Case Study:
Dynamic registration for Oil & Gas marketplace

Author: Amir Hamidi Amha

Project Overview

- As part of the Malaysian government's initiative to reduce cost of procuring O&G materials amongst operators in the country — primarily referred as Petroleum Arrangement Contractors (PAC), a marketplace was built to facilitate the sharing of Oil & Gas (O&G materials among these PACs.
- This marketplace emphasises the reutilisation of materials such as drills, pipes, valves, etc. to optimise usage and avoid procuring new materials for new projects.
- With 16 PACs in the country, a dynamic registration process was required to ensure that all parties are able to access and benefit from the marketplace.
- As technical lead overseeing the Business Analysts (4 team members) and UIUX (3 team members), I was tasked to lead the team and deliver a solution that satisfies the requirements while delivering the best User Experience.

Problem Statement

- As the marketplace will be accessed by more than 1,000 users across 16 PACs, bringing a unified, simplified registration process to fruition is a big challenge, given the differing cyber security policies and tech stack of each operator.
- With employee turnovers expected to be volatile on an annual basis, and the marketplace strictly operating on a confidentiality basis, the management of newly registered users was a pain-point that needed to be addressed.
- The previous method where the marketplace was placed under the purview of the main PAC in Malaysia meant that other PACs needed to register as an external contractor before being able to access the marketplace. This created governance issues where transactions were marked as inter-company when it should have been marked as intra-company.

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Goals & Objectives

- A dynamic registration process that can catered to the differing requirements in cyber security and personal data protection was required to ensure a seamless and integrated user registration and management process.
- Despite the complexity of the backend, it was imperative to create a unified registration process across all 16 PACs to achieve our best user experience goal.
- To solidify the team's focus, I derived 3 main criterias on which the success of the solution hinged upon:
    1. Quick — Reducing the amount of red-tape and time to ensure users can be onboarded quickly.
    2. Compliant — Adherence to all 16 PACs differing cyber security and data protection policies.
    3. Seamless — The registration process is consistent for all users, regardless of which PAC they belong to.

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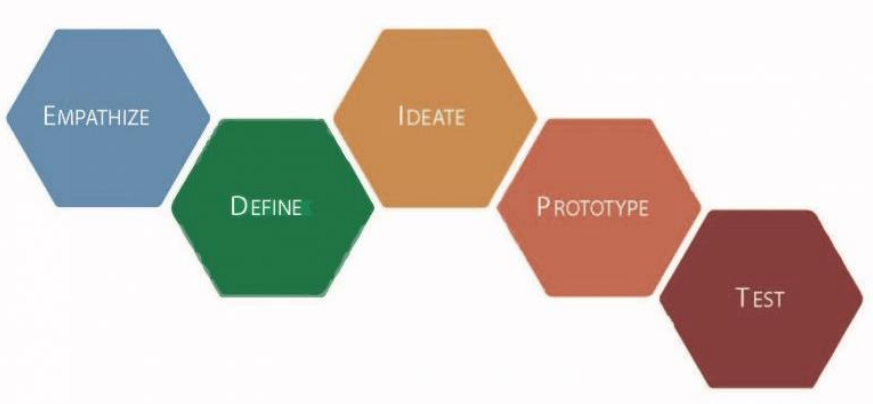
Research & Insights

- We began our search for the right solution by adopting the Design Thinking method — Empathise, define, Ideate, Prototype, and Test.



- As part of the Empathsing with the users, we spend a month in meeting with representatives of all 16 PACs to understand their paint points with the current registration process.
- Simultaneously, we also conducted surveys with existing users and studied the analytics of the current system to match the pain points from the interviews and surveys to the gaps within the system to identify the exact point of the user's journey that created friction.
- Each friction was then assigned a weightage from 1 (little friction, requires minimal fixes) to 5 (extreme friction, requires extensive fixes).
- From our research we found the following (friction weightage):
    1. Adherence to cyber security & data protection policies (5)
        - It was found that PACs had to make exceptions to their policies in order for users to be able to be onboarded. This was given the highest weightage as it compromises each PAC's compliance and governance.

2. Change/Acquisition of PACs (4)
    - From time to time, there are and will be acquisitions of a PAC which previously meant that the entire organisation had to be reintroduced into the system with new credentials. This process was strenuous and tedious for all involved.
3. Onboarding completion time (3)
    - Currently, the average completion time for onboarding ranged from 3 business days to 5 business days as each registration had to be verified and approved manually by up to 5 separate parties.
4. Non-compliant workaround (3)
    - To overcome the friction in point 3 above, some PACs reverted to skipping several verification and approval processes that risk the confidentiality nature of the platform and raised compliance and governance issues.
5. User management complexity (2)
    - The current User Management System was overseen by a team of 4 from the main PAC. This created situations where they are more reactive and proactive in updating the User Database, especially in the case when existing users leave their positions or there are structural changes to other PACs
6. Change of user's personal details (1)
    - Related to point 5 above, the team managing the User Management System were able to update personal information of each user only when it was requested by users via email.

- From the above findings, it was clear that we required a solution that is dynamic. Allowing for personalized registration approval flows for each PAC, while also allowing keeping to our goal of quick, compliant and seamless.

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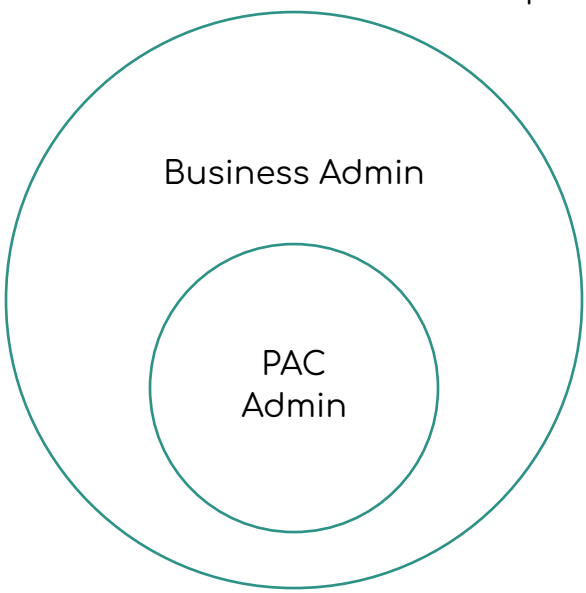
Strategy & Approach

- Following the research, and defining the requirements, I spearheaded the solution design phase with the team to formulate our solution.
- It was agreed upon that we required an administrative (PAC Admin) from each of the 16 PACs. These PAC Admins would be responsible in maintaining their respective PACs by:
    1. Ensuring their PAC are compliant to their own governance polices, including cyber security and personal data policies.
    2. Implementing the desired registration approval process on the PAC level.
    3. Carrying out configurations of their respective PACs to ensure the organisation is reflected and updated in the system, as and when needed. I.e. in the event of a merger or acquisition.
- To supplement the PAC Admins, the original administrative role was refined into a new role — Business Administrator (Business Admin). These Business Admins would still be responsible for the overall user management system. However, they would now work in tandem with the PAC Admins, to ensure the user database is always up to date.

PAC Admin vs. Business Admin responsibilities



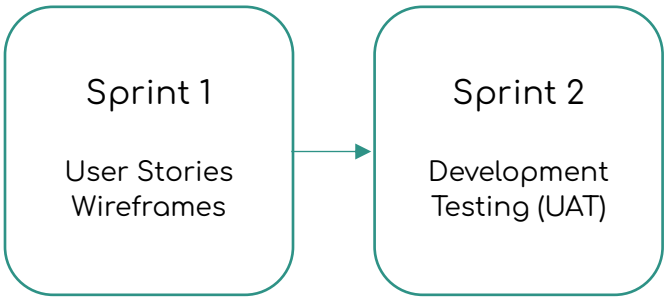
- With these 2 roles defined, the registration process naturally adopted the checker-maker process which helped with reducing errors, increasing accountability, improving data accuracy, and ensuring compliance.
- From here, we derived a high-level reworking of the registration process:

  This helps lessen the burden on Business Admins who were previously responsible for the end-to-end registration process, which resulted in bottlenecks and slowing down the registration process.
- To further lessen the red-tape and automate part of the registration process, I initiated a process to automate part of the registration process.
- As each PAC have their own compliance and governance policies, I tasked part of the team to look into implementing domain recognition into the registration process. This effectively signals the system to adopt a set of policies and restrict relevant personal information to within the same domain. For example, a person x with the email x@abc.com would only be govern by policies enforced on the abc.com domain while personal information is strictly available to only those on the abc.com domain.
- This eliminates the need for manually enforcing cyber security and personal data policies throughout the system.

- The solution was presented to the Product Owner and stakeholders which included our research findings, lo-fi wireframes and prototype. It was well received with the team able to answer all questions pertaining the solution with only minimal request changes. These changes were more to the design concept and did not interfere with functionality.

Execution

- We began the execution of the solution by adopting a 2-week sprint, it was estimated to take 2 sprints to build the solution and get it ready for User Acceptance Testing (UAT).



- A total of 13 User Stories were composed by the Business Analyst team, carried out together with the Product Owner and stakeholders to ensure we covered all requirements.
- These User Stories were then handed over to the UIUX team to create hi-fi wireframes on Figma. Once completed, the User Stories and design were handed over to developers.
- Each handover session was done as a sprint ceremony to ensure that the requirements were understood across the collaborating teams. Any questions were addressed and refined during the ceremony itself.
- The collaborating team included the Product Owner, Stakeholders, Project Manager, Developers and Quality Assurance (QA) team.

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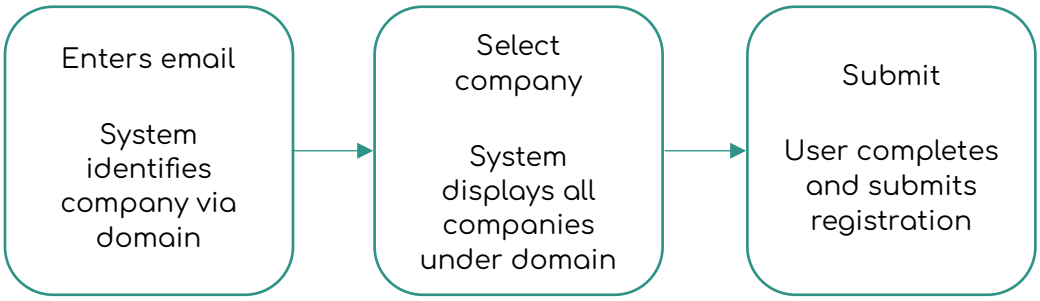
- The major challenge we faced during the development involved the limitations of our selected development platform, OutSystem. During that time, OutSystem did not have an integrated grid function that was required for the User Management process. To address this, the team decided to build our own grid function from scratch, as such, this caused a delay to our sprint planning which required it to be extended to 3 sprints instead of the original 2.

- Another challenge we faced were for subsidiaries of a PAC. Despite sharing the same domain as the parent company, these subsidiaries required their own policy enforcement and approval process. As such, the registration form was expanded to include a company selection drop-down menu. This menu was integrated to a database which lists all subsidiaries under one company. For example, company Y and Z is a subsidiary of company X and shares the same domain: abc.com. When detecting the user's domain from their email address, the company menu will only display companies that are under the domain, in this instance, putting in a@abc.com will result in the dropdown menu displaying only X (parent), Y and Z (subsidiaries) as possible selection.



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Results & Impact

- The solution was tested and went live 6 weeks exactly from the beginning of Sprint 1. In total we executed in 3 sprints, which was extended to provide enough time to developers to create the grid function from scratch, perform UAT, and fix any bugs found during the UAT session.
- As expected, there was a teething period where users needed time to familiarize themselves with the new registration process, especially for the newly created PAC Admin and Business Admin roles.
- However, about 1-month after go-live, we observed results that validated our solution:
    1. Reduced onboarding time by up to 40% — Average time to complete registration fell from 3 to 5 working days to 1 to 3 working days.
    2. Eliminated compliance workarounds across 16 PACs — There was no longer any need by PAC Admin to derive workaround that compromised their cyber security and data protection policy.
    3. Improved support diagnosis efficiency by up to 100% — All users went through the same exact registration process, enabling the Support team to identify the precisely whenever an issue was raised. This reduced turnaround time for diagnosis between 50% and 100%

Function	Before	After	Delta
Onboarding time	3-5 working days	1-3 working days	↓ 40%
Compliance	75%	100%	↑ 25%
Support diagnosis	≈2-3 days	≈1-2 days	↑ 50% - ↑ 100%

- We also perform a User Satisfaction Survey to gauge the solutions reception by users. From the 30 questions fronted, we received a favourable response of 72% which is an excellent result when benchmarked against similar Satisfaction Survey. Our most common feedback was that the users were happy to not have to sign into multiple systems before being able to access the marketplace — "with the simplified registration process, my team no longer feel the need to gatekeep access to the marketplace within our company".

Reflection

- When planning and executing this dynamic registration process, I found that different stakeholders have different needs, from the users who desire a seamless and quick onboarding process, to the Product Owner who impressed the non-negotiable compliance and governance aspects. My responsibility is to satisfy — if not all, then most of these requirements harmoniously.
- Collaborating works only when stakeholders are willing to make compromises. However, these compromises should not risk the overall requirements, doing so may only surface even bigger risks in the future. I've learnt to compromise where I can and hold firm where I can't.
- One aspect that I could improve on is to take into considerations for the collaborative team not under my purview. Understanding their restrictions and making leeway for their delivery will result in a better estimated timeline and budgeting.
- Conflicts are the norm in any collaborative team. The key to making it work is to ensure that conflicts are not personal in nature and understanding that everyone want to deliver to the best of their ability. Conflicts in itself is also an avenue to finding creative solutions and encourages out-of-the-box thinking.