

**DIGITAL REPORT APP FOR EXTERNAL RELATION
DEPARTEMENT AT PT BERAU COAL**



**Compiled as one of the requirements for completing the Undergraduate Study
Program at the Informatics Study Program, Faculty of Communication and
Informatics**

By:

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FACULTY OF COMMUNICATION AND INFORMATICS
UNIVERSITY OF MUHAMMADIYAH SURAKARTA**

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**DIGITAL REPORT APP FOR EXTERNAL RELATION
DEPARTEMENT AT PT BERAU COAL**

SCIENTIFIC PUBLICATION

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**DIGITAL REPORT APP FOR EXTERNAL RELATION
DEPARTEMENT AT PT BERAU COAL**

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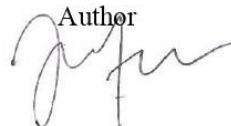
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DIGITAL REPORT APP FOR EXTERNAL RELATION DEPARTEMENT AT PT BERAU COAL

Abstract
 PT Berau Coal Energy is one of the companies that provide leading mining materials in Indonesia. At a company, reporting is one important thing to do every day. The development of technology is currently fast and very helpful for humans in doing a job. Currently PT Berau Coal is in the process of digitalization, one of which is the external department. The External Department at PT Berau Coal has the task of ensuring stakeholders and PT Berau Coal run smoothly and there are no conflicts. There is daily reporting that must be reported by external department officer (Reporter) in the field and there are other reports that require approval from superiors (Superintendent and Manager). Therefore, external departments need digital reporting because for reporting in external departments, it is still manual using WhatsApp which is then input into excel by admins. This application build using PHP programming language with the CodeIgniter (CI) framework, for its Front-end using HTML, CSS, JS, Bootstrap and SASS frameworks for styling. To develop the system, we applied Scrum. We use the SCRUM method because this method is faster and more efficient which can be more flexible in its implementation. This research ultimately resulted in a web-based application with displaying features that suit external department PT. Berau Coal needs. The testing is used Black box testing and User Acceptance Test (UAT) which produces a test value of 90.6%. Hopefully, this application can make efficient, easier for PT Berau Coal External employees to do a reporting and manage the report.

Keywords: Digital Report, PHP, CodeIgniter, SCRUM, Website, Applications.

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DIGITAL REPORT APP FOR EXTERNAL RELATION DEPARTEMENT AT PT BERAU COAL

Abstrak

PT Berau Coal Energy merupakan salah satu perusahaan yang menyediakan material pertambangan terkemuka di Indonesia. Di sebuah perusahaan, pelaporan adalah salah satu hal penting yang harus dilakukan sehari-hari. Perkembangan teknologi saat ini sangat pesat dan sangat membantu manusia dalam melakukan suatu pekerjaan, Saat ini PT Berau Coal sedang dalam proses digitalisasi, salah satunya adalah departemen eksternal. Departemen Eksternal PT Berau Coal memiliki tugas untuk memastikan para pemangku kepentingan dan PT Berau Coal berjalan lancar dan tidak ada konflik. Ada pelaporan harian yang harus dilaporkan oleh karyawan departemen eksternal (*Reporter*) di lapangan dan ada laporan lain yang memerlukan persetujuan dari atasan (*Superintendent* dan *Manager*). Oleh karena itu, departemen eksternal membutuhkan pelaporan digital karena untuk pelaporan di departemen eksternal masih manual menggunakan WhatsApp yang kemudian diinput menjadi excel oleh *admin*. Aplikasi ini dibangun menggunakan bahasa pemrograman *PHP* dengan kerangka *CodeIgniter* (CI), Untuk Front-end-nya menggunakan kerangka kerja *HTML*, *CSS*, *JS*, *Bootstrap* dan *SASS* untuk *styling*. Untuk mengembangkan sistem, kami menerapkan *Scrum*. Kami menggunakan metode *SCRUM* karena cara ini lebih cepat dan efisien yang bisa lebih fleksibel dalam implementasinya. Penelitian ini pada akhirnya menghasilkan aplikasi berbasis website dengan fitur yang sesuai dengan kebutuhan eksternal departemen PT. Berau Coal. Pengujian ini menggunakan *Black box testing* dan *User Acceptance Test (UAT)* yang menghasilkan nilai uji sebesar 90,6%. Aplikasi ini dapat memberikan efisiensi, kemudahan bagi karyawan PT Berau Coal Eksternal departemen untuk melakukan pelaporan dan pengelolaan laporan.

Keywords: Laporan Digital, PHP, CodeIgniter, *SCRUM*, Website, Aplikasi.

Abstract

PT Berau Coal Energy is one of the companies that provide leading mining materials in Indonesia. At a company, reporting is one important thing to do everyday. The development of technology is currently fast and very helpful for humans in doing a job, Currently PT Berau Coal is in the process of digitalization, one of which is the external department. The External Department at PT Berau Coal has the task of ensuring stakeholders and PT Berau Coal run smoothly and there are no conflicts. There is daily reporting that must be reported by external department officer (*Reporter*) in the field and there are other reports that require approval from superiors (*Superintendent* and *Manager*). Therefore, external departments need digital reporting because for reporting in external departments, it is still manual using WhatsApp which is then input into excel by admins. This application build using *PHP* programming language with the *CodeIgniter* (CI) framework, For its Front-end using *HTML*, *CSS*, *JS*, *Bootstrap* and *SASS* frameworks for *styling*. To develop the system, we applied *Scrum*. We use the *SCRUM* method because this method is faster and more efficient which can be more flexible in its implementation. This research ultimately resulted in a website-based application with displaying features that suit external department PT. Berau Coal needs. The testing is used *Black box testing* and *User Acceptance Test (UAT)* which produces a test value of 90,6%. Hopefully, this application can make efficient, easier for PT Berau Coal External employees to do a reporting and manage the report.

Keywords: Digital Report, PHP, CodeIgniter, *SCRUM*, Website, Applications.

1. INTRODUCTION

PT Berau Coal Energy is one of the companies that provide leading mining materials in Indonesia. Berau Coal itself began operations since 1983 with business units in the form of surveying, exploration, coal mining and carrying out the transfer, storage, sale and exploration of coal from its concession areas.

At a company, reporting is one important thing to do everyday. The development of technology is currently fast and very helpful for humans in doing a job, PT Berau Coal is one of the largest coal mining companies in Indonesia, Currently PT Berau Coal is in the process of digitalization, one of which is the external department.

The External Department at PT Berau Coal has the task of ensuring stakeholders and PT Berau Coal run smoothly and there are no conflicts. There is daily reporting that must be reported by external department reporter (officer) in the field and there are other reports that require approval from superiors (Superintendent and Manager).

Therefore, external departments Berau Coal need Digital Reporting Application because for reporting in external departments, it is still manual using WhatsApp and it takes a long time when external department officer (reporter) report from the mine / field site which is then input into excel by admins.

This Application build according to the needs and instructions given by the external department of PT Berau Coal. In the application there will be 6 Roles, namely admin, officer CM and officer Comrel (reporter), Superintendent CM and Superintendent Comrel (superior) and Manager (superior). Superiors can see the officer report and approve it in a tiered manner. Officer makes a report and the report data automatically goes to the officer's Superintendent (superior) then after the superintendent checked the report, the report goes to manager to be approved. And there are many other features.

There are many studies that discuss application needs, application suitability until testing, some of which are research that discusses customer improvement customer analysis, and the needs of applications used to solve customer movement problems (Suharso & Djunaidy, 2013), research on the design of information systems in the field of mechanical engineering in this case is oil service (Santana et al., 2017), research on assistive information systems social (Kamaruddin Tone, 2016), research on information systems in the world of education (Romadhoni et al., 2015), research on the design of android-based information systems (Fitri, 2016), and research related to the analysis and testing of information systems in Higher Education (Fathoni et al., 2017). In these studies, it can be concluded that applications that suit the needs of a company are the most important thing.

This Application build using PHP with the Code Igniter (CI) framework along with libraries used in development, the codeigniter framework is A PHP framework that can help accelerate developers in development PHP-based web applications (Basuki, 2010), Besides, PHP is a web scripting language which is used in dynamic interactive web development. It is a general-purpose and an open source tool that requires minimal setup (Bergmann & Kniesel, 2006), and database using mysql phpmyadmin. For its Front-end using HTML, CSS, JS, Boostrap and SASS frameworks for styling.

To develop the system, we applied Scrum. Scrum is a framework that can be used to answer complex adaptive problems, while fostering creativity and productivity in order to produce the highest value-added products possible (Sutherland, 2018).

We use the SCRUM method because this method is faster and more efficient which can be more flexible in its implementation because this method prioritizes fast iteration or delivery based on the functionality of the software to be developed.

Hopefully, this application can make efficient, easier for PT Berau Coal External employees to do a reporting and manage the report.

2. METHOD

2.1 SCRUM

In building this Digital Report Application, we implemented the Scrum method. Scrum was developed by Jeff Sutherland in 1993 with the aim of being a development and management method that follows Agile principles (Pham & Pham, 2010). Scrum is an iterative method that belongs to the Agile method of how to manage and run a project. It can be used to manage all types of projects from software development, websites, hardware, marketing, event planning, etc (Sutherland, 2018). Scrum helps to organize a team and we need to have strong communication between team members. Scrum says that each “sprint” begins with a brief planning meeting and ends with a review, usable products are shipped to customers. Customer feedback helps uncover potential problems or change the initial development plan if needed (Sutherland, 2018). An important priority in agile deployment is to meet client needs by creating valuable applications quickly and regularly. To support this, one of the principles of agile is the process of presenting results that is carried out within a period of two to four weeks, with a preference for a faster time scale (Martin & Martin, 2006).

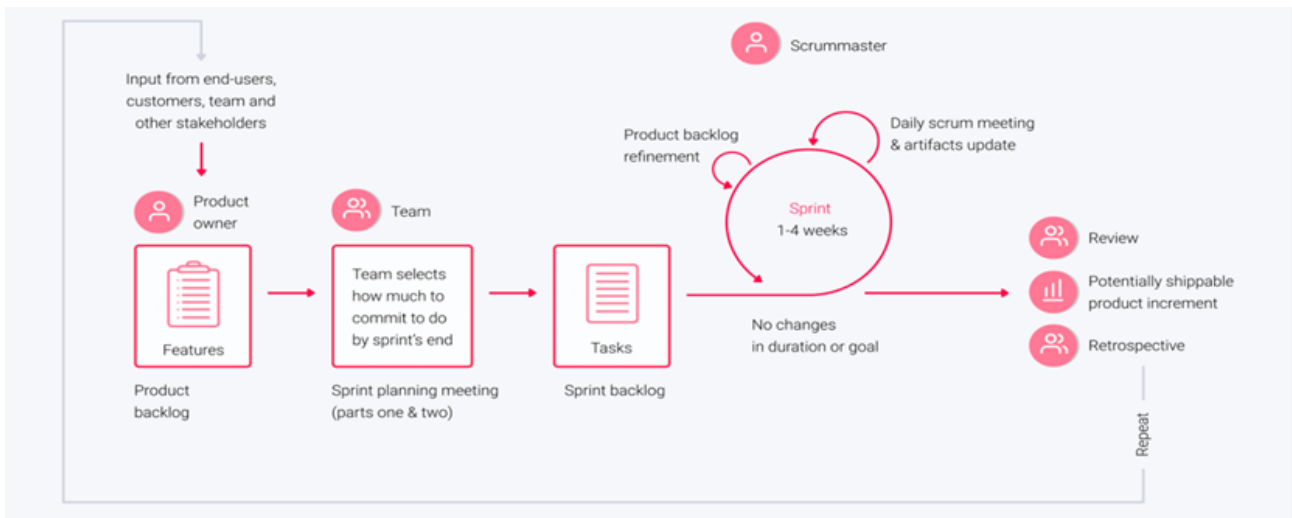


Figure 1. Processes of the Scrum Model

Figure 1 describes the phases of the Scrum model. The details of each phase areas follows:

2.1.1 Creating a Product Backlog

Product backlog is a list of features that will be implemented during the development process. This is ordered by priority and each item is called a User story. Each user story gets a unique ID. As a rule, user stories have the following format: *As [User Role], I want [feature body] so [User benefit]*. Table 1 describes the user stories for the development of the Digital Report application.

Report doesn't need approval : Daily Report

Reports that need approval are :

- Notifikasi Konflik
- Analisa Konflik General
- Analisa Konflik Lahan
- Analisa Konflik Lingkungan
- Analisa Konflik Ketenagakerjaan
- Analisa Konflik Sosial
- Laporan Penanganan

User Role/Level :

- Admin

Superior :

- Manager
- Conflict Management Superintendent (Supt CM)
- Community Relation Superintendent (Supt COMREL)

Reporter :

- Conflict Handling Officer (Officer CM)
- Community Relation Officer (Officer COMREL)

Table 1. Product Backlog/User Stories

ID	User Story
a-001	Create Mobile friendly interface, Create Database according to customer (External Department) needs.
a-002	All Users can login on the same page (Multi User Login) and can logout.
a-003	All Users can edit profile and changed password. So that it can manage the account easily.
a-004	As a Admin, I want to add and delete Users. So that I can manage all users properly.
a-005	Each of users can see the data profile of all users. So that it can easily view the users profile data.
a-006	All Users can view Dashboard.
b-001	All Users can see daily reports data (Doesn't need approval). So that I can see the data in the daily reports easily.
b-002	All Users see all the reports data that need to be approved and can see the data separately, there are : Reject, Needs Check, Needs Approval, Done. So that I can see the data organizely.
b-003	As a Reporter (Officer CM & Officer Comrel), I can create and edit a daily report. So that my report can be seen by all users.
b-004	As a Reporter (Officer CM & Officer Comrel), I can create report that need to be approved by Superior. The report will automatically goes to the reporter's superior (Supt CM & Supt Comrel). For Example : If Officer CM make a report, then the report data will automatically go to Supt CM.

ID	User Story
b-005	As a Superior (Supt CM & Supt Comrel), I can change the status of the reports (approve or reject), and edit report that need to be approved based on the subordinates of the superior (Supt CM & Supt Comrel).

	<p>For example : Data Report from Officer CM only can be approve, reject, edit by Supt CM.</p> <p>And then after Supt CM approve, the report goes to Manager.</p> <p>Report Step:</p> <ul style="list-style-type: none"> - Reject (Report that reject from check/Approved Step) - Needs Check (At this step Approve/reject, Edit only by Superintendent) - Needs Approval (At this step Approve/reject, Edit by Manager) - Done
b-006	<p>As a Superior (Manager), I can change the status of the reports (approve or reject), and edit report that need to be approved based on report that have been approved by Supt CM & Supt Comrel.</p> <p>For example : Supt CM and Supt Comrel have been approved some report, then those report are approved by manager to get the reports done.</p> <p>Report Step:</p> <ul style="list-style-type: none"> - Reject (Report that reject from check/Approved Step) - Needs Check (At this step Approve/reject, Edit only by Superintendent) - Needs Approval (At this step Approve/reject, Edit by Manager) - Done
b-007	Notification Feature.

2.1.2 Sprint Planning and Sprint Backlog Creation

First, we determine the duration of our sprints. In this work, our sprint is held every 2 weeks to complete each job, but every day there will be a check to see the progress of the work (daily Scrum). During sprint planning, we select an item from the top of the User Stories sequence in the previous phase and decide how to execute the chunk.

We then create a sprint backlog that consists of user stories that will be completed during the current sprint. The number of stories depends on their capacity in story points assigned to each story during the evaluation stage. The Scrum team must be able to complete all of these stories on time. Then we also define Sprint Goals.

2.1.3 Work on Sprints Daily Scrum Meeting

Once the actual user story for the current phase is selected, the development process begins. To keep track of the current work processes, common task boards are used. There is usually a large card with the name of a specific user story and a small bundle of sticky notes with a description of the single task required for the implementation of this or that story. Each particular board is developed according to the project specifications. In this step, we create an example of our taskboard/sprint

backlog which can be seen in Figure 2

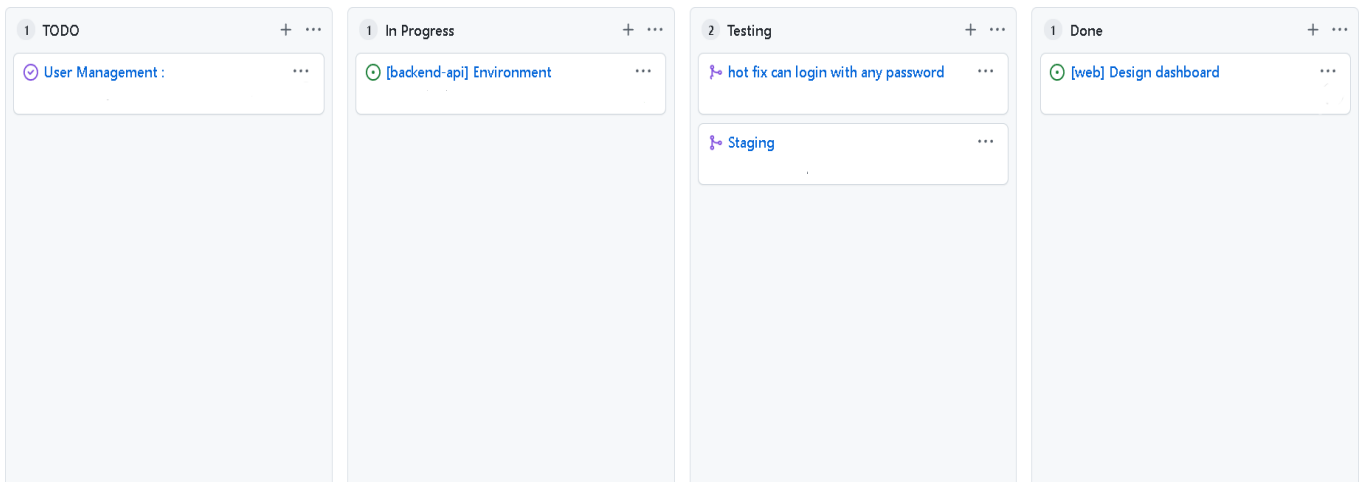


Figure 2. SCRUM Taskboard/Sprint backlog

Based on Figure 2, the cards can be arranged according to their importance. When a work on the task has started, the appropriate card is moved from the "To do" field to the "In progress" one. When the job is done, the card can be moved to the "Test" field, and if the task were successfully tested, the card moved to the "Completed" box.

Another important thing is the Daily Scrum meeting. The main purpose of the meeting is to get complete and correct information about the current status of the project and ensure that all team members are on the same page. During a Scrum meeting, each team member must inform what he or she has done for the Sprint Goal, what task will be the next, and what problems the team member has encountered while working.

2.1.4 Product Increment and Sprint Review

When the implementation period of a sprint is complete, we conduct a review to show the features that have been completed in the sprint process. The sprint process will then be carried out with a different sprint backlog until all of the product backlogs are fulfilled. If the product backlog can be refined, it can be done during the sprint process. During the sprint review, which is the final part of each sprint, the overall results can be demonstrated and analyzed.

2.1.5 Retrospective and Next Sprint Planning

Once all product backlogs are fulfilled, a retrospective is carried out for reviewing the overall performance of the project owner, scrum master, and the team which will later be used as feedback so that the next project can be improved.

In its implementation, this framework includes key practices consisting of: (1) Sticking to the schedule agenda, (2) working consistently according to the sprint, (3) all work is marked as a product backlog, (4) the product backlog is the basis of doing sprints and the team must be able to decide whether a product can be developed or not, (5) The scrum master

is responsible for receiving the results of the sprint, (6) holds meetings every working day, and (7) focuses on sprints, meetings, reviews and project timelines (Kenett & Baker, 2010).

The advantage of Scrum is that it often checks and changes needed in accordance with the needs and technology used (Ependi, 2018). Another advantage of Crum is that it creates projects based on modules so that it can focus on development (Meiliana et al., 2014).

2.2 System Design

System design include design Use Case, Activity Diagram, Entity Relationship Diagram (ERD).

2.2.1 Use Case

In the Use Case Diagram there are two elements that must be present, namely, the Actor and the Use Case. Actors are users who interact with the application that will be created, in this case there will be several actors and each actor will have access rights each one is depicted with a stick-man symbol.

While the Use Case is an activity of an application that will be created (Kurniawan, 2018). Design Use Case is shown as in the Figure 3, Figure 4, Figure 5, Figure 6, Figure 7 and Figure 8.

- 1) Use Case Diagram Admin of PT Berau Coal's external department Digital Reporting Application. The main feature of this role is create and delete users.

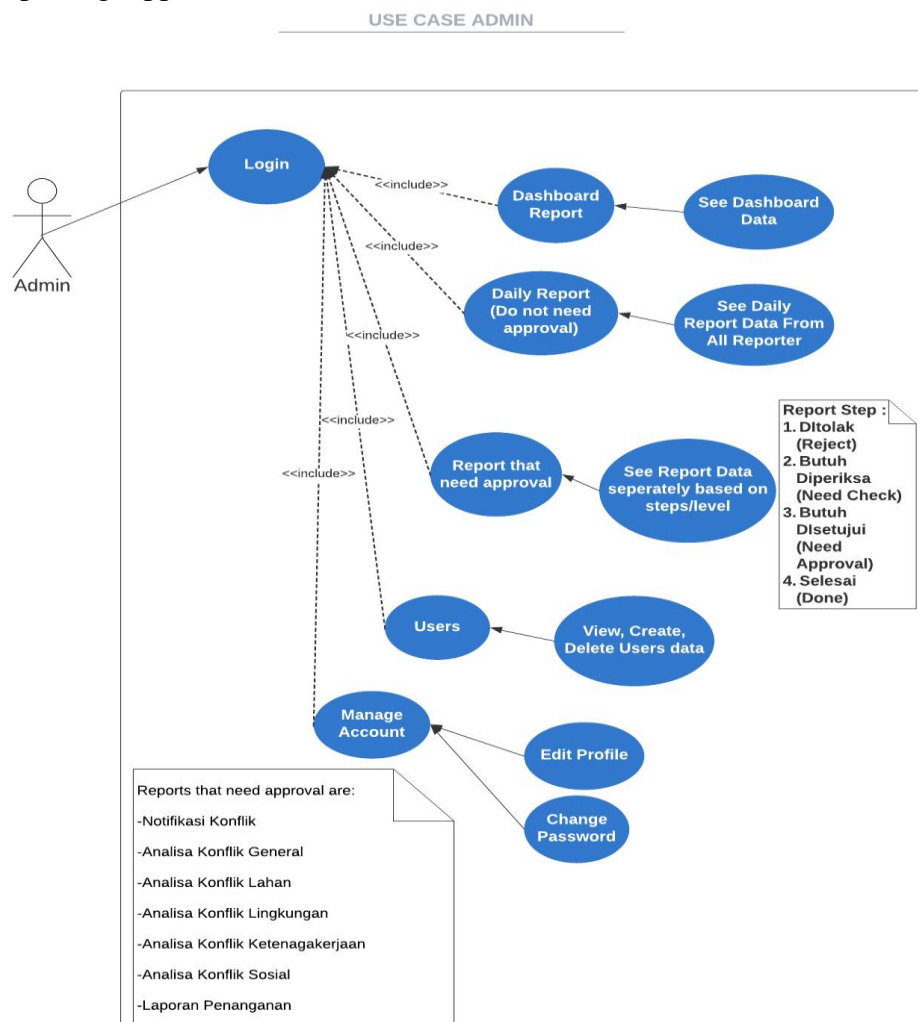


Figure 3. Use Case Admin

2) Use Case Diagram Reporter (Officer CM) of PT Berau Coal's external department Digital Reporting Application. The main feature of this role is create a report and the report automatically goes to Superior (Supt CM).

USE CASE REPORTER (Officer CM)

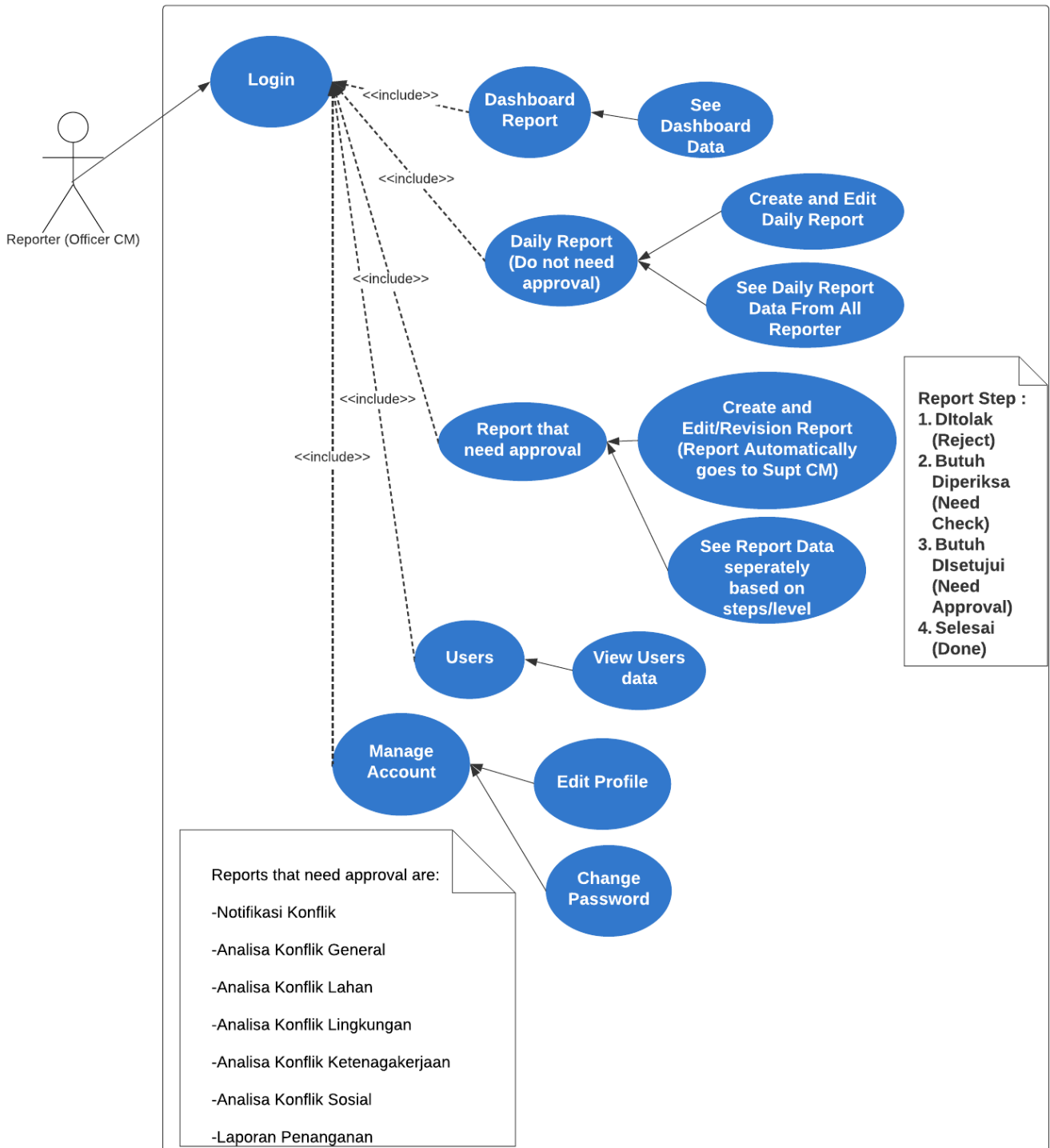


Figure 4. Use Case Reporter (Officer CM)

3) Use Case Diagram Reporter (Officer COMREL) of PT Berau Coal's external department Digital Reporting Application. The main feature of this role is create a report and the report automatically goes to Superior (Supt COMREL).

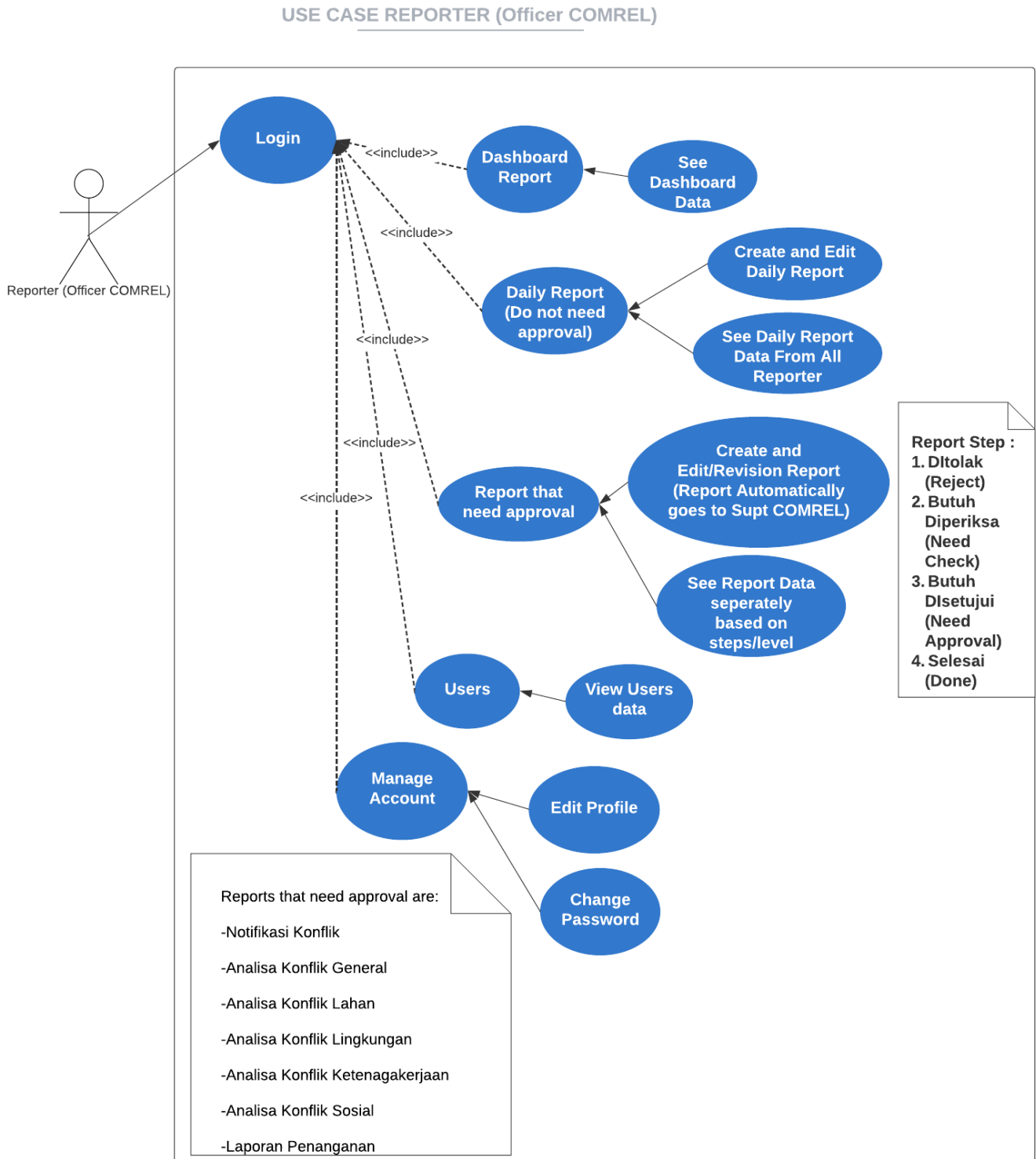


Figure 5. Use Case Reporter (Officer COMREL)

4) Use Case Diagram Superior (Supt CM) of PT Berau Coal's external department Digital Reporting Application. The main feature of this role is edit, approve or reject a report from Officer CM.

USE CASE SUPERIOR (Supt CM)

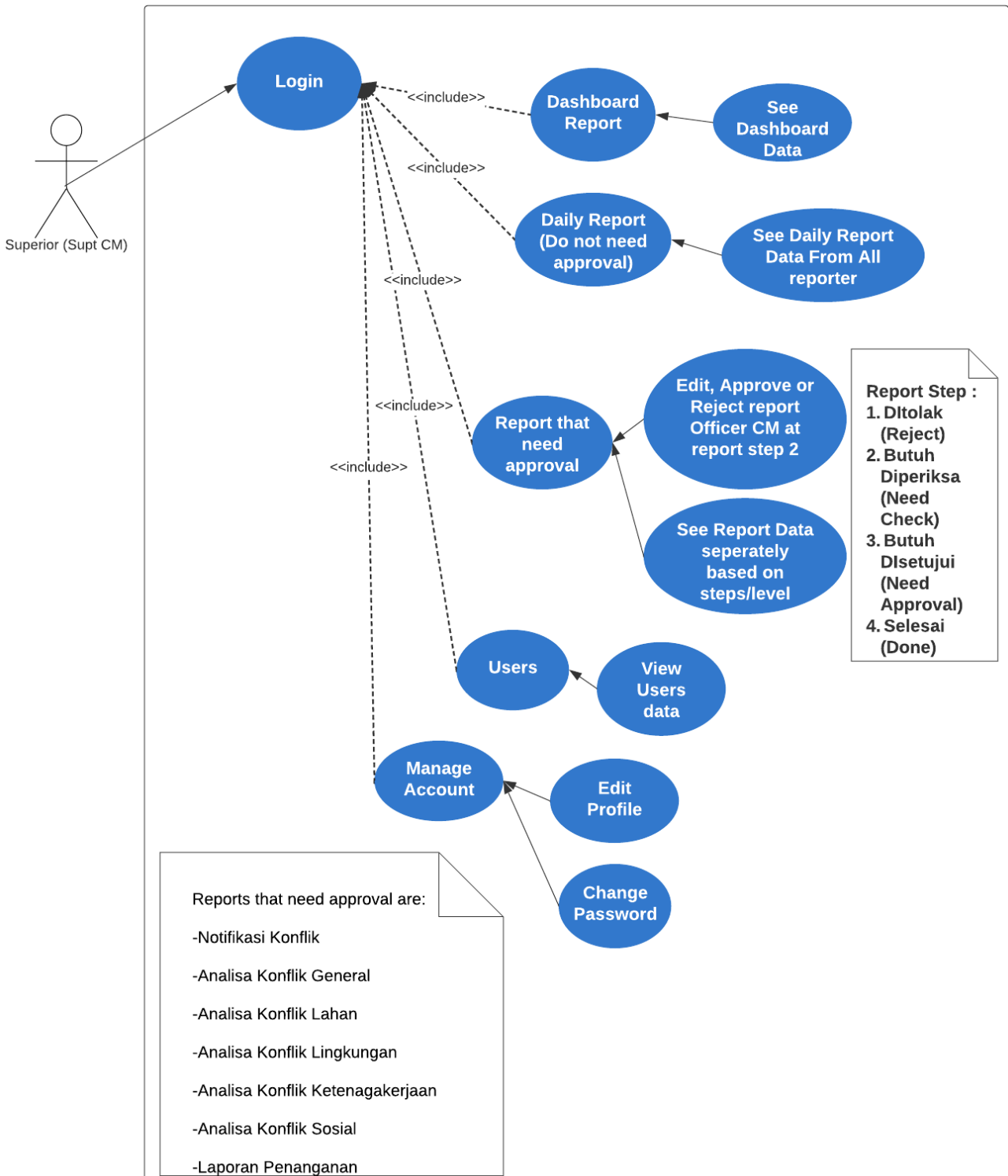


Figure 6. Use Case Superior (Supt CM)

5) Use Case Diagram Superior (Supt COMREL) of PT Berau Coal's external department Digital Reporting Application. The main feature of this role is edit, approve or reject a report from Officer COMREL.

USE CASE SUPERIOR (Supt COMREL)

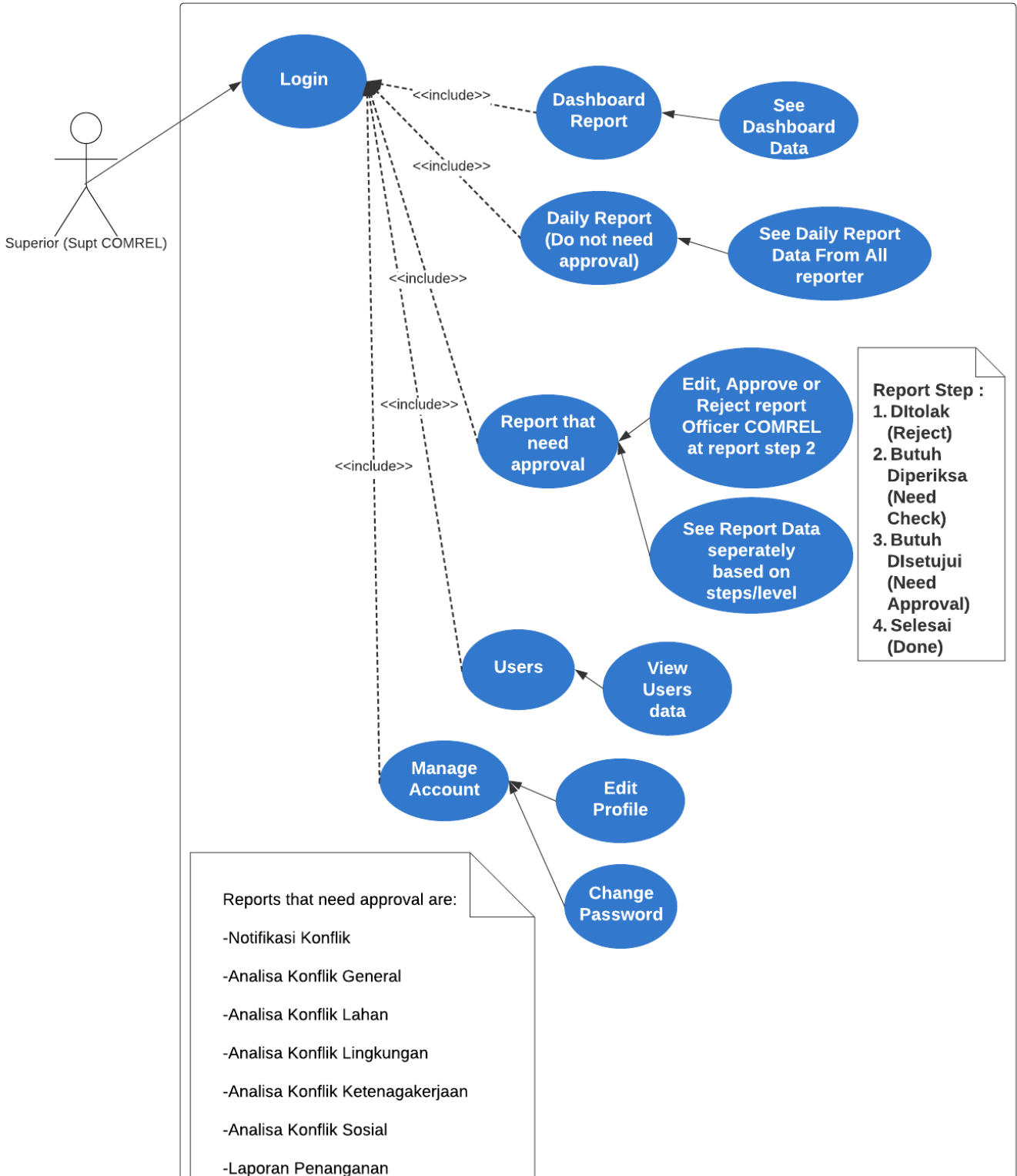


Figure 7. Use Case Superior (Supt COMREL)

6) Use Case Diagram Superior (Manager) of PT Berau Coal's external department Digital Reporting Application. The main feature of this role is edit, approve or reject a report from Officer CM and Officer COMREL after Supt CM and Supt COMREL approve the report.

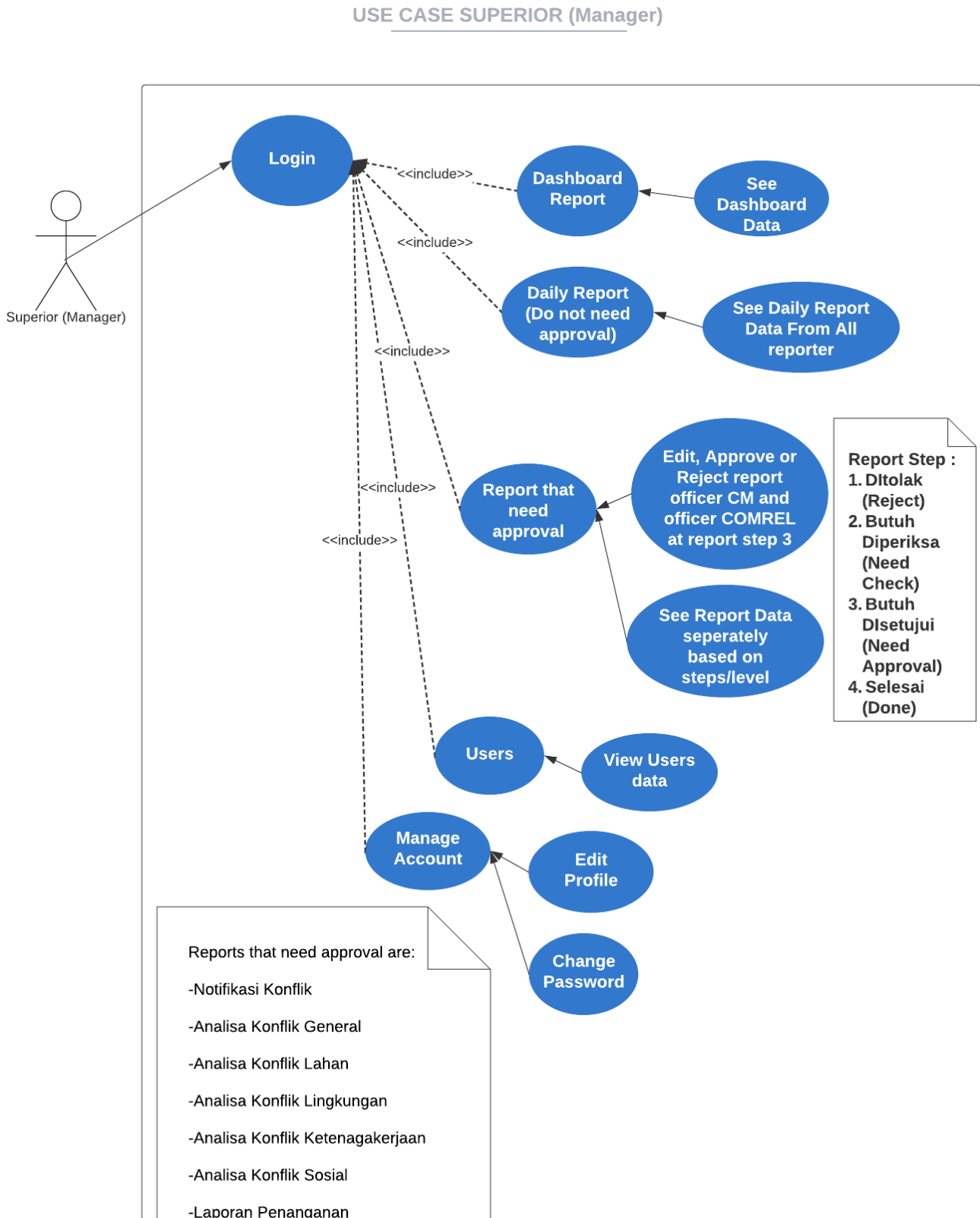


Figure 8. Use Case Superior (Manager)

2.2.2 Activity Diagram

The chart activity is an overview of the activities of the actors interacting with the application (Rambe et al., 2020). Some Activity Diagram shown explain about:

- 1) Admin, Superior (Manager, Supt CM and Supt Comrel), Reporter (Officer CM and Officer Comrel) can log in using a special account that can access features in the application according to its role. Figure 9 describe the Activity diagram of Multi User Login.

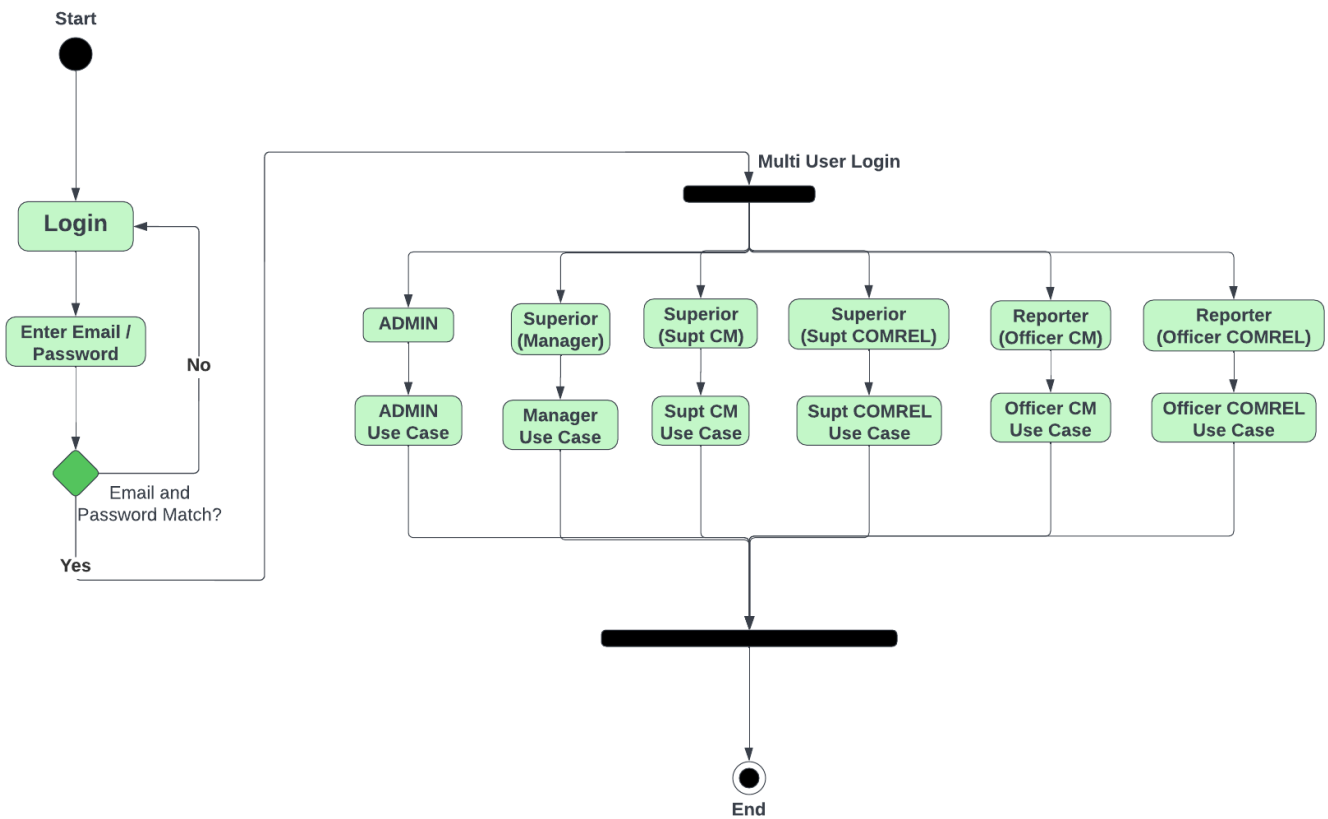


Figure 9. Activity diagram of Multi User Login

- 2) Reporter (Officer CM and Officer Comrel) add/create a report and it's automatically send to the reporter's Superior. Then the Superior (Manager, Supt CM and Supt Comrel) choose to edit, approve/reject the report. The purpose of the activity is to create/add a report, the activity diagram can be seen at Figure 10.

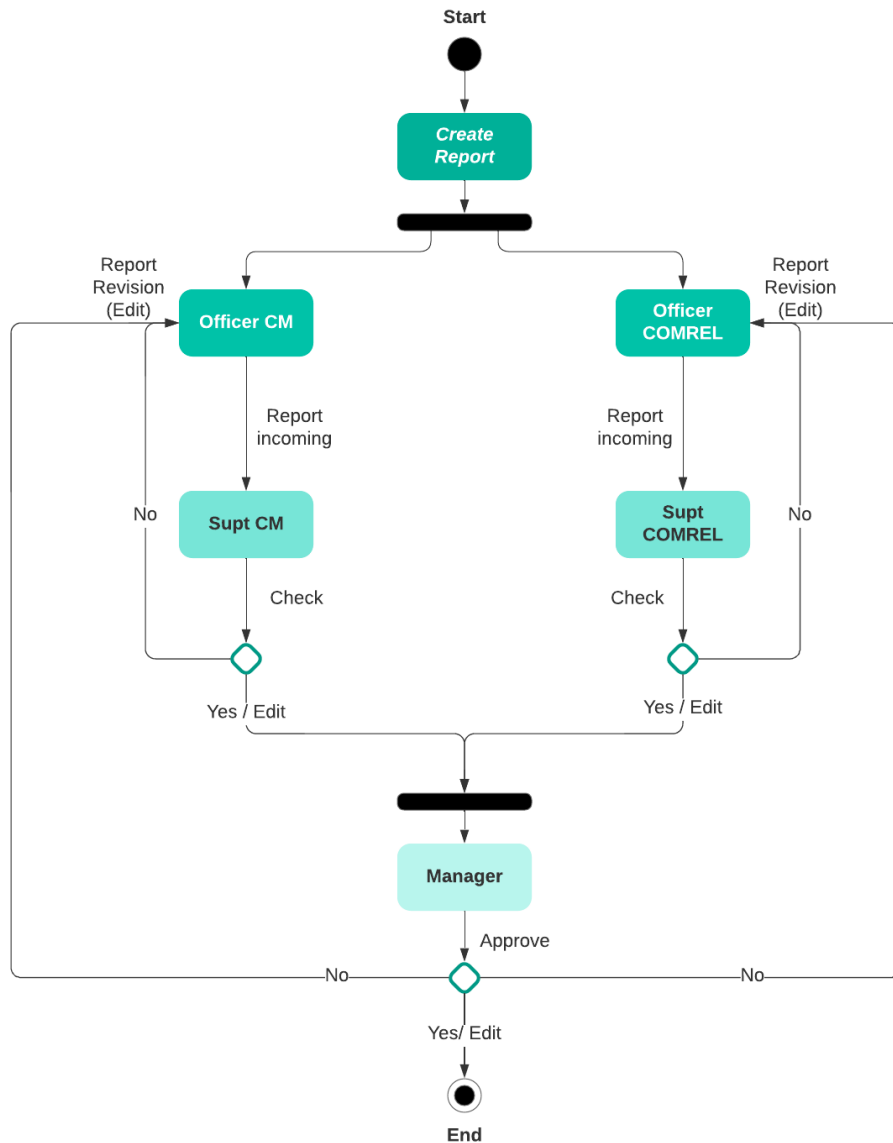


Figure 10. Activity diagram for Reporter (Officer CM and Officer Comrel) to Create Report and Superior (Manager, Supt CM and Supt Comrel) to Edit, approve/reject the report

2.2.3 Entity Relationship Diagram

To develop an application with a complex database requires a database design. With a good database design will create fast data retrieval (Amran et al., 2019). The next step is to design the database using an ERD. In The ERD has components that must exist such as entities that are unique objects and it's different from others. Inside every entity there is always an Attribute that is a description of an entity. A relation is a relationship between one or many entities. And The Line is the link and the flow pointer between entities. Database design in the Digital Report application can be seen in Figure 11.

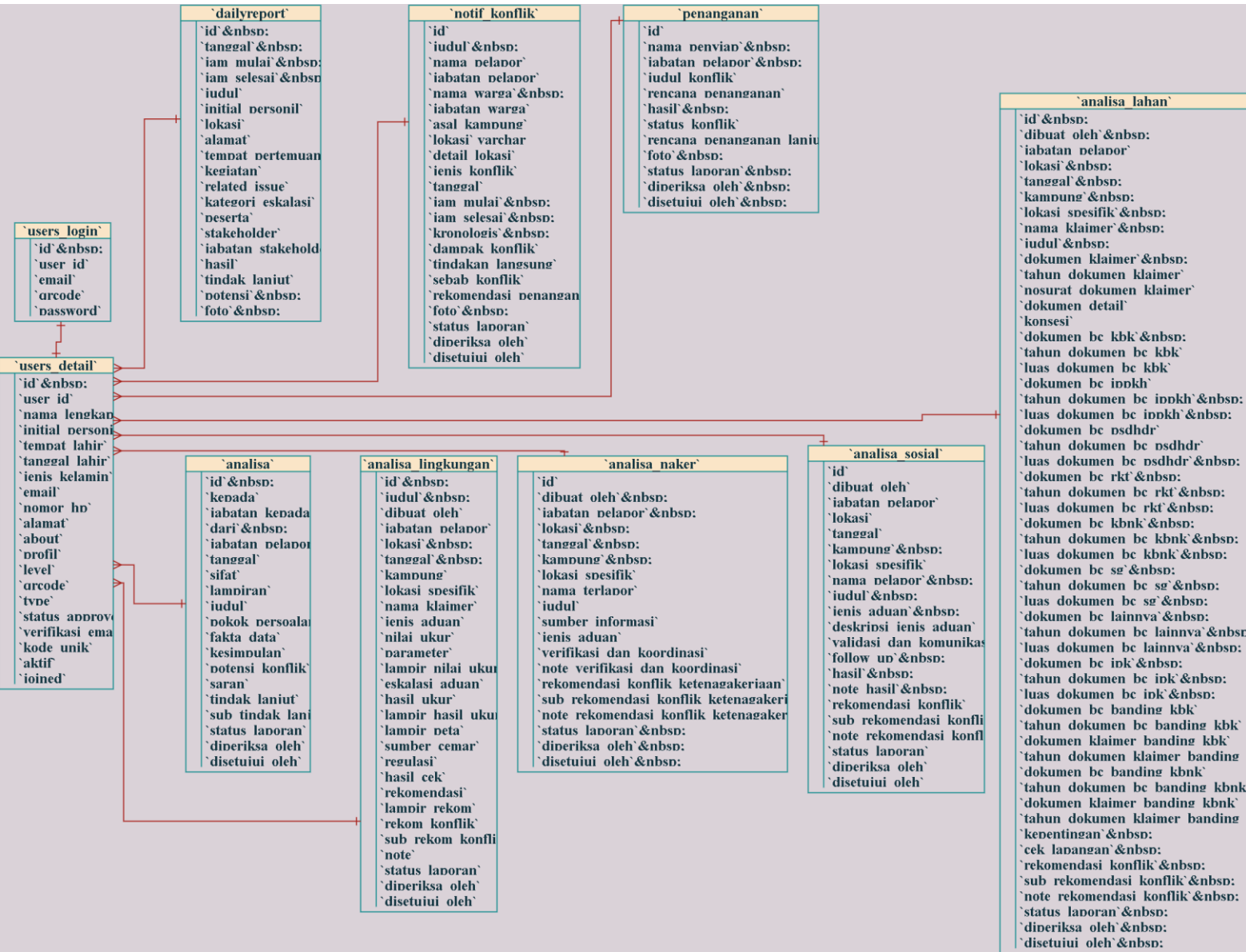


Figure 11. (Entity Relationship Diagram Digital Report Application External department PT Berau Coal)

2.3 Implementation

The implementation stage is the stage where the previously created design is then translated into programming language. The programming language used to build this Digital Report application uses PHP language and uses an Application Web Design Framework CodeIgniter with the MVC method which means Model (related to a database to input data, update data and data processing), View (related to views), and Controller (connecting models with views) (Syaifudin et al., 2021).

2.4 Testing

The testing stage or often referred to as testing an application is carried out at the time the application has finished being developed. The purpose of this stage is to assess the quality from the side of functional applications in order to minimize the occurrence of errors or bugs. After the test is completed, recently conducted evaluation and improvement.

For testing this website-based Digital Report application, it is carried out using the Black box testing method, Black box testing is A test case, is a description of the specific interaction that the tester will have to test the single behavior of the software (Wu, 2012). Black box testing considers the value of inputs on a study (Estrada-Vargas et al., 2017) and ignores the internal mechanisms of a system (Khan & Sadiq, 2011).

The testing Also use User Acceptance Test, User Acceptance Testing (UAT) is described as “formal testing carried out to determine whether a software system meets business requirements and can be used by the end user” (Pandit & Tahiliani, 2015). The application should be assessed during UAT instead of depending only on a specification written at the beginning of the development process. UAT recognizes the need for formal testing and the value of acceptance requirements, and it emphasizes of understanding the real needs of the users (SISOMBOON et al., 2021).

3. RESULT AND DISCUSSIONS

3.1 Results

A. Implementation of the Scrum for Digital Report Application

On the application of the Scrum Method in the development of digital report applications. Product backlog can be completed in less than 4 months which can be seen in Table 2.

Table 2. Working/Processing time feature of Digital Reporting Application

ID	User Story/feature	Time
a-001	Create User friendly interface for web and mobile, Create Database according to External Department needs.	2 Weeks, Week 1-2 in April
a-002	All Users can login on the same page (Multi User Login) and can logout.	1 Week, Week 3 in April
a-003	As a Admin, I want to add and delete Users. So that I can manage all users properly.	
a-004	All Users can edit profile and changed password. So that it can manage the account easily.	1 Week, Week 4 in April
a-005	Each of users can see the data profile of all users. So that it can easily view the users profile data.	
a-006	All Users can view Dashboard.	
b-001	All Users can see daily reports data (Doesn't need approval). So that I can see the data in the daily reports easily.	1 Week, Week 1 in Mei
b-002	All Users see all the reports data that need to be approved and can see the data separately, there are : Reject, Needs Check, Needs Approval, Done. So that I can see the data organizely.	

b-003	As a Reporter (Officer CM & Officer Comrel), I can create and edit a daily report. So that my report can be seen by all users.	1 Week, Week 2 in Mei
b-004	As a Reporter (Officer CM & Officer Comrel), I can create report that need to be approved by Superior. The report will automatically goes to the reporter's superior (Supt CM & Supt Comrel). For Example : If Officer CM make a report, then the report data will automatically go to Supt CM.	1 Week, Week 3 in Mei

ID	User Story/feature	Time
b-005	As a Superior (Supt CM & Supt Comrel), I can change the status of the reports (approve or reject), and edit report that need to be approved based on the subordinates of the superior (Supt CM & Supt Comrel). For example : Data Report from Officer CM only can be approve, reject, edit by Supt CM. And then after Supt CM approve, the report goes to Manager. Report Step: <ul style="list-style-type: none"> - Reject (Report that reject from check/Approved Step) - Needs Check (At this step Approve/reject, Edit only by Superintendent) - Needs Approval (At this step Approve/reject, Edit by Manager) - Done 	1 Week, Week 4 in Mei
b-006	As a Superior (Manager), I can change the status of the reports (approve or reject), and edit report that need to be approved based on report that have been approved by Supt CM & Supt Comrel. For Example : Supt CM and Supt Comrel have been approved some report, then those report are approved by manager to get the reports done. Report Step: <ul style="list-style-type: none"> - Reject (Report that reject from check/Approved Step) - Needs Check (At this step Approve/reject, Edit only by Superintendent) - Needs Approval (At this step Approve/reject, Edit by Manager) - Done 	1 Week, Week 1 in June
b-007	Notification Feature.	1 Week, Week 2 in June

Implementation of the Scrum Method in the development of Digital Report Application produces below.

B. Multi User Login Page

The following page is the page that is first displayed when opening the application. The login page on this application enters the email and password which then after pressing the login button, authentication will be carried out in order to enter the application according to their respective access rights. The page can be seen in Figure 12.

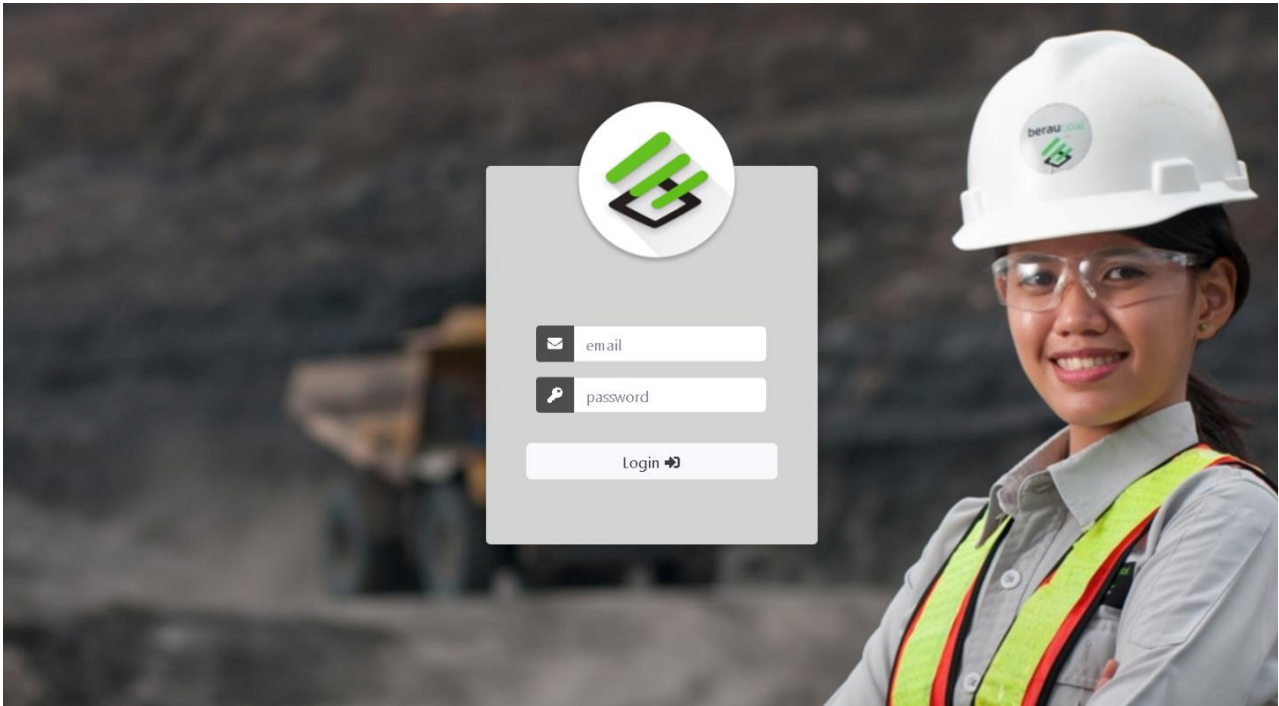


Figure 12. Multi User Login Page

C. Page Dashboard

This page is the first page when after successfully logging in. This page displays the amount of data for each report in this application. The appearance of the page can be seen in Figure 13.

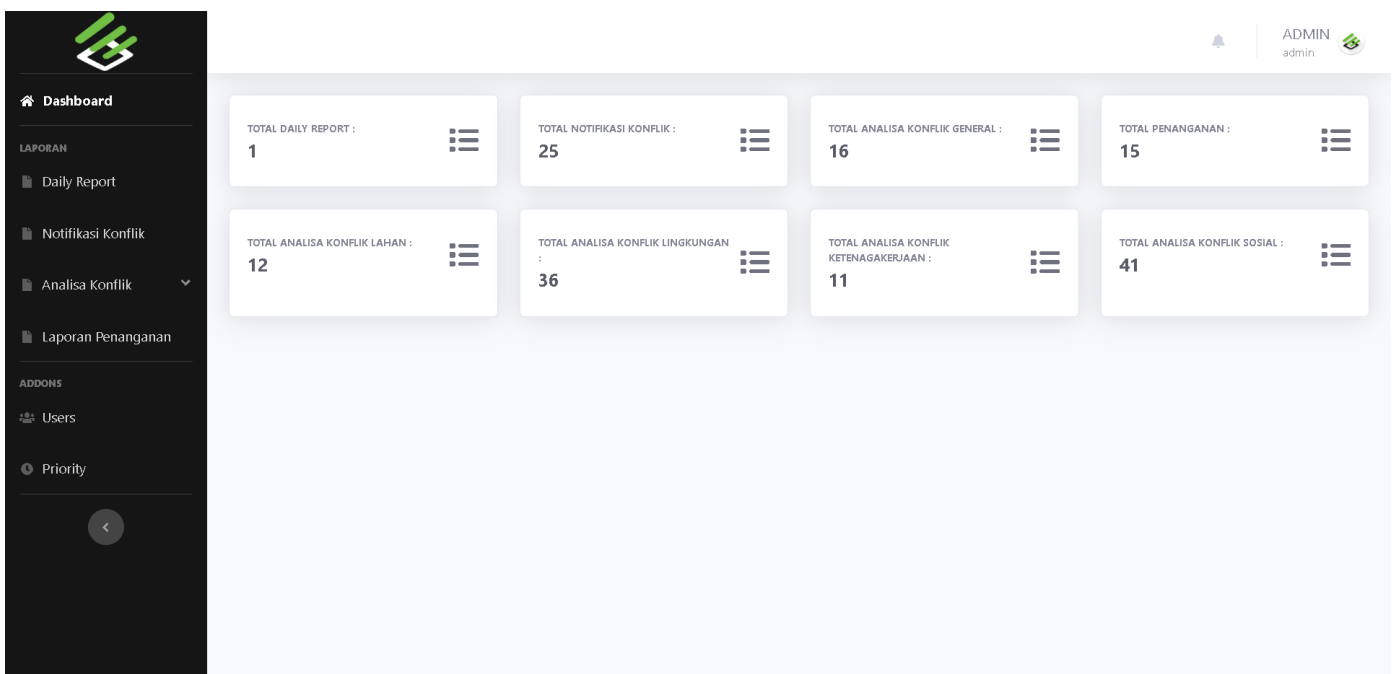


Figure 13. Dashboard Page

D. Page Daily Report

This page showing the data of Daily Report. All users except Reporter (Officer CM and Officer Comrel) just can see the data. Reporter (Officer CM and Officer Comrel) can create Daily report and Edit the Daily report. There is also a search feature to search the report. The appearance of the page can be seen in Figure 14.

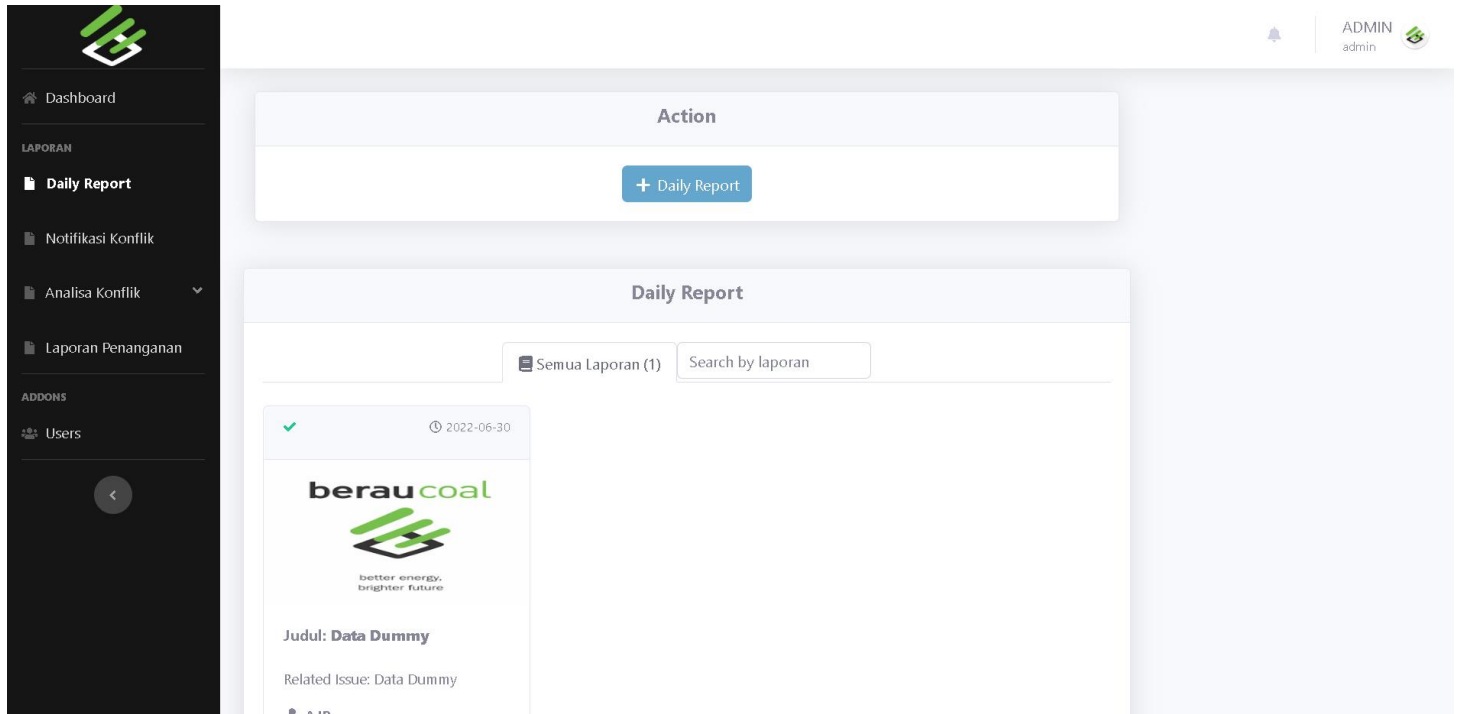


Figure 14. Daily Report Page

E. Page Report that need to be approved

This page showing the data of Laporan Penanganan (One of report that need to be approved). All Users can see all the reports data and see the data separately, there are : Reject (Ditolak), Needs Check (Butuh Diperiksa), Needs Approval (Butuh Disetujui), Done (Selesai).

Reporter (Officer CM and Officer Comrel) can create the report and Edit the report (If the report is reject by the reporter's superior). Superior can approve, edit or reject the data by clicking the image of the report to show the report detail page.

For Superior (Supt CM and Supt Comrel), they just can approve report at the Needs Approval (Butuh Disetujui) stage. The next stage is Needs Check (Butuh Diperiksa), at this stage the report can only be approved by the Superior (Manager).

There is also a search feature to search the report. The appearance of the page can be seen in Figure 15.

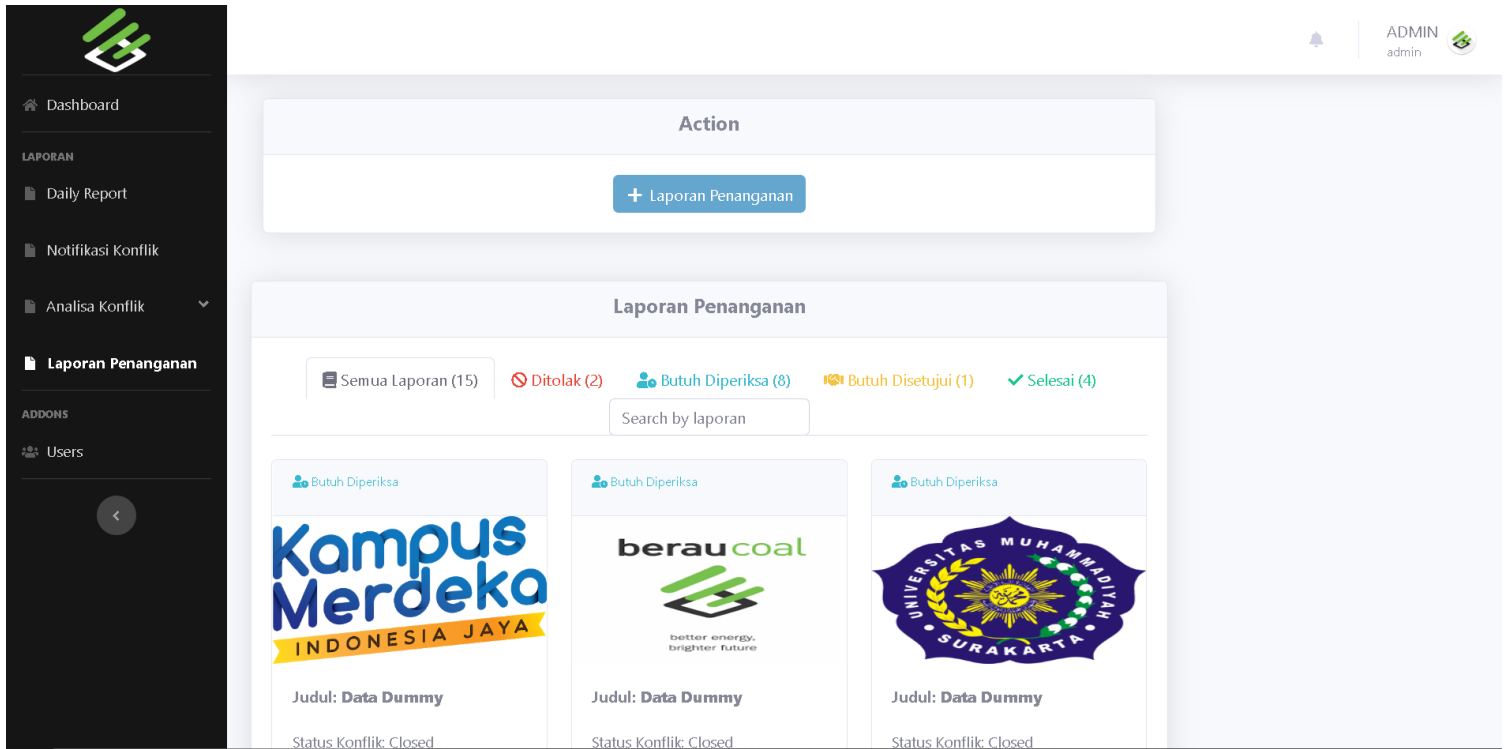


Figure 15. Page Report that need to be approved

F. Page Detail Report

This page showing the detailed data report. All users can see the data, The appearance of the page can be seen in Figure 13.

For Superior (Manager, Supt CM and Supt Comrel), they can edit, approve or reject the data based on the subordinates of the superior, the button is at the bottom of the detail report page. The appearance of the page can be seen in Figure 16 and Figure 17.

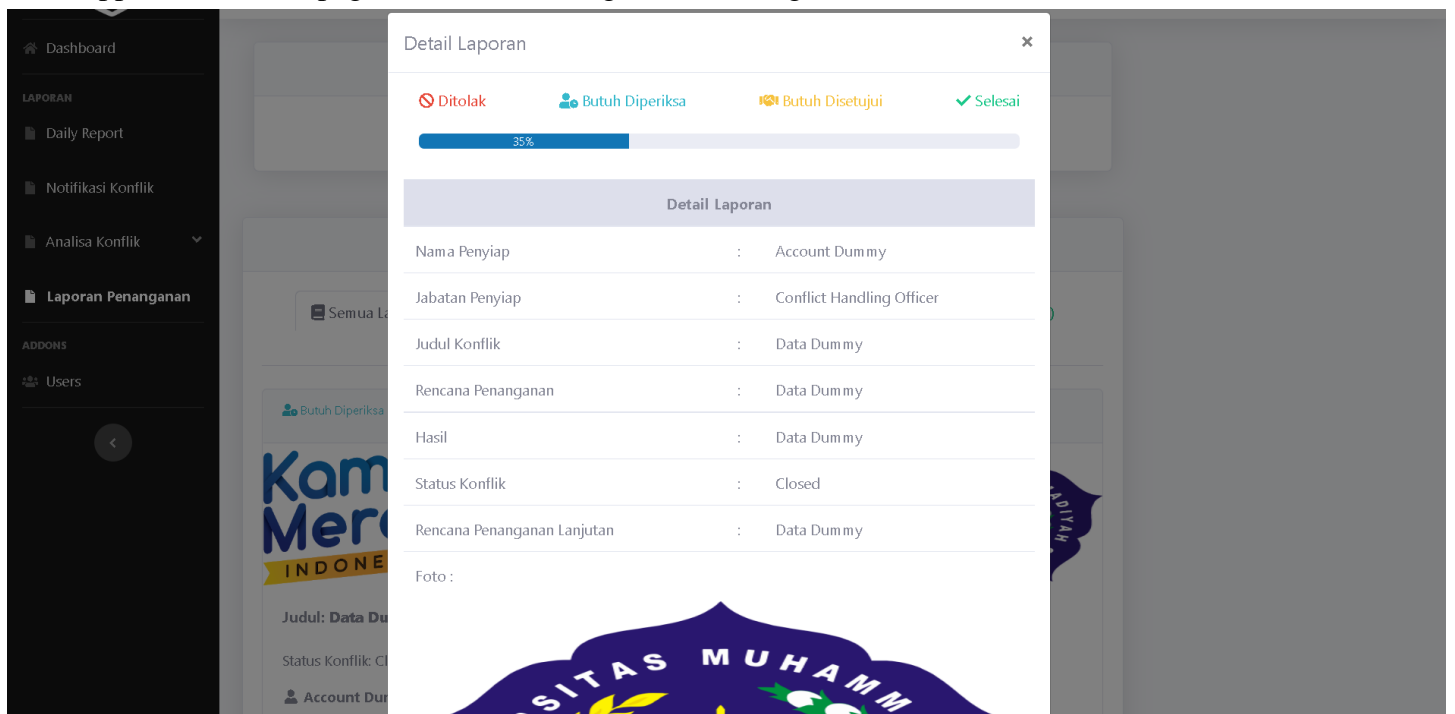


Figure 16. Page Detail Report

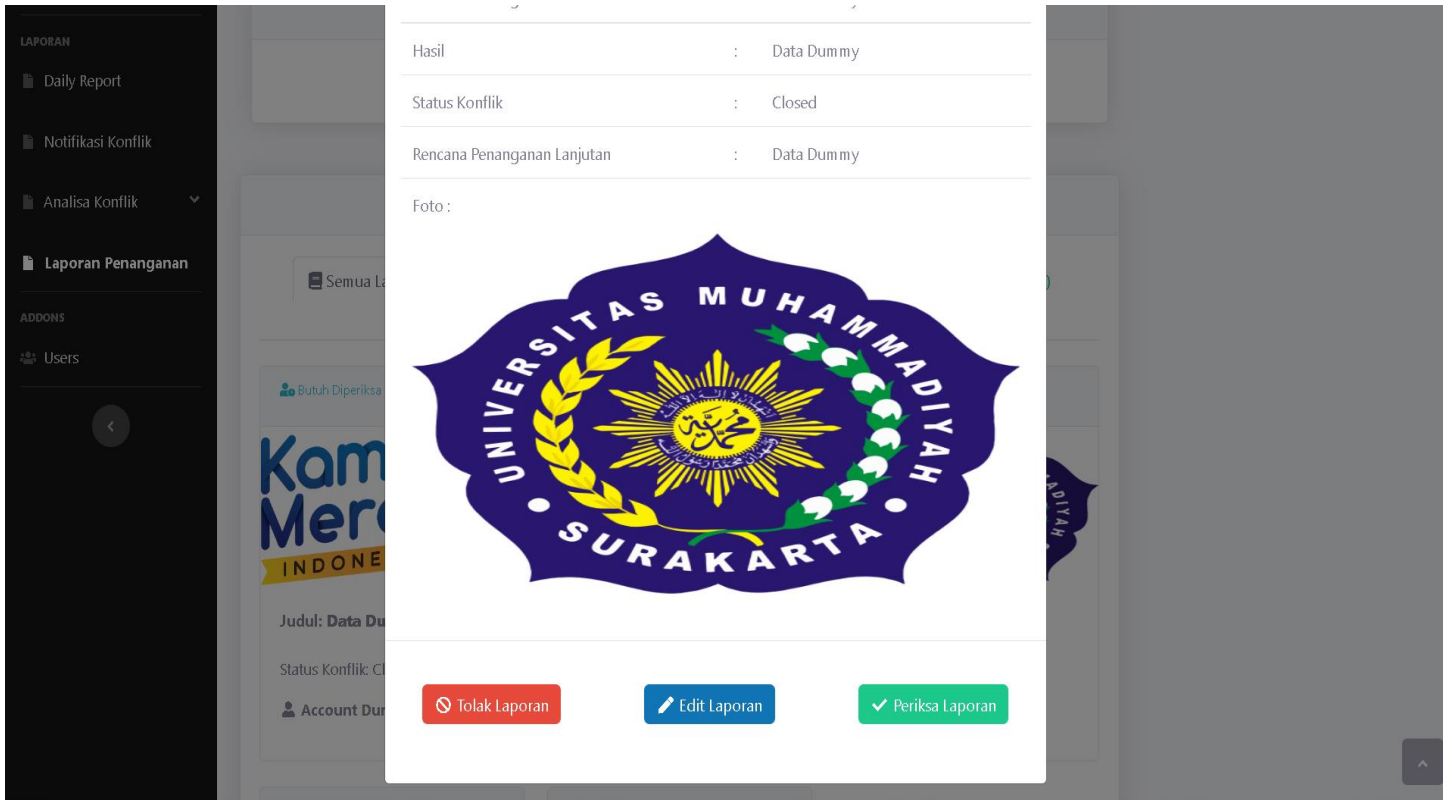


Figure 17. Page Detail Report

G. Page Users

This page showing the users page for admin to control/manage the users. All users except admin just can see the data. Admin can create and delete user's data. The appearance of the page can be seen in Figure 18.

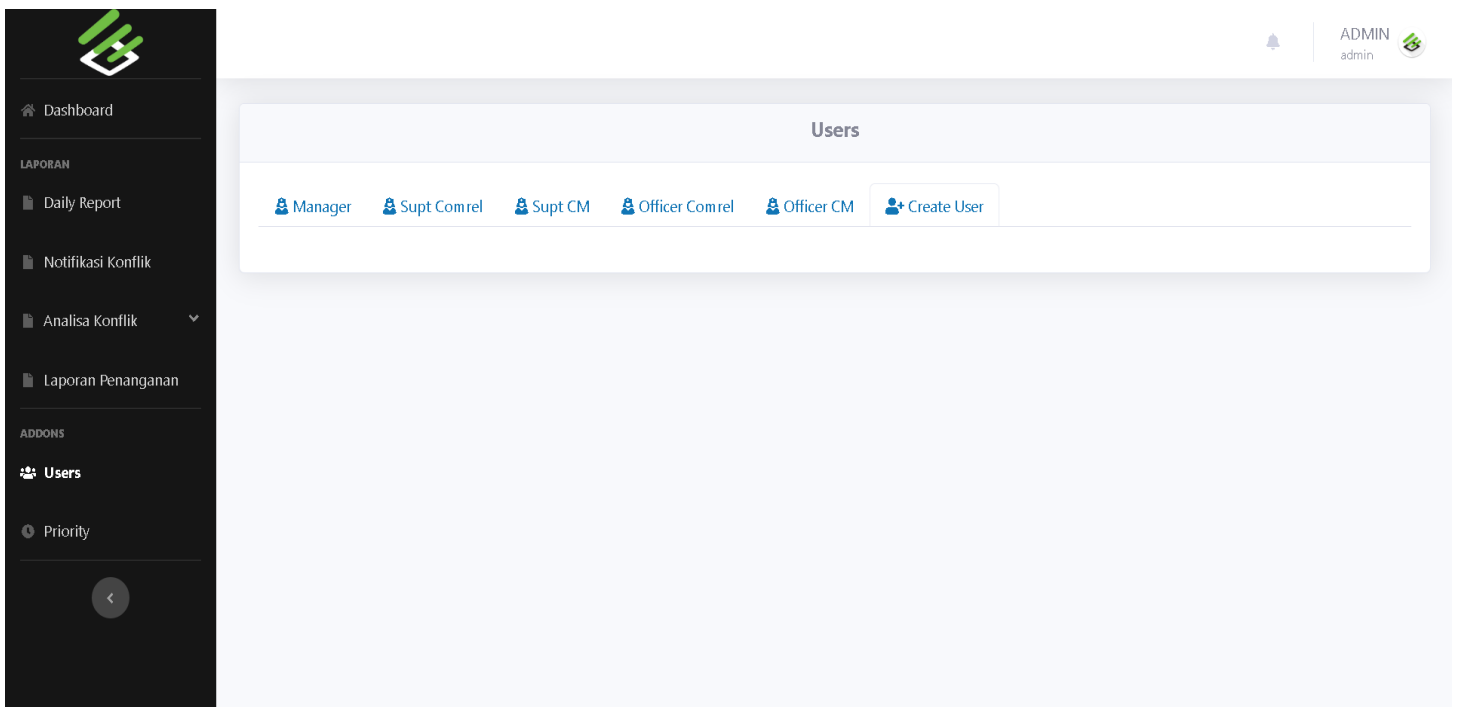


Figure 18. Users Page

H. Page Settings/Profile and Logout

This page showing settings profile page, in this page All User can edit profile and change password. For logout click the profile button at the top corner right, then it will show the logout button. The appearance of the page can be seen in Figure 19.

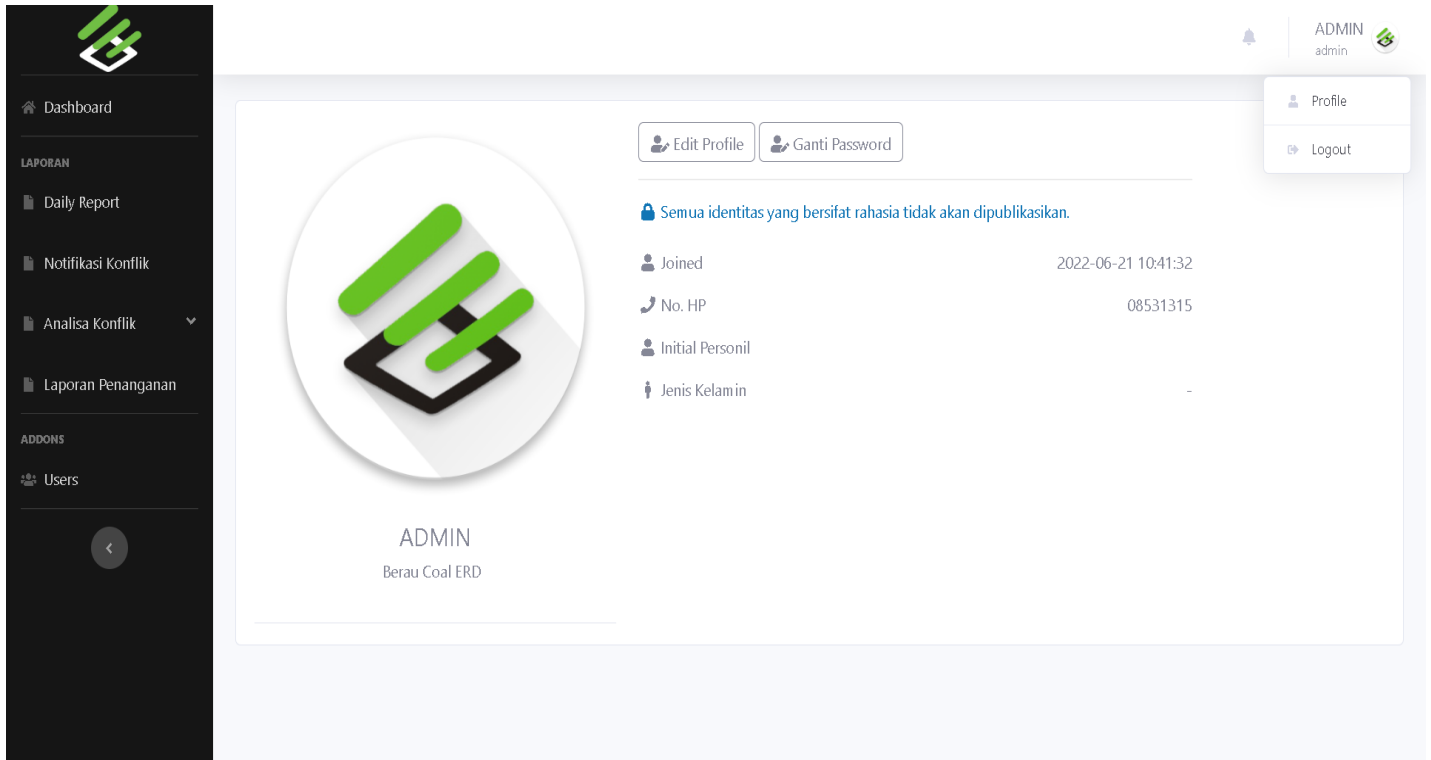


Figure 19. Settings/Profile Page and logout

I. Other User Profile Page

This page showing the data of other users, in this page All User can see the data of other users. The appearance of the page can be seen in Figure 20.

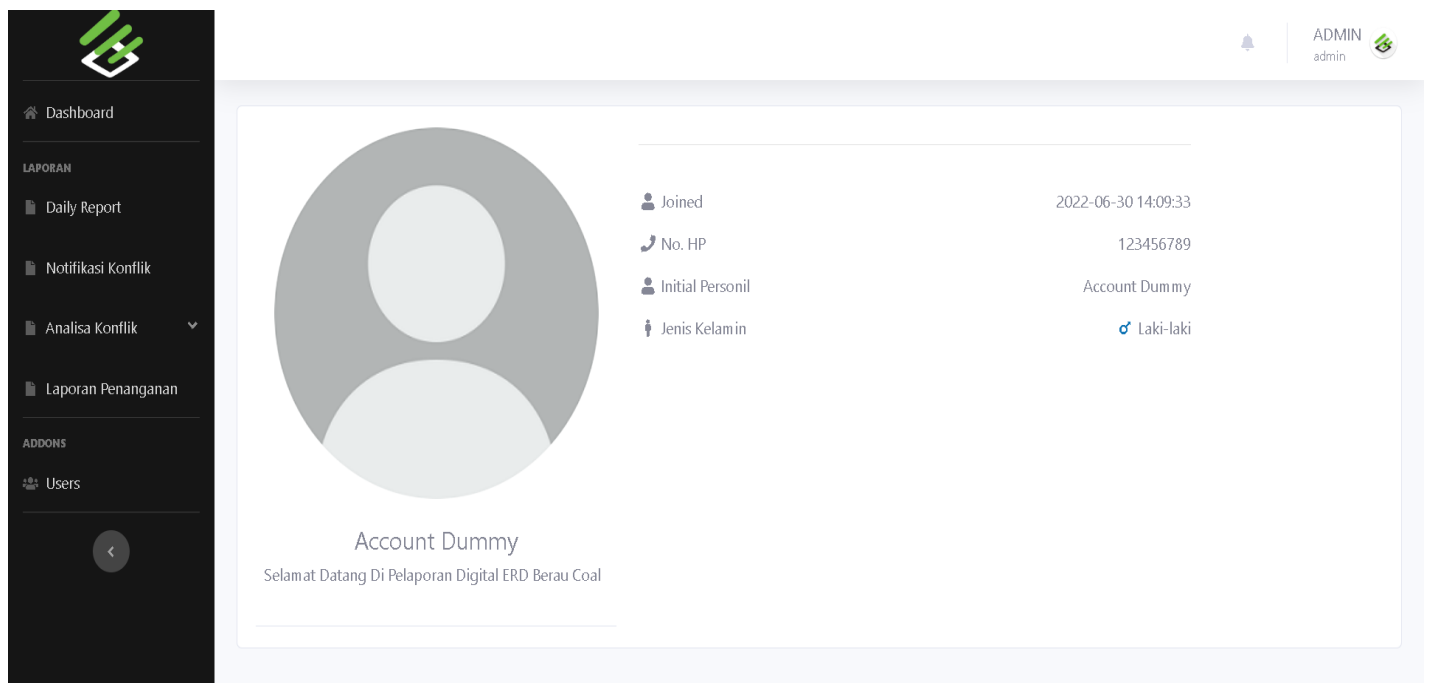


Figure 20. Other User Profile Page

3.2 Testing

A. Blackbox Testing

The testing phase using the blackbox method aims to assess and ensure that the features in the application run well. This test was carried out by application developers and external department employees as users. For blackbox test results can be seen in Table 3.

Table 3. Blackbox Testing Result of the Digital Report Application

No	Testing	Test Case	Expected Results	Results
1.	Multiuser Login/ Multilevel User Login	User login using correct email and password.	The application will leads to the page dashboard.	Suitable
		User login using false email and password.	The application will show fail alert “Wrong email or password”.	
2.	Create Dailyreport (No need approval)	User (Reporter) fill all the form and upload a photo then click submit button.	A successful alert appears "Daily report successfully created" and data successfully entered in database and its data are displayed in the application.	Suitable
		User (Reporter) not fill one of the form or not upload a photo then click submit button.	The application will show fail alert “Please Fill All the form”.	
3.	Edit Dailyreport (No need approval)	User (Reporter) Change the contents of the data by click detail report. Then click Edit, then change the data in the form, and click submit.	A successful alert appears "Report successfully changed" and data successfully entered in database and its data are displayed in the application.	Suitable
		Just the reporter who can edit the report.	If not the reporter then the edit button not shown, if yes then the edit button shown.	
		User (Reporter) Change the contents of the data by click detail report. Then click Edit, then there are unfilled form input and click submit.	The application will show fail alert “Please Fill All the form”.	

No	Testing	Test Case	Expected Results	Results
4.	Create Reports (That need approval)	User (Reporter) fill all the form and upload an attachment then click submit button.	A successful alert appears "Report successfully created" and data successfully entered in database and its data are displayed in the application.	Suitable
		The report will automatically goes to the reporter's superior.	The report successfully goes to the reporter's superior.	
		User (Reporter) not fill one of the form or not upload an attachment then click submit button.	The application will show fail alert "Please Fill All the form".	
5.	Edit Reports (That need approval) for reporter when the reports is rejected	User (Reporter) Change the contents of the data by click detail report. Then click Edit, then change the data in the form, and click submit.	A successful alert appears "Report successfully changed" and data successfully entered in database and its data are displayed in the application.	Suitable
		Just the reporter who can edit the report at reports rejected stage.	If not the reporter then the edit button not shown, if yes then the edit button shown.	
		User (Reporter) Change the contents of the data by click detail report. Then click Edit, then there are unfilled form input and click submit.	The application will show fail alert "Please Fill All the form".	
6.	Edit Reports (That need approval) For superior (Supt CM, Supt Comrel and Manager)	User (Superior) Change the contents of the data by click detail report. Then click Edit, then change the data in the form, and click submit.	A successful alert appears "Report successfully changed" and data successfully entered in database and its data are displayed in the application.	Suitable
		Superior can only edit the report based on the subordinates of the superior.	The button edit not show when it is not based on the subordinates of the superior, if it is based on the subordinates of the superior then the button edit is shown.	
		User (Superior) Change the contents of the data by click detail report. Then click Edit, then there are unfilled form input and click submit.	The application will show fail alert "Please Fill All the form".	

No	Testing	Test Case	Expected Results	Results
7.	Approve/Reject Reports (That need approval) For superior (Supt CM, Supt Comrel and Manager)	User (Superior) Approve/reject by click detail report. Then click approve/reject.	First, An alert appears if the superior sure want to approve/reject the report. If yes, A successful alert will appears and data successfully entered in database and its data are displayed in the application.	Suitable
		Superior can only approve/reject the report based on the subordinates of the superior.	The button approve/reject not show when it is not based on the subordinates of the superior, if it is based on the subordinates of the superior then the button approve/reject is shown.	
8.	Add data Users (Officer CM, Officer Comrel, Supt CM, Supt Comrel, Manager)	Admin add new data users by click create user button, then fill the form input and click save.	A successful alert appears and data successfully entered in database and its data are displayed in the application.	Suitable
		Admin add new data users by click create user button, then there are unfilled form input and click save.	The application will show fail alert "Please Fill All the form".	
9.	Delete Data Users (Officer CM, Officer Comrel, Supt CM, Supt Comrel, Manager)	Admin Delete data by press the Delete button, and click "ok".	A successful alert appears "User Data successfully Deleted" and data successfully deleted from database.	Suitable
10.	Edit Profile (Officer CM, Officer Comrel, Supt CM, Supt Comrel, Manager, Admin)	All user can edit profile by click edit profile button, then fill/change the data. Then click submit and "ok".	A successful alert appears and data successfully entered in database and its data are displayed in the application.	Suitable
		All user can edit profile by click edit profile button, then fill/change the data but there is unfilled form input. Then click submit and "ok".	The application will show fail alert "Please Fill All the form".	

No	Testing	Test Case	Expected Results	Results
11.	Change Password (Officer CM, Officer Comrel, Supt CM, Supt Comrel, Manager, Admin)	All user can change password by click change password button, then input correct old password and new password. After that click submit and "ok".	A successful alert appears and data successfully entered in database.	Suitable
		All user can change password by click change password button, then input wrong old password, then input new password. After that click submit and "ok".	The application will show fail alert "Old Password Not Match".	

B. User Acceptance Test (UAT)

The User Acceptance Test step is carried out to find out how the application runs and test whether the application is in accordance with the needs of the user side (Utomo et al., 2018). With this test can obtain results that developers can use to evaluate the application. In the UAT test for this application asked 8 questions contained in Table 4 to the respondents and involved 7 external department PT. Berau Coal employees as Respondents.

By using Formula 1 (Rahayu & Nurgiyatna, 2022) and the weight of the value has been specified in Table 4 to calculate the percentage result. The result of its calculations can be viewed in Table 5.

Formula 1. UAT test percentage result calculation formula

$$\text{Percentage Result} = \left(\frac{\sum \text{Total Score}}{\sum \text{Number Of Respondents} \times 5} \right) \times 100\% \dots (1)$$

Table 4. Value of the Answers

Answers	Code	Value	Percentage
Strongly Disagree	SD	1	0% - 20%
Disagree	D	2	21% - 40%
Neutral	N	3	41% - 60%
Agree	A	4	61% - 80%
Strongly Agree	SA	5	81% - 100%

Table 5. Calculation results of the user acceptance test (UAT) test value

No	Question	Value					Total Score	Percentage Results
		SDx1	Dx2	Nx3	Ax4	SAx5		
1	Is the App Display Easy to understand and Easy to use?				12	20	32	91%
2	Can this application do daily reports well?				12	20	32	91%
3	Is this application able to do reports that require approval properly?			3	8	20	31	88%
4	Is the format of all reports in this application in accordance with the requests/needs?				16	15	31	88%
5	Are the features inside the app already running well?				12	20	32	91%
6	Is the appearance of the menu in this application already in accordance with your needs?				12	20	32	91%
7	Are you satisfied with this application?				16	15	31	88%
8	Can this application make user performance easier?				4	30	34	97%
Average								90,6%

Based on the User Acceptance Test in this application, the results of calculating the answers from respondents that given questions as in Table 5 show that the percentage results Application testing generates a number 90,6%, which means it can prove that this Digital Reporting Application is acceptable and used by External Department PT. Berau Coal.

4. CONCLUSION

The conclusion that can be drawn is the Digital Report Application Web-Based at the External Department of PT. Berau Coal has been successfully made according to needs. By making this application can help ease the user's work, and in making and managing reports become more efficient and faster. Based on the User Acceptance Test (UAT) test that produces a value 90,6% it can prove that the application can be accepted and used by the External Department of PT. Berau Coal. Suggestions for the future, the application can be developed by adding other features such as track reports by maps, email notifications, etc.

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