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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.

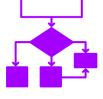
The platform features the integration of a human-in-the-loop system, which allows for manual review and correction of the mapping results. This feedback will be used to continuously enhance the platform's accuracy and performance.

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 3 (Development Sprint) |
| Team Location | Melbourne, Australia |
| Team representative's Email | doncd@student.unimelb.edu.au |

Important Pages

| | | |
|---|--|---|
|  |  |  |
| Github | Backlog | Timeline |
|  |  |  |
| Figma | Architecture | Meetings |
|  |  |  |
| Trello (Invitation link) | 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@student.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@student.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

Role: Product Owner

Responsibility:

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



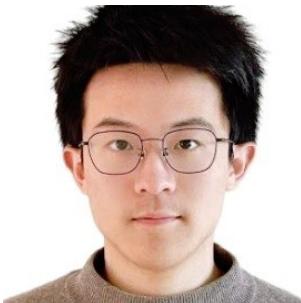
Chenyang (Peter) Dong

Email: doncd@student.unimelb.edu.au

Role: Scrum Master

Responsibility:

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



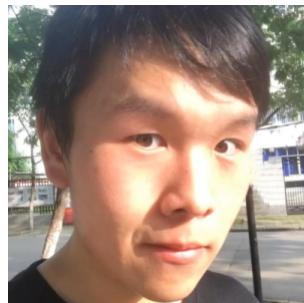
Hanyi (Henry) Gao

Email: hanyig1@student.unimelb.edu.au

Role: Development Team Member

Responsibility:

- Implements the system
- Frontend, Testing, Design



Yulai (Ricardo) Luo

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Role: Development Team Member

Responsibility:

- Implements the system
- Frontend, Backend, UX



Yue (Molly) Fei

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Role: Development Team Member

Responsibility:

- Implements the system
- Frontend, Backend, UX

Recent space activity



Yue Fei

[Behaviour Driven Development](#) updated about an hour ago • [view change](#)

[2023-05-08 Meeting notes - Team](#) updated about an hour ago • [view change](#)

[2023-05-05 Meeting notes - Client](#) updated about an hour ago • [view change](#)

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- [Yue Fei](#) (an hour ago)
- [Ricardo Luo](#) (an hour ago)
- [Chenyang Dong](#) (an hour ago)
- [KUNXI SUN](#) (2 hours ago)
- [Hanyi Gao](#) (1 day ago)
- ...

[2023-05-12 Meeting notes - Client](#) updated about an hour ago • [view change](#)

[2023-05-19 Meeting notes - Client](#) updated about an hour ago • [view change](#)

Requirements

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| Title | Creator | Modified |
|--------------------------------------|---------------|--------------------|
| Background | Chenyang Dong | about 14 hours ago |
| Product Backlog | Chenyang Dong | 02 May, 2023 |
| User Stories and Acceptance Criteria | KUNXI SUN | 30 Apr, 2023 |
| 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.

2.3 SNOMED CT Latest Release

[Use this link](#) to download the last six SNOMED CT-AU monthly releases in their native RF2 distribution format.

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 A Brief 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 to request a (free) Ontoserver licence. ADHA will then arrange authorisation for your [quay.io](#) account
- Elsewhere, email 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.
- To use the ontoserver image:
 1. (Once you have a license) Ensure your dockerhub account has been registered with ontoserver-support@csiro.au
 2. Log in to docker docker login
 3. Create a docker-compose.yml file for ontoserver (example provided in the repository), making sure to supply your syndication credentials (for information on how to retrieve these credentials, please [consult the Ontoserver documentation](#)).
 4. Start the compose docker-compose up -d
 5. To get the latest version of SNOMED CT-AU into the Ontoserver index, run the following: docker exec ontoserver /index.sh -s sctau Or, to get a specific version of SNOMED CT-AU into the Ontoserver index, run the following: docker exec ontoserver /index.sh -s sctau -v 20230131

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 MedCAT

5.1 A Brief Overview of MedCAT

MedCAT (Medical Concept Annotation Tool) is an open-source NLP tool developed by the University of Cambridge that can be used to extract a wide range of medical concepts, such as diseases, symptoms, procedures, and medications, from clinical notes and other healthcare-related documents.

Paper on [arXiv](#). Official Docs [here](#).

5.2 How MedCAT Works:

MedCAT uses a combination of rule-based and machine learning-based approaches to identify and classify medical concepts. It first applies rule-based techniques to identify known medical terms, then uses machine learning to identify and classify new terms based on their context.

5.3 Downloading the Model

To download any of public models, please [follow this link](#) and sign into your NIH profile / UMLS license. You will then be redirected to the MedCAT model download form. Please complete this form and you will be provided a download link.

6 Security and Privacy in Healthcare Data

6.1 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.

6.2 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.

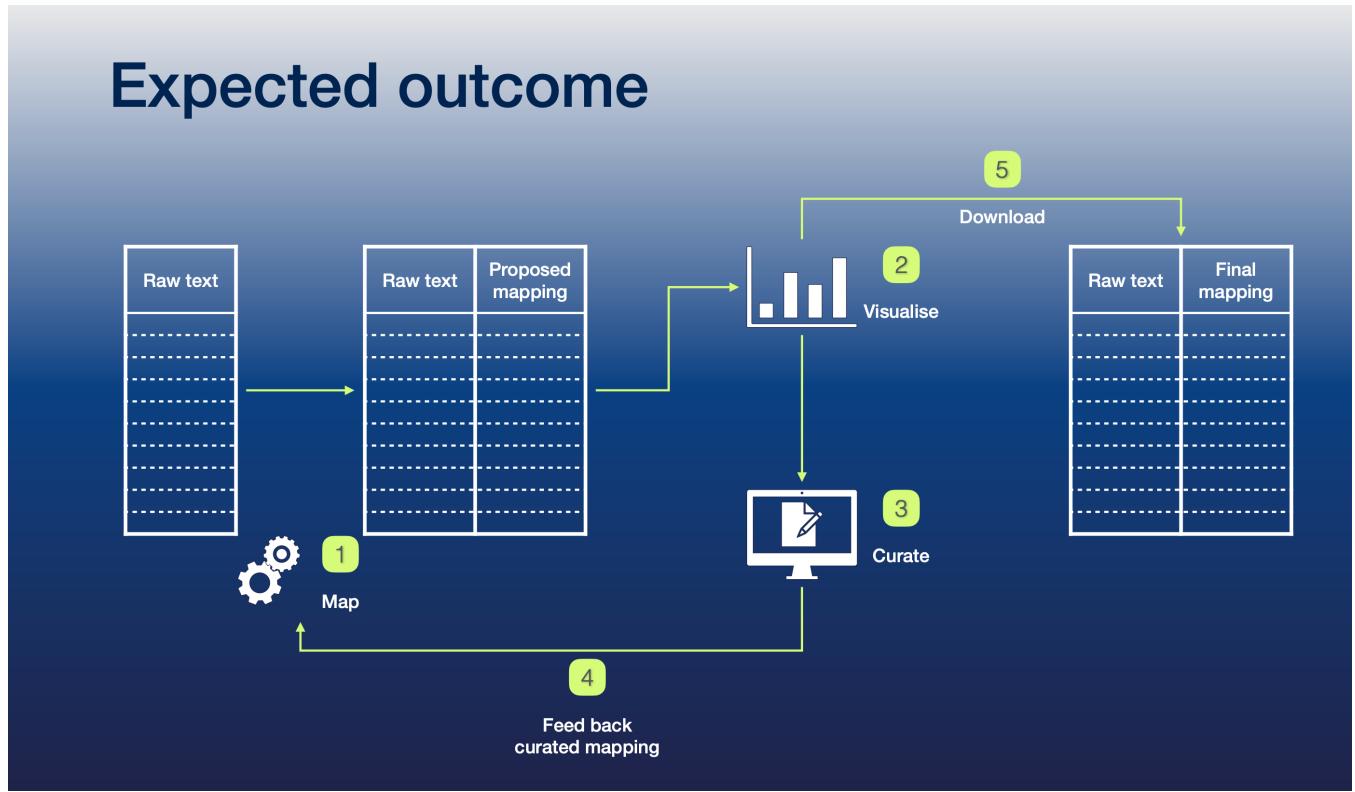
7 Project maintenance and updates

- 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

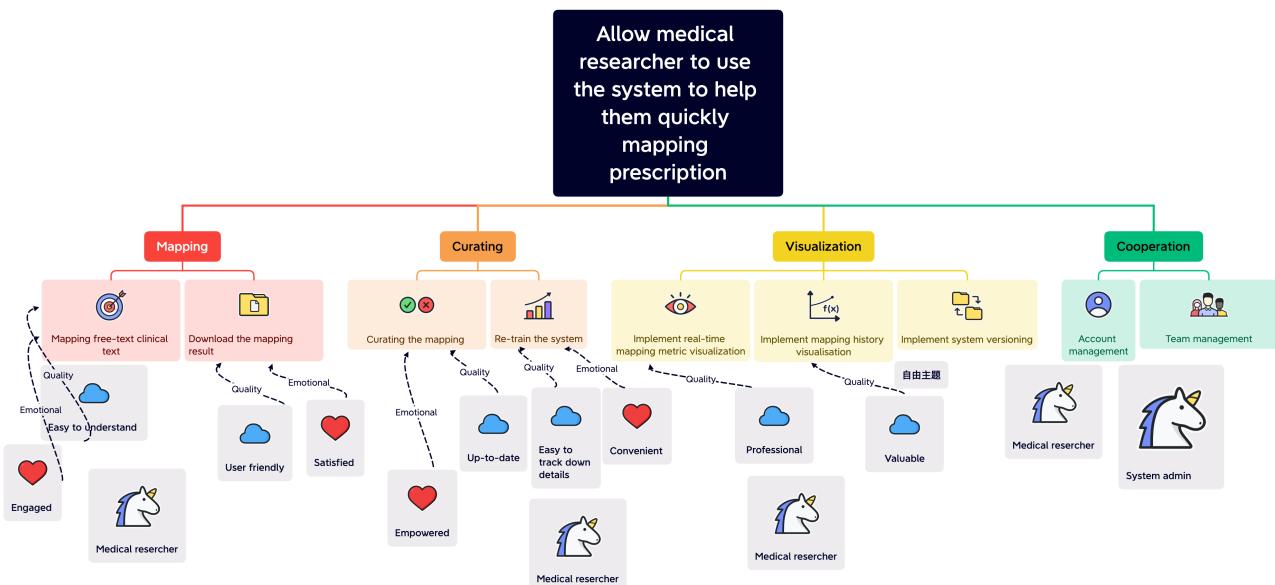
| Version | Description | Date |
|---------|---|-------------|
| 2.0.0 | 1. Fix some tempo in goal model 2. Add Do-Be-Feel-Who list | 23 Mar 2023 |
| 1.0.0 | 1. A basic goal model | 15 Mar 2023 |

Version 2.0.0

Do-Be-Feel-Who List

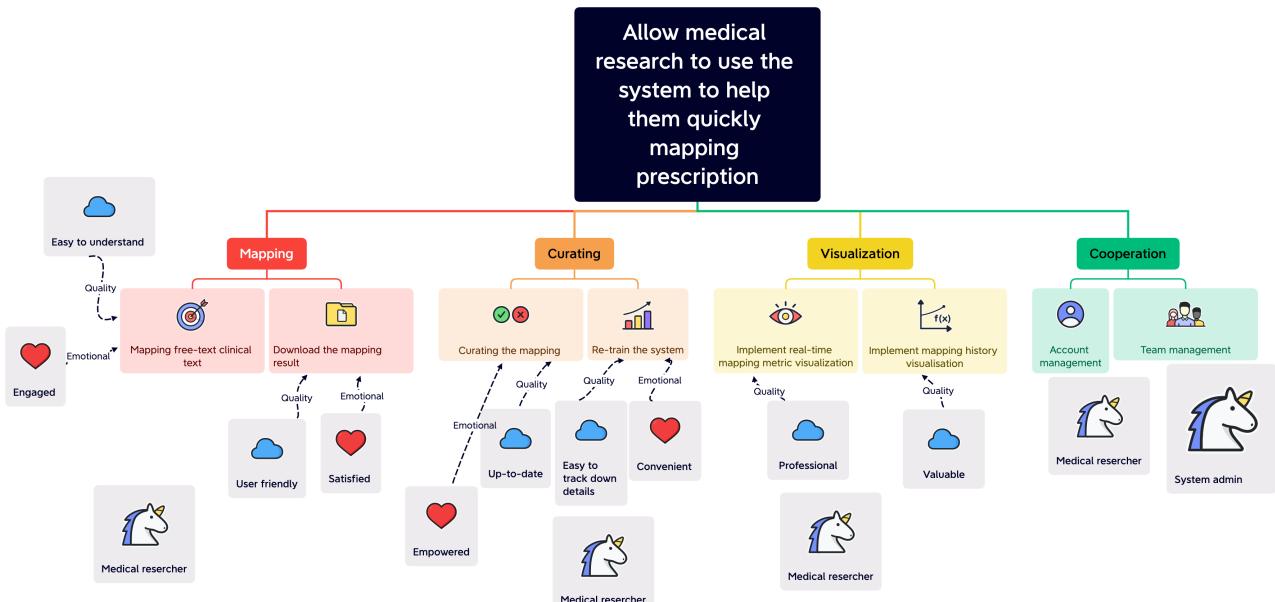
| Do(Functional Goal) | Be (Quality Goal) | Feel(Emotional Goal) | Who(Roles) |
|--|------------------------------------|----------------------|--------------------|
| Map the free-text clinical text | Easy to understand | Engaged | Medical researcher |
| Download the mapping results | User friendly | 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

| | | |
|---|---|---|
| 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 Female 30 years Australia Single Occupation: Digital Health Researcher Education: Master's degree in Health informatics | Goals <ul style="list-style-type: none">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 <ul style="list-style-type: none">Passionate about improving patient care and reducing the potential harm caused by inappropriate medication prescribing.Committed to advancing the field of digital health research and developing 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 <ul style="list-style-type: none">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 and limit the effectiveness of medication prescribing practices.Limited funding for research and innovation, which can hinder the development of new solutions for improving patient care. |
| Technology  | Brands and influencers  THE UNIVERSITY OF MELBOURNE  | |
| Browsers  Google Chrome  Safari | | |

Persona Analysis

Summer Taylor

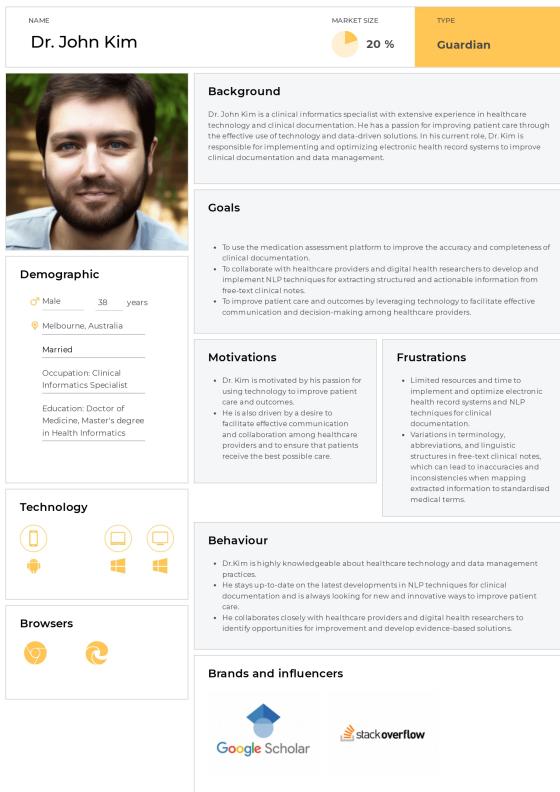
Summer's goals involve using the medication assessment platform to identify potential medication errors, collaborating with healthcare providers, and improving efficiency and accuracy in medication prescribing practices through technology. By focusing on these goals in the system design, the development 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.

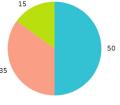
By addressing Dr. Kim's frustrations, the system design should prioritize optimizing electronic health record systems and NLP techniques, even with limited resources and time, and tackle variations in terminology, abbreviations, and linguistic structures to minimize inaccuracies and inconsistencies. 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.

| NAME | MARKET SIZE | TYPE | | | | | | | | |
|---|--------------------|--|-----------|------------|------------|----|--------------|----|-----------------|----|
| Kelly Underwood | 15 % | Idealist | | | | | | | | |
| <p>Background 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> | | | | | | | | | | |
| <p>Goals</p> <ul style="list-style-type: none"> Get data on the error rate of clinicians' prescriptions on our platform Find ways to reduce the error rate of prescriptions Obtain the above data to support her PhD project research | | | | | | | | | | |
| <p>Motivations 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. 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> | | <p>Frustrations Some physicians' notes are meaningless and cannot be valid data. It is troublesome to eliminate these data.</p> | | | | | | | | |
| <p>Chart</p>  <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 |
| Data Type | Percentage | | | | | | | | | |
| Valid data | 50 | | | | | | | | | |
| Invalid data | 35 | | | | | | | | | |
| Very valid data | 15 | | | | | | | | | |
| <p>Brands and influencers UNIVERSITY OF CAMBRIDGE UNIVERSITY OF CAMBRIDGE Study at Cambridge About the University School of Clinical Medicine</p> | | | | | | | | | | |
| <p>Technology </p> | | | | | | | | | | |
| <p>Browsers </p> | | | | | | | | | | |

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.

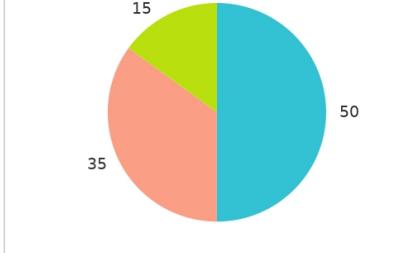
In summary, by considering Kelly Underwood's goals, motivations, and frustrations, the development team can validate the system design and create a tool that meets the unique needs of PhD students in clinical medicine, ultimately contributing to improved patient care and the advancement of clinical medicine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

Version 1.0.0

| | | |
|---|--|--|
| NAME Summer Taylor | MARKET SIZE  30 % | TYPE Rational |
|  | <p>Background</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> | |
| Demographic | <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> | |
| Technology | <ul style="list-style-type: none">         | |
| Browsers |  Google Chrome  Safari | |
| | Motivations | Frustrations |
| | <ul style="list-style-type: none"> 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. | <ul style="list-style-type: none"> 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 towards 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 | |
| |   | |

| | | |
|---|--|---|
| NAME Dr. John Kim | MARKET SIZE  20 % | TYPE Guardian |
|  | Background 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. | |
| Demographic ♂ Male 38 years Location: Melbourne, Australia Status: Married Occupation: Clinical Informatics Specialist Education: Doctor of Medicine, Master's degree in Health Informatics | Goals <ul style="list-style-type: none"> To use the medication assessment platform to improve the accuracy and completeness of clinical documentation. 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. To improve patient care and outcomes by leveraging technology to facilitate effective communication and decision-making among healthcare providers. | |
| Technology      | Motivations <ul style="list-style-type: none"> Dr. Kim is motivated by his passion for using technology to improve patient care and outcomes. 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. | Frustrations <ul style="list-style-type: none"> Limited resources and time to implement and optimize electronic health record systems and NLP techniques for clinical documentation. 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. |
| Browsers   | Behaviour <ul style="list-style-type: none"> Dr. Kim is highly knowledgeable about healthcare technology and data management practices. 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. He collaborates closely with healthcare providers and digital health researchers to identify opportunities for improvement and develop evidence-based solutions. | |
| | Brands and influencers   | |



| NAME Kelly Underwood | MARKET SIZE 15 % | TYPE Idealist | | | | | | | | |
|--|--|--|-----------|------------|------------|----|--------------|----|-----------------|----|
|  | <p>Background</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> | | | | | | | | | |
| Demographic | Motivations | Frustrations | | | | | | | | |
| <ul style="list-style-type: none"> 📍 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>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> | | | | | | | | |
| Technology | <p>Chart</p>  <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 |
| Data Type | Percentage | | | | | | | | | |
| Valid data | 50 | | | | | | | | | |
| Invalid data | 35 | | | | | | | | | |
| Very valid data | 15 | | | | | | | | | |
| Browsers | <p>Brands and influencers</p> <p> UNIVERSITY OF CAMBRIDGE</p> <p>UNIVERSITY OF CAMBRIDGE Study at Cambridge About the University</p> <p>/ School of Clinical Medicine</p> <p>School of Clinical Medicine</p> | | | | | | | | | |



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"> 1. Add ID to each user story 2. Split all user stories 3. Add specific priority 4. Add acceptance criteria 5. Add note to the each user story to explain the priority 6. Update some user stories with better descriptions 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. 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 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" 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' 11. According to new requirement, add "US0007: Update the Version of UIL" | 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> | |
|-------------------------------------|---|
| User story | As <stakeholder> I want to <> So that <> |
| Acceptance criteria | Given <> AND... (optional) When <> AND... (optional) Then <> AND... (optional) |
| Story point | <Fibonacci story point: 0, 1, 2, 3, 5, 8, 13> |
| Size estimation | <User story size: S, M, L, XL> |
| Priority | <Priority rank: 1, 2, 3,, No. of user stories> |
| MoSCow Priority | One of (Could have, Should have, Must have) |

| | |
|------|------------------------|
| Note | <Priority description> |
|------|------------------------|

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>As a medical researcher</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>As a medical researcher</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>As a medical researcher</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>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>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 |
|--|--|-------------------------------|

| | | | |
|---------------------|--|---|--|
| User story | <p>As a medical researcher (curator)</p> <p>I want to easily identify the status of the mapping process for each raw text input</p> <p>So that I can quickly determine if further curation or review is needed</p> | <p>As a medical researcher (curator)</p> <p>I want to see a list of category options while curating the data</p> <p>So that I can choose the correct category for the incorrect mapping or unmapped items</p> | <p>As a medical researcher (curator)</p> <p>I want to review and curate the failed-mapping result or mapping results of raw text to SNOMED-CT into UIL</p> <p>So that 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>As a medical researcher (curator)</p> <p>I want to re-train the system using the curated data</p> <p>So that I can make the system have a better mapping performance in the future</p> |

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

| | | | |
|---|--|--|---|
| A cc e pt a n ce cr it er ia | <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> | A c c e p t a n c e c r i t e ria | <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> |
| St or y p oi nt | 5 | S t or y p o int | 5 |
| Si ze es ti m at ion | L | S iz e e s ti m a ti on | M |
| Pr io ri ty | 6 | P ri o ri ty | 8 |
| M o S C o w Pr io ri ty | Must have | M o S C o w Pr i o ri ty | Must have |
| N ote | Continuously refining the system based on user feedback is key to ensuring it remains relevant and useful over time. | N o te | 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>As a medical researcher</p> <p>I want to have a dashboard to display the mapping metrics for a mapping task</p> <p>So that I can review and analyze mapping results</p> | <p>User story</p> <p>I want to view the successful mapping rate and the number of mapped items in a dashboard</p> <p>So that I can assess the performance of the system on the current mapping task</p> | <p>User story</p> <p>I want to view the overall confidence in a dashboard</p> <p>So that 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>As a medical researcher</p> <p>I want to view the specific performance of each category</p> <p>So that 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>As a medical researcher</p> <p>I want to view the proportion of each category</p> <p>So that 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> |

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

Epic 4 - Implement mapping history visualization

| US0014: Visualize Mapping Performance History | | US0015: Rollback to Earlier System Version | |
|---|---|--|-------------|
| User story | <p>As a medical researcher</p> <p>I want to visualize the history of the mapping performance</p> <p>So that I can measure the mapping quality</p> | <p>As an admin user</p> <p>I want to roll back to the earlier (default) version of the mapping system</p> <p>So that I can restore the default behaviour of the system</p> | |
| Acceptance criteria | <p>Given I am a medical researcher who wants to visualize the history of the mapping performance</p> <p>When I access a dedicated section or page on the mapping tool's interface</p> <p>Then I should see a visual representation of the mapping performance over time, such as a line chart, bar chart, or other appropriate visualization.</p> | <p>Given I am an admin user who wants to rollback to an earlier version (default) of the system</p> <p>When I access the mapping history performance page</p> <p>Then I should see the available version restore button</p> <p>And the version restoring should be easy to locate and use.</p> | |
| Story point | 8 | Story point | 5 |
| Size estimation | XL | Size estimation | M |
| Priority | 11 | Priority | 12 |
| MoSCow Priority | Must have | MoSCow Priority | Should have |

| | |
|-------------|---|
| Note | Visualizing the performance history allows users to track progress and identify trends over time. |
|-------------|---|

| | |
|-------------|--|
| Note | Providing version rollback capabilities ensures admins can maintain system stability and performance in case of problematic updates. |
|-------------|--|

Epic 5 - Manage account

| US0016: Account Login | |
|------------------------------|---|
| User story | As a medical researcher I want to log in to my account So that I can be identified by the system for curating. |
| Acceptance criteria | 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. |
| Story point | 3 |
| Size estimation | S |
| Priority | 10 |
| MoSCow Priority | Must have |
| Note | User authentication ensures a secure environment and allows for personalized experiences. |

| US0017: Edit Personal Information | |
|--|--|
| User story | As a medical researcher I want to edit my personal information So that I can update my roles and responsibilities. |
| Acceptance criteria | 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. |
| Story point | 2 |
| Size estimation | S |
| Priority | 18 |
| MoSCow Priority | Could have |
| Note | Allowing users to edit their personal information helps maintain up-to-date user profiles and improves collaboration. |

| US0018: Add New User Account | |
|-------------------------------------|--|
| User story | As an admin user I want to add an account to the system So that I can give other people access to the system. |
| Acceptance criteria | 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. |
| Story point | 5 |
| Size estimation | M |
| Priority | 13 |
| MoSCow Priority | Should have |
| Note | Adding new accounts enables collaboration and helps scale the system to accommodate more users. |

Epic 6 - Manage team

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

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

| | | |
|------------------------|--|--|
| Access criteria | 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 | 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. |
| Story point | 1 | 1 |
| Size estimation | S | S |
| Priority | 19 | 20 |
| MoSCow Priority | Could have | Could have |
| Note | Team-based collaboration features help organize users and facilitate more efficient collaboration. | 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 MRFF NCAS mapping tool requirements 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.

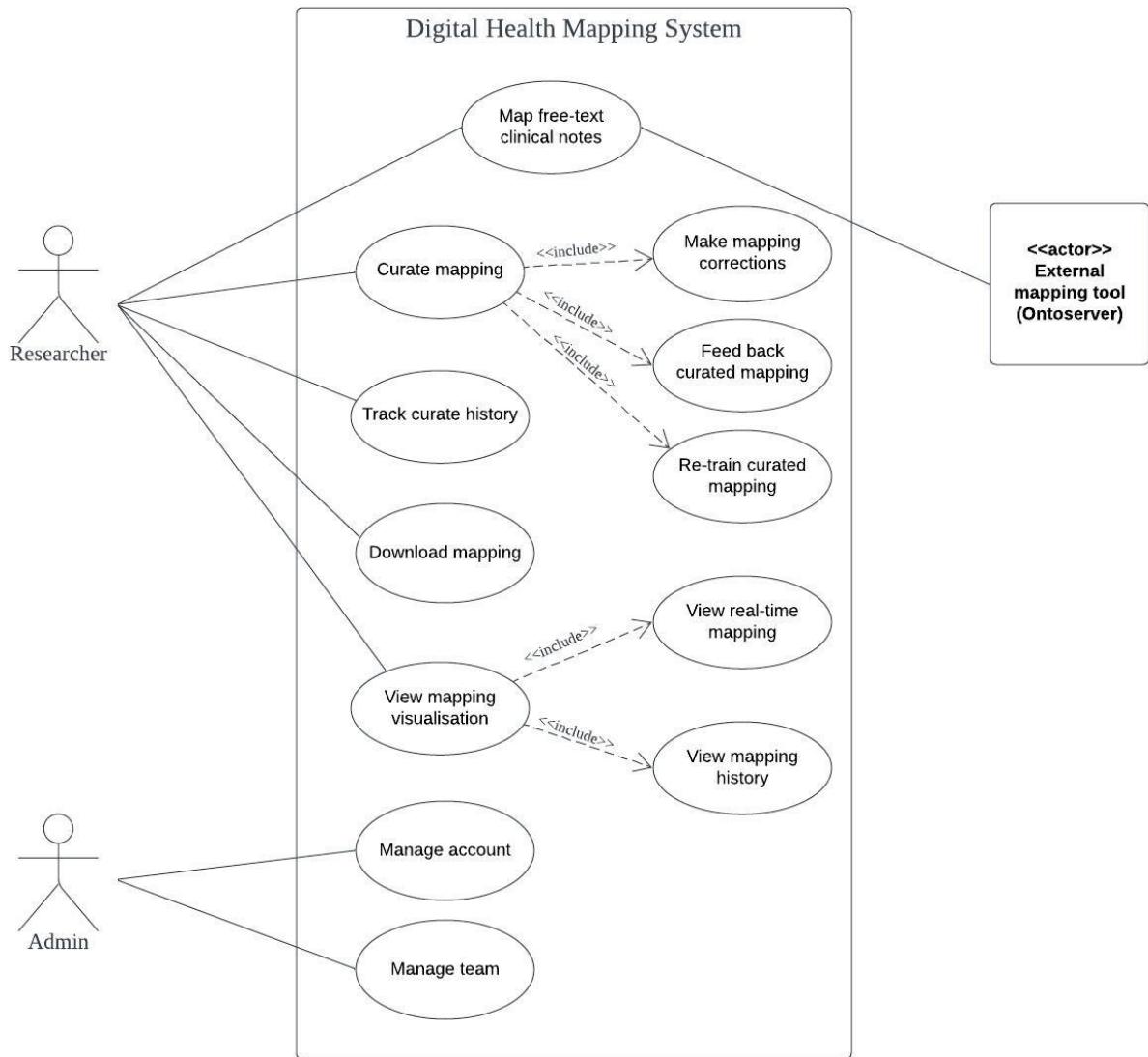
Alternative Paths:

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 User Stories and Acceptance Criteria modified by new requirements | 21 Apr 2023 |
| 1.0.0 | Basic product backlog using user story map framework | 23 Mar 2023 |

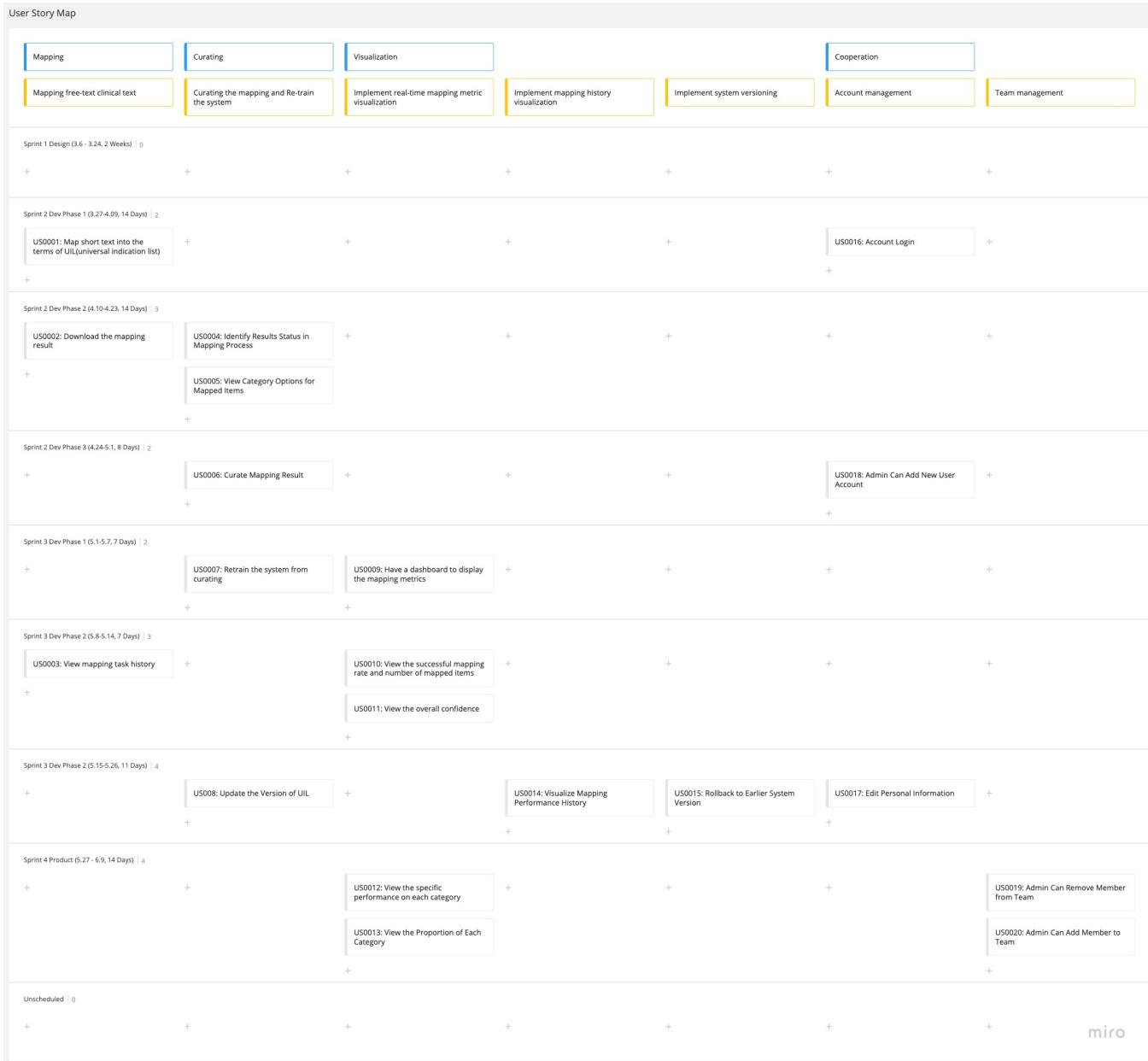
Version 2.0.0

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 | As a medical researcher I want to map the short text into certain or multiple categories in a universal indication list So that I do not need to map the text manually | XL | Must Have | 8 |
| | Download Mapping Results | US0002 | 2 | Medical Researcher | As a medical researcher I want to download the mapping results So that I can save the mapping history and view it in the future | S | Must Have | 3 |
| | View mapping task history | US0003 | 7 | Medical Researcher | As a medical researcher I want to view my own and team members' previous mapping task So that 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) | As a medical researcher (curator) I want to easily identify the status of the mapping process for each raw text input So that 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) | As a medical researcher (curator) I want to see a list of category options while curating the data So that 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) | As a medical researcher (curator) I want to review and curate the failed-mapping result or mapping results of raw text to SNOMED-CT into UIL So that I can give feedback to the system and improve it | M | Must Have | 5 |
| | Retrain the system from curating | US0007 | 6 | Medical Researcher (Curator) | As a medical researcher (curator) I want to re-train the system using the curated data So that 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 | As an admin user I want to update the UIL to the latest version So that 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 | As a medical researcher I want to have a dashboard to display the mapping metrics for a mapping task So that 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 | As a medical researcher I want to view the successful mapping rate and number of mapped items in a dashboard So that I can assess the performance of the system on current mapping task | S | Should Have | 5 |
| | View Overall Confidence | US0011 | 15 | Medical Researcher | As a medical researcher (curator) I want to view the overall confidence in a dashboard So that 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 | As a medical researcher I want to view the specific performance of each category So that I can know the system performance among different categories | M | Could Have | 5 |
| | View Proportion of Each Category | US0013 | 17 | Medical Researcher | As a medical researcher I want to view the proportion of each category So that 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 | As a medical researcher I want to visualize the history of the mapping performance So that I can measure the mapping quality | XL | Should Have | 8 |
| | Rollback to Earlier System Version | US0015 | 12 | Admin User | As a admin user I want to rollback to earlier (default) version of the mapping system So that I can restore the default behaviour of the system | M | Should Have | 5 |
| Epic 4 - Manage account | Account Login | US0016 | 10 | Medical Researcher | As a medical researcher I want to login my account So that I can be identified by the system for curating. | S | Must Have | 3 |
| | Edit Personal Information | US0017 | 18 | Medical Researcher | As a medical researcher I want to edit my personal information So that I can update my roles and responsibilities. | S | Could Have | 2 |
| | Add New User Account | US0018 | 13 | Admin User | As a medical researcher I want to add an account to the system So that 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 | As a medical researcher I want to add the account to a team So that I can let people on the same team work together. | S | Could Have | 1 |
| | Delete Member from Team | US0020 | 20 | Admin User | As a medical researcher I want to delete a member from a team So that I can remove a member's privileges in a team | S | Could Have | 1 |

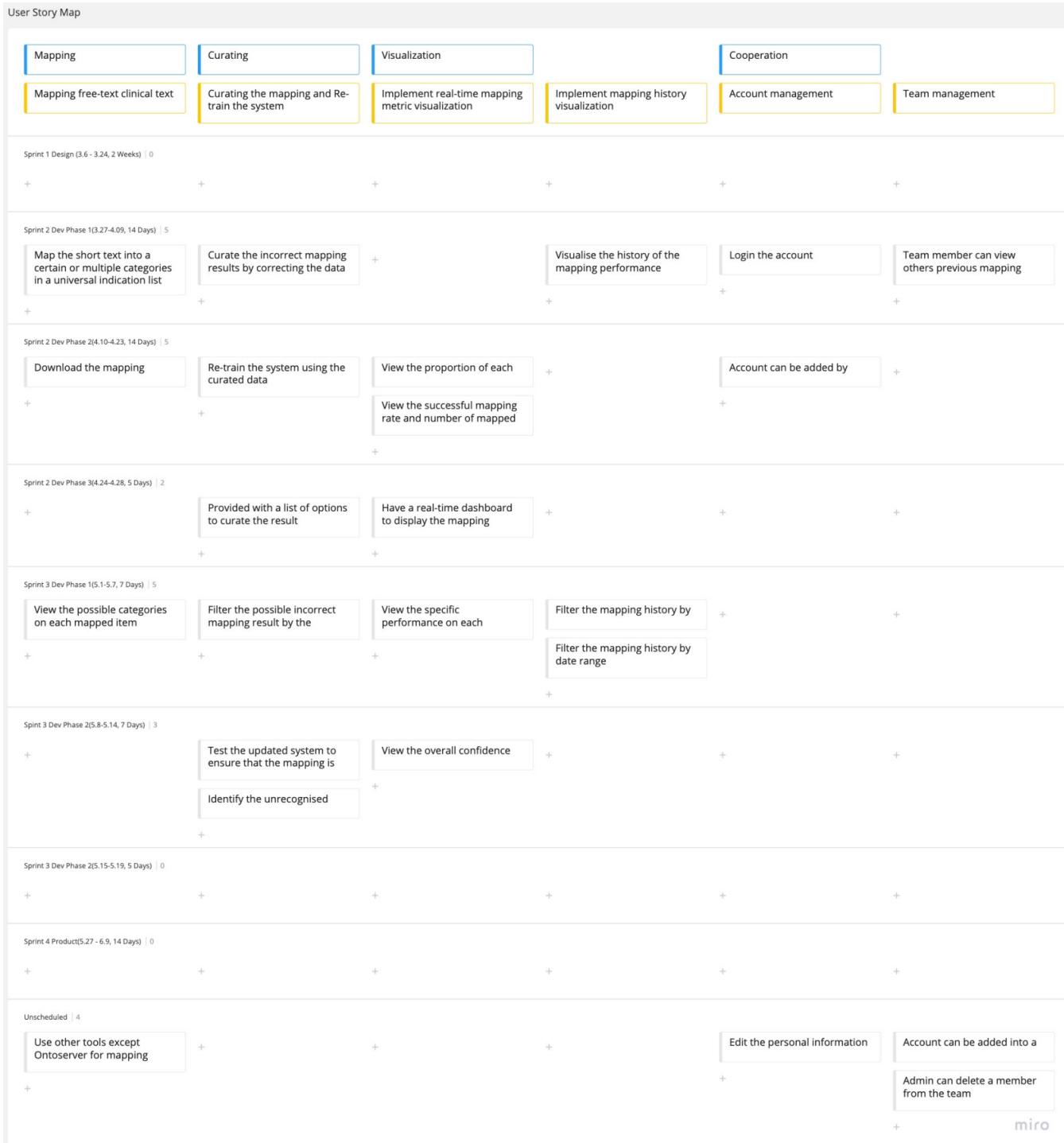
User Story Map Framework



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

Sprint 2 - Development

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

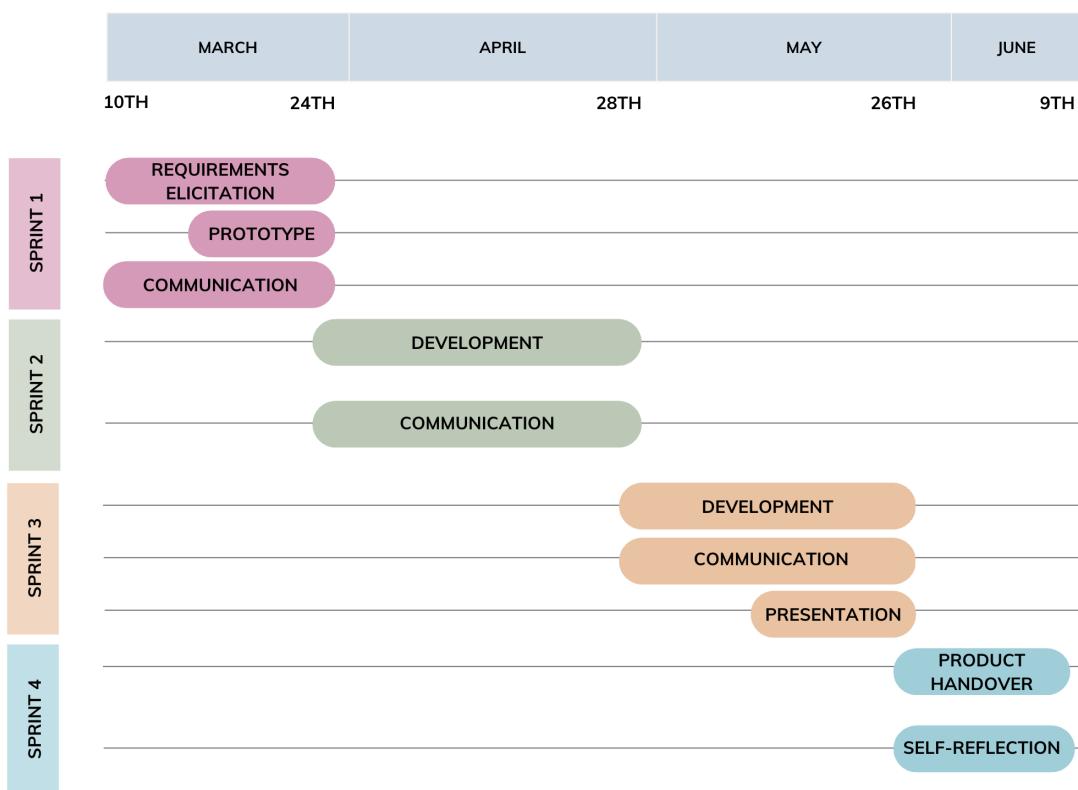
The days from April 10 to April 16 are during the Non-teaching period of the university.

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

Timeline

| Title | Creator | Modified |
|--------------------------|---------------|--------------|
| Sprint 4 - Product | Chenyang Dong | 26 May, 2023 |
| Sprint 3 - Development | Ricardo Luo | 30 Apr, 2023 |
| Sprint 2 - Development | Ricardo Luo | 30 Apr, 2023 |
| Sprint 1 - Design Sprint | Chenyang Dong | 30 Apr, 2023 |



Sprint 1 - Design Sprint

| Title | Creator | Modified |
|-----------------------------------|-------------------------------|--------------|
| Sprint 1 - Review | Chenyang Dong | 30 Apr, 2023 |
| Sprint 1 - Plan | Chenyang Dong | 30 Apr, 2023 |

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

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

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 |
|------------------------------------|---------------|--------------|
| Sprint 2 - Review | Chenyang Dong | 20 May, 2023 |
| Sprint 2 - Plan | Chenyang Dong | 30 Apr, 2023 |
| Sprint 2 - Backlog | Chenyang Dong | 30 Apr, 2023 |

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](#)

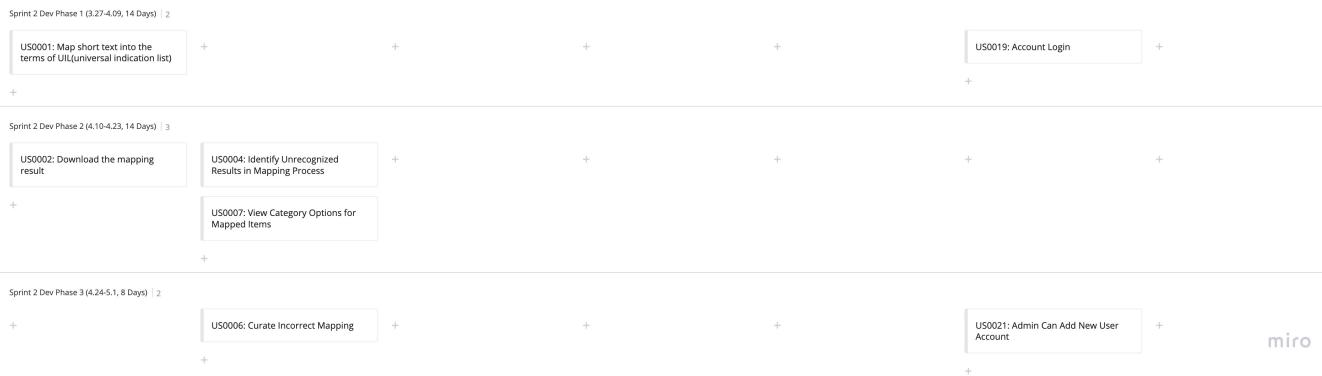
3 Planning

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 | As a medical researcher I want to map the short text into certain or multiple categories in a universal indication list So that 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] | DONE | Hanyi Gao | 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. |
| | | | | | <input checked="" type="checkbox"/> Implement the CSV file mapping user interface with a browse button [1 hour] | DONE | Hanyi Gao | 09 Apr 2023 | |
| | | | | | <input checked="" type="checkbox"/> Create a function for submitting short text and retrieving mapped categories using the Ontoserver API [1 hour] | DONE | Hanyi Gao | 09 Apr 2023 | |
| | | | | | <input type="checkbox"/> Map the short text into certain or multiple categories in SNOMED CT [3 hours] | IN PROGRESS | Chenyang Dong | 28 Apr 2023 | New approach is going to be experimented to combine with existing mapping tool to fulfill the requirements in the next sprint. |
| | | | | | <input type="checkbox"/> Further match the mapping result from SNOMED CT into UIL [2 hours] | IN PROGRESS | Chenyang Dong | 28 Apr 2023 | |
| | | | | | <input type="checkbox"/> Preprocess the raw text [1 hour] | TO DO | Yue Fei | TBD | The preprocessing of the raw text was pending since many approaches contain such strategies. |
| Download Mapping Results | US0002 | As a medical researcher I want to download the mapping results So that 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) I want to easily identify the status of the mapping process for each raw text input So that 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) I want to review and curate the failed-mapping result or mapping results of raw text to SNOMED-CT into UIL So that 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) I want to see a list of category options while curating the data So that 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 I want to login my account So that 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 I want to add an account to the system So that 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](#).

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

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. Also, the deployment on SRE is not possible at this stage.

- 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 |
|------------------------------------|-------------------------------|--------------|
| Sprint 3 - Backlog | Chenyang Dong | 30 May, 2023 |
| Sprint 3 - Plan | Chenyang Dong | 30 Apr, 2023 |

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

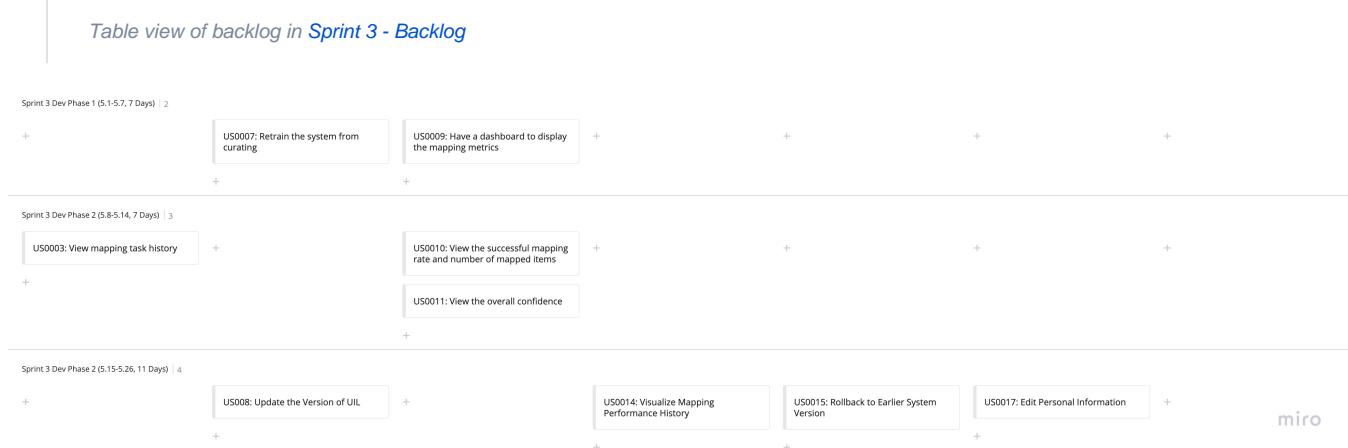
- [Role Assignment](#)

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



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 | As a medical researcher I want to map the short text into certain or multiple categories in a universal indication list So that I do not need to map the text manually | Must Have | 8 | <input checked="" type="checkbox"/> Preprocess the raw text [1 hour] | DONE | Yue Fei | 07 May 2023 | [Not required since MedCAT is used] Unique preprocessing guide for clinical terms |
| | | | | | <input checked="" type="checkbox"/> Map the short text into certain or multiple categories in SNOMED CT [3 hours] | DONE | | | Chenyang Dong Custom algorithm and MedCAT implemented at the same time |
| | | | | | <input checked="" type="checkbox"/> Further match the mapping result from SNOMED CT into UIL [2 hours] | DONE | | | KUNXI SUN Based on the current assumption from the 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 | As a medical researcher I want to download the mapping results So that I can save the mapping history and view it in the future | Must Have | 3 | <input checked="" type="checkbox"/> Develop a secure API endpoint to retrieve the mapping results for the input CSV file [3 hours] | DONE | KUNXI SUN | 14 May 2023 | |
| | | | | | <input checked="" type="checkbox"/> Create API endpoint for retrieving mapping results [2 hours] | DONE | | | Chenyang Dong 14 May 2023 |
| | | | | | <input checked="" type="checkbox"/> Connect the 'Download' button to the API endpoint to trigger the file download [1 hour] | DONE | | | Hanyi Gao 14 May 2023 |
| View mapping task history | US0003 | As a medical researcher I want to view my own and team members' previous mapping task So that I can review the mapping results and performance | Must | 5 | <input checked="" type="checkbox"/> Create a backend API for fetching mapping task history [3 hours] | DONE | KUNXI SUN | 14 May 2023 | |
| | | | | | <input checked="" type="checkbox"/> Develop a frontend component for displaying mapping task history (card style) [1 hour] | DONE | | | Hanyi Gao 14 May 2023 |
| | | | | | <input checked="" type="checkbox"/> Integrate the frontend component with the backend API [2 hours] | DONE | | | Hanyi Gao 14 May 2023 |

| | | | | | | | | | |
|---|--------|--|-----------|---|--|------|---------------|-------------|---|
| | | | | | <p><input checked="" type="checkbox"/> Implement search and filtering functionalities (by date range or user) for mapping task history [3 hours]</p> | DONE | KUNXI SUN | 26 May 2023 | |
| Curate Mapping Result [From Sprint 2] | US0006 | As a medical researcher (curator) I want to review and curate the failed-mapping result or mapping results of raw text to SNOMED-CT into UIL So that I can give feedback to the system and improve it | Must Have | 5 | <p><input checked="" type="checkbox"/> Create a backend API endpoint to gather and store curated data for submitting [1 hour]</p> | DONE | Chenyang Dong | 14 May 2023 | |
| | | | | | <p><input checked="" type="checkbox"/> Create a function to update the downloadable data with the curated mapping results [1 hours]</p> | DONE | Chenyang Dong | 22 May 2023 | |
| Retrain the system from curating | US0007 | As a medical researcher (curator) I want to re-train the system using the curated data So that I can make the system have a better mapping performance in the future | Must Have | 5 | <p><input checked="" type="checkbox"/> Collect curated data via the API created in US0006 [1 hour]</p> | DONE | KUNXI SUN | 14 May 2023 | |
| | | | | | <p><input checked="" type="checkbox"/> Create a backend API for retraining the system [2 hours]</p> | DONE | KUNXI SUN | 19 May 2023 | Approach to make curation improve the system TBD depends on the method finally used |
| | | | | | <p><input checked="" type="checkbox"/> Adapt the system's training algorithm to incorporate the curated data [3 hours]</p> | DONE | KUNXI SUN | 19 Apr 2023 | |
| Update the Version of UIL | US0008 | As an admin user I want to update the UIL to the latest version So that I can access the most up-to-date term for curation | Must Have | 5 | <p><input checked="" type="checkbox"/> Create API points to create a UIL list, group, and category [3 hours]</p> | DONE | KUNXI SUN | 07 May 2023 | |
| | | | | | <p><input checked="" type="checkbox"/> Develop the interface to allow uploading a format-compatible file of the new UIL version [1 hour]</p> | DONE | Hanyi Gao | 14 May 2023 | |
| | | | | | <p><input checked="" type="checkbox"/> Develop a version comparison tool [3 hours]</p> | DONE | Chenyang Dong | 26 May 2023 | Keep all versions for user to choose |
| | | | | | <p><input checked="" type="checkbox"/> Communicate the UIL version update or display the version of UIL on the interface [2 hours]</p> | DONE | Chenyang Dong | 19 May 2023 | To notify the user version update on UIL (Will be a version display) |
| Have a dashboard to display the mapping metrics | US0009 | As a medical researcher I want to have a dashboard to display the mapping metrics for a mapping task So that I can review and analyze mapping results | Must Have | 8 | <p><input checked="" type="checkbox"/> Develop the interface of data visualization components [2 hours]</p> | DONE | Ricardo Luo | 07 May 2023 | |

| | | | | | | | | | |
|---|--------|--|-------------|---|---|-------|---------------|-------------|--|
| | | | | | <input checked="" type="checkbox"/> Integrate the dashboard with the mapping system [3 hours] | DONE | Chenyang Dong | 14 May 2023 | |
| View the successful mapping rate and number of mapped items | US0010 | As a medical researcher I want to view the successful mapping rate and number of mapped items in a dashboard So that I can assess the performance of the system on the current mapping task | Should Have | 3 | <input checked="" type="checkbox"/> Determine the calculations for the successful mapping rate and the number of mapped items [1 hour] | DONE | KUNXI SUN | 14 May 2023 | Component of the dashboard in US0010 |
| | | | | | <input checked="" type="checkbox"/> Develop the data visualization component for successful mapping rate and number of mapped items [2 hours] | DONE | Ricardo Luo | 14 May 2023 | |
| View the overall confidence | US0011 | As a medical researcher (curator) I want to view the overall confidence in a dashboard So that 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 [1 hour] | TO DO | TBD | 14 May 2023 | Component of the dashboard in US0010 (Optional, now considering to view mapping results on SCT or UI) |
| | | | | | <input type="checkbox"/> Develop the data visualization component for the overall confidence metric [2 hours] | TO DO | TBD | 14 May 2023 | |
| Visualize Mapping Performance History | US0014 | As a medical researcher I want to visualize the history of the mapping performance So that I can measure the mapping quality | Must Have | 8 | <input checked="" type="checkbox"/> Create a backend API for fetching overall mapping performance data [2 hours] | DONE | KUNXI SUN | 19 May 2023 | Component required to be further confirmed |
| | | | | | <input checked="" type="checkbox"/> Develop a data visualization component for overall mapping performance [2 hours] | DONE | Yue Fei | 19 May 2023 | |
| | | | | | <input checked="" type="checkbox"/> Connect the overall mapping performance visualization to the backend API [2 hours] | DONE | Yue Fei | 26 May 2023 | |
| Rollback to Earlier System Version | US0015 | As a admin user I want to rollback to earlier (default) version of the mapping system So that I can restore the default behaviour of the system | Should Have | 5 | <input type="checkbox"/> Identify and store the default version of the mapping system [2 hours] | TO DO | 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 [2 hours] | TO DO | TBD | 26 May 2023 | |

| | | | | | | | | |
|---|--------|---|-------------|---|---|-------|---------------|-------------|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Edit Personal Information | US0017 | As a medical researcher I want to edit my personal information So that I can update my roles and responsibilities. | Could Have | 2 | <input type="checkbox"/> Develop a frontend component for initiating the rollback process [1 hour] | TO DO | TBD | 19 May 2023 |
| | | | | | <input type="checkbox"/> Implement user authentication and authorization for admin users [2 hours] | TO DO | TBD | 26 May 2023 |
| | | | | | <input checked="" type="checkbox"/> Develop the profile interface based on the approved design [2 hours] | DONE | Ricardo Luo | 22 May 2023 |
| | | | | | <input checked="" type="checkbox"/> Develop a secure API endpoint for user profile information [1 hour] | DONE | KUNXI SUN | 22 May 2023 |
| | | | | | <input checked="" type="checkbox"/> Develop the edit mode interface for profile update [1 hour] | DONE | Ricardo Luo | 22 May 2023 |
| | | | | | <input checked="" type="checkbox"/> Develop a secure API endpoint for updating profile information [1 hour] | DONE | KUNXI SUN | 22 May 2023 |
| Add New User Account [From Sprint 2] | US0018 | As a medical researcher I want to add an account to the system So that I can give other people access to the system | Should Have | 5 | <input checked="" type="checkbox"/> Develop the 'Member' page user interface [1 hour] | DONE | Ricardo Luo | 07 May 2023 |
| | | | | | <input checked="" type="checkbox"/> Create API endpoint for registering [1 hour] | DONE | Chenyang Dong | 22 May 2023 |
| | | | | | <input checked="" type="checkbox"/> Implement registering functionality [3 hours] | DONE | Ricardo Luo | 22 May 2023 |
| Add Member to Team | US0019 | As a medical researcher I want to add the account to a team So that I can let people on the same team work together. | Could Have | 1 | <input checked="" type="checkbox"/> Develop the 'Add Member' button on the member page [1 hour] | DONE | Hanyi Gao | 22 May 2023 |
| | | | | | <input checked="" type="checkbox"/> Create API endpoint for adding new members [1 hour] | DONE | Chenyang Dong | 22 May 2023 |
| | | | | | <input checked="" type="checkbox"/> Create the new member page [1 hour] | DONE | Ricardo Luo | 22 May 2023 |
| | | | | | <input checked="" type="checkbox"/> Implement adding member functionality [1 hour] | DONE | Ricardo Luo | 22 May 2023 |

| | | | | | | | | | |
|-------------------------|--------|--|------------|---|--|-------------|-----------|-------------|--|
| Delete Member from Team | US0020 | As a medical researcher I want to delete a member from a team So that I can remove a member's privileges in a team | Could Have | 1 | <input checked="" type="checkbox"/> Develop the 'Delete Member' button on the member page [1 hour] | DONE | Hanyi Gao | 24 May 2023 | |
| | | | | | <input checked="" type="checkbox"/> Develop a secure API endpoint for deleting a member from a team [1 hour] | DONE | KUNXI SUN | 23 May 2023 | |

Sprint 3 - Review

This sprint review note is the discussion result based on the [Sprint 3 Review Meeting](#).

1 Introduction

- Date: from 02 May 2023 to 01 Jun 2023
- Sprint Name/Number: Sprint 3 - 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

- Produce a fully functional website platform
- Implement all user stories
- Meet all the requirements of our clients

3 Completed Work

- Finished user stories:
 - US0001: Map short text into the terms of UIL(universal indication list)
 - US0002: Download Mapping Results
 - US0003: View mapping task history
 - US0006: Curate Mapping Result
 - US0007: Retrain the system from curating
 - US0008: Update the Version of UIL
 - US0009: Have a dashboard to display the mapping metrics
 - US0010: View the successful mapping rate and number of mapped items
 - US0014: Visualize Mapping Performance History
 - US0017: Edit Personal Information
 - US0018: Add New User Account
 - US0019: Add Member to Team
 - US0020: Delete Member from Team
- User-friendly web interface
- Highly scalable microservices architecture
- Fast and accurate mapping based on MedCAT
- Continuous integration via GitHub Actions
- Follow the SOLID software principles
- APIs including Authentication Service, Center Service and Mapper Service
- Tests including Unit Test, Functional Test, Integration Test and System Test
- Discard user stories: US0011, US0012, US0013 and US0015. Reason: through communication with our clients, those user stories are out of scope and do not meet the needs of our clients. Therefore, they were carefully discarded by our team.
- [Product presentation](#) to the clients.

4 Incomplete Work

- Blocked user stories:
 - US0011: View the overall confidence
 - US0012: View Specific Performance of Each Category
 - US0013: View the proportion of each category
 - US0015: Rollback to Earlier System Version
- Unit testing

We use API tools such as Apifox to complete the unit testing. If we have time later, we will implement unit testing using code.

5 Metrics

- Total number of story points completed: 59
- Total number of story points planned: 59
- Velocity (completed story points / planned story points): 1

6 Stakeholder Feedback

- Stakeholder's feedback and suggestions for improvement:
 - Our clients felt that our product met most of the expectations and requirements. They will test and compare the performance of our system later. (Further acceptance testing required in Sprint 4)
 - Our supervisor felt that our team was making a lot of effort and progress, which satisfied him.
- How the feedback will be addressed in future sprints:
 - We will review the system to see if there is any issue to be fixed and any room for improvement.

7 Reflection

- Could have done a better job on automatic testing via GitHub Actions while releasing the product.
- Could have done a better job on task management.
- The agile process could be improved – continuously deploy a complete system, but the client did not offer a production server, more detail is available at [No Continuous Deployment](#).

8 Decision and Next Steps

- Therefore, the system will not be deployed. Due to the complexities and challenges in advancing the deployment of the Secure Research Environment, and the intricate approval processes involved, we have mutually agreed with our clients to abstain from final deployment at this stage.
- Format code and release the branch
- Release documentation
- Write Docker compose scripts for the next sprint

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 made significant progress in this sprint. We achieved most of our user stories and made a product that satisfied our customers. The next thing to improve is adding more tests and how to manage with deployment when it is impossible at this stage.

- **Stakeholders:**

The stakeholders felt that our product met most of their needs.

Sprint 4 - Product

| Title | Creator | Modified |
|---------------------------------|-----------|-------------------|
| Sprint 4 - Plan | KUNXI SUN | about an hour ago |

Sprint 4 - Plan

1 Sprint Goal

- Finish all the testing
- Deploy the final product on the client's server
- Do handover with clients and the next team

2 Roles and Responsibility

- [Role Assignment](#)

3 Planning

3.1 Tasks details

- Testing: Finish acceptance testing of our product and the final system testing on the client's server
- Handover:
 - write detailed release documents
 - write a docker-compose file to set up the system automatically
 - write detailed development documentation for the next team
 - write help documents for users
 - add detailed comments to the code

3.2 User Stories Map

- No user stories will be implemented in Sprint 4(Deploy/Handover Sprint)

3.3 Addition Tasks/Rules

- Fix bugs if found while deploying the product.
- Improve code based on code review.

4 Future work

- Redesign and implement cancelled user stories in previous sprints. These user stories are beyond the scope of the project, but they still have value for implementation.
 - US0012: View Specific Performance of Each Category
 - US0013: View the proportion of each category
 - US0015: Rollback to Earlier System Version
- Regarding the mapping algorithm, we will look at ways to improve its accuracy, such as how to train Medcat's model with the latest sct.

Development

| Title | Creator | Modified |
|-------------------|---------------|----------------------|
| APIs | KUNXI SUN | yesterday at 1:46 AM |
| Digital Prototype | Chenyang Dong | 02 Apr, 2023 |

APIs

| Version ID | Description | Date |
|------------|---------------------------------|-------------|
| 2.0.0 | 1. Change the API to the latest | May 30,2023 |
| 1.0.0 | 1. A basic API plan | May 01,2023 |

Version 2.0.0

| Modules | Sub Modules | APIs | Description |
|------------------------|-------------|---|---|
| Authentication Service | - | 1. User Login 2. User Logout 3. User Register <FOR DEVELOPER TEST ONLY> 4. Get user profile data 5. Update user profile 6. Get team members and info 7. Invite a team member to the team 8. Accept an invitation 9. Get user's avatar 10. Update user's avatar | Team management, User information, Authentication |
| Center Service | Dashboard | 1. Predict single clinical text 2. Get the item status ratio | CodeSystem, Task, Visualization, Dashboard |
| | CodeSystem | 1. Create a new code system 2. Get code system concepts of a team 3. Delete a code system 4. Get all versions of code system | |
| | Boards | 1. Get board lists 2. Modify a board detail 3. Delete a board 4. Create a new task board 5. Get Task Meta Data 6. Get all map tasks 7. Get map task details 8. Create a map task 9. download map task result 10. Curate the map item | |
| Mapper Service | - | 1. Map Clinical Text to SNOMED CT 2. Predict the texts 3. Retrain the model 4. Reset the model to original | Map, Curation, Retrain |
| Gateway Service | - | 1. Redirect requests | Control and manage the request and response |

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.

Version 1.0.0

| Module | APIs | Description |
|--------|------|-------------|
|--------|------|-------------|

| | | |
|-----------------|--|---|
| Auth Service | <ul style="list-style-type: none"> 1. User Login 2. User Logout 3. User forget password 4. User reset password 5. User Register <FOR DEVELOPER TEST ONLY> | Authentication, team management, user information |
| Center Service | <ul style="list-style-type: none"> 1. Create a map task 2. Get detail of a map task 3. Delete a map task 4. Get mapped items of a map task 5. Update(Curate) the category of a mapped item in map task | |
| Map Service | <ul style="list-style-type: none"> 1. Create a new UIL category 2. Get details of a category 3. Update a category 4. Delete a category 5. Get the UIL list of all version 6. Get the UIL list of a version | |
| Common Service | <ul style="list-style-type: none"> 1. Create a Team 2. Add team member into a team 3. Delete a team member from a team 4. Change owner of a team 5. Update permission of a team member 6. Send a email 7. Upload a file 8. Update SNOMED CT version 9. Get Dictionary | |
| Gateway Service | <ul style="list-style-type: none"> 1. Redirect requests | |

Auth Service

DigitalHealth

v1.0.0

Base URLs:

auth

POST Login

POST /auth/login/email

Authenticates a user by their username and password, and if successful, returns an access token (e.g., JWT).

Body Parameters

```
email: sunkunxi@gmail.com
password: "12345678"
```

Params

| Name | Location | Type | Required | Description |
|------------|----------|--------|----------|---------------|
| body | body | object | no | none |
| » email | body | string | no | User email |
| » password | body | string | no | User password |

Response Examples

200 Response

```
{
  "code": 200,
  "msg": "ok"
}
```

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|--------------|----------------------------|-------------|
| 200 | OK | success | Inline |
| 400 | Bad Request | Invalid Email and Password | Inline |
| 401 | Unauthorized | Incorrect password | Inline |
| 404 | Not Found | User not found | Inline |

Responses Data Schema

HTTP Status Code **200**

| Name | Type | Required | Restrictions | Title | description |
|--------|---------|----------|--------------|-------|-------------|
| » code | integer | true | none | | none |
| » msg | string | true | none | | none |

HTTP Status Code **400**

| Name | Type | Required | Restrictions | Title | description |
|--------|---------|----------|--------------|-------|-------------|
| » code | integer | true | none | | none |
| » err | string | true | none | | none |

HTTP Status Code 401

| Name | Type | Required | Restrictions | Title | description |
|--------|---------|----------|--------------|-------|-------------|
| » code | integer | true | none | | none |
| » err | string | true | none | | none |

HTTP Status Code 404

| Name | Type | Required | Restrictions | Title | description |
|--------|---------|----------|--------------|-------|-------------|
| » code | integer | true | none | | none |
| » err | string | true | none | | none |

POST Logout

POST /auth/logout

Logs out the user by invalidating their access token.

Response Examples

200 Response

```
{
  "code": 200,
  "msg": "ok"
}
```

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|-------------|-------------|-------------|
| 200 | OK | success | Inline |
| 400 | Bad Request | Not log in | Inline |

Responses Data Schema

HTTP Status Code 200

| Name | Type | Required | Restrictions | Title | description |
|--------|---------|----------|--------------|-------|-------------|
| » code | integer | true | none | | none |
| » msg | string | true | none | | none |

HTTP Status Code 400

| Name | Type | Required | Restrictions | Title | description |
|--------|---------|----------|--------------|-------|-------------|
| » code | integer | true | none | | none |
| » err | string | true | none | | none |

GET Invite a team member to a team

GET /auth/team/invite

This system allows users to add a new team member to the existing team by providing the team ID and the new member's user ID along with their role.

Params

| Name | Location | Type | Required | Description |
|---------|----------|--------|----------|------------------------------------|
| team_id | query | string | no | The unique identifier of the team. |

Response Examples

200 Response

```
{  
    "team_id": "string"  
}
```

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|-----------------------|------------------|-------------|
| 200 | OK | success | Inline |
| 400 | Bad Request | Bad Request | Inline |
| 404 | Not Found | Record Not Found | Inline |
| 500 | Internal Server Error | Server Error | Inline |

Responses Data Schema

HTTP Status Code 200

| Name | Type | Required | Restrictions | Title | description |
|-----------|--------|----------|--------------|-------|-------------|
| » team_id | string | true | none | | none |

HTTP Status Code 400

| Name | Type | Required | Restrictions | Title | description |
|-----------|--------|----------|--------------|-------|-------------|
| » error | string | true | none | | none |
| » message | string | true | none | | none |

HTTP Status Code 404

| Name | Type | Required | Restrictions | Title | description |
|-----------|--------|----------|--------------|-------|-------------|
| » error | string | true | none | | none |
| » message | string | true | none | | none |

HTTP Status Code 500

| Name | Type | Required | Restrictions | Title | description |
|-----------|--------|----------|--------------|-------|-------------|
| » error | string | true | none | | none |
| » message | string | true | none | | none |

GET Get team members and info

GET /auth/team

Get the team members and team informations

Params

| Name | Location | Type | Required | Description |
|------|----------|------|----------|-------------|
| | | | | |

| | | | | |
|---------|-------|--------|----|------|
| team_id | query | string | no | none |
|---------|-------|--------|----|------|

Response Examples

200 Response

{}

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|--------------------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

GET Get User profile data

GET /auth/user

Get user profile information, including name, email, nickname, gender

Params

| Name | Location | Type | Required | Description |
|---------|----------|--------|----------|-------------|
| user_id | query | string | no | none |

Response Examples

200 Response

{}

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|--------------------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

PUT Update user profile

PUT /auth/user

Update the user profile

Body Parameters

```
{
  "first_name": "DI",
  "last_name": "Boxjelly",
  "nickname": "di-boxjelly",
  "gender": "male"
}
```

Params

| Name | Location | Type | Required | Description |
|------|----------|------|----------|-------------|
|------|----------|------|----------|-------------|

| | | | | |
|--------------|------|--------|----|------|
| body | body | object | no | none |
| » first_name | body | string | no | none |
| » last_name | body | string | no | none |
| » nickname | body | string | no | none |
| » gender | body | string | no | none |

Response Examples

200 Response

{}

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|---------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

POST Accept a invitation

POST /auth/team/accept

The invitee can accept the invitation by registering using invitation link.

Body Parameters

```
invite_token: string
username: string
email: string
password: string
first_name: string
last_name: string
gender: string
```

Params

| Name | Location | Type | Required | Description |
|----------------|----------|--------|----------|-------------|
| body | body | object | no | none |
| » invite_token | body | string | no | none |
| » username | body | string | no | none |
| » email | body | string | no | none |
| » password | body | string | no | none |
| » first_name | body | string | no | none |
| » last_name | body | string | no | none |
| » gender | body | string | no | none |

Response Examples

200 Response

{}

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|---------|-------------|-------------|
| 200 | OK | Success | Inline |

Responses Data Schema

GET Get avatar of a user

GET /auth/user/avatar

Get avatar of a user

Params

| Name | Location | Type | Required | Description |
|--------|----------|--------|----------|-------------|
| avatar | query | string | no | none |

Response Examples

200 Response

{}

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|---------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

POST Update the avatar file

POST /auth/user/avatar

Body Parameters

avatar: file:///Users/sunkunxi/Pictures/IMG_4391.JPG

Params

| Name | Location | Type | Required | Description |
|----------|----------|----------------|----------|-------------|
| body | body | object | no | none |
| » avatar | body | string(binary) | yes | none |

Response Examples

200 Response

{}

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|---------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

Data Schema

Center Service

DigitalHealth

v1.0.0

Base URLs:

- PRODUCTION: <http://localhost:8003>

center

POST Create a Map Task

POST /center/boards/tasks

Create a new map task for a user in a team with the specified UI version.

Body Parameters

```
file: file:///Users/sunkunxi/Desktop/test.csv
team_id: 60c879e72cb0e6f96d6b0f65
board_id: 60c879e72cb0e6f96d6b0f65
```

Params

| Name | Location | Type | Required | Description |
|--------------|----------|----------------|----------|-------------|
| Content-Type | header | string | yes | none |
| body | body | object | no | none |
| » file | body | string(binary) | no | none |
| » team_id | body | string | no | none |
| » board_id | body | string | no | none |

Response Examples

200 Response

```
{
  "data": {
    "id": "645328311abd2039faa81f3a",
    "num": 0,
    "status": "pending"
  },
  "code": 0,
  "msg": "string"
}
```

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|---------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

HTTP Status Code 200

| Name | Type | Required | Restrictions | Title | description |
|------|------|----------|--------------|-------|-------------|
| | | | | | |

| | | | | | |
|-----------|---------|------|------|--|------|
| » data | object | true | none | | none |
| »» id | string | true | none | | none |
| »» num | integer | true | none | | none |
| »» status | string | true | none | | none |
| » code | number | true | none | | none |
| » msg | string | true | none | | none |

GET Get All Map Tasks

GET /center/boards/tasks

Params

| Name | Location | Type | Required | Description |
|----------|----------|---------|----------|-------------|
| page | query | integer | no | none |
| size | query | integer | no | none |
| team_id | query | string | no | none |
| board_id | query | string | no | none |

Response Examples

SUCCESS

```
{
  "code": "9",
  "msg": "success",
  "data": {
    "page": 2,
    "size": 10,
    "page_num": 2,
    "tasks": [
      {
        "id": "47",
        "status": "pending",
        "num": 8,
        "create_by": "dolor",
        "create_at": "2003-12-15 15:17:17",
        "update_at": "2006-07-07 11:30:59"
      },
      {
        "id": "52",
        "status": "success",
        "num": 25,
        "create_by": "Duis et nisi dolore ad",
        "create_at": "1981-04-26 06:12:29",
        "update_at": "2007-09-20 23:51:33"
      },
      {
        "id": "35",
        "status": "fail",
        "num": 58,
        "create_by": "exercitation in esse",
        "create_at": "1978-03-07 15:46:58",
        "update_at": "2020-02-01 13:32:27"
      },
      {
        "id": "25",
        "status": "success",
        "num": 10,
        "create_by": "nisi",
        "create_at": "2015-12-17 00:21:47",
        "update_at": "1995-01-16 13:10:39"
      }
    ]
  }
}
```

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|---------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

HTTP Status Code **200**

| Name | Type | Required | Restrictions | Title | description |
|--------------|----------|----------|--------------|-------|------------------------------------|
| » code | number | true | none | | none |
| » msg | string | true | none | | none |
| » data | object | true | none | | none |
| »» page | integer | true | none | | current page number |
| »» size | integer | true | none | | page size |
| »» page_num | integer | true | none | | total page number |
| »» tasks | [object] | true | none | | none |
| »» id | string | true | none | | none |
| »» status | string | true | none | | none |
| »» num | integer | true | none | | number of mapped items in the task |
| »» create_by | string | true | none | | none |
| »» create_at | string | true | none | | none |
| »» update_at | string | true | none | | none |

GET Get Map Task Detail

GET /center/boards/task/detail

Get detail of a map task

Body Parameters

{ }

Params

| Name | Location | Type | Required | Description |
|----------|----------|---------|----------|-------------|
| page | query | integer | no | none |
| size | query | integer | no | none |
| team_id | query | string | no | none |
| board_id | query | string | no | none |
| task_id | query | string | no | none |
| body | body | object | no | none |

Response Examples

200 Response

```
{
  "data": {
    "id": "string",
    "status": "pending",
    "create_at": "string",
    "update_at": null,
    "items": [
      {
        "id": "string",
        "mapping_status": 0,
        "original_text": "string",
        "mapped_text": null,
        "confidence": null,
        "source": null,
        "curate": null
      }
    ],
    "num": 0,
    "num_success": 0,
    "num_fail": 0
  },
  "code": "200",
  "msg": "ok"
}
```

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|--------------------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

HTTP Status Code **200**

| Name | Type | Required | Restrictions | Title | description |
|--------------|--------|----------|--------------|-------|-------------------------------|
| » data | object | true | none | | none |
| »» id | string | true | none | | none |
| »» status | string | true | none | | 0: fail 1: pending 2: success |
| »» create_at | string | true | none | | none |
| »» update_at | any | true | none | | none |

anyOf

| Name | Type | Required | Restrictions | Title | description |
|---------------|------|----------|--------------|-------|-------------|
| »»» anonymous | null | false | none | | none |

or

| Name | Type | Required | Restrictions | Title | description |
|---------------|--------|----------|--------------|-------|-------------|
| »»» anonymous | string | false | none | | none |

continued

| Name | Type | Required | Restrictions | Title | description |
|--------------------|----------|----------|--------------|-------|-------------------------------|
| »» items | [object] | true | none | | none |
| »»» id | string | true | none | | none |
| »»» mapping_status | integer | true | none | | 0: fail 1:success 2: reviewed |
| »»» original_text | string | true | none | | none |
| »»» mapped_text | any | true | none | | none |

anyOf

| Name | Type | Required | Restrictions | Title | description |
|------|------|----------|--------------|-------|-------------|
| | | | | | |

| | | | | | |
|----------------|------|-------|------|--|------|
| »»»» anonymous | null | false | none | | none |
|----------------|------|-------|------|--|------|

or

| Name | Type | Required | Restrictions | Title | description |
|----------------|--------|----------|--------------|-------|-------------|
| »»»» anonymous | string | false | none | | none |

continued

| Name | Type | Required | Restrictions | Title | description |
|----------------|------|----------|--------------|-------|-------------|
| »»» confidence | any | true | none | | none |

anyOf

| Name | Type | Required | Restrictions | Title | description |
|----------------|------|----------|--------------|-------|-------------|
| »»»» anonymous | null | false | none | | if map fail |

or

| Name | Type | Required | Restrictions | Title | description |
|----------------|--------|----------|--------------|-------|-------------|
| »»»» anonymous | number | false | none | | none |

continued

| Name | Type | Required | Restrictions | Title | description |
|------------|------|----------|--------------|-------|-------------|
| »»» source | any | true | none | | none |

anyOf

| Name | Type | Required | Restrictions | Title | description |
|----------------|------|----------|--------------|-------|-------------|
| »»»» anonymous | null | false | none | | none |

or

| Name | Type | Required | Restrictions | Title | description |
|----------------|---------|----------|--------------|-------|-------------------|
| »»»» anonymous | object | false | none | | none |
| »»»» status | integer | true | none | | 0: snomed, 1: uil |
| »»»» snomed | any | true | none | | none |

anyOf

| Name | Type | Required | Restrictions | Title | description |
|-----------------|------|----------|--------------|-------|-------------|
| »»»»» anonymous | null | false | none | | none |

or

| Name | Type | Required | Restrictions | Title | description |
|-----------------|--------|----------|--------------|-------|-------------|
| »»»»» anonymous | object | false | none | | none |
| »»»»» code | string | true | none | | none |
| »»»»» name | string | true | none | | none |

continued

| Name | Type | Required | Restrictions | Title | description |
|-----------|------|----------|--------------|-------|-------------|
| »»»»» uil | any | true | none | | none |

anyOf

| Name | Type | Required | Restrictions | Title | description |
|-----------------|------|----------|--------------|-------|-------------|
| »»»»» anonymous | null | false | none | | none |

or

| Name | Type | Required | Restrictions | Title | description |
|-------------------|--------|----------|--------------|-------|-------------|
| »»»»» anonymous | object | false | none | | none |
| »»»»» id | string | true | none | | none |
| »»»»» snomed_code | string | true | none | | none |
| »»»»» name | string | true | none | | none |

continued

| Name | Type | Required | Restrictions | Title | description |
|------------|------|----------|--------------|-------|-------------|
| »»» curate | any | true | none | | none |

anyOf

| Name | Type | Required | Restrictions | Title | description |
|---------------|------|----------|--------------|-------|-------------|
| »»» anonymous | null | false | none | | none |

or

| Name | Type | Required | Restrictions | Title | description |
|--------------------|--------|----------|--------------|-------|-------------|
| »»» anonymous | object | false | none | | none |
| »»»» category_id | string | true | none | | none |
| »»»» category_name | string | true | none | | none |
| »»»» update_at | string | true | none | | none |

continued

| Name | Type | Required | Restrictions | Title | description |
|----------------|---------|----------|--------------|-------|-----------------------|
| »» num | integer | true | none | | total number of items |
| »» num_success | integer | true | none | | none |
| »» num_fail | integer | true | none | | none |
| » code | string | true | none | | none |
| » msg | string | true | none | | none |

DELETE Delete a Map Task

DELETE /ui/boards/tasks

Params

| Name | Location | Type | Required | Description |
|----------|----------|--------|----------|-------------|
| task_id | query | string | no | none |
| board_id | query | string | no | none |
| team_id | query | string | no | none |

Response Examples

200 Response

```
{
  "success": true,
  "code": "string",
  "msg": "string"
}
```

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|--------------------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

HTTP Status Code **200**

| Name | Type | Required | Restrictions | Title | description |
|-----------|---------|----------|--------------|-------|-------------|
| » success | boolean | true | none | | none |
| » code | string | true | none | | none |
| » msg | string | true | none | | none |

GET get all mapped items of a task

GET /map/items

Params

| Name | Location | Type | Required | Description |
|------|----------|--------|----------|-------------|
| id | query | string | no | taskId |

Response Examples

200 Response

```
{
  "data": {
    "items": [
      {
        "itemId": "string",
        "mappingSuccess": true,
        "mappingStatus": 0,
        "originalText": "string",
        "mappedText": null,
        "confidence": null,
        "curate": null,
        "uil": null,
        "snomed": null,
        "source": 0
      }
    ],
    "totalNumber": "string",
    "numberOfSuccess": 0,
    "numberOfFail": 0
  },
  "code": "string",
  "msg": "string"
}
```

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|--------------------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

HTTP Status Code **200**

| Name | Type | Required | Restrictions | Title | description |
|--------------------|----------|----------|--------------|-------|-------------------------------|
| » data | object | true | none | | none |
| »» items | [object] | true | none | | none |
| »»» itemId | string | true | none | | none |
| »»» mappingSuccess | boolean | true | none | | none |
| »»» mappingStatus | integer | true | none | | 0: success 1:fail 2: reviewed |
| »»» originalText | string | true | none | | none |
| »»» mappedText | any | true | none | | none |

anyOf

| Name | Type | Required | Restrictions | Title | description |
|----------------|------|----------|--------------|-------|-------------|
| »»»» anonymous | null | false | none | | none |

or

| Name | Type | Required | Restrictions | Title | description |
|----------------|--------|----------|--------------|-------|-------------|
| »»»» anonymous | string | false | none | | none |

continued

| Name | Type | Required | Restrictions | Title | description |
|----------------|------|----------|--------------|-------|-------------|
| »»» confidence | any | true | none | | none |

anyOf

| Name | Type | Required | Restrictions | Title | description |
|----------------|------|----------|--------------|-------|-----------------|
| »»»» anonymous | null | false | none | | if mapping fail |

or

| Name | Type | Required | Restrictions | Title | description |
|----------------|--------|----------|--------------|-------|-------------|
| »»»» anonymous | number | false | none | | none |

continued

| Name | Type | Required | Restrictions | Title | description |
|------------|------|----------|--------------|-------|-------------|
| »»» curate | any | true | none | | none |

anyOf

| Name | Type | Required | Restrictions | Title | description |
|----------------|------|----------|--------------|-------|-------------|
| »»»» anonymous | null | false | none | | none |

or

| Name | Type | Required | Restrictions | Title | description |
|--------------------|--------|----------|--------------|-------|-------------|
| »»»» anonymous | object | false | none | | none |
| »»»»» categoryName | string | true | none | | none |
| »»»»» categoryId | string | true | none | | none |
| »»»»» updateAt | string | true | none | | none |

continued

| Name | Type | Required | Restrictions | Title | description |
|---------|------|----------|--------------|-------|-------------|
| »»» uil | any | true | none | | none |

anyOf

| Name | Type | Required | Restrictions | Title | description |
|----------------|------|----------|--------------|-------|-------------|
| »»»» anonymous | null | false | none | | none |

or

| Name | Type | Required | Restrictions | Title | description |
|-----------------|--------|----------|--------------|-------|--|
| »»»» anonymous | object | false | none | | none |
| »»»» id | string | true | none | | none |
| »»»» snomedCode | string | true | none | | none |
| »»»» name | string | true | none | | uil category name, should be same as the mapped Text |

continued

| Name | Type | Required | Restrictions | Title | description |
|------------|------|----------|--------------|-------|-------------|
| »»» snomed | any | true | none | | none |

anyOf

| Name | Type | Required | Restrictions | Title | description |
|----------------|------|----------|--------------|-------|-------------|
| »»»» anonymous | null | false | none | | none |

or

| Name | Type | Required | Restrictions | Title | description |
|----------------|--------|----------|--------------|-------|-------------|
| »»»» anonymous | object | false | none | | none |
| »»»» code | string | true | none | | none |
| »»»» name | string | true | none | | none |

continued

| Name | Type | Required | Restrictions | Title | description |
|------------------------|--------|----------|--------------|-------|----------------------------|
| »»» source | number | true | none | | 0: fail, 1: snomed, 2: uil |
| »» totalNumber | string | true | none | | none |
| »» numberOfWorkSuccess | number | true | none | | none |
| »» numberOfWorkFail | number | true | none | | none |
| » code | string | true | none | | none |
| » msg | string | true | none | | none |

POST Curate The Map Item

POST /center/boards/task/curate

Update(Curate) a category of a mapped item in map task

Body Parameters

```
{
  "board_id": "string",
  "team_id": "string",
  "map_item_id": "string",
  "concept_id": "string"
}
```

Params

| Name | Location | Type | Required | Description |
|---------------|----------|--------|----------|----------------------------------|
| id | query | string | no | taskId |
| body | body | object | no | none |
| » board_id | body | string | yes | none |
| » team_id | body | string | yes | none |
| » map_item_id | body | string | yes | the id of the item |
| » concept_id | body | string | yes | the id (code) of the curated uil |

Response Examples

200 Response

```
{  
  "code": "string",  
  "msg": "string",  
  "success": true  
}
```

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|--------------------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

HTTP Status Code **200**

| Name | Type | Required | Restrictions | Title | description |
|-----------|---------|----------|--------------|-------|-------------|
| » code | string | true | none | | none |
| » msg | string | true | none | | none |
| » success | boolean | true | none | | none |

GET Get Task Meta Data

GET /uil/boards/task/meta

Num of success, number of fail, number of reviewed....

Params

| Name | Location | Type | Required | Description |
|---------|----------|--------|----------|-------------|
| task_id | query | string | no | none |

Response Examples

200 Response

```
{}
```

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|---------|-------------|-------------|
| | | | |

| | | | |
|-----|--------------------|---------|--------|
| 200 | OK | success | Inline |
|-----|--------------------|---------|--------|

Responses Data Schema

GET Get task board list

GET /uil/boards

Get the task board of a team

Response Examples

200 Response

{}

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|--------------------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

POST Create a new task board

POST /uil/boards

Get the task board of a team

Body Parameters

```
{
  "team_id": "string",
  "name": "string",
  "description": "string"
}
```

Params

| Name | Location | Type | Required | Description |
|---------------|----------|--------|----------|-------------|
| body | body | object | no | none |
| » team_id | body | string | yes | none |
| » name | body | string | yes | none |
| » description | body | string | no | none |

Response Examples

200 Response

{}

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|--------------------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

PUT Modify a board detail

PUT /uil/boards

Modify a board's name and description

Body Parameters

{}

Params

| Name | Location | Type | Required | Description |
|------|----------|--------|----------|-------------|
| body | body | object | no | none |

Response Examples

200 Response

```
{  
  "team_id": "string",  
  "board_id": "string",  
  "new_name": "string",  
  "new_description": "string"  
}
```

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|---------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

HTTP Status Code 200

| Name | Type | Required | Restrictions | Title | description |
|-------------------|--------|----------|--------------|-------|-------------|
| » team_id | string | true | none | | none |
| » board_id | string | true | none | | none |
| » new_name | string | true | none | | none |
| » new_description | string | true | none | | none |

GET /center/dashboard/item-status-ratio

GET /center/dashboard/item-status-ratio

Response Examples

200 Response

{}

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|---------|-------------|-------------|
| | | | |

| | | | |
|-----|--------------------|---------|--------|
| 200 | OK | success | Inline |
|-----|--------------------|---------|--------|

Responses Data Schema

center/dashboard

POST Predict single clinical text

POST /center/dashboard/predict

Body Parameters

```
{
  "text": "string"
}
```

Params

| Name | Location | Type | Required | Description |
|--------|----------|--------|----------|-------------|
| body | body | object | no | none |
| » text | body | string | yes | none |

Response Examples

200 Response

{}

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|--------------------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

center/codesystem

GET Get Code System Concepts of a Team

GET /center/codesystem

Retrieves the UIL category list detail for a specific version.

Params

| Name | Location | Type | Required | Description |
|---------|----------|--------|----------|-------------|
| version | query | string | no | none |

Response Examples

200 Response

```
{
  "code": "string",
  "msg": "string",
  "data": {
    "version": "string",
    "categories": [
      {
        "id": "string",
        "name": "string"
      }
    ]
  }
}
```

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|--------------------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

HTTP Status Code 200

| Name | Type | Required | Restrictions | Title | description |
|---------------|----------|----------|--------------|-------|---|
| » code | string | true | none | | none |
| » msg | string | true | none | | none |
| » data | object | true | none | | none |
| »» version | string | true | none | | The UIL list version. |
| »» categories | [object] | true | none | | An array of categories for the specified version. |
| »»» id | string | true | none | | none |
| »»» name | string | true | none | | none |

POST Create a New Code System

POST /center/codesystem

When a new team is created, create a new code system

Response Examples

200 Response

{}

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|--------------------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

DELETE Delete a code system

DELETE /center/codesystem

Delete the code system given a unique version

Params

| Name | Location | Type | Required | Description |
|---------|----------|--------|----------|------------------------|
| version | query | string | no | Version of code system |

Response Examples

200 Response

{}

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|---------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

GET Get all versions of codesystem

GET /center/codesystem/versions

Get all version of code system from database

Response Examples

200 Response

{}

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|---------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

Data Schema

Gateway Service

Mapper Service

DigitalHealth

v1.0.0

Base URLs:

- PRODUCTION: <http://localhost:8003>

map

POST Map Clinical Text To Snomed CT

POST /map/translate

Body Parameters

```
{  
  "texts": [  
    "Pharyngitis, streptococcal",  
    "Abscess - left lower conjunctiva"  
  ]  
}
```

Params

| Name | Location | Type | Required | Description |
|---------|----------|----------|----------|-------------|
| body | body | object | no | none |
| » texts | body | [string] | yes | none |

Response Examples

200 Response

```
{  
  "code": 0,  
  "data": {},  
  "msg": "string"  
}
```

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|--------------------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

HTTP Status Code **200**

| Name | Type | Required | Restrictions | Title | description |
|--------|---------|----------|--------------|-------|-------------|
| » code | integer | true | none | | none |
| » data | object | true | none | | none |
| » msg | string | true | none | | none |

POST Predict the texts

POST /map/predict

Predict the texts

Body Parameters

```
{  
    "texts": [  
        "string"  
    ]  
}
```

Params

| Name | Location | Type | Required | Description |
|---------|----------|----------|----------|-------------|
| body | body | object | no | none |
| » texts | body | [string] | yes | none |

Response Examples

200 Response

```
{  
    "code": 0,  
    "msg": "string",  
    "data": {  
        "name": "string",  
        "predictions": {}  
    }  
}
```

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|---------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

HTTP Status Code 200

| Name | Type | Required | Restrictions | Title | description |
|----------------|---------|----------|--------------|-------|-------------|
| » code | integer | true | none | | none |
| » msg | string | true | none | | none |
| » data | object | true | none | | none |
| »» name | string | true | none | | none |
| »» predictions | object | true | none | | none |

POST Retrain the model

POST /map/retrain

Response Examples

200 Response

```
{}
```

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|---------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

POST Reset the model to original

POST /map/reset

Response Examples

200 Response

{}

Responses

| HTTP Status Code | Meaning | Description | Data schema |
|------------------|---------|-------------|-------------|
| 200 | OK | success | Inline |

Responses Data Schema

Data Schema

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' button is at the bottom.

Username: Kunxi Sun
Password: *****

Forgot password?

Log In

Main

The main interface has a sidebar with 'Main' selected, 'History Stats', and 'Account'. The main area shows 'Select the Mode' with 'Inference' selected. A central input field says 'Drag your file here or [Browse](#)'. Below it is a text input field 'Or input a short text for test' and a result 'Mapping Result: Term 1'. A user profile 'Daniel' is shown in the top right.

Mapping

Main

History Stats

Account

Select the Mode

Inference Training

Map

Or input a short text for test

Input the short text

Mapping Result:
Term 1

Daniel

Your profile

Sign out

Inference Mode

This screenshot shows the 'Inference' tab of the Mapping application. The left sidebar includes 'Main', 'History Stats', and 'Account'. The top navigation bar has 'Go Back', 'Inference' (which is selected), 'Training', and a user profile for 'Daniel'. A blue 'Export' button is located in the top right. The main content area displays a table with two columns: 'Original Text' and 'Mapping Category'. The table contains several rows of data, with some entries like '?????????????' having empty mapping categories. At the bottom, there are navigation arrows for page 1 through 60.

This screenshot is similar to the one above but includes a modal dialog box in the center. The dialog asks 'Do you confirm to export the CSV file?' with 'Cancel' and 'Confirm' buttons. The rest of the interface is identical to the first screenshot, showing the 'Inference' tab with a list of mapped items.

Training Mode

This screenshot shows the 'Training' tab of the Mapping application. The left sidebar includes 'Main', 'History Stats', and 'Account'. The top navigation bar has 'Go Back', 'Inference' (which is selected), 'Training', and a user profile for 'Daniel'. There are three buttons at the top: 'Filter', 'Reset', and a search bar. The main content area displays a table with six columns: 'Original.Text', 'Mapping Category', 'Curated Category', 'Mapping Status', 'Confidence', and 'Actions'. One row shows a curated category dropdown menu expanded to show options like 'Body lice', 'Skin', 'Eye', etc. At the bottom, there is a blue 'Re-train' button.

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

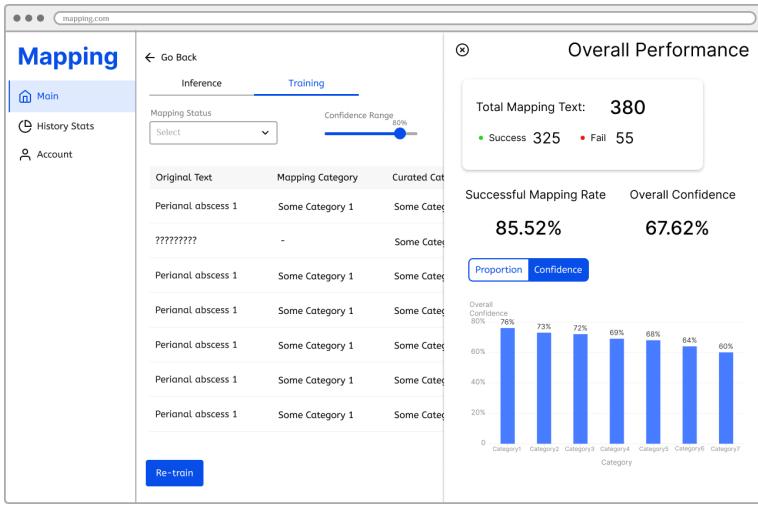
Success 325 Fail 55

Successful Mapping Rate: 85.52% Overall Confidence: 67.62%

Proportion Confidence

Proportion of Each Category

- Category 4
- Category 5
- Category 2
- Category 7
- Category 3
- Category 1
- Category 6



Retrain History

Retrain History

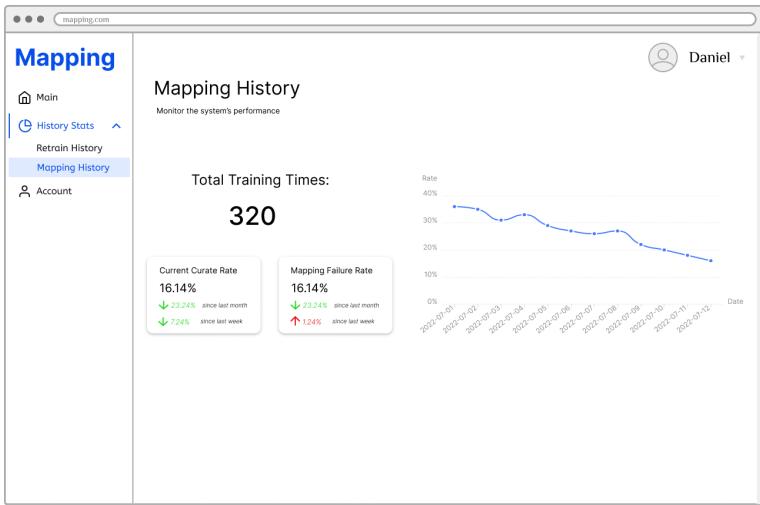
| Mapping ID | Retrained By | Retrained At | Curate Number | Actions |
|------------|--------------|------------------|---------------|---------|
| 1 | Daniel | 2023-03-18 13:37 | 8 | 🔗 |
| 2 | Daniel | 2023-03-18 13:37 | 10 | 🔗 |
| 3 | Daniel | 2023-03-18 13:37 | 10 | 🔗 |
| 4 | Daniel | 2023-03-18 13:37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

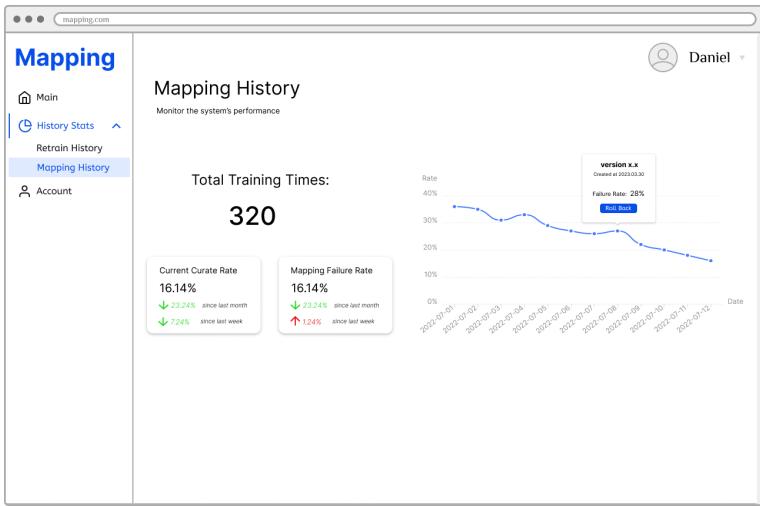
Curated By Daniel at 2023-03-18 13:37
The total number of curation is 8

| 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

Search member

| Name | User Group | Last Login | Role |
|----------------|------------------|------------------|--------|
| XXXX XXX | CURATE | 2022-12-12 12:00 | OWNER |
| XXXX@GMAIL.COM | | | |
| XXXX XXX | RESEARCH/ CURATE | 2022-12-12 12:00 | MEMBER |
| XXXX@GMAIL.COM | | | |
| XXXX XXX | RESEARCH/ NORMAL | 2022-12-12 12:00 | MEMBER |
| XXXX@GMAIL.COM | | | |
| XXXX XXX | NORMAL | 2022-12-12 12:00 | MEMBER |
| XXXX@GMAIL.COM | | | |
| XXXX XXX | - | 2022-12-12 12:00 | MEMBER |
| XXXX@GMAIL.COM | | | |

+ New User Group

All members

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

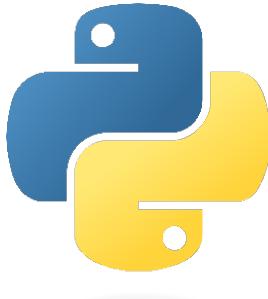
- [Sequence diagrams](#)(On Plan)

Reference

https://cis-projects.github.io/project_based_course_notes/topics/architecture.html?highlight=diagram

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

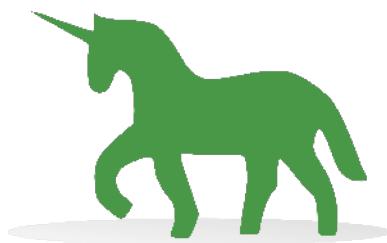
Flask, Gunicorn, and Nginx are popular choices for web development projects due to their ease of use, flexibility, and high-performance. These choices allow the team to quickly develop and deploy a robust, scalable and efficient web application that meets the client's requirement.



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](#)

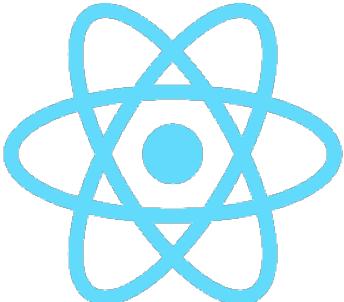


NGINX

[More about Nginx](#)

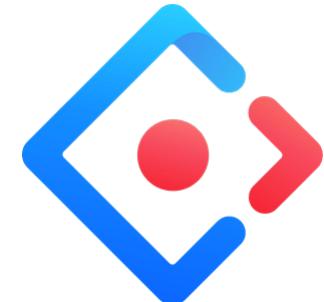
Frontend

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](#)

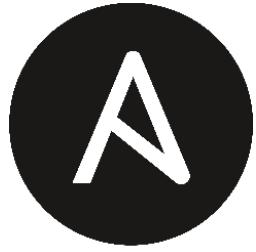
Deployment

We use Docker and Ansible for deployment which can make the project benefit from the consistency, scalability, and automation. It can streamline the deployment process and improve infrastructure's reliability. However, Ansible requires 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 a microservice architecture, Docker is the most prevalent tool to help 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](#)

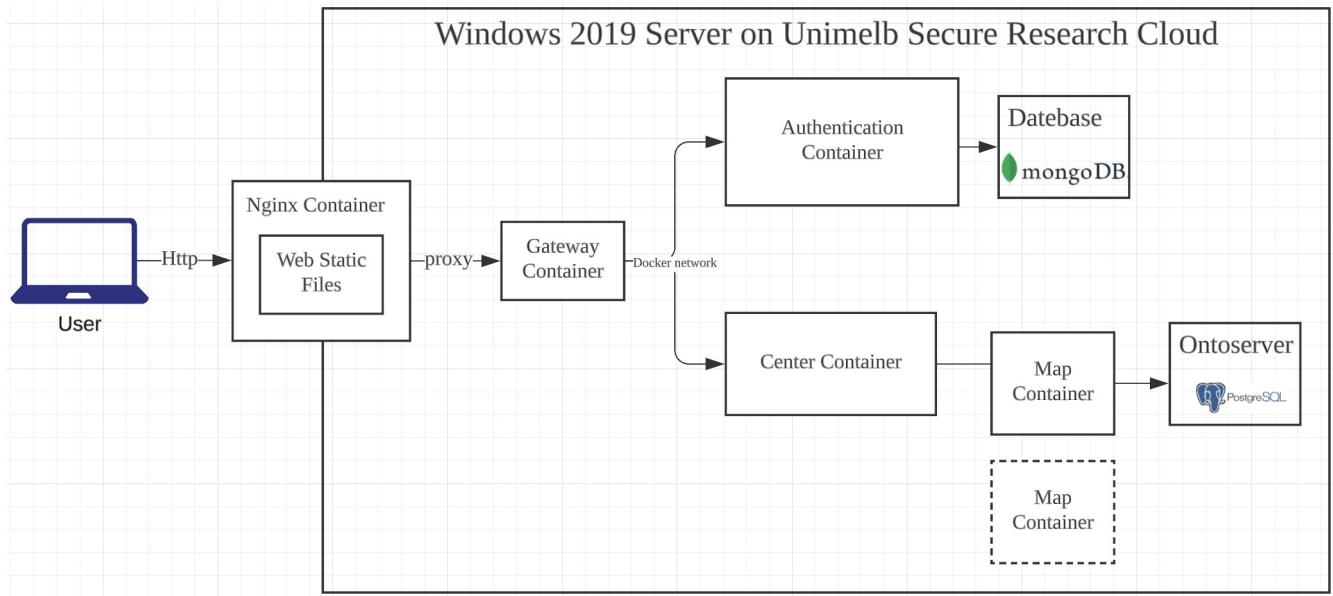
4+1 Architecture Models

| Title | Creator | Modified |
|-------------------|-----------|-----------------------|
| Database Model | KUNXI SUN | yesterday at 12:14 AM |
| Container Diagram | KUNXI SUN | 30 May, 2023 |
| System Diagram | KUNXI SUN | 30 May, 2023 |
| State Diagram | KUNXI SUN | 30 May, 2023 |
| Sequence Diagrams | KUNXI SUN | 30 May, 2023 |

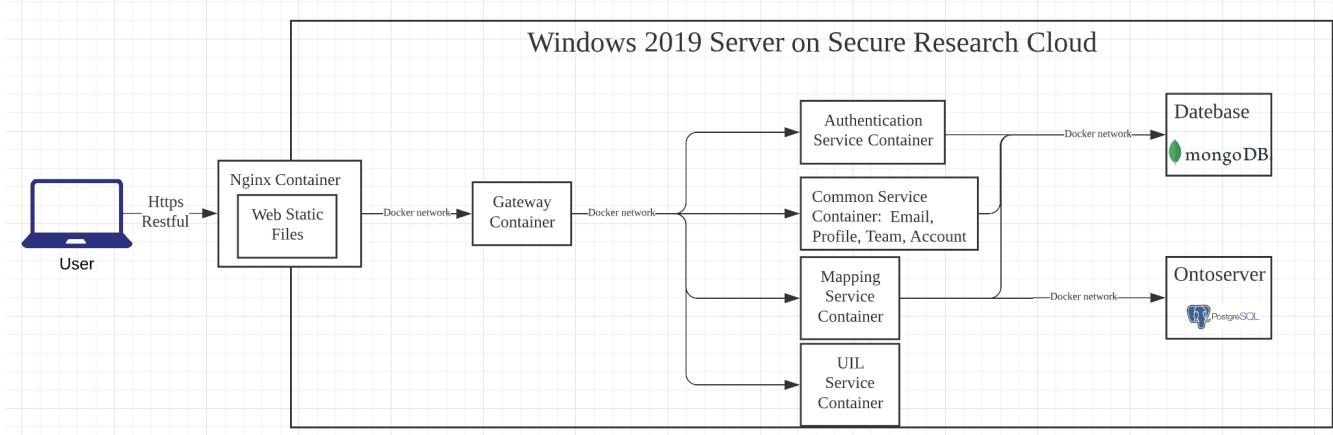
Container Diagram

| Version | Description | Date |
|---------|---|-------------|
| 2.0.0 | Change the container diagram aligning with the latest structure | 30 May 2023 |
| 1.0.0 | Basic container diagram | 28 Apr 2023 |

Version 2.0.0



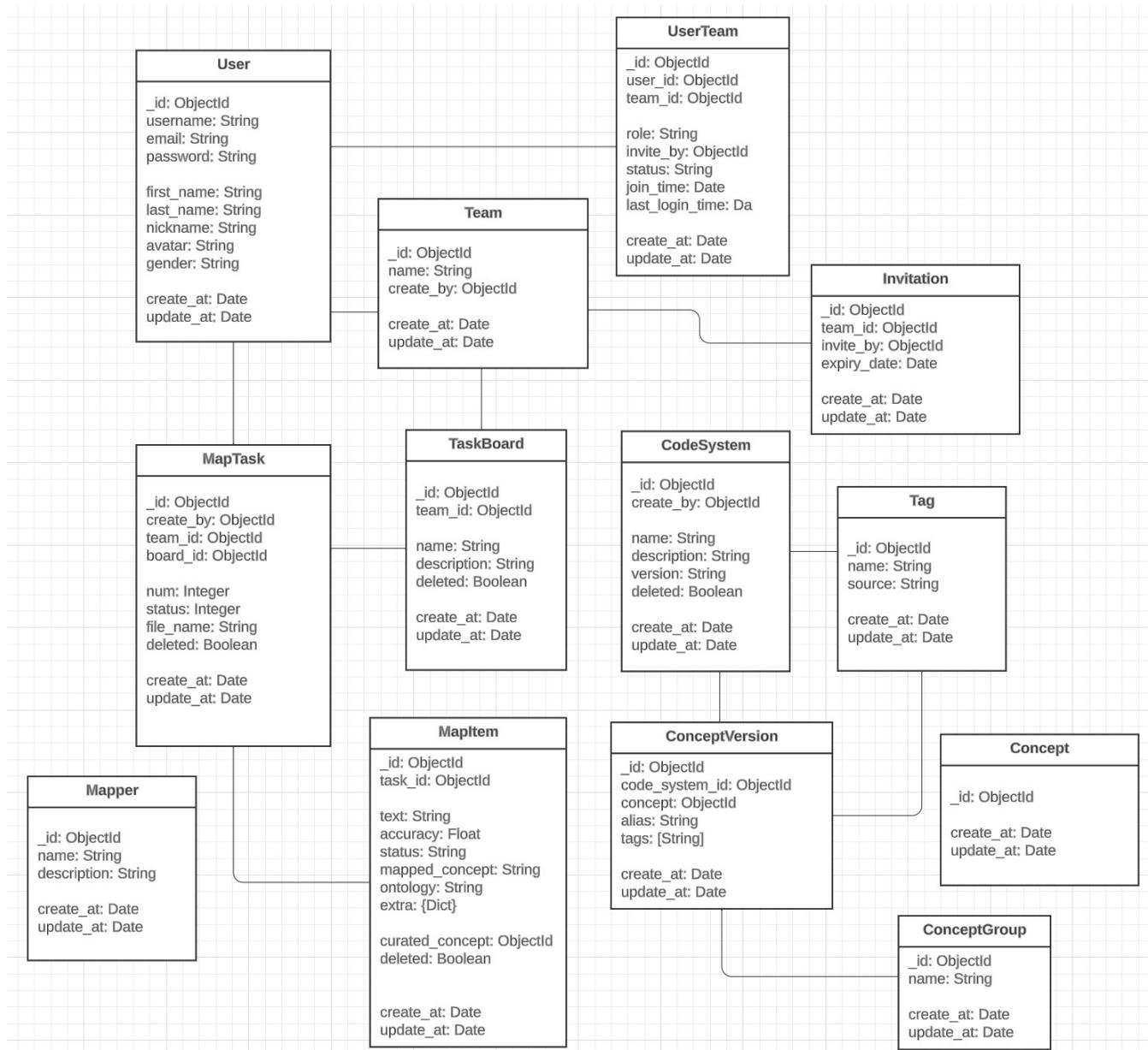
Version 1.0.0



Database Model

| Version | Description | Date |
|---------------|---|-------------|
| Version 2.0.0 | 1. Updated MongoDB data models with latest system | 30 May 2023 |
| Version 1.0.0 | 1. Basic MongoDB data models with basic relations | 24 Apr 2023 |

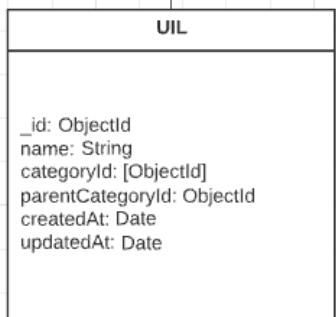
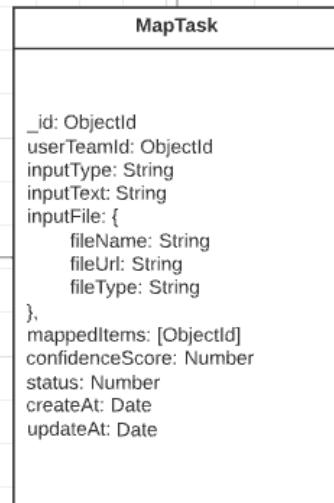
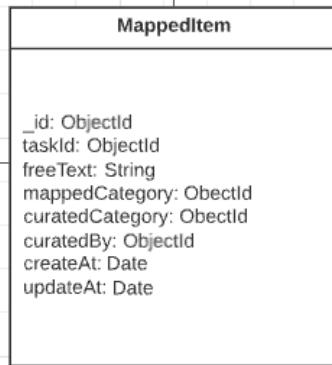
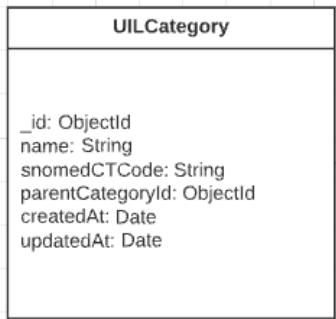
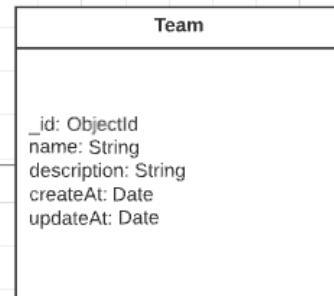
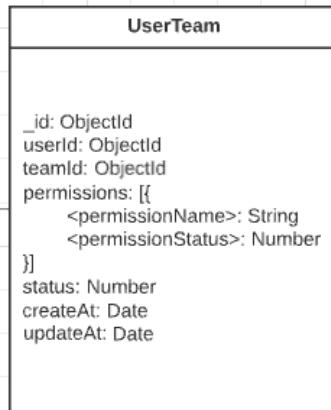
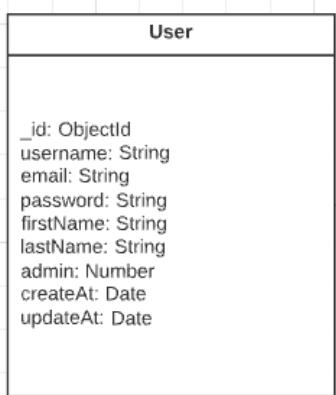
Version 2.0.0



Version 1.0.0

Database Model - MongoDB

KUNXI SUN | April 24, 2023

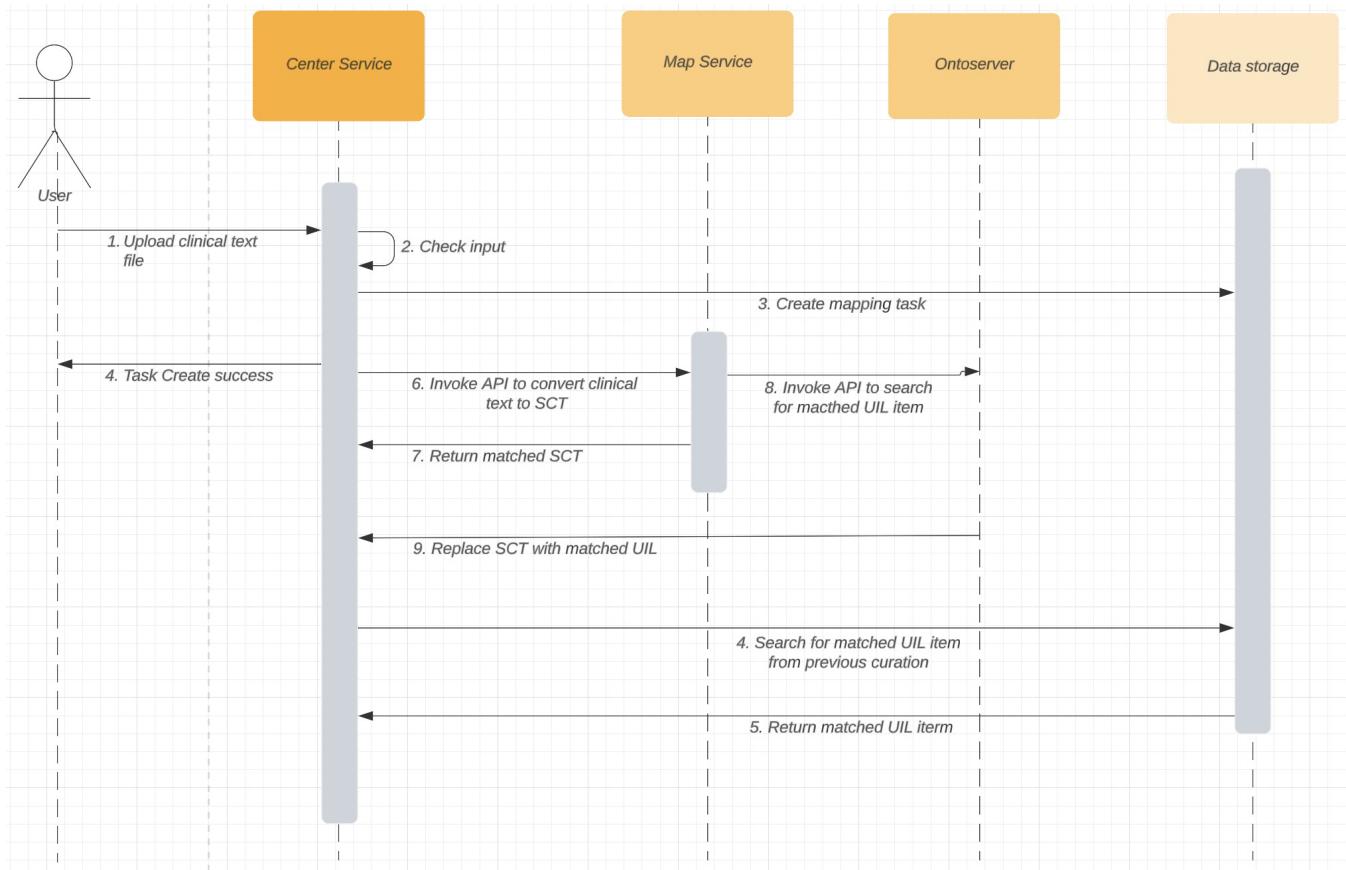


Sequence Diagrams

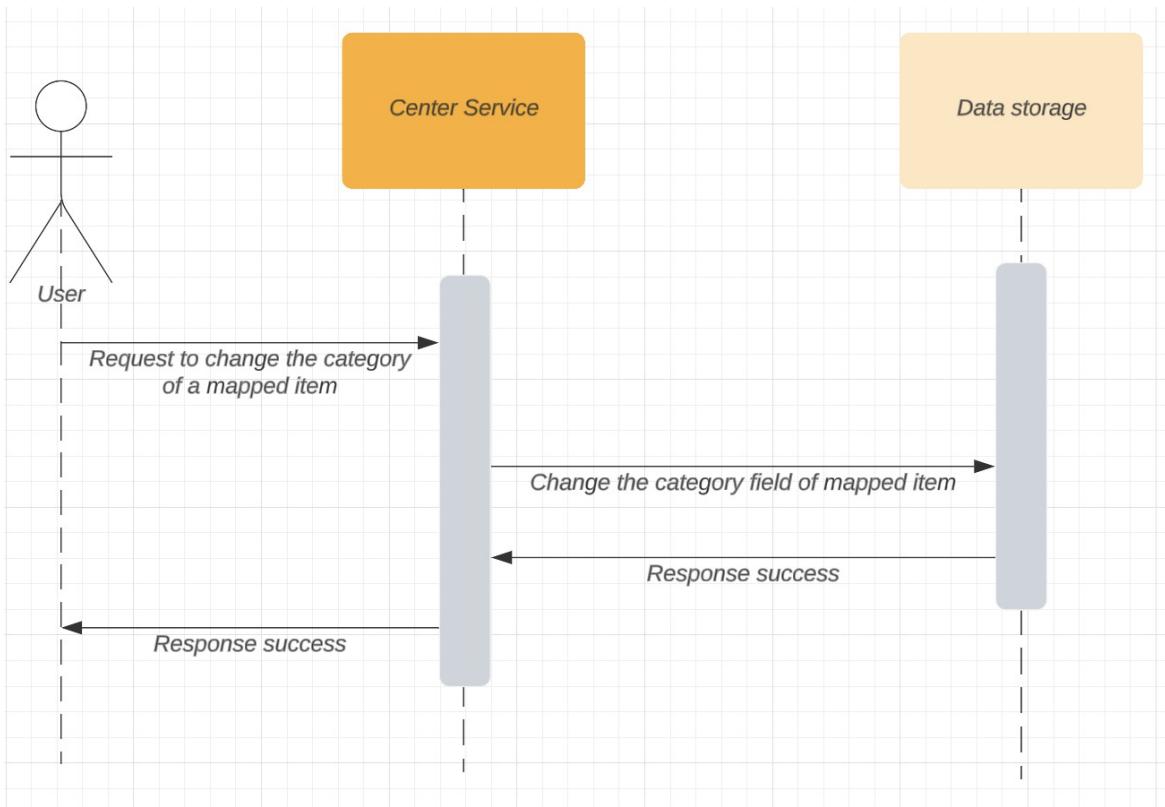
| Version | Description | Date | Comment |
|---------|---|-------------|--|
| 2.0.0 | Change the sequence diagram aligning with the latest system | 30 May 2023 | 1. Update on mapping sequence with Ontoserver service 2. Update on system rollback sequence with new logic. However, this function is not yet implemented due to time limitation. |
| 1.0.0 | Basic sequence diagram | 30 Apr 2023 | |

Version 2.0.0

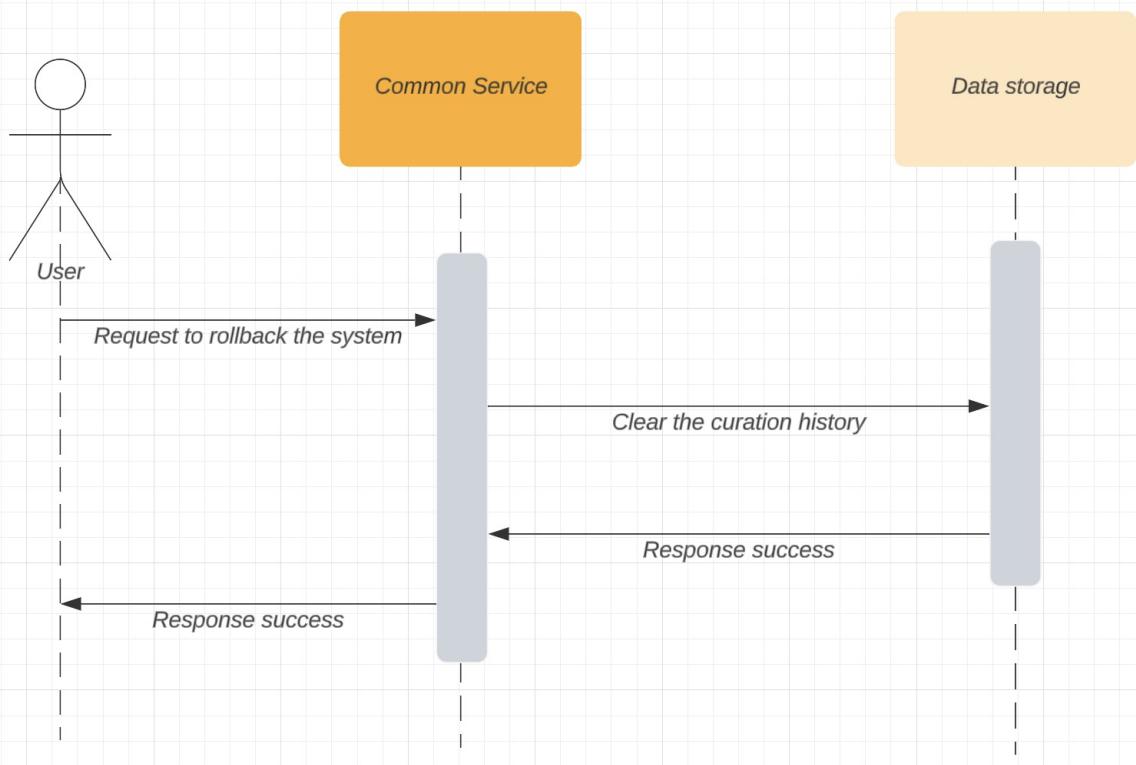
Mapping Sequence



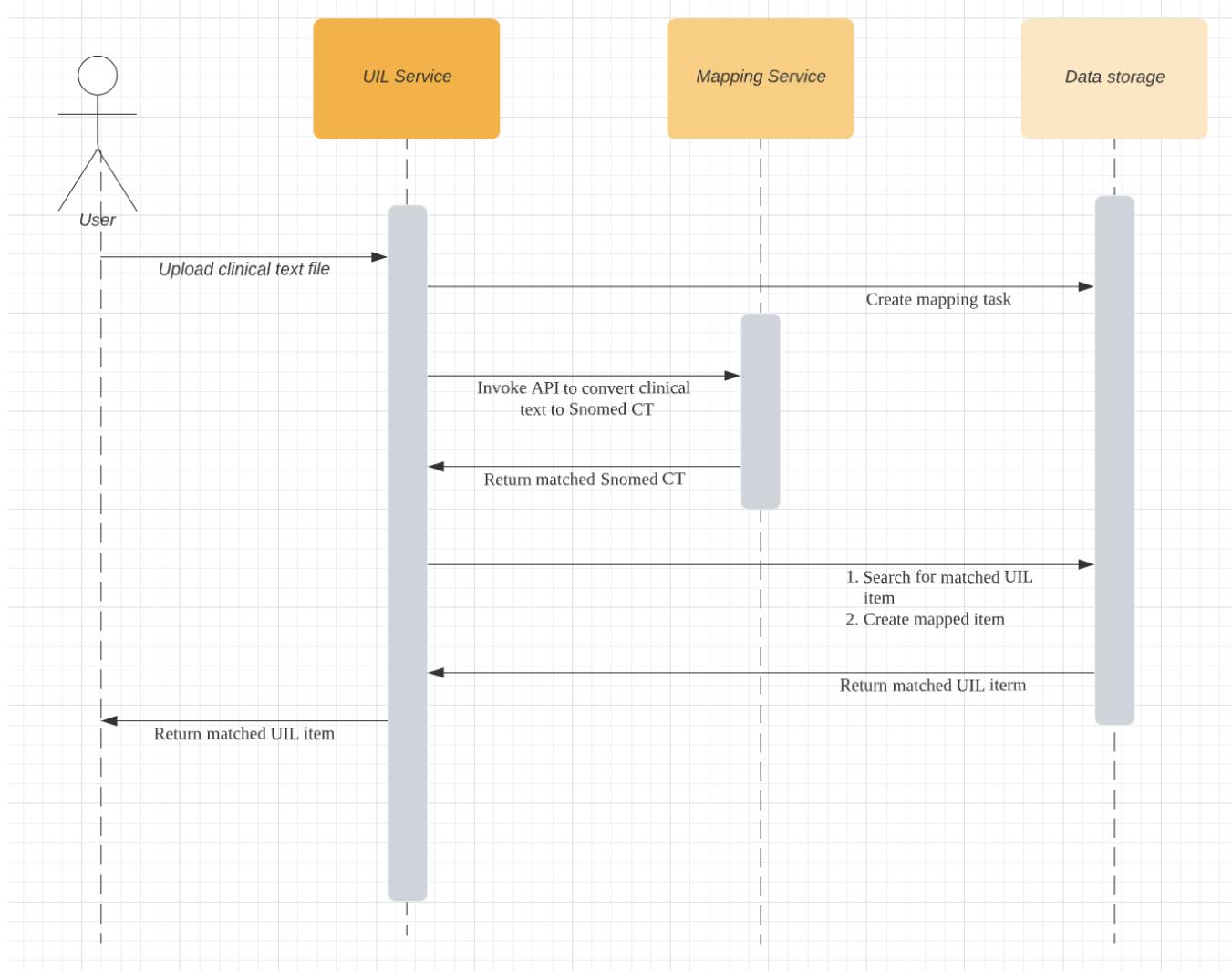
Curate Sequence



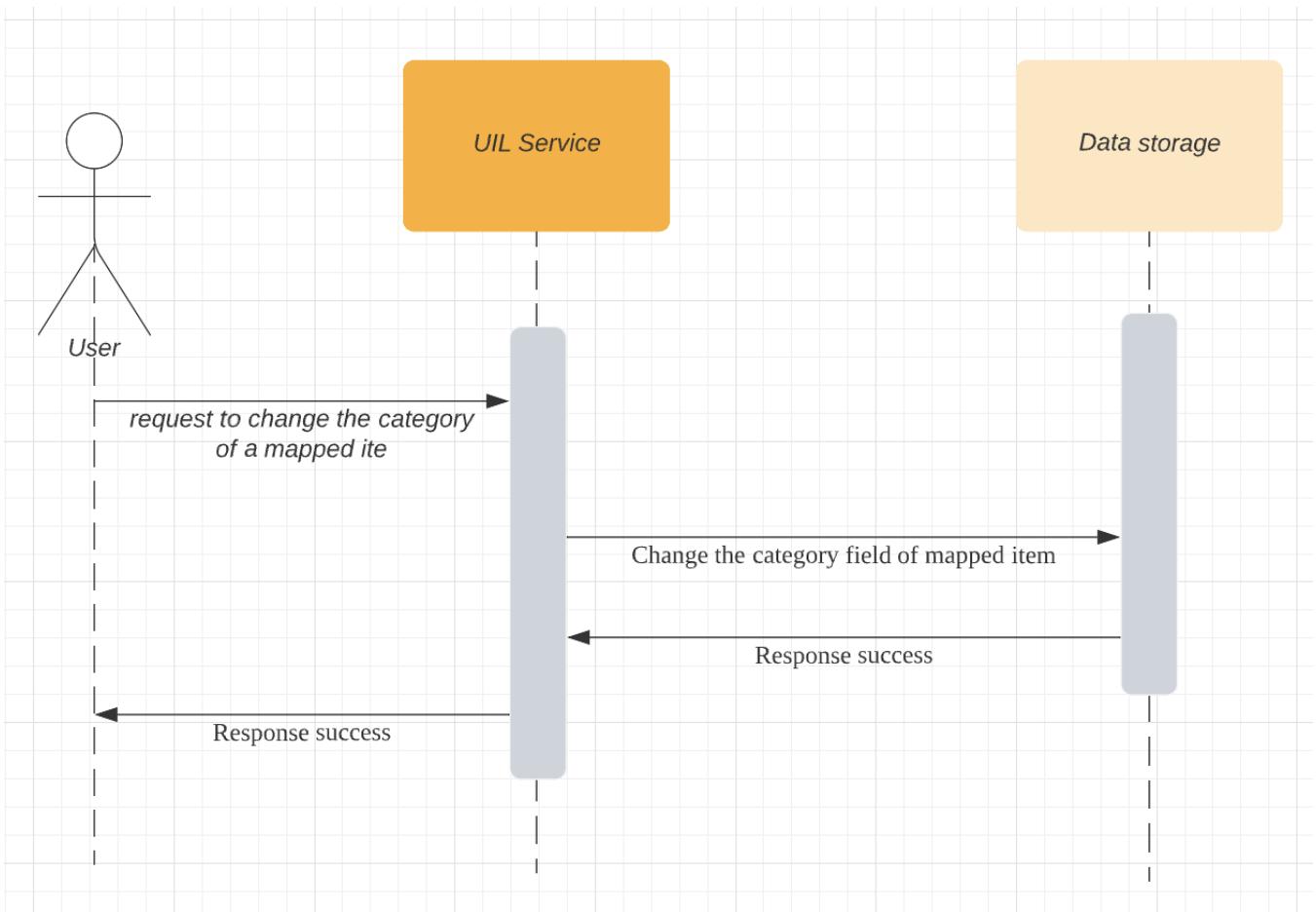
Rollback/Default System Sequence



Mapping Sequence



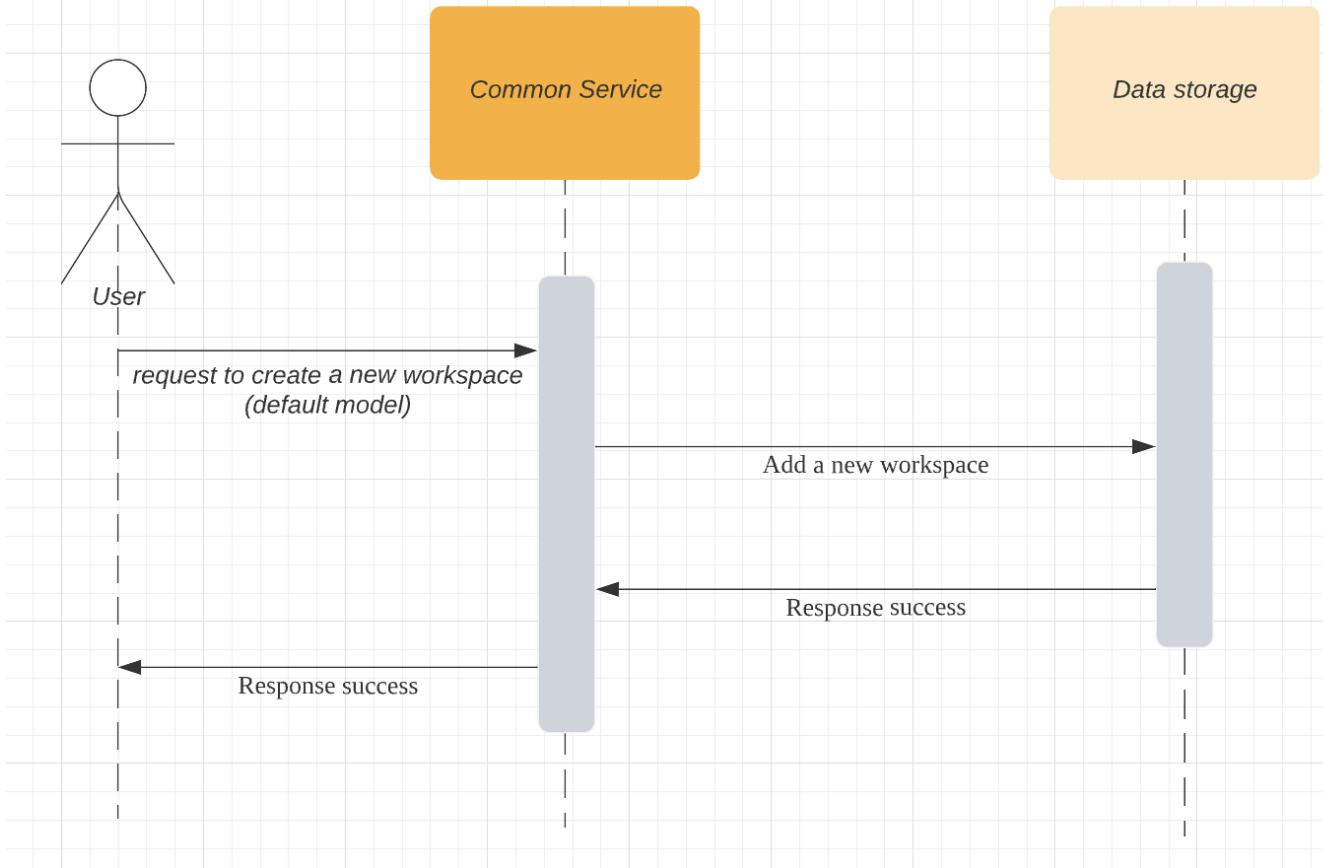
Curate Sequence



Rollback/Default System Sequence

Go back to default system Diagram

KUNXI SUN | April 30, 2023



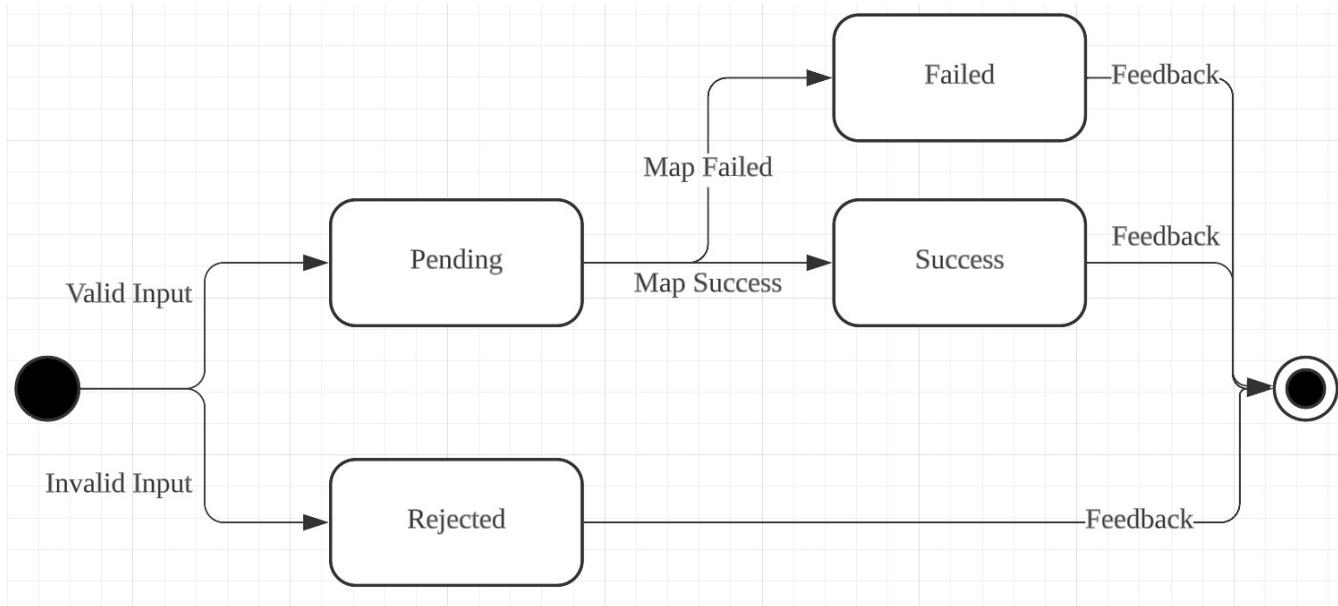
State Diagram

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

Version 1.0.0

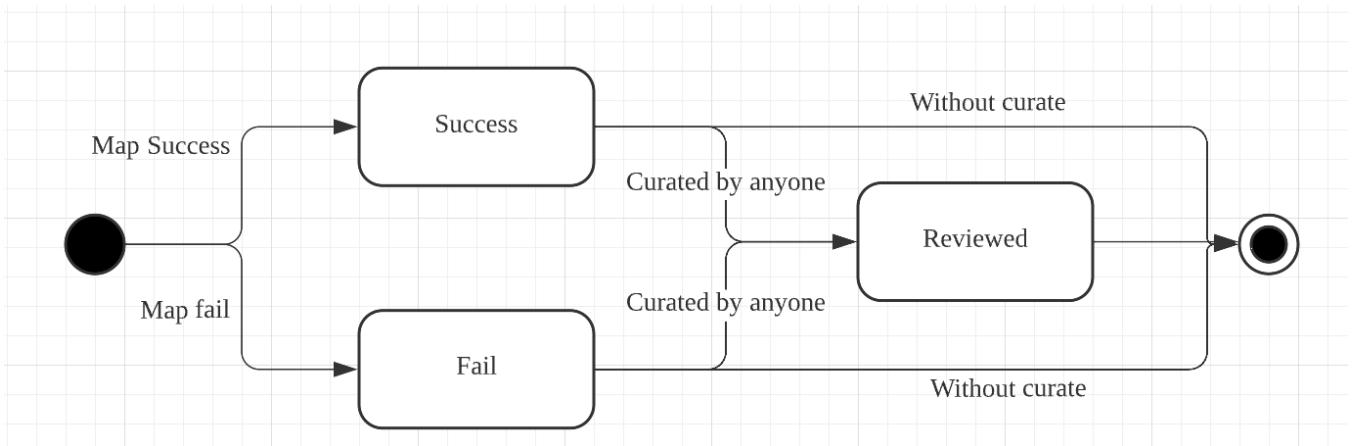
MapTask Status

| 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

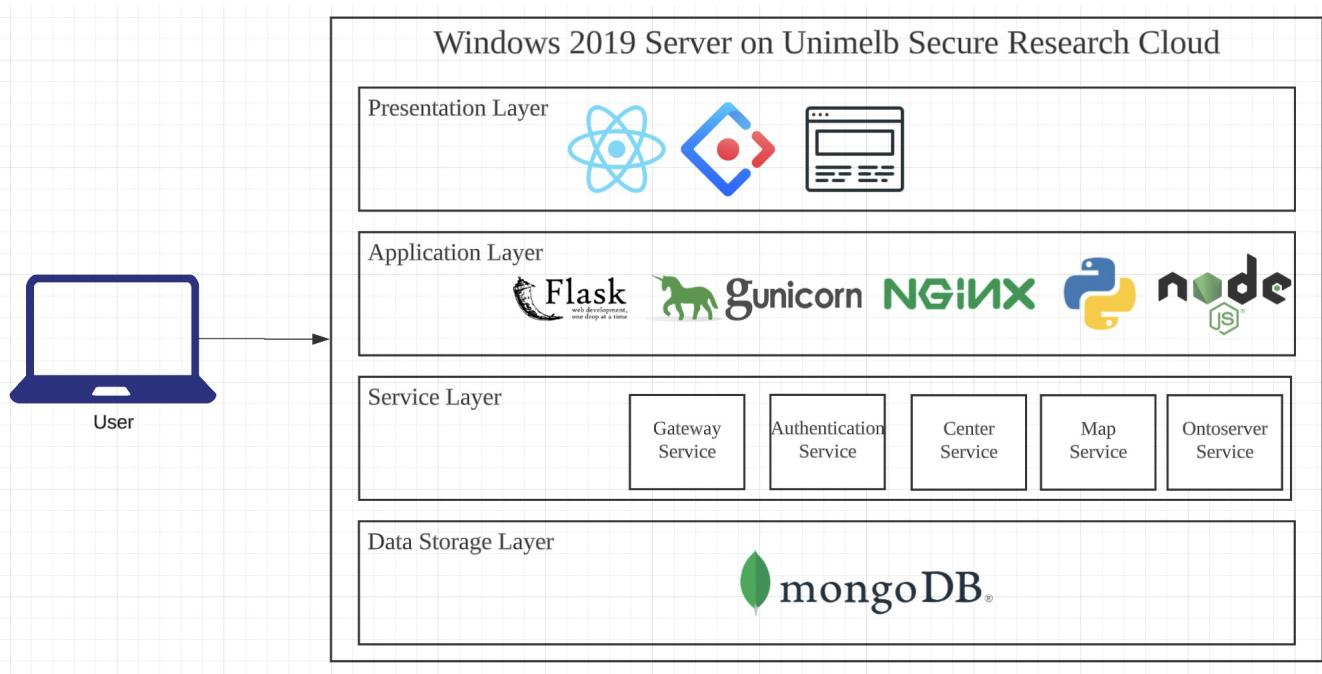
| Status Name | Status Number | Description |
|-------------|---------------|--|
| Fail | 0 | Mapping system failed to map this raw text |
| Success | 1 | Mapping system map this item successfully |
| Reviewed | 2 | This raw text has been curated by user |



System Diagram

| Version | Description | Date |
|---------|---|-------------|
| 3.0.0 | 1. Align with latest services | 30 May 2023 |
| 2.1.0 | 1. Add UIL service | 28 Apr 2023 |
| 2.0.0 | 1. Change the system diagram into a standard layers structure | 24 Apr 2023 |
| 1.0.0 | 1. Basic system diagram with modulus | 23 Mar 2023 |

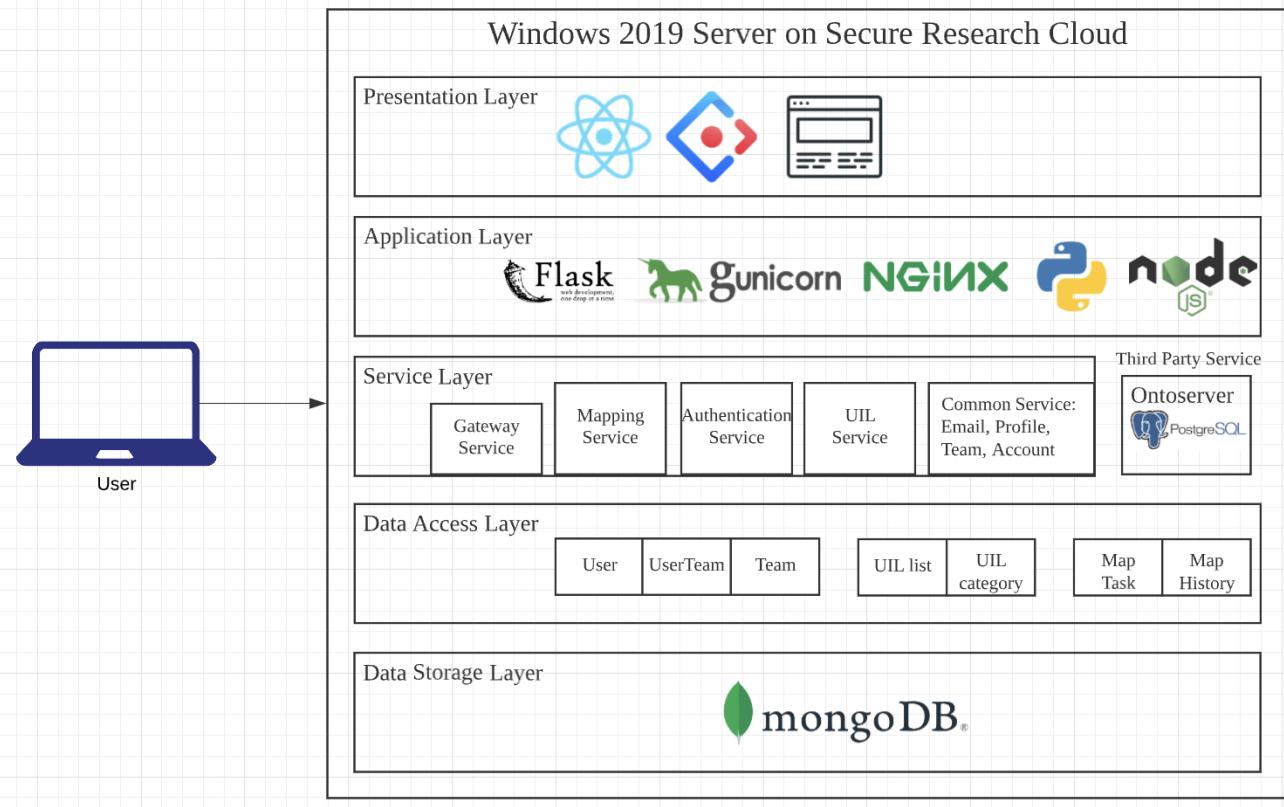
Version 3.0.0



Version 2.1.0

System Diagram

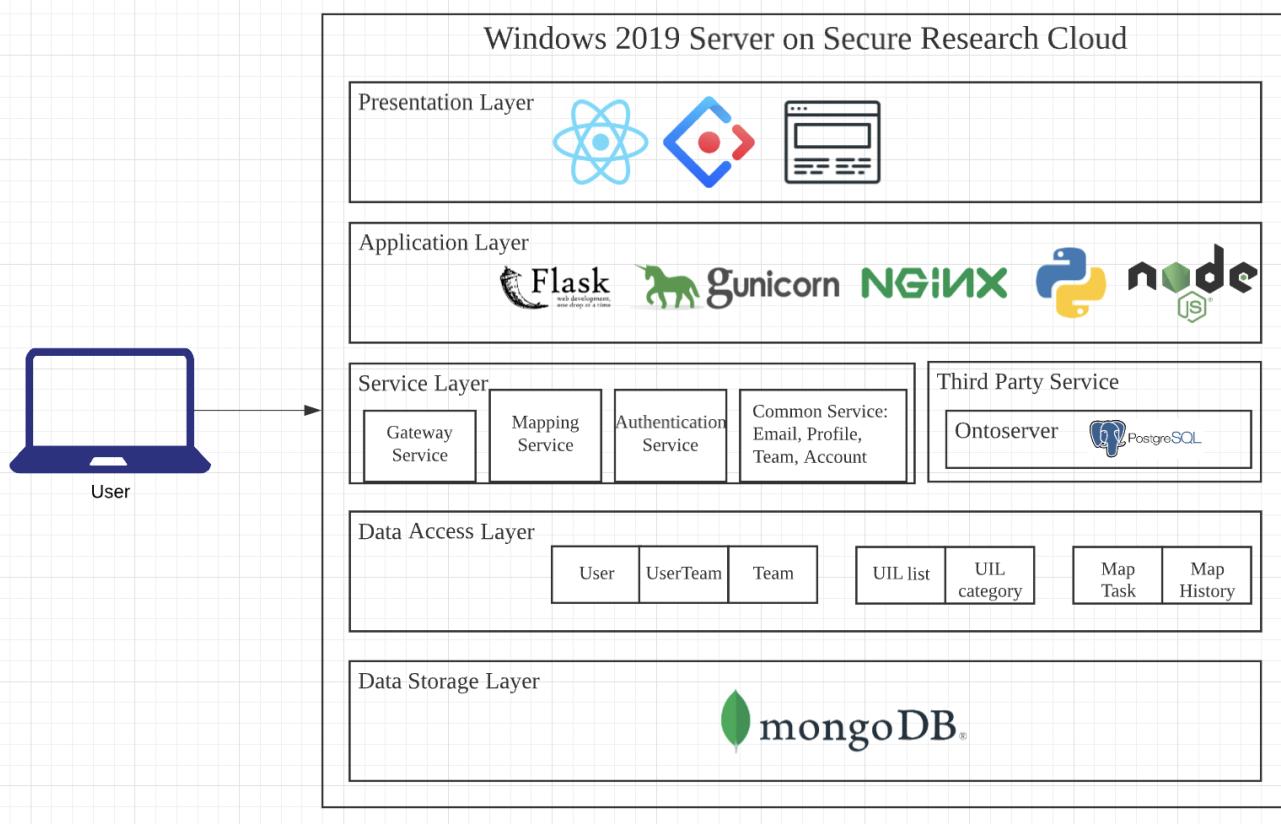
KUNXI SUN | April 28, 2023



Version 2.0.0

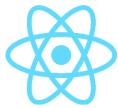
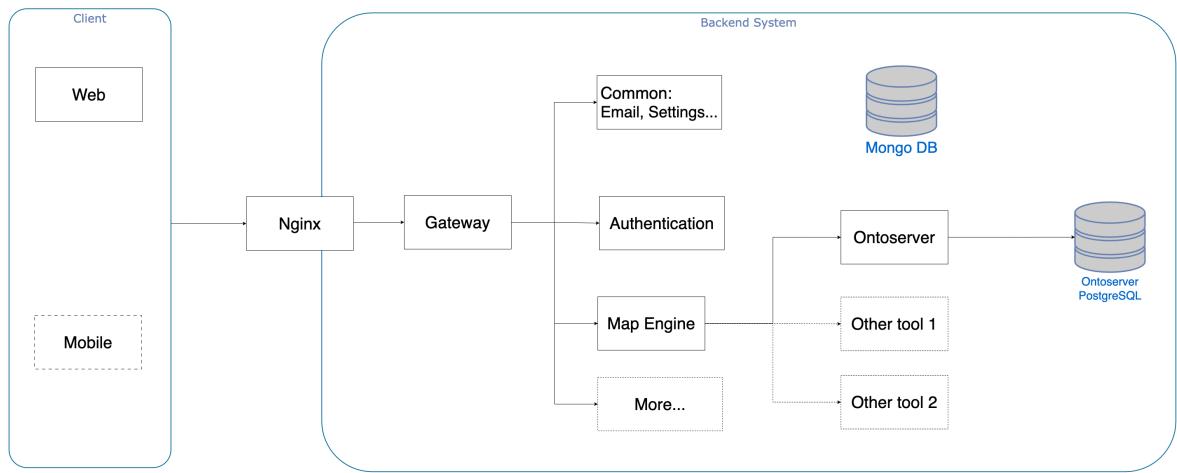
System Diagram

KUNXI SUN | April 25, 2023



Version 1.0.0

System Architecture Diagram



Quality

This page contains documentation related to quality control.

| Title | Creator | Modified |
|----------------------------|-------------|-------------------|
| User Experience Evaluation | Yue Fei | about 2 hours ago |
| Pair programming | KUNXI SUN | about 2 hours ago |
| Test Plan | Ricardo Luo | 30 Apr, 2023 |
| 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 the system. Our BDD test plan, as well as the 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 |
|---|-----------|--------------|
| TC0004 - Visualise Mapping Result | KUNXI SUN | 25 May, 2023 |
| TC0008 - Security | KUNXI SUN | 30 Apr, 2023 |
| TC0007 - Team Management | KUNXI SUN | 30 Apr, 2023 |
| TC0005 - Curate Mapping Result | KUNXI SUN | 30 Apr, 2023 |
| TC0003 - Mapping Clinical Raw Text | Hanyi Gao | 30 Apr, 2023 |
| 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: diboxjelly@gmail.com 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: email@noexist.com 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: diboxjelly@gmail.com 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">1. Click the Browse button in the upload area2. Select a CSV file | 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"> Click 'Curate' icon in the action column Select a category in the dropdown Click 'Save' to curate the result | TC0003-2 | <ol style="list-style-type: none"> Able to see all the UIL categories in the dropdown The status becomes 'reviewed' after saving the curated category | |
| TC0005-2 | The system is retrained after curating the result | Curate the mapping and re-train the system | <ol style="list-style-type: none"> Curate a mapping Click 'Retrain' button Do the mapping again | 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">1. Click 'Mapping Stats' section2. Click 'Mapping History' subsection3. Click 'Rollback to Default' button beyond mapping history monitoring timeline4. Click 'Confirm' button | 1. user is admin | The user has rolled back the system successfully. Navigate to the main page. | Email: diboxjelly@gmail.com 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"> Click the "Create Team" button Enter the name of the team Click the "Confirm" button | <ol style="list-style-type: none"> The admin user has successfully logged in | 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"> Select a user Click the "Add to a team" button View the list of all team names Select a team from the team list Click the "Confirm" button | <ol style="list-style-type: none"> The admin user has successfully logged in A team exists The team is not full | 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"> Select a team Select a team member from the team Click the "Remove from the team" button Click the "Confirm" button | <ol style="list-style-type: none"> The admin user has successfully logged in A team exists The team is not empty | 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"> Without using access token from login URL Use all request method(POST/GET /UPDATE/DELETE) to all API with protected resource | 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"> System create a new workspace (empty mapping history). Check the previous mapping history, and the history did not lose. | 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 |
|----------------------------|-----------|-----------------------|
| Performance Test Report | KUNXI SUN | yesterday at 11:43 PM |
| 2023-05-25 Functional Test | Hanyi Gao | 25 May, 2023 |
| 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 ISSUE00010: Login incorrect error message |
| | TC0001-3 | FAIL | see ISSUE00010: 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 | |

2023-05-25 Functional Test

| | |
|--------|-------------|
| Tester | Hanyi Gao |
| Date | 25 May 2023 |

| Test cases | Test Case ID | Status | Note |
|---|--------------|------------|------|
| Test Cases - Authentication&Authorization | TC0001-1 | PASS | |
| | TC0001-2 | PASS | |
| | TC0001-3 | PASS | |
| | 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 | TC0004-01 | PASS | |
| | TC0004-02 | PASS | |
| TC0005 - Curate Mapping Result | TC0005-1 | PASS | |
| | TC0005-2 | PASS | |
| TC0007 - Team management | TC0007-2 | PASS | |
| | TC0007-3 | PASS | |
| TC0006 - Rollback to Default System | TC0006-1 | DEVELOPING | |
| TC0008 - Security | TC0008-1 | PASS | |

Performance Test Report

| | |
|------------|----------------|
| Tester | Yue Fei |
| Technology | Macbook Pro M1 |
| Date | 04 May 2023 |

1. Introduction

The purpose of this performance test is to assess the speed and efficiency of MedCAT's `get_entities` function in conjunction with multiprocessing. The `get_entities` function is a key component of MedCAT, responsible for extracting relevant entities and concepts from clinical text data. By evaluating the execution time of this function using both single-process and multi-process approaches, we aim to determine the potential performance gains achieved through multiprocessing.

The performance test will focus on measuring the time taken by MedCAT's `get_entities` function to process a given set of text data. The comparison between single-process and multi-process execution will enable us to assess the benefits of parallel processing and evaluate the scalability of MedCAT in handling larger workloads.

The outcomes of this performance test will provide valuable insights into the efficiency of MedCAT's `get_entities` function and the effectiveness of multiprocessing as a technique to improve processing speed. These findings will aid in optimizing the utilization of MedCAT for clinical text analysis, potentially leading to enhanced productivity and reduced processing times for healthcare-related applications.

2. Test Objectives

The primary objectives of the performance testing were to measure and compare the execution time of MedCAT's `get_entities` function using both single-process and multi-process approaches. The specific goals were as follows:

1. Execution Time Measurement:
 - Determine the time taken by MedCAT's `get_entities` function to process a given set of text data using a single-process approach.
 - Measure the execution time of the `get_entities` function accurately to assess the performance of MedCAT.
2. Single-Process Approach:
 - Evaluate the performance of MedCAT when processing the test data sequentially within a single process.
 - Measure and record the execution time of the `get_entities` function for the entire dataset to establish a baseline performance metric.
3. Multi-Process Approach:
 - Assess the performance improvement achieved by employing multiprocessing to parallelize the execution of the `get_entities` function.
 - Measure the execution time of the `get_entities` function when the workload is distributed across multiple processes.
4. Performance Comparison:
 - Compare the execution times of the single-process and multi-process approaches.
 - Identify any significant differences in execution time and assess the efficiency gains achieved through multiprocessing.

By achieving these objectives, the performance test aimed to provide insights into the efficiency and scalability of MedCAT's `get_entities` function under different processing paradigms. The results would inform decision-making regarding the optimal approach to leverage the function's capabilities while optimizing resource utilization and reducing processing time.

3. Test Environment

| | |
|----------------|--------|
| MedCAT Version | v1.7.0 |
|----------------|--------|

4. Test Data

Two sets of test data were used for the performance testing:

1. 100 Texts:
 - This dataset consisted of 100 individual texts.
 - The texts were carefully selected to cover a range of scenarios and variations in text length.
2. 100,000 Texts:
 - This dataset comprised 100,000 individual texts.
 - The texts were designed to reflect the diversity and complexity of real-world text data.

By using these two datasets, we aimed to assess the performance and scalability of MedCAT's `get_entities` function across varying text volumes. The smaller dataset (100 texts) helped evaluate the performance of MedCAT on a smaller scale, while the larger dataset (100,000 texts) provided insights into the performance of MedCAT in handling more significant workloads.

5. Test Methodology

1. Single-Process Testing:

- Implement the single-process approach by calling MedCAT's `get_entities` function on the test dataset within a single process.
- Measure the execution time of the `get_entities` function using a timer or performance profiling tools.
- Repeat the single-process testing multiple times to capture variations in execution time and establish a reliable baseline.

2. Multi-Process Testing:

- Employ multiprocessing to parallelize the execution of the `get_entities` function across multiple processes using the `multiprocessing` command.
- Measure the overall execution time of the multi-process approach, considering the time taken by each process and any synchronization overhead.

6. Test results

Based on the testing result, multiprocessing significantly speed up the processing for both large number of text and small number of text.

These results clearly indicate that multiprocessing significantly enhances the performance of MedCAT's `get_entities()` function, regardless of the number of texts being processed. The processing time for both small and large datasets is considerably reduced when using multiprocessing compared to the single-process approach.

By leveraging the capabilities of multiprocessing, the processing time for 100 texts was reduced by a factor of approximately 15 (from 0.75 seconds to 0.05 seconds), while for 100,000 texts, the processing time was reduced by a factor of approximately 120 (from 636.90 seconds to 5.30 seconds).

These findings demonstrate the effectiveness of multiprocessing in improving the efficiency and speed of MedCAT's text processing capabilities. Utilizing multiprocessing can significantly reduce the time required for analyzing clinical text data, leading to enhanced productivity and streamlined workflows in healthcare-related applications.

| Text number | Function used | Time Used(s) |
|-------------|------------------------------|--------------|
| 100 | <code>get_entities()</code> | 0.75 |
| 100000 | <code>get_entities()</code> | 636.90 |
| 100 | <code>multiprocessing</code> | 0.05 |
| 100000 | <code>multiprocessing</code> | 5.30 |

Table1 : Table of the processing time for `get_entities` and `multiprocessing` function

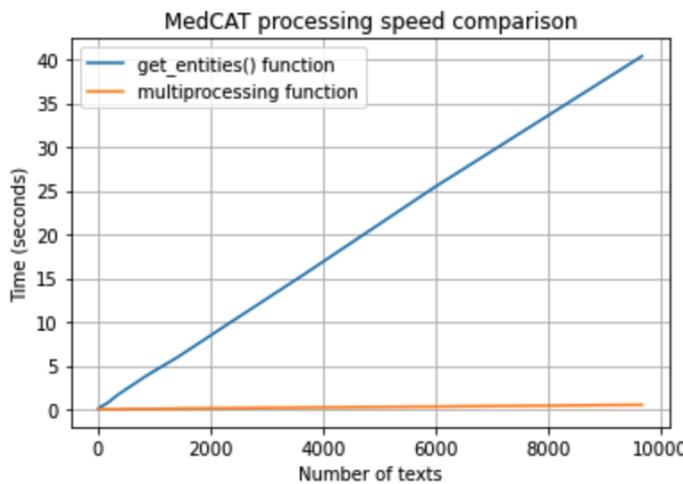


Figure 1: Plot of the processing time for `get_entities` and `multiprocessing` function

Code Reviews

| Title | Creator | Modified |
|--|-------------|-----------------------|
| 2023-05-31 Sprint 3 ChatGPT-assisted Code Review Report - FrontEnd | Ricardo Luo | yesterday at 11:48 PM |
| 2023-05-31 Sprint 3 ChatGPT-assisted Code Review Report - BackEnd | Yue Fei | yesterday at 11:47 PM |
| 2023-04-27 Sprint 2 peer-to-peer Code Review Report - FrontEnd | Yue Fei | 26 May, 2023 |
| 2023-04-27 Sprint 2 peer-to-peer Code Review Report - BackEnd | KUNXI SUN | 26 May, 2023 |

2023-04-27 Sprint 2 peer-to-peer 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 Sprint 2 peer-to-peer 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.jsx | 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.

2023-05-31 Sprint 3 ChatGPT-assisted Code Review Report - BackEnd

Code review information

| | |
|--------------------------|---|
| Date | 31 May 2023 |
| Reviewer | Yue Fei |
| Author | KUNXI SUN Chenyang Dong |
| Code Repository / Branch | DI-Boxjelly/src/di-auth/ DI-Boxjelly/src/di-center/ DI-Boxjelly/src/di-map/ |

Feedback

1. Login

- a. Documentation Defects:
 - a. Naming: The naming of software elements is good. The names are descriptive and follow Python naming conventions.
 - b. Comment: The comments are well-written and provide useful information. They explain the purpose of the classes, methods, and arguments. The code examples in the comments are helpful.
- b. Visual Representation Defects:
 - a. Bracket Usage: The bracket usage is correct.
 - b. Indentation: The indentation is consistent and follows Python's recommended style.
 - c. Long Line: The code statements are not too long and are easy to read.
- c. Structure Defects:
 - a. Dead Code: There is no dead code.
 - b. Duplication: There is no duplicate code.
- d. New Functionality:
 - a. Use Standard Method: The code already uses standard methods for the tasks it performs.
- e. Resource Defects:
 - a. Variable Initialization: All variables are initialized correctly.
 - b. Memory Management: There are no apparent memory management issues.
- f. Check Defects:
 - a. Check User Input: The code validates user input and handles invalid input correctly.
- g. Interface Defects:
 - a. Parameter: The code correctly handles parameters when calling functions or libraries.
- h. Logic Defects:
 - a. Compute: The logic appears to be correct and there are no apparent issues.
 - b. Performance: The code's performance appears to be good.

Recommended changes:

- None. The code is well-written and follows best practices.

2. Logout

- a. Documentation Defects:
 - a. Naming:
 - The naming of the class and method is appropriate and descriptive.
 - The naming of the attributes 'mongo' and 'jwt' could be more descriptive.
 - b. Comment:
 - The comments are informative and provide examples.
 - The TODO comments should be elaborated upon to provide more information.
- b. Visual Representation Defects:
 - a. Bracket Usage:
 - The bracket usage is correct.
 - The indentation is consistent and correct.
 - There are no long lines in the code.
- c. Structure Defects:
 - a. Dead Code:

- There is no dead code in the code.
 - b. Duplication:
 - There is no duplication in the code.
- d. New Functionality:
 - a. Use Standard Method:
 - There are no single-purpose code statements that require a standardized approach.
- e. Resource Defects:
 - a. Variable Initialization:
 - All variables are correctly initialized.
 - b. Memory Management:
 - There are no memory management issues in the code.
- f. Check Defects:
 - a. Check User Input:
 - There is no user input in the code.
- g. Interface Defects:
 - a. Parameter:
 - There are no incorrect or missing parameters when calling functions or libraries.
- h. Logic Defects:
 - a. Compute:
 - There are no incorrect logic during system execution.
 - b. Performance:
 - There are no performance issues in the code.

Recommended Changes:

- Improve the naming of the 'mongo' and 'jwt' attributes to make them more descriptive.
- Elaborate on the TODO comments to provide more information.
- Add more comments to explain the code flow and logic.
- Add error handling for cases where the header does not have the cookie.
- Consider adding more functionality to the code, such as blacklisting the tokens on the server side.

3. Codesystem

- a. Documentation Defects:
 - a. Naming: The naming of software elements is generally good, with clear and descriptive names used throughout the code.
 - b. Comment: The code comments are generally good, with clear explanations provided for the purpose of each section of code.
- b. Visual Representation Defects:
 - a. Bracket Usage: The bracket usage is correct throughout the code.
 - b. Indentation: The indentation is consistent and correct throughout the code.
 - c. Long Line: There are no long code statements that hinder readability.
- c. Structure Defects:
 - a. Dead Code: There is no dead code in the provided code.
 - b. Duplication: There is no duplicate code in the provided code.
- d. New Functionality:
 - a. Use Standard Method: There are no single-purpose code statements that require a standardized approach.
- e. Resource Defects:
 - a. Variable Initialization: All variables are correctly initialized.
 - b. Memory Management: The program's memory usage and management are not evaluated in the provided code.
- f. Check Defects:
 - a. Check User Input: The validity of user input and its handling are not analyzed in the provided code.
- g. Interface Defects:
 - a. Parameter: There are no incorrect or missing parameters when calling functions or libraries.
- h. Logic Defects:
 - a. Compute: There are no incorrect logic during system execution.
 - b. Performance: The efficiency of the algorithm used is not evaluated in the provided code.

Recommended changes to improve the quality of the code provided:

- Add more comments to explain the purpose of each section of code in detail.
- Evaluate the program's memory usage and management to ensure that it is efficient and optimized.
- Analyze the validity of user input and its handling to ensure that the code is secure and robust.
- Evaluate the efficiency of the algorithm used to ensure that it is optimized for performance.

4. Versioning

1. Documentation Defects:
 - Naming: The names of the imported modules and classes are appropriate and descriptive. However, the variable name "user_id" could be more descriptive, such as "request_user_id".
 - Comment: The code has a single comment that explains the purpose of the "get" method.
2. Visual Representation Defects:
 - Bracket Usage: The code has correct bracket usage.

- Indentation: The code has correct indentation.
 - Long Line: The code has no long lines.
3. Structure Defects:
- Dead Code: The code has no dead code.
 - Duplication: The code has no duplicate code.
4. New Functionality:
- Use Standard Method: The code does not have any single-purpose code statements that require a standardized approach.
5. Resource Defects:
- Variable Initialization: The code initializes all the variables correctly.
 - Memory Management: The code does not have any memory management issues.
6. Check Defects:
- Check User Input: The code does not have any user input validation or handling.
7. Interface Defects:
- Parameter: The code does not have any incorrect or missing parameters when calling functions or libraries.
8. Logic Defects:
- Compute: The code does not have any incorrect logic during system execution.
 - Performance: The code does not have any performance issues.

Recommended Changes:

1. Rename the "user_id" variable to a more descriptive name.
2. Add more comments to explain the purpose of the code and functions.
3. None. The code is well-structured and has no dead or duplicate code.
4. None. The code does not have any single-purpose code statements that require a standardized approach.
5. None. The code initializes all the variables correctly and does not have any memory management issues.
6. None. The code does not have any user input validation or handling.
7. None. The code does not have any incorrect or missing parameters when calling functions or libraries.
8. None. The code does not have any performance issues and does not require optimization.

5. Dashboard

1. Documentation Defects:
 - a. Naming: The naming of software elements is generally good, with clear and concise names that accurately describe their purpose.
 - b. Comment: The code comments are minimal, but they are accurate and helpful in understanding the purpose of each function and class.
2. Visual Representation Defects:
 - a. Bracket Usage: The bracket usage is correct throughout the code.
 - b. Indentation: The indentation is consistent and easy to read.
 - c. Long Line: There are a few long code statements that could be broken up to improve readability.
3. Structure Defects:
 - a. Dead Code: There is no dead code in the provided code.
 - b. Duplication: There is no duplicate code in the provided code.
4. New Functionality:
 - a. Use Standard Method: There are no single-purpose code statements that would benefit from a standardized approach.
5. Resource Defects:
 - a. Variable Initialization: All variables are correctly initialized.
 - b. Memory Management: The program's memory usage and management cannot be evaluated without more information.
6. Check Defects:
 - a. Check User Input: User input is checked for validity, but the error message returned could be more informative.
7. Interface Defects:
 - a. Parameter: There are no incorrect or missing parameters when calling functions or libraries.
8. Logic Defects:
 - a. Compute: The logic appears to be correct.
 - b. Performance: The efficiency of the algorithm used cannot be evaluated without more information.

Recommended changes:

- Improve code comments to provide more detail and context.
- Break up long code statements to improve readability.
- Improve error message returned when user input is invalid.
- Provide more information on memory usage and management to evaluate its effectiveness.

6. Mapping

1. Documentation Defects:
 - a. Naming: The software element names are descriptive and follow PEP8 naming conventions.
 - b. Comment: The code comments are sparse and could be improved to explain the purpose of each method and class.
2. Visual Representation Defects:
 - a. Bracket Usage: No issues with bracket usage.
 - b. Indentation: The code follows PEP8 indentation conventions.
 - c. Long Line: Some lines exceed the recommended 79 character limit.

3. Structure Defects:
 - a. Dead Code: There is some commented-out code that serves no purpose.
 - b. Duplication: No duplicate code statements were found.
4. New Functionality:
 - a. Use Standard Method: No single-purpose code statements were found that could benefit from a standardized approach.
5. Resource Defects:
 - a. Variable Initialization: No uninitialized or incorrectly initialized variables were found.
 - b. Memory Management: No issues with memory usage or management were found.
6. Check Defects:
 - a. Check User Input: No analysis of user input or handling was found.
7. Interface Defects:
 - a. Parameter: No missing or incorrect parameters when calling functions or libraries were found.
8. Logic Defects:
 - a. Compute: No incorrect logic during system execution was found.
 - b. Performance: No evaluation of the efficiency of the algorithm used was found.

Recommendations to improve the quality of the code:

- Add more descriptive comments to explain the purpose of each method and class.
- Remove commented-out code that serves no purpose.
- Break up long lines of code to improve readability.
- Consider evaluating the efficiency of the algorithm used to identify potential performance improvements.

7. Curate

1. Documentation Defects:
 - a. Naming: The naming of software elements is mostly clear and follows Python naming conventions. However, the name of the `PostMapTaskCurateSchema` class could be improved to better reflect its purpose.
 - b. Comment: The code comments are clear and concise, providing useful information about the purpose of the code.
2. Visual Representation Defects:
 - a. Bracket Usage: There are no issues with incorrect or missing brackets.
 - b. Indentation: The code is well-indented and easy to read.
 - c. Long Line: There are no long code statements that hinder readability.
3. Structure Defects:
 - a. Dead Code: There is some commented-out code that serves no meaningful purpose and should be removed.
 - b. Duplication: There are no duplicate code statements that can be refactored.
4. New Functionality:
 - a. Use Standard Method: There are no single-purpose code statements that could benefit from a standardized approach.
5. Resource Defects:
 - a. Variable Initialization: All variables are correctly initialized.
 - b. Memory Management: The code does not seem to have any memory management issues.
6. Check Defects:
 - a. Check User Input: The code correctly validates user input and returns an error response if the input is invalid.
7. Interface Defects:
 - a. Parameter: There are no incorrect or missing parameters when calling functions or libraries.
8. Logic Defects:
 - a. Compute: The code logic seems correct and there are no issues during system execution.
 - b. Performance: It is difficult to evaluate the efficiency of the algorithm used without more context about the overall system architecture.

Recommended changes:

- Improve the name of the `PostMapTaskCurateSchema` class to better reflect its purpose.
- Remove commented-out code that serves no meaningful purpose.
- Consider adding more detailed comments to explain the purpose of some of the code statements.
- Provide more context about the overall system architecture to better evaluate the performance of the algorithm used.

8. Visualisation

1. Documentation Defects:
 - a. Naming: The names of the imported modules and classes are appropriate and descriptive. However, consider renaming the variable `"user_id"` to a more descriptive name, such as `"request_user_id"`, to improve code clarity and understanding.
 - b. Comment: The code has a single comment that explains the purpose of the `"get"` method. Consider adding more comments throughout the code to provide additional context and improve code readability.
2. Visual Representation Defects:
 - a. Bracket Usage: The code has correct bracket usage, and no changes are required.
 - b. Indentation: The code has correct indentation, and no changes are required.
 - c. Long Line: The code does not have any long lines, which is commendable.
3. Structure Defects:
 - a. Dead Code: The code does not contain any dead code, which is good.
 - b. Duplication: The code does not have any duplicate code, which is well-maintained.
4. New Functionality:
 - a. Use Standard Method: The code does not have any single-purpose code statements that require a standardized approach. No changes are needed in this regard.
5. Resource Defects:

- a. Variable Initialization: The code initializes all the variables correctly, and no changes are necessary.
- b. Memory Management: The code does not have any memory management issues, which is appropriate.

6. Check Defects:

- a. Check User Input: The code does not have any user input validation or handling. Consider implementing proper validation and error handling for user input to improve the robustness of the code.

7. Interface Defects:

- a. Parameter: The code does not have any incorrect or missing parameters when calling functions or libraries. No changes are required here.

8. Logic Defects:

- a. Compute: The code does not contain any incorrect logic during system execution, which is well-maintained.
- b. Performance: The code does not have any performance issues, which is commendable.

Recommended Changes:

- Rename the "user_id" variable to a more descriptive name, such as "request_user_id", to improve code clarity and maintainability.
- Add more comments throughout the code to explain the purpose and functionality of various sections and improve code understandability.
- Consider implementing user input validation and error handling mechanisms to ensure the code can handle invalid or unexpected user input gracefully.

Overall, the code appears to be well-structured and organized, with only minor recommendations for improvement.

9. Download

1. Documentation Defects:

- a. Naming: The naming of software elements is generally good, with clear and descriptive names used throughout the code.
- b. Comment: The code comments are generally good, with clear explanations of what the code is doing and why. However, there could be more comments explaining some of the more complex logic.

2. Visual Representation Defects:

- a. Bracket Usage: The bracket usage is correct throughout the code.
- b. Indentation: The indentation is consistent and easy to read.
- c. Long Line: There are no long lines of code that hinder readability.

3. Structure Defects:

- a. Dead Code: There is no dead code in the provided code.
- b. Duplication: There is no duplicate code in the provided code.

4. New Functionality:

- a. Use Standard Method: The code appears to use standard methods and approaches where appropriate.

5. Resource Defects:

- a. Variable Initialization: All variables are correctly initialized before use.
- b. Memory Management: The code does not appear to have any memory management issues.

6. Check Defects:

- a. Check User Input: The code checks for invalid input and returns an appropriate error message if necessary.

7. Interface Defects:

- a. Parameter: The code correctly handles parameters when calling functions and libraries.

8. Logic Defects:

- a. Compute: The logic in the code appears to be correct.
- b. Performance: The performance of the algorithm used is not evaluated in the provided code.

Recommended changes:

- Consider adding more comments to explain the more complex logic in the code.
- Evaluate the performance of the algorithm used to ensure it is efficient enough for the intended use case.

2023-05-31 Sprint 3 ChatGPT-assisted Code Review Report - FrontEnd

Code review information

| | |
|--------------------------|-------------------------------|
| Date | 31 May 2023 |
| Reviewer | Ricardo Luo |
| Author | Hanyi Gao Ricardo Luo Yue Fei |
| Code Repository / Branch | DI-Boxjelly/src/di-web/src/ |

Feedback

1. CodeSystem

- Documentation Defects: a. Naming: The naming conventions used in this code are generally clear and descriptive. b. Comment: The code lacks comments, making it harder to understand the purpose of some variables or operations. It would be beneficial to add comments for clarity and maintainability.
- Visual Representation Defects: a. Bracket Usage: Bracket usage seems to be correct throughout the code. b. Indentation: Indentation is consistently applied, improving code readability. c. Long Line: There are no overly long lines in the code.
- Structure Defects: a. Dead Code: There's some commented out code regarding 'exportCodeSystem'. If this functionality is not needed, it should be removed. b. Duplication: No obvious code duplication detected.
- New Functionality: a. Use Standard Method: The code seems to make good use of standard methods.
- Resource Defects: a. Variable Initialization: Variables seem to be properly initialized. b. Memory Management: The code does not appear to have any memory leaks or improper memory management. React and the browser should handle memory management automatically.
- Check Defects: a. Check User Input: User input seems to be validated in the form through 'rules' in Form.Item. It's not clear how file uploads are validated; the code might benefit from additional input validation on the uploaded file.
- Interface Defects: a. Parameter: Function calls seem to include correct parameters.
- Logic Defects: a. Compute: No obvious logic defects in the code. b. Performance: The performance of the code appears to be acceptable. However, the efficiency of the algorithm used depends on the actual functions in the 'api' file, which are not provided.

In conclusion, the code seems to be well-written overall with good use of React hooks and antd components. However, the code would benefit from the following improvements:

- Add comments throughout the code to improve readability and maintainability.
- Remove unused, commented-out code related to 'exportCodeSystem'.
- Add more extensive validation for file uploads.

2. Dashboard

- Documentation Defects: a. Naming: The software element names are generally clear and describe their purpose. `inputRef` could be more explicit about its purpose, like `searchInputRef`. b. Comment: The code has no comments. Although the code is generally readable due to good variable naming, some complex parts like the `onSuccess` callback in `useRequest` might benefit from a brief explanation.
- Visual Representation Defects: a. Bracket Usage: All brackets seem to be correctly used. There are no obvious syntax errors. b. Indentation: The code's indentation appears to be consistent and correct, improving readability. c. Long Line: There aren't any exceedingly long lines in the code that hinder readability.
- Structure Defects: a. Dead Code: There doesn't appear to be any dead code. b. Duplication: No obvious duplication is present in the code.
- New Functionality: a. Use Standard Method: The functions are generally following standard methods and using hooks effectively.
- Resource Defects: a. Variable Initialization: All variables appear to be correctly initialized. b. Memory Management: Given that this is a JavaScript program running in a managed environment, it does not manually manage memory. No memory leaks are apparent from this code.
- Check Defects: a. Check User Input: The function `onSingleTextSearch` correctly checks for an empty string before proceeding with the search.
- Interface Defects: a. Parameter: All function calls and parameters appear to be correct. There don't seem to be any missing or incorrect parameters.
- Logic Defects: a. Compute: The code's logic appears correct, though without knowing the exact specifications, this cannot be completely verified. b. Performance: The performance of this component should be sufficient for most use cases. However, a potential performance bottleneck could be the number of requests being made in parallel using `useRequest`. If the component needs to handle a large amount of data, this could cause problems.

Overall, the code is well written and adheres to many best practices. However, it could be improved by adding comments to explain complex or critical parts, renaming `inputRef` for more clarity, and considering potential performance issues if a large amount of data is being handled.

3. Login

- Documentation Defects: a. Naming: Most function and variable names like `login`, `navigate`, `setLoggedIn` are clear and self-descriptive, which is good practice. b. Comment: The code has no comments, which makes it harder to understand its intent. Even though the code is fairly clear, some sections (such as storing data in `localStorage` and calling the `login` function) could benefit from explanations.
- Visual Representation Defects: a. Bracket Usage: Brackets are used correctly and in line with JavaScript/React conventions. b. Indentation: The indentation of the code is consistent and helps readability. c. Long Line: There are no excessively long lines in the code.
- Structure Defects: a. Dead Code: There is no dead code in the provided snippet. b. Duplication: There are no significant duplicate code statements that need to be refactored.
- New Functionality: a. Use Standard Method: The code appears to use standard methods appropriately.
- Resource Defects: a. Variable Initialization: All variables are correctly initialized. b. Memory Management: In JavaScript, memory management is handled by the JavaScript engine and doesn't require explicit handling in code.
- Check Defects: a. Check User Input: User input for email and password is being accepted and seems to be handled correctly. However, the email input could benefit from additional validation (e.g., checking for proper email format).
- Interface Defects: a. Parameter: The function calls with parameters appear to be correct.
- Logic Defects: a. Compute: No computational errors are apparent in the code. b. Performance: No obvious performance issues in the given code. However, in real-world applications, the performance of the `login` function will be dependent on factors such as network latency and server performance, which aren't under control of this component.

In summary, the code appears to be well written, but could benefit from comments for better readability and maintainability, as well as additional validation checks for the email input field. Also, consider the implications of storing sensitive user information in `localStorage`, as it may pose security risks. If the data is sensitive, consider storing the data in HTTP-only cookies or using a more secure strategy for managing authentication.

4. Main

- Documentation Defects: a. Naming: The names of variables, functions, and components are meaningful and descriptive, which is good practice. b. Comment: The code lacks comments, which makes it hard to understand the role of certain functions and components without a careful study. Adding comments to the code would significantly increase its readability and maintainability.
- Visual Representation Defects: a. Bracket Usage: The bracket usage in the code seems correct, no issues were found. b. Indentation: Indentation is consistently applied, making the code blocks clear and easy to read. c. Long Line: There are a few long lines of code in the script. Breaking these down would improve readability.
- Structure Defects: a. Dead Code: There is a commented line, `// const user = JSON.parse(localStorage.getItem('userDetail'));` which appears to be unused and can be considered dead code. b. Duplication: There's no significant duplication in the code.
- New Functionality: The code uses standard and modern React practices, such as functional components and hooks.
- Resource Defects: a. Variable Initialization: All variables appear to be correctly initialized. b. Memory Management: The code doesn't seem to have any apparent issues with memory management.
- Check Defects: a. Check User Input: User input is validated in the form fields.
- Interface Defects: a. Parameter: The code does not seem to have incorrect or missing parameters when calling functions or libraries.
- Logic Defects: a. Compute: The logic seems correct as far as can be determined from the code snippet. b. Performance: There is no explicit optimization done in the code, but also there are no obvious inefficiencies. Using the `React.memo` or `useMemo` hooks might improve performance in some cases, but it would be premature optimization without profiling.

In summary, the code is overall well-written and adheres to modern React standards. The main areas for improvement would be adding comments and perhaps breaking down some of the longer lines of code for readability. Also, the dead code should be removed if it is not needed for future reference. It would also be helpful to handle possible exceptions, especially for API calls to ensure the application doesn't crash unexpectedly when an error occurs.

5. Mapping

- Documentation Defects: a. Naming: The naming convention is good and reflects the purpose of each function and variable. The function and variable names are clear and descriptive. b. Comment: The code has no comments at all. It would improve readability and maintainability if comments explaining the purpose and functioning of key blocks of code were included.
- Visual Representation Defects: a. Bracket Usage: Brackets are used correctly throughout the code. b. Indentation: The indentation is consistent and enhances the readability of the code. c. Long Line: No excessively long lines of code are present.
- Structure Defects: a. Dead Code: No dead code detected. b. Duplication: No duplicated code found.
- New Functionality: a. Use Standard Method: The code appears to use standard methods appropriately.
- Resource Defects: a. Variable Initialization: All variables are correctly initialized. b. Memory Management: As this is a React functional component, the memory management is handled by the React framework itself.
- Check Defects: a. Check User Input: The code checks for an empty string in the `onSingleTextSearch` function. This can be considered appropriate validation for the given scenario.
- Interface Defects: a. Parameter: No incorrect or missing parameters detected when calling functions or libraries.
- Logic Defects: a. Compute: No incorrect logic found during the analysis. b. Performance: The efficiency of the algorithm cannot be fully assessed from this code. It largely depends on the implementations of the functions `mapSingleText` and `createMappingTask` which are imported from '`/api'`.

To summarize, the overall quality of the code is good with appropriate use of React hooks and other conventions. However, there's a significant scope of adding comments to the code to make it more readable and maintainable. Comments can especially help explain the purpose of the functions, the `useState` and `useRequest` hooks, the `useRef` hook, and the logic inside the functions.

6. MappingHistory

- Documentation Defects: a. Naming: The quality of software element names is good and generally self-descriptive. However, `team_id` and `board_id` might be better written in camelCase to follow JavaScript naming conventions. b. Comment: The code lacks comments. Key blocks of code and functions should be accompanied by comments to enhance understanding and maintainability.
- Visual Representation Defects: a. Bracket Usage: The code appears to have all brackets correctly placed. b. Indentation: The indentation in this code is consistent and enhances readability. c. Long Line: No excessively long lines of code are found.
- Structure Defects: a. Dead Code: No dead code is detected in the snippet. b. Duplication: There's no noticeable code duplication.

4. New Functionality: a. Use Standard Method: The code uses standard methods as per React and Ant Design norms.
5. Resource Defects: a. Variable Initialization: All variables are correctly initialized. b. Memory Management: As this is a React functional component, the memory management is handled by the React framework itself.
6. Check Defects: a. Check User Input: The user input checks are not fully visible in this component, likely they are implemented within the API calls.
7. Interface Defects: a. Parameter: No issues found in this area. Parameters are correctly passed to functions and libraries.
8. Logic Defects: a. Compute: No logical errors were identified. b. Performance: The efficiency of the algorithm cannot be fully assessed from this code. It largely depends on the implementations of the functions imported from './api'.

In conclusion, the code is written well, adheres to React norms, and uses hooks effectively. However, it lacks comments which makes it a bit hard to understand for someone new to the code. Adding descriptive comments would significantly improve its readability and maintainability. Variable names should also follow a consistent naming convention, preferably camelCase which is the standard in JavaScript.

7. MappingResult

1. Documentation Defects: a. Naming: The variable names are descriptive and easy to understand. However, like the previous example, `taskId`, `teamId`, and `boardId` might be better written in camelCase. b. Comment: There are no comments in the code. Adding comments would improve readability and maintainability, especially for other developers who might work on this code in the future.
2. Visual Representation Defects: a. Bracket Usage: No issues found with brackets. They're correctly used. b. Indentation: Indentation is consistent and enhances code readability. c. Long Line: There are no excessively long lines that hinder readability.
3. Structure Defects: a. Dead Code: No dead code is identified. b. Duplication: There's no noticeable code duplication.
4. New Functionality: a. Use Standard Method: Standard methods are being used according to React and JavaScript norms.
5. Resource Defects: a. Variable Initialization: Variables are initialized correctly. b. Memory Management: Memory management is handled by the React framework.
6. Check Defects: a. Check User Input: The user input checks are not fully visible in this component. It seems to be done in the API calls.
7. Interface Defects: a. Parameter: No issues were found with parameters. They're correctly passed to functions and libraries.
8. Logic Defects: a. Compute: No logic errors were identified in the code. b. Performance: The efficiency of the code can't be fully assessed from this snippet, as it depends on the implementations of the functions imported from './Mapping/api'.

In summary, the code is well-written and follows the React hooks style. However, it lacks comments which makes it harder for others to understand what each part of the code is doing. I recommend adding comments to improve code readability. Additionally, consistent naming conventions (preferably camelCase) should be followed throughout the code.

8. Profile

1. Documentation Defects: a. Naming: The names for functions and variables are descriptive and properly illustrate their purpose, making the code self-documenting to an extent. b. Comment: No comments are provided in the code. While the function and variable names are quite descriptive, some lines or sections of code may still benefit from comments for easier understanding by other developers.
2. Visual Representation Defects: a. Bracket Usage: Brackets are correctly used throughout the code. b. Indentation: The indentation in this code is consistent and greatly improves readability. c. Long Line: No lines in this code appear to be excessively long.
3. Structure Defects: a. Dead Code: No dead code is apparent. b. Duplication: There doesn't appear to be any duplicated code.
4. New Functionality: a. Use Standard Method: The code uses standardized methods for its functions.
5. Resource Defects: a. Variable Initialization: All variables appear to be initialized correctly. b. Memory Management: As this is a React application, memory management is primarily handled by the framework itself.
6. Check Defects: a. Check User Input: It's not completely clear if there's validation happening for user input before it is processed or sent to the server, which is a potential issue.
7. Interface Defects: a. Parameter: All functions and methods seem to have the correct parameters when called.
8. Logic Defects: a. Compute: There doesn't seem to be any incorrect logic during the execution of the code. b. Performance: The code's performance seems adequate, but it's also dependent on how the API handles the requests.

To summarize, this code is generally well-written with clear variable and function names. However, there's a noticeable lack of comments, which would help others understand the code more quickly. Additionally, while there's no clear user input validation, the true status of input checking would depend on the API's implementation and it's worth ensuring that there is robust checking and validation there.

9. Register

1. Documentation Defects: a. Naming: The naming conventions are clear and descriptive. Variables, functions, and components all have names that accurately represent their functionality. b. Comment: The code lacks comments. Although the code is quite readable and follows standard conventions, including comments would provide better context and understanding for future developers.
2. Visual Representation Defects: a. Bracket Usage: The bracket usage is correct. All brackets are properly opened and closed. b. Indentation: The indentation is consistent and follows standard conventions, which enhances readability. c. Long Line: No extremely long lines were observed that could impair readability.
3. Structure Defects: a. Dead Code: No dead code was found in the script. b. Duplication: No significant code duplication was found.
4. New Functionality: a. Use Standard Method: Standard methods and libraries are being used correctly. The form validation is done by Ant Design's Form component which handles most of the low-level details.
5. Resource Defects: a. Variable Initialization: All variables are properly initialized. b. Memory Management: As it's a front-end JavaScript code and doesn't handle explicit memory allocation, it doesn't have any apparent memory management issues.
6. Check Defects: a. Check User Input: User input is properly validated using the rules prop provided by Ant Design's Form.Item component.
7. Interface Defects: a. Parameter: There don't appear to be any missing or incorrect parameters when calling functions or libraries. All necessary data seems to be correctly passed between functions and components.
8. Logic Defects: a. Compute: There do not seem to be any logical errors in the code. b. Performance: The script doesn't have any operations that would cause significant performance issues. It's a straightforward form submission.

In conclusion, the code is well-written and doesn't require any major changes. To improve the quality of the code, consider adding comments to explain the purpose and functionality of the components and functions. This will enhance readability and maintainability, especially for developers who are unfamiliar with the code.

10. TeamProfile

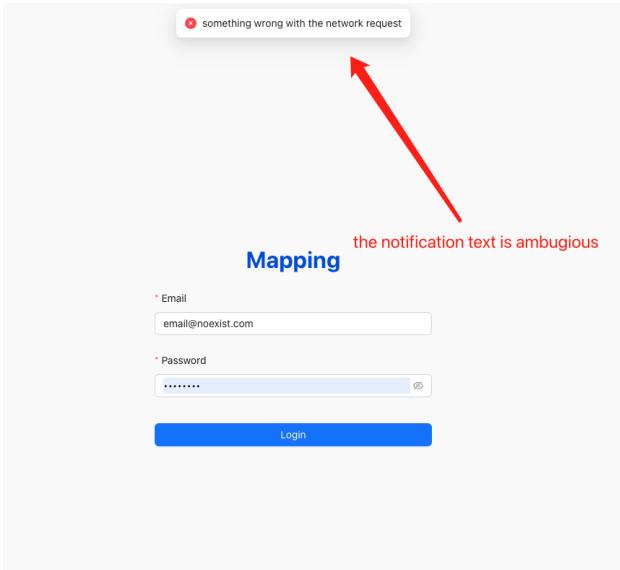
1. Documentation Defects: a. Naming: The variable and function names are mostly clear and meaningful. However, `msgApi` and `api` could be more descriptive. b. Comment: There are no comments in the code. Adding comments to explain more complex parts of the code or overall functionality would improve the maintainability of the code.
2. Visual Representation Defects: a. Bracket Usage: The code properly uses brackets, both for function declaration and JSX syntax. b. Indentation: The code's indentation seems to follow standard conventions and is consistent throughout, making it readable. c. Long Line: The line `const link = DOMAIN_URL + '/register?invite_token=' + result.data;` could be considered slightly long. It could be rewritten using a template literal for better readability.
3. Structure Defects: a. Dead Code: There doesn't appear to be any dead code in the provided script. b. Duplication: The code doesn't seem to contain duplicate blocks.
4. New Functionality: a. Use Standard Method: The code seems to be using standard practices for React and Ant Design libraries.
5. Resource Defects: a. Variable Initialization: All variables seem to be initialized correctly, considering they are either imported modules or state variables managed by React. b. Memory Management: There is no explicit memory management in this code as it's handled by the JavaScript engine and the React library.
6. Check Defects: a. Check User Input: This component doesn't handle direct user input, except for button clicks. The handling of user input from local storage or APIs should be more robust to prevent errors if the expected data is not present.
7. Interface Defects: a. Parameter: The function doesn't take any parameters. However, the code is making use of functions from other modules with parameters and it seems to pass the correct arguments.
8. Logic Defects: a. Compute: The logic seems to be correct in this function. b. Performance: There is nothing inherently inefficient with the algorithm used in this component. However, re-rendering could potentially be optimized based on how often state updates occur.

In conclusion, this code seems to be mostly well-written and follows best practices for a React component. However, to improve it, consider adding comments for better understandability and maintainability, and consider handling exceptions if the data retrieved from the local storage or APIs is not as expected. Also, as a small improvement, the `api` variable could be given a more descriptive name.

Issue Tracking

| Title | Creator | Modified |
|--|---------------|--------------------|
| ISSUE00029: Cannot display the board with deleted member's task | Chenyang Dong | about 15 hours ago |
| ISSUE00010: Login incorrect error message | KUNXI SUN | about 16 hours ago |
| ISSUE00012: MedCAT: Fail to load the model because of ValidationError | Yue Fei | about 16 hours ago |
| ISSUE00015: Github Actions: checkout repository takes too long and sometimes fail #15 | KUNXI SUN | about 16 hours ago |
| ISSUE00021: MedCAT: Cannot use cat.multi_processing to map a file of raw texts | Yue Fei | about 16 hours ago |
| ISSUE00022: Dashboard nickname is not updated in real time | Ricardo Luo | about 16 hours ago |
| ISSUE00023: Forced to refresh page to login in successfully after cookie removed | KUNXI SUN | about 16 hours ago |
| ISSUE00025: Avatar is obscured when entering edit mode | Ricardo Luo | about 16 hours ago |
| ISSUE00026: The numbers in the chart are inconsistent with the Numbers on the card | Ricardo Luo | about 16 hours ago |
| ISSUE00028: New member register showing missing cookie | KUNXI SUN | about 16 hours ago |
| ISSUE00027: New users cannot be invited if this user does not have an account in login status. | Ricardo Luo | about 16 hours ago |

ISSUE00010: Login incorrect error message

| | |
|-------------------|---|
| ISSUE00010 | <input checked="" type="checkbox"/> Login incorrect error message |
| Status | SOLVED |
| Assignee | KUNXI SUN |
| Github Issue link | https://github.com/COMP90082-2023-SM1/DI-Boxjelly/issues/10 |
| Description | <p>Fail to give reasonable notification when the email or password is incorrect.</p>  <p>A red arrow points from the text "the notification text is ambiguous" to the error message "something wrong with the network request".</p> <p>Mapping</p> <p>* Email email@noexist.com</p> <p>* Password *****</p> <p>Login</p> |
| Solution | Solved in eaf5d01 commit on branch feature/ui |

ISSUE00012: MedCAT: Fail to load the model because of ValidationError

| | |
|-------------------|--|
| ISSUE00012 | <input checked="" type="checkbox"/> MedCAT: Fail to load the model because of ValidationError |
| Status | SOLVED |
| Assignee | Yue Fei |
| Github Issue link | https://github.com/COMP90082-2023-SM1/DI-Boxjelly/issues/12 |
| Description | <p>When use the MedCAT demo code to load the model ValidationError raised. MedCAT demo code:</p> <pre>```python from medcat.cat import CAT # Download the model_pack from the models section in the github repo. cat = CAT.load_model_pack('<path to downloaded zip file>') # Test it text = "My simple document with kidney failure" entities = cat.get_entities(text) print(entities) # To run unsupervised training over documents data_iterator = <your iterator> cat.train(data_iterator) #Once done, save the whole model_pack cat.create_model_pack(<save path>) ``` <p>ValidationError message:</p><pre>``` File "pydantic/main.py", line 384, in pydantic.main.BaseModel.__setattr__ pydantic.error_wrappers.ValidationError: 1 validation error for Config linking -> filters -> cuis value is not a valid set (type=type_error.set) ``` </pre></pre> |
| Solution | <p>Solution:</p> <p>This issue has been raised in the official repository of Medcat: CogStack/MedCAT#293</p> <p>There are two solutions:</p> <ol style="list-style-type: none">1. Use Medcat v1.22. Self initialise the Cat instance: <pre>from medcat.vocab import Vocab from medcat.cdb import CDB from medcat.cat import CAT from medcat.meta_cat import MetaCAT unzip = '<path>/mc_modelpack_snomed_int_16_mar_2022_25be3857ba34bdd5 ' # Load the vocab model you downloaded vocab = Vocab.load(unzip+'vocab.dat') # Load the cdb model you downloaded cdb = CDB.load(unzip+'cdb.dat') #needed to add these two lines cdb.config.linking.filters.cuis = set() cdb.config.general.spacy_model = unzip+'spacy_model' # Download the mc_status model from the models section below and unzip it mc_status = MetaCAT.load(unzip+'meta_Status') cat = CAT(cdb=cdb, config=cdb.config, vocab=vocab, meta_cats=[mc_status])</pre> |

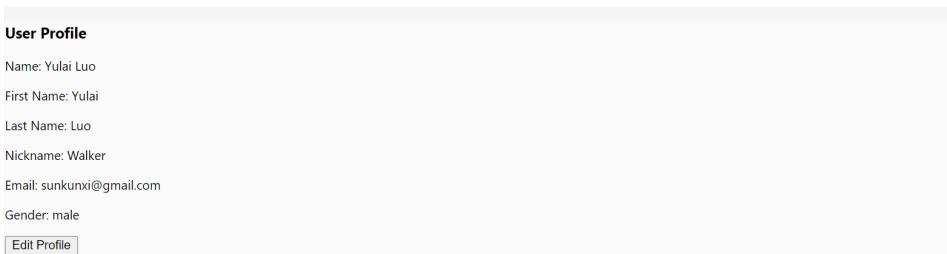
ISSUE00015: Github Actions: checkout repository takes too long and sometimes fail #15

| | |
|-------------------|--|
| ISSUE00015 | <input checked="" type="checkbox"/> Github Actions: checkout repository takes too long and sometimes fail |
| Status | SOLVED |
| Assignee | KUNXI SUN |
| Github Issue link | https://github.com/COMP90082-2023-SM1/DI-Boxjelly/issues/15 |
| Description | <p>actions/checkout@v2 can successfully checkout the repository on the runner, but sometimes it will fail and it takes too long to checkout. Not sure what is going on.</p> <pre>Error: fatal: unable to access 'https://github.com/COMP90082-2023-SM1/DI-Boxjelly/': GnuTLS recv error (-110): The TLS connection was non-properly terminated. The process '/usr/bin/git' failed with exit code 128 Waiting 11 seconds before trying again</pre> |
| Solution | <p> KunxiSun commented now</p> <p>I noticed that the github runner is deployed on our Tencent Cloud Server. Due to it is deployed in China, therefore, it is slow to clone the repository as the server of Github located in America.</p> <p>Deploy a github runner in Australia can solve this issue.</p> <p></p> <p>  KunxiSun closed this as completed now</p> <div style="float: right;"> Locl Pin i Trar Cor</div> |

ISSUE00021: MedCAT: Cannot use cat.multi_processing to map a file of raw texts

| | |
|-------------------|---|
| ISSUE00021 | <input checked="" type="checkbox"/> MedCAT: Cannot use cat.multi_processing to map a file of raw texts |
| Status | SOLVED |
| Assignee | Yue Fei |
| Github Issue link | https://github.com/COMP90082-2023-SM1/DI-Boxjelly/issues/21 |
| Description | <p>When use cat.multi_processing to map a file of raw texts ```</p> <hr/> <p>AttributeError Traceback (most recent call last) /var/folders/7h/cjlhkqns6ql6trqrp2lr1thc0000gn/T/ipykernel_37206/989250044.py in <module> ---> 1 results = cat.multi_processing(texts, nproc=2, only_cui=True)</p> <p>AttributeError: 'CAT' object has no attribute 'multi_processing' ```</p> <p>raise.</p> <p>Solution: Update python and use multiprocessing instead.</p> |
| Solution | <p>KunxiSun commented last month</p> <p>This issue has been raised in the official repository of Medcat: CogStack/MedCAT#293</p> <p>There are two solutions:</p> <ol style="list-style-type: none">1. Use Medcat v1.22. Self initialise the Cat instance: <pre>from medcat.vocab import Vocab from medcat.cdb import CDB from medcat.cat import CAT from medcat.meta_cat import MetaCAT unzip = '<path>/mc_model/pack_snomed_int_16_mar_2022_25be3857ba34bdd5/' # Load the vocab model you downloaded vocab = Vocab.load(unzip+'vocab.dat') # Load the cdb model you downloaded cdb = CDB.load(unzip+'cdb.dat') #needed to add these two lines cdb.config.linker.filters.cuis = set() cdb.config.general.spacy_model = unzip+'spacy_model' # Download the mc_status model from the models section below and unzip it mc_status = MetaCAT.load(unzip+'meta_Status') cat = CAT(cdb=cdb, config=cdb.config, vocab=vocab, meta_cats=[mc_status])</pre> <p>KunxiSun closed this as completed last month</p> |

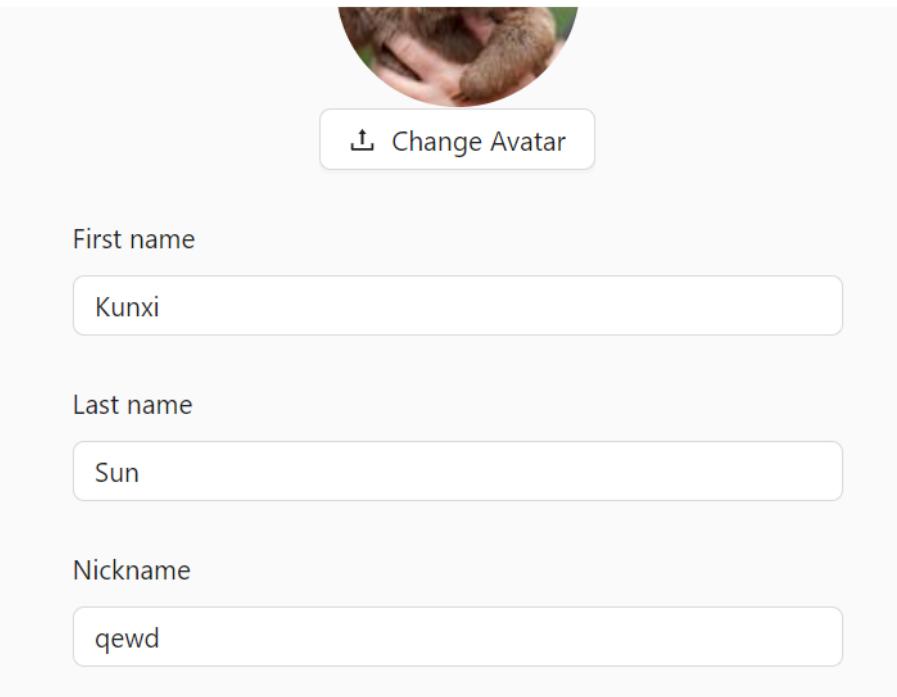
ISSUE00022: Dashboard nickname is not updated in real time

| | |
|-------------------|--|
| ISSUE00022 | <input checked="" type="checkbox"/> Dashboard nickname is not updated in real time |
| Status | SOLVED |
| Assignee | Hanyi Gao |
| Github Issue link | https://github.com/COMP90082-2023-SM1/DI-Boxjelly/issues/22 |
| Description | After I edit the nickname on the profile page, the dashboard nickname does not update with the profile nickname. It does not update until I log in again.  Ricardo ▾ |
| Solution | Solved in 9162ca9 commit on branch feature/ui |

ISSUE00023: Forced to refresh page to login in successfully after cookie removed

| | |
|-------------------|---|
| ISSUE00023 | <input checked="" type="checkbox"/> Forced to refresh page to login in successfully after cookie removed |
| Status | SOLVED |
| Assignee | Hanyi Gao |
| Github Issue link | https://github.com/COMP90082-2023-SM1/DI-Boxjelly/issues/23 |
| Description | <p>Fail to give reasonable notification when the email or password is incorrect.</p> <p>If I clear the cookie when I'm on dashboard page or any page inside the system, after I refresh, I will be identified as not logged in, and redirects me to login page which is correct.</p> <p>After that, I can use email and password to log in, which shows that I login successfully and I can see cookies are set successfully but it does not redirect me to dashboard page. I have to refresh on the login page and then click on login to succeed logging in with redirecting.</p> |
| Solution | <p>KunxiSun commented 1 minute ago</p> <p>This feature is not implemented at that moment you create this issue, but the authentication service is implemented already. You wont meet this error again</p> <p>...</p> |

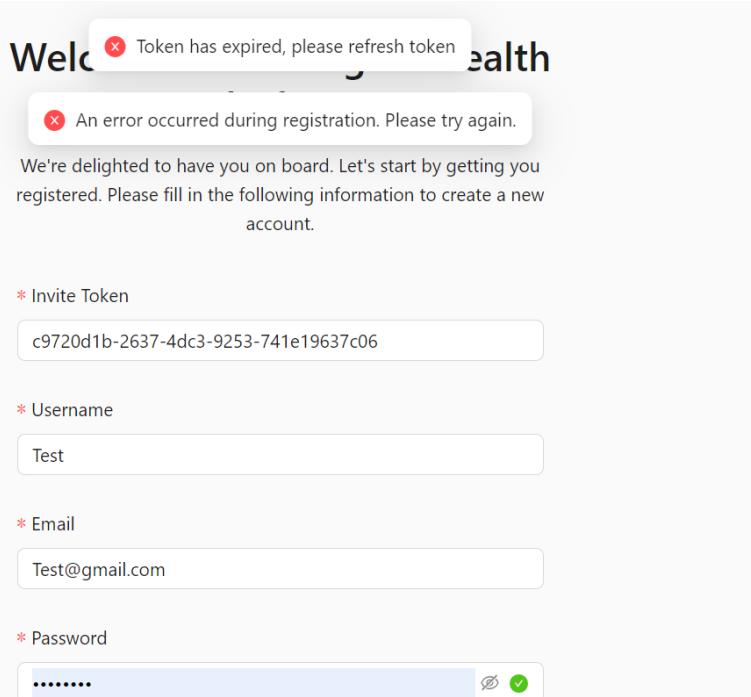
ISSUE00025: Avatar is obscured when entering edit mode

| | |
|-------------------|---|
| ISSUE00025 | <input checked="" type="checkbox"/> Avatar is obscured when entering edit mode |
| Status | SOLVED |
| Assignee | Ricardo Luo |
| Github Issue link | https://github.com/COMP90082-2023-SM1/DI-Boxjelly/issues/25 |
| Description | <p>When entering edit mode, the avatar on the profile page is obscured</p>  <p>The screenshot shows a user profile edit screen. At the top, there is a placeholder for an avatar, which is a circular image of a person's face, but it appears very dark and almost black, indicating it is obscured. Below the placeholder is a button labeled "Change Avatar". Underneath the placeholder are three input fields: "First name" containing "Kunxi", "Last name" containing "Sun", and "Nickname" containing "qewd".</p> |
| Solution | Solved in a640d14 commit on branch feature/ui |

ISSUE00026: The numbers in the chart are inconsistent with the Numbers on the card

| ISSUE00026 | <input checked="" type="checkbox"/> The numbers in the chart are inconsistent with the Numbers on the card | | | | | | | | | | | | | | |
|-------------------|---|----------|-------|---------|-----|--------|---|----------|---|--------|-------|-----|---|-----------|-----|
| Status | SOLVED | | | | | | | | | | | | | | |
| Assignee | Ricardo Luo | | | | | | | | | | | | | | |
| Github Issue link | https://github.com/COMP90082-2023-SM1/DI-Boxjelly/issues/26 | | | | | | | | | | | | | | |
| Description | <p>In the visualization component, the numbers in the chart are inconsistent with the numbers on the card.</p> <p>Overall Performance</p> <p>Total Mapping Text: 175 Successful Mapping Rate: 94.86 %</p> <ul style="list-style-type: none"> Number of Success: 166 Number of Failure: 9 Number of Reviewed: 0 <p>UIL Mapping Ratio : 0.00 % SNOMED CT Mapping Ratio: 100.00 %</p> <ul style="list-style-type: none"> Number of UIL: 0 Number of SNOMED CT: 166 <p>numbers in chart are inconsistent with the numbers in card</p> <table border="1"> <thead> <tr> <th>Category</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>Success</td> <td>166</td> </tr> <tr> <td>Failed</td> <td>9</td> </tr> <tr> <td>Reviewed</td> <td>0</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Metric</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>UIL</td> <td>0</td> </tr> <tr> <td>SNOMED CT</td> <td>166</td> </tr> </tbody> </table> | Category | Value | Success | 166 | Failed | 9 | Reviewed | 0 | Metric | Value | UIL | 0 | SNOMED CT | 166 |
| Category | Value | | | | | | | | | | | | | | |
| Success | 166 | | | | | | | | | | | | | | |
| Failed | 9 | | | | | | | | | | | | | | |
| Reviewed | 0 | | | | | | | | | | | | | | |
| Metric | Value | | | | | | | | | | | | | | |
| UIL | 0 | | | | | | | | | | | | | | |
| SNOMED CT | 166 | | | | | | | | | | | | | | |
| Solution | Solved in b073037 commit on branch feature/UIL | | | | | | | | | | | | | | |

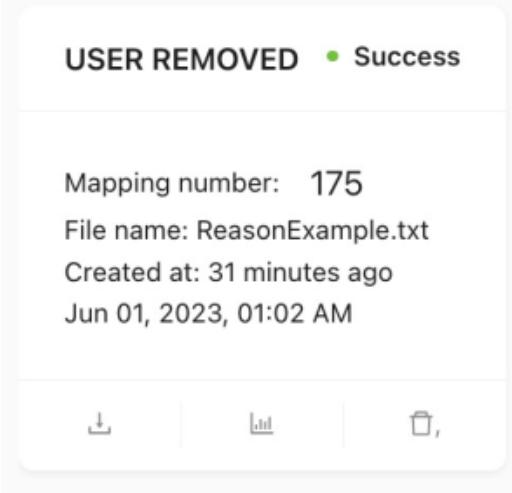
ISSUE00027: New users cannot be invited if this user does not have an account in login status.

| | |
|-------------------|---|
| ISSUE00027 | <input checked="" type="checkbox"/> New users cannot be invited if this user does not have an account in login status. |
| Status | SOLVED |
| Assignee | Ricardo Luo |
| Github Issue link | https://github.com/COMP90082-2023-SM1/DI-Boxjelly/issues/27 |
| Description | <p>We use "const headers = getCSRFTokenHeader();" in api.js for the Register page. But the new user does not have CSRFToken. If the new user does not have an account in login status, the user could not register. This is contradictory and unreasonable.</p>  |
| Solution | Solved in 2d2dd64 commit on branch feature/ui |

ISSUE00028: New member register showing missing cookie

| | |
|-------------------|--|
| ISSUE00028 | <input checked="" type="checkbox"/> New member register showing missing cookie |
| Status | SOLVED |
| Assignee | KUNXI SUN Hanyi Gao |
| Github Issue link | https://github.com/COMP90082-2023-SM1/DI-Boxjelly/issues/28 |
| Description | <p>New member register showing missing cookie #28</p> <p> Closed doncd-p opened this issue last week · 1 comment</p> <hr/> <p> doncd-p commented last week ...</p> <p>Also redirects to login page even throwing error on missing cookie</p> <p></p> |
| Solution | Refresh token is canceled, you will get error when the token is expired. When the access token is expired, you should re-login to get a new access token |

ISSUE00029: Cannot display the board with deleted member's task

| | |
|-------------------|---|
| ISSUE0029 | Cannot display the board with deleted member's task |
| Status | SOLVED |
| Assignee | Chenyang Dong |
| Github Issue link | https://github.com/COMP90082-2023-SM1/DI-Boxjelly/issues/29 |
| Description | <p>Cannot display the board with deleted member's task #29</p> <p> Closed doncd-p opened this issue last week · 1 comment</p> <p> doncd-p commented last week As the task card requires showing the nickname of the user creating that task</p> |
| Solution | <p>Storing the nickname in the dictionary and use get method of dictionary to prevent possible KeyError in case there are tasks with removed users. It will default to "USER REMOVED" if not found.</p> <p></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.

User Experience Evaluation

In this project, our team decide to conduct an expert review instead of usability test due to the time and resource limit. Heuristic Evaluation and Cognitive Walkthrough will be conducted to identify general usability issues.

| | |
|---------------------|---------------------------------|
| Website: | Digital health mapping platform |
| Technology: | Macbook Pro M1 |
| Evaluator: | Yue Fei |
| Date of Evaluation: | 16 May 2023 |

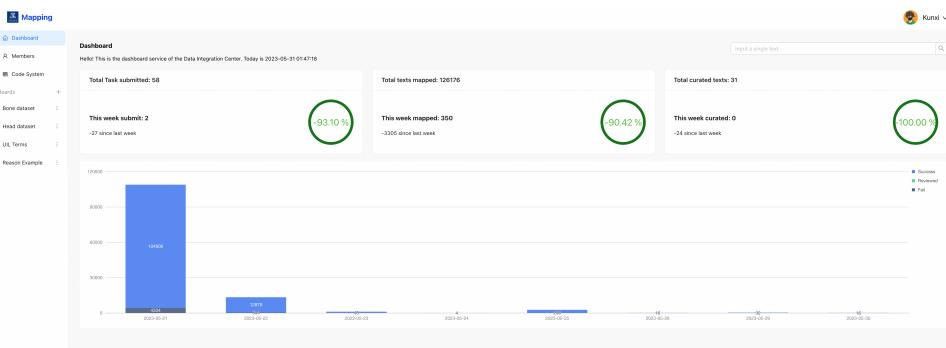
Heuristic Evaluation

Introduction:

Heuristic evaluation is a process where experts use rules of thumb to measure the usability of user interfaces in independent walkthroughs and report issues. In this report, I will use the Nielsen heuristic evaluation 10 principles to evaluate the website.

1. Visibility of system status;
2. Match between system and the real world;
3. User control and freedom;
4. Consistency and standards;
5. Error prevention;
6. Recognition rather than recall;
7. Flexibility and efficiency of use;
8. Aesthetic and minimalist design;
9. Help users recognize, diagnose, and recover from errors;
10. Help and documentation.

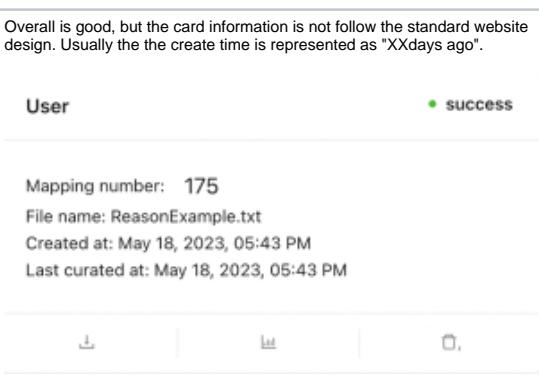
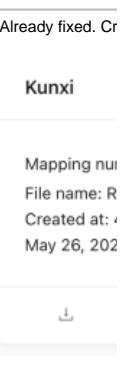
Positive Findings:

| Heuristic (Nielsen, 2000) | Comments |
|---|--|
| Aesthetic and minimalist design | Overall speaking, the health mapping platform has a very concise UI design, presenting information and interfaces in a visually appealing and uncluttered manner. This website has clear and concise interface, the main function of the website is clearly displayed on the left sidebar with a very clear structure.  |
| Help users recognize, diagnose, and recover from errors | When errors happen. This website shows some pop up message to help the user recover from unwanted state. |
| Match between system and the real world | This website has standard and clear design. Use the words, phrases and concepts familiar to users. Users can leverage their existing knowledge and transfer it seamlessly to the system, reducing the need for extensive learning or cognitive effort. |

| Flexibility and efficiency of use | This website provide shortcut for expert user and hidden from novice user. The design can cater to both inexperienced and experienced users. Allow users to tailor frequent actions. For example, user can use download and visualise button on the task card to download and visualise data instead of click into the task download. And for novice user, they can download the mapping file inside the task page. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------------|---|----------------|------------------|---------|------------------|--------|-------|--------|-----|----------|----------------------------|------------|--------|--------|------------------|--------|--|----------|----------|---------|-----------|---------|---|---|--|-------------|---------------------------|---|-----|---------|---|---|--|----------------|---------------------------|---|-----|---------|---|---|--|------|-------------|---|-----|---------|---|---|--|---------------------|--|---|-----|---------|---|---|--|--------|------------------|---|-----|---------|---|---|--|-------|---------------------------|---|-----|---------|---|---|--|--------------------|----------------------|--------|-----------|---------|---|---|--|----------------------------------|------------------------|---------|-----------|---------|---|---|--|--------------------|--------------------|--------|-----------|---------|---|---|--|---------------|-------------------|---------|-----------|---------|---|---|--|---------------------|-------------------|---------|-----------|---------|---|---|--|---------------------|---------------------|---------|-----------|---------|---|---|--|--------------------------|--------------------------|---------|-----------|---------|---|---|--|--------------|--------------|--------|-----------|---------|---|---|--|------------------|---------------------------|---|-----|---------|---|---|--|------------------------------------|---------------------------|---|-----|---------|---|---|--|--------------------|---------------------------------------|---------|-----------|---------|---|---|--|-------------------------|--------------------|---|-----|---------|---|---|--|------------|---|---|---|------|---|---|--|
| | <p>Bone dataset</p> <p>This task board is used for bone task</p> <div style="display: flex; justify-content: space-around;"> <div style="width: 45%;"> <p>Mapping number: 175</p> <p>File name: ReasonExample.txt</p> <p>Created at: 4 days ago</p> <p>May 26, 2023, 12:59 AM</p> </div> <div style="width: 45%;"> <p>Mapping number: 175</p> <p>File name: ReasonExample.txt</p> <p>Created at: 5 days ago</p> <p>May 25, 2023, 07:47 PM</p> </div> </div> <div style="margin-top: 10px;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Mapping Status</th> <th>Source</th> <th>Confidence Range</th> <th>Filter</th> <th>Reset</th> <th style="background-color: #007bff; color: white;">Export</th> <th>Lat</th> </tr> </thead> <tbody> <tr><td>Raw text</td><td>Output of the mapping tool</td><td>Confidence</td><td>Source</td><td>Status</td><td>Curated Category</td><td>Action</td><td></td></tr> <tr><td>Snuffles</td><td>Snuffles</td><td>100.00%</td><td>SNOMED-CT</td><td>Success</td><td>-</td><td>🔗</td><td></td></tr> <tr><td>Tonsillitis</td><td>Compound or open fracture</td><td>-</td><td>UIL</td><td>Success</td><td>-</td><td>🔗</td><td></td></tr> <tr><td>Skin infection</td><td>Compound or open fracture</td><td>-</td><td>UIL</td><td>Success</td><td>-</td><td>🔗</td><td></td></tr> <tr><td>LRTI</td><td>Blepharitis</td><td>-</td><td>UIL</td><td>Success</td><td>-</td><td>🔗</td><td></td></tr> <tr><td>Bacterial vaginosis</td><td>Infected prosthetic joint or bone pro...</td><td>-</td><td>UIL</td><td>Success</td><td>-</td><td>🔗</td><td></td></tr> <tr><td>Review</td><td>Septic arthritis</td><td>-</td><td>UIL</td><td>Success</td><td>-</td><td>🔗</td><td></td></tr> <tr><td>??UTI</td><td>Rethritis, other pathogen</td><td>-</td><td>UIL</td><td>Success</td><td>-</td><td>🔗</td><td></td></tr> <tr><td>Dental prophylaxis</td><td>Preventive procedure</td><td>53.17%</td><td>SNOMED-CT</td><td>Success</td><td>-</td><td>🔗</td><td></td></tr> <tr><td>Infective exacerbation of asthma</td><td>Exacerbation of asthma</td><td>100.00%</td><td>SNOMED-CT</td><td>Success</td><td>-</td><td>🔗</td><td></td></tr> <tr><td>Atypical pneumonia</td><td>Atypical pneumonia</td><td>99.00%</td><td>SNOMED-CT</td><td>Success</td><td>-</td><td>🔗</td><td></td></tr> <tr><td>Travel advice</td><td>Recommendation to</td><td>100.00%</td><td>SNOMED-CT</td><td>Success</td><td>-</td><td>🔗</td><td></td></tr> <tr><td>"Soreness, frontal"</td><td>Frontal sinusitis</td><td>100.00%</td><td>SNOMED-CT</td><td>Success</td><td>-</td><td>🔗</td><td></td></tr> <tr><td>Perioral dermatitis</td><td>Perioral dermatitis</td><td>100.00%</td><td>SNOMED-CT</td><td>Success</td><td>-</td><td>🔗</td><td></td></tr> <tr><td>Administrative procedure</td><td>Administrative procedure</td><td>100.00%</td><td>SNOMED-CT</td><td>Success</td><td>-</td><td>🔗</td><td></td></tr> <tr><td>Prescription</td><td>Prescription</td><td>99.00%</td><td>SNOMED-CT</td><td>Success</td><td>-</td><td>🔗</td><td></td></tr> <tr><td>Perioral abscess</td><td>Compound or open fracture</td><td>-</td><td>UIL</td><td>Success</td><td>-</td><td>🔗</td><td></td></tr> <tr><td>Probable hypertension - Borderline</td><td>Compound or open fracture</td><td>-</td><td>UIL</td><td>Success</td><td>-</td><td>🔗</td><td></td></tr> <tr><td>Travel vaccination</td><td>Administration of vaccine to produ...</td><td>100.00%</td><td>SNOMED-CT</td><td>Success</td><td>-</td><td>🔗</td><td></td></tr> <tr><td>"Cough, post infective"</td><td>Acute otitis media</td><td>-</td><td>UIL</td><td>Success</td><td>-</td><td>🔗</td><td></td></tr> <tr><td>STI screen</td><td>-</td><td>-</td><td>-</td><td>Fail</td><td>-</td><td>🔗</td><td></td></tr> </tbody> </table> </div> | Mapping Status | | Source | Confidence Range | Filter | Reset | Export | Lat | Raw text | Output of the mapping tool | Confidence | Source | Status | Curated Category | Action | | Snuffles | Snuffles | 100.00% | SNOMED-CT | Success | - | 🔗 | | Tonsillitis | Compound or open fracture | - | UIL | Success | - | 🔗 | | Skin infection | Compound or open fracture | - | UIL | Success | - | 🔗 | | LRTI | Blepharitis | - | UIL | Success | - | 🔗 | | Bacterial vaginosis | Infected prosthetic joint or bone pro... | - | UIL | Success | - | 🔗 | | Review | Septic arthritis | - | UIL | Success | - | 🔗 | | ??UTI | Rethritis, other pathogen | - | UIL | Success | - | 🔗 | | Dental prophylaxis | Preventive procedure | 53.17% | SNOMED-CT | Success | - | 🔗 | | Infective exacerbation of asthma | Exacerbation of asthma | 100.00% | SNOMED-CT | Success | - | 🔗 | | Atypical pneumonia | Atypical pneumonia | 99.00% | SNOMED-CT | Success | - | 🔗 | | Travel advice | Recommendation to | 100.00% | SNOMED-CT | Success | - | 🔗 | | "Soreness, frontal" | Frontal sinusitis | 100.00% | SNOMED-CT | Success | - | 🔗 | | Perioral dermatitis | Perioral dermatitis | 100.00% | SNOMED-CT | Success | - | 🔗 | | Administrative procedure | Administrative procedure | 100.00% | SNOMED-CT | Success | - | 🔗 | | Prescription | Prescription | 99.00% | SNOMED-CT | Success | - | 🔗 | | Perioral abscess | Compound or open fracture | - | UIL | Success | - | 🔗 | | Probable hypertension - Borderline | Compound or open fracture | - | UIL | Success | - | 🔗 | | Travel vaccination | Administration of vaccine to produ... | 100.00% | SNOMED-CT | Success | - | 🔗 | | "Cough, post infective" | Acute otitis media | - | UIL | Success | - | 🔗 | | STI screen | - | - | - | Fail | - | 🔗 | |
| Mapping Status | | Source | Confidence Range | Filter | Reset | Export | Lat | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Raw text | Output of the mapping tool | Confidence | Source | Status | Curated Category | Action | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Snuffles | Snuffles | 100.00% | SNOMED-CT | Success | - | 🔗 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tonsillitis | Compound or open fracture | - | UIL | Success | - | 🔗 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Skin infection | Compound or open fracture | - | UIL | Success | - | 🔗 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LRTI | Blepharitis | - | UIL | Success | - | 🔗 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bacterial vaginosis | Infected prosthetic joint or bone pro... | - | UIL | Success | - | 🔗 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Review | Septic arthritis | - | UIL | Success | - | 🔗 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ??UTI | Rethritis, other pathogen | - | UIL | Success | - | 🔗 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dental prophylaxis | Preventive procedure | 53.17% | SNOMED-CT | Success | - | 🔗 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Infective exacerbation of asthma | Exacerbation of asthma | 100.00% | SNOMED-CT | Success | - | 🔗 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Atypical pneumonia | Atypical pneumonia | 99.00% | SNOMED-CT | Success | - | 🔗 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Travel advice | Recommendation to | 100.00% | SNOMED-CT | Success | - | 🔗 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| "Soreness, frontal" | Frontal sinusitis | 100.00% | SNOMED-CT | Success | - | 🔗 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Perioral dermatitis | Perioral dermatitis | 100.00% | SNOMED-CT | Success | - | 🔗 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Administrative procedure | Administrative procedure | 100.00% | SNOMED-CT | Success | - | 🔗 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Prescription | Prescription | 99.00% | SNOMED-CT | Success | - | 🔗 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Perioral abscess | Compound or open fracture | - | UIL | Success | - | 🔗 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Probable hypertension - Borderline | Compound or open fracture | - | UIL | Success | - | 🔗 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Travel vaccination | Administration of vaccine to produ... | 100.00% | SNOMED-CT | Success | - | 🔗 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| "Cough, post infective" | Acute otitis media | - | UIL | Success | - | 🔗 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STI screen | - | - | - | Fail | - | 🔗 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Issues:

| Heuristic (Nielsen, 2000) | Comments | Scope | Frequency | Impact | Severity | Recommendation | Status |
|---------------------------------|----------|-------|-----------|--------|----------|----------------|--------|
| | | | | | | | |

| | | | | | | | |
|-----------------------------|--|--|---|--|--|--|---|
| Visibility of system status | There is no indication of the current location of the website | Medium Some users may be confused about their current state. | High The website is straight forward | Low The website is straight forward | Low The website is straight forward | Add the current path or highlight the current page on the side bar.  | Already fixed. Inc |
| User control and freedom | Overall is good, but can add option for user to select the file type. | Low Some users may want to download the file in a different format. | Low The download function is frequently used. | Low CSV file can meet the majority of needs. | Low CSV file can meet the majority of needs. | Add the file type option for user to select. | Discard |
| Consistency and standards | Overall is good, but the card information is not follow the standard website design. Usually the the create time is represented as "XXdays ago".  | Low Some users may calculate the time elapsed from a specific "create" time to the current time | Medium The task card is frequently used. | Low It do not lead to any confusion. | Low It do not lead to any confusion. | Change the time format.  | Already fixed. Cr Kunxi Mapping nu File name: R Created at: M May 26, 202 |
| Error prevention | Overall, it is good, but there is no confirmation dialog if the user clicks the log out button accidentally. | High All users need to use this function. | High It is a frequently used function for all users. | Low The website is straight forward | Low The website is straight forward | Add a confirmation dialog window to confirm log out. | Discard |
| Help and documentation | There is no help document. | Medium Some users may need documentation or contact information, users may find it difficult to get assistance. | Medium Without any help documentation or contact information, users may find it difficult to get assistance. | Low The website is straight forward and have aesthetic and minimalist design. | Low The website is straight forward and have aesthetic and minimalist design. | Add help document. | Will send to client |

Result:

This website has good usability based on the Nielsen 10 usability heuristics for user interface design. It demonstrates a match between the system and the real world, consistency and standards, good memorability, flexibility and efficiency of use, and an aesthetic and minimalist design. Despite some identified issues, the overall usability is satisfactory.

Cognitive Walkthrough

Cognitive walkthrough is a task-based usability-inspection method that involves a cross-functional team of reviewers walking through each step of a task flow and answering a set of prescribed questions, with the goal of identifying those aspects of the interface that could be challenging to new users. In this report, I will go through major tasks to test the functionalities.

Task1:

Mapping a single text to SNOMED-CT or UIL view the result.

| | steps | Will users know what to do? | Will the users know how to do it? | Will users understand from feedback whether the actions correct or not? |
|-------|--|---|---|---|
| Step1 | Enter the free text that needs to be mapped. | Yes, usually there is a search bar to search. | Yes, it is shown on the dashboard | Yes, it will show the search bar. |
| Step2 | Click the search button to map the text. | Yes, usually users need to click the search icon to search. | Yes, it is just next to the search box. | Yes, it will show the result. |
| Step3 | View the mapping results. | Yes, usually it will automatically appear somewhere on the screen | Yes, it will show on the screen. | Yes, there is a pop-up window showing the result. |

Task2:

Mapping a file to SNOMED-CT or UIL and viewing the result.

| | steps | Will users know what to do? | Will the users know how to do it? | Will users understand from feedback whether the actions correct or not? |
|-------|-----------------------------|--|---|---|
| Step1 | Open the board. | No, because mapping a single task is on the dashboard, users may assume that mapping a file is in the same location. However, it is actually located on the board. | No, there is no indication of its location, so users may take a while to find it. | Yes, once they click on the board, they will be able to find the location to create a task and upload the file. |
| Step2 | Create a task. | Yes, there is usually a location to upload a file to create a new task. However, the naming of the button may be confusing for new users. | Yes, there is usually a button on the screen to create a task. | Yes, there is a pop-up window that requires the user to upload a file for mapping, with an indication text. |
| Step3 | Upload the file for mapping | Yes, there is an indication text on the popup window asking the user to drag or select a file to upload. | Yes, usually users need to drag or select a file to upload. | Yes after the file is select, it will show on the screen. |
| Step4 | View the mapping result. | Yes, the mapping task is clearly shown on the screen. | Yes, usually user can click on the mapping task to view the result. | Yes, it will redirect the user to the mapping result. |

Recommendation: Add help documents to help the user find the right place.

Task3:

Curate the mapping result.

| | steps | Will users know what to do? | Will the users know how to do it? | Will users understand from feedback whether the actions correct or not? |
|-------|--|---|---|---|
| Step1 | Click on the action button. | Yes, the mapping tool always has the curation function. | Yes, the action button is clearly shown on the mapped task. But new users may not know to click the button to curate the mapping. | Yes, the curated category will show a window for users to select the term that they want to curate the mapping. |
| Step2 | Click on the selection box to curate the category. | Yes, usually users need to select the category. | Yes, there is a pop-up box under the curated category column for users to select the category they want to curate. | Yes, the categories that users want to curate will be displayed on the screen after being clicked. |
| Step3 | Save the curated term to the task. | Yes, usually users need to confirm their curation and feedback to the system. | Yes, the save button is clearly shown on the right side of the screen. | Yes, the status will change after being reviewed after curation. |

Task4:

Visualisation of the mapping task.

| | steps | Will users know what to do? | Will the users know how to do it? | Will users understand from feedback whether the actions correct or not? |
|--|-------|-----------------------------|-----------------------------------|---|
| | | | | |

| | | | | |
|-------|---|--|--|--|
| Step1 | Click on the visualisation button on the task page. | Yes, usually visualisation may show directly on the page or have a place to enter. | Yes, the visualisation button is clearly shown on the top-right hand side of the task. | Yes, the visualisation drawer will show. |
|-------|---|--|--|--|

Result:

Overall speaking, I walked through the major task that users will use the website for. Most of them are easy and clear to use. But fresh users of the website may need time to find the right place to complete the task. But the memorability of the website is excellent, after they learn the right way to finish their task, they can use it efficiently.

Pair programming

What is pair programming?

Note: the following definition is generated by ChatGPT 4.0

Pair programming is a software development technique where two programmers work together at one workstation. The technique involves two roles: the "driver" and the "navigator" (also known as the "observer").

1. **Driver:** The driver is the one who writes the code. This person focuses on the tactical aspects of completing the task, like syntax, coding conventions, and the specific implementation details.
2. **Navigator:** The navigator observes the work of the driver, focusing more on the strategic aspects of the task. They think about the design, the overall direction of the work, and what will come next. They also review the code written by the driver and can suggest changes or improvements.

The programmers switch roles frequently (maybe every few minutes or hours) to get the benefits of both aspects. This approach is believed to improve code quality by catching mistakes early (two sets of eyes instead of one), improve collaboration and communication, facilitate knowledge sharing and skill improvement, and generally lead to better design decisions.

However, it's also important to note that pair programming requires a good interpersonal rapport and can be exhausting, so it's usually not done 100% of the time. Some tasks may also not be well-suited to pair programming. The best usage of pair programming often depends on the team, the individuals involved, and the task at hand.

How should we do pair programming?

The following shows our pair programming plan to implement this project

1. Front-end and Back-end Interface Debugging

- Start by clearly defining the interface between the front-end and back-end. This includes the structure of the request, response, error messages, and status codes.
- The driver writes the code for implementing or modifying the interface. The navigator reviews and provides suggestions for improvements, looks up relevant documentation, and thinks about edge cases.
- Switch roles and debug the interface. Test it by sending requests from the front-end and verifying the responses received from the back-end.

2. Microservice Module Integration

- Understand the interaction between different modules in the microservice architecture. Each service should be loosely coupled and should communicate with each other through well-defined APIs.
- The driver starts integrating two services while the navigator reviews the code, suggests improvements, and thinks about potential issues with the integration.
- Switch roles, refine the integration, and verify its correctness by writing and running integration tests.

3. Code Refactoring

- Review the code together to identify parts that can be made more efficient, readable, or maintainable.
- The driver starts refactoring the code while the navigator thinks about potential impacts on other parts of the codebase.
- Switch roles, continue the refactoring process, and make sure to run tests to ensure the refactoring did not break anything.

4. Documentation

- Document the interfaces, integrations, and important parts of the codebase for future reference.
- Both the driver and navigator contribute to the documentation, with one typing and the other reviewing and suggesting additions or changes.

Decision

[Create decision](#)

| Decision | Status | Stakeholders | Outcome | Due date | Owner |
|---|---------|--------------------------------------|---|----------|----------------|
| MedCAT - Use Single Processing Instead of Multiprocessing | DECIDED | Clients | Use single processor to predict SNOMED CT codes | - | KUNXI SUN |
| Use Github Actions Instead of Ansible Script | DECIDED | Team members and the next team | Change the way for continuous integration | - | KUNXI SUN |
| No Continuous Deployment | DECIDED | Clients and development team members | No continuous deployment | - | - |
| Github Branch Workflow | DECIDED | Team member and clients | Github branch workflow | - | KUNXI SUN |
| Combine Ontoserver with MedCAT | DECIDED | Clients | Combine Ontoserver and Medcat | - | Chenya ng Dong |
| Use Apifox API Test to Replace Automatic Unit Test | DECIDED | Team member and clients | No automatic unit test | - | KUNXI SUN |
| Use Apifox Instead of Postman | DECIDED | Development Team | Use ApiFox to make API documentations | - | KUNXI SUN |
| Technique Stack | DECIDED | Team members | Technique stack | - | - |
| Role Assignment | DECIDED | Team members | Role assignment | - | - |

Combine Ontoserver with MedCAT

| Version ID | Description | Date |
|------------|--|-------------|
| 2.0.0 | Further decision why team decide to combine Ontoserver and Medcat in the mapping algorithm | 25 May 2023 |
| 1.0.0 | A basic description about why team decide to use MedCat for the mapping algorithm | 27 Apr 2023 |

Version 2.0.0

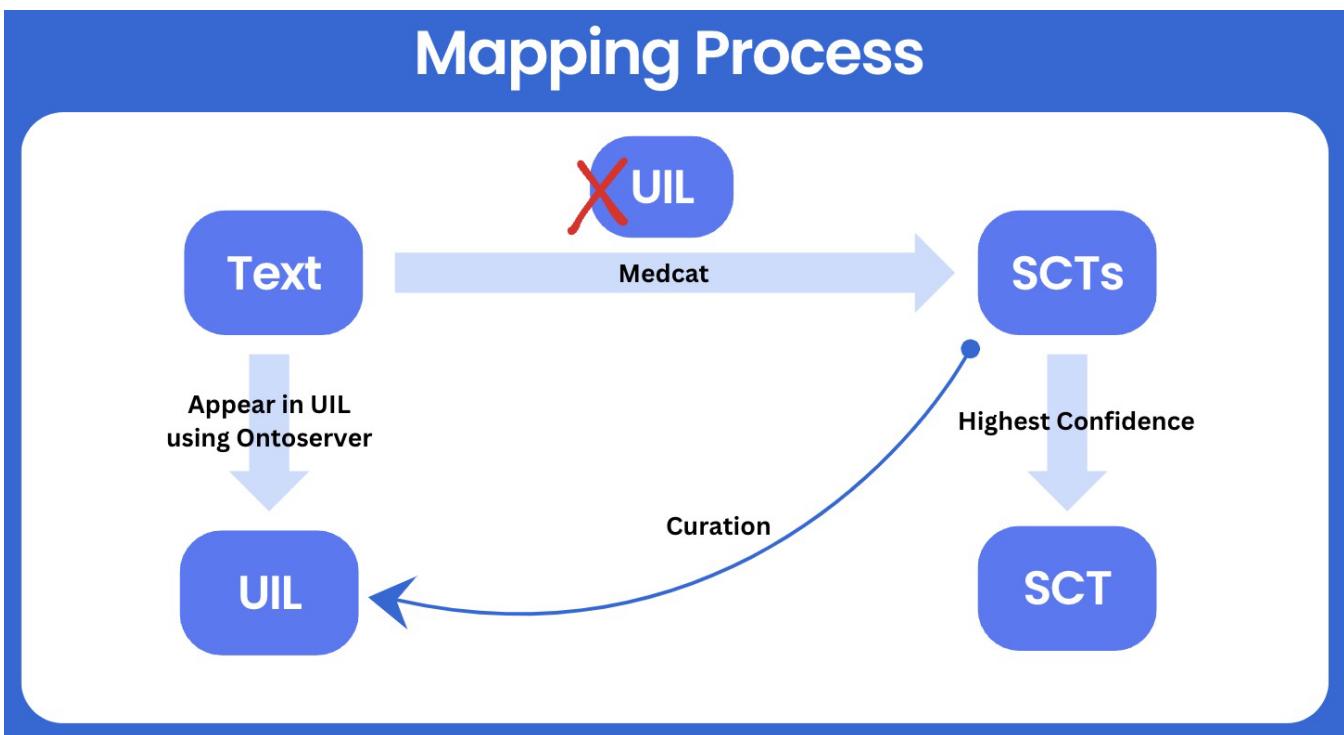
| | |
|--------------|-------------------------------|
| Status | DECIDED |
| Stakeholders | Clients |
| Outcome | Combine Ontoserver and Medcat |
| Due date | - |
| Owner | Chenyang Dong |

Background

- Information about Ontoserver and Medcat including their usage can be found in [Background](#).
- Using Medcat alone provide high performance on mapping speed and accuracy. It produce trustworthy result on mapping short text to SNOMED-CT code. However, the final goal for the product is to map the clinical texts into code in Universal Indication List(UIL). Therefore, team decided to use Ontoserver to map the SNOMED-CT into UIL classes.

Action items

- Connect the current map service with Ontoserver



Version 1.0.0

- Due to [change of mapping requirements](#) and [recent notice](#) that the deployment environment does not allow constant use of external endpoints , our previous mapping approach has to be deprecated.
- Based on [2023-04-28 Meeting notes - Client](#), the team is going to implement MedCAT to map raw text to SNOMED CT as one of the approaches.

MedCAT - Use Single Processing Instead of Multiprocessing

| | |
|--------------|---|
| Status | DECIDED |
| Stakeholders | Clients |
| Outcome | Use single processor to predict SNOMED CT codes |
| Due date | - |
| Owner | KUNXI SUN |

Background

Performance test of Medcat is applied in [Performance Test Report](#).

Although the Medcat allows multiprocessing to predict, it should to be avoided due to that the product is deployed on a single node(a server/ a virtual machine instance), use multiprocessing technique have negative effect on other services' performance. However, if the Medcat is deployed on a single node with isolated resources(cores, memories), it is better to use the multiprocessing of the Medcat.

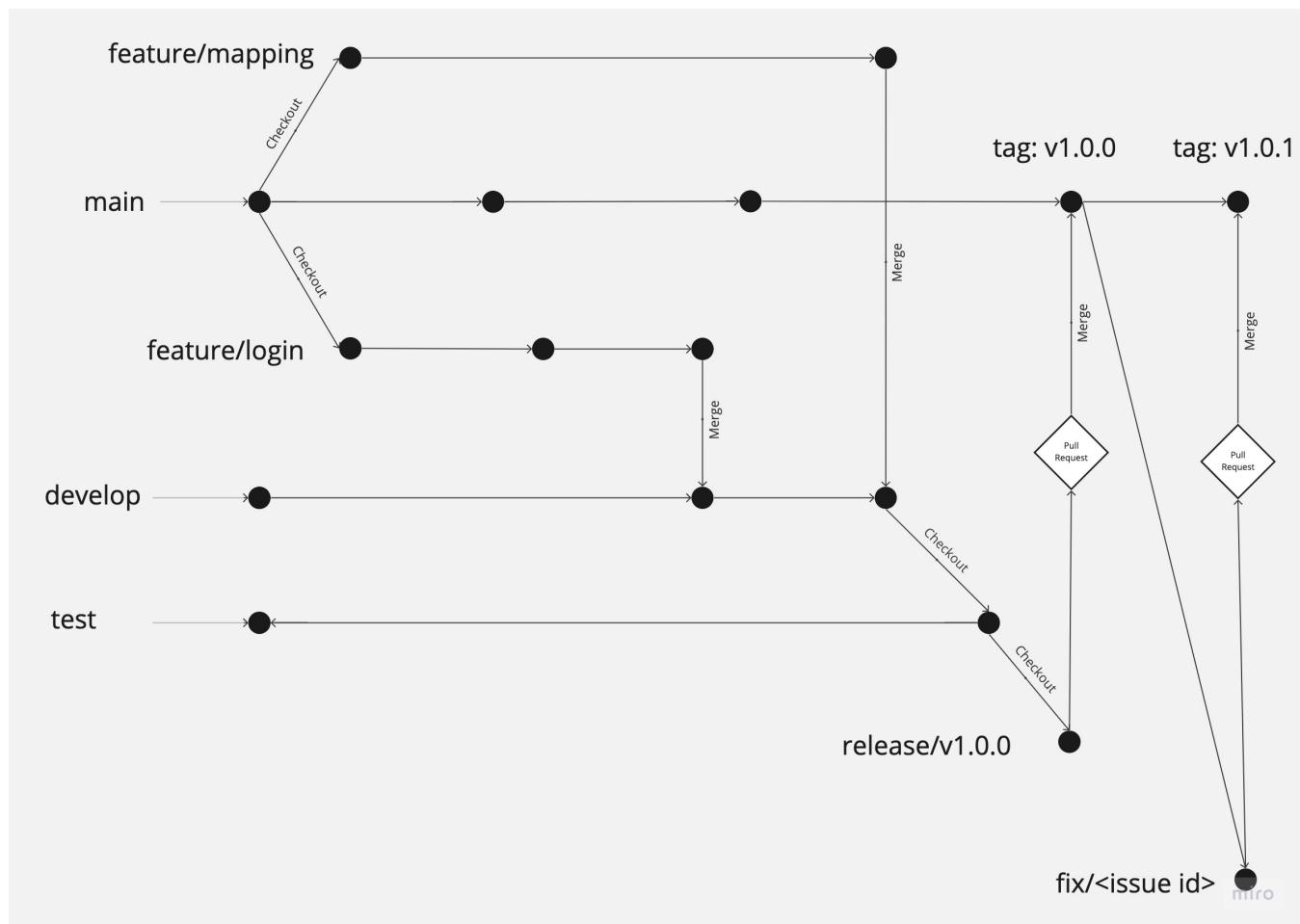
Github Branch Workflow

| | |
|--------------|-------------------------|
| Status | DECIDED |
| Stakeholders | Team member and clients |
| Outcome | Github branch workflow |
| Due date | - |
| Owner | KUNXI SUN |

Background

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

Action items



No Continuous Deployment

| | |
|--------------|--------------------------------------|
| Status | DECIDED |
| Stakeholders | Clients and development team members |
| Outcome | No continuous deployment |
| Due date | - |
| Owner | - |

Background

Based on communication with SRC and clients started at sprint 1, team has tried to get a production server. However, team did not get production server until sprint 3. Therefore, team member decided to get rid of Continuous Deployment(CD) in this project. Team will rent a server as development server for continuously integration.

Update: the production server is offered by MRC at the end of Sprint 3 (May 30, 2023)

Action items

- Rent a development server from Cloud Service Provider
- Get rid of continuously deployment

Role Assignment

| | |
|--------------|-----------------|
| Status | DECIDED |
| Stakeholders | Team members |
| Outcome | Role assignment |
| Due date | - |
| Owner | - |

Background

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

Technique Stack

| | |
|--------------|-----------------|
| Status | DECIDED |
| Stakeholders | Team members |
| Outcome | Technique stack |
| Due date | - |
| Owner | - |

Update: The [technologies to use in this project](#) has been decided based on the following technique stack.

Background

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 |
|--------------|-----------|-----------|---------|-----------------------|-----------|
| Major | AI | AI | AI | Distributed Computing | Computing |
| Python | 5 | 4 | 5 | 5 | 3 |
| Java | 3 | 4 | 3 | 3 | 3 |
| C | 3 | 1 | 2 | 2 | 2 |
| Golang | 0 | 0 | 0 | 0 | 0 |
| Javascript | 2 | 2 | 3 | 4 | 5 |
| Spring | 0 | 3 | 0 | 0 | 0 |
| Flask | 4 | 0 | 0 | 0 | 0 |
| Django | 0 | 1 | 0 | 1 | 0 |
| Pandas | 3 | 3 | 5 | 5 | 3 |
| Scikit-learn | 3 | 1 | 5 | 5 | 1 |
| Numpy | 4 | 4 | 5 | 5 | 3 |
| Matplotlib | 4 | 3 | 5 | 5 | 3 |
| Tensorflow | 4 | 1 | 3 | 3 | 0 |
| Keras | 3 | 2 | 3 | 3 | 0 |
| Pytorch | 4 | 2 | 4 | 3 | 0 |
| React | 0 | 3 | 0 | 3 | 5 |
| Vue | 0 | 3 | 0 | 0 | 1 |
| Html | 4 | 5 | 4 | 4 | 5 |
| Css | 2 | 5 | 4 | 4 | 5 |
| Figma | 5 | 0 | 0 | 0 | 5 |
| Adobe XD | 2 | 0 | 0 | 3 | 2 |
| Sketch | 0 | 0 | 0 | 0 | 0 |

Use Apifox API Test to Replace Automatic Unit Test

| | |
|--------------|-------------------------|
| Status | DECIDED |
| Stakeholders | Team member and clients |
| Outcome | No automatic unit test |
| Due date | - |
| Owner | KUNXI SUN |

Background

Consider that team has derived further functional requirements(Code system management, team member management), and there are only few user stories therefore team is short of time in the third sprint. Therefore, in order to finish as much user stories as possible, team decided to use Apifox to write test cases for each API.

Action items

- No automatic unit testing
- Write test cases in ApiFox to cover as much code coverage as possible

Use Apifox Instead of Postman

| | |
|--------------|---------------------------------------|
| Status | DECIDED |
| Stakeholders | Development Team |
| Outcome | Use ApiFox to make API documentations |
| Due date | - |
| Owner | KUNXI SUN |

Background

The free plan of postman has limitation that it only allow three people in a team for the API documentations, therefore the team decided to use [Apifox](#) to do API documentation.

Action items

- Copy and paste the APIs from postman to Apifox
- Create team and invite members into Apifox.=

Use Github Actions Instead of Ansible Script

| | |
|--------------|---|
| Status | DECIDED |
| Stakeholders | Team members and the next team |
| Outcome | Change the way for continuous integration |
| Due date | - |
| Owner | KUNXI SUN |

Background

Team has decided and implemented Ansible script to integrate service components on the development server. However, in the later sprint, team get notification to use Github Actions to do ChatGPT code review. Therefore, team decided to get rid of Ansible script for deployment, and pay extra effort on implementing Github Actions scripts. Not just for the ChatGPT automatic code review, but also for the automatic continuous integration and deployment.

Action items

- Delete the ansible module on Github
- Implement the Github Actions

Others

| Title | Creator | Modified |
|-----------------------|-------------|-----------------------|
| Server Configuration | Ricardo Luo | about 2 hours ago |
| Tool Uses | KUNXI SUN | yesterday at 1:54 AM |
| Demonstration | Hanyi Gao | yesterday at 12:23 AM |
| Mapping Tools Survey | KUNXI SUN | 30 Apr, 2023 |
| Code Review Checklist | Yue Fei | 30 Apr, 2023 |

Demonstration

Note: Due to the complexities and challenges in advancing the deployment of the Secure Research Environment, and the intricate approval processes involved, we have mutually agreed with our clients to abstain from final deployment at this stage. Therefore, the system you'll see in this demonstration is running locally on our host machine.

Sprint 3 video demo:

<https://youtu.be/BC8NPPdGJ6M>

Sprint 2 video demo:

https://www.youtube.com/watch?v=zaSCr7h_XnI

Presentation

<http://youtube.com/watch?v=IDwuwGa9t3g>

Below is the presentation slides.



Presentation Slides.pdf

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, connected by a green line.

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-github-main** (highlighted with a blue box)
 - noti-miro
 - noti-trello-all
 - zoom-meeting
- Add channels
- Direct messages
 - KUNXI SUN you
 - Chenyang Dong
- noti-github-main (dropdown menu)

GitHub Channel View:

noti-github-main (locked channel, 5 members)

- + 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 input field: Message @noti-github-main

Example 2: Develop branch notification on Slack

The screenshot shows a Slack workspace interface. On the left, the DI-BoxJelly sidebar includes a 'Upgrade Plan' button, 'Later' (1), '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), and a 'Compose' button.

The main area displays the 'noti-github-develop' channel feed:

- Sunday, April 23rd**
 - GitHub APP 2:42 PM**
1 new commit pushed to `main` by agogear
 - `0971760a` - Update CODE REVIEW as a new assessment criteria
COMP90082-2023-SM1/comp90082-2023-sm1-resources
 - GitHub APP 10:44 AM**
1 new commit pushed to `main` by agogear
 - `9f6a8cf5` - New updates on code review criteria
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

The message input field at the bottom says 'Message @noti-github-develop' with various formatting and emoji icons.

Example 3: General information on Slack

The screenshot shows the DI-BoxJelly Slack interface. On the left, a sidebar lists various channels and direct messages. The 'noti-github-general' channel is highlighted with a blue box. The main pane displays the 'noti-github-general' channel feed. At the top, there's a header with a lock icon, the channel name, and a user count of 5. Below the header, there's a button to 'Add a bookmark'. The feed shows a message from 'COMP90082-2023-SM1/DI-Boxjelly' dated April 4th, containing a list of items: 'Nginx->Backend', 'di-gateway->di-auth', and 'di-auth->mongodb'. It also includes numbered steps '2. Login(Page and API)' and '3. Register(Only API)'. A 'Show more' link is present. Below this, another message from 'COMP90082-2023-SM1/DI-Boxjelly' dated April 4th is shown, with a 'Comment' button and a note about 1 reply 23 days ago. The date 'Wednesday, April 5th' is displayed above a GitHub message. This GitHub message, from 'GitHub APP' at 7:20 PM, replies to a thread and mentions a pull request merged by 'doncd-p'. It also includes a link to '#9 Release/v1.1.0'. The message is timestamped 'Apr 4th'. At the bottom, there's a message input field with placeholder text 'Message @noti-github-general' and a toolbar with various icons.

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 sprint2 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.

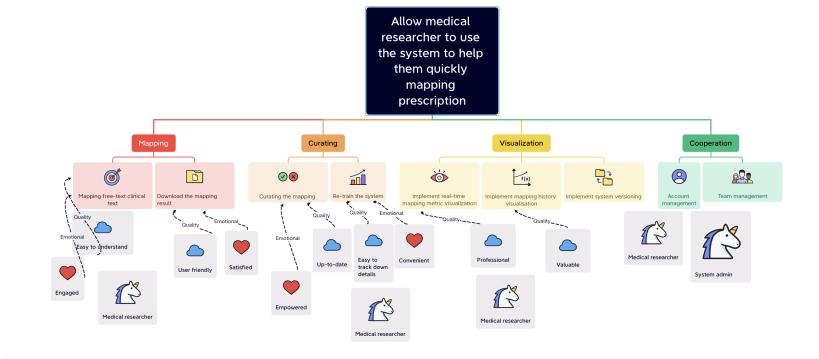
4 Integrate Zoom on Slack

FAIL

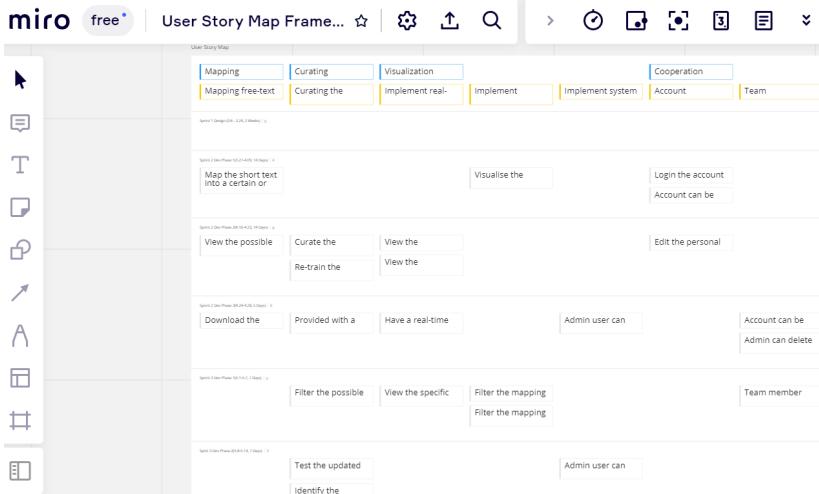
Reason: Permission from unimelb Zoom administration required.

5 Xmind

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

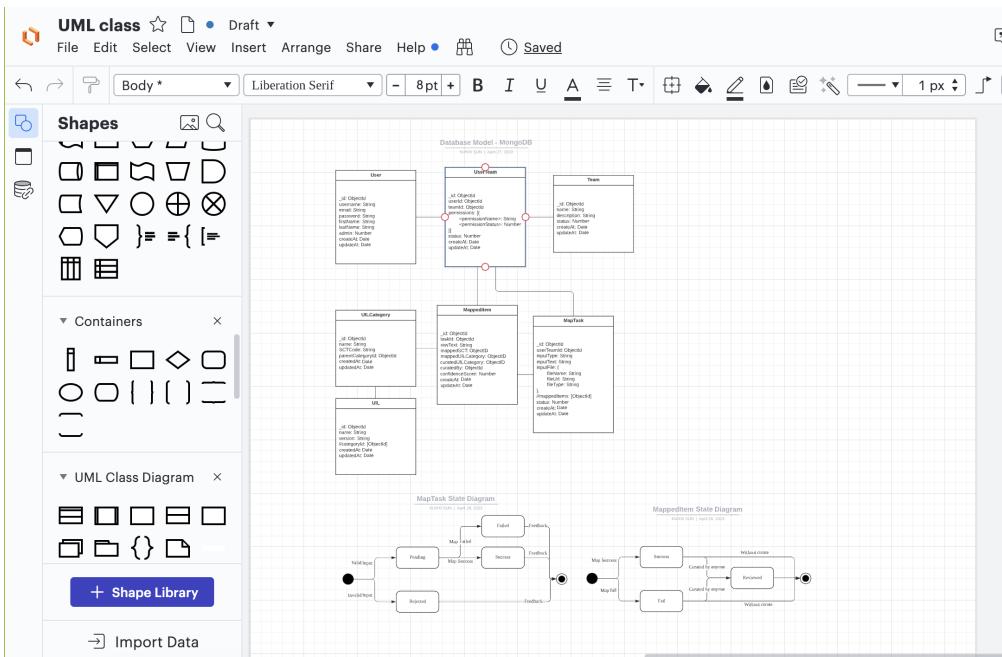


6 Miro



7 Lucidchart

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



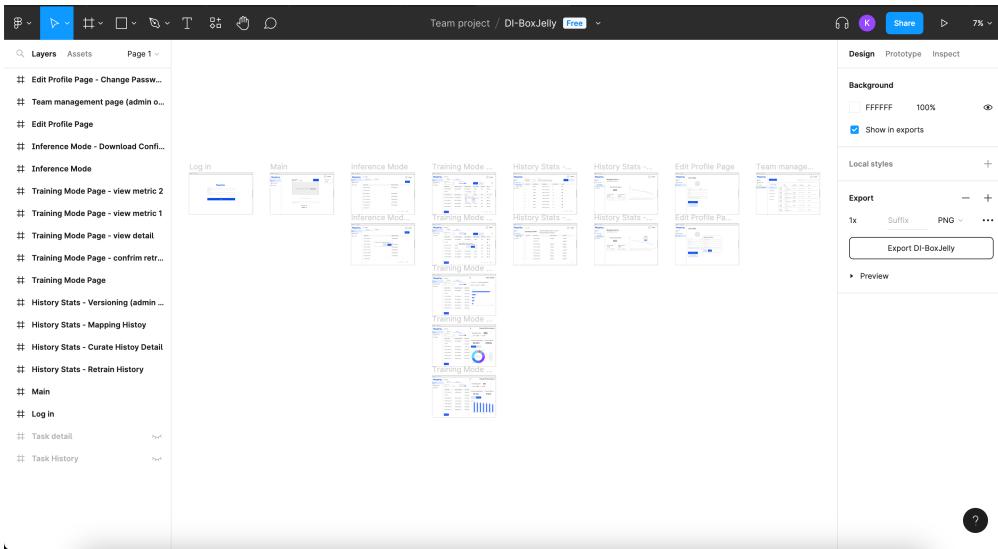
8 Postman

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: ENVIRONMENT (set to R4), LAYOUT (set to Single Column), LANGUAGE (set to cURL - cURL), and a Public button. The main content area is titled 'Ontoserver'. It has a sidebar on the left with a tree view of the API structure under 'ONTOSERVER' (Introduction, CodeSystem, Lookup, Subsumes, Closure, ValueSet, Expand, Validate code, ConceptMap, Translate, Batch, Resource validation, AuditEvent, Syndication) and a 'Server capabilities' section. The main content area shows the 'CodeSystem' section with a 'GET Search all CodeSystems, return their names and urls' endpoint. The URL is https://r4.ontoserver.csiro.au/fhir/CodeSystem?_elements=name,_url&_count=10. Below the URL, it says 'Retrieves the name and _url elements for all CodeSystem resources in the server, limiting the number of results in the first page to 10.' and 'See Search.' There is also a 'PARAMS' section with parameters '_elements' (value: name,_url) and '_count' (value: 10).

9 Figma

Figma is a collaborative ui design tools which has been used to produce the digital prototypes.



10 Apifox

Apifox is a free application for API documentation, testing tool. It has similar functions to Postman but with free plan.

| Name | Method | Path | Folder | Status | Tags |
|---|----------------------------------|----------------------|------------|------------|------|
| Create a New Code System | POST | /center/codesystem | codesystem | Developing | - |
| Get Code System Concer... | GET | /center/codesystem | codesystem | Developing | - |
| Delete a code system | DELETE | /center/codesystem | codesystem | Developing | - |
| Get all versions of codes... | GET | /center/codesyste... | codesystem | Developing | - |
| POST Create a ... | POST | /center/codesyste... | codesystem | Developing | - |
| GET Get Code... DEL Delete a ... GET Get all v... GET Export co... POST Create-New... | GET DEL GET GET POST | /center/codesyste... | codesystem | Developing | - |

Server Configuration

Dev Cloud Server

| | |
|-------------|----------------|
| Public IP | 101.43.110.249 |
| Password | ***** |
| Instance ID | Ihins-6y84pbke |
| username | ubuntu |
| Area | Shanghai |
| secret key | Ihkp-j8q3flr4 |

Production MRC server (Obtained at May 30, 2023)

To use this server, you need to connect to the Unimelb wifi, or use the Anyconnect VPN to connect to Unimelb network.

| | |
|-------------|----------------|
| Public IP | 115.146.95.215 |
| Password | ***** |
| Instance ID | - |
| username | ubuntu |
| Area | Melbourne(MRC) |
| secret key | - |

Develop Database

| | |
|----------------|---|
| Address | http://101.43.110.249:27017/ |
| admin username | boxjelly |
| admin password | di_boxjelly90082 |
| Connection URL | mongodb://boxjelly:di_boxjelly90082@101.43.110.249:27017/ |

Develop Web

| | |
|---------|---|
| Address | http://101.43.110.249/ |
|---------|---|

Production Web

| | |
|---------|---|
| Address | http://115.146.95.215/ |
|---------|---|

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 |
|--------------------------|-------------------|---|---|---------------------------------|----------------------|
| Support SNOMED CT | Yes | Yes | Yes | Yes | Yes |
| Mapping | Yes | Yes | Yes | Yes | Yes |
| Automapping | Yes | No | No | No | Yes |
| Search Engine | Yes | Yes | Yes | Yes | Yes |
| RESTful APIs | Yes | Yes | Yes | Yes | Yes |
| Custom Mappings | Yes | No | No | Yes | Yes |
| Technical Support | Yes | No | Yes | - | - |
| Company Location | AU | US | US | US | US |
| Pricing | 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 |

Docker command

This page is to share some common commands of docker

What is Docker?

Docker is an open-source platform that enables developers to automate the deployment, scaling, and management of applications within containers. Docker containers package an application along with its runtime environment, libraries, and system tools - essentially, everything that the application needs to run. This allows applications to run reliably and consistently across different computing environments.

Docker Common Commands

Below are some commonly used Docker commands:

1. `docker version`: This command is used to show the Docker version information.
2. `docker info`: This command provides system-wide information regarding the Docker installation. This includes details such as the number of containers and images, etc.
3. `docker pull [OPTIONS] NAME[:TAG|@DIGEST]`: This command is used to pull an image or a repository from a Docker registry server.
4. `docker push [OPTIONS] NAME[:TAG]`: This command is used to push an image or a repository to a Docker registry server.
5. `docker run [OPTIONS] IMAGE [COMMAND] [ARG...]`: This command is used to run a command in a new container. If the image does not exist locally, Docker will try to download it first.
6. `docker ps [OPTIONS]`: This command is used to list the currently running Docker containers.
7. `docker stop [OPTIONS] CONTAINER [CONTAINER...]`: This command is used to stop one or more running containers.
8. `docker rm [OPTIONS] CONTAINER [CONTAINER...]`: This command is used to remove one or more containers.
9. `docker images [OPTIONS] [REPOSITORY[:TAG]]`: This command is used to list the images.
10. `docker rmi [OPTIONS] IMAGE [IMAGE...]`: This command is used to remove one or more images.
11. `docker build [OPTIONS] PATH | URL | -`: This command is used to build an image from a Dockerfile.

Remember to replace [OPTIONS], NAME[:TAG|@DIGEST], IMAGE [COMMAND] [ARG...], and CONTAINER [CONTAINER...] with your actual parameters when you use these commands.