University of Wollongong

CSIT321 PROJECT 2021

A5: Progress Report and Initial Design

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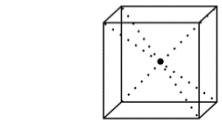

KODIMENSION

Report prepared for:

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Executive Summary

DICOM stands for **D**igital **I**maging and **Co**mmunication in **M**edicine which is commonly familiarised within the field of radiation therapy. DICOM software is utilized to help process, transfer and store medical imaging data. To further assist radiation Oncologists and enhance the functionalities of current existing applications in the market, an open-source solution such as OnkoDICOM has come to place. The project will be developed under the guidelines and requirements from product owner Dr Andrew Miller. The goal of the project is to expand and incorporate the product's functionality including image fusion, manipulation of Regions of Interest and plugging for machine learning functionalities when processing data.

The key requirements and focuses of the system for this year are listed below:

- Establishing the connection to SQLite database
- Opening and reading of DICOM images with the following formats DICOM-RT, CT, MRI, PET
- Closing of DICOM images without tempting unintended data
- Expanding current functionalities of viewing DICOM images
- Allowing **image fusion** between DICOM-RT, CT, MRI and PET images
- Expanding current manipulation of regions of interest
- Providing plug-in feature for **machine learning** capability

The above requirements have been delegated amongst the three teams working on the OnkoDICOM project this year (2021). Our team, Kodimension, will primarily focus on implementing the image fusion functionalities.

In this document, project development process will be investigated and broken into the following sectors:

- Analysis on Design Methodologies to help determine the choice of methodology for the product
- Research on possible product Development Environment and Deployment Environment including all the tools that will be utilized
- Comprehensive Analysis on the product's system Requirements and a reflective overview on the requirements' progression so far into the project.
- Revision of project risks and the strategies implemented to mitigate and or reduce them.

This report will document the progress made by our team, Kodimension, on the assigned requirements of the OnkoDICOM project so far into 2021.

Revision log

Version Number	Updated By	Reviewed By	Version Description	Changes Made
1	Team19		First Submission	-
2	Kodimension	Jie Yang	Assignment 5	Group name, officially assigned group requirements elaborated.

Introduction

This document will provide a revision on the system requirements of the OnkoDICOM project and report on the progress made by Kodimension throughout the first half of 2021. The project is currently under its third year of development, aiming to further improve and expand on its functionalities. The application adopts open-source technologies which offer radiation Oncologists a platform to operate and study on standard datasets such as DICOM-RT, CT, MRI and PET.

This report will include: a brief Project and Method overview adapted from the Project Requirements Documentation(A2), Requirements (modified and extended), Risk Analysis, Interface Designs and Information Architecture**.**

In-scope

The product is to meet the requirements from Dr Andrew Miller, the outcome of the project scope can be found below:

- Successful opening of all DICOM files
- Enabling image fusion of DICOM-RT, CT, MRI, PET into one data set
- Expanding current manipulation of regions of interests
- Allowing plug-in feature for machine learning algorithms

Out-of-scope

For this project, the team is not required to develop a web-based counterpart for OnkoDICOM.

Design Methodology

Scrum, an agile framework, is the development methodology chosen for this established project that our team will continue to develop on. The project began with our team primarily communicating with Ashley Maher (Scrum Master) in weekly meetings so that we are adequately trained on effective communication and practising the scrum methodology. From Spring session onwards, our team has transitioned to liaising directly with Dr. Andrew Miller (Product Owner) to identify tasks while the Scrum Master will continue to assist our team in facilitating the scrum ideology. The project progress will be tracked via a series of sprints created through Redmine. Any queries from the team regarding the product development can be communicated to Dr Miller through Slack, and queries related to the subject outcomes can be communicated to Dr. Jie (Jack) Yang (Project Supervisor) either during consultation times and via email, and to Ashley Maher through Slack.

The team will be employing the following structure throughout the development of this project:

- Weekly Group Meetings
  - Discuss upcoming assignment details
  - Discuss any issues that the team needs clarification on
  - Provide materials required for the weekly sprint meetings
- Weekly Sprints Meetings
  - Discuss any issues or difficulties related to the project
  - Present the completed sprint tasks for the week
  - Identify tasks required to complete for the following weeks sprint
- Scrum Daily Stand-up
  - Performed through Slack in the mornings
- Redmine tickets
  - Create tickets for the tasks needed to be completed each week
  - Create sub-tickets when necessary (log any progress or issues)

Advantages of Scrum

Dealing with international crisis: The appearance of COVID-19 has affected the living situations of every member on the team and subsequently increased the difficulty of team members being able to meet in person and completing tasks. The use of weekly sprints through scrum allows the team to adapt to missed goals and understand the progress made.

Better quality: The use of scrum allows the team to receive immediate feedback from the scrum master or product owner after a sprint ends and before a new sprint starts. This will allow the team some time to implement any missing requirements immediately.

Development Environment

The following table list the development tools and languages that are to be used for the development of the product. Our team will be looking at utilising PySide6, and Python to develop the product.

Table 1 Development Tools/ Languages

Development Tools/Languages	Description	Reasoning
Python	An object-oriented, high-level programming language with dynamic semantics	Python has been chosen for this project as the current OnkoDICOM is written using Python.
PySide6	It is the official Python module of the QT Python project, providing access to the complete QT 6.0+ framework	PySide6 is the framework we are using for the new added image fusion feature thus is essential for the OnkoDICOM project.

Front-End

Since the development of the system will be consisting of the use of the PySide6 MVC framework, the front-end of the system will be referred to as the 'View Class'. The view classes will provide the GUI for user interactions. With the 'delegate' or 'controller' class handling data inputs.

Back-End

In the back-end development of the system, the information will be processed using the 'Model Class' of the framework. Where the 'delegate' handles as the controller and communication between the front-end and back-end.

In terms of server side, the system will be required to connect to SQLite database to which database will also be handled in the backend.

Deployment Environment

The following table details the operating systems that are considered for the deployment of the product. Currently, the user wants the application to work on both Windows, Mac OS, and Linux.

Table 2 Operating Systems

Operating System	Description	Reasoning
Windows	An OS developed and published by Microsoft.	The user would like the OnkoDICOM applications to be compatible with the existing Windows, Mac OS, and Linux operating software.
Mac OS	An OS developed and marketed by Apple Inc.	The user would like the OnkoDICOM applications to be compatible with the existing Mac operating software.
Linux	An OS or a kernel distributed under an open-source license.	The user would like the OnkoDICOM applications to be compatible with the existing Linux operating software.
SQLite	A C-language library that implements a fast, small, self-contained, high reliability, full-feature, SQL database engine.	SQLite has been chosen as the database where the DICOM files will be stored in.

Aside from the operating systems, SQLite is also used for the deployment of OnkoDICOM. The C-language library has been chosen as the database where the DICOM files will be stored in as it implements a fast, small, self-contained, high reliability, full-feature, SQL database engine.

Tools

OnkoDICOM requires many tools throughout its development life cycle. The current tools are listed below and categorised into Project Management and Development tools respectively:

Project Management:

- **Slack:** This is the platform used for written communication between the project team and the team leader, product owner and expert
- **Zoom:** This is the platform used to hold virtual team meetings with the project team and project manager. It is also the platform for the product owner and expert to give demonstrations and for all stakeholders to give presentations.
- **Redmine:** This is the platform where project documentation, product backlog and sprint documentation are managed and stored.

Development:

- **UMLet:** This UML drawing tool is used for creating UML diagrams to represent the MVC architecture of OnkoDICOM.
- **Balsamiq:** This tool is used for drawing the wireframes for the Image Fusion and PET/CT View GUIs to be implemented in OnkoDICOM.
- **PyCharm:** This IDE is the development environment for OnkoDICOM
- **GitHub:** This online platform hosts the OnkoDICOM source code and is used to adjust and fork code.
- **Linux/Ubuntu:** This operating system is the environment in which the OnkoDICOM application is modified and tested during development.
    - Ubuntu 18.04
    - Ubuntu 20.04
- **Windows and Mac:** These operating systems are used to test OS based differences during OnkoDICOM testing.
    - Windows 10
    - Mac OS Catalina 10.15.7
- **Oracle VM VirtualBox:** This program is used to host the Ubuntu VM, as all team members have windows/mac computers and require access to Ubuntu for development
- **OnkoDICOM:** This is the program the team is working with and knowledge of how the program functions is necessary for development

Requirements Progress

Note: As there are three teams working together working on the OnkoDICOM project, our team, Kodimension, has been assigned **requirements 4, 6, 7 and 8** exclusively. For contextual purposes, we have still mentioned requirements 1, 2, 3 and 5. Our progress on these requirements are outlined in the relevant sections below.

First Requirement

The user currently wants the system to be able to pull DICOM(.dcm) files off an SQLite database and open DICOM files containing CT, MR and PET/CT image sets. The user wants to be able to open DICOM files pulled from the database in a fault-tolerant procedure.

Second Requirement

Region on Interest (ROI)

When applying a Draw ROI on a slice, only that specific slice contains information of the ROI. The user wants to be able to apply the ROI on a targeted volume and the system automatically applies a rough sketch of the ROI of every slice related to the targeted volume (that is every slice before and after the current slice).

Third Requirement

Region of Interest (ROI)

Currently the ‘Draw ROI’ tool functionality creates a new window for the user to be able to perform ROI analysis on a specified slice in the image set. This new window, display a similar user interface compared to the main menu. The user wants to perform the ‘Draw ROI’ tool within the same window of the main window and eliminate a new window pop for every time the user wishes to draw a ROI.

Fourth Requirement

Image Fusion

The user wishes to be fuse images between CT, MR and PET (under the assumption that the PET images have not already been combined as a PET/CT image set). That is to be able to impose images sets of different image acquisition modes against each other.

Typically, fusing at this current involves in a process of two image sets that may be misaligned, translational and rotational values are used to align image sets together. The DICOM file stores these values so when the user opens the DICOM image sets, the images are fused based on the translate and rotate values.

Progress: The user interface components required for the Image Fusion tab have been implemented to the system. Further details can be found in subsection *Image Fusion GUI* under section *Interface Designs*. We are currently working on displaying and manipulating an overlaid image separately whilst investigating the Platipy library.

Fifth Requirement

Operating Software Compatibility

The user wants the OnkoDICOM application to be compatible with current existing Operating Software: Windows, Linux and Mac OS. The user wants to extend the compatibility and therefore the usability to satisfy the needs of radiation oncologists and medical physicists globally.

Progress: Aside from the progress from last year's team, we have yet to make further progress.

Sixth Requirement

Currently the dose-volume-histogram (DVH) becomes exported into a CSV file with the use of 'EXPORT DVH', where information is stored about the patient ID, RT_STRUCT, volume and dose (cGY) in 10 cGy increments. The Pyradiomics also can be exported into a CSV, containing information of versions of libraries installed and calculations of the image taken under the ROI.

The user wants information of the DVH and Pyradiomics to be stored back into the DICOM_SR (Structured Reporting) file. Where this file contains information to the DVH and Pyradiomics information and be able to extract the information back to CSV files. The user also says, if possible, to do this in a batch process.

Progress: Yet to start.

Seventh Requirement

Machine Learning Functionality

The user wants there to be a plug-in functionality available for OnkoDICOM in the event the user wishes to implement a machine learning algorithm in their analysis.

Progress: Yet to start.

Eigth Requirement

PET/CT View

The user would like to be provided with images that contain a PET view, an axial CT view, an overlay view alongside with a maximal intensity projection which allows for rotation. It will also offer users with the options to alter the view to sagittal or coronal. An alpha slider is needed to allow the user to change the transparency level of the overlaid PET scan, thereby adjusting the extent to which the CT and PET images are to be fused.

The user mostly should not be required to choose both CT and PET scans given the reason that any PET scan will come with a matching, fused CT image set. Furthermore, both the PET/CT scans will be made available for fusions with other scans.

Progress: The user interface components required for the PET/CT View tab have been implemented to the system. Further details can be found in subsection *PET/CT View GUI* under section *Interface Designs*. We are currently working on implementing its functionality.

Interface Designs

Changes to the existing toolbar

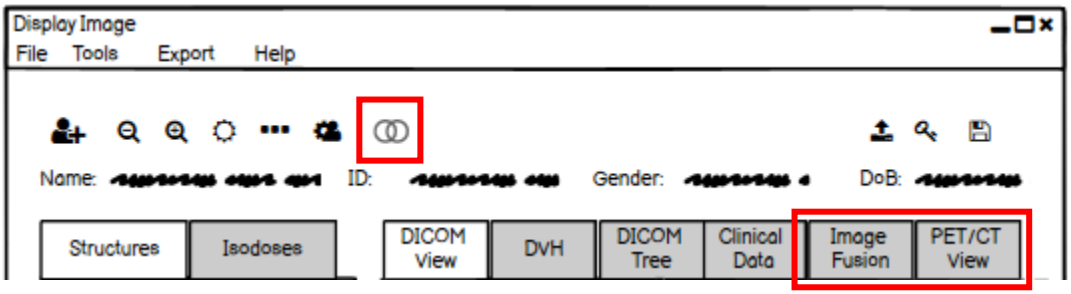

Figure 1 Wireframe of the updated toolbar and navigation tabs

Two new tabs have been added to the current OnkoDICOM: Image Fusion and PET/CT View. A button that enables the image fusion functionality has been added to the toolbar. To increase affordance, a venn-diagram icon has been chosen to represent the image fusion button as it illustrates the merging of two (or more) sets of items. The design patterns integrated in these two new GUIs are outlined below.

Image Fusion GUI

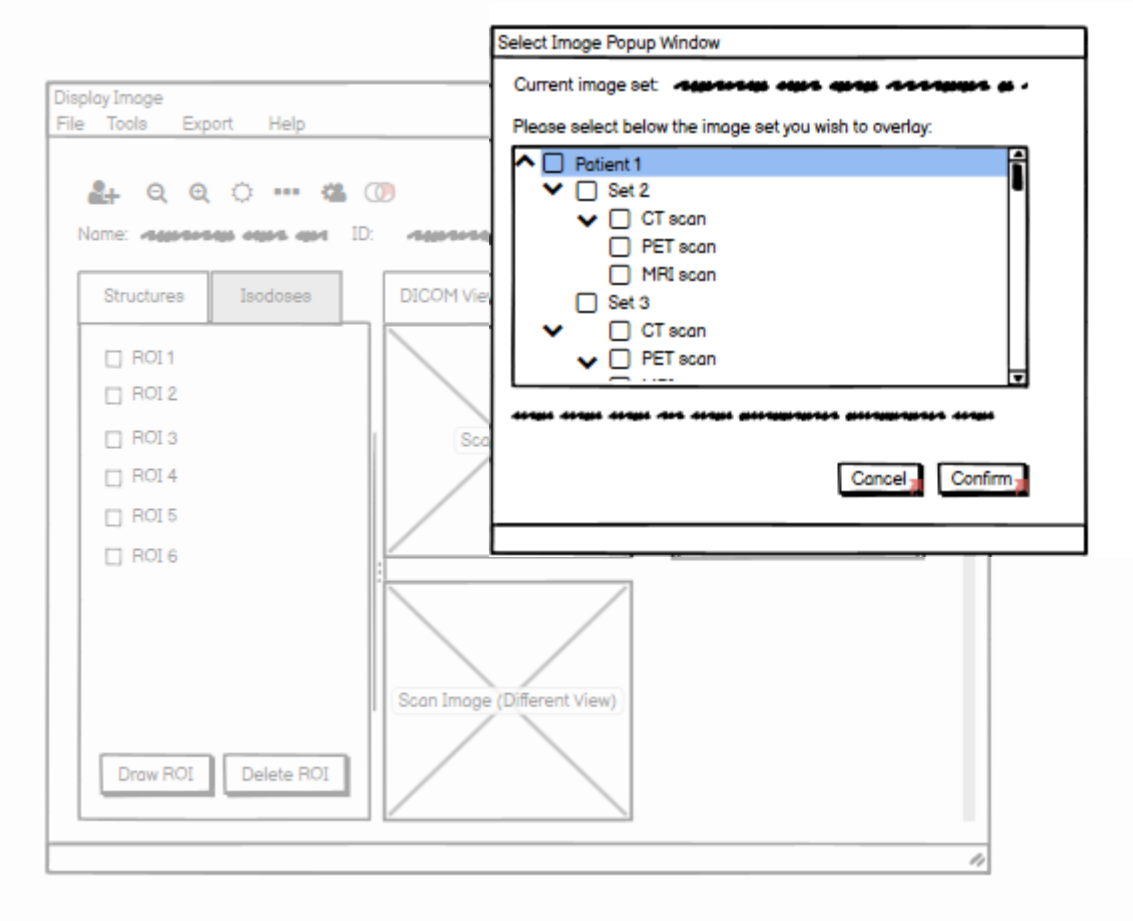

Figure 2 Figure 2 Wireframe of the "Select Image" pop up window upon clicking the Image Fusion button

Upon clicking the Image Fusion button as highlighted in Figure 1, a pop up window will appear and prompt the user to select the scans they wish to fuse from the current patient folder. This information is shown at the top of the window and acts as a security/ error prevention measure. The sets of images available in the current folder are arranged in a hierarchical structure which allows the user to be aware of their location within the folder. There is a vertical scrollbar on the right to help ease navigation. Affordance is addressed in the “Cancel” and “Confirm” buttons as they will be coloured red and green respectively, thereby also maintaining visual consistency throughout OnkoDICOM. To address modality and help the user focus on the task at hand, interactions can only be made within the “Select Image” popup window until either the “Confirm” or “Cancel” button has been clicked.

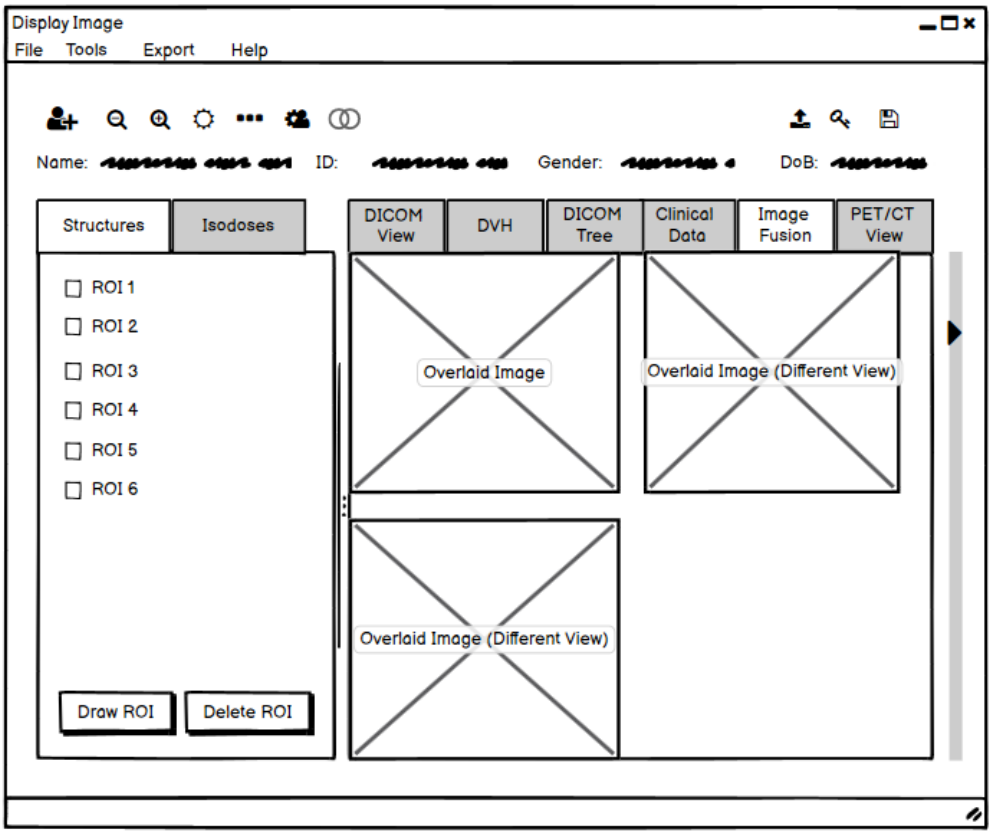

Figure 3 Wireframe of the "Image Fusion" tab

Once the images have been confirmed in the pop up window illustrated in Figure 2, the user will be taken to the Image Fusion tab where the overlaid images will be displayed in a layout similar to the DICOM View tab.

Note: This tab does not appear initially in the OnkoDICOM GUI and is triggered by the Image Fusion functionality only. Figure 3 illustrates the four-window view functionality which is not implemented by our team and thus, would not be elaborated in this document.

PET/CT View GUI

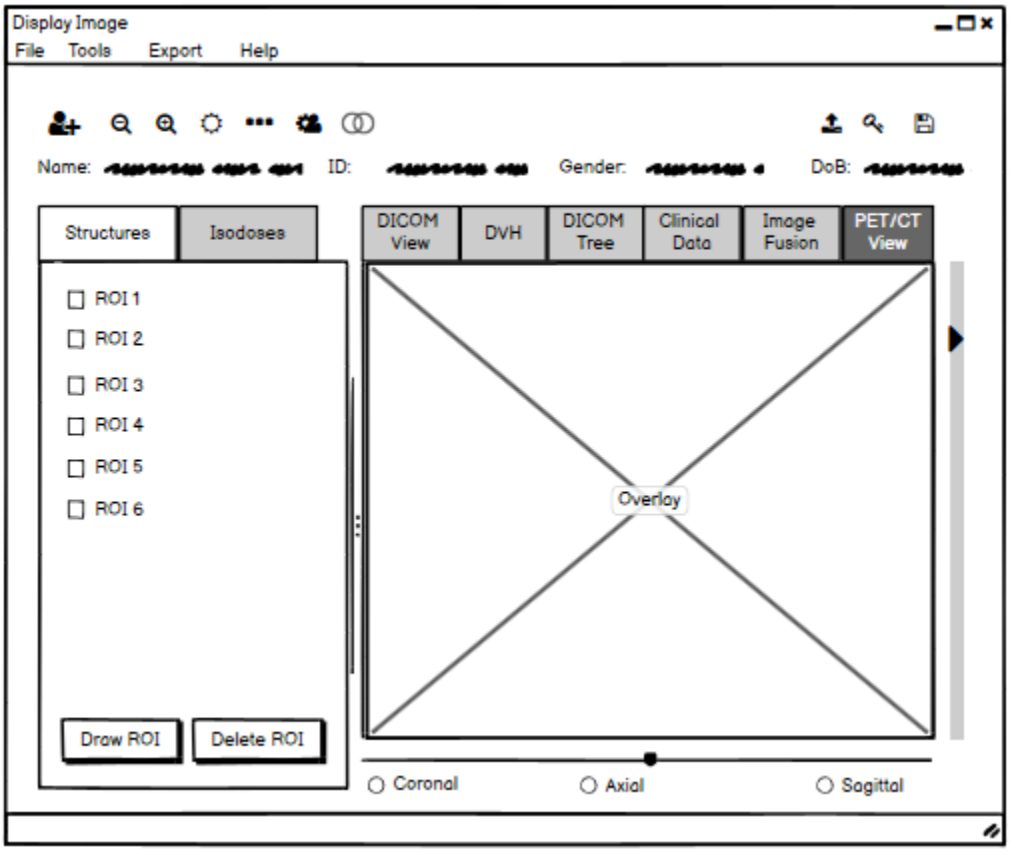

Figure 4 Wireframe of the PET/CT View tab

The functionality of the PET/CT View is initially disabled. To indicate this, its navigation tab is initially grayed out. The gallery window/container displays fused slices of the PET/CT scans. The purpose of the vertical slider bar on the right hand side functions similarly to that in the DICOM View tab. This maintains consistency and increases the learnability of OnkoDICOM.

Below the gallery container is a horizontal slider and a set of three radio buttons labelled Coronal, Axial and Sagittal respectively. The former is the alpha slider, which allows the user to adjust the opacity of the fused images. In other words, on one extremity of the slider, the gallery container will display only the PET scan and conversely for the other extremity, the CT scan. By implementing the slider, the user is confined to selecting a valid opacity level within the range provided. The set of radio buttons enables the user to switch between the three aforementioned views, however, the default view will be Axial.

Information Architecture

The system will expand out the current system design which currently exists as a Model-View-Controller (MVC) Pattern. This architecture pattern currently using the PySide6 framework accommodates the deployment of the software as a desktop application. PySide6 is a user interface and applications framework for desktop platforms. The current system has been updated from PyQt5 to PySide6 to remain leading-edge with the current version of libraries and Python3.8.10. Provided below is a MVC representation of the current system.

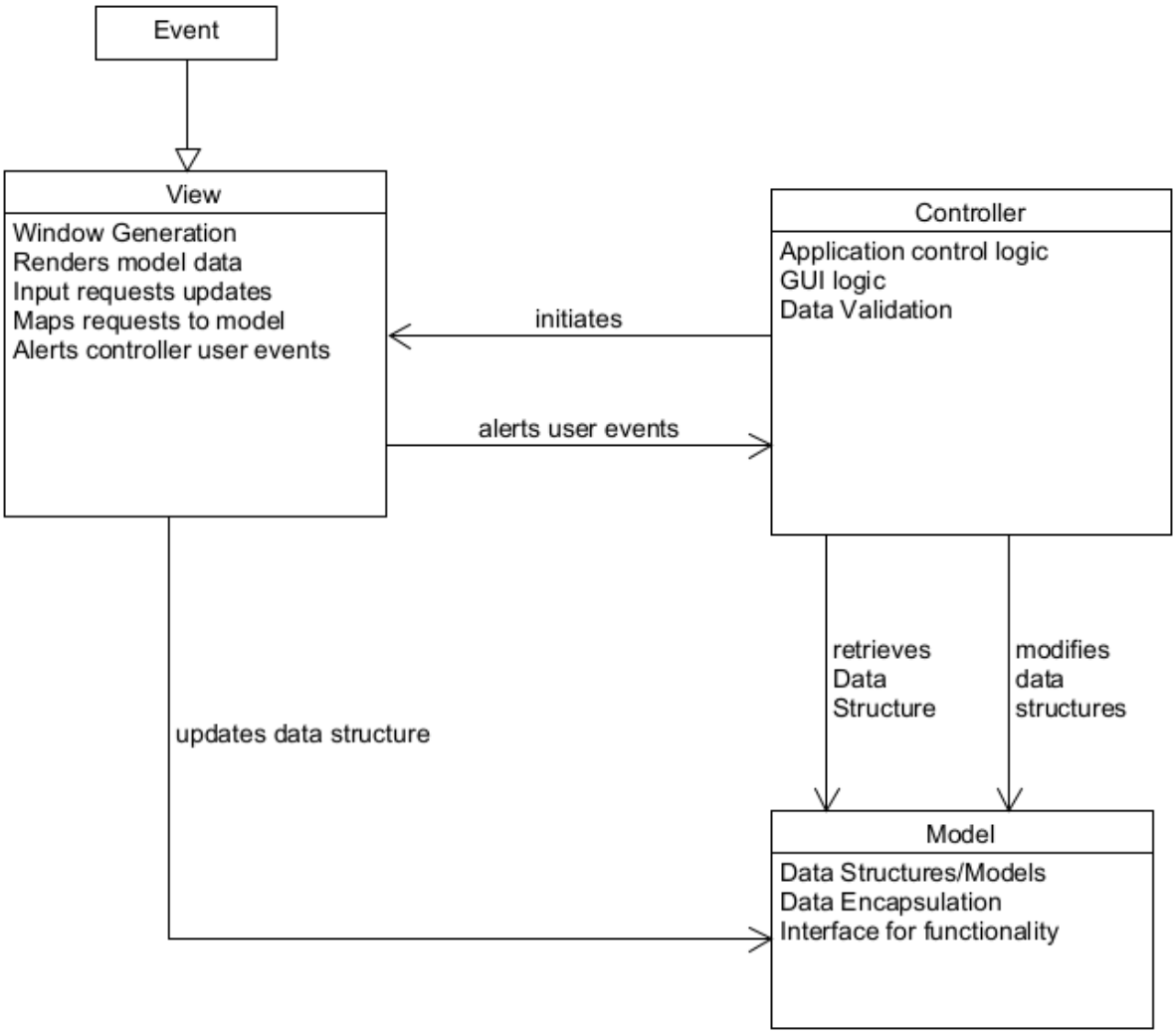

Figure 5 MVC representation of the current system

The current solution design involves in designing the necessary classes for Image Fusion, following the MVC pattern. The functional requirements mentioned in previous documents will be explained further in detail within this section.

The Product Owner has requested the system to be implemented with Image Fusion and PET/CT viewer. They are described as:

1. Image Fusion:
    a. The user wants the system to have a UI design that allows the user to request Image Fusion
    b. The user wants to be able to select which images to co-register/fuse and display the resulted image in a new tab in the “mainpage” of the system
    c. The user wishes to be able to view the axial, sagittal and coronal views as three separate views and a fourth view of the image rendered.
2. PET/CT:
    a. The user wants to be able to view PET/CT image in a separate tab of the window and have a slider that displays how much of the PET or the CT image.

The image fusion functionalities have been defined as of this moment and the PET/CT functionalities will be considered after the functionality of image fusion has been implemented, to follow agile development. The solution design features will involve in a creating the necessary classes within the architecture to produce the necessary user interactions for users. This will involve in creating a new icon within the toolbar to access the image fusion functionality.

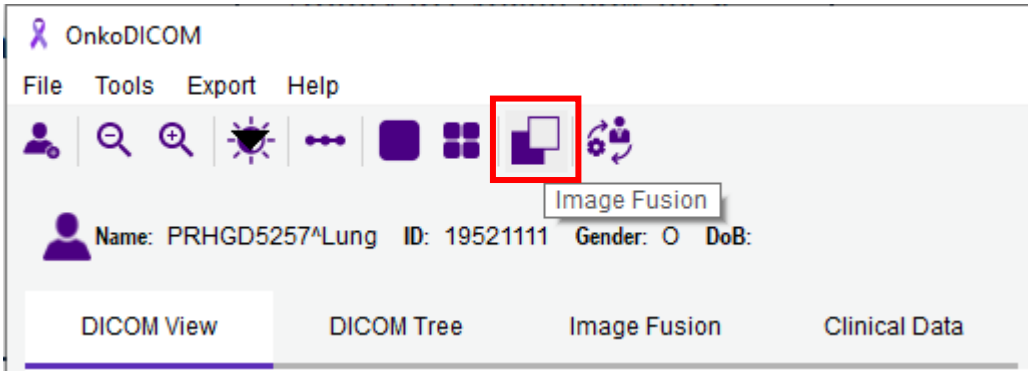

Figure 6 Implemented button for Image Fusion

The main access for image fusion has been decided to be placed within the toolbar to follow the main purpose of the existing toolbar, an ease of access to the core functionalities of image manipulation. This is prelevant with the existing “Zoom-In”, “Zoom-out”, “Transect” and single or four window view that exists in the toolbar. This has been determined to be the most suitable design as the user interacts the toolbar, the user will be able to determine each icon of the toolbar as a functionality associated to image manipulation.

For the time being, an adapter pattern will be deployed for this functionality and while it is still yet to be implemented, design patterns will be considered while expanding out the functionalities of image fusion. Shown below is the current implementation for prompting the selection of image(s) for fusion, this benefits for modularity and low-coupling.

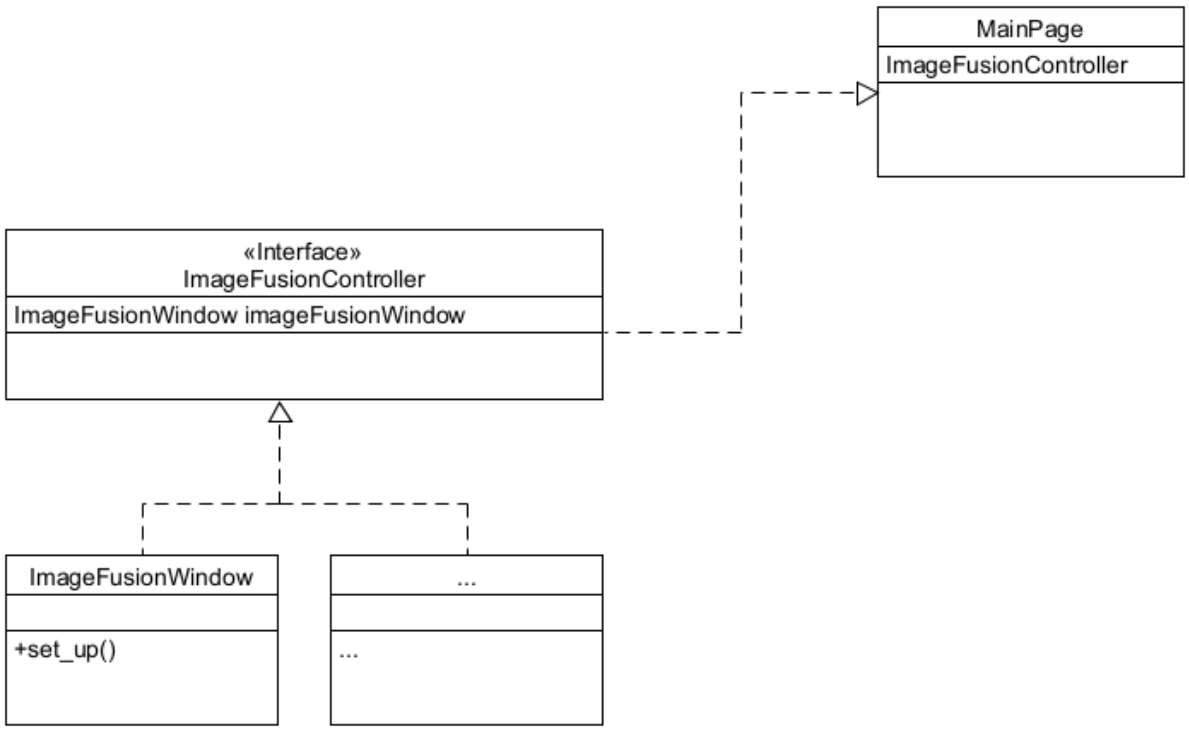

Figure 7 Class diagram of the ImageFusionController

When pressed, the icon will open a pop up window (without closing the main window) as this will provide the user the functionality to select the image to fuse with. The idea is to produce a secondary window, allowing the user to maintain the view of the main window in order to accommodate the need of the user, in the event of when they want to continue to view the existing image. This is also appropriate as if the user, by forgetfulness has already fused the images displaying both the main window and the select patient (for image fusion) will prevent any errors involved.

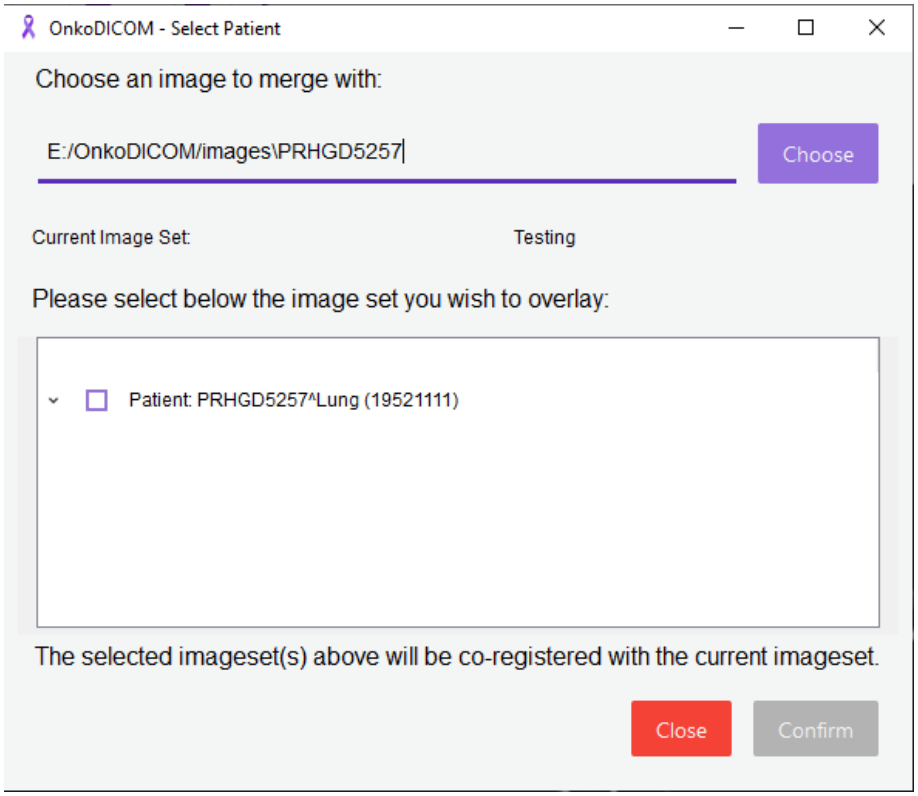

Figure 8 Secondary window prompting the user to select a patient for Image Fusion

After selection of a fused image, the team will implement the solution of presenting the fused image in a new tab in the main window. The solution of producing in a new tab is to preserve the information that each tab displays. The DICOM View displays the main image of the DICOM files, DICOM Tree displays information regarding to a slice of the dataset, as patient DICOM files come in a number of slices. As each tab presents different information, the decision to present the fused image in a separate tab is preserve the presentation of data and the method of the presentation. By default this tab will not be opened until after the user has confirmed on selecting the images for fusion.

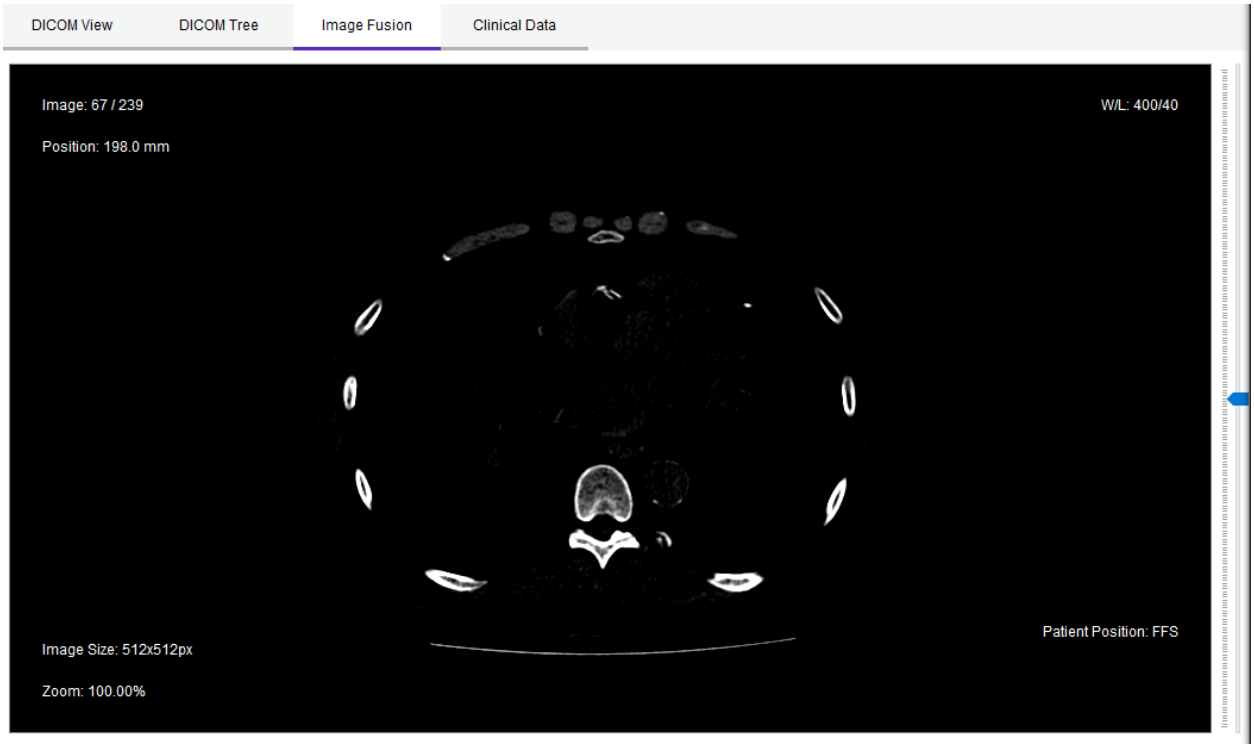

Figure 9 Fused Image displayed in Image Fusion tab

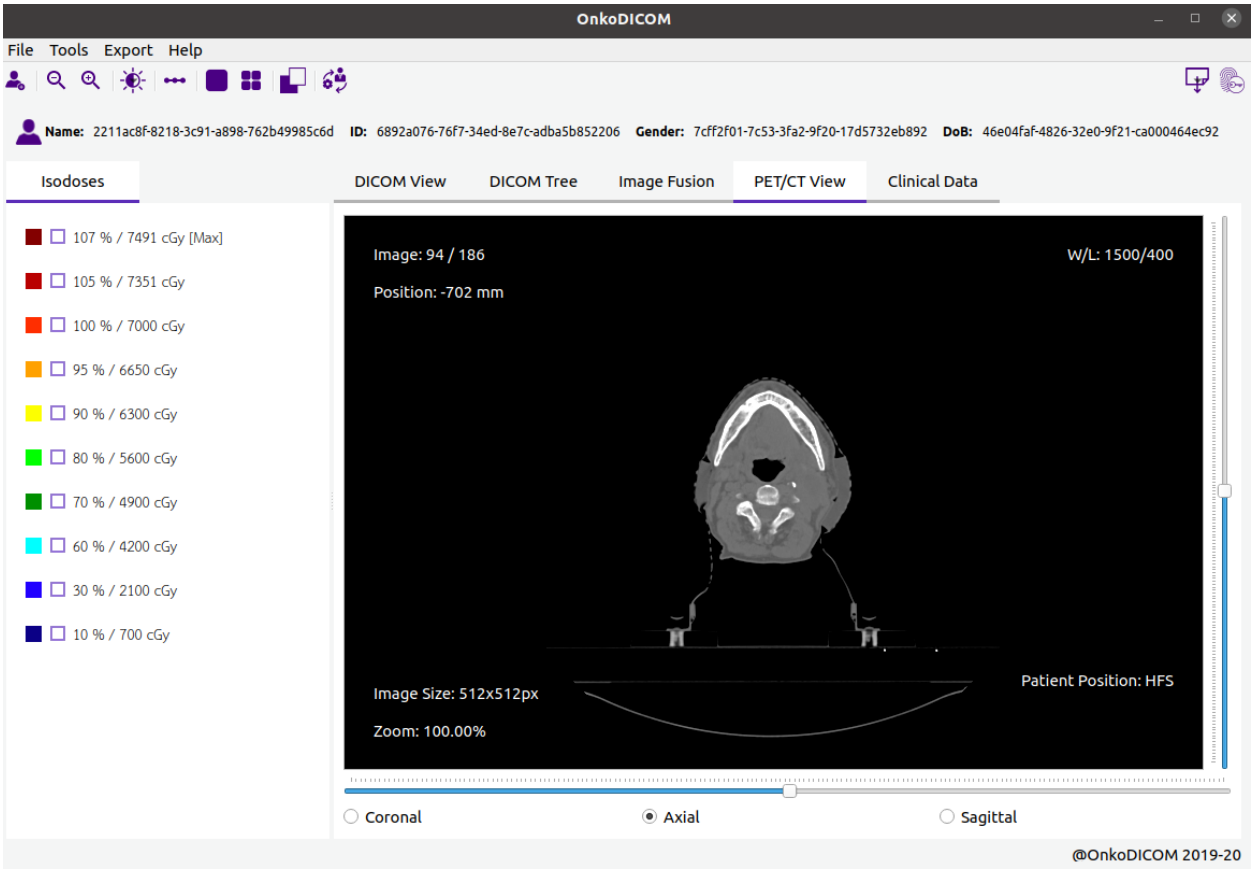

Figure 10 Implemented PET/CT View GUI

Afte

Risks, Issues and Dependences Update

Risk Identification

Revised from A2.

Table 3 Risk Identification Matrix

ID	Impact Rank	Probability	Name	Description	Category	Cause	Response
1	Medium	Medium	Transition from old team to new team	Transition from old and new team will impact the development of the system as the new team will need to develop an understanding of the system in its current state. The new team will need to understand the system in order to introduce new features or continue to enhance pre-existing features.	Time-risk	The new team will have a different work ethics and productivity will differ. There is also a difference in skill sets.	Team will develop the necessary skills to collaborate as a team to work with the project manager. Team will also develop their skillsets to provide benefits to the system.
2	High	High	Learning OnkoDICOM	The new team will be required to understand the system functionalities and the source code. SQLite database is also another system functionality used to	Technical	Team does not have knowledge of the system	Team will study the system's functionalities.

				store and access DICOM(.dcm) files.			
3	High	High	Learning the system's framework	The team will need to learn the current framework the system has been developed in. The current software is built on PyQt GUI framework.	Technical	Team does not have knowledge of the framework the system has been written on.	Team will study the PyQt5 framework.
4	Medium	High	Application of Agile methodology on Redmine platform.	The Redmine platform will be used as SCRUM framework for communication and organization between the SCRUM master/project manager and the rest of the team.	Time	New SCRUM platform that may be unfamiliar to the team. Proprietary system used for documentation of OnkoDICOM	The team will be required to understand how the platform can be used.
5	Low	High	Team miscommunication	Due to the current circumstances od COVID-19, the team communication methods have been impacted. This reduces face-to-face meetings. Online communications methods such as Zoom and Slack have been employed.	Communication	COVID-19	Developers will adapt their communication habits to the circumstances.
6	High	Medium	Patient data may be visible	Patient data may be present even after processing.	Technical	The patient data may be exposed to the development team.	Team will remain confidentiality

7	Medium	Low	Team member unavailable	A team member may become unavailable due to external factors. They maybe become unresponsive to communication methods such as: email, phone, Slack and Facebook.	Technical	An external factor may have caused the team member to become unavailable.	The first procedure is to reattempt contact via the main communication methods. If no communication has been deployed to the unavailable team member, then ask for project manager for further assistance.
8	High	Medium	Unit Test Case	In the event of unit testing, the unit tests could be designed poorly, incorrectly judging the system's performance.	Technical	Error in the unit test case	Fix the error
9	High	Medium	Overdue Sprint Ticket	When the progression of an assigned Sprint ticket is overdue	Time	It is likely students are overwhelmed with university-related or life-related events. Or possibly that the task workload would be too intensive	Communication with the project manager to determine best course of time management.
10	High	Medium	Understanding of project scope/ requirements	Project scope could be defined poorly from the previous documentations such as A2 and/ or lacking timely updates, consequently affecting the consistent understanding of the project requirements to	Technical	Misinterpretation of information obtained from stakeholder meetings. Difference in educational backgrounds also affect the students' ability to grasp	Regular engagement with the clients to confirm tasks to be performed. Communication with the product owner and project manager will mainly involve the logging and revision of

				be designed and developed across all team members.		particular requirements.	sprint tickets on the Redmine platform.
11	Medium	Medium	Learning Linear Algebra	There is an inherent requirement of mathematical knowledge from students as the successful implementation of the image fusion functionality requires a strong understanding of matrix multiplication and linear transformations. Incorrect design and application may lead to inaccurate outputs.	Technical	Linear algebra is not a mandatory subject for students enrolled in a course at the School of Computing and Information Technology.	The team will study the mathematical knowledge as required. Note: Team 19 has the option of having their mathematics students train the rest of the group.
12	Medium	Medium	Team Velocity and group dynamics	The pace at which the team completes assigned tasks could be significantly lower than the other contracted teams, consequently impacting on the overall project schedule and project owner satisfaction.	Time-risk, Communication	Each team member will have a different work ethic and pre-existing commitments.	Team members will work to compromise with one another by using their individual strengths to support one another. Daily Scrum comments to build mutual support and maintain open communication within the team.
13	Medium	High	Learning Platipy Library	The team needs to investigate the Platipy Library to see how they accomplished image fusion.	Technical	Team does not have knowledge of the library.	The team will liaise with Platipy authors Phillip Chlap and Robert Finnegan by arranging

							online meetings to resolve any issues.
14	Medium	Medium	Members' skill competency	A conspicuous gap between a team member's expected and observed skill level.	Technical	This may be affected by the team member's instinct/ approach.	Additional training with other team members. Regular interactions within the team to check in on progress.
15	Low	Medium	PEP-8 Compliance	The team's contributions must comply with the PEP-8 standards to ensure consistency and readability.	Technical	The team may be unfamiliar with PEP-8 standards.	Team members to review a self-produced video by Team 19 on PEP-8 compliance. Subunit of Team 19 to refactor any code from this year's pull requests that do not comply with PEP-8.

Risk Monitoring

Top Ten Risk Item Tracking

As part of Team 19's risk management strategy, Top Ten Risk Item Tracking is utilised to monitor the most significant risk items identified in the section above. This maintains the team's awareness of the risks, particularly those concerning communication and time, throughout the project life cycle of OnkoDICOM and periodically assess the effectiveness of the risk mitigation strategies put in place. The table below offers a comparison of the risks identified in the past two months (as of time of submission, we will be looking at monthly periods June – July and July - August 2021 respectively):

Table 4 Top 10 Risk Item Tracking June - August 2021

MONTHLY RANKING				
Risk Event	**Rank This Month (July 2021 – August 2021)**	**Rank Last Month (June 2021 – July 2021)**	**Number of Months in Top Ten**	**Risk Resolution Progress**
Learning Platipy Library	1	-	1	Issues so far have been resolved by communicating with the Platipy library authors. This has been an effective solution and will continue to be employed in the future if necessary.
Understanding project scope and requirements	2	-	1	Draft submissions to be reviewed by the project supervisor, the scrum master and the product owner before submission.
Member's skill competency	3	-	1	Regular check – in's on progress. Any questions

				to be asked in a timely manner.
Learning Linear Algebra	4	-	1	A subunit of the team with mathematical backgrounds have been revising linear algebra concepts covered in MATH203 and have been applying the knowledge to further their understanding of the Platipy library and image fusion implementation.
Unit Test Case	5	2	2	All pull requests involving unit tests are to be cross-reviewed by the other two teams.
Team Velocity and Group Dynamics	6	6	4	Due to the COVID-19 lockdown caused by the delta variant, our previous planned in-person meeting could no longer take place. The team will continue regular interaction via Slack.
PEP-8 Compliance	7	-	1	All pull requests to be cross-reviewed by the other two teams.
Overdue Sprint Ticket	8	-	1	Team to close tickets on time.
Team Miscommunication	9	8	4	Keeping up with daily scrum comments in Slack.

Team member unavailable	10	1	3	This was primarily due to the university's exam period for Autumn session and was naturally resolved upon the end of exams.

Note: The above ranking was determined with a special consideration to the deliverables required for the submission of this document.

Redmine Product Backlogs

The application of SCRUM on the Redmine platform has enabled the monitoring of task-associated risks as sprint tickets have the option to be logged with a parent task. This clearly establishes the dependencies between the affected and impacting tasks. Examples of this can be found in the product backlogs attached in this documentation.

Risk Mitigation Strategies

The table below defines risk mitigation strategies that will be deployed during the remainder of the project with Team 19.

Table 5 Risk Mitigation Strategies

Technical	**Communication**	**Time**
Increase frequency of monitoring team performance	Constant use of communication tools such as Slack, Discord and Facebook	Consistently create sprint tickets and assign members to tasks to their capability
Team discussion on research performed to increase team's understanding with the tools used.	Daily Slack Mornings (optionally on weekends)	Frequently update Sprint tickets to record team's progress
	Frequent communication between Project Manager and Team	Updating and closing tickets on Redmine.
	Regular logging of sprint tickets to ensure product owner and project manager remain aware of the tasks being completed by the team	

Reflection

The table below provides an overview of the requirements that we have completed so far:

Requirement 4	Requirement 5	Requirement 6	Requirement 7	Requirement 8
In progress.	To be continued.	Yet to start.	Yet to start.	In progress.

As requirements 4 and 8 are our most complicated tasks, we have dedicated the majority of our efforts to implementing that so far. Overall, we are satisfied with our progress on the project requirements. We have closely monitored and implemented appropriate strategies to overcome the project risks. As a team, we need to improve on closing our tickets to more accurately document our progress in Redmine.

Conclusion

This document is the continuation of the OnkoDICOM project, progressing into its third year. It is the summary of our team's development process comparing to our initial designs. It has provided an overview of our current user interface design together with our updated system development progresses.

As discussed in the requirement analysis, we have evaluated and extended our major system requirement, arranging form the initial region of interest to our group's speciality, image fusions and PET/CT view. To ensure the success of the implementing a viable product, our team has strictly followed the development principle of agile methodology and will continue to build on each iteration.

References

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Glossary

Word/ abbreviation	Definition
Computerised Tomography (CT)	Using computer processing to create cross-sectional image slices of the human anatomy, including organs and soft tissues, from a sequence X-ray images taken from multiple angles across the body. (Mayo Clinic 2020)
Dose Volume Histogram (DVH)	Information regarding to the amount of the ROI volume receiving Dose (cGy). (OnkoDICOM n.d.)
Machine Learning (ML)	The application of non-linear algorithms to get something for organisational/ prediction services
Magnetic Resonance Imaging (MRI)	3D anatomical images generated for the purpose of detecting, diagnosing, and treating diseases. The non-invasive imaging technology creates these images by tracking the rotational axis of protons present in the water that makes up living tissues. (National Institute of Biomedical Imaging and Bioengineering n.d.)
Positron Emission Tomography (PET)	An imaging test that requires the patient to consume a radioactive drug combined with a tracer. This will then concentrate in body areas with higher levels of chemical activity, which is normally an indicator of disease and show as bright spots in the images. (Mayo Clinic 2020)
Pyradiomics	A Python open-source library that examines the histogram and grey scale variations in scan areas designated as a Region of Interest (ROI). (OnkoDICOM n.d.)
Radiomics	The examination of the texture and statistical analysis of the image data rather than simply looking at the grade scale
Rt-structure Set (RT_Struct)	Contours and position on the CT, around the organs and tumour

Appendix

Link to Source Code

https://github.com/peteqian/OnkoDICOM

If you would like to run the program with a test folder, a link supplied below will direct you to a folder containing anonymized test data.

Test Data

https://uowmailedu-my.sharepoint.com/:f:/g/personal/lyfc012_uowmail_edu_au/EhIPyswlb7RMl0HATMY_FVIBfdc1eXNbxZqF0wHWL5DnUQ?e=2Qw5GT

Installation

Please follow this Installation Guide rather than the one supplied by the Project Wiki:

Ubuntu

Note: OnkoDICOM should work on other Linux distributions, however it has not been tested on them. If you identify any issues preventing OnkoDICOM from running on other Linux distributions, please make a ticket.
These instructions are based off this comment posted by @sjswerdloff

Onko can be installed on Ubuntu 18.04, if you do not run Ubuntu you can try it on a virtual machine such as Virtualbox A premade Ubuntu virtual machine can be downloaded from OSBoxes.

Onko requires virtualenv, python3-dev, gcc, Libopengl0 and git installed and can be installed by running this command in the terminal.

```
sudo apt install virtualenv git python3-dev gcc libopengl0*
```

Clone the Onko repository

```
git clone https://github.com/didymo/OnkoDICOM.git
```

Enter the directory and create a virtual environment with a name of your choice, in this case it's venv.

```
cd OnkoDICOM
virtualenv --python=python3 venv
```

Note that when cloning into a PyCharm workspace, it is recommended to create a virtual environment from the terminal *outside* of PyCharm, as PyCharm's built-in virtual environment creation often leads to issues with the pip version.

Activate the virtual environment

```
source venv/bin/activate
```

Install the requirements

```
pip install platipy
pip install -r pre-requirements.txt
pip install -r requirements.txt`
```

You can execute Onko by running

```
python main.py
```

Windows

In order to run OnkoDICOM on Windows, you will need to have installed:

- *64-bit* Python 3.7 or later. OnkoDICOM will not run on 64-bit computers that have a 32-bit version of Python installed. Additionally, OnkoDICOM has not been tested on 32-bit machines.
- Visual Studio Build Tools

If you do not already have virtualenv installed into your global packages, execute the command:

```
pip install virtualenv
```

First, clone the OnkoDICOM repository and switch to it:

```
git clone https://github.com/didymo/OnkoDICOM.git
cd OnkoDICOM
```

Then, create and activate the virtual environment:

```
python -m virtualenv venv
venv\Scripts\activate
```

If you get an error saying execution of scripts is disabled on your system, use this solution to fix it.

Once you are within the virtual environment, install the requirements:

```
pip install platipy
pip install -r pre-requirements.txt
pip install -r requirements.txt
```

After the requirements are installed, you can run OnkoDICOM with the command:

```
python main.py
```

OnkoDICOM will always need to be run within the virtual environment, so make sure it is activated before attempting to run Onko.

Plastimatch

To utilise OnkoDICOM's radiomics toolset, the external program Plastimatch is required.

On Linux systems that use the APT package manager, the following command can be used:

```
sudo apt-get install plastimatch
```

For Windows, the binaries can be downloaded from Plastimatch's SourceForge.

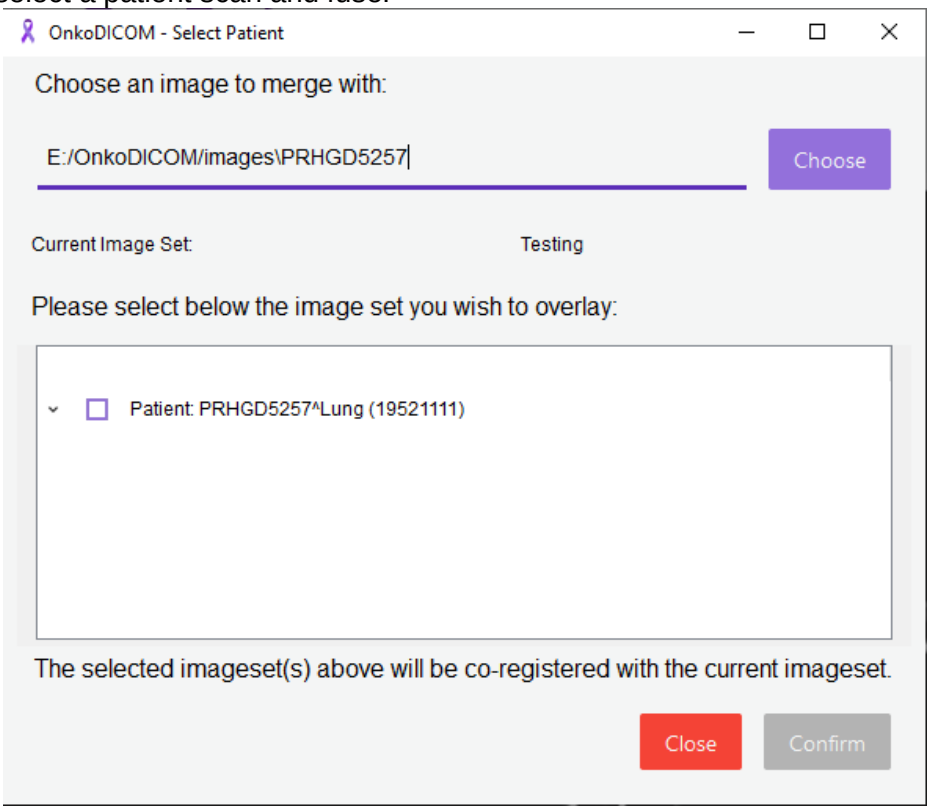
Note that in order to be able to use Plastimatch in OnkoDICOM on Windows, Plastimatch's binaries must be added to the system's PATH. Plastimatch's installation wizard will give you the option to add Plastimatch to the system PATH for the current or all users. Alternatively, the binaries can be manually added to the system PATH.

User Manual

The user manual for the released version of OnkoDICOM can be accessed via the link below:

https://onkodicom.com.au/sites/default/files/2019-10/OnkoDICOM.%20User%20Manual.pdf

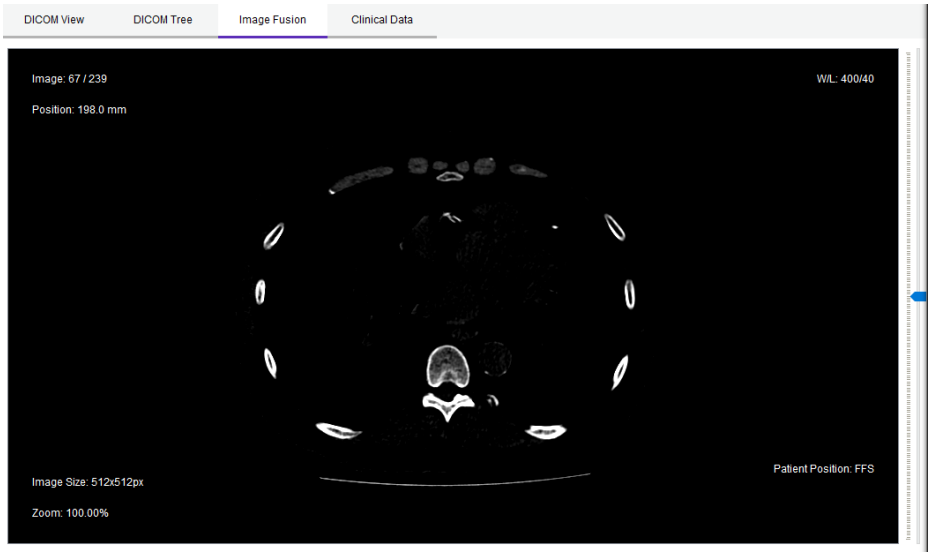
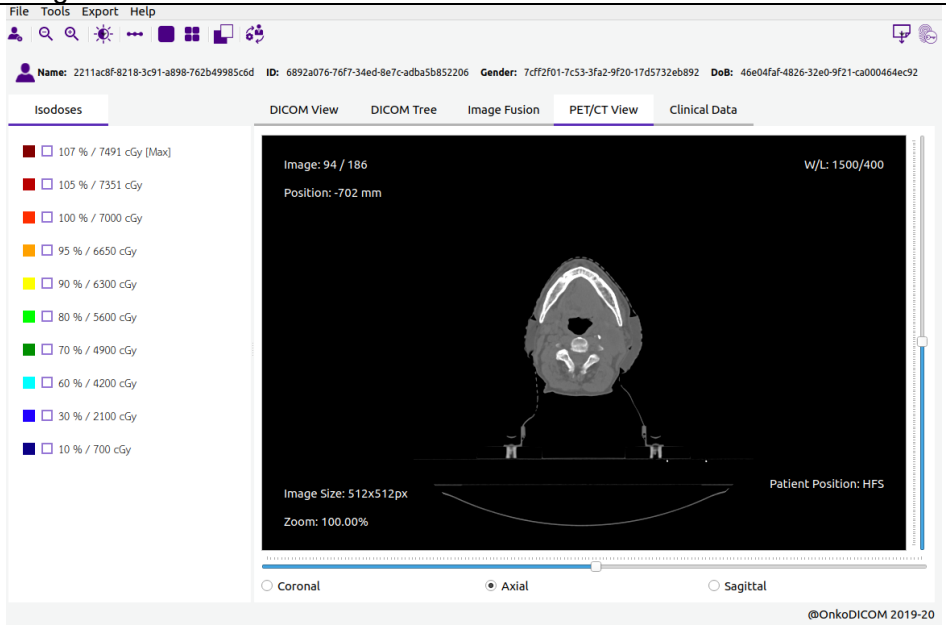
The following sections will outline how to interact with this year's added features:

<table>
<tr><td>Toolbar</td><td></td><td>  </td></tr>
<tr><td></td><td>  </td><td>Four Window View to switch from a single window to four smaller windows that display the image slice at different angles.</td></tr>
<tr><td></td><td>  </td><td>Image Fusion:
Press the Image fusion icon start the image fusion functionality. to select a patient scan and fuse.
 

From the pop up window, press Choose to if you wish to change the directory from which you want to select the image from.

Select a checkbox from the dropdown lists in the container to choose the image set you wish to overlay. Confirm your selected image set.

OR</td></tr>
</table>

		Close to exit the image fusion functionality.  Once confirmed, the fused image will be displayed in a new tab called Image Fusion.
PET/CT View		 **Drag** the vertical slider to navigate through the image slices in the opened set of scans. **Drag** the horizontal slider to adjust the transparency level of the PET scan over the CT scan. **Select** Axial, Coronal or Sagittal to display the image slice at your desired angle.

Style Guide

The purpose of this section is to enable consistency in interface designs across the team. The following subsections will catalogue Kodimension's tone, typography, colours, logos, and icons. These will collectively form the brand's overall identity and distinguish Kodimension from other competitors in the market.

Our Brand

Our brand name "Kodimension" is a compound word using "co" and "dimension", where the C in "co" is stylised with a "k". The "CO" in Kodimension alludes to "on-CO-logy", "CO-registration" (a mathematical concept required as a part of our image fusion implementation) and "CO-ding".

Typography

The primary font for Kodimension is Arial, a sans serif design that encompasses more humanist characteristics as it is more in tune with the temperament of the 20th century. The curve on Arial is more soft and fuller, and the terminal strokes are sliced on the diagonal which enables the face to appear less mechanical.

As a general rule, headlines should use Arial Bold with a font size of 16 whilst sub-headings will use Arial Regular with a maximum font size of 14 and a minimum font size of 11 according to the number of subheadings required. The body component will strictly use Arial Regular with a font size of 11.

Arial Bold

Aa This is a headline example

Arial Regular

Aa This is a sub-heading example

Aa This is a body copy example

Narrow	*Narrow Italic*	**Narrow Bold**	***Narrow Bold Italic***
Regular	*Regular Italic*	**Bold**	***Bold Italic***
Black			

Colour Palette

Gold is commonly associated with influence, success, achievement, and triumph. It is also inherently optimistic, uplifting and enlightening. Kodimension believes that utilising gold as a part of our colour palette can inspire and offer us the confidence to reach our potentials.

Black has also been added to our colour palette as it displays elegance and sophistication. The combination of black and gold enables our brand to appear more elegant and polished.

Kodimension has also included the colour Indigo in our colour palette to match with one of the current colours of OnkoDICOM in hopes that our solutions can further assist radiation Oncologists successfully.

WCAG contrast ratio

In terms of colour for our headings and sub-headings, #4B0081 passes the WCAG Large Text requirements against a white background with a contrast ratio of 12.99:1 and is therefore acceptable for usage.

Our coloured logo of gold gradients #E0B02D, #E0BE09, and #FAE473 passes the WCAG Graphical Objects and UI Interface Components requirement against a black background (#0D0D0D) with a contrast ratio of 7.5:1, 8.31:1, and 11.82:1 respectively. Our logos with black wordmark (#000000) and white background (#FFFFFF), and white wordmark (#FFFFFF) and black background (#000000) also passes the WCAG Graphical Objects and UI Interface Components requirement with a contrast ratio of 21:1 making them all acceptable for usage.

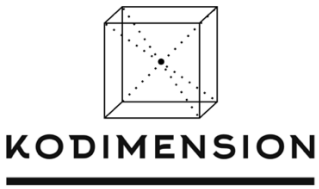
#E0B02D	#E0BE09	#FAE473
Gold Tips	**Sunflower**	**Sweet Corn**
RGB (224, 176, 45)	RGB (224, 192, 9)	RGB (250, 228, 115)
CMYK (0, 0.21, 0.80, 0.12)	CMYK (0, 0.15, 0.96, 0.12)	CMYK (0, 0.09, 0.54, 0.02)
HSL (43.91, 74.27, 52.75)	HSL (50.51, 92.27, 45.69)	HSL (50.22, 93.1, 71.57)

#4B0081	#0D0D0D	#000000

Indigo	Black	Black
RGB (75, 0, 129)	RGB (13, 13, 13)	RGB (0, 0, 0)
CMYK (0.42, 1, 0, 0.49)	CMYK (0, 0, 0, 0.95)	CMYK (0, 0, 0, 1)
HSL (274.88, 100, 25.29)	HSL (0, 0, 0.95)	HSL (0, 0, 0)

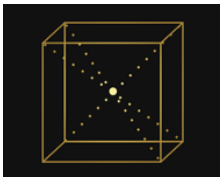
Logos

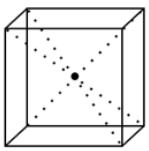
Our primary logo consists of a cube with dotted lines to convey the idea dimensions which is also utilised in our brand name. The minimum requirement for our primary logo is 160(W) x 95(H) pixels. Interface designs involving the use of this logo must leave a margin of at least 32 pixels on all sides to leave an adequate amount of whitespace around it to avoid any cluttered interface.

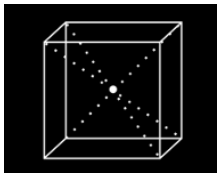


Icons

Our official icons are established below. The three icon variations exist to cater for different applications and or style implementations. Our icons do not include any wordmark like our official logos as this enables a more simple and neat design. All icons are to be used against background colours as illustrated below.







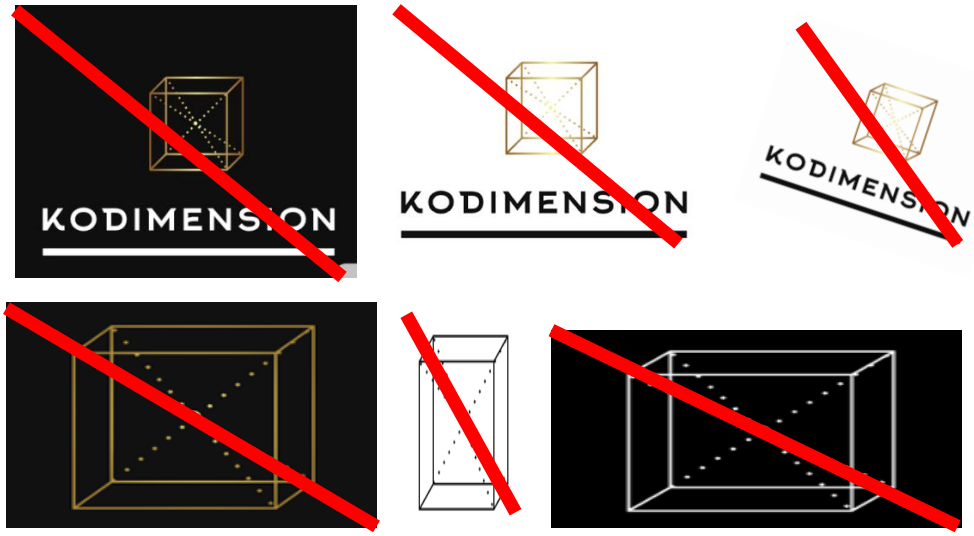
Logo Misuse

For Kodimension to preserve its brand recognition, it is crucial that our logo remains consistent. Any alternatives other than those specified in the sections above will not be accepted.

There shall be no variation of different colours against each background of any sort within the primary logo (accentuated below in Logo 1, 2, and 3). This means that only one colour can be used as the background colour and the other as the wordmark colour. Any rotations or distortion of the logo are examples of logo misuse (accentuated below in Logo 3, 4, 5, and 6). All logos must also keep their square aspect ratio of 1:1.

WCAG contrast ratio

In terms of the colour contrast ratio for the logos below, Logo 2 uses gold gradients #E0B02D, #E0BE09, and #FAE473 which does not pass the WCAG Graphical Objects and UI Interface Components requirement against a white background (#FFFFFF). Its current contrast ratio is 2.01:1, 1.81:1, and 1.27:1 respectively, and although the black (#000000) is acceptable against a white background (#FFFFFF), due to the gold gradients, the logo cannot be used as it does not meet the full criteria of WCAG.



Meeting Agendas/ Minutes Summary

Week/ Date	Meeting Agenda	Meeting Minutes
Week 2 (AUT) – 9th March 2021	Group Formation and Roles	Projects of interest discussed and member roles informally delegated.
Week 3 (AUT) – 17th March 2021	Final selection of top 3 projects	Projects selected – OnkoDICOM, Sunly, IMB. Project selection form submitted and client directly contacted.
Week 4 (AUT) – 23rd March 2021	Introduction to Redmine	Team members' accounts created on Redmine. Team Slack channel created as primary communication channel with ScrumMaster.
Week 4 (AUT) – 26th March 2021	Discussion of Assignment 1	A1 sections evenly distributed.
Week 5 (AUT) – 31st March 2021	Introduction to DICOM	Attended Zoom presentation by DICOM expert. A1 to be submitted by Peter Qian.
Week 5 (AUT) – 1st April 2021	Overview of Ticket Standards	Mini project assigned to all three groups. Team to devise sprint ticket structure in spreadsheet.
Week 6 (AUT) – 8th April 2021	Review Sprint Spreadsheet	All academic submissions must also be ticketed in Redmine. Sprint ticket structure needs improvement and provide feedback to other teams on their ticket structure.
Week 7 (AUT) – 13th April 2021	Overview of Assignment 2	Went over the specifications for Assignment 2. Noted questions to ask ScrumMaster.
Week 7 (AUT) – 15th April 2021	Revision on Sprint 1	More sprint tickets need to be logged. Improved version to be submitted for review.
Midsession Recess (AUT) – 22nd April 2021	A2 Requirements and Product Backlog Presentation by Dr. Andrew Miller.	Discussed product backlog and asked questions about OnkoDICOM's design methodology for Assignment 2 submission.

		Attended presentation by Dr. Andrew Miller on OnkoDICOM's purpose and current functionality.
Midsession Recess (AUT) – 23rd April 2021	Overview of Requirements	Assignment 2 sections distributed and associated tickets logged in Redmine.
Week 8 (AUT) – 29th April 2021	Meeting Format and Weekly Sprint	Prepare for next week's sprint. Team to download OnkoDICOM and investigate its class structure.
Week 9 (AUT) – 6th May 2021	Ticket Wording, Interface Design Feeedback	PyQt and Proxy Class models, need to get wireframe mechanism started
Week 9 (AUT) – 7th May 2021	Wireframe tool, mini-project view models	Use Balsamiq, Team 19 to make wireframes for the Select Directory window.
Week 10 (AUT) – 13th May 2021	Assignment 3, Mini project	UI sub-team to present options to Andrew, investigate existing MVC design pattern
Week 11 (AUT) – 20th May 2021	Assignment 3, Mini project	Pixel array for basic windowing and conversion resulting in a better image. Memoisation. Interface designs for Image fusion to be included without confirmation with Dr. Miller.
Week 12 (AUT) – 27th May 2021	Mini project	Continue with mini-project development
Week 13 (AUT) – 3rd June 2021	Sprint progress	Implementing a way to store default path into a config file, experimenting with unit testing
Study Recess (AUT) – 10th June 2021	Unit testing, PySide6 Migration, Exam management	Open Patient Window(Mini project) tested. PySide6 migration to be reviewed. Next meeting in a fortnight due to exams.
Winter Break – 24th June 2021	PySide6 Migration, UNSW Platipy Library	Research Platipy library to see if code can be refactored. Subteam of 2 – 3 to take on this task.

Winter Break – 1st July 2021	UNSW Platipy Library, Unit testing (mini project)	Explanation of fusion and how colourspaces should work. Check PEP-8 compliance in mini project.
Winter Break – 8th July 2021	Platipy Library, Unit testing (mini project)	Error regarding the file type – to be resolved with Platipy authors and Dr. Miller. Unit Testing for DICOM Tree tab and view/ scrolling bar 60% and 40% complete respectively.
Winter Break – 9th July 2021	Platipy Library (with Phillip Chlap and Robert Finnegan)	Introduction of Platipy and examples of image fusion/co-registration.
Winter Break – 15th July 2021	Platipy Library, Unit Testing, PET/CT View GUI	Co-registration with the image library, visulations are not working in the conventional Python, capable of rotating the images manually. Learn test procedure PET-CT are 2 scans already fused. Wireframes to be made and presented to Dr. Miller.
Winter Break – 18th July 2021	Platipy Library Image Retrieval, PET/CT View GUI	Issues in retrieving images from the library, attempted to pull matplotlib figure from the library into PySide6 GUI, attempted to pull view as an array to be displayed. Alternate wireframes made and presented to Dr. Miller for changes and confirmations.
Winter Break – 22nd July 2021	PySide 6, Using Array	Difficulties due to PySide 6 not supporting any image relating from the Platipy library, credit to Team 23 showing a matplotlib library. Tried inserting 3D array from the nifty files.
Week 1 (SPR) – 29th July 2021	Image Fusion GUI, PET/CT View GUI, Assignment 5	Image fusion tab and pop up window for selecting patient scans added, colormap of the image overlay retrieved and converted to a pixmap for display. PET/CT GUI tab and components added without functionality.

Week 2 (SPR) – 4th August 2021	Image Fusion, PET/CT View	Trying to add current image set and new image set together to allow the user to load the extra image. Further explanation of the alpha slider.

Product Backlog

Sprint #1655

Edit | Log time | Unwatch | Copy | Delete

Sprint20210729

« Previous | 1 of 193 | Next »

Added by Felicina Chau 7 days ago. Updated 3 days ago.

Status:	In Progress	**Start date:**	11/07/2021
Priority:	Normal	**Due date:**	06/08/2021 (Due in 1 day)
Assignee:	-	**% Done:**	22%
		Estimated time:	(Total: 0.00 h)

Subtasks Add

Product Backlog #1573: A5: Progress Report and Initial Design	New	11/07/2021	06/08/2021		
> Product Backlog #1574: Interface Designs	New	13/07/2021			
> Product Backlog #1581: Refinement of Wireframes	New	13/07/2021		Melinda Vay	
> Product Backlog #1650: Design Patterns	New	28/07/2021		Felicina Chau	
> Product Backlog #1575: Information Architecture	New	28/07/2021			
> Product Backlog #1651: Information Architecture UML Diagram	New	28/07/2021			
> Product Backlog #1576: Style Guide	New	11/07/2021		Melinda Vay	
> Product Backlog #1577: System Functionality and User interactions	New	11/07/2021	06/08/2021		
> Product Backlog #1652: Project Overview	New	28/07/2021			
> Product Backlog #1653: Method Overview	New	28/07/2021			
> Product Backlog #1654: Requirements Analysis	New	28/07/2021			

Related issues Add

Sprint #1624

Edit | Log time | Watch | Copy | Delete

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Sprint20210725

Added by Peter Qian 11 days ago. Updated 7 days ago.

Status:	In Progress	**Start date:**	25/07/2021
Priority:	Normal	**Due date:**	
Assignee:	-	**% Done:**	66%
		Estimated time:	(Total: 0.00 h)

Subtasks Add

Sprint #1625: Image Fusion GUI	In Progress	25/07/2021		
> Sprint Subtask #1627: Image Fusion Icon in Toolbar	New	25/07/2021	Peter Qian	
> Sprint Subtask #1628: Image Fusion Window - Combine Image Window	New	25/07/2021	Peter Qian	
> Sprint Subtask #1629: Image Fusion Tab	New	25/07/2021	Joshua Thomas	
> Sprint Subtask #1630: Image Fusion Functionality	New	25/07/2021	Chai Forest	
~~Sprint #1626~~: PET/CT-GUI	Closed	25/07/2021		
> ~~Sprint Subtask #1631~~: PET/CT Tab	Closed	25/07/2021	Shengjie Yu	
> ~~Sprint Subtask #1632~~: PET/CT Radio Buttons	Closed	25/07/2021	Melinda Vay	
> ~~Sprint Subtask #1633~~: PET/CT Alpha Slider	Closed	25/07/2021	Felicina Chau	
> ~~Sprint Subtask #1634~~: PET/CT Slice Slider	Closed	25/07/2021	Melinda Vay	

Related issues Add

Sprint #1587

Edit | Log time | Watch | Copy | Delete

« Previous | 20 of 193 | Next »

SPRINT20210715

Added by Peter Qian 21 days ago. Updated 11 days ago.

Status:	Closed	**Start date:**	15/07/2021
Priority:	Normal	**Due date:**	
Assignee:	-	**% Done:**	100%
		Estimated time:	(Total: 0.00 h)

Subtasks Add

~~Sprint Subtask #1583~~: Test Procedure	Closed	15/07/2021	
~~Sprint Subtask #1584~~: Investigate: NIFTI Image	Closed	15/07/2021	
~~Sprint Subtask #1585~~: Investigate: Four Window View	Closed	15/07/2021	
~~Sprint Subtask #1586~~: Investigation: Manual Registration	Closed	15/07/2021	
~~Sprint Subtask #1602~~: OnkoDICOM PlatiPy	Closed	16/07/2021	

Related issues Add

Sprint #1487

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Product Backlog #1486: Overview of Software Creation

« Previous | 46 of 193 | Next »

SPRINT20210708-Investigate Image Fusion Library

Added by Peter Qian about 1 month ago. Updated 21 days ago.

Status:	Closed	**Start date:**	02/07/2021
Priority:	Normal	**Due date:**	
Assignee:	-	**% Done:**	100%
		Estimated time:	(Total: 0.00 h)

Description

Quote

Problem/Motivation

Team 19 will need to investigate the UNSW image fusion library, PlatiPy to understand the functionalities involved in the library.

Proposed Resolution

The investigation will involve:

- Read the documentation
- Install the library
- Investigate and learn the library

Additional Information

Getting Started with the library
https://github.com/pyplati/platipy/blob/master/PlatiPy-GettingStarted.pdf

There is examples listed in the GitHub of the library
https://github.com/pyplati/platipy/tree/master/examples

Subtasks

Add

~~Sprint #1488~~: Read Documentation of PlatiPy	Closed	02/07/2021	
~~Sprint #1489~~: Installation	Closed	02/07/2021	
~~Sprint #1490~~: Investigate and Learn	Closed	02/07/2021	
> ~~Sprint Subtask #1491~~: Experiment: Different Fusion Types	Closed	02/07/2021	
> ~~Sprint Subtask #1492~~: UI	Closed	02/07/2021	
> ~~Sprint Subtask #1493~~: Layout	Closed	02/07/2021	
> ~~Sprint Subtask #1494~~: Interactive Elements	Closed	02/07/2021	
> ~~Sprint Subtask #1495~~: Image Presentation	Closed	02/07/2021	
> ~~Support #1548~~: Platipy File Compatibilities	Closed	08/07/2021	
> ~~Support #1549~~: Unable to process DICOM files	Closed	08/07/2021	

Sprint #1476

Edit Log time Watch Copy Delete

Sprint 20210624

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Added by Joshua Thomas about 1 month ago. Updated 11 days ago.

Status:	Closed	**Start date:**	28/06/2021
Priority:	Normal	**Due date:**	
Assignee:	-	**% Done:**	100%
		Estimated time:	(Total: 0.00 h)

Subtasks Add

~~Sprint Subtask #1477~~: Unit Testing PySide6	Closed	28/06/2021		
> ~~Sprint Subtask #1480~~: DICOM Image	Closed	28/06/2021	Melinda Vay	
> ~~Sprint Subtask #1481~~: DICOM Tree View	Closed	28/06/2021	Joshua Thomas	
~~Sprint Subtask #1482~~: Error Image Window	Closed	28/06/2021		
> ~~Sprint Subtask #1484~~: Open DICOM in fault Tolerant Way	Closed	28/06/2021		

Related issues Add

Sprint #1422

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Spint 20210603

« Previous | 57 of 193 | Next »

Added by Joshua Thomas 2 months ago. Updated about 1 month ago.

Status:	Closed	**Start date:**	26/05/2021
Priority:	Normal	**Due date:**	10/06/2021
Assignee:	-	**% Done:**	100%
		Estimated time:	(Total: 0.00 h)

Subtasks Add

~~Sprint Subtask #1363~~: Mini Project	Closed	26/05/2021			
› ~~Sprint Subtask #1364~~: First Time User Window	Closed	26/05/2021			
› ~~Sprint Subtask #1371~~: Develop	Closed	26/05/2021			
› ~~Sprint Subtask #1372~~: Unit Test	Closed	26/05/2021			
› ~~Sprint Subtask #1373~~: Integrate	Closed	26/05/2021			
› ~~Sprint Subtask #1365~~: Welcome Window	Closed	26/05/2021			
› ~~Sprint Subtask #1374~~: Develop	Closed	26/05/2021			
› ~~Sprint Subtask #1375~~: Unit Test	Closed	26/05/2021			
› ~~Sprint Subtask #1376~~: Integrate	Closed	26/05/2021			
› ~~Sprint Subtask #1366~~: Open Patient Window	Closed	26/05/2021		Joshua Thomas	
› ~~Sprint Subtask #1377~~: Develop	Closed	26/05/2021			
› ~~Sprint Subtask #1378~~: Unit Test	Closed	26/05/2021			
› ~~Sprint Subtask #1379~~: Integrate	Closed	26/05/2021			
› ~~Sprint Subtask #1367~~: Select Folder	Closed	26/05/2021			
› ~~Sprint Subtask #1380~~: Develop	Closed	26/05/2021			
› ~~Sprint Subtask #1381~~: Unit Test	Closed	26/05/2021			
› ~~Sprint Subtask #1382~~: Integrate	Closed	26/05/2021			
› ~~Sprint Subtask #1368~~: File Tree Structure	Closed	26/05/2021			
› ~~Sprint Subtask #1383~~: Develop	Closed	26/05/2021			
› ~~Sprint Subtask #1384~~: Unit Test	Closed	26/05/2021			
› ~~Sprint Subtask #1385~~: Integrate	Closed	26/05/2021			
› ~~Sprint Subtask #1369~~: Error Message Window	Closed	26/05/2021			
› ~~Sprint Subtask #1386~~: Develop	Closed	26/05/2021			
› ~~Sprint Subtask #1387~~: Unit Test	Closed	26/05/2021			
› ~~Sprint Subtask #1388~~: Integrate	Closed	26/05/2021			
› ~~Sprint Subtask #1370~~: Display Image Window	Closed	26/05/2021			
› ~~Sprint Subtask #1389~~: Develop	Closed	26/05/2021			
› ~~Sprint Subtask #1390~~: Unit Test	Closed	26/05/2021			
› ~~Sprint Subtask #1391~~: Integrate	Closed	26/05/2021			
~~Sprint Subtask #1423~~: PyQt5 Unit Testing	Closed	03/06/2021	10/06/2021	ashley maher	

Sprint #1362

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Sprint 20210527

Added by Joshua Thomas 2 months ago. Updated 2 months ago.

Status:	Closed	**Start date:**	26/05/2021
Priority:	Normal	**Due date:**	
Assignee:	-	**% Done:**	100%
		Estimated time:	(Total: 0.00 h)

Subtasks

Add

~~Sprint Subtask #1392~~: Interface Presentation	Closed	26/05/2021	
› ~~Sprint Subtask #1393~~: Wireframes	Closed	26/05/2021	
› ~~Sprint Subtask #1394~~: Low-Fi	Closed	26/05/2021	
› ~~Sprint Subtask #1395~~: Hi-Fi	Closed	26/05/2021	
› ~~Sprint Subtask #1396~~: Script	Closed	26/05/2021	
› ~~Sprint Subtask #1397~~: Features / Functionality	Closed	26/05/2021	
› ~~Sprint Subtask #1398~~: Design Patterns	Closed	26/05/2021	
› ~~Sprint Subtask #1399~~: Accessibility	Closed	26/05/2021	
› ~~Sprint Subtask #1400~~: Security	Closed	26/05/2021	
› ~~Sprint Subtask #1401~~: HIGS	Closed	26/05/2021	
› ~~Sprint Subtask #1402~~: Usability	Closed	26/05/2021	
› ~~Sprint Subtask #1403~~: System Architecture	Closed	26/05/2021	
› ~~Sprint Subtask #1404~~: Recording	Closed	26/05/2021	
› ~~Sprint Subtask #1405~~: Editing	Closed	26/05/2021	

Sprint #1330

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Sprint-2021-05-13

Added by Peter Qian 3 months ago. Updated 2 months ago.

Status:	Closed	**Start date:**	06/05/2021
Priority:	Normal	**Due date:**	
Assignee:	-	**% Done:**	100%
		Estimated time:	(Total: 4.00 h)
		Spent time:	(Total: 4.00 h)

Files

SPRINT-2021-05-13-Peter.pptx (323 KB) Peter Qian, 20/05/2021 08:56 AM

Subtasks

Add

~~Sprint #1243~~: PyQt5 - Learn and Train	Closed	06/05/2021		
> ~~Sprint Subtask #1244~~: Views	Closed	06/05/2021		
> ~~Sprint Subtask #1245~~: Model Class	Closed	06/05/2021		
> ~~Sprint Subtask #1246~~: View Class	Closed	06/05/2021	Peter Qian	
> ~~Sprint Subtask #1247~~: Delegate/Controller Class	Closed	06/05/2021	Peter Qian	
> ~~Sprint Subtask #1248~~: Drag and Drop Model	Closed	06/05/2021		
> ~~Sprint Subtask #1249~~: Proxy Models	Closed	06/05/2021	Joshua Thomas	
> ~~Sprint Subtask #1250~~: Model Subclassing	Closed	06/05/2021		
~~Sprint #1290~~: A3: Interface Presentation Research	Closed	13/05/2021		
> ~~Sprint Subtask #1332~~: Main Interface Design Features	Closed	13/05/2021	Felicina Chau	
> ~~Sprint Subtask #1333~~: Consideration of Standards and HIGS	Closed	13/05/2021		
~~Sprint #1296~~: Investigation: Home and Hidden Directory	Closed	13/05/2021		
> ~~Sprint Subtask #1297~~: Windows	Closed	13/05/2021	Peter Qian	
> ~~Sprint Subtask #1298~~: Linux	Closed	13/05/2021	Peter Qian	
> ~~Sprint Subtask #1299~~: Mac OS	Closed	13/05/2021		
~~Sprint #1319~~: Finalize Wireframes	Closed	13/05/2021		
> ~~Sprint #1312~~: Prototype: Wireframe	Closed	13/05/2021		
> ~~Sprint Subtask #1328~~: Prototype: First-time Setting Window	Closed	13/05/2021		
> ~~Sprint Subtask #1322~~: First-time Setting Window	Closed	13/05/2021		
> ~~Sprint Subtask #1323~~: Welcome Window	Closed	13/05/2021		
> ~~Sprint Subtask #1324~~: Display Select Patient Window	Closed	13/05/2021		
> ~~Sprint Subtask #1325~~: Select Folder Popup Window	Closed	13/05/2021		
> ~~Sprint Subtask #1326~~: File Tree Structure Window	Closed	13/05/2021		
> ~~Sprint Subtask #1327~~: Error Message Window	Closed	13/05/2021		
~~Sprint Subtask #1341~~: Sqlite3 Injection	Closed	19/05/2021	Joshua Thomas	

Sprint #1251

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Sprint20210506

Added by Joshua Thomas 3 months ago. Updated 3 months ago.

Status:	Closed	**Start date:**	06/05/2021
Priority:	Normal	**Due date:**	
Assignee:	-	**% Done:**	100%
		Estimated time:	(Total: 6.00 h)
		Spent time:	(Total: 7.00 h)

Subtasks

Add

~~Sprint #1252~~: SQLite - Investigation	Closed	06/05/2021	Chai Forest	
> ~~Sprint Subtask #1253~~: Module	Closed	06/05/2021	Shengjie Yu	
> ~~Sprint Subtask #1254~~: Connection	Closed	06/05/2021	Shengjie Yu	
> ~~Sprint Subtask #1255~~: Cursor	Closed	06/05/2021	Peter Qian	
> ~~Sprint Subtask #1256~~: Row	Closed	06/05/2021	Peter Qian	
> ~~Sprint Subtask #1257~~: Exceptions	Closed	06/05/2021	Chai Forest	
> ~~Sprint Subtask #1258~~: SQL and Python Types	Closed	06/05/2021	Chai Forest	
> ~~Sprint Subtask #1259~~: Adapters and Converters	Closed	06/05/2021	Shengjie Yu	
> ~~Sprint Subtask #1260~~: Efficient Methods	Closed	06/05/2021	Chai Forest	
~~Sprint #1261~~: Investigation: Configuration	Closed	06/05/2021	Joshua Thomas	
> ~~Sprint Subtask #1262~~: SQLite	Closed	06/05/2021	Joshua Thomas	
> ~~Sprint Subtask #1264~~: Default Directory	Closed	06/05/2021	Joshua Thomas	
> ~~Sprint Subtask #1266~~: OnkoDICOM Naming Conventions	Closed	06/05/2021	Joshua Thomas	
~~Sprint #1263~~: Wireframe Mechanism	Closed	13/05/2021	Felicina Chau	
> ~~Support #1265~~: Wireframe Mechanism	Closed	13/05/2021	Melinda Vay	
~~Sprint #1267~~: Learn and Train: SQLite	Closed	06/05/2021		
> ~~Sprint Subtask #1268~~: Module	Closed	06/05/2021		
> ~~Sprint Subtask #1269~~: Connection	Closed	06/05/2021		
> ~~Sprint Subtask #1270~~: Cursor	Closed	06/05/2021		
> ~~Sprint Subtask #1271~~: Row	Closed	06/05/2021		
> ~~Sprint Subtask #1272~~: Exceptions	Closed	06/05/2021		
> ~~Sprint Subtask #1273~~: SQL and python Types	Closed	06/05/2021		
> ~~Sprint Subtask #1274~~: Adapters and Converters	Closed	06/05/2021		

Related issues

Add

Sprint #1229

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Sprint20210429

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Added by Joshua Thomas about 14 hours ago. Updated about 14 hours ago.

Status:	In Progress	**Start date:**	23/04/2021
Priority:	Normal	**Due date:**	
Assignee:	-	**% Done:**	0%
		Estimated time:	(Total: 0.00 h)

Subtasks

Add

Sprint #1195: PyQt5	New	23/04/2021		
> Sprint Subtask #1196: Views	New	23/04/2021	Peter Qian	
> Sprint Subtask #1197: Model Class	New	23/04/2021		
> Sprint Subtask #1198: View Class	New	23/04/2021		
> Sprint Subtask #1199: Delegate Class	New	23/04/2021		
> Sprint Subtask #1200: Drag and Drop Model	New	23/04/2021	Shengjie Yu	
> Sprint Subtask #1201: Proxy Models	New	23/04/2021	Joshua Thomas	
> Sprint Subtask #1202: Model Subclassing	New	23/04/2021	Chai Forest	
Sprint Subtask #1230: Virtual Machine	New	29/04/2021		
Sprint Subtask #1231: Unit Testing	New	29/04/2021		
Sprint Subtask #1232: Onko Source Code	New	29/04/2021		

Related issues

Add

Sprint #1087

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Sprint20210411

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Added by Peter Qian 18 days ago. Updated 16 days ago.

Status:	Closed	**Start date:**	11/04/2021
Priority:	Normal	**Due date:**	14/04/2021
Assignee:	-	**% Done:**	100%
		Estimated time:	2.00 h

Description

Quote

Problem/Motivation

Team is required to review Teams 14 and 23's SCRUM Product Backlog and provide feedback on other's product backlog as well develop ideas on improving our own product backlog.

Proposed Resolution

Each member will review the SCRUM Product backlogs. Then the team will need to discuss the organisation of the product backlogs.

Done Definition

1. Document detailing feedback on Team 14 and 23's Product backlog
2. Document detailing improvements on our Product backlog.

Files

spreadsheet-feedback.pdf (379 KB) Peter Qian, 13/04/2021 04:58 PM

Subtasks

Add

~~Sprint Subtask #1092~~: Week 7 Task - Everyone: Detail Feedback on Product Backlog	Closed	11/04/2021	13/04/2021		
~~Sprint Subtask #1093~~: Week 7 Task - Everyone: Revise our own Product Backlog	Closed	11/04/2021	14/04/2021		

Related issues

Add

Sprint #1062

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Sprint20210408 - A2: Project Requirements Documentation

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Added by Peter Qian 22 days ago. Updated about 14 hours ago.

Status:	In Progress	**Start date:**	08/04/2021
Priority:	Normal	**Due date:**	30/04/2021 (Due in 1 day)
Assignee:	-	**% Done:**	66%
		Estimated time:	(Total: 0.00 h)
		Spent time:	(Total: 0.50 h)

Description

Quote

Problem/Motivation

Group is to write a professional report outlining plans for development of the system.

Proposed Resolution

Plan and allocate tasks among members of the team. Regular slack mornings to keep team updated on progression.

Done Definition

1. Project Requirements Documentation

Subtasks

Add

~~Sprint Subtask #1064~~: Letter to client/supervisor	Closed	08/04/2021	27/04/2021	Felicina Chau	
Sprint Subtask #1066: Executive Summary	New	08/04/2021			
Sprint Subtask #1071: Conclusion	New	08/04/2021	30/04/2021		
~~Sprint #1226~~: Design Methodology	Closed	08/04/2021	27/04/2021	Melinda Vay	
~~Sprint #1227~~: Development Environment	Closed	08/04/2021	28/04/2021	Melinda Vay	
~~Sprint #1228~~: Deployment Environment	Closed	08/04/2021	28/04/2021	Melinda Vay	

Related issues

Add

Sprint #1060

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Assignment 1 - Initial Project Description

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Added by Felicina Chau 22 days ago. Updated 22 days ago.

Status:	Closed	**Start date:**	24/03/2021
Priority:	Normal	**Due date:**	02/04/2021
Assignee:	-	**% Done:**	100%
		Estimated time:	10.00 h (Total: 10.75 h)
		Spent time:	10.00 h

Description

Quote

Assignment 1 for CSIT321, deliverable for Jack Yang (Subject Coordinator)

Subtasks

Add

~~Sprint Subtask #1061~~: Initial Business Case	Closed	24/03/2021	02/04/2021	Peter Qian	
~~Sprint Subtask #1063~~: Initial Project Scope	Closed	24/03/2021	02/04/2021	Peter Qian	
~~Sprint Subtask #1065~~: Scope Management	Closed	24/03/2021	02/04/2021	Peter Qian	
~~Sprint Subtask #1067~~: Market Analysis	Closed	24/03/2021	02/04/2021	Chai Forest	
~~Sprint Subtask #1068~~: Time and Quality Management	Closed	24/03/2021	02/04/2021	Felicina Chau	
~~Sprint Subtask #1069~~: Risk Management	Closed	24/03/2021	02/04/2021	Peter Qian	
~~Sprint Subtask #1070~~: Member Skills and Experience	Closed	24/03/2021	02/04/2021		
~~Sprint Subtask #1072~~: Stakeholder Matrix	Closed	24/03/2021	02/04/2021	Joshua Thomas	
~~Sprint Subtask #1073~~: Group Charter	Closed	24/03/2021	02/04/2021	Shengjie Yu	
~~Sprint Subtask #1074~~: Group Ethics	Closed	24/03/2021	02/04/2021	Melinda Vay	
~~Sprint Subtask #1075~~: Writing and Collation of Meeting Minutes	Closed	24/03/2021	02/04/2021	Felicina Chau	

Related issues

Add