

Designing Online Project Monitoring with a Design Thinking Approach at Telkom Indonesia's Government Solution Unit

Diatl Levi Putri¹, Rina Djunita Pasaribu²

^{1,2}Telkom University Bandung

Email : diatileviptr@gmail.com, rinadjunita@telkomuniversity.ac.id

Abstract

As the era of globalization develops, influencing the growth of technology worldwide, especially in Indonesia, PT Telkom Indonesia, as a company engaged in the Information Technology sector, continues to strive to improve its services and meet the needs of its customers and provide customer satisfaction. In line with Telkom's main vision of becoming the preferred digital telco to advance society, Telkom continues to strive to transform into a digital telecommunication company. Telkom Group implements a customer-oriented business and operational strategy that makes the company lean and agile in adapting to the rapidly changing telecommunications industry. In its transformation, Telkom offers products, services, and solutions by providing digital connectivity, digital platforms, and digital services to enterprise, government, and SME customers. In carrying out its function as a solution provider to government customers, the Government solution unit in the Solution Delivery & Assurance division has an internal challenge where the process of monitoring projects is still manual, using Google Sheets created by each sub-unit, so it cannot be monitored centrally and in real time. The purpose of this research is to design a solution dashboard for the government solution unit using design thinking. The design thinking stages used consist of five stages, namely empathize, define, ideate, prototype, and testing. The method used in this research is a qualitative research method, with the data collection method being interviews. The result of this research is a tested prototype that can display data for each government project handled by the government solution unit.

Keywords: *design thinking, government, project*



INTRODUCTION

PT Telkom Indonesia (Persero) Tbk (Telkom) which is a state-owned enterprise engaged in information and communication technology (ICT) services and telecommunications networks in Indonesia. Telkom provides solutions for enterprise customers including providing solutions to 524 customers of BUMN (State-Owned Enterprises), BUMD (Regional-Owned Enterprises), and BLU (Business Service Agency) groups, 1,694 private customers, 618,854 MSME (Micro, Small and Medium Enterprises) customers, and 714 government institution customers. Telkom participates in supporting the digitalization of the governance system in accordance with the company's vision to become the first choice digital telco to advance society by presenting end-to-end innovative ICT solutions

According to Telkom President Director, Ririek Adriansyah, 2023 is a year full of challenges for all industrial sectors, especially in the telecommunications industry. This was also felt by Telkom, which is engaged in telecommunications, Telkom underwent a business transformation in the 5 Bold Moves strategy while still based on Telkom's three business domains, namely digital connectivity, digital platforms, and digital services. In the digital connectivity pillar, Telkom initiated Fixed Mobile Convergence (FMC) which integrates broadband and InfraCo businesses. Then, in the digital platform business pillar, it initiated Data Center Co and B2B Digital IT Service Co. Meanwhile, in the digital services business pillar, there is the Digico initiative which is a structured acceleration of digital business. (Wiryawan et al., 2023). The challenges of industrial change that occur due to technological developments, competition, and changes in people's lifestyles, besides that Telkom is faced with various obstacles in responding to the development of digitalization. Therefore, Telkom continues to strive to adapt to change, improve network infrastructure, expand service coverage, and also innovate to meet growing market demands

Govsol unit which is a unit that provides solutions to the government segment. Solutions offered are in the form of *connectivity*, *data center* and *cloud*. The *connectivity* services consist of *fixed broadband*, *Wi-Fi*, *ethernet*. In addition, there is *data communication* which includes *leased channels* such as *metro ethernet*, VPN-IP, and high capacity data network solutions that provide *point to point* connections, as well as *fixed voice* services. Govsol has solved 657 *government* projects in 2021, 601 projects in 2022, and 659 projects in 2023. *Government project* fulfillment is 40% more than the other solution units, namely VIS (*Vertical Industry Solution*) with 38% and VSS (*Vertical Service Solution*) with 20%. In escorting and monitoring the *Government's LOP (List of Project)*

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to ensure effective implementation and in accordance with the rules and timeline, Govsol collects data on escorting *Government* Projects through *google sheets* that are updated manually and periodically. There is no uniform project monitoring, this is evidenced by the project monitoring information for each *sub unit* has its own *google sheet* or excel which can only be accessed by each *sub unit*.

This is also experienced by other companies including PT Visio Indonesia, which in its project supervision still uses a recap of excel documents that are updated once a month to the Project Manager so that daily activity supervision is not monitored and controlled. (Dewantoko & Andiani, 2023). In addition, it is felt by PT Cyber Solution which still uses a manual system and project analysis cannot monitor the system that programmers work on for application project registration, teamwork formation, and submission of application projects so that it requires a project monitoring application system to make it easier to monitor projects. (Tandilintin et al., n.d.). Then, the conditions felt at this time by PT EDII which still does not have its own system, so that in the process of project reporting it still uses data storage via google drive and data processing in the form of google sheets. This requires a longer time in monitoring the ongoing project and reporting the progress of the ongoing project. (Tyastuti & Matondang, 2023)

Furthermore, PT PNL UP3 Metro City is still using simple data processing tools such as Microsoft Excel and in sending work progress reports (LKP) still through short message applications, so an information system is needed to monitor the project. (Yunita et al., 2023). So, from some of the cases above, it shows that in project supervision, project management is needed to make it easier and produce faster and more cost-effective projects. This is conveyed in the *iron triangle of project management* which states that three variables are important in project success which include scope, cost and time. These variables are closely related to one another, the greater the scope of the project, the cost and time will increase. So that project management is needed to maintain the variables so that what is produced is appropriate. In addition, according to the *Management project institute*, project management can simplify the management of data needed for planning and monitoring the performance and success of the project and make it easier to simplify and automate the implementation of various tasks in the *project*.

According to (John L. Howard, 2024), the main key to project success lies in communication. In the digital era, namely Industry 4.0 which utilizes digitalization, automation, information technology and communication to make it easier to store data as a basis for digital implementation in project supervision and can also increase efficiency and save costs. (Pasaribu et al., 2021). Then, the data generated in project management



can be collected and presented by stakeholders for a more concise evaluation in a project report or through a dashboard. In addition, this has the advantage of having automatic data access. In addition, according to (Huemann & Turner, 2024), project performance needs to be documented to inform the risk of all uncertainties. So that there will be an evaluation that will bridge the related organizational actions of the project performance. From previous research, it can be concluded that there needs to be project management in a company to help identify and evaluate the process of running a project. Therefore, there is a gap that arises in the Govsol unit because there is no project monitoring dashboard to see the performance of the project and also the solutions generated from each team.

Based on the findings of the problem in the Govsol unit, it can be concluded that there is no automated dashboard that contains centralized information to see how many *projects* have been resolved, how many have won and how many have lost. The information needed is the total *projects* within a certain period of time, the status of the *project*, the value of the *project*, the value of the company's margin, etc. This information is needed to be considered, whether the data provided can support the information needs needed. In addition, the existing conditions to find out the status of the *project* must ask each sub unit, this takes time not to mention if there is *project* data that is missed or missed in the recording. According to (Nicholas & Steyn, n.d), although humans have been involved in the *project* from the beginning, the nature of the *project* and the environment changes and involves a lot of technical complexity, requiring *project* oversight management.

According to (Nur Salsabila et al., 2021), the *project* monitoring process is carried out to see the status of the *project* and manage each activity carried out by comparing the plan with the current conditions. This is done so that the *project* can be completed according to plan. Components that need to be considered include cost, time and scope of work. So, it can be concluded that the need for a *project* supervision process in a company. Therefore, this is an idea for innovation or business processes in the company which is an effort to digitize with a dashboard. The approach used is a design thinking approach. Design Thinking is a way of solving problems by understanding user desires and preferences (Sreenivasan & Suresh, 2024). The design thinking stages used consist of 5 (five) stages, namely *empathize*, *define*, *ideation*, *prototyping* and *testing*. Thus, it is expected that an *online project monitoring* will emerge that is able to provide the information needed in the Govsol unit.



METHODS

This research is a descriptive study with a qualitative approach based on the *constructivism* paradigm to understand the project escort mechanism in the Government Solution unit. The research is inductive, uses a case study strategy, and is conducted in a natural (*non-contrived*) situation in a *cross-sectional* manner. Data collection was conducted through in-depth interviews and observations, with a *purposive sampling* technique involving Senior Managers, Managers, and Officers in the Government Solution unit as samples to explore information related to their problems and needs. The research process uses the *design thinking* method which includes five stages: (1) Empathize: understanding user needs through interviews and mapping data into *empathy maps* and *user personas*; (2) Define: formulating problem statements based on user needs; (3) Ideate: generating creative ideas using the *How Might We* method; (4) Prototype: designing solutions in the form of dashboards using Figma; and (5) Testing: testing the prototype with *usability testing* to ensure the suitability of the solution to user needs.

Data validity testing includes credibility, transferability, dependability, and confirmability. Credibility is obtained through extended observation, source triangulation, and *member check*. Transferability measures the extent to which findings can be applied to other contexts. Dependability assesses the consistency of the data, and confirmability ensures the objectivity of the findings through validation by colleagues and researcher reflection. The data analysis technique refers to the Miles and Huberman model which includes data reduction, data presentation in the form of tables or diagrams, and conclusion drawing which is carried out iteratively until the findings are declared credible. This research is expected to produce solutions that are effective and relevant to user needs.

DISCUSSION

Discussion of the *Emphatize* Stage

At the *empathize* stage, researchers collect perspectives from sources who are directly involved in running solutions in the *government solution* unit which are grouped into 4 users, namely *Senior Manager*, *Manager*, *Solution Design Officer* and *Solution Administration Officer*. In the *empathy map* and user persona that has been done, there are several similarities felt by users, including feeling difficulties in knowing the status of Project information, the Project database is still manual, and to find out the status of the Project must ask the PIC concerned. This is often felt by users as project actors in Govsol,

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so it takes time to get information about ongoing projects and projects that are just starting to be initiated. Project oversight must be done, especially for large-scale projects with a level of solution complexity that usually must be resolved in a short time. If updates about project information are not updated, this causes *misscommunication* between the PIC and the managerial team because updates are usually carried out at regular meetings of *senior leaders*.

In addition, users said that at this stage they need a database that is uniform, can be accessed in real time, and can be seen by anyone in the Govsol solution team. Another thing that was conveyed was the need for a container or information media to see the performance of the solution team because currently there is no container or information media that can show both in terms of project information and the performance of the solution team. This can consider the managerial team in assessing its team and make it easier to divide the workload of its team. Then, there are times when the solution team cannot participate in overseeing until the end of the solution offered and is replaced by another team but there are obstacles to the last update on the status of the solution that has been made because it is usually done on their respective gadgets. So, this is what makes the solution team need a centralized information media and can be accessed together so that it can become a medium for sharing information or *sharing knowledge* related to solutions that have been made before. This also makes it easier if in the future there are additions or new requests so that it can be seen what the *existing* solution is because often customers do not know the details about the solutions that have been provided. In addition, project monitoring can be a learning medium for other units if there is the same request, it can be a comparison or benchmark to provide the best solution according to customer needs.

Discussion of the *Define* Stage

At the *define* stage, a PoV (*Point of View*) is made and concluded in the form of a *problem statement* by making an HMW *Question*. At the PoV stage by analyzing the *needs* and *insights* felt by users. Then, it was found that the *senior manager* user obtained *insights* which included stating that existing project monitoring could not document the solutions that had been delivered, existing project monitoring using excel and there was no dashboard for monitoring the performance of the solution team. Furthermore, the *insight* obtained from the *manager* user states that the existing information media does not contain information on the stages of the project up to where, recording progress, and potential problems that arise, as well as information data is not up to date and there is also

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no monitoring of the performance of the solution team. Next, the *insights* obtained from the *officer solution design* user include that project monitoring is still manual, existing project information through excel or google sheets, and there is no information media that can see *project history*. In addition, the *insight* obtained from the *officer solution administration* user is that project monitoring is still manual and not realtime. The results of mapping *needs* and *insights* are then grouped based on *insights* that have the same problems and then mapped in HMW questions which then obtained 8 HMW questions which will be the initial stimultan to initiate ideas at the ideation stage. The question is then made an *impact effort matrix* to prioritize solutions that must be prioritized to be resolved because it takes into account the level of impact generated and also the effort expended which is done by *brainstorming* with users through zoom meetings. At this stage, 2 priorities are taken, namely *major projects* and *quick wins* which have a large impact but not too much effort. In *major projects*, 3 HMW questions are obtained and in *quick wins* 2 HMW questions are obtained. After mapping based on priorities, the author also conducts discussions with users regarding the solution ideas needed according to HMW questions which are then continued at the ideation stage.

Ideate Stage Discussion

The next stage is the *ideate* stage or ideation stage which at this stage is a follow-up stage to the *define* stage that has been carried out previously. At this stage, it follows up on the 8 HMW questions that have been grouped which then create the solution ideas needed by users. The author *brainstormed* with users about solution ideas based on previous HMW questions and produced 11 solution ideas based on the needs needed by users. The solution ideas have been discussed and received *feedback* from users. The *highlight* points are project monitoring in the form of an interactive website which can be used or accessed on gadgets such as laptops and *cellphones* so that there is no need to download again if access is done via cellphone. Then, project information can be updated by different people who get updated information not only updated by one person to save time and project monitoring can be real. Furthermore, project monitoring can be accessed simultaneously by displaying the required information such as customer name, partner name, AM PIC, solution PIC involved and solar involved. Meanwhile, to measure the performance of the solution team, it is hoped that the duration of the project will also be made because there are projects that require a long time and projects that have a fast processing time. So, it must take into account the length of the project in the performance



of the solution team. Furthermore, at the ideation stage, it is divided into 3 main solutions including *Project Activity*, *Project Data* and *Solution Performance*.

The first solution idea is *Project Activity*, this solution idea contains *summary project data* in which there is a project status with an *add project* feature to add new or pre-existing projects. Then, there is a *project history* along with the required documents. The second solution idea is *Project Data*, in this solution idea whose function is more directed to the managerial team which is tasked with monitoring the status of projects *inprogress*, *cancel*, and *close*. In this solution idea, there is an approval menu if the project status shifts or changes. Furthermore, the third solution idea is *Solution Performance* which contains a *summary of project performance* from the Govsol unit based on status, how many projects have been completed, how many projects have been *canceled* and so on. In addition, it contains information on the performance of the solution team that handles the project.

Discussion of Prototyping Stages

The next stage is the prototyping stage, which visualizes the solution ideas that have been determined and determined previously to make it easier for users to see the solution ideas that have been made. Project monitoring is made with the name Promina (*Project Monitoring Solution*) to make it easier to mention the name. The resulting *prototype* can be seen in the following images. The first is the *login* display by inputting the user's *username* and *password*.



Figure 1. Prototype Application Display Login Menu
Source: Processed by Researchers (2024)

Second, enter the first project menu page, namely *Project Activity* by displaying the *Summary Project* in its initial appearance. Then there is an *action* menu consisting of

Details to see more details of the project, *delete* menu to delete projects, *download* to download project data in the form of files, and *add projects* to add new projects or those that have not been included in the previous project list.



Figure 2. Prototype Application View of *Project Activity* Menu
Source: Processed by Researchers (2024)

Furthermore, the *details* menu in *Project Activity* displays *solution details* which contain *sub tasks*, *agendas*, and *files & links* for documentation. In this menu, notes or updated information from the project can be written by adding supporting documentation. Update project information can be done by anyone related to the project so that it can be monitored simultaneously.

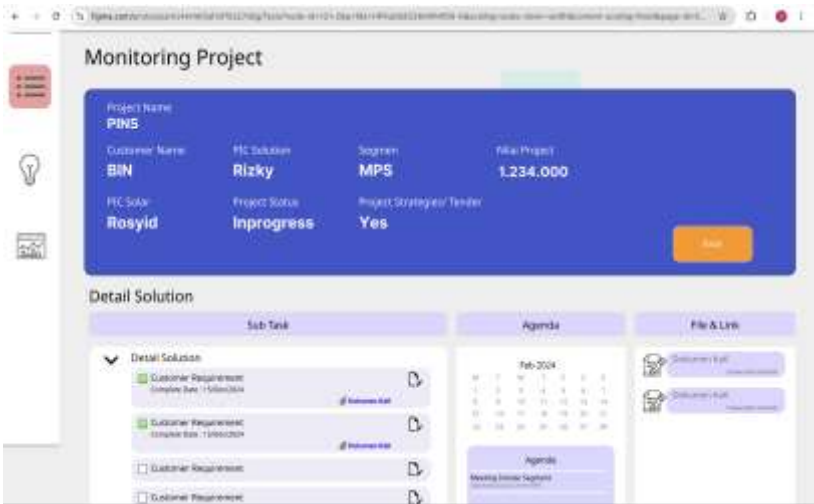


Figure 3. Prototype Application Display *Detail Sub Menu - Project Activity*
Source: Processed by Researchers (2024)

In addition, you can see who made the last update by looking at the comments column. Agenda can display the history of activities that have been carried out during the project.

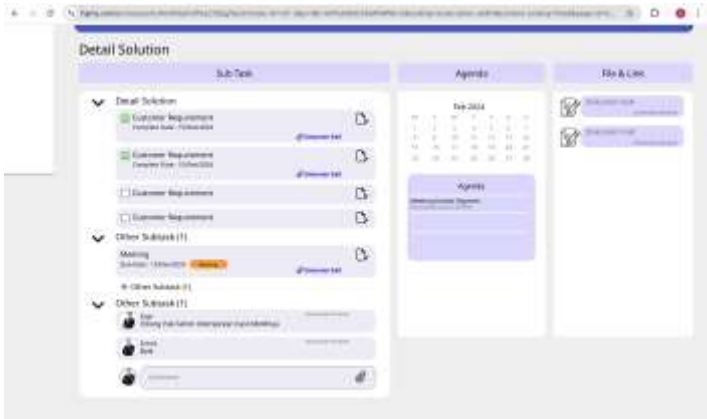


Figure 4. Prototype Application Display Detail Sub Menu - *Project Activity* (2)
Source: Processed by Researchers (2024)

On the *add project* view which functions as adding a new project or one that is not yet on the previous project list. In this display, it is inputted based on a predetermined formation which contains *Project name*, *Customer Name*, *Segment*, *Partner Name*, *PIC Solution*, *PIC Solar*, *Contact AM*, and a checklist button whether the project is included in the strategic project or not.

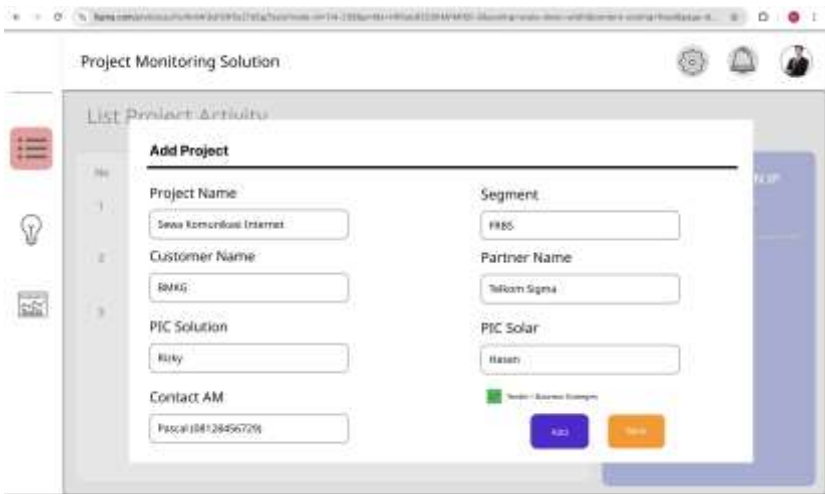


Figure 5. Prototype Application Display Sub Menu *Add Project* - *Project Activity*
Source: Processed by Researchers (2024)

In this display to see which project statuses are projects that have been *closed*, *canceled* or *project approved*. In addition, this menu is an approval menu for the managerial team if the project status changes or shifts.

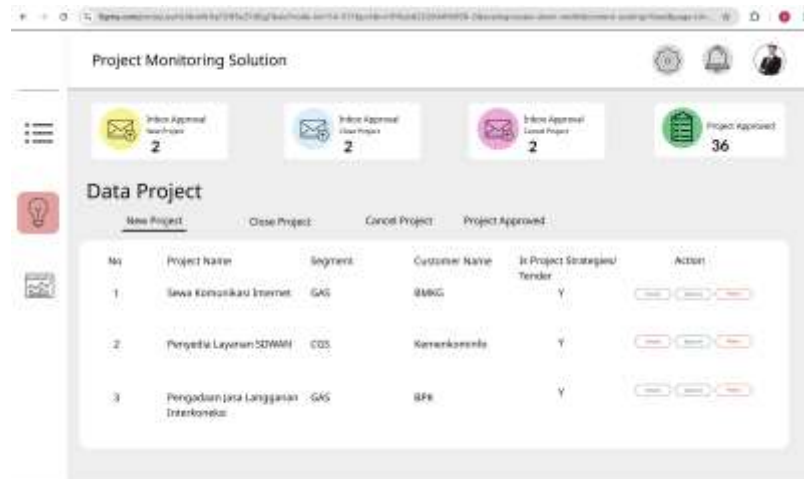


Figure 6. Application View of *Project Data* Prototype
Source: Processed by Researchers (2024)

Next, to *approve the project* by clicking *details* so that the display will appear as below. The menu that then appears is the *approval* menu in the form of *approve*, *reject*, and *back*.

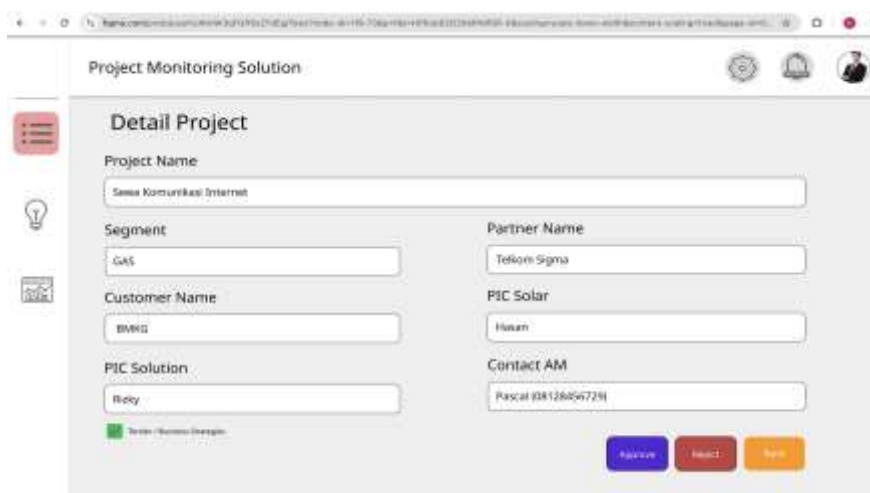


Figure 7. Prototype Application Display Project Detail Sub Menu - *Project Data*
Source: Processed by Researchers (2024)

Third, enter the *solution performance* menu stage which displays a summary of Govsol unit performance based on total projects per segment, *success rate by project status*, *cancel reason*, *average project duration*.



Figure 8. Application View of *Solution Performance* Prototype
Source: Processed by Researchers (2024)

In addition, it can see the performance of the solution team in the *project workload* based on the solution team and solar involved in the project.

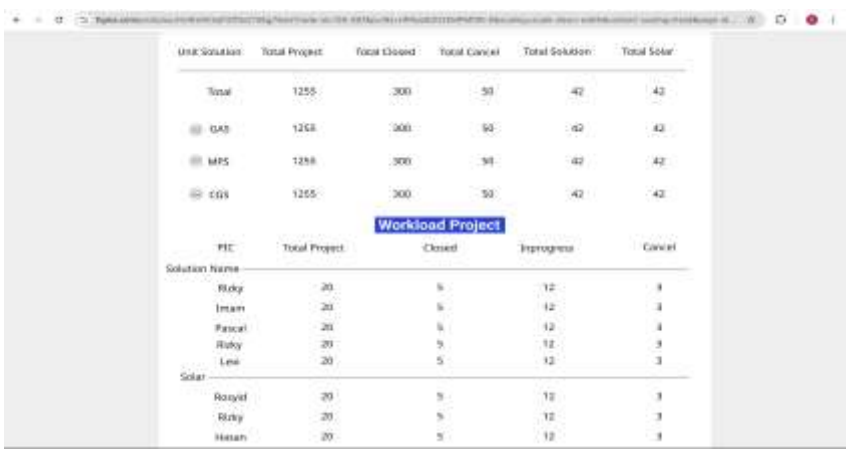


Figure 9. Application View of *Solution Performance* Prototype - *Workload Project*
Source: Processed by Researchers (2024)

DISCUSSION OF TESTING STAGES

Table 1. Results of *Usability Testing* with

Tasks	Average <i>missclick</i> rate (%)	Average turnaround time (seconds)	Average <i>usability</i> score	Success Rate (%)
Update Solution Details	20	23.3	69	100
Create a New Project	28.4	120.2	72.8	85.7
Project Approval Data	19.5	42.2	52.5	85.7
View Solution Performance	63	32	66.5	85.7

Source: Processed by Researchers (2024)

Testing of the first task, which explains that the success rate of *updating solution details* with a task description by accessing and checking data in the *Project Activity* menu by looking at solution details by *checking customer requirements* then updating the agenda. The test results explain that the *average time on screen* is 23.3 seconds with an average *missclick rate* of 20% and an average *usability* score of 69. This happens because the lowest test value on the first screen when selecting the *details* sub menu seen in the *summary* assessment Figure 4.20 when compared to *missclick* errors on screen 2 and screen 3.



Figure 10. Task 1 Testing Results Screen 1

Source: Processed by Researchers (2024)



Figure 11. Testing Results Task 1 Screen 2
Source: Processed by Researchers (2024)

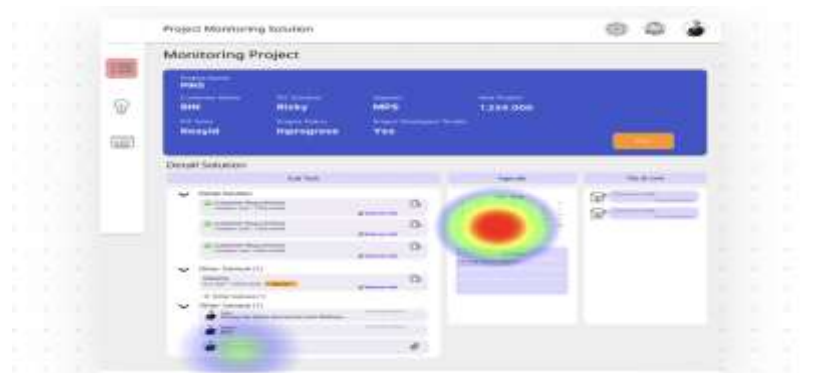


Figure 12. Task 1 Testing Results Screen 3
Source: Processed by Researchers (2024)

Testing of the second task explains that the level of success carried out in creating a new project with a task description by creating a new project that has not been inputted in the previous project list by clicking the "add project" button and filling in the Project Name, Customer Name, PIC Solution, Contact AM, Segment, Partner Name, PIC Solar data and choosing whether it includes a tender project / strategic project. Task 2 test results explain that the *average time on screen* is 120.2 seconds with an average number of errors of 28% and an average *usability score* of 72.8. This occurs because the magnitude of the *missclick* value on the first screen is 43% and the completion time value is 25 seconds greater when compared to the other screens described in Figure 13.



Figure 13. Task 2 Testing Results Screen 1
Source: Processed by Researchers (2024)

Furthermore, for task 3 testing, namely *approving new projects* with a task description of checking data in the Project Data menu, then selecting the New Project menu by displaying details per Project. Then, approve the new project data. The results of the test stated that the *avarage time on screen* was 42.2 seconds with an average *missclick rate* of 19.5% and an average *usability score* of 52.5. This occurs because of the move from menú *Project activity* to menú *Data Project*, causing users to take more time to explore the screen or display. This causes the value of the completion time to be quite long. The results of task 3 testing are shown in Figure 14.



Figure 14. Task 3 Testing Results Screen 1
Source: Processed by Researchers (2024)

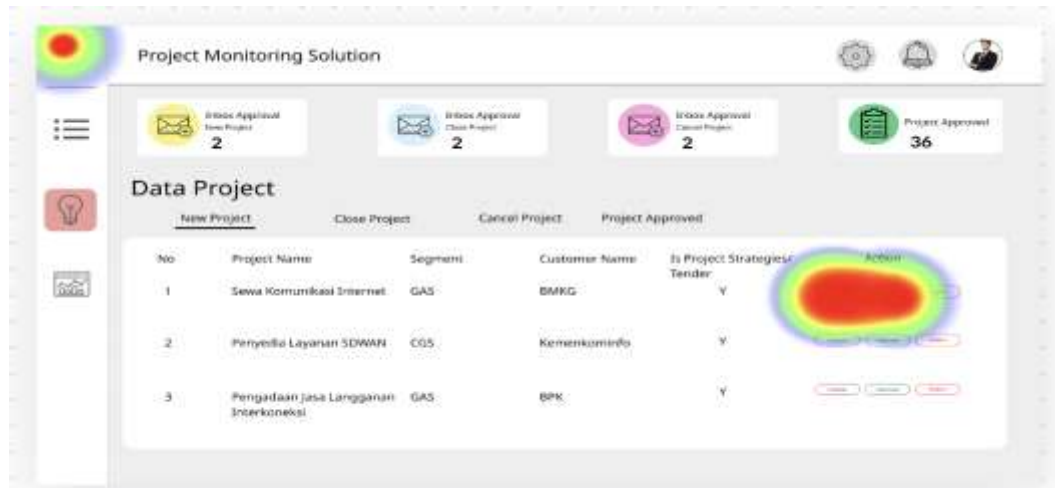


Figure 15. Task 3 Testing Results Screen 2

Source: Processed by Researchers (2024)

So that in task 3 it is necessary to evaluate the ease of accessing the information displayed to make it easier for users. Then, the last test is to see *solution performance* with a task description to see summary data on solution performance based on per segment and see the workload of the solution team. The results generated from this test are *avarage time on screen* of 32 seconds with an average *missclick rate* of 63% and an average *usability score* of 66.5. This happens because this task only displays a *summary* so that there is no activity carried out by users which causes users to *missclick* a lot on the display in this task. The results of testing all tasks, all users can complete the task according to the instructions set by the researcher so that the success rate is 89.27%.

CONCLUSION

Based on the results of the research conducted, it can be concluded that the *design thinking* method is effective for exploring the *pain problems* felt by sources or prospective users through the stages of *empathize*, *define*, *ideate*, *prototyping*, and *testing*. In the *empathize* stage, researchers used an *empathy map* to understand the user's point of view, including what they feel, think, say, and do. In addition, *user personas* were used to describe user needs and behavior in depth. The *define* stage is done by determining the problem from the user's perspective to generate *needs and insights*. Problems were mapped into *How Might We* (HMW) questions that were prioritized using the *impact effort*

matrix, resulting in three questions for the *major project* category with high impact and effort, and two questions for the *quick wins* category with high impact and low effort.

At the *ideation* stage, *brainstorming* was conducted with users to generate 11 solution ideas which were then visualized at the *prototyping* stage. The prototype was designed using Figma with three main menus, namely *Project Activity* for detailed information and project updates, *Project Data* for project status approval by the managerial team, and a menu for *solution performance*. In the *testing* phase, *usability testing* was conducted using the Maze platform to evaluate the ease of user access to the prototype. This test measures access time, *missclick rate*, and *usability* score. The test results showed the ease of user access to the prototype, although the *project data approval* and *solution performance* menus received lower usability scores due to menu switching that triggered more misclicks.

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