Object Oriented Software Engineering CA Part 2
May 2023

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Business Domain: A hospital or driving licence renewal

Business Domain Chosen: Hospital

Application: I want to build a system that creates a rota for doctors to know when they are scheduled to work.

9. Propose and justify an agile development methodology you will follow and explain how it's different from the Object Orientated Software Engineering approach (Rational unified Process, RUP vs Agile).

At the beginning of the developing stage we will need a project management methodology that provides a structured and controlled approach to project delivery, with clear defined roles, responsibilities and defined project stages so we can develop the first functionality and release the system to our users with a 1.0 version.

Once we have made the system available to our end users we are going to switch to an approach that is more flexible, adaptable and allows us to iterate our workflow through our users' feedback.

The methodology that we are going to use in order to release the first version of the rota system is PRINCE2 Lean, which combines the framework of PRINCE2 with the efficiency of the Lean principles.

Focusing on the PRINCE2 Lean approach, here is how it is going to be applied to the development of our rota system:

1) Business Justification: Using PRINCE2 will allow us to align the project with the organization's strategic objectives. It also continuously reassess and evaluates the project's business justification.

2) Product Focus: PRINCE2 Lean maintains a really strong focus on delivering what the end-users need. It prioritizes features and functionalities based on the value and it will deliver the most essential and beneficial functionality to the people who are going to use the rota system.

3) Waste Reduction: By using PRINCE2 Lean we will streamline the development process, reducing features that might not be necessary at the beginning.

4) Continuous Improvement: PRINCE2 Lean encourages retrospectives and Lessons Learned where the team can reflect on their work, identify areas for improvement and make necessary adjustments to the project development. It also allows iterating the functionalities through users' feedback.

5) Lean Techniques: As the name explains, PRINCE2 Lean incorporates Lean techniques into the PRINCE2 framework to maximize project efficiency and visibility.

6) Stakeholder Engagement: Under my point of view visibility is extremely important since it will allow the whole team (DevOps, Support, Leadership, Accounts, etc) to know what is happening with the development of the system at all times. This will open communication channels between the team members and the stakeholders that otherwise wouldn't be there and will allow engagement from all parties.

7) Risk Management: Using PRINCE2 Lean our team will be able to identify, assess, mitigate and monitor all the risks associated with the development and release of the rota system. By proactively identifying and managing the risks we will minimize potential negative impacts and will ensure a smoother project development.

8) Stages: PRINCE2 use of stages during the development will better project control from all parties and will enable clear milestones. It is a systematic approach to planning, executing, delivering and evaluating each stage.

Having delivered my first project using just the PRINCE2 project management framework I feel that an approach that has a bit more of visibility would be extremely useful for the stakeholders and as I will be one of them, as well as the project manager of the project, I want to make sure that everybody is aware of the different stages, iterations and percentage of completeness. On top of that I felt that the risk management of PRINCE2 (not Lean) was a bit rigid. Those are the two reasons as to why we will use the PRINCE2 Lean framework for the delivery of this Rota system.

Of course, the first functionality is going to be chosen by gathering user interviews, user feedback, research and competitor's analysis. We are going to do all those tasks prior to the start of the development process.

As previously stated, once the system is first released to the end users with a release version of 1.0, our team is going to switch to an approach that is customer-centric, adaptable and flexible.

The framework that we are going to use for the next releases until completion of the project is the Kanban framework, within the PRINCE2 Lean project management approach.

Here is how it is going to be applied to the development of our rota system:

1) Customer-centric approach: Kanban prioritizes a customer-centric approach since it ensures that the customer needs and the feedback from them are considered. By integrating customer feedback into the development of the system the development process will remain aligned with the customer needs.

2) Flexibility and Adaptability: Kanban allows for changes in priorities and requirements. As we are going to gather feedback from our users and stakeholders we will be able to identify the most important features that need to be incorporated in the Rota system.

This approach will allow us to respond quickly to the needs of the users and will make sure that the efforts of the development remain aligned with the top user requirements.

3) Limits on Work In Progress (WIP): One feature of Kanban that I really love is the emphasis in limiting the Work In Progress. WIP is all about finishing and delivering tasks before starting new ones, which reduces multitasking. By setting limits for each stage / release we will allow the development team to focus on what is important. This will also prevent the team from overloading and burnout.

4) Kanban boards: By using Kanban boards we will visualize the progress of the different tasks that are assigned to team members. I found Kanban boards extremely valuable because they allow visibility and collaboration between the whole team.

5) Stages: Again, stages will be incorporated into the Kanban approach so that the team knows exactly what needs to be completed in order to release a new version until the final stage, which is the "Closing a Project" stage.

We are going to have a managed backlog of tasks for each version of the Rota system (after 1.0) with the most important features that are missing from the software and the team will pick the tasks as they see fit until all of them are completed in each stage. The person who is going to manage the backlog is the project manager through user feedback.

PRINCE2 Lean is different from a traditional OOSE approach in the following ways:

1) PRINCE2 Lean is more focused on project management, it provides a framework and it emphasize things like planning, risk management, customer feedback. OOSE focuses on designing and developing software systems through an object oriented approach.

2) PRINCE2 Lean promotes the concept of "minimal" documentation, enough to support decision making. OOSE involves detailed documentation involving design models, code documentation, etc.

3) PRINCE2 Lean is all about being flexible and adaptable through continuous improvement, customer feedback and eliminating "waste". OOSE is more structured and does not allow for much iteration.

I was thinking about a PRINCE2 Agile framework for the development of version 1.0 and I believe that it would work very well too. However, I feel that if you are going to use a PRINCE2 Agile framework the team needs to be really experienced and there has to be a clear understanding from all parties on what the first functionality needs to be and not allow the users feedback to change the functionality mid-way because it will derail the project completely.
I would not be comfortable (at this stage in my career) using the PRINCE2 Agile framework, which is the only reason as to why I did not choose it. I believe that with a bit more of experience as a Project Manager I would be able to handle all aspects of the Agile addition to PRINCE2 very well.

References:

PRINCE2.com., (n.d.)., PRINCE2 Methodology., (Accessed on April 20th on www.prince2.com/uk/prince2-methodology)

PRINCE2.com., (n.d.)., PRINCE2 – Beyond the board: How Kanban works within agile., (Accessed on April 21st on https://www.prince2.com/uk/blog/beyond-the-board-how-kanban-works-within-agile)

Personal project management plans from my daily job as a Product Expert at Phonovation.

Personal studies of the PRINCE2 (Foundation) course in eSolas college.

10. Provide detailed artefacts of the agile methodology followed, such as user stories, backlogs and burndown charts.

PRINCE2 Lean methodology artifacts

A) BUSINESS CASE

- Business case: *a PRINCE2 business case is a major control document that is referenced on a regular basis to ensure and confirm that the project remains viable. PRINCE2 business cases will contain justifications for a project, such as value for money for what is to be done and why it should be done now.*

Business Case: Rota System Project

1. Executive Summary:

The Rota System project aims to reinterpret the scheduling process for doctors, prioritizing the needs of doctors together with medical centres. By developing and implementing an intuitive and efficient rota system, we seek to optimize doctors' scheduling, improve doctors' satisfaction, and improve patient care. This business case outlines the customer-centric rationale, benefits, costs, and risks associated with the project, emphasizing the value it brings to all stakeholders.

The project will follow a two-phase approach, with the initial delivery utilizing a PRINCE2 Lean framework, followed by subsequent deliveries using a Kanban approach with staged iterations.

The project will also implement a third phase that will be delivered once the project is completed and will continue being delivered throughout the life of the Rota system until "end of life".

2. Reasons:

Outdated scheduling methods currently used for doctors create numerous challenges for hospitals, clinics, doctors and patients. Scheduling conflicts hinder the ability to deliver quality patient care, while also affecting staff well-being. A customer-centric solution is required to transform the scheduling process, making it efficient, transparent, and responsive to the needs of all groups.

3. Objectives:

- Phase 1: PRINCE2 Lean (First Delivery, version 1.0)

- Develop a customer-centric rota prototype that addresses key pain points in scheduling.

- Validate and refine the prototype through user feedback and iterative development.

- Release version 1.0 of the system with the most essential feature that doctors need.

- Phase 2: Kanban with Staged Iterations (Subsequent Deliveries, version 2.0 until and including "Closing a project")

- Expand the functionality of the rota system in stages and updates, based on user needs, feedback and priorities through a Kanban approach.

- Phase 3: Customer Support of developed Rota System (Out of the scope of the actual project)

- Continuous delivery of customer support of developed Rota System through feedback directed to DevOps and backlog of errors / improvements through a Kanban approach. Phase 3 will be out of the scope of the actual project and will be done once the "Closing a project" stage is done.

(Note) I included the Phase 3 because I feel that customer support is really important after delivering the project and even though it is not part of the project per-se I believe that it is good to address that there will be a need to organise and deliver this part too.

4. Benefits:

- Phase 1: PRINCE2 Lean (First Delivery, version 1.0)

- Rota Process: Automation and simplification of scheduling tasks, reducing errors, delays, and administrative tasks.

- User Validation: User feedback and iterative development ensure the system meets the actual needs of doctors and hospitals / clinics.

- Phase 2: Kanban with Staged Iterations (Subsequent Deliveries, version 2.0 until and including "Closing a project")

- Flexible Delivery: Continuously deliver features and enhanced existing ones based on user feedback.

- Incremental Improvement: Each iteration brings tangible benefits and opportunities for making the system more effective.

- Phase 3: Kanban with Staged iterations. Customer Support of developed Rota System (Out of the scope of the actual project)

- Continuous customer support: After the release of the full version of the Rota system users will likely encounter bugs and errors in the system that will need to be addressed. Each bug fixed will make the system more stable and robust.

5. Costs:

- Phase 1: PRINCE2 Lean (First Delivery, version 1.0)

- Development and Prototyping: Investment required for system development, customization, and initial user testing.

- Phase 2: Kanban with Staged Iterations (Subsequent Deliveries, version 2.0 until and including "Closing a project")

- Staged Development and Releasing: Investment required for development, user feedback, user testing, system customization and system enhancements.

- Phase 3: Kanban with Staged iterations. Customer Support of developed Rota System (Out of the scope of the actual project)

- Customer support: Investment required for ongoing customer support, user feedback and iterative bug fixes.

6. Investment / Financial Appraisal:

The expected benefits outweigh the costs over the project's lifecycle. The savings from increased doctors' satisfaction, enhanced patient care and scheduling certainty will generate significant long-term value for the hospital / clinic that acquires the Rota system. It will also reduce the amount of LOCUM schedules that hospital / clinics will need to use because doctors will be able to create and swap schedules with ease and that will be communicated to the upper management in an easy to understand document, pinpointing the amount of LOCUM shifts needed for each day.

7. Risks:

- Technical Risks: Potential challenges in system development, integration in hospitals / clinics current systems, or performance. These risks will need robust testing before implementation.

- Adoption Risks: Resistance to change from doctors and hospitals / clinics. It will need strong communication with all parties.

- Implementation Risks: Potential disruption during the transition period from current Rota system (if used) to new one. It will need support from team to minimize impact. (Teams that will provide support to be discussed during implementation stage).

8. Timescales:

The Rota System project is estimated to be completed within 6 months.

Phase 1 will use a PRINCE2 Lean framework for the delivery of version 1.0.

Phase 2 will use a Kanban approach with staged iterations for subsequent deliveries until project completion.

Phase 3 will use a Kanban approach with staged iterations for fixing bugs.

9. Governance and Project Management:

The project will be governed and managed using a customer-centric approach, combining PRINCE2 Lean and Kanban methodologies.

Phase 1 will follow the PRINCE2 Lean framework, which provides a well structured project management process and emphasizes early validation and iteration through user feedback.

After the first delivery (V1.0), the project will transition to Phase 2, adopting a Kanban approach with staged iterations.

Kanban provides a flexible and iterative framework that allows for continuous delivery of projected and new features based on user feedback. By implementing a Kanban system, the project team can visualize the workflow, prioritize tasks, and deliver incremental improvements to the rota system in a controlled and efficient manner.

The staged iterations in the Kanban approach will allow the project manager to slice the work into manageable stages. Each stage will have predefined objectives, deliverables, success criteria, feedback and reviews ensuring that the project progresses.

B) DAILY LOG

***- Daily log:** The Daily Log is used to record informal issues, notes, etc., that are not captured in other project documents at that time.*

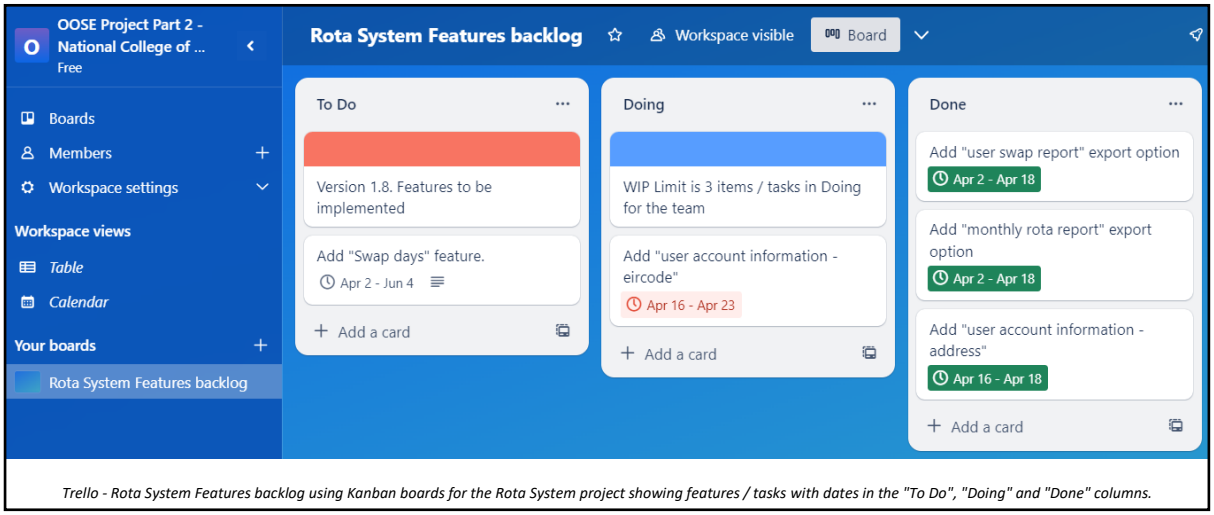
Document:	Daily Log	Project:	Rota System	Author:	Miguel Angel / Project Manager	Date:	01st March, 2023
ID	Date of Entry	Description	Responsible	Target Date	Result		
1	30th April, 2023	Irena Popinceanu, a doctor in Tallagh Hospital, Dublin, who is testing our "swap day" feature has discovered that the system does not work when swapping days in the same date. She emailed me with the feedback.	Project Manager and DevOps	15th May, 2023	At the next iteration of the Rota system, (V1.7) we fixed the issue when swapping days in the same date.		

Daily log screenshot from the Rota System daily log excel file.

Kanban framework artifacts

C) KANBAN BOARD

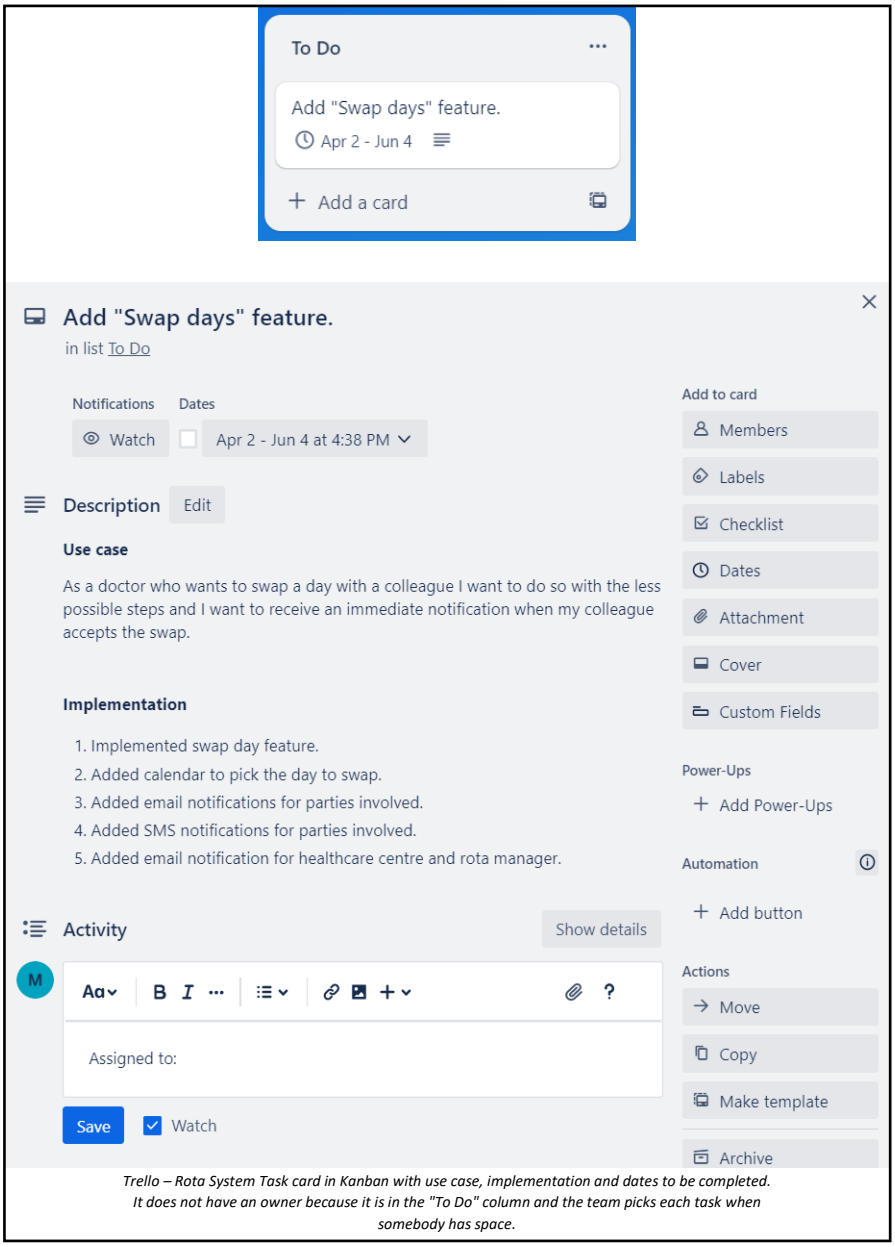
***- Kanban Board:** The Kanban board is a visual representation of the workflow and tasks in progress. It typically consists of columns representing different stages of work, such as "To Do," "In Progress," and "Done." The direction of the Kanban board goes from left (To Do) to right (Done).*



Trello - Rota System Features backlog using Kanban boards for the Rota System project showing features / tasks with dates in the "To Do", "Doing" and "Done" columns.

D) WORK ITEMS

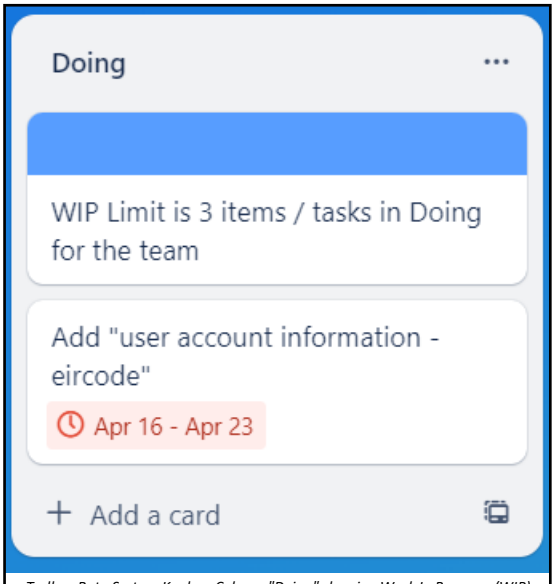
*- **Work Items:** Work items in Kanban represent individual tasks, user stories, or features. Each work item is typically represented by a card or sticky note on the Kanban board. Work items capture relevant information such as the task description, priority, assignee, and due dates.*



Trello – Rota System Task card in Kanban with use case, implementation and dates to be completed. It does not have an owner because it is in the "To Do" column and the team picks each task when somebody has space.

E) WORK IN PROGRESS (WIP) LIMITS

- WIP Limits: *WIP limits are the maximum number of cards that can be in one column at any given time. A column with a WIP limit of three cannot have more than three cards in it. WIP limits are critical for exposing bottlenecks in the workflow and maximizing flow.*



Trello – Rota System Kanban Column "Doing" showing Work In Progress (WIP) Limit for the developers team.

References:

Personal project management plans from my daily job as a Product Expert at Phonovation.

Personal studies of the PRINCE2 (Foundation) course in eSolas college.

Personal use of Kanban framework in my daily job as a Product Expert at Phonovation.

PRINCE2.com., (n.d.)., PRINCE2 Business Case., (Accessed on April 20th on www.prince2.com/uk/prince2-business-case)

PRINCE2.com., (n.d.)., PRINCE2 – Beyond the board: How Kanban works within agile., (Accessed on April 21st on https://www.prince2.com/uk/blog/beyond-the-board-how-kanban-works-within-agile)

Turley. F., PRINCE2 wiki (Accessed on April 21st on https://prince2.wiki)

Wikipedia – Kanban board., (n.d.)., Kanban board., (Accessed on April 21st on https://en.wikipedia.org/wiki/Kanban_board)

Vinas. M.A., Trello – Rota System Features backlog., (Created on May 1st on https://trello.com/b/sRyMtInP/rota-system-features-backlog)

11. Determine potential risks for your project and describe the quality and communication management strategy.

The Rota System development can have a series of potential risks, which include the following ones.

1. Technical Risks: These risks relate to potential challenges or issues in the technical implementation of the Rota system.

The system integration with current technology cannot be achieved. Data security included in the database could be compromised

2. Stakeholder Risks: Risks associated with stakeholders.

Communications between Teams and Stakeholders is inadequate. Visibility of progress of development. Doctors and Hospitals / Clinics could resist to change and learning of new Rota software.

3. Resource Risks: These risks relate to the availability and allocation of resources required for the project.

Impossibility to recruit staff with the skills required. Key staff are ill and unavailable at critical times.

4. Schedule Risks: Risks related to project schedule.

Delays in release of software versions. Changes in project priorities.

5. Quality Risks: These risks involve the potential for compromised quality in the development of the Rota system.

Errors or bugs in the software. Insufficient testing or validation. Failure to meet user requirements and expectations.

6. Requirements Risk: These risks concern the requirements of the system.

Changes to requirements that require major design work are proposed through Stakeholders feedback. Customers fail to understand the impact of requirements changes.

7. Estimation Risk: These risks concern the calculation of an estimate or approximation to determine the certainty of a task.

Time required to develop the software is underestimated.

We are going to use a 3 x 3 Risk Assessment Matrix to assess the risks. It is a basic framework that consists of three levels of likelihood / probability and three levels of impact, resulting in nine possible risks combinations. Being that simple, it facilitates quick decision – making, it allows the allocation of appropriate resources and it is accessible to all Stakeholders and Teams.

Risk Assessment Matrix				
		Severity / Impact		
Probability		Marginal (1)	Moderate (2)	Critical (3)
	Probable (3)	Low -3	High - 6	High - 9
	Occasional (2)	Low -2	Medium - 4	High - 6
	Improbable (1)	Low - 1	Low - 2	Medium - 3

Risk Assessment Matrix (3 x 3) for Rota System project development

To categorise the risks we will use Risk Event Cards where the team will document the risks associated with achieving each of the company's strategic objectives.

Risk Event Card			
Strategic Objective			
Release of stable version 1.0			
Risk Event			
Confusion on scheduling			
Outcomes			
Overtime			
Quality problems			
Rushed version release			
Risk Indicators			
Late completion of tasks			
Late completion of reports			
Likelihod / Consequences			
			3
		x	2
			1
1	2	3	
Management Controls			
Hold daily meetings with developers and Stakeholders.			
Risk-mitigation Intitiave: Identify problems on timeframes			
Accountable Manager			
Miguel Angel Vinas - Project Manager			

Risk Event Card showing risk 1 for Rota System Project.

Risk Event Card			
Strategic Objective			
Satisfy customer expectations			
Risk Event			
Information being stolen			
Outcomes			
Users sensitive information exposed to unathorised individuals			
Steal person's identities			
Fraudulent activities commited through stolen person's identities			
Making unathorised purchases			
Bankrupcy of company			
Risk Indicators			
Presence of malware			
Unpatch or misconfigured systems			
Likelihod / Consequences			
			3
		x	2
			1
1	2	3	
Management Controls			
Contain initial incident			
Risk-mitigation Initiative: Data Protection office will carry out full review of the systems each month			
Accountable Manager			
Miguel Angel Vinas - Project Manager			

Risk Event Card showing risk 2 for Rota System Project.

To mitigate these risks, a quality management and communication strategy should be in place.

Quality Management Strategy:

1. Establish Quality Criteria: Clearly define the quality criteria and requirements for the Rota system.

2. Quality Assurance: Implement quality assurance checkpoints, such as regular code reviews or testing procedures.

3. Testing and Validation: Conduct testing to identify issues before deployment.

4. Documentation: Maintain well written and understandable documentation.

Communication Management Strategy:

1. Stakeholder Engagement: Identify and engage relevant stakeholders. Communicate regularly about the progress of the projects, including releases and risks.

2. Clear Communication Channels: Establish clear communication channels to make work and communications visible with all parties.

3. Risk Communication: Communicate identified risks and risk management strategies with all parties.

References:

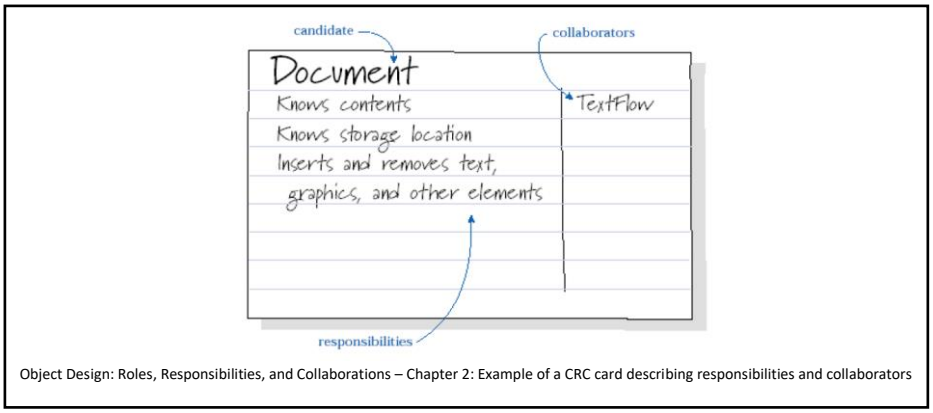
Madsen. S., 9 Steps to Managing Risk for Your Projects. (Accessed on 21st April on www.liquidplanner.com/blog/9-steps-risk-management-process)

Hayes. A., Risk Analysis: Definition, Types, Limitations, and Examples (2023)., Investopedia (Accessed on 21st April on https://www.investopedia.com/terms/r/risk-analysis.asp)

Mikes. A., Kaplan. R. S., Managing Risks: A New Framework (2012)., Harvard Business Review. Harvard Business Publishing. (Accessed on 21st April on https://hbr.org/2012/06/managing-risks-a-new-framework)

12. Develop all the classes required to implement one of the use cases described in part 1 of the assessment in a suitable OO language (e.g. Java or C++).

We are going to use the concept of Class-Responsibility-Collaboration (CRC) cards while implementing the use case. This will help promoting knowledge sharing between the team and test our system for potential problem points.



Object Design: Roles, Responsibilities, and Collaborations – Chapter 2: Example of a CRC card describing responsibilities and collaborators

Use Case Name: Request Time Off

Classes required to implement the use case.

Class Name: AnaestheticDoctor
Responsibilities: Logs in, views ICU monthly schedule, requests time off, checks request status, gets time off
Collaborators: RotaAdministrator, Database

Class Name: RotaAdministrator
Responsibilities: Logs in, checks ICU monthly schedule, checks time off requests, approves time off requests, approves hiring of Substitute Doctor, denies hiring of Substitute Doctor
Collaborators: AnaestheticDoctor, Database, Agency

Class Name: Database
Responsibilities: Stores ICU monthly schedule, retrieves ICU monthly schedule, stores time off requests, retrieves time off requests
Collaborators: AnaestheticDoctor, RotaAdministrator

Class Name: Agency
Responsibilities: Receives request to hire substitute doctors, confirms requests to hire substitute doctor, sends details of substitute doctors *(I added this last one because the Agency needs to send the details of the person who has been hired!)*
Collaborators: RotaAdministrator, System

Class Name: icuMontlySchedule
Responsibilities: Holds information about the ICU monthly schedule
Collaborators: AnaestheticDoctor, RotaAdministrator, Database

Class Name: timeOffRequest
Responsibilities: Holds information about the Time Off request
Collaborators: AnaestheticDoctor, RotaAdministrator, Database

Class Name: hireSubstituteDoctorRequest
Responsibilities: Sends request to hire a substitute doctor
Collaborators: RotaAdministrator, Agency, System

Class Name: Notification
Responsibilities: Sends notifications to relevant actors (AnaestheticDoctor, RotaAdministrator)
Collaborators: AnaestheticDoctor, RotaAdministrator

Class Name: Interface
Responsibilities: Provides user interfaces for AnaestheticDoctor and RotaAdministrator
Collaborators: AnaestheticDoctor, RotaAdministrator

Class Name: System
Responsibilities: Manages the use case
Collaborators: AnaestheticDoctor, RotaAdministrator, Database, Agency, Interface

Class Name: EncryptionRequest
Responsibilities: Encrypts and decrypts data for secure requests between the System and Agency but also between AnaestheticDoctor / RotaAdministrator and System. All requests must be made in a secure way
Collaborators: System, Agency, AnaestheticDoctor, RotaAdministrator

Class Name: SecureLogin
Responsibilities: Ensures system security and authentication for user logins
Collaborators: AnaestheticDoctor, RotaAdministrator, Interface

Class Name: employeeLeave *(it is not in Part1 but I feel that it is important for the system)*
Responsibilities: Holds the amount of days that an employee has off. Updates itself with successful requests for time off.
Collaborators: AnaestheticDoctor, RotaAdministrator, System, Database, ICU Monthly Schedule

References:

Gamma, E., Helm, R., Johnson, R., Vlissides, J., (1995)., Design Patterns: Elements of Reusable Object-Oriented Software. Addison-Wesley Professional Computing Series., Pearson.

Wirfs-Brock, R., McKean, A., (2002)., Object Design: Roles, Responsibilities, and Collaborations., Addison-Wesley., Pearson.

13. Create test cases or scenarios to test the classes developed above, naming and justifying the test methodology followed. Describe the tests carried out, detailing how you will ensure that the classes are free from errors and detail the results of the tests.

We are going to follow a Kanban framework approach for the testing of the classes. This will allow us to visualize the testing workflow through the different stages ("To Do", "Doing", "Done"). It will help with visibility for all stakeholders and teams.

We will be able to prioritize the tests according to importance and we will be able to track the effort of the team and how much time they are spending on testing the classes.

Our testing team is going to have two Kanban boards.

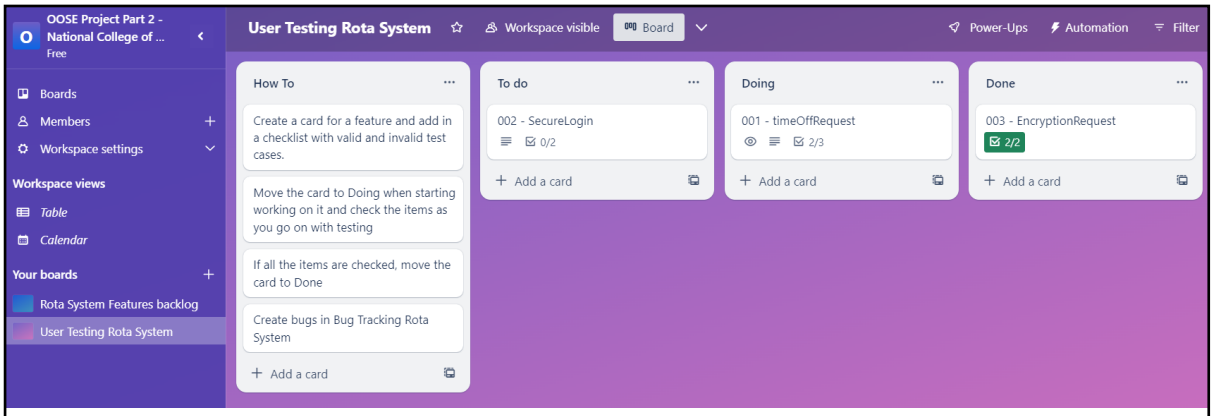
1) Testing Rota System.

The tests will be performed recording the series of steps that the tester is performing. The tests will have an Expected Result, an Actual Result and the Status of the test. These three fields will allow the team visualize what is happening exactly at a quick glance.

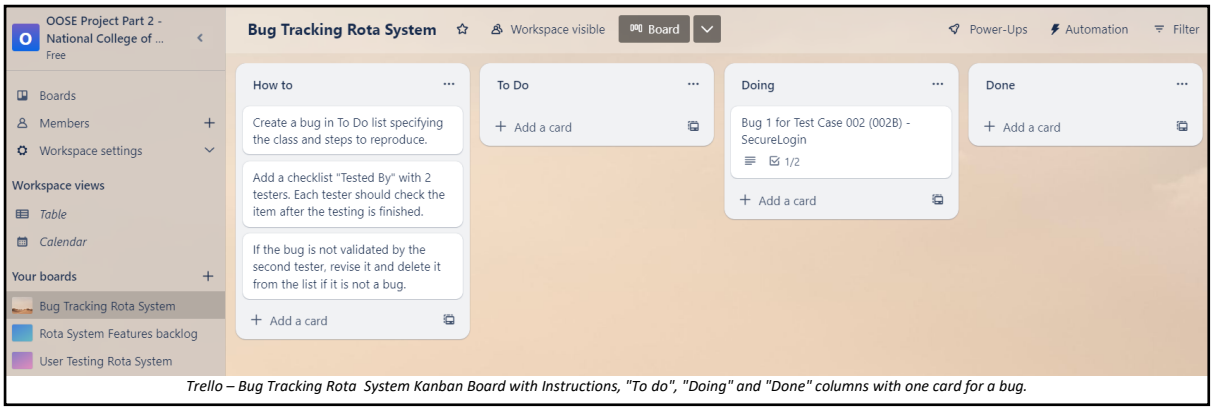
2) Bug Tracking Rota System.

All the bugs found while testing the classes (and other subsets of testing) will be organized and reported in the Bug Tracking Rota System board making it easier to visualize and manage.

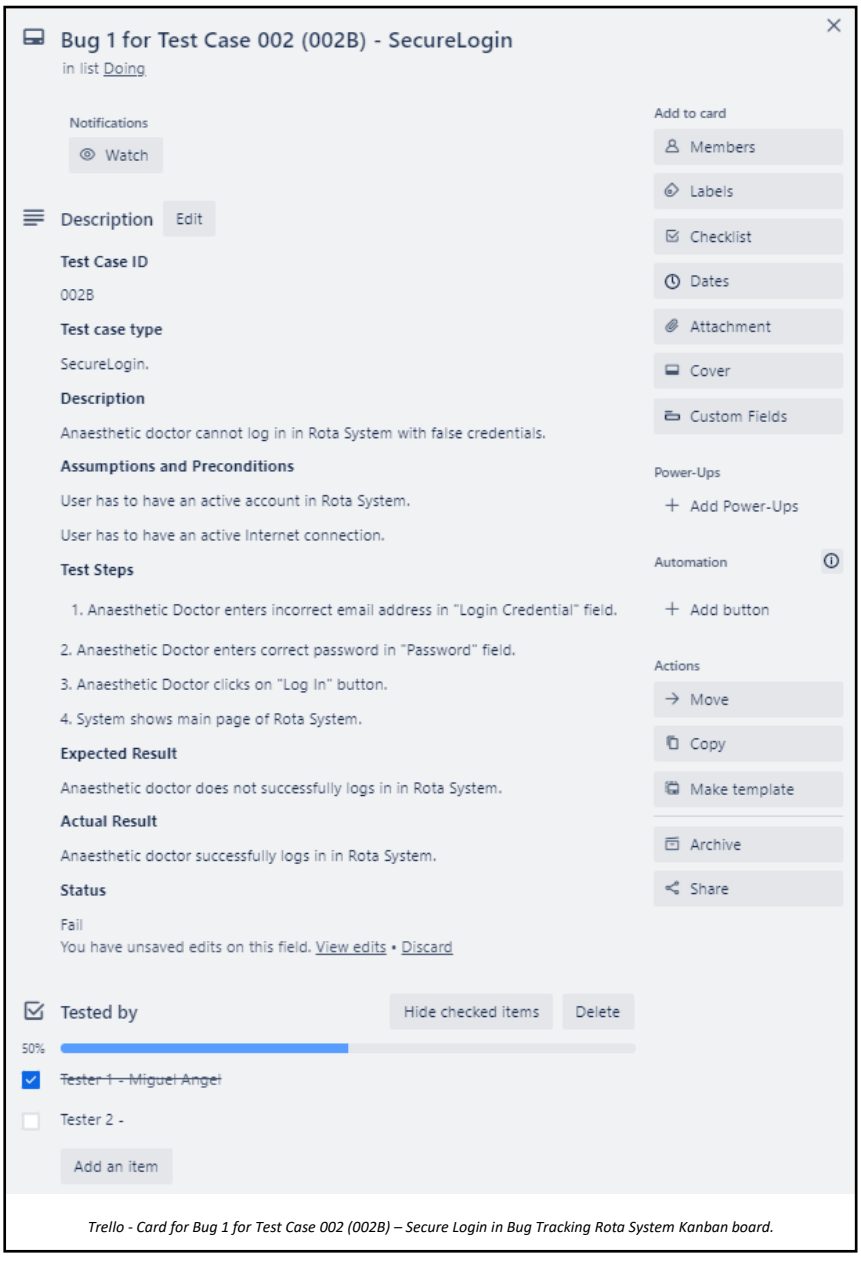
Bugs will have to be tested by two testers to ensure proper validation.



Trello – User Testing Rota System Kanban Board with Instructions, "To do", "Doing" and "Done" columns.



Trello – Bug Tracking Rota System Kanban Board with Instructions, "To do", "Doing" and "Done" columns with one card for a bug.



Trello - Card for Bug 1 for Test Case 002 (002B) – Secure Login in Bug Tracking Rota System Kanban board.

Test Case ID

001

Test case type

timeOffRequest.

Description

Anaesthetic doctor requests a day off from the ICU Monthly Schedule.

Assumptions and Preconditions

User has to have an active account in Rota System.

User has to be logged in in Rota System.

User has to have an active Internet connection.

ICU Monthly Schedule is up to date.

Test Steps

1. Anaesthetic Doctor clicks on calendar to pick day off.

2. Anaesthetic Doctor clicks on day off.

3. Anaesthetic Doctor clicks on "Confirm" button.

4. System shows feedback to Anaesthetic Doctor confirming that the request has been successfully submitted.

5. Rota Administrator receives notification (SMS, email, notification in Rota System) showing that there is a pending Time Off request.

6. Rota Administrator clicks on notification in system.

7. Notification shows to Rota Administrator the time off request from Anaesthetic Doctor showing that there is no schedule conflicts.

8. Rota Administrator clicks on "Confirm Time Off Request" button.

9. System shows feedback to Rota Administrator confirming that the Time Off request has been confirmed.

10. Anaesthetic Doctor receives notification (SMS, email, notification in Rota System) showing that Time Off Request has been approved.

11. System subtracts one day from the Anaesthetic Doctor's leave / Time Off and marks it as day off.

Expected Result

Anaesthetic doctor successfully request a day off from the ICU Monthly Schedule.

RotaAdministrator receives the request for a day off and successfully approves it.

System subtracts a day from the Anaesthetic Doctor's Leave / Time Off.

Actual Result

Anaesthetic doctor successfully request a day off from the ICU Monthly Schedule.

RotaAdministrator receives the request for a day off and successfully approves it.

System subtracts a day from the Anaesthetic Doctor's Leave / Time Off.

Status

Pass

Trello - User Testing Rota System – Card001 - timeOffRequest

Test Case ID

002A

Test case type

SecureLogin.

Description

Anaesthetic doctor logins in Rota System.

Assumptions and Preconditions

User has to have an active account in Rota System.

User has to have an active Internet connection.

Test Steps

1. Anaesthetic Doctor enters email address in "Login Credential" field.

2. Anaesthetic Doctor enters password in "Password" field.

3. Anaesthetic Doctor clicks on "Log In" button.

4. System shows main page of Rota System.

Expected Result

Anaesthetic doctor successfully logs in in Rota System.

Actual Result

Anaesthetic doctor successfully logs in in Rota System.

Status

Pass

Test Case ID

002B

Test case type

SecureLogin.

Description

Anaesthetic doctor cannot log in in Rota System with false credentials.

Assumptions and Preconditions

User has to have an active account in Rota System.

User has to have an active Internet connection.

Test Steps

1. Anaesthetic Doctor enters incorrect email address in "Login Credential" field.

2. Anaesthetic Doctor enters correct password in "Password" field.

3. Anaesthetic Doctor clicks on "Log In" button.

4. System shows main page of Rota System.

Expected Result

Anaesthetic doctor does not successfully logs in in Rota System.

Actual Result

Anaesthetic doctor successfully logs in in Rota System.

Status

Fail

References:

Vinas. M.A., Trello – User Testing Rota System backlog., (Created on May 1st on https://trello.com/b/Poi5uScV/user-testing-rota-system)

Vinas. M.A., Trello – User Testing Rota System backlog., (Created on May 1st on https://trello.com/b/3aHSShdl/bug-tracking-rota-system)

14. Glossary.

Agile: Approach to project management that centers around incremental and iterative steps to completing projects.

Lean: A methodology that prioritizes continuous improvement, eliminating waste while creating as much value for the customer as possible.

Test Case: A set of actions performed on a system to determine if it satisfies software requirements and functions correctly.

Risk: A potential problem. It is an activity or event that has the potential to jeopardize the success of a software development project.

PRINCE2: A structured project management method. It emphasises dividing projects into manageable and controllable stages. It stands for **PR**ojects **IN C**ontrolled **E**nvironments.

Stakeholder: An individual, group or organization that's impacted by the outcome of a project or a business venture.

Project Manager: The person in overall charge of the planning and execution of a particular project.