. Most of the techniques used in this product are listed in detail in the [technique details](#) page.

### Logical View

- [Database model diagram](#)
- [State diagram](#)

### Process View

- *Planned in Sprint 3*

### Development View

- [System Diagram](#)
- [Container diagram](#)

### Physical View

- Deployment Pipeline(On Plan)

### Scenario/Use Case View

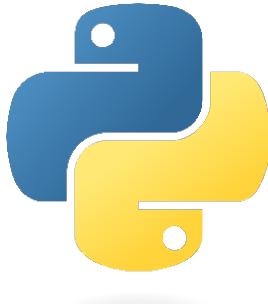
- [Sequence diagrams](#)(On Plan)

## Reference

[https://cis-projects.github.io/project\\_based\\_course\\_notes/topics/architecture.html?highlight=diagram](https://cis-projects.github.io/project_based_course_notes/topics/architecture.html?highlight=diagram)

# Technique Detail

## Programming language



## Architecture Overview

### Front-end and back-end separation

From the perspective independently, we separate the frontend and backend, so that each part can be developed, maintained, and scaled independently. From the perspective of software future extensibility, as we aim to handover several docker images including backends docker images and frontend docker images for our client. This separation of concerns simplifies the development process, so that we can implement the code by separated the groups into frontend and backend. For the project to be further extent in the future, this architecture is easier to allow it to be developed as a complex applications. On the other hand, if the client decide to change the backend technology or migrate to a different frontend framework in the future implementation of the project, having a clear separation between the two will make the transition smoother and less disruptive.

## Microservice

Microservice is an popular architecture in todays software, as it offers various benefits in terms of scalability, maintainability, and flexibility. Microservices can be independently scaled based on their specific resource requirements or load, allowing the project to handle increased demand more efficiently. This can lead to more cost-effective use of resources and better performance under varying workloads. In addition, microservices can be implemented using different programming languages, frameworks, or technologies, based on the requirements of each service. This enables the future development teams who aim to improve this project to choose the best tools for their specific needs and avoid being locked into our current technology stack. Furthermore, microservices are smaller and more focused than monolithic applications, making them easier to understand, maintain, and update. This can lead to improved code quality, reduced technical debt, and a lower likelihood of bugs or issues. Lastly, Microservice architecture promotes modular design and separation of concerns, making it easier to manage complexity and maintain a clear focus on individual components, and each service can be on different infrastructure components, allowing for more efficient use of resources and better distribution of workloads.

## Backend

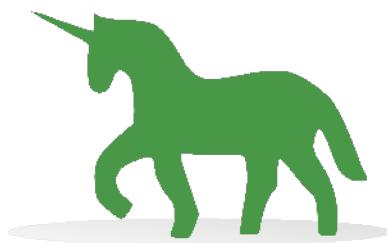
Flask, Gunicorn, and Nginx are popular choices for web development projects due to their ease of use, flexibility, and high-performance. These choices allow the team to quickly develop and deploy a robust, scalable and efficient web application that meets the client's requirement.



# Flask

Flask provides the freedom to design the application's structure and architecture as you see fit, making it suitable for a wide variety of projects with different requirements and constraints. As the project is to intergrate the functions from Mapping tools such as Ontoserver.

[More about Flask](#)



Gunicorn is usually applied as a combination with Flask application. By using Gunicorn as the WSGI server, the application can efficiently manage multiple concurrent requests, leading to better performance and a more responsive user experience.

[More about Gunicorn](#)

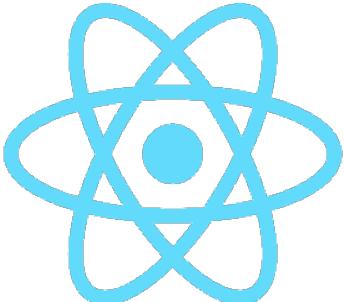


# NGINX

[More about Nginx](#)

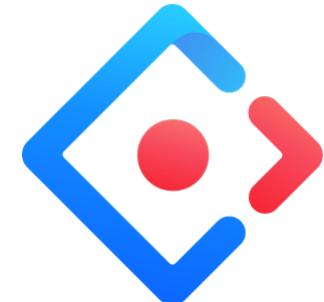
## Frontend

We use React and Ant Design for the frontend, the project can benefit from a modular, maintainable, and scalable architecture that enables efficient development and collaboration. This approach also allows for greater flexibility in adapting to future changes or integrating with external services.



React is a popular, powerful, and efficient JavaScript library for building user interfaces. It utilizes a component-based architecture, making it easy to create modular, reusable UI components. React's virtual DOM ensures high performance and efficient updates, leading to a smoother user experience.

[More about React](#)



Ant Design is a comprehensive UI design framework for React applications. It provides a wide range of pre-built, customizable components that follow a consistent design language, which accelerates the development process and ensures a professional-looking application.

[More about Ant design](#)

## Database



MongoDB is a popular NoSQL database that stores data in a flexible BSON format. It is chosen for this project because it offers schema flexibility, allowing data storage without a fixed structure, which is useful for diverse data types and evolving data models. Additionally, it provides horizontal scalability, making it suitable for handling large data volumes and high-traffic loads. MongoDB's document-based storage model results in faster and more efficient queries compared to traditional relational databases, and it supports indexing and caching for improved query performance. The database also features a rich query language, enabling developers to build complex and efficient queries. Furthermore, MongoDB has extensive support for various programming languages, including JavaScript, Python, Java, and C#.

[More about mongoDB](#)

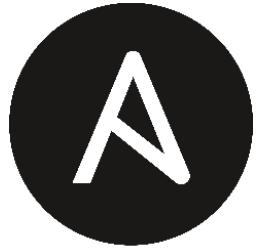
## Deployment

We use Docker and Ansible for deployment which can make the project benifitted from the consistency, scalability, and automation. It can streamline the deployment process and improve infrastructure's reliability. However, Ansible require a learning curve, which might be a challenge for future teams.



Docker enables us to package the project and its dependencies in a container, ensuring consistency across development, testing, and production environments. This eliminates the "it works on my machine" problem and streamlines deployment. In addition, as we decided to use stucture our project as microservice architecture, docker is the most prevalent tools to helps us to fulfill this goal. Furthermore, Docker containers run in isolation, reducing the risk of conflicts between applications or dependencies. This isolation improves the security and reliability of the services. Lastly, Docker makes it easy to scale applications horizontally by deploying additional containers. This scalability allows future teams to add more functions("components") into the system.

[More about Docker](#)



ANSIBLE

Ansible uses a declarative language, implemented by python, to define the project infrastructure and configurations, which means the infrastructure is treated as code. This enables version control, easier collaboration, and improved maintainability. It automates the deployment, configuration, and management of infrastructure by reducing manual effort and the potential for human error. Unlike some other configuration management tools, Ansible is easy to install, because it is a python package, and can be easily installed by 'pip install ansible' which does not require an agent to be installed on the production system.

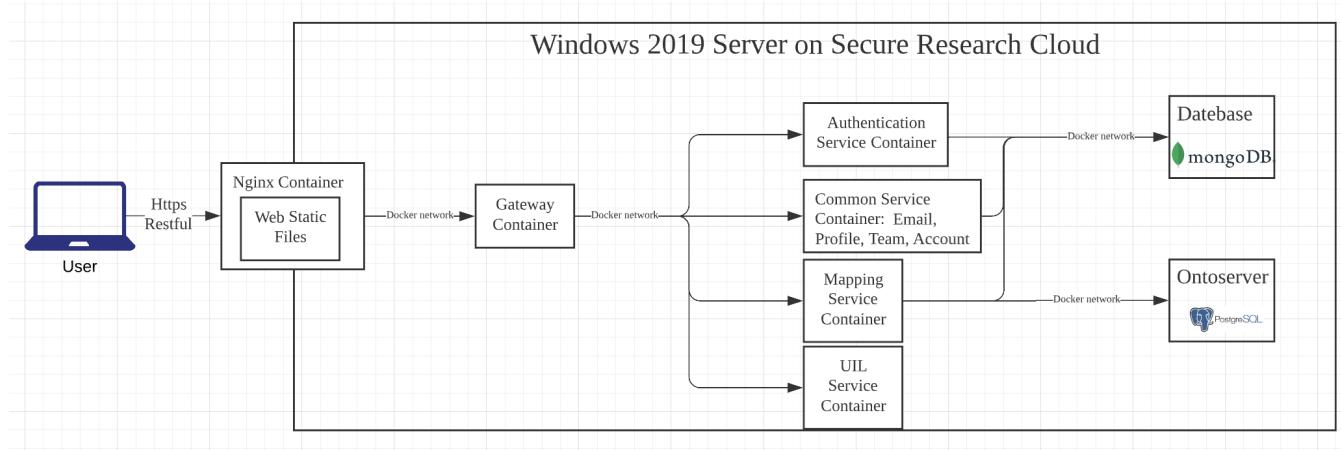
Ansible's playbooks are idempotent, meaning they can be run multiple times without causing unintended side effects. This ensures consistent and predictable results when applying configuration changes.

[More about Ansible](#)

# 4+1 Architecture Models

Title	Creator	Modified
Sequence Diagrams	KUNXI SUN	yesterday at 3:10 PM
System Diagram	KUNXI SUN	29 Apr, 2023
Container Diagram	KUNXI SUN	28 Apr, 2023
State Diagram	KUNXI SUN	27 Apr, 2023
Database Model	KUNXI SUN	27 Apr, 2023

# Container Diagram



# Database Model

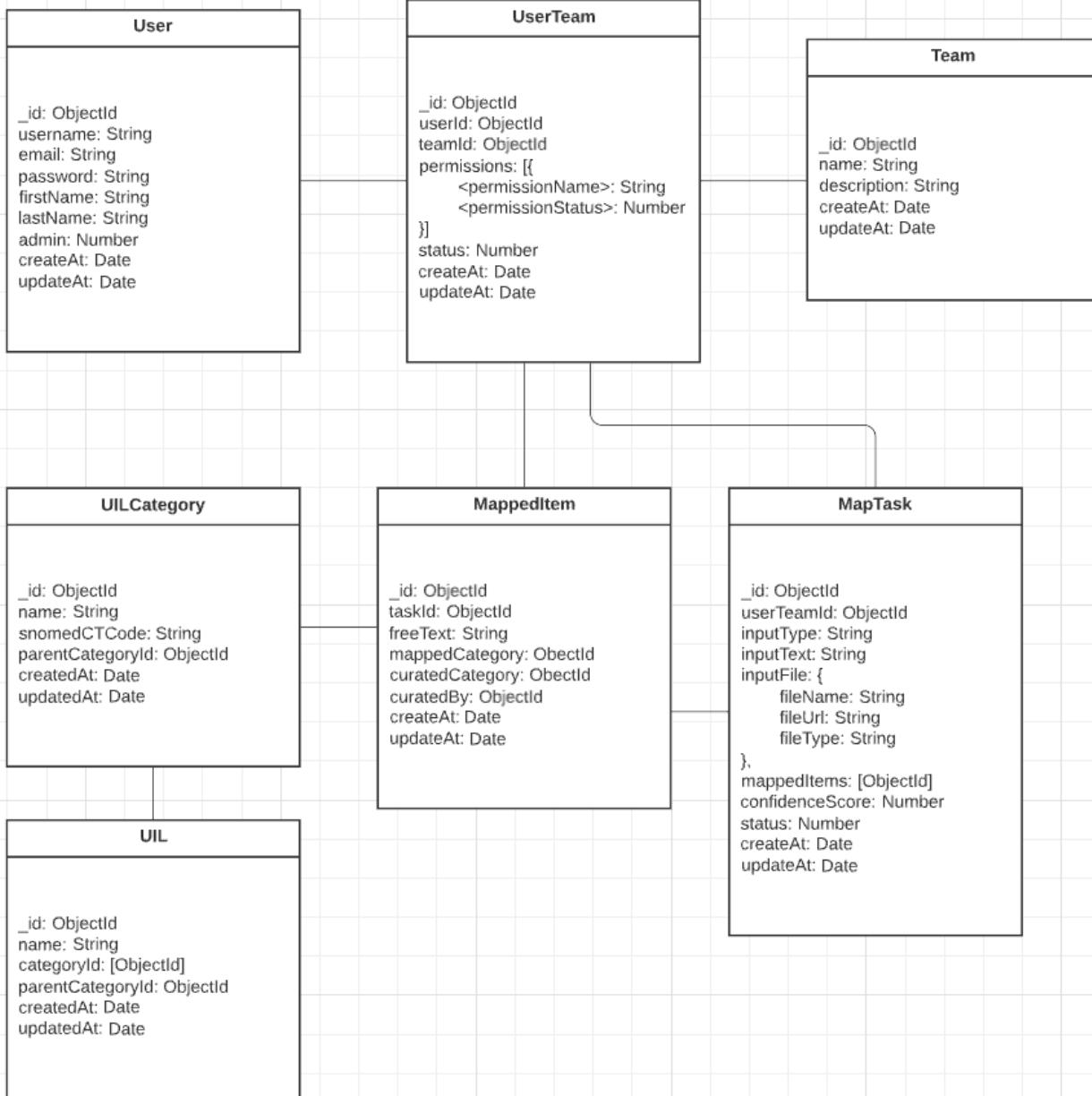
Version	Description	Date
Version 1.0.0	1. Basic MongoDB data models with basic relations	April 24, 2023

---

## Version 1.0.0

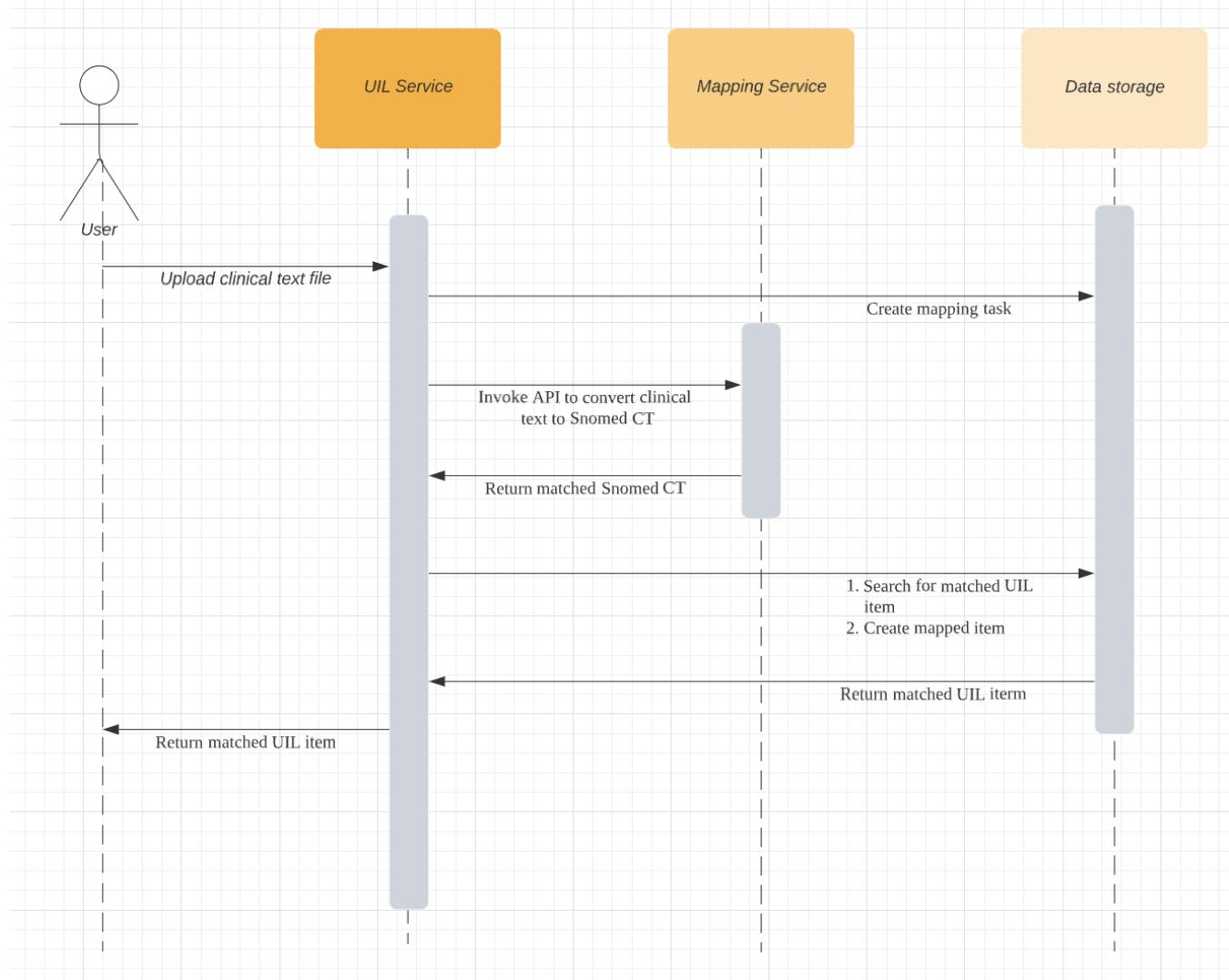
## Database Model - MongoDB

KUNXI SUN | April 24, 2023

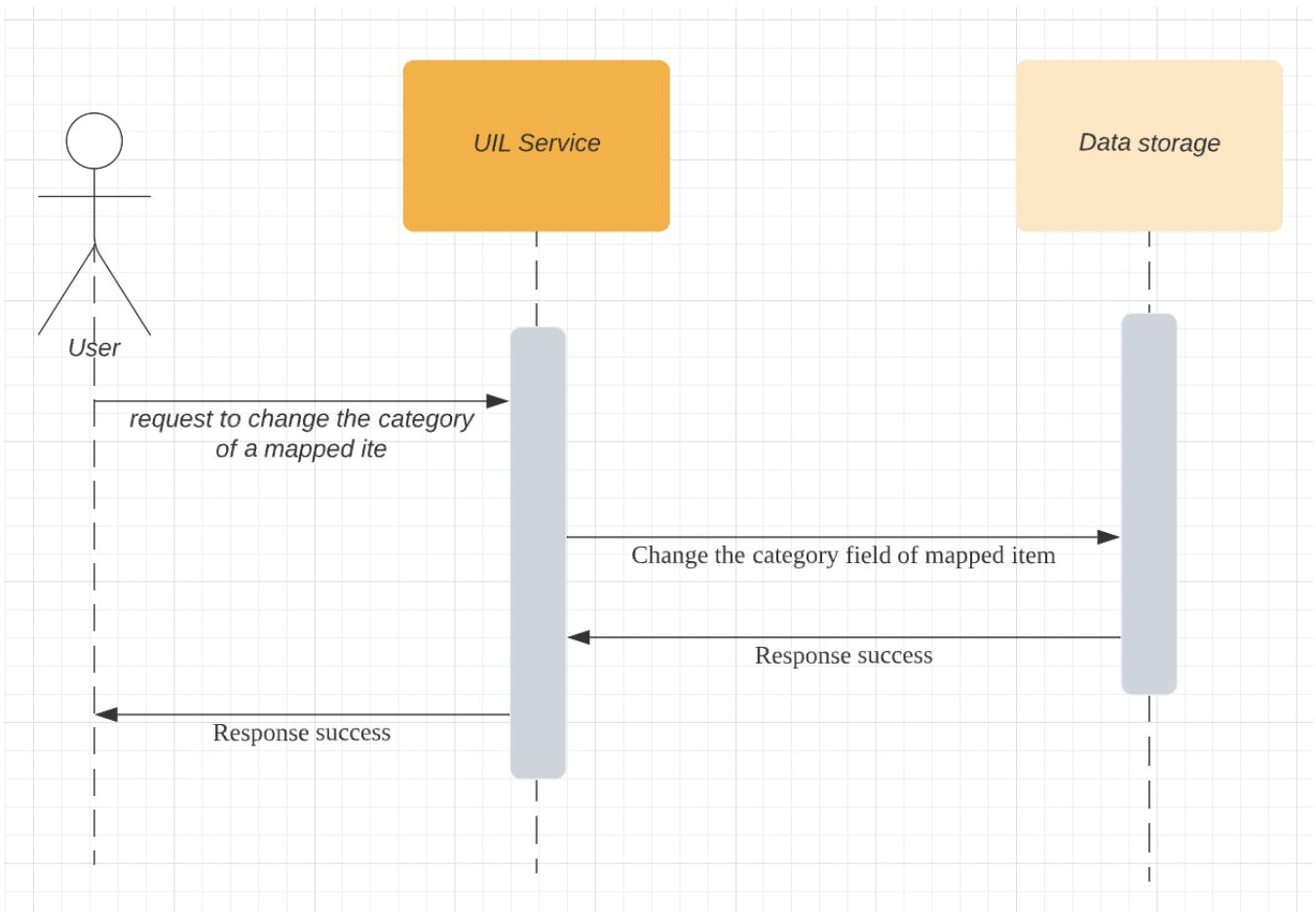


# Sequence Diagrams

## Mapping Sequence



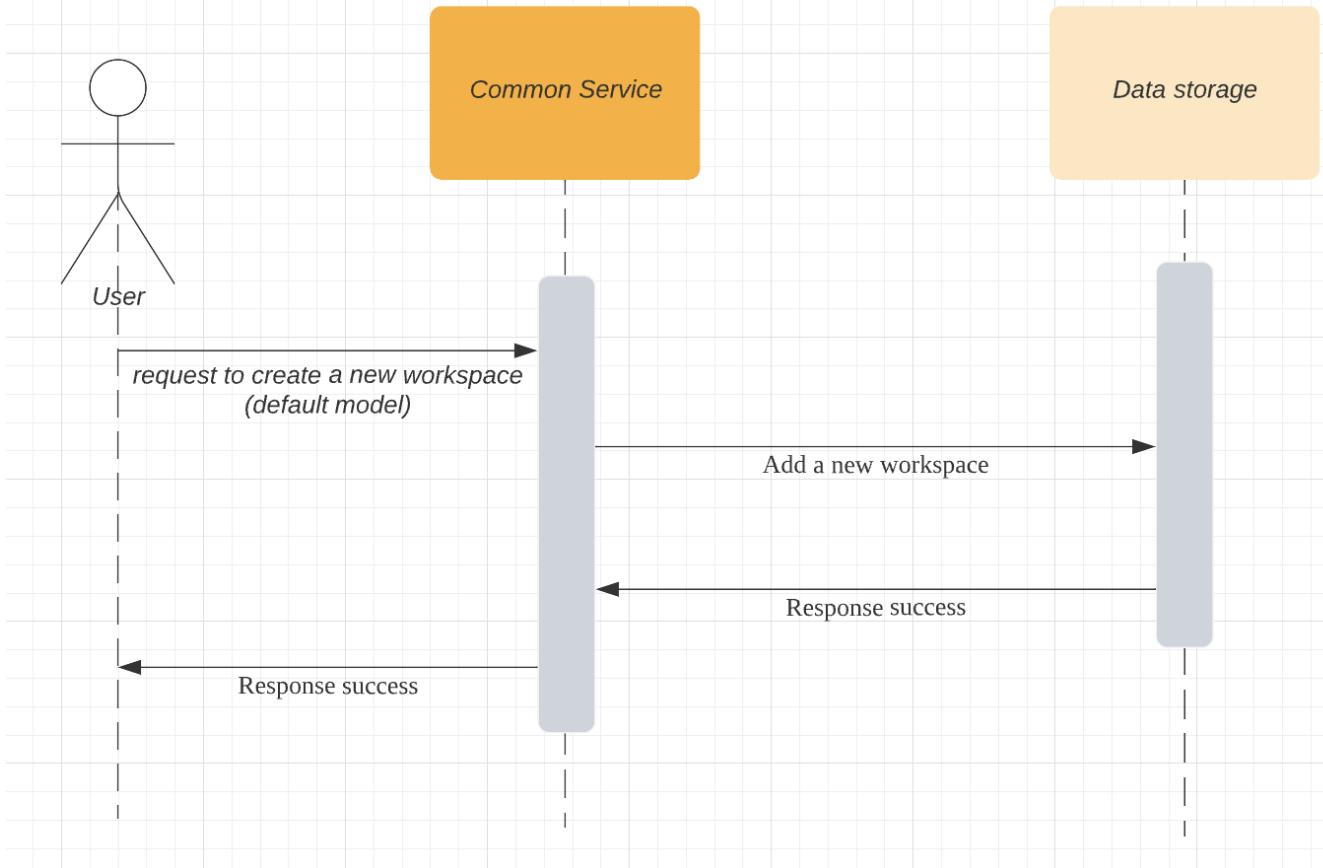
## Curate Sequence



Rollback/Default System Sequence

## Go back to default system Diagram

KUNXI SUN | April 30, 2023



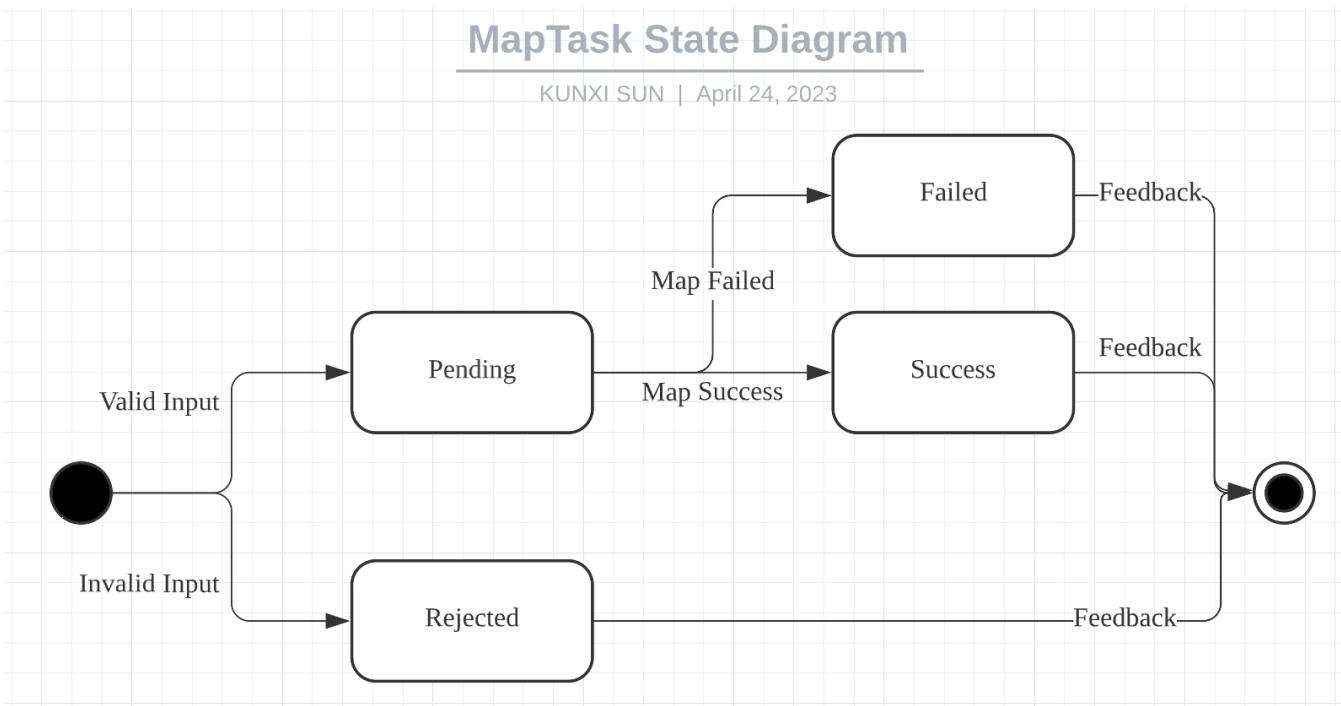
# State Diagram

Version	Description	Date
1.0.0	1. Map Task State Diagram	April 24, 2023

## Version 1.0.0

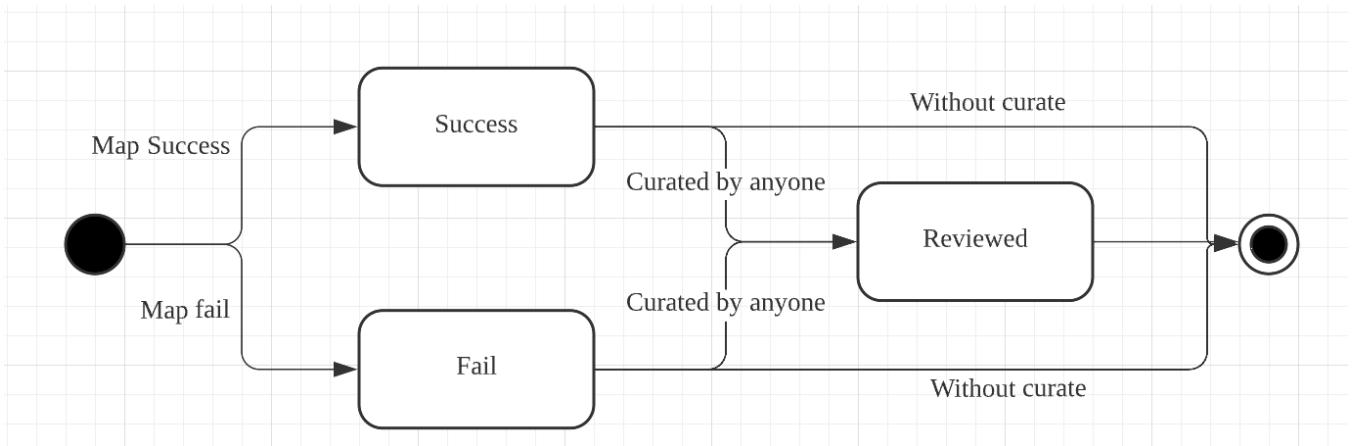
### MapTask Status

Status Name	Status Number	Description
Pending	0	Waiting for task to finish
Success	1	Task success
Rejected	2	Task rejected due to invalid input or other reasons which cause the task did not start
Failed	3	ask failed during mapping for any reasons



### Mapped Item Status

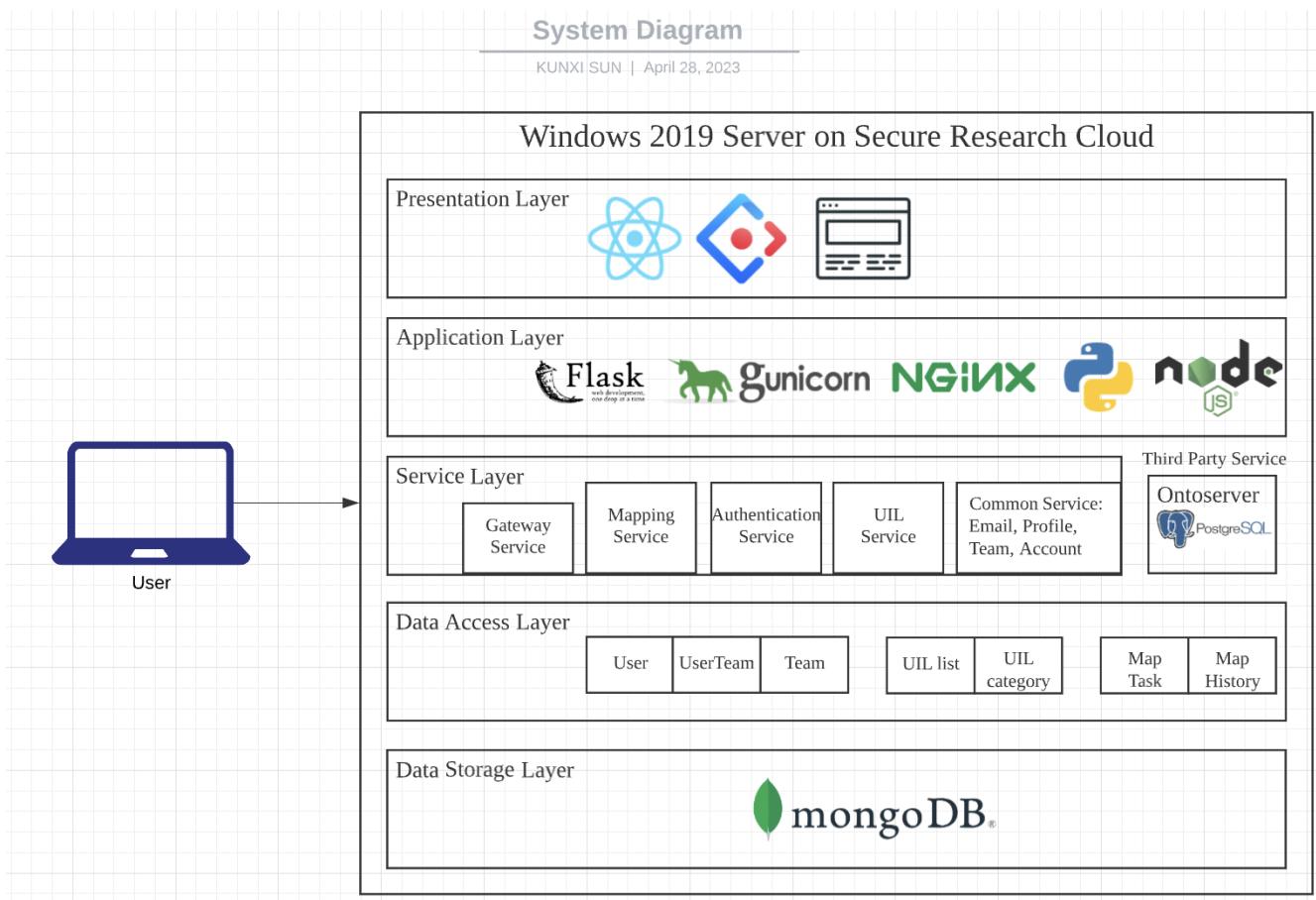
Status Name	Status Number	Description
Fail	0	Mapping system failed to map this raw text
Success	1	Mapping system map this item successfully
Reviewed	2	This raw text has been curated by user



# System Diagram

Version	Description	Date
2.1.0	1. Add UIL service	April 28, 2023
2.0.0	1. Change the system diagram into a standard layers structure	April 24, 2023
1.0.0	1. Basic system diagram with modules	March 23, 2023

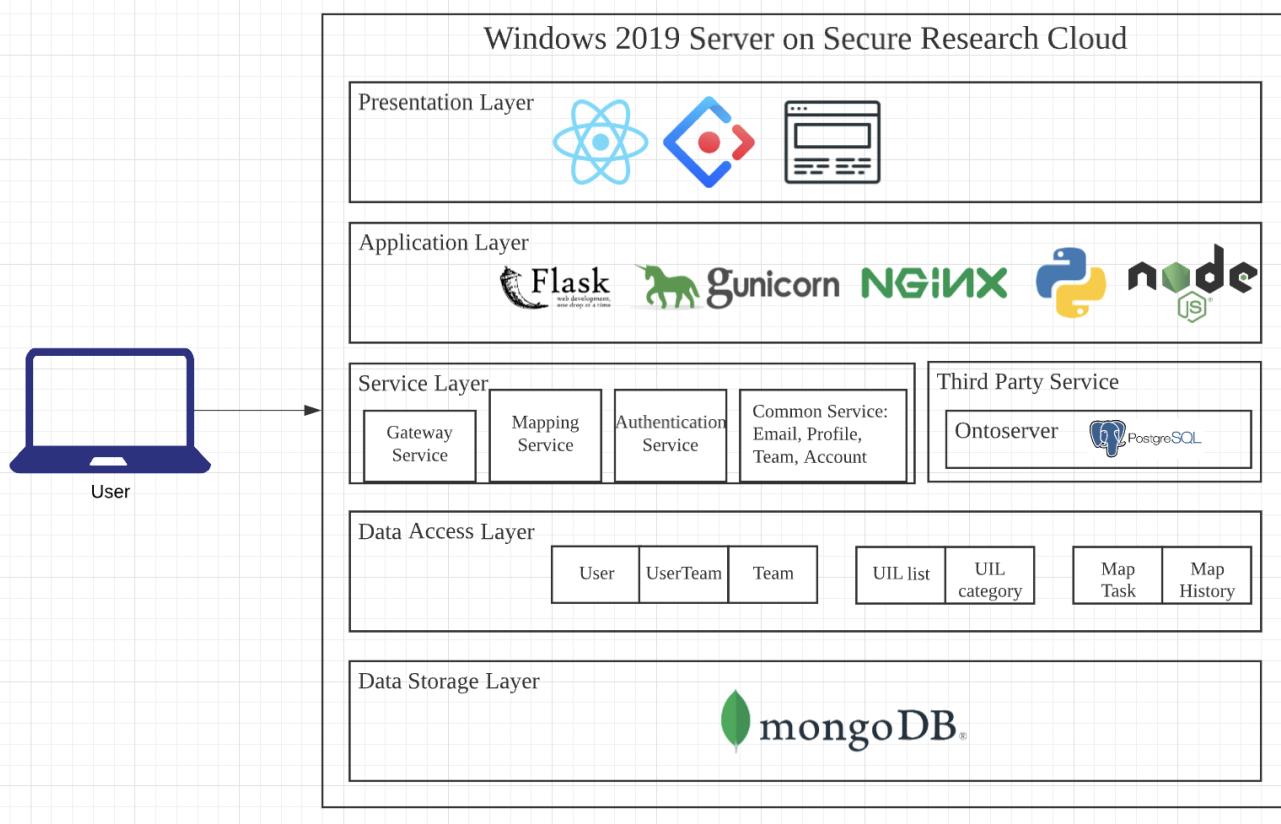
## Version 2.1.0



## Version 2.0.0

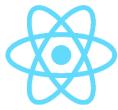
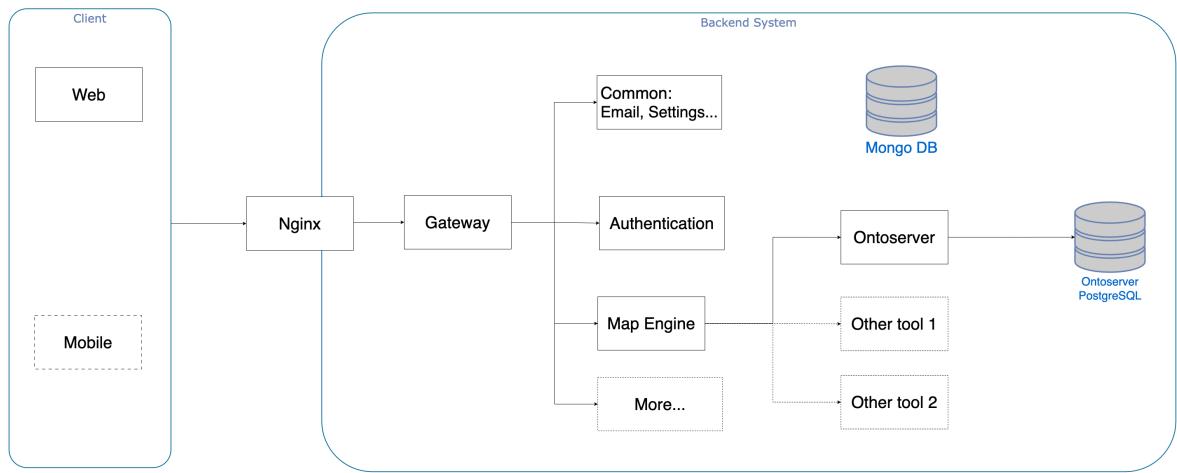
## System Diagram

KUNXI SUN | April 25, 2023



## Version 1.0.0

# System Architecture Diagram



# Quality

This page contains documentation related to quality control.

Title	Creator	Modified
Test Plan	Ricardo Luo	yesterday at 2:05 PM
CI/CD	KUNXI SUN	29 Apr, 2023
Issue Tracking	Hanyi Gao	29 Apr, 2023
Test Cases	KUNXI SUN	29 Apr, 2023
Test Reports	KUNXI SUN	29 Apr, 2023
Code Reviews	KUNXI SUN	29 Apr, 2023

# Test Plan

## 1 Introduction

The objective of this test plan is to outline the testing strategy for the given project, which involves mapping short text into the terms of a Universal Indication List (UIL), curating and updating the mappings, and providing a real-time dashboard to monitor the mapping metrics. The plan will cover Unit Test, Functional Test, Integration Test, and System Test.

The project development will focus on two prevalent development strategy: [Behaviour Driven Development\(BDD\)](#) and [Test Driven Development\(TDD\)](#).

## 2 Test Objectives

- Ensure that all user stories are implemented correctly
- Verify that the project meets the functional and non-functional requirements
- Validate that the system performs as expected under different conditions
- Identify any defects or issues in the software

## 3 Test Strategy

### 3.1 Unit Test

Unit tests will focus on testing individual components, functions, and classes in isolation. These tests will help identify issues at the code level.

1. Map short text into the terms of UIL (US0001)
  - Test input validation for short texts
  - Test mapping of different types of short texts to UIL terms
2. Download the mapping result (US0002)
  - Test downloading of different file formats (e.g. CSV, JSON)
3. Identify unrecognized results in the mapping process (US0004)
  - Test the identification of unrecognized results in different situations
4. Filter incorrect mappings by confidence (US0005)
  - Test filtering functionality with different confidence thresholds
5. Curate incorrect mapping (US0006)
  - Test the editing and updating of incorrect mappings
6. View category options for mapped items (US0007)
  - Test the display and navigation of category options
7. Retrain the system from curating (US0008)
  - Test the retraining process after curating incorrect mappings
8. Update the version of UIL (US0025)
  - Test updating the UIL version and ensure backward compatibility
9. Account login (US0019)
  - Test user authentication and validation
10. Edit personal information (US0020)
  - Test the editing and updating of user information
11. Add new user account (US0021)
  - Test the creation of new user accounts
12. Add member to team (US0023)
  - Test adding members to the team
13. Remove member from team (US0024)
  - Test removing members from the team

### 3.2 Functional Test

Functional tests will focus on validating the functionality of the project according to the user stories.

1. Test mapping process (US0001, US0004)
  - Test the mapping of short texts to UIL terms with various inputs and scenarios
2. Test mapping results management (US0002, US0005, US0006)
  - Test downloading, filtering, and curating of mapping results
3. Test mapping dashboard (US0010-US0018)
  - Test the display of mapping metrics, filtering options, and performance history

4. Test user management (US0019-US0024)
  - Test user authentication, account creation, and team management

### **3.3 Integration Test**

Integration tests will focus on testing the interaction between different components and modules of the project.

1. Test the interaction between mapping components (US0001, US0004, US0005, US0006)
  - Test the end-to-end process of mapping, identifying unrecognized results, filtering, and curating
2. Test the interaction between dashboard components (US0010-US0018)
  - Test the display and updating of mapping metrics and performance history
3. Test the interaction between user management components (US0019-US0024)
  - Test the integration of user authentication, account creation, and team management

### **3.4 System Test**

System Test will test the complete system, including its performance, reliability, and security. We will focus on testing the complete system as a whole.

1. Test the system's performance under various load conditions
2. Test the system's reliability by simulating different failure scenarios
3. Test the system's security by simulating various attack scenarios
4. Test Environment and Resources

# Behaviour Driven Development

Behaviour Driven Development (BDD) is a software development methodology that emphasises collaboration between developers, QA, and non-technical participants in a software project. BDD encourages teams to use conversation and concrete examples to formalise a shared understanding of how the application should behave. [Acceptance Criteria](#) are created based on BDD, and corresponding acceptance criteria tests will be held based on the system behaviour. Test plans in BDD use Given-When-Then statements to describe the scenarios and expected outcomes of system. Our BDD test plan, as well as acceptance test, is as follows:

## 1.

Feature: Text Mapping

Scenario: Map short text to UIL categories

Given a short text input

When the system processes the input

Then the short text is mapped to one or more UIL categories

## 2.

Feature: Download Mapping Results

Scenario: Download the mapping results for future reference

Given a completed mapping task

When the user requests to download the mapping results

Then the user receives a downloadable file containing the mapping results

## 3.

Feature: Mapping Task History

Scenario: View previous mapping tasks and results

Given a user with previous mapping tasks

When the user accesses their task history

Then the user can view their own and team members' previous mapping tasks and results

## 4.

Feature: Mapping Process Status

Scenario: Identify the status of the mapping process for raw text input

Given a list of raw text inputs

When the user views the mapping process status

Then the user can quickly determine if further curation or review is needed for each input

## 5.

Feature: Category Options

Scenario: View category options while curating data

Given a list of mapped items

When the user curates the data

Then the user can view and choose from a list of category options for each item

## 6.

Feature: Curate Mapping Results

Scenario: Review and curate failed or incomplete mapping results

Given a list of failed or incomplete mapping results

When the user curates the data

Then the user can review and modify the mapping results for accuracy

## 7.

Feature: Retrain System Scenario: Retrain the system using curated data

Given a set of curated data

When the user retrains the system

Then the system's mapping performance is improved

## 8.

Feature: Update UIL Version

Scenario: Update the UIL to the latest version

Given an admin user

When the user updates the UIL version

Then the system has access to the most up-to-date UIL terms

## 9.

Feature: Dashboard and Metrics

Scenario: Display mapping metrics on a dashboard

Given a completed mapping task

When the user views the dashboard

Then the user can see various mapping metrics for analysis

## 10.

Feature: Successful Mapping Rate and Mapped Items

Scenario: View the successful mapping rate and the number of mapped items

Given a completed mapping task

When the user views the dashboard

Then the user can see the successful mapping rate and the number of mapped items

## 11.

Feature: Overall Confidence

Scenario: View the overall confidence in mapping results

Given a completed mapping task

When the user views the dashboard

Then the user can see the overall confidence in the mapping results

## 12.

Feature: Category Performance Metrics

Scenario: View specific performance metrics for each category

Given a completed mapping task

When the user views the dashboard

Then the user can see the specific performance of each category

## 13.

Feature: Proportion of Each Category

Scenario: View the proportion of each category in the dataset

Given a completed mapping task

When the user views the dashboard

Then the user can see the proportion of each category in the dataset

#### **14.**

Feature: Visualize Mapping Performance History

Scenario: Visualize the history of the mapping performance

Given a user with previous mapping tasks

When the user views the mapping performance history

Then the user can visualize the historical mapping performance for analysis

#### **15.**

Feature: Rollback System Version

Scenario: Roll back to an earlier system version

Given an admin user

When the user initiates a rollback to an earlier version

Then the system is restored to the specified earlier version

#### **16.**

Feature: Account Login

Scenario: Log in to a user account

Given a registered user

When the user logs in with their credentials

Then the user is granted access to their account

#### **17.**

Feature: Edit Personal Information

Scenario: Update personal information, roles, and responsibilities

Given a logged-in user

When the user edits their personal information

Then the system updates the user's roles and responsibilities accordingly

#### **18.**

Feature: Add New User Account

Scenario: Add a new user account to the system

Given an admin user

When the admin creates a new user account

Then the new user account is added to the system and the new user can log in

#### **19.**

Feature: Add Member to Team

Scenario: Add a user account to a team

Given an admin user and a user account

When the admin adds the user account to a team

Then the user account becomes a member of the specified team

**20.**

Feature: Remove Member from Team

Scenario: Remove a user account from a team

Given an admin user and a user account that is part of a team

When the admin removes the user account from the team

Then the user account is no longer part of the specified team and loses team privileges

# Test Driven Development

Test Driven Development (TDD) is a software development methodology that involves writing tests before writing the code to be tested. The test plan for your project will outline the testing requirements and steps for each feature or user story. Our TDD test plan is as follows:

## 1. Text Mapping:

- Test: Map a short text input to one or more UIL categories.
- Requirement: Input validation, UIL mapping function, and mapping result.

## 2. Download Mapping Results:

- Test: Download the mapping results as a file.
- Requirement: Completed mapping task, download functionality, and file format.

## 3. Mapping Task History:

- Test: Access and view previous mapping tasks and results.
- Requirement: User authentication, task history storage, and display functionality.

## 4. Mapping Process Status:

- Test: Identify the status of the mapping process for raw text input.
- Requirement: Mapping status determination and display functionality.

## 5. Category Options:

- Test: View and select category options while curating data.
- Requirement: Category list, display functionality, and selection functionality.

## 6. Curate Mapping Results:

- Test: Review and modify failed or incomplete mapping results.
- Requirement: List of failed or incomplete mapping results, display functionality, and curation functionality.

## 7. Retrain System:

- Test: Retrain the system using curated data to improve performance.
- Requirement: Curated data, machine learning model, and retraining functionality.

## 8. Update UIL Version:

- Test: Update the UIL to the latest version.
- Requirement: Admin authentication, UIL version management, and update functionality.

## 9. Dashboard and Metrics:

- Test: Display various mapping metrics on a dashboard.
- Requirement: Completed mapping task, dashboard functionality, and metric calculation.

## 10. Successful Mapping Rate and Mapped Items:

- Test: View the successful mapping rate and the number of mapped items.
- Requirement: Completed mapping task, dashboard functionality, and metric calculation.

## 11. Overall Confidence:

- Test: View the overall confidence in mapping results.
- Requirement: Completed mapping task, dashboard functionality, and metric calculation.

## 12. Category Performance Metrics:

- Test: View specific performance metrics for each category.
- Requirement: Completed mapping task, dashboard functionality, and metric calculation.

## 13. Proportion of Each Category:

- Test: View the proportion of each category in the dataset.
- Requirement: Completed mapping task, dashboard functionality, and metric calculation.

## 14. Visualize Mapping Performance History:

- Test: Visualize the history of mapping performance.
- Requirement: Mapping task history, visualization functionality, and metric calculation.

## 15. Rollback System Version:

- Test: Roll back to an earlier system version.
- Requirement: Admin authentication, version management, and rollback functionality.

## 16. Account Login:

- Test: Log in to a user account.
- Requirement: User authentication, login functionality, and account management.

## 17. Edit Personal Information:

- Test: Update personal information, roles, and responsibilities.
- Requirement: User authentication, personal information management, and role management.

## 18. Add New User Account:

- Test: Add a new user account to the system.
- Requirement: Admin authentication, account creation functionality, and account management.

## 19. Add Member to Team:

- Test: Add a user account to a team.
- Requirement: Admin authentication, team management functionality, and account management.

## 20. Remove Member from Team:

- Test: Remove a user account from a team.
- Requirement: Admin authentication, team management functionality, and account management.

For each feature or user story, you should create tests that check for both successful and unsuccessful outcomes, including edge cases and unexpected inputs. These tests will help ensure that your application is robust, reliable, and meets the requirements of the project. Implementing these tests before writing the code will guide your development and help you focus on creating well-structured and maintainable code.

# Test Cases

Title	Creator	Modified
TC0008 - Security	KUNXI SUN	yesterday at 2:14 PM
TC0007 - Team Management	KUNXI SUN	yesterday at 12:51 PM
TC0005 - Curate Mapping Result	KUNXI SUN	yesterday at 11:29 AM
TC0004 - Visualise Mapping Result	KUNXI SUN	yesterday at 11:29 AM
TC0003 - Mapping Clinical Raw Text	Hanyi Gao	yesterday at 11:29 AM
TC0006 - Rollback to Default System	KUNXI SUN	29 Apr, 2023
TC0002 - Upload & Download files	Hanyi Gao	29 Apr, 2023
TC0001 - Authentication & Authorization	KUNXI SUN	29 Apr, 2023

# TC0001 - Authentication & Authorization

ID	Description	Category	Test Steps	Prerequisites	Expected Results	Note
TC001-1	Login with a correct email and password	Manage Account	1. Enter user's email 2. Enter user's password 3. Click 'Login' button	1. user is invited in the team	The user has logged into the system successfully. Navigate to the main page	Email: <a href="mailto:diboxjelly@gmail.com">diboxjelly@gmail.com</a>  Password: 12345678
TC001-2	Login with an email that does not exist	Manage Account	1. Enter a non-existing email 2. Enter any password 3. Click 'Login' button	-	The user should not log into the system. The system should give a notification telling the user that the email does not exist	Email: <a href="mailto:email@noexist.com">email@noexist.com</a>  Password: 12345678
TC001-3	Login with an exist email but wrong password	Manage Account	1. Enter a existing email 2. Enter a wrong password 3. Click 'Login' button	1. user is invited in the team	The user should not log into the system. The system should give a notification telling the user that the password is wrong	Email: <a href="mailto:diboxjelly@gmail.com">diboxjelly@gmail.com</a>  Password: wrongpassword
TC001-4	Logout	Manage Account	1. Move mouse to the username on the top right 2. Click 'Sign out' in the dropdown menu	1. TC0001-1	The user has logged out successfully. Navigate to the Login page	

## TC0002 - Upload & Download files

ID	Description	Category	Test Steps	Prerequisites	Expected Results	Note
TC0002-1	Upload a CSV file	Map free text	<ol style="list-style-type: none"><li>1. Click the Browse button in the upload area</li><li>2. Select a CSV file</li></ol>	1. TC0001-1	<p>Only the CSV file can be selected.</p> <p>The selected file name should be rendered in the uploaded area</p>	

# TC0003 - Mapping Clinical Raw Text

ID	Description	Category	Test Steps	Prerequisites	Expected Results	Note
TC003-1	Map the CSV file in inference mode	Map free text	1. Click the Inference radio button 2. Click Map button	1. TC0002-1 2. the uploaded CSV file is in a correct format	Navigate to the mapping result inference mode page  The table at the mapping result page should show the relevant result	The header of the CSV file should be Text
TC003-2	Map the CSV file in training mode	Map free text	1. Click the Training radio button 2. Click Map button	1. TC0002-1 2. the uploaded CSV file is in a correct format	Navigate to the mapping result training mode page  The table at the mapping result page should show the relevant result	The header of the CSV file should be Text
TC003-3	Map the CSV file that has a wrong format	Map free text	1. Click Map button	1. TC0002-1 2. the uploaded CSV file is in a wrong format	Mapping should fail. The system should give a notification that the CSV format is wrong	
TC003-4	View mapping task history	Map free text	1. Click Retain History on the side bar	1. TC0001-1 2. The team or researcher has had a mapping task before.	History mapping task is shown on the webpage.	

# TC0004 - Visualise Mapping Result

ID	Description	Category	Test Steps	Prerequisites	Expected Results	Note
TC004-01	Have a dashboard to display the mapping metrics	Mapping Visualisation	1. Click on the dashboard icon	1. TC0004-2 2. Mapping is successful	Dashboard is shown on the right side drawer.	
TC004-02	View the successful mapping rate and number of mapped items	Mapping Visualisation	1. Click on the dashboard icon	1. TC0004-2 2. Mapping is successful	Mapping rate and number of mapped items are shown on the right side drawer.	
TC004-03	View the overall confidence	Mapping Visualisation	1. Click on the dashboard icon	1. TC0004-2 2. Mapping is successful	Overall confidence is shown on the right side drawer.	
TC004-04	View the Specific Performance On Each Category	Mapping Visualisation	1. Click on the dashboard icon 2. Then click the confidence button on the right side drawer.	1. TC0004-2 2. Mapping is successful	Specific performance of each category on the right side drawer.	
TC004-05	View the Proportion of Each Category	Mapping Visualisation	1. Click on the dashboard icon	1. TC0004-2 2. Mapping is successful	Ring Chart indicates proportion of each category is shown on the right side drawer.	
TC004-06	Visualize Mapping Performance History	History Visualisation	1. Click on History States on the left side bar 2. Click on the Mapping History below the History States section	1. Have successful mapping results before	Mapping history dashboard is shown on the web page.	
TC004-07	Filter Mapping History by Date Range	History Visualisation	1. Select the date range on the webpage	1. TC0004-06	Mapping History within the selected date range is shown on the web page.	
TC004-08	Filter Mapping History by User	History Visualisation	1. Select the user on the webpage	1. TC0004-06	Mapping History within the selected user is shown on the web page.	
TC004-09	Rollback to Earlier System Version	History Visualisation	1. Click on the roll back button on the mapping diagram	1. TC0004-06	Roll back to the selected version.	

# TC0005 - Curate Mapping Result

ID	Description	Category	Test Steps	Prerequisites	Expected Results	Note
TC0005-1	View Category Options for Mapped Items and curate	Curate the mapping and re-train the system	<ol style="list-style-type: none"> <li>Click 'Curate' icon in the action column</li> <li>Select a category in the dropdown</li> <li>Click 'Save' to curate the result</li> </ol>	TC0003-2	<ol style="list-style-type: none"> <li>Able to see all the UIL categories in the dropdown</li> <li>The status becomes 'reviewed' after saving the curated category</li> </ol>	
TC0005-2	The system is retrained after curating the result	Curate the mapping and re-train the system	<ol style="list-style-type: none"> <li>Curate a mapping</li> <li>Click 'Retrain' button</li> <li>Do the mapping again</li> </ol>	TC0005-1	The system is retrained and the new mapping should show the results that are curated last time	

## TC0006 - Rollback to Default System

ID	Description	Category	Test Steps	Prerequisites	Expected Results	Note
TC006-1	Rollback the mapping system	Implement mapping history visualization	<ol style="list-style-type: none"><li>1. Click 'Mapping Stats' section</li><li>2. Click 'Mapping History' subsection</li><li>3. Click 'Rollback to Default' button beyond mapping history monitoring timeline</li><li>4. Click 'Confirm' button</li></ol>	1. user is admin	The user has rolled back the system successfully. Navigate to the main page.	Email: <a href="mailto:diboxjelly@gmail.com">diboxjelly@gmail.com</a> Password: 12345678

# TC0007 - Team Management

ID	Description	Category	Test Steps	Prerequisites	Expected Results	Note
TC008-1	Create a team	Manage team	<ol style="list-style-type: none"> <li>Click the "Create Team" button</li> <li>Enter the name of the team</li> <li>Click the "Confirm" button</li> </ol>	<ol style="list-style-type: none"> <li>The admin user has successfully logged in</li> </ol>	The system shows a new team page, which means that the admin user successfully creates a team.	The team name should not be empty.
TC008-2	Add a team member to a team	Manage team	<ol style="list-style-type: none"> <li>Select a user</li> <li>Click the "Add to a team" button</li> <li>View the list of all team names</li> <li>Select a team from the team list</li> <li>Click the "Confirm" button</li> </ol>	<ol style="list-style-type: none"> <li>The admin user has successfully logged in</li> <li>A team exists</li> <li>The team is not full</li> </ol>	A new user appears on the team page, which means that the user has been successfully added to a team.	The admin can only add one user to a team in one operation.
TC008-3	Remove a team member from a team	Manage team	<ol style="list-style-type: none"> <li>Select a team</li> <li>Select a team member from the team</li> <li>Click the "Remove from the team" button</li> <li>Click the "Confirm" button</li> </ol>	<ol style="list-style-type: none"> <li>The admin user has successfully logged in</li> <li>A team exists</li> <li>The team is not empty</li> </ol>	The user no longer appears on the team page which means that the user has been successfully removed from the team.	The admin can remove multiple users from a team in one operation.

# TC0008 - Security

ID	Description	Category	Test Steps	Prerequisites	Expected Results	Note
TC008-1	API should be protected	-	<ol style="list-style-type: none"> <li>Without using access token from login URL</li> <li>Use all request method(POST/GET /UPDATE/DELETE) to all API with protected resource</li> </ol>	1. Does not log in	1. The API does not return any data without access token	Sensitive data can only be seen after log in
TC008-2	System can safely rollback /default system setting without losing data	-	<ol style="list-style-type: none"> <li>System create a new workspace (empty mapping history).</li> <li>Check the previous mapping history, and the history did not lose.</li> </ol>	1. User log in	1. Check the previous workspace, and the mapping history will not lose.	Data will never lose

# Test Reports

Title	Creator	Modified
2023-04-28 Functional Test	KUNXI SUN	29 Apr, 2023

# 2023-04-28 Functional Test

Tester	Hanyi Gao
Date	27 Apr 2023

Test cases	Test Case ID	Status	Note
Test Cases - Authentication&Authorization	TC0001-1	PASS	
	TC0001-2	FAIL	see (Unsolved) ISSUE0001: Login incorrect error message
	TC0001-3	FAIL	see (Unsolved) ISSUE0001: Login incorrect error message
	TC0001-4	PASS	
TC0001 - Upload&Download files	TC0002-1	PASS	
TC0003 - Mapping Clinical Raw Text	TC0003-1	PASS	
	TC0003-2	PASS	
	TC0003-3	PASS	
TC0004 - Visualise Mapping Result		DEVELOPING	
TC0005 - Curate Mapping Result	TC0005-1	PASS	
	TC0005-2	DEVELOPING	
TC0007 - Team management		DEVELOPING	
TC0006 - Rollback to Default System	TC0006-1	DEVELOPING	
TC0008 - Security	TC0008-1	PASS	

# Code Reviews

Title	Creator	Modified
2023-04-27 Code Review Report - BackEnd	KUNXI SUN	yesterday at 11:42 PM
2023-04-27 Code Review Report - FrontEnd	Yue Fei	29 Apr, 2023

# 2023-04-27 Code Review Report - BackEnd

## Code review information

Date	27 Apr 2023
Reviewer	Yue Fei
Author	KUNXI SUN
Code Repository / Branch	DI-Boxjelly/src/

## Code review spreadsheet

Issue ID	Artifact(on Github)	Location	Severity	Type	Defects Category	Description	Fixed by the author?	Verified by the moderator?
BE01-01	DI-Boxjelly/src/di-auth/app/api/register.py	class EmailRegister (Resource) Function post	Trivial	Improvement	Check Defects	Add password strength validation.	No	No
BE01-02	DI-Boxjelly/src/di-auth/app/api/register.py	class EmailRegister (Resource) Function post	Medium	Improvement	Logic Defects	Add failure model of MongoDB.	No	No
BE01-03	DI-Boxjelly/src/di-auth/app/api/register.py	class EmailRegister (Resource) Function post	Trivial	Improvement	Structure Defects	Consider defining a function or class method to break down to the smaller function for validating the length and format of input data.	No	No
BE01-04	DI-Boxjelly/src/di-auth/app/api/login.py	class EmailLogin (Resource) Function post	High	Issue	Check Defects	Consider changing the error code when the email or password is incorrect from 404 or 401 to 200.	No	No
BE01-05	DI-Boxjelly/src/di-common/app/api/email.py	class Mail (Resource)	Trivial	Improvement	Structure Defects	Please delete the dead code.	No	No
BE01-06	DI-Boxjelly/src/di-common/app/api/email.py	class Mail (Resource)	Medium	Improvement	Logic Defects	Add error handling code to catch any exceptions that might be raised while sending the email.	No	No
BE01-07	DI-Boxjelly/src/di-auth DI-Boxjelly/src/di-gateway DI-Boxjelly/src/di-map	All	Trivial	Improvement	Documentation Defects	Add comment to each file.	No	No
BE01-08	DI-Boxjelly/src/di-auth DI-Boxjelly/src/di-gateway DI-Boxjelly/src/di-map	All	Trivial	Improvement	Structure Defects	Please delete dead code.	No	No

## Summary and Next Steps

In general, the backend code appears to meet the standards outlined in the checklist, but there are some issues that have been identified and listed above. It would be greatly appreciated if you could kindly take the time to remove any unused code and add comments to the code within the di-common, di-gateway, and di-map folders in order to improve the code's readability and comprehension. Please consider to add some more error handling cases and fix the error code bugs as well.

# 2023-04-27 Code Review Report - FrontEnd

## Code review information

Date	27 Apr 2023
Reviewer	Ricardo Luo
Author	Hanyi Gao
Code Repository / Branch	DI-Boxjelly/src/di-web/src/

## Code review spreadsheet

Issue ID	Artifact(on Github)	Location	Severity	Type	Defects Category	Description	Fixed by the author?	Verified by the moderator?
FE01-01	DI-Boxjelly/src/di-web/src/App.js	all	Trivial	Improvement	Documentation Defects	Need more comments to describe the aim of the file and functions	No	No
FE01-02	DI-Boxjelly/src/di-web/src/App.js	function App()	Trivial	Improvement	Visual Representation Defects	There are some instances of long lines which may make the code difficult to read.	No	No
FE01-03	DI-Boxjelly/src/di-web/src/modules/Login/index.jsx	all	Trivial	Improvement	Documentation Defects	Need more comments to describe the aim of the file and functions	No	No
FE01-04	DI-Boxjelly/src/di-web/src/modules/Login/index.jsx	return ()	Trivial	Improvement	New Functionality	Change the class attribute to className in the JSX div elements to fix the React-specific syntax.	No	No
FE01-05	DI-Boxjelly/src/di-web/src/modules/Dashboard/index.jsx	all	Trivial	Improvement	Documentation Defects	Need more comments to describe the aim of the file and functions	No	No
FE01-06	DI-Boxjelly/src/di-web/src/modules/Dashboard/index.jsx	all	Trivial	Improvement	New Functionality	Change the class attribute to className in the JSX div elements to fix the React-specific syntax.	No	No
FE01-07	DI-Boxjelly/src/di-web/src/modules/Dashboard/index.jsx	onProfileClick()	Trivial	Improvement	New Functionality	Implement the profile page navigation in the onProfileClick function, replacing the console.log statement with the appropriate navigation code.	No	No
FE01-08	DI-Boxjelly/src/di-web/src/modules/Mapping/index.jsx	all	Trivial	Improvement	Documentation Defects	Need more comments to describe the aim of the file and functions	No	No
FE01-09	DI-Boxjelly/src/di-web/src/modules/MappingResult/index.js	all	Trivial	Improvement	Documentation Defects	Need more comments to describe the aim of the file and functions	No	No

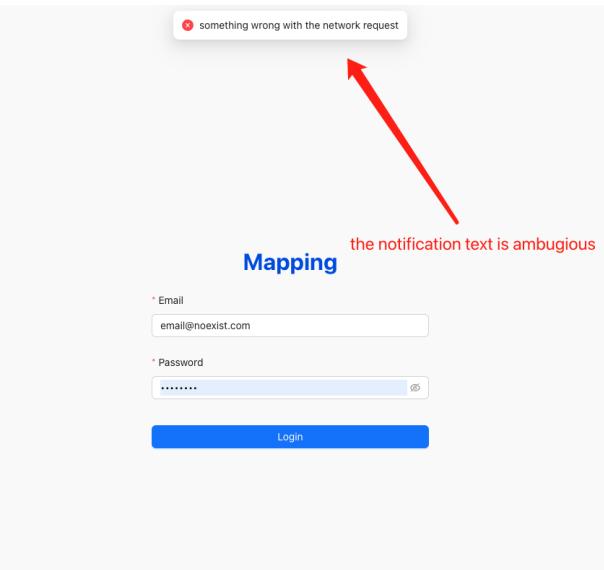
## Summary and Next Steps

Overall, the front-end code quality was excellent and met almost all the criteria and requirements in the checklist. Through the code review, we found some minor issues, but most of the code are easy to fix. No major structural or logical issues were found so far, so hopefully we can keep up the good work.

# Issue Tracking

Title	Creator	Modified
(Unsolved) ISSUE0001: Login incorrect error message	KUNXI SUN	yesterday at 11:18 PM

# (Unsolved) ISSUE0001: Login incorrect error message

ISSUE0001	<input type="checkbox"/> Login incorrect error message
Status	UNRESOLVED
Assignee	KUNXI SUN
Github Issue link	<a href="https://github.com/COMP90082-2023-SM1/DI-Boxjelly/issues/10">https://github.com/COMP90082-2023-SM1/DI-Boxjelly/issues/10</a>
Description	<p>Fail to give reasonable notification when the email or password is incorrect.</p>  <p>The screenshot shows a login form with two fields: 'Email' containing 'email@noexist.com' and 'Password' containing several dots. A blue 'Login' button is at the bottom. Above the form, a small red-bordered box contains the text 'something wrong with the network request'. A red arrow points from the text 'the notification text is ambiguous' to this box. Below the form, the word 'Mapping' is written in blue.</p> <p>the notification text is ambiguous</p> <p>Mapping</p>

# CI/CD

Version	Description	Date
Version 1.0.0	1. Basic CI/CD using Ansible, a short description about how team use Ansible to deploy product	28 Apr 2023

## Version 1.0.0

### 1 Introduction

#### 1.1 Ansible & Github Actions

A Continuous Integration/Continuous Deployment (CI/CD) pipeline is crucial for modern software development, as it helps to automate the process of building, testing, and deploying applications. While we were planning to develop our project, we plan to use Ansible for deploying the product on our development cloud server. The Ansible script has been successfully implemented and tested. In later Sprint, team will try to use Github Actions for automating deployment by merging branches.

- A short description about Ansible can be found in [confluence page](#).
- More details about how to deploy our product on development server can be found on [Github Ansible README](#).

### 2 Continuous Integration using Github Actions

This is planned in Sprint 3

### 3 Continuous Deployment for Development environment

Ansible is used to automate the deployment of the application to the development environment. It provisions the cloud server, configures the environment, installs dependencies, and deploys the application.

### 4 Continuous Deployment for Production environment

As team still did not get the instance from client, therefore, we cannot deploy project on the production environment

### 5 Monitoring and Feedback

Throughout the CI/CD process, the team monitors the build and deployment status using GitHub Actions logs and notifications. Any failures or issues encountered during the process are addressed and resolved to ensure a smooth and efficient pipeline.

# Decisions

Title	Creator	Modified
Version Control	Yue Fei	yesterday at 11:28 AM
Role Assignment	KUNXI SUN	yesterday at 11:26 AM
Use MedCAT	KUNXI SUN	yesterday at 12:51 AM
Technique Stack	KUNXI SUN	28 Apr, 2023

# Role Assignment

Name	Preferred Name	Role	Responsibility
Kunxi Sun	Quincy	Product Owner	<ul style="list-style-type: none"><li>• Manage the product backlog</li><li>• Prototype Design</li><li>• Github repository setup and management</li></ul>
Chenyang Dong	Peter	Scrum Master	<ul style="list-style-type: none"><li>• Responsible for ensuring that the Scrum framework is followed</li><li>• Negotiation and communication with Client and Supervisor</li></ul>
Hanyi Gao	Henry	Development Team Member	<ul style="list-style-type: none"><li>• Prototype Design</li><li>• Determine the architectural decisions</li></ul>
Yulai Luo	Ricardo	Development Team Member	<ul style="list-style-type: none"><li>• Verify that the documents meet the standards and guidelines</li><li>• Meeting Minutes</li></ul>
Yue Fei	Molly	Development Team Member	<ul style="list-style-type: none"><li>• User experience on prototype</li><li>• Review the task</li></ul>

# Technique Stack

Update:

The **technologies to use in this project** has been decided based on the following technique stack.

---

Rate the familiarity with the following technologies on a scale from 1 to 5.

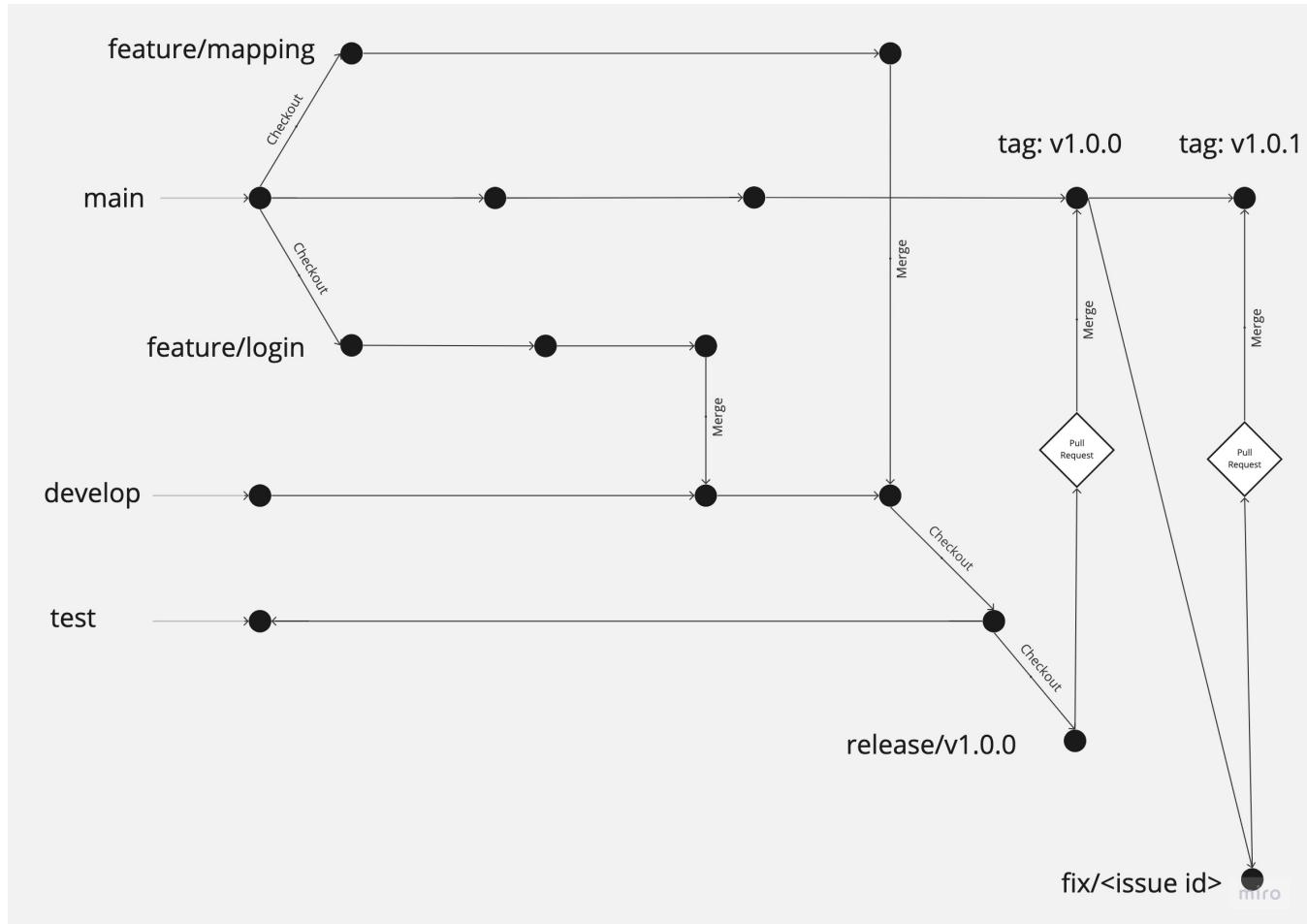
Name	Kunxi Sun	Yulai Luo	Yue Fei	Chenyang Dong	Hanyi Gao
<b>Major</b>	AI	AI	AI	Distributed Computing	Computing
<b>Python</b>	5	4	5	5	3
<b>Java</b>	3	4	3	3	3
<b>C</b>	3	1	2	2	2
<b>Golang</b>	0	0	0	0	0
<b>Javascript</b>	2	2	3	4	5
<b>Spring</b>	0	3	0	0	0
<b>Flask</b>	4	0	0	0	0
<b>Django</b>	0	1	0	1	0
<b>Pandas</b>	3	3	5	5	3
<b>Scikit-learn</b>	3	1	5	5	1
<b>Numpy</b>	4	4	5	5	3
<b>Matplotlib</b>	4	3	5	5	3
<b>Tensorflow</b>	4	1	3	3	0
<b>Keras</b>	3	2	3	3	0
<b>Pytorch</b>	4	2	4	3	0
<b>React</b>	0	3	0	3	5
<b>Vue</b>	0	3	0	0	1
<b>Html</b>	4	5	4	4	5
<b>Css</b>	2	5	4	4	5
<b>Figma</b>	5	0	0	0	5
<b>Adobe XD</b>	2	0	0	3	2
<b>Sketch</b>	0	0	0	0	0

# Use MedCAT

Based one [2023-04-28 Meeting notes - Client](#), team is going to implement MedCAT to map raw text to SNOMED CT as one of the approaches.

# Version Control

Team member should follow the following graph to make commit and create branches.



# Others

Title	Creator	Modified
Demonstration	Hanyi Gao	less than a minute ago
Mapping Tools Survey	KUNXI SUN	yesterday at 11:26 AM
Code Review Checklist	Yue Fei	yesterday at 11:26 AM
Server Configuration	Ricardo Luo	yesterday at 11:23 AM
Tool Uses	KUNXI SUN	28 Apr, 2023

# Server Configuration

## Dev Cloud Server

Public IP	101.43.110.249
Email	<a href="mailto:895023420@qq.com">895023420@qq.com</a>
Password	*****
Instance ID	Ihins-6y84pbke
Instance name	Ubuntu
Area	Shanghai
secret key	lhkp-j8q3flr4

## Database

Address	<a href="http://101.43.110.249:27017/">http://101.43.110.249:27017/</a>
admin username	boxjelly
admin password	di_boxjelly90082
Connection URL	<a href="mongodb://boxjelly:di_boxjelly90082@101.43.110.249:27017/">mongodb://boxjelly:di_boxjelly90082@101.43.110.249:27017/</a>

## Web

Address	<a href="http://101.43.110.249/">http://101.43.110.249/</a>
---------	---

# Demonstration

**Sprint 2 video demo:**

# Tool Uses

## 1 Integrate Github on Slack

Integrate GitHub on Slack helps the team track the commit on important branches: develop and main branch

Example 1: Main branch notification on Slack

The screenshot shows the Slack interface on the left and a GitHub channel view on the right. A green box highlights the 'noti-github-main' channel in both sections.

**Slack Sidebar:**

- DI-BoxJelly
- Upgrade Plan
- Later
- Mentions & reactions
- Drafts & sent (1)
- Slack Connect
- More
- Starred
- research-team
- Channels
  - general
  - main-discussion
  - noti-confluence-all
  - noti-github-develop
  - noti-github-general
  - noti-miro
  - noti-trello-all**
  - zoom-meeting
- Add channels
- Direct messages
  - KUNXI SUN you
  - Chenyang Dong
- noti-github-main

**GitHub Channel View:**

**noti-github-main**

- + Add a bookmark
- commits::dev/sprint1
- Monday, March 20th
- KUNXI SUN 12:41 PM  
renamed the channel from "github-main" to "noti-github-main"
- Wednesday, March 22nd
- GitHub APP** 10:11 PM  
4 new commits pushed to dev/sprint1 by KunxiSun
  - b96dc116 - test commit
  - 86c6ca78 - Update README.md
  - a64be105 - test slack noti
  - 8cf5a758 - Merge branch 'dev/sprint1' of https://github.com/COMP90082-2023-SM1/DI-Boxjelly into dev/sprint1
- Thursday, March 23rd
- GitHub APP** 12:43 AM  
1 new commit pushed to dev/sprint1 by KunxiSun
  - a9d3c137 - update the workflow-branching naming

Message to noti-github-main

Example 2: Develop branch notification on Slack

The screenshot shows the DI-BoxJelly Slack interface. On the left, there's a sidebar with various options like 'Later', 'Mentions & reactions', 'Drafts & sent', 'Slack Connect', 'More', 'Starred', 'research-team', 'Channels' (including '# general', 'main-discussion', 'noti-confluence-all', 'noti-github-develop' which is highlighted with a green box, 'noti-github-general', 'noti-github-main', 'noti-miro', 'noti-trello-all', 'zoom-meeting'), 'Add channels', 'Direct messages' (with entries for 'KUNXI SUN you' and 'Chenyang Dong').

The main area shows a conversation in the 'noti-github-develop' channel. It starts with a GitHub message from 'agogear' on Sunday, April 23rd:

0971760a - Update CODE REVIEW as a new assessment criteria  
COMP90082-2023-SM1/comp90082-2023-sm1-resources

1 new commit pushed to `main` by `agogear`

9f6a8cf5 - New updates on code review criteria  
COMP90082-2023-SM1/comp90082-2023-sm1-resources

Sunday, April 23rd

GitHub APP 2:42 PM  
1 new commit pushed to `main` by `agogear`

88021066 - Updating checklists - simplifying items to students  
COMP90082-2023-SM1/comp90082-2023-sm1-resources

Monday, April 24th

GitHub APP 10:44 AM  
1 new commit pushed to `main` by `agogear`

98dade15 - Improved checklist to students (consistent with current dev workflow - NO additional work for them)  
COMP90082-2023-SM1/comp90082-2023-sm1-resources

Message to noti-github-develop

Message input field with rich text editor icons: bold, italic, font size, etc.

Example 3: General information on Slack

The screenshot shows the DI-BoxJelly Slack interface. On the left, there's a sidebar with various sections like 'Later', 'Mentions & reactions', 'Drafts & sent', 'Slack Connect', 'More', 'Starred', 'research-team', 'Channels' (including '# general', 'main-discussion', 'noti-confluence-all', 'noti-github-develop', and 'noti-github-general'), 'noti-trello-all', 'zoom-meeting', 'Add channels', 'Direct messages' (with entries for 'KUNXI SUN' and 'Chenyang Dong'), and a 'Upgrade Plan' button. The 'noti-github-general' channel is highlighted with a blue box. The main area shows a message from GitHub (@noti-github-general) at 7:20 PM on April 4th, which is a reply to a thread about a pull request merge. The message includes a link to '#9 Release/v1.1.0'. Below the message is a text input field with placeholder text 'Message @noti-github-general' and a toolbar with various formatting options.

DI-BoxJelly ▾

Upgrade Plan

Later

Mentions & reactions

Drafts & sent 1

Slack Connect

More

Starred

research-team

Channels

# general

main-discussion

noti-confluence-all

noti-github-develop

noti-github-general

noti-github-main

noti-miro

noti-trello-all

zoom-meeting

Add channels

Direct messages

KUNXI SUN you

Chenyang Dong

noti-github-general ▾

+ Add a bookmark

• Nginx->Backer Tuesday, April 4th

• di-gateway->di-auth

• di-auth->mongodb

2. Login( Page and API)

3. Register(Only API)

Show more

COMP90082-2023-SM1/DI-Boxjelly | Apr 4th

Comment

1 reply 23 days ago

Wednesday, April 5th

GitHub APP 7:20 PM replied to a thread Pull request merged by doncd-p

#9 Release/v1.1.0

COMP90082-2023-SM1/DI-Boxjelly | Apr 4th

B I S | ⌂ | ⌂ ⌂ | ⌂ ⌂ | ⌂ ⌂ | ⌂ ⌂ | ⌂ ⌂

Message @noti-github-general

## 2 Integrate Trello on Slack

Integrate Trello on Slack helps team track the status of user story cards.

Example 1: Trello card notifications on Slack

**DI-BoxJelly** ▾

Upgrade Plan

Later

Mentions & reactions

Drafts & sent 1

Slack Connect

More

Starred

research-team

Channels

# general

main-discussion

noti-confluence-all

noti-github-develop

noti-github-general

noti-github-main

noti-miro

**noti-trello-all**

zoom-meeting

+ Add channels

**noti-trello-all** ▾

+ Add a bookmark

Moved Sprint 1 review Today → Sprint2 confluence to sprint 2 confluence review.

Trello APP 7:14 PM  
Yulai Luo Moved Code review 2 -p2p-Frontend from SPrint2 confluence to springt 2 confluence review.

Trello APP 7:36 PM  
Yue Fei Moved Code review 3-p2p-Backend from SPrint2 confluence to springt 2 confluence review.

Trello APP 7:54 PM  
Chenyang Dong Archived the card Code review - p2p.

Trello APP 9:33 PM  
Chenyang Dong Renamed the card "Sprint Goal:" to Sprint Goal: Enable efficient and accurate mapping of short text into the terms of the Universal Indication List (UIL) by developing a mapping system, allowing for account login and management, and providing category options for mapped items.

### 3 Integrate Confluence on Slack

FAIL

Reason: Permission from unimelb Confluence administration required.

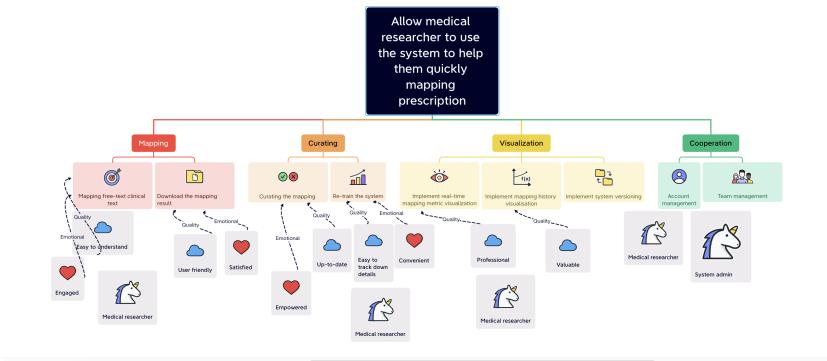
### 4 Integrate Zoom on Slack

FAIL

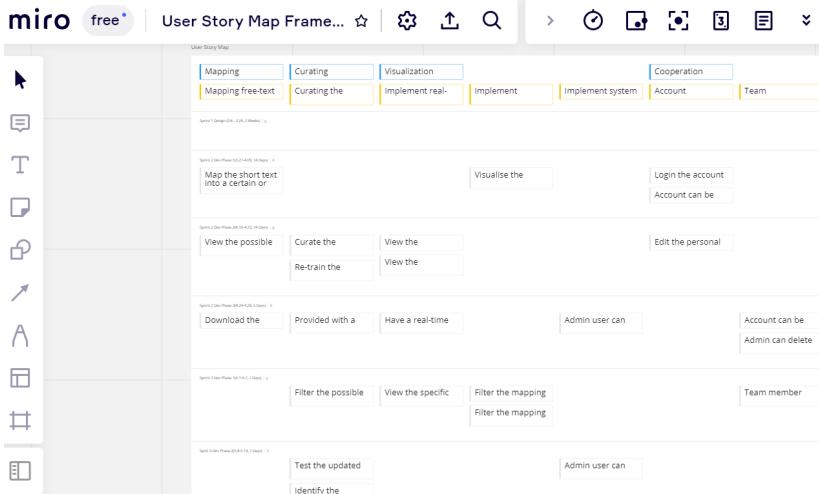
Reason: Permission from unimelb Zoom administration required.

### 5 Xmind

Xmind is a very powerful tool which helps team to draw the [motivational model](#).

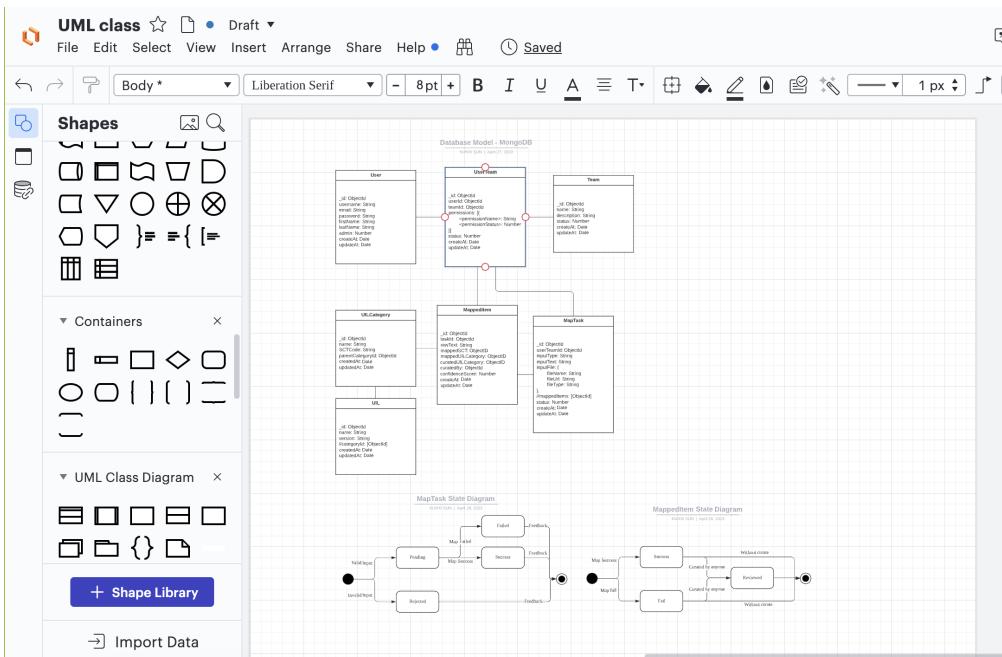


## 6 Miro



## 7 Lucidchart

Lucidchart is a very powerful tool to draw diagrams. It has been used to produce the [4+1 architecture diagrams](#).



## 8 Postman

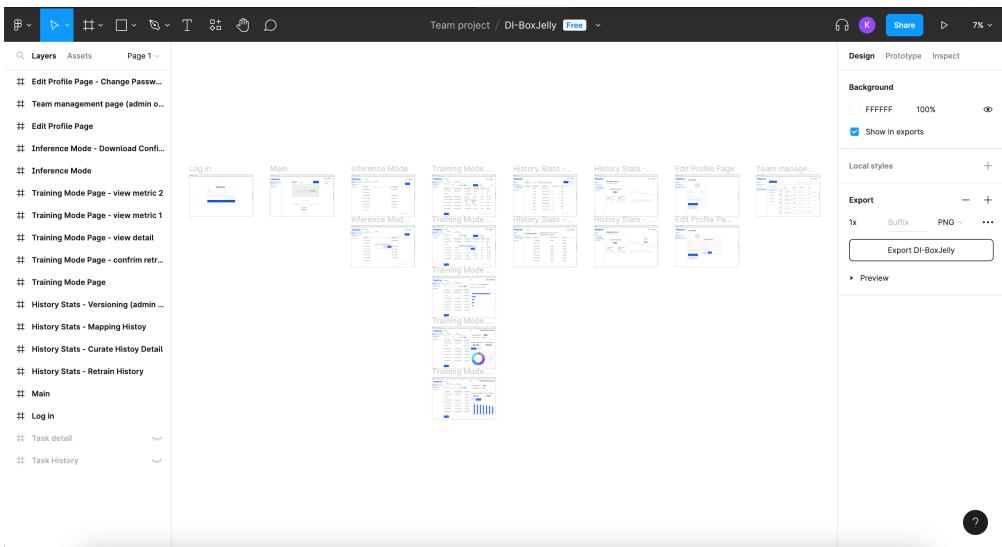
Ontoserver provides their APIs through Postman, so team members use postman very often to test the Ontoserver API, and test our own backend APIs.

The screenshot shows the Postman application interface. At the top, there are navigation tabs for ENVIRONMENT (set to R4), LAYOUT (set to Single Column), LANGUAGE (set to cURL - cURL), and a Public button. Below the header, the 'ONTOSERVER' collection is selected. The collection structure is as follows:

- Introduction**: Examples of usage of the Ontoserver APIs. See the [Ontoserver documentation](#) and the [FHIR R4 specification](#) for more information about these operations.
- CodeSystem**: Examples demonstrating use of the basic operations relating to [CodeSystem](#) resources. See [Code System](#) in the Ontoserver documentation.
- GET Search all CodeSystems, return their names and urls**: A search endpoint with the URL [https://r4.ontoserver.csiro.au/fhir/CodeSystem?\\_elements=name,\\_url&\\_count=10](https://r4.ontoserver.csiro.au/fhir/CodeSystem?_elements=name,_url&_count=10). Description: Retrieves the `_name` and `_url` elements for all `CodeSystem` resources in the server, limiting the number of results in the first page to 10. See [Search](#).
- PARAMS**: Parameters for the search endpoint:
  - `_elements`: `name,url`
  - `_count`: `10`

## 9 Figma

Figma is a collaborative ui design tools which has been used to produce the [digital prototypes](#).



# Code Review Checklist

The following checklist is used for our analysis:

1. Documentation Defects:
  - a. Naming: Assess the quality of software element names.
  - b. Comment: Analyze the quality and accuracy of code comments.
2. Visual Representation Defects:
  - a. Bracket Usage: Identify any issues with incorrect or missing brackets.
  - b. Indentation: Check for incorrect indentation that affects readability.
  - c. Long Line: Point out any long code statements that hinder readability.
3. Structure Defects:
  - a. Dead Code: Find any code statements that serve no meaningful purpose.
  - b. Duplication: Identify duplicate code statements that can be refactored.
4. New Functionality:
  - a. Use Standard Method: Determine if a standardized approach should be used for single-purpose code statements.
5. Resource Defects:
  - a. Variable Initialization: Identify variables that are uninitialized or incorrectly initialized.
  - b. Memory Management: Evaluate the program's memory usage and management.
6. Check Defects:
  - a. Check User Input: Analyze the validity of user input and its handling.
7. Interface Defects:
  - a. Parameter: Detect incorrect or missing parameters when calling functions or libraries.
8. Logic Defects:
  - a. Compute: Identify incorrect logic during system execution.
  - b. Performance: Evaluate the efficiency of the algorithm used.

# Mapping Tools Survey

	Ontoserver	3M HDD	Apelon DTS	Clinical Architecture Symedical	HealthTerm
<b>Support SNOMED CT</b>	Yes	Yes	Yes	Yes	Yes
<b>Mapping</b>	Yes	Yes	Yes	Yes	Yes
<b>Automapping</b>	Yes	No	No	No	Yes
<b>Search Engine</b>	Yes	Yes	Yes	Yes	Yes
<b>RESTful APIs</b>	Yes	Yes	Yes	Yes	Yes
<b>Custom Mappings</b>	Yes	No	No	Yes	Yes
<b>Technical Support</b>	Yes	No	Yes	-	-
<b>Company Location</b>	AU	US	US	US	US
<b>Pricing</b>	Free License held	Starts at USD \$27,500 per year for development use	Basic: USD \$27,000 per year With software support: additional USD \$15,000 per year	Waiting for response	Waiting for response