Requirements Elicitation

Introduction

Requirement elicitation is the process of identifying, analyzing, and defining the requirements of a software project. It is a critical step in software development that involves gathering information from stakeholders about their needs, preferences, and expectations for the project to guide our team in building a software system.

It is a thorough process. Our team use seven primary techniques of requirement elicitation.

Interview (for first client meeting)

The interview is the most common way for requirement elicitation, and from the interview, we can easily understand what to do and how to perform well by communicating with several stakeholders. In addition, the meeting minute concluded after the interview is an excellent way to review what we have done and plan our next steps.

Due to these advantages, we use interviews to elicit requirements in the first client meeting.

Interview tool used

- We use **Zoom** to interview the client

Interview Method

We have applied semi-structured interview in our first client meeting since semi-structured interview can allow us ask additional questions. We have prepared our questions before meeting and we can flexible asking client without order when the meeting progressing.

Many methods have been used in process:

1. FH-Koala team members analyzed the project detail document and prepared some questions to ask before the first client meeting.
2. Then, FH-Koala team used interview technique as the format of first client meeting. The participants and their roles are in the table below.
3. After the first client meeting, a brainstorm based group meeting was held by FH-Koala team. During the meeting, team members exchanged ideas about project with each other and analyzed the stakeholders according to the introduction from the client meeting and the knowledge from the lectures.
4. Finally, FH-Koala team concluded a meeting minute. 2023-3-15 First Client Meeting Note.

The question prepared before client meeting

3 Motivating Questions:

- Why are we building this?
- Who are we building it for?
- What are we building it to do?

Stakeholder Questions

- Who are the organization, and what are their business goals?
- Who are the stakeholders?
- What is the current system (Validitron Sandbox)? How does it function?
  - What are its strengths?
  - What are its weaknesses?
- How this project contribute to the Validitro Sandbox?

Non-Functional Questions

- Background
  - What is FHIR Studio?
  - Is there any extra material to help us understand the background or purpose of this project?
- Users
  - What is its targeted user?
  - How does FHIR studio help users?
  - What do users need to be able to achieve using the application?
  - What can be done to help users better use the application?
    - Are there different methods that work for different people?

  - What interfaces can FHIR studio read/use that already exist?
  - What should it look like?
  - How will users expect to use it?

- How comfortable are expected users with technologies?
- How does the simulated data validate the accuracy and realisticity?

Functional Questions

- Platform
    - What operating systems does it need to run on?
    - How does FHIR Studio interact with other components of Validitron Sandbox?
- Interface
    - What interface does it need to support (e.g. mouse, keyboard, touch screen)
    - Does it need to be usable with a reduced interface?
    - What colors are expected for the User interface?

Final Questions

- What is your metric for success? (broad, good way to summarise the overall goal)

The role and responsibilities

Name	Role	Responsibility	Email
Dr. Kit Huckvale	Client	- Describe the project. - Answer questions for participants.	kit.huckvale@unimelb.edu.au
Yuchen Cao	Facilitator	- Make sure meeting has structure and direction - Organize self introductions of FH-koala team members and client	yuccao@student.unimelb.edu.au
Yanbo Lu	Participants	- Ask questions about projects. - Improve meeting minutes and upload it to Confluence	yanbol3@student.unimelb.edu.au
Yulong HUANG	Recorder	- Record the meeting process. - Writing the meeting minutes.	yulongh@student.unimelb.edu.au
Jie Zhou	Participants	- Communicate with customers and make meeting plans - Ask questions about projects.	jiezhou5@student.unimelb.edu.au
Shuowen Yu	Participants	- Communicate with customers and make meeting plans - Ask questions about projects.	shuoweny@student.unimelb.edu.au

Document analysis

Document analysis is a valuable heuristic technique that can help gather information from relevant documents related to an FHIR Studio project.

Analysis Process

The document we have analyzed:

- LMS: ModulesProject information FH related
- The slide showed by client on first client meeting
- FHIR's Overview

By using document analysis technique, we knows The FHIR Studio project aims to develop a web-based platform for engineering simulated patient data using the Fast Health Interoperability Resource (FHIR) standard. The platform will be integrated into the Validitron Sandbox. The project will involve devising, prototyping, implementing, and testing a UI-driven workflow for engineering realistic simulated time series data for clinical measurements. The platform will allow simulated data to be staged, configured, and pushed to a receiving clinical system for testing and validation.

The utilization of this technology has significantly enhanced the triumph of our products, affording us with an elaborate comprehension of stakeholder requisites and the present operational status of the system. Such technology enables us to amass adequate information that enables us to adequately plan our project. Through the analysis of the document furnished by the client, we can precisely evaluate the soundness of the data generated and institute requisite improvements to amplify the quality of the ensuing data.

In conclusion, document analysis is an essential heuristic technique for FHIR Studio projects, as it allows us to comprehensively understand the existing system, its strengths, weaknesses and potential for improvement. It is an effective method of extracting and organising critical information from documents. It can then be used to develop a clear and concise set of project requirements and objectives.

Brainstorm

Brainstorm can help team generate more ideas, thus providing a more accurate and comprehensive requirements. Additionally, it provides a great way of communication to help team members understand different priorities and perspectives.

Discussion Process

First client meeting

- What is the expectation of a system?

This project will create a new capability for the virtual sandbox that flexibly combines both real and simulated infrastructure and clinical information to rapidly enable integration/user testing. It is a web-based UI tool that makes it easy to 'design' longitudinal data that has a particular trend or characteristics. There are two criteria for project success: One is something that's workable and generates usable data, and the other is the meaningful progress on the user interface side of this to help solve the problem of how do you design a trending or shapes data set with a web based UI.

Prepare for the next meeting:

- What are the risk factors affecting the development of the proposed system and how to avoid it?
- What are the business and organization rules required to follow?
- What are the options available to resolve the current issues?
- What should we do so that this particular issue does not happen in the future?

Stakeholders analysis

The Stakeholder analysis is a necessary process that helps the project team better identify individuals or groups who might significantly impact a project. We want to adopt the stakeholder analysis since we have several different groups with varying interest levels and influence on the project outcome. We want to apply stakeholder analysis to extend our understanding of stakeholder interests, concerns and influences, which allows us to develop appropriate strategies for attracting stakeholders and achieving their expectations.

Based on our understanding of FHIR Studio, we have created the fundamental stakeholders' graph, including the role, power or influence of the different key stakeholders and the responsibilities of each stakeholder. We will show it to the client to see whether it needs improvement.

Key Stakeholders

Stakeholder	Position	Project Role	Internal/external	Power/Influence	Current Engagement
Project Team	Project team	developer	Internal	high/high	Lead
Healthcare Professionals	User	Normal User	external	low/low	neutral
Third Party Developers	User	Direct User	external	high/high	supportive
Dr Kit Huckvale	Client	Requirements Analyst	internal	high/high	lead
NAVEED ALI	Supervisor	Project Manager	internal	medium/medium	supportive

Responsibilities of Stakeholders

Stakeholder	Responsibility
Project Team	Analysis the client's requirement and develop the solution to satisfy it
Healthcare Professionals	Using the platform to create and share simulated patient data for testing, evaluation, and improvement of their research or diagnosis.
Third Party Developers	Using the FHIR Studio platform to create and share simulated patient data on their applications.
Dr Kit Huckvale	Discuss the requirements for the requirement with the project team, and give a determine of the success of the project.
NAVEED ALI	Give professional advice to the project team about how to communicate with the client, give feedback on project design and ensure the project team is on the right track.

Research

Research techniques are basic heuristics that allow us to glean useful additional information. For the FHIR Studio project, this technology will provide us with the necessary knowledge and understanding of the Fast Health Interoperability Resources (FHIR) standard and its implementation in a healthcare setting. Through research, we can ensure that it meets the needs and expectations of the target user and the healthcare industry's standards and best practices. This research technique facilitates the collection of large amounts of data and standard that can be analyzed to identify patterns, trends and insights to help us make informed decisions and recommendations for our projects. Therefore, using research as a heuristic is critical to ensuring the success of your FHIR Studio project.

System interface analysis

The analysis of the interface is a good way to reveal what a project looks like and how this project works. In this way, we can understand the basic process of this project, conclude the targeted users and find a way to generate data. Moreover, we may come up with several missing requirements by simulating the use of certain functions.

Analysis Process

- Who will be using the interface?

Developers for digital health solutions and product owners.

- What kind of datasets should be generated?

Clinical datas like heart rate, blood pressure and oxygen saturation.

- Why we need the interface? Can't the task be completed without using the interface?

This system aims to build a new web-based platform for engineering simulated patient data, and it should be object oriented. The interface can not only help users understand how this system work but also offers visualize medical data which can help developers to analyze the outcomes. Furthermore, the feedback from users can also help developers find several missing requirements.

Observation

The observation technique is a valuable elicitation approach that enables gathering information in real-world settings, encompassing both quantitative and qualitative data. Validitron possesses a physical simulation laboratory and virtual sandbox. We apply the observation technique, which can be utilized to comprehend better how the system or process is employed, including how to interface software systems with the sandbox and how the previous product interfaces with the sandbox to obtain novel solutions for this project. This method is particularly beneficial when designing the project system and devising proper solution strategies, as it can ensure that our product designs effectively align with the actual expectations of users concerning intended plans and processes, particularly given our primary objective of generating usable data. This process necessitates a high level of precision and plausibility, thus rendering the use of observation techniques advantageous in improving product quality.

Conclusion

Summary

In conclusion, there are various ways of requirements elicitation, and some of them have been applied during our research in this project. For example, we use interview as the format for client meeting and analyze the stakeholders according to the meeting minute. These are both effective in analyzing the requirement of FHIR studio project. Furthermore, other techniques will also be used during our further research. For instance, we plan to apply for meeting client's physical simulation lab as the format for our next client meeting.

Next Steps

The flow chat as follows shows our basic steps and related elicitation techniques which will used on stakeholders meeting basis.

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                                              │   client meeting    │
                                              │ format: observation │
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  │  next steps  │──▶│ application │──▶│  client meeting  │────▶│  group meeting   │
  └──────────────┘    ╲ for observation ╱  │ format: interview │      │ format: brainstorm │
                        ╲  allowed  ╱       └──────────────────┘      └──────────────────┘
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                          N
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next steps

application for observation allowed

Y

N

client meeting format: observation

client meeting format: interview

group meeting format: brainstorm