

# Recruitment Application Revamp Using Agile Development Methodology

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## ABSTRACT

To speed up the recruitment process of Maxtekno, a robust and reliable application platform needs to be developed. The agile development methodology is being used in this research along with qualitative research for the supporting data. The result of this development is a prototype that can be evaluated and continued to be iterated in the future. After the prototype was evaluated, most of the users were satisfied and it concludes that the prototype can deliver the user's needs. The impact of using agile development methodology is that the development progress is more trackable and changes in features can be identified sooner than in other methodologies.

**Keywords:** agile methodology, low-code, recruitment platform, scrum.

## 1. INTRODUCTION

Based on a study from Indonesia Internet Providers Association (APJII), from the 266.91 million population of Indonesia, there have been 196.71 million users by quarter 2 of 2020, which equals 73.7% of the total population in Indonesia. The number has increased by 14.92% from the previous year [1]. With the huge amount of internet users as potential users, digital services will become more essential, and the ICT industry will continue to grow in the future.

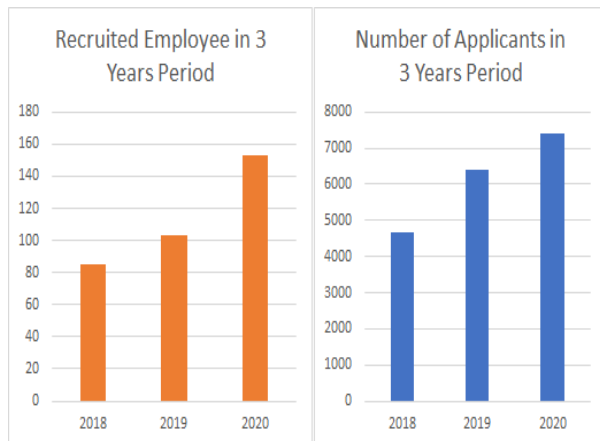
According to the data that was collected from 7.012 companies all over 34 provinces by Statistics Indonesia (Badan Pusat Statistik, BPS), there are only 37% of companies already have their website. It is also shown that in 2020, there are only 33% of the companies that implement innovation 2020 (Badan Pusat Statistik, 2020) [2].

Based on the research that was conducted by Frost & Sullivan in 2018, Cloud Data Centre, Cloud Services, and Business Process Outsourcing (BPO) will keep growing until 2022. The growth of cloud services will be the highest compared to data centers and BPOs throughout

the years. The cloud services market is currently led by Telkom Sigma with a 19% revenue share, followed by Indonesia Cloud, XL-Axiata, and other cloud services providers [3]. With the growing potential of digital services market revenue in Indonesia, Maxtekno sees this as an opportunity to penetrate. Even though the cloud services market is led by big national companies, Maxtekno can enter the market with a broad portfolio and high experience in Singapore.

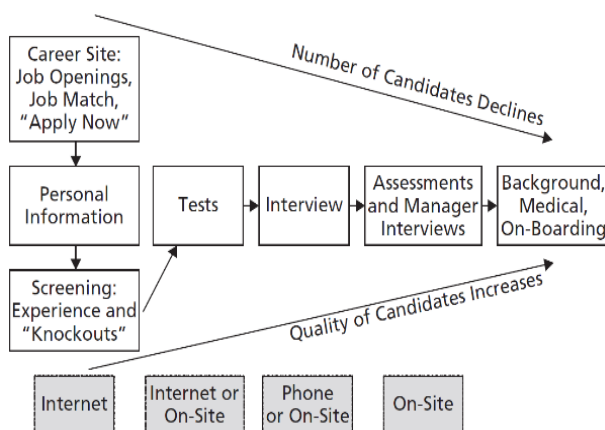
During these past 3 years, the number of applicants for Maxtekno has been increasing from more than 4500 in 2018 to almost 7500 in 2020. Although the number of recruited applicants is increasing as well, not more than 200 were recruited per year. The biggest number of recruited employees is in 2020 which is 153.

In Maxtekno, 8 phases need to be done during the recruitment process. Unfortunately, there are still a lot of manual processes, and the documents are not centralized. With the huge number of candidates in a year, the long process of recruitment, and a lot of manual processes that the HR department needs to do, an enhancement or a revamp will be needed for the current recruitment platform.



**Figure 1** Number of Candidates and Recruited Employees in 2018 – 2020

According to Reynolds and Weiner (2008), the typical job candidate flow model is shown in Fig 2. In this internet era, the careers site will first be used to attract candidates. To make a good first impression for the candidates, the “About our Company” page needs to reflect the company’s brand clearly and give details on company culture, major benefits and flexibilities for employees, testimonials from employees, and a clear statement on the meaning of working in the company. Next, job categories, career paths, and available positions will be shown to the job seekers. Once the job seekers are applying for a position, their personal information will be collected. To screen the candidates whether they are suitable for the position or not, some questions will be asked such as certifications and licenses, relevant experience, specific occupational skills, and other job-related characteristics. screening questions are not enough to provide depth of insight and an accurate view of the candidate's capability and fit with a role. Hence, tests can be positioned at several points in the hiring process. Beyond screening questions and testing tools, richer assessment options consist of simulations of work activities that will be crucial for the candidate when on board [4].

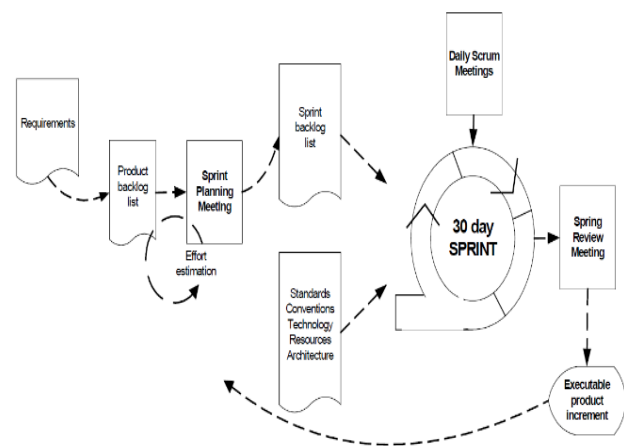


**Figure 2** Number of Candidates and Recruited Employees in 2018 – 2020 [4]

Referring to Schweyer (2004), the talent management continuum shows the need to view the workforce management process as a recurring process that started with planning. A workforce plan is a variable instrument that makes every organization unique depending on its needs and structure. Thus, mapping available and potential talent is needed to broad and precise business objectives. Schweyer also mentioned that the workforce must first be analyzed. The growth and reduction of the workforce must be planned even until its development and redeployment [5].

Based on research by Mahadi and Dhewanto (2019), managing innovation is about how the company’s innovation meet the condition the need of the current situation in the company. Managing innovation allows the organization to respond to external and internal conditions, and use its creativity to make or create new ideas, processes, or products. This kind of management is needed in terms to gain competitive advantage or power in wide areas of industry. Managing innovation is about how to create and adopt the innovation for users or customers [6]. Since Maxtekno has been migrating to Microsoft stack, thus new technology enablement will be needed as part of innovation management.

The agile development methodology that will be used is the scrum methodology. The process can be seen in Fig.3.



**Figure 3** Scrum Process [7]

As explained by Abrahamsson, et. al. (2002), Product Backlog defines the work to be done in the project. Backlog items can include, for example, features, functions, bug fixes, defects, requested enhancements, and technology upgrades. Effort estimation is an iterative process, in which backlog item estimates are focused on the more accurate level when more information is available on a certain Product Backlog Item. Sprint Planning Meeting is a two-phase meeting organized by the Scrum Master. The first phase of the meeting involves the customers, users, management, Product Owner, and Scrum Team to decide upon the goals and the functionality of the next Sprint. The second phase of the

meeting is held by the Scrum Master with the Scrum Team focusing on how the product increment will be developed in the Sprint by selecting the items from the Product Backlog. To keep on track of the progress of the Scrum Team continuously, daily scrum meetings are organized. It will discuss what has been done since the last meeting and what is to be done before the next one. Problems also can be carried out during the meeting. Then, the Scrum Team and the Scrum Master present the results of the Sprint to the management, customers, users, and the Product Owner. The participants assess the product increment and decide on the following activities [7].

Based on the business issues that have been identified, there are 3 questions to be researched, such as what requirements do the user need for the new recruitment platform? What kind of product accomplishes the user's needs? And what are the improvements needed based on the current prototype and the current design?

This research is conducted to define the requirements of the new recruitment platform, to develop a prototype that will be able to deliver the user's needs based on the requirements, and to gather feedback from the prototype for future improvement.

## 2. METHODS

The methodology in this research is shown in Fig. 4. First, the business issue is defined by a discussion with the stakeholders. Then, a root cause analysis of the business issue is conducted. After that, requirement gathering for the new recruitment platform is conducted by holding a meeting with the users, especially the HR team. After the requirement has been gathered, the product backlog that contains the tasks that should be done during the development is created. While preparing the product backlog, the development team also prepares high-level design such as system architecture and wireframe design.

Once ready, the sprint backlog is defined for each sprint during the sprint planning. Every day in each sprint, there will be a daily scrum meeting to keep the team up to date on what has been done and what is going to be worked on that day. At the end of each sprint, there will be Sprint Review Meeting to review what has been done in the sprints. If there is an increment that can be released, then the increment will be integrated with the previously released product. Sprint review also followed with Sprint Retrospective Meeting to discuss what has been done well on that sprint and what needs to be improved in the following sprint. Then, the development will continue to the next sprint starting with defining the sprint backlogs that need to be done in the sprint planning.

This research involves 2 HR department personnel. The research also involves 2 developers to validate the requirements whether it is feasible to be done and how is difficult to develop the features.



Figure 4 Research Methodology

## 3. RESULTS AND DISCUSSION

### 3.1 Root Cause Analysis

To understand the root cause of the problem, an analysis is done by interviewing the stakeholders such as the HR team and the interviewer team. A Fishbone diagram is used, and the result can be seen in Fig. 5.

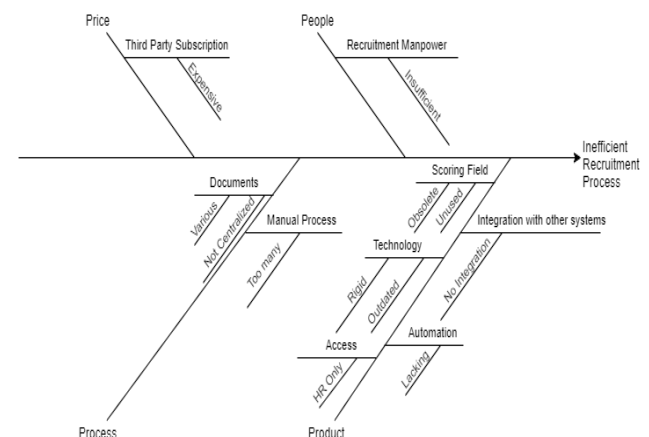


Figure 5 Fishbone diagram

The problems are then analyzed to verify which problem is the root cause of the issue and which one is not. The full analysis can be seen in Table 1.

**Table 1.** Root cause analysis

Possible Cause	Root	Discussion	Cause?
Price			
High Third-Party Subscription Price		The subscription price for online testing is too high	No
People			
Lack manpower		It will be great if there is an addition of manpower for the recruitment division in HR	Yes
Product			
No integration with other systems		Currently, there is no integration with another internal ERP systems	No
Unused Scoring Field		Scoring field exists but unused because it is obsolete	Yes
Outdated Technology		The technology used currently is outdated and too rigid	Yes
HR Only Access		Only HR department have the access to the admin site	No
Lack of automation		There is still a lot of manual processes needed to be done	Yes
Process			
Documents are not centralized		Document templates are in various places	Yes
Too many manual processes		There is still a lot of manual processes needed to be done	Yes

### 3.2 Pre-game Phase

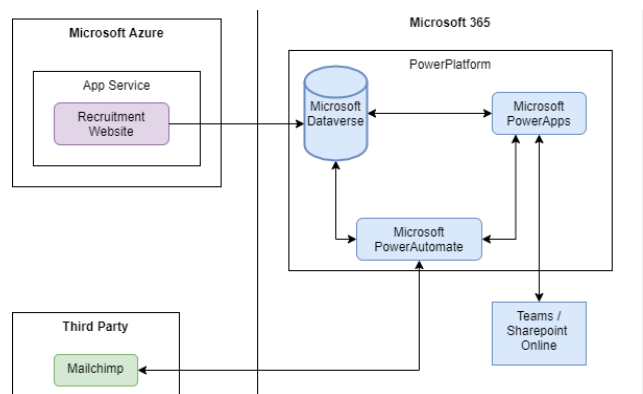
The team then define the user stories needed to solve the problems that have been identified based on the root cause analysis. The user stories are shown in Table 2.

**Table 2.** User stories

As a/an	I want to	So that I
HR Recruitment Team	Have advanced sorting feature	Can track candidate's status easily
HR Recruitment Team	Have a role-based interface for documents and scoring	Can access prohibited candidate's data with authorization and do scoring in one platform

HR Recruitment Team	Have an interface to assign interviewer and create an invitation in calendar	Can assign an interviewer and book their time seamlessly
HR Recruitment Team	Have configuration tools	Can configure the flow and fields for the recruitment process

While the Product Owner defines the user stories based on the requirements from the user, the development team then creates the product backlog and the high-level design of the new recruitment platform. The technical architecture can be seen in Fig. 6. The recruitment platform will be created using Microsoft Power Platform to simplify the integration with Microsoft services that have been used by Maxtekno.



**Figure 6** Technical Architecture

The product backlog for the development is shown in Fig. 7. There will be some of the pages that need to be created based on the application phase (e.g. Demo App Assessment, Interview Assessment). For each phase, there will be a listing page and a detail or scoring page. The phases are created separately so that the user access can be controlled based on the user role so that only privileged users are able to view and create scoring on each phase.

Epic	Story / Task	Subtask
Public Recruitment Site	Maintain the existing features of the public recruitment site	Source code and content migration
		Integration to the new platform database
	Application progress monitoring	Send unique code upon submission
		Create OTP Trigger Page
		Trigger OTP Delivery to email
		Create progress monitoring page
	Have clear information on benefits, detailed job description, etc.	Recruitment Site Content Update
	Ability to re-apply	Disable blocking logic
	Ability to refer a friend	Modify fields in the recruitment site
	Have a Privacy Policy Statement	Create Privacy Policy Page
	Data Extraction from Resume	Create data extraction method after resume upload

Epic	Story / Task	Subtask
Internal Recruitment Platform	Initial Setup	Setup environment
		Create database structure
	All Applications Page	Applications Listing Page
		Applications Detail Page
	WST Assessment Page	WST Listing Page
		WST Scoring Page
	Live Test Assessment Page	Live Test Listing Page
		Live Test Scoring Page
	Demo App Assessment Page	Demo App Listing Page
		Demo App Scoring Page
	Interview Assessment Page	Interview Listing Page
		Interview Scoring Page
		Automated assign interviewer and scheduling
	Psychological Test Page	Psychological Test Listing Page
		Psychological Test Detail Page
	Offering Assessment Page	Offering Listing Page
		Offering Scoring Page
	Medical Checkup Assessment Page	Medical Checkup Listing Page
		Medical Checkup Detail Page
	Configuration Tools	Configuration Tool Page
		Access Control
	External Tool Integration	Integration with workforce planning tools
		Integration with Learning and Performance Management System
	Automation	Automate WST Case or Demo App Test Delivery to Candidate

Figure 7 Product Backlog

### 3.3 Development Phase

The development occurs in 2-weeks sprints. For every sprint, there will be a sprint planning meeting to define the tasks that need to be developed on that sprint

and there will be a sprint review meeting at the end of each sprint to review the features or iteration that has been developed. There will be a sprint retrospective meeting at the end of each sprint to evaluate the process of the sprint. For the first two sprints, the sprint backlog that is being developed is shown in Fig. 8.

Story / Task	Subtask	Story / Task	Subtask
Initial Setup	Setup environment	All Applications Page	Applications Detail Page
	Create database structure		
All Applications Page	Applications Listing Page	Live Test Assessment Page	Live Test Listing Page
			Live Test Scoring Page
WST Assessment Page	WST Listing Page	Demo App Assessment Page	Demo App Listing Page
	WST Scoring Page		Demo App Scoring Page

Figure 8 Sprint 1 and Sprint 2 Backlog

After the two sprints, the task has been completed so that in the new recruitment platform, the application listing and detail page, Work sample test (WST) assessment listing and detail page, live test listing and scoring page, and demo app listing and the scoring page has been created.

Then, a sprint review meeting with the HR team is conducted to gather feedback on whether the created features have met their expectations or not and whether any features need to be developed that were not yet defined in the product backlog. From the sprint review, the HR team mentions that the feature so far has met the requirements based on the developed features. The HR team also gives feedback that there is a need for a consolidated scoring page so that it could simplify the HR team when requesting approval from the management. For that, the task will be added in future sprints.

To add on, the comparison of the current recruitment process and the new recruitment process can be seen in Table 3.

Table 3. Existing and new recruitment process comparison

Existing Recruitment Process	New Recruitment Process
HR needs to download the candidate's CV and upload it to Microsoft Sharepoint	The CV submitted by the candidate can be seen in the new recruitment platform by the HR and the scorer
HR needs to create scoring sheets in Microsoft Sharepoint and fill in the candidate's data manually	Scoring sheet will be provided in the platform and the candidate data is retrieved from the database
HR team needs to send Work Sample Test (WST) study case manually to the candidate	WST study case delivery to the candidate is able to be triggered from the platform
No integration to other systems in the company	Interface to other systems is ready to be used.

## 4. CONCLUSIONS

As employee candidate increases, the HR team of a company needs a system that simplifies and centralize all the process to be able to work faster and provide new employee faster to the company. To deliver the right solution for the HR team, root cause analysis is used, and then a requirement gathering is conducted. After that, the high-level design and product backlog are created. Based on the requirement gathering, it is defined that the HR team needs the platform to be able to have an advanced sorting feature, a role-based interface for documents and scoring, have an interface to assign an interviewer, and create an invitation in the calendar, and have a configuration tool. After two sprints, the team conducted a sprint review with the HR team. Using low-code platforms such as Microsoft PowerPlatform, the new recruitment platform could accomplish the user's needs due to its built-in sorting feature and ability to configure the platform easily. The ability to assign an interviewer or scorer and create invitations to the calendar is also able to be done because the company already uses Microsoft 365 for the whole company. With the prototype created, the users see that the application could meet the requirements when it is ready. According to the sprint review as well, there is an addition of a feature based on the HR team's feedback that they need a consolidated scoring page to simplify the process to ask approval from the management. Thus, the consolidated scoring page will be developed in future sprints.

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