



# ADOPT GAMIFICATION IN HELPDESK TO GAIN USER ENGAGEMENT (STUDY CASE CENTRE FOR POLITICAL STUDIES LIPI)

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**Abstract:** In order to improve and organize the availability of information technology (IT) services, it is now common for both private and government organizations to have a helpdesk that acts as the spearhead in solving and managing emerging problems. The helpdesk service includes hardware, software, and network repair services. In managing IT services in P2 LIPI's Politics, the unstructured helpdesk management process, often results in the loss of information handling of the problem handling. In addition, it is related by a lack of monitoring all activities from beginning to end. At the end of the year, the IT Team's supervisor is not able to conduct the evaluation activities of his staff optimally. Solutions for systems using Information Technology Infrastructure Library version 3 and gamification methods. Classification problem made into a prioritized level adjusted based on title and interest in accordance with the track in P2 Political coordination LIPI. Based on the results and discussion of the adoption of gamification methods on the helpdesk application is expected to create an interesting working environment, improving the performance of employees P2 Politics in general and the technicians in particular.

**Keyword:** Gamification; Helpdesk; Technician;

## I. INTRODUCTION

In the current era, the role of the Helpdesk is one related service with reporting the damage in the IT field. The helpdesk is the spearhead in a work unit or organization that helps handle the complaint related issues. The helpdesk is the main part of an organization that helped address need user-related questions, service, technical support, or complaints against a particular products and services that utilize the numbering system (request ticket) to facilitate searches against solution the resolution is coordinated by a team[1].

The Helpdesk should preferably be supplemented by software that provides data, monitoring recap of activities, and report. The software used must be able to do this problem, keep the documentation of problems occurred with the solution obtained settlement priorities, and do the work. This will help the IT staff when faced with a problem in the work unit or the organization with many users. Center for Political Research LIPI is a research institute under the deputy of IPSK LIPI field, here in after referred to as P2 Politics. P2 Politics is the executor of science in the field of local, national and international politics which is under and responsible to the Deputy of Social Science and Humanity (IPSK-LIPI). Information technology services in P2 Politics are handled by IT teams that are part of the household and the public. The IT team faces several problems in performing its tasks, primarily being the making of activity reports for each member of the IT team itself. Data such as client, problem occurring, diagnosis, name of IT Team handling, date of report entry, date of report response, completion date of repair work, completion step, duration of work, and acceptance of user in the form of signature. The data in the form of information has not been done record, because the main task of IT Team in P2 Politics own each personnel not specifically handle problems in the field of information technology and also spread in some parts such as staffing, household, library, and finance.

In the case of improvements made when there are reports of incoming users, it has not been adapted to the expertise of each technician. The current fix assignment is done by the IT team who received the call in the form of a problem report complaint from the user requesting assistance. The expertise of each of the technicians in question is about hardware, software, or networking. In hardware scope, repairs are performed around hardware configuration and replacement of new components if needed. Software issues include software errors, new software installation, and reinstall the computer operating system. For network handling problems include internet related issues, e-mail user, and network configuration. Since there is no record of problems that have occurred, it is difficult to repair activities, especially the problem of handling time. Time handling a problem can be long and even delayed, even though the problem has never happened, in addition to the absence of recording problems that ever happened, the main task of the IT Team itself more towards things are administrative offices. In P2 Politics there are certain indicators that every IT team member can achieve to increase the credit score for functional promotion and for the Employee Performance Target (SKP) report which serves to get performance allowance every year. Indeed, helpdesk is not only about the technician's own reporting activities, but rather the classification of problems, knowledge assets, guidance, supervision of ongoing activities, surveillance of goods in and out, performance appraisals. Study this case take action that runs generally on Institutions of Government and Politics, especially in P2 Politics. Therefore there is a difference in the needs and business processes that take place that will be discussed next. The focus discussed in these helpdesk activities is related to the quality and speed of service and unstructured helpdesk management processes, resulting in frequent loss of information handled by the handling of problems. In addition, it is related by a lack of monitoring all activities from beginning to end. At the end of the year, the IT Team's supervisor is not able to conduct the evaluation activities of his staff optimally. In addition to storing reports on the purchase of goods if there is damage stored in one place, this makes it difficult to search data when needed, such as for the preparation of maintenance budgets or purchases of goods and machinery in the next year. We propose applying gamification at helpdesk application that will be applied in political P2 LIPI. We made a survey between helpdesk design without gamification and with gamification. The writing of this paper is composed of: first introduction in part 1, related work in section 2. Part 3 will discuss system analysts, while section 4 will contain system design. For section 5 contains the results and discussion, and finally the concluding section contains the conclusions.

## **II. RELATED WORK**

Gamification is a method the use of game design techniques [2], thinking games and mechanical games, the aims increase of non-game context. In General gamification used for application non-games and processes, with the intention of increasing the interactivity of the user. Various studies have been done that, gamification can improve engagement or attachment between applications with user.

Research on the application of gamification had previously done by Juho Koivisto Hamari, Jonna, and Harri Sarsa with titles Does Gamification Work?. The research they are doing that is making a framework to check the impacts gamification with the elaboration of the definition of gamification and discussions about motivation. The result of the frameworks they create indicated that gamification gives a positive influence, but the impact depends on the context in which gamification is being implemented, as well as on the users who use it [3]. Yusep Rosmansyah and Muhammad Rifqi conducted a study entitled Mobile Learning with Gamification for Memorizing the Koran. The research of applying gamification in mobile learning to help recite the Holy Quran which aims at increasing the element of interest. The result of application of mobile learning the Quran by using qualitative factors such as gamification increase the ease, convenience, and pleasure [4]. Research on the helpdesk has been done among them by Pranoto, Fitro Nur Hakim, Victor Gayuh Utomo (2015) that conduct research design of Application Software and Hardware Services Helpdesk is Web-based (case study: PT. Karya Main Zirang Semarang).

This research aims to simplify the IT section in the management issues through a web-based program that can be accessed through the internet. Based on previous studies, then we made a research with some updates. Applications are made accessible through the internet, added the feature to monitor the development of reports from users, features a recap of crash reports, type of damage, and the performance of the IT team members. In addition, we add gamification at the technician that is reward and experience (points), with the aim of creating a work environment that attracts and pleases so that it can improve the performance and capabilities of employees as well as provide services optimally.

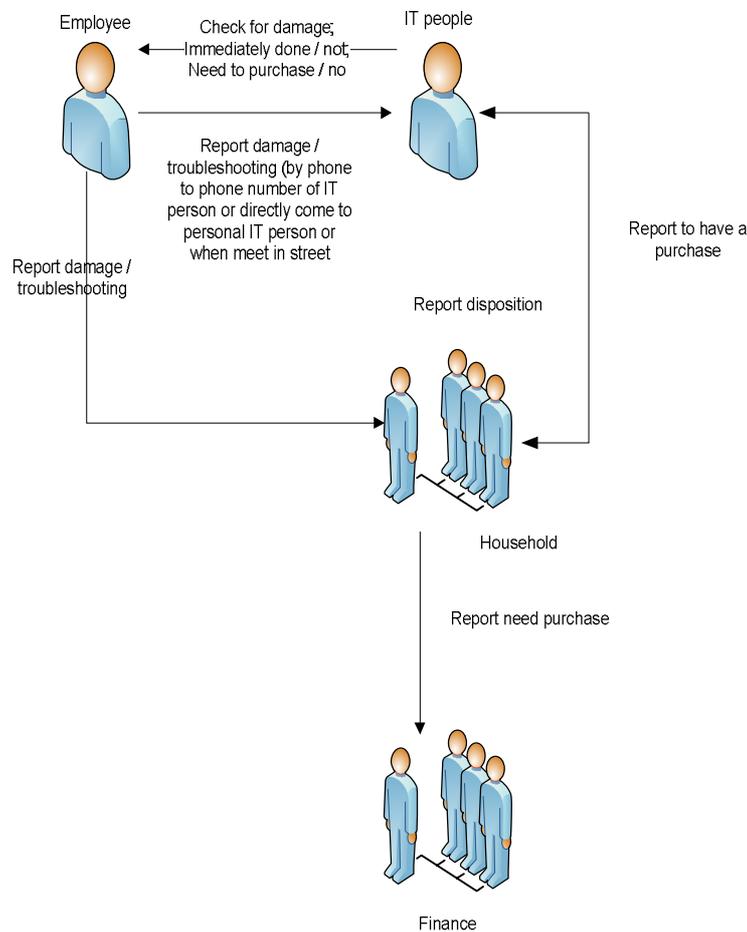
### III. SYSTEM ANALYSIS

The analysis system consists of three parts, namely, problem analysis, solution analysis, and prioritization.

#### A. Analysis of the problem

The process of the activity of the helpdesk are running currently on the P2 Politics as follows:

1. Users with computer-related issues will contact the IT personnel or contact the household .
2. The household section contacts the IT department regarding user reports .
3. IT personnel contacted by the user or contacted by the household checks .
4. Report completed handled / pending (no change of sparepart / can not be completed that day) .
5. If there is a change of spare parts, IT personnel report to the household section, for further report to the finance department.



**Figure 1. Business process P2 Politics helpdesk**

IT Section P2 Politics requires a manual related to helpdesk service management to be used as a guide in carrying out helpdesk activities in the office. Existing problems are related to several stages that have not been performed in accordance with work procedures, beginning with the recording of unworked helpdesk information resulting in inhibition of the need for knowledge transfer among IT personnel, as well as complicating supervisors in terms of monitoring and evaluation of work results at the end of each period. The staging stage of user reporting is also not recorded if the problem conveyed by phone has been completed with the solution directly delivered by phone at that time, so the report has been closed (closure) without any information recorded on the form. Additionally, problem grouping issues have not been done yet. All user issues have only one type of category and all have no work completion limit yet. This applies to mild to severe problems.

Whereas while the problems that arise will inhibit the activities and performance of users, especially work done using a computer or any other related data search through the internet. After going through the stages of identification, recording, and classifying the problem, the problem will be traced the cause and diagnosed for immediate completed. This has a great impact on the work of problem solving, so it can save the completion time and users can immediately re-use the computer to work. However, this has constraints, ie the results of the investigation and diagnosis of the problem are not recorded in full and detailed. This obviously affects the loss of information. Problems are also present in component replacements if there is a problem with the hardware on the user's computer. Substitution of new components performed by staff and then installed on the user computer takes longer because of having to check the availability of maintenance funds in the financial section before making a purchase. In addition, if the required components are scarce or not produced, then the work of users who need computers are also affected. This component-related thing is also very important, as it concerns management for the financial helpdesk service that runs.

Any problems that occur to the user will be closed if it has been resolved. Completed in this helpdesk activity is when a repair service has restored the condition of the hardware, software, or user network in its original state which can be used normally again, without interrupting the user's work. Closing the problem still has shortcomings, ie the staff does not validate from the user in question. In addition, if it takes a recap of the results of the work that has been done, then the IT team does not have such data. All of these stages require monitoring in every work, but currently the IT Team has not yet monitored the helpdesk activities, as the process is only known when the problem is done. Helpdesk is one of the services related to reporting damage in the IT field. It can be said to helpdesk as a bridge between service users and technicians. In practice the helpdesk receives reports of damage from the user then reports the damage to the technician in the form of ticketing. In the ticketing system the technician will receive damage reports and make improvements. Ticketing system is actually an administrative process to document any IT damage reporting. With this documentation, it is expected to make it easier for IT teams to analyze the damage in anticipation of greater damage. To obtain complete documentation and accurate data is required also complete.

This makes the constraint, that the work is often boring and unattractive so that the use of helpdesk system is not maximal. To overcome this, there needs to be an update in the system. Gamification method with helpdesk system will be more interesting to use. Gamification is a gaming method that is applied in a non-gaming context. By method this, the job feels like playing games. It aims to make system users feel comfortable doing their work. So with this expected work is fully documented. From the research that has been done, there are some objectives and expected results of the implementation of this gamification, among others for pleasure (fun), increase productivity, men i n gkatkan motivation, increase the skills / skill building, an s d e b againya. In fact from the research that has been done, it is possible that gamification methods can be used to improve the results in accordance with the desired. Elements in the game that can be applied in the helpdesk include rewards / rewards. In addition progress bars, notifications and feedback can motivate individuals to continue their work.

## **B. Analysis Of The Solution**

Based on the problems that occur and the cause of the problem is then analyzed to determine the framework that suits the needs of the case study. In some studies that have been done before, there are several similarities of problems that occur with the case study case. These equations include the lack of reporting forms, documentation on handling for the needs of knowledge transfer and monitoring of helpdesk activities. Based on the needs of P2 Politics that has been described before , then selected ITIL V3 framework and gamification methods . Both are considered more relevant in solving the problems that occur in P2 Politics. Because ITIL V3 has a conceptual alignment with ITSM (Information Technology Service Management). In this case, ITSM is a method of managing the information technology activities fo c us to provide excellent service to the users. Meanwhile, gamification methods apply in-game design techniques into non-gaming contexts, thus creating an exciting and fun working environment. The functions of the ITIL framework used are as follows.

1. Provides a guide against the corporate helpdesk.
2. Optimizing the settings of any data obtained from the results of the activities of troubleshooting on the user.
3. Appropriate levels of difficulty problem of classification in order to be directly proportional to the working time limit for each level of difficulty.
4. Existing human resources Settings in company for process troubleshooting to run optimally, thus achieved the effectiveness and efficiency of all aspects of troubleshooting activities.
5. Help the evaluation process and monitoring required for every issue that goes on the handling of the helpdesk in the company.

The functions applied are in conformity with the provision of standard standard helpdesk services. The provision is to facilitate the activities carried out helpdesk of several aspects, such as documentation data automatically and structured, monitoring activities from the beginning to completion and transfer knowledge using complete information.

Using the framework and applying the gamification method is expected to attract users or technicians in reporting and handling IT issues. In implementation, the rules in the gamification and the objectives must be in accordance with the service standards recommended by the ITIL framework. In other words, ITIL V3 framework is used as Support for determine some processes inside helpdesk service. To customize the gamification method with the framework can be done by connecting the rules and the purpose of gamification with every aspect of ITIL in the helpdesk service.

The following game design categories are divided into 5 levels:

1. Game interface design patterns : badges, leaderboards and level
2. Game Design Patterns and Mechanics, time constraints, limited resources and turns.
3. Game Design Principles and heuristics; enduring play, clear goals and a variety of game styles
4. Game Model – challenge, fantasy, curiosity and game design atoms.
5. Game Design, playtesting playcentric design Methods and value conscious game design

In gamification there is some elements, such as competition, cooperation, point, avatars, levels, leaderboards, chance, risk, aesthetics, rules, clear objectives. In this helpdesk app use some element of gamification, namely levels and point. This matter expected can support performance technician. Point is determined by system with technician do documenting checking, working and writing with complete history processing then the point will be increases. With increasing point, automatic level will rise. From the above description, the ITIL V3 framework and gamification method are chosen to be applied in the design of helpdesk application systems created on P2 Politics. Helpdesk application design starts from users with IT related issues and reports the problem to the IT team or household section, then IT team completes the problem and documens the work. There are 2 ways to report the problem. First, the user reports the damage by creating a direct ticket on the Helpdesk app. Users describe in detail the problems they experienced through applications that have been made. The second way the user called the home part ladder, then the household section make the ticket by detailing the problem in detail to the application then the ticket is submitted. Once the problem is submitted, the system will send a detailed report of damage to equipment. Then the technician will pick up tickets and check on the device. In this step, the technician documines the checks performed. At this stage the technician gets reward and experience (points) increases. The next step, the technician will start dealing with the problem. In this stage the technician must also document the repair/replacement device. After recording the technician gets reward and experience (points) increases. If in handling required spare part replacement, the technician filling out the spare part purchase form in the application and report in the system note that the delayed repair until the spare parts come.

After the spare parts have been obtained, then the installation, then technicians do a close ticket by recording all history of workmanship and perform evaluation. In this stage, the technician gets reward and experience (points) increases. Any problems that come in the Helpdesk application will be automatically stored into the database and become information for the IT team for future improvements when it encounters similar problems. From the problems that have been fixed, it will get the report after the user to confirm to close the problem. Combining gamification and ITIL V3 techniques on the helpdesk service is expected to create an exciting work environment and fun to improve performance, employee skills, employee motivation and provide optimal service. Motivation is important because it triggers and support human behavior, in order to work hard and enthusiastically achieve results the maximal[5].

### C. Priority Determination

Determination of priority user The helpdesk application user in P2 Politics is composed from researchers , admin staff and officials structural.

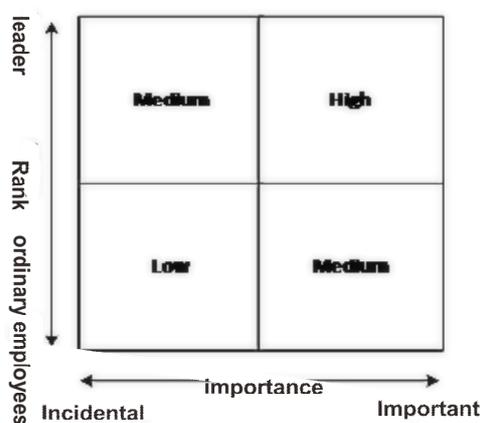


Figure 2. Diagram Of The User Priority

On the official structural composed from Head of Puslit, Head of PDHP, Head of Dissemination and Cooperation Division, Kasubbid PHP, KaBid TU, Sub Division Head of Staffing, and Head of Financial Sub-division. Based on 2 groups of users namely officials structural and non-structural ( researchers and administrative staff ), then created be a priority level in a diagram for then applied in Helpdesk apps , as in the following picture . From the diagram above there are 2 classifications used as determinant priority processing. The first positions in it there structural and non-structural officials (researchers and administrative staff). While interests in structural positions affect interest on non-structural positions , then when structural officials experience problem in category important will directly get priority high. If experience problem with category less important, get medium category. In the non-structural positions, as researchers and administrative staff experienced problem with category important get medium priority, if including category less important, get low priority. Determination priority the used for help admin Helpdesk inside determine processing repair on each problem if happen reporting problems that come in time at the same time or close together. In each level is given limits time as determinant processing repair done right time or late. Priority high has limit time for 1 hour, medium 4 hours, and low 24 hours. If processing repair exceeds from limit time already determined, will go in late status.

#### IV. SYSTEM PLANNING

The design of the system is a step that aims to divide the whole system into its components parts [6]. Here is a picture of the process that occurs when bisni s implementation gamification.

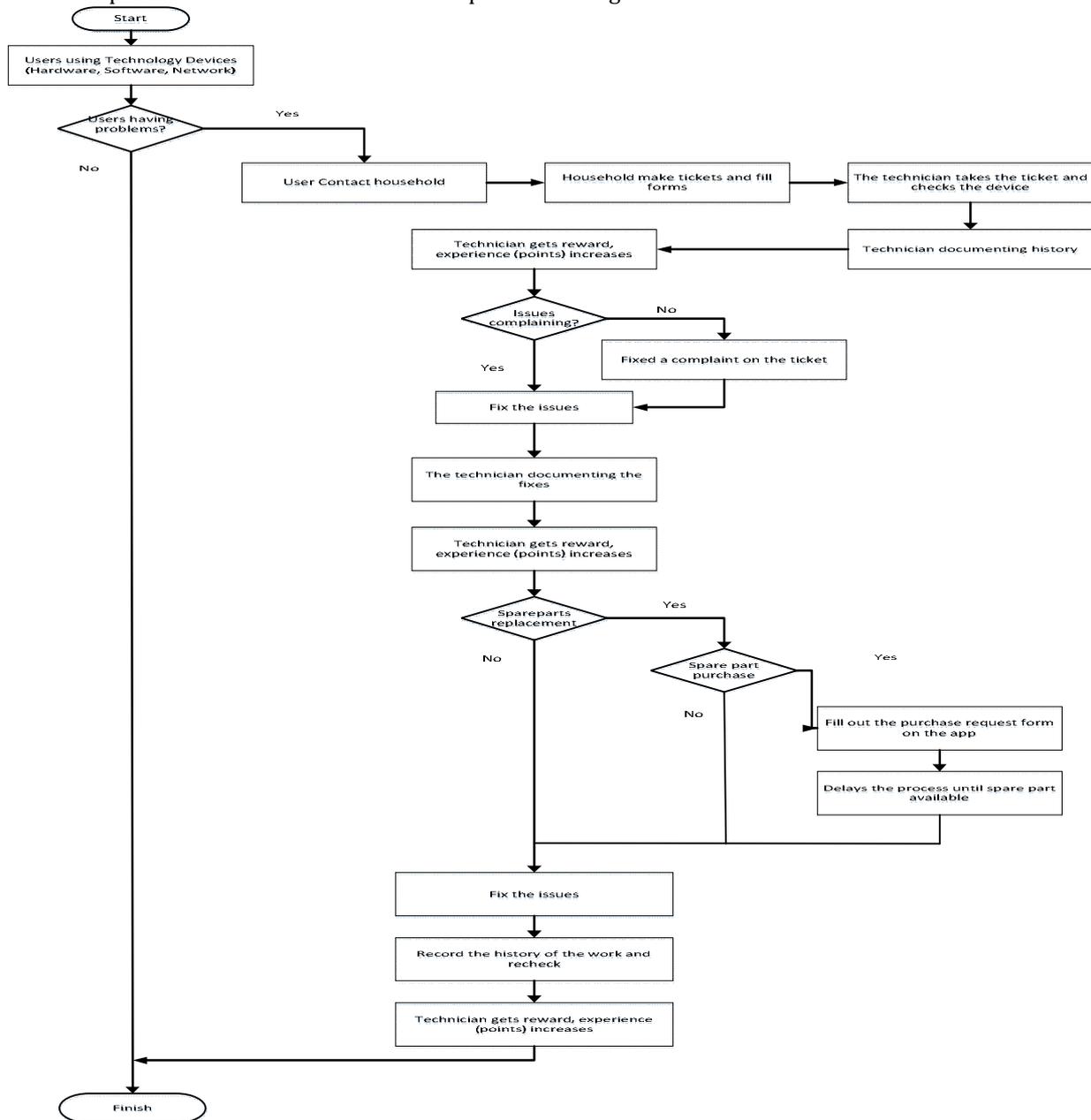


Figure 3. Business process with gamification

There was an addition to the process after the ticket was made. After the technician checks and has completed the form on the ticket, technicians change the status of the ticket to be handled. The system will add points to the experience in accordance with the completeness of the technician in checking and filling the form. Next the technician will do the same and will happen the same process any status change until the ticket status becomes completed. The image below shows a screen design for Technician roles. The technician is also a user of IT equipment, therefore Technicians also have a menu to create new tickets with the same screen design as the previous points. In the picture below there are two designs navigation menu navigation technician, ie without gamification and with gamification. The difference is in the gamification menu, this menu displays the number of levels achieved, Class and progress bar that will increase automatically in accordance with the work completed. The level will increase when the progress bar has been met (100), the maximum number of progress bar points will also increase as the level increases. Class indicates the rank that has been reached by technicians based on a certain level that has been achieved.

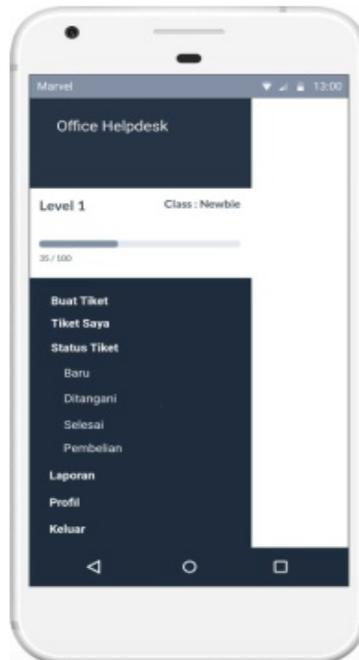


Figure 4. Technician

The last image below is the profile screen on the technician, there are two screens. The first screen is a technician profile view without gamification, same as the user profile. The second screen is the technician's profile view with gamification, there is additionally the same status on the navigation menu with the gamification as described in the previous point.

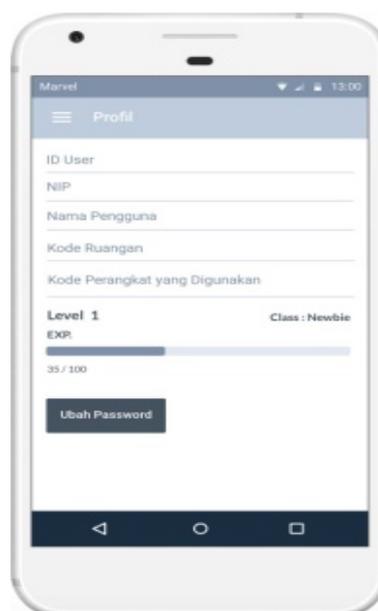


Figure 5 Profil Technician

In both the helpdesk models created, there are three types of users that will use the helpdesk system. Users who will use the system are the people who are on P2 Politics that have been registered on the system.

The design of the system created is closed/only used by employees of P2 Politics. Users are divided according to their respective rights in the use of the system. Users in this design are as follows.

1. Household (System Admin), the person responsible for overseeing ongoing work, managing devices, technicians, and users. Households are in charge of receiving complaints and overseeing ongoing activities and checking the completeness of the documentation.
2. Users, including researchers, technicians, households and others concerned with the use of technological equipment. They will contact the technician directly by phone or see a technician when there is a problem with the device.
3. The technician, the person who handles technological device improvements and is responsible for the documentation during the helpdesk activities.

We create two business process models and prototype app view. The first business process is a helpdesk that runs without gamification, while the second uses gamification. The difference on display is on the technician side. In gamification, the technician has a view to see the achievements gained during the helpdesk activities running, ie on the navigation bar and technician profile. The view contains experience displayed in numbers and progress bar. If the number reaches 100 / progress bar full, then the level will increase. If the level reaches a certain number then the Class will change.

## V. RESULTS AND DISCUSSION

From the literature review that we do, got similarities between some research that is very close to the problems in P2 Politics. We combine the solutions that occur with increasing user engagement and gamification method applications. We drafted both models, and from both the designs the research could be developed for its application. The results of both models can also be tested by doing a questionnaire on the study of the intended chassis. The new business process can improve the current business processes. In addition, the helpdesk can be implemented, and the gamification expected in a method will help helpdesk create an attractive working environment, improve employee performance P2 Politics in general and engineers in particular.

## VI. CONCLUSION

Based on the results and discussion of the adoption of gamification methods on the helpdesk application is expected to create an interesting working environment, improving the performance of employees P2 Politics in general and the technicians in particular. Other than that it is also expected that the house section provides call centers to do damage reports, as not all employees in P2 Politics LIPI eloquently use mobile applications. On the other hand, it is hoped that with the helpdesk application by entering the elements of gamification, structural officials can know and evaluate the valid data about the number of damage reports on the category of hardware, software, internet network, often problematic items from one working period, so that can help budget planning in the following year.

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