



Transforming E-Sport Communities: Mobile-Based Online Forum Development

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Abstract: The world of e-sports is growing rapidly in Indonesia, starting from the regional, national, and even international levels. Players or game lovers, especially in the e-sport category, are very enthusiastic about various events, competitions organized by companies or individuals, and so on. However, players or lovers of e-sport games need a system for mutual communication, discussion, and finding information related to e-sport games ranging from events, competitions, patches, tutorials, problems, and others. The application of forums to the world of esports can be implemented using mobile applications, where this mobile e-sport forum is expected not only as a place of discussion but also as a social media place for pro players and e-sport gamers themselves that can be accessed anywhere and anytime. The Rational Unified Process (RUP) method is used to create applications. Using object-oriented development with UML for the approach. The system implementation process uses the Java programming language and the database uses Firebase for the testing system using API 27 Android 8.0.

Keywords: forum, e-sport, social media, Rational Unified Process (RUP), mobile.

I. INTRODUCTION

Electronic Sport (E-Sport) is a competitive activity that involves the use of electronic devices. This type of sport includes games such as FPS (First Person Shooting), RTS (Real Time Strategy), MOBA (Multiplayer Online Battle Arena), MMORPG (Multiplayer Massive Online Role-Playing Game), Battle Royale, and others. Esports is rapidly growing in Indonesia, as evidenced by the increasing number of tournaments and players across the country. The number of global e-sports viewers and active e-sports players is growing every year, especially in the Asia-Pacific region [1]. The Indonesian Esports Executive Board (PBESI) manages esports in Indonesia. The development of e-sports in Indonesia is supported by the existence of a strong e-sports community. The esports community is a place where esports fans can gather, discuss, and share information about esports. Several active forums exist today, such as MainBareng [2], BoardGameGeek [3], IndoGamers [4], HoyoLAB [5], and Garudaku [6]. These forums are typically specialized and focused on a single e-sports game.

The e-sports industry has grown tremendously since 2010, with an increase in the number of players and viewers and technological advancements [7,8]. The mobile sector has played a significant role in revolutionizing the way the esports community interacts and shares experiences. E-sports should be considered a sport as it requires competitive skills, has an increasingly organized structure, and is recognized by various institutions [9]. However, many e-sports communities in Indonesia still rely on social media platforms for communication and discussion. An Internet forum, or message board, is an online discussion site where people can have conversations in the form of posted messages [10].

These platforms are not specifically designed to meet their needs, so the e-sports community needs a more focused and structured discussion space. To address this, some authors have developed web-based e-sports forums using different methods, such as the Extreme Programming method and CodeIgniter [11,12]. Both magazines are still web-based, so users have to open a browser to use them. This is one of the problems, namely the lack of time efficiency, and when users open the site in mobile form, sometimes the UI that comes out is not suitable and confusing. So, this application will be adapted to the needs of e-sports games. E-sport athletes at a top level are usually referred to as pro gamers [13]. Therefore, we aim to develop a mobile-based e-sports forum application that will serve as an interactive platform for the e-sports community, players or professional gamers, and fans and can be used anywhere and anytime.

The development of this mobile-based e-sports forum application is expected to provide significant benefits. These benefits include strengthening interactions between community members, players, and fans of e-sports, creating an environment that supports the exchange of ideas and experiences, and facilitating access and exchange of the latest information about the world of e-sports, tournaments, and players. Users can share tips, tricks, and game strategies, supporting individual growth in playing esports. This application has the potential to increase the popularity of esports in Indonesia.



II. PROPOSED SYSTEM

The proposed system is an online forum for e-sports that aims to provide a platform for both individuals and e-sports communities as a forum application and social media for e-sports games. The following facilities will be provided:

- Create a new post: Users will be able to readily create new e-sports-related posts, using images or text.
- Add replies to posts: Users have the option to reply to individual posts shared on the platform.
- Search for other users: The system can include a search feature to find other users by entering their usernames.
- Informative profile menu: Each user's profile menu will display their username, posts, number of followers, followed users, and a brief bio or status.
- Notification: The system will include notification options for new posts, comment replies, and incoming private messages.
- Dark mode: The application offers a dark mode feature, which allows users to adjust the appearance and color scheme. This feature can be helpful for users concerned about eye health or those in certain conditions.
- Users will have access to various features on the platform including the ability to like, share, and save posts. They can search for posts and view the number of reactions each post has received. Additionally, users can follow and be followed by other users.

A. Methods

In this study, we used RUP in developing this e-sport forum application. The Rational Unified Process (RUP) is a Software Engineering Process [14]. RUP is an iterative, architecture-centric, and use case-driven software development approach, where the software engineering process is clear and well structured [15]. The Rational Unified Process (RUP) consists of four stages: inception, elaboration, construction, and transition. These stages are illustrated in Figure 1.

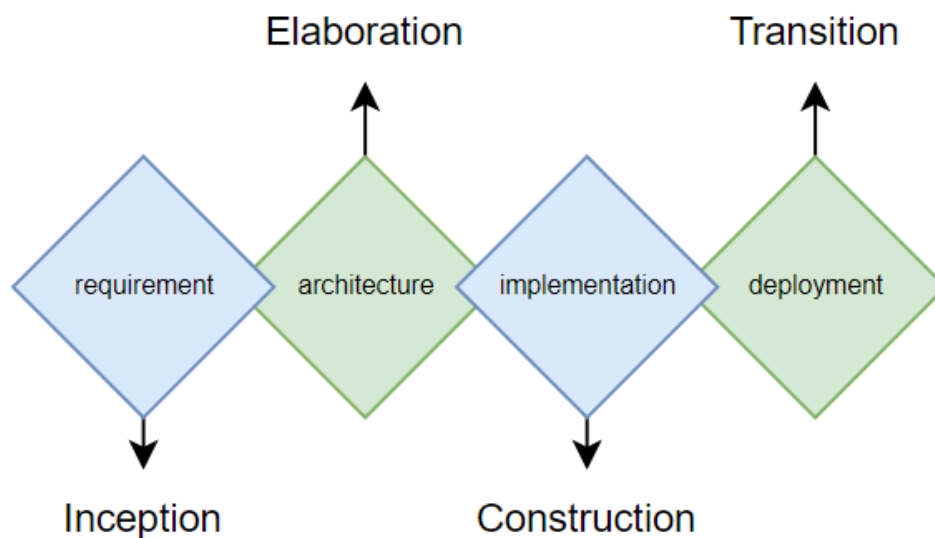


Fig. 1 The Rational Unified Process stages

An Explanation of the Above Stages:

1. Inception

The initial stage of RUP involves identifying the objectives and needs of the application to be developed, starting with feasibility and initial scope.

2. Elaboration

In the second stage, the requirements will be detailed, the system architecture will be designed, a system design will be created, and a development plan will be established.

3. Construction

The stage of building and testing the application's functionality.

4. Transition

Deploy applications to users and provide ongoing support.



B. System Architecture

The proposed architecture follows the operating mechanism that can be seen in Figure 1 below. This architecture allows the application forum management process to be presented to users through the application UI on mobile.

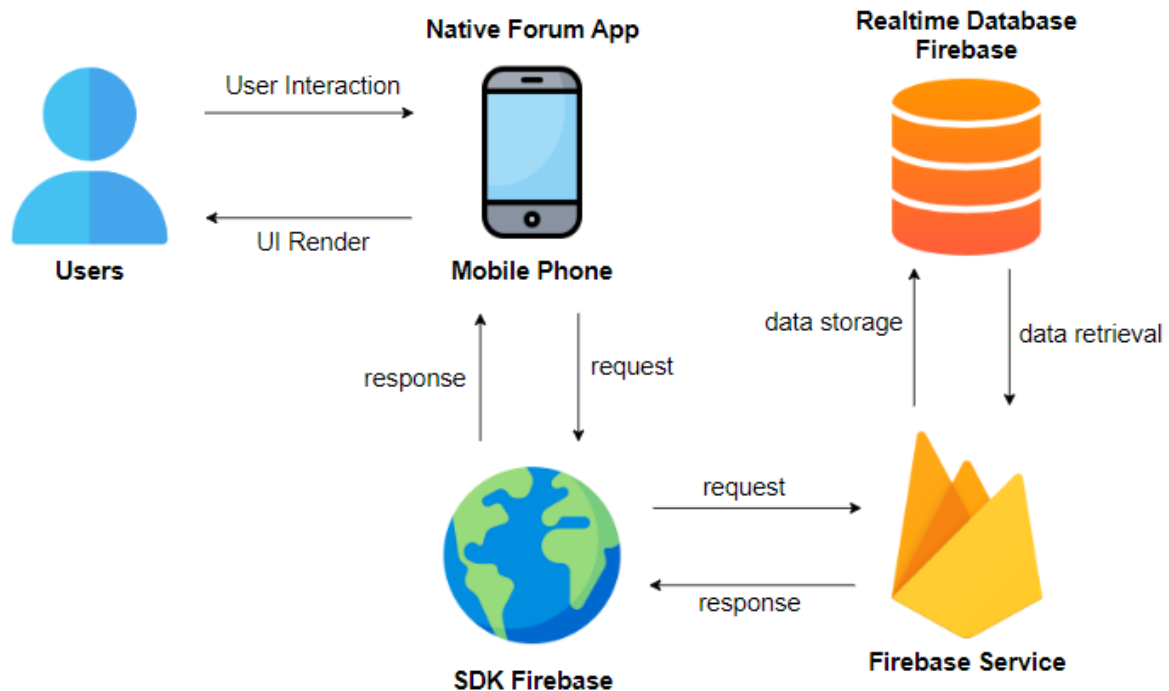


Fig. 2 System Architecture Forum E-Sport App

As shown in Figure 1, all user information is stored in the database in real-time. The architecture consists of three main parts:

- **Native Forum App:** This system requires a mobile device to run the e-sports forum application, which can then display the developed native mobile application with a user interface (UI) optimized for mobile devices.
- **Communication Layer:** To facilitate communication between the mobile application and the backend Firebase server, we utilize an official SDK (Software Development Kit) provided by Firebase. This SDK allows the system to interact with various Firebase services, such as Firebase Realtime Database, Cloud Firestore, Authentication, Cloud Functions, and more, through a special Application Programming Interface (API).
- **Firebase Service:** This section allows us to access different types of services provided by Firebase, starting with Firebase Realtime Database or Cloud Firestore as a NoSQL database that stores and synchronizes data in real-time user information, posts, threads, and more. Firebase Authentication is a user authentication service with multiple application login methods including email/password, Google, Facebook, and more. Firebase Storage is a place to store image files such as profile photos, profile backgrounds, and post images. Cloud Functions as serverless to handle backend tasks such as notifications or background processing. Firebase Cloud Messaging (FCM) to send push notifications.

C. System Requirement

These are the software requirements needed for the Mobile E-Sport Forum:

- (1) Operating System: macOS 10 or later, Windows 10 or higher
 - (2) Web browser: Microsoft Edge or Google Chrome
 - (3) Android Studio as an editor code
 - (4) Kotlin for the back end
 - (5) Firebase database (Realtime Database Firebase).
 - (6) SDK as an integration for Firebase services.
- The system's hardware specifications are as follows: (1) CPU: 64bit; (2) Processor: Intel i5 or above; (3) 8GB of RAM; (4) 50GB or more of storage. Mobile specifications are as follows: (1) Operating System: Lollipop 5.0 or higher; (2) Processor: 1.2Ghz; (3) 2GB of RAM; (4) 16GB of ROM.



III. RESULT AND DISCUSSION

3.1 Registration Page

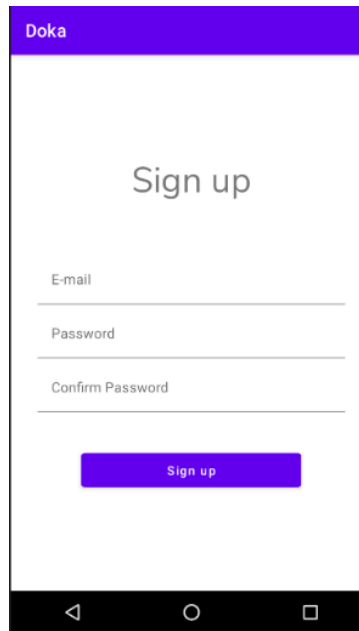


Fig. 3 Registration page

This page offers a streamlined account creation process. Simply provide your email and create a robust password. For added security, we require that you enter your password twice. Once complete, you'll have full access to our platform's impressive range of features.

3.2 Login Page

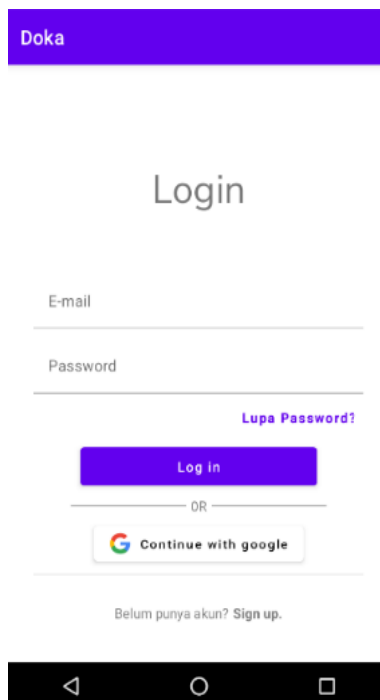


Fig. 4 Login page



After creating a new account, users may log in by entering their email and password. The login page acts as a rapid and secure account verification or primary gateway before accessing the main menu. To facilitate an effortless login experience, users also have the option to use their Google account and enter the main menu promptly, without creating a new account. A password reset is available on this login page if a user has forgotten their account password.

3.3 Home Page

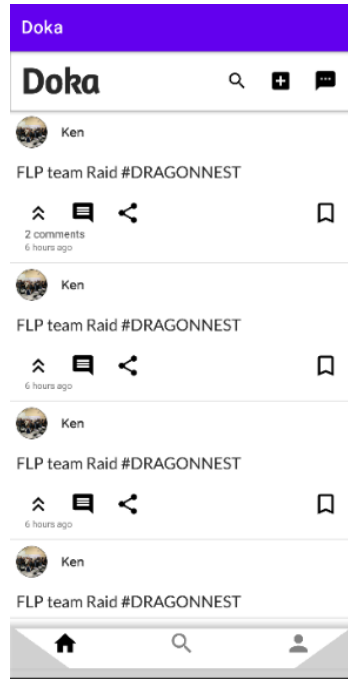


Fig. 5 Home page

The e-sports forum homepage functions as an interactive interface that is thoughtfully designed. It incorporates several vital elements, including a home menu serving as the primary location for posts - with or without images - a search menu to find other registered users, and a profile menu displaying basic personal information. Each post has menus for voting, commenting, sharing, and saving to the favorites page. On the home page, a menu is available for searching posts, mining posts, and facilitating private chats between users.

3.4 Profile Page

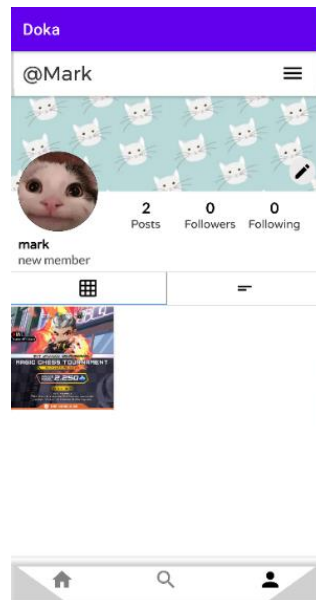


Fig. 6 Profile page



The profile menu has been designed with user-friendliness in mind, offering a compelling and informative impression. Its fresh design and interesting layout add to its appeal. Starting with the profile photo and background image, users can identify each other more quickly with the help of the username search function. The bio section provides a brief explanation of the user. Posts can be organized with the option to upload pictures or write text only. The inclusion of a post count enhances user interaction and competition, while also tracking followers and followees. User profile editing and settings menus are also available.

3.5 Search Users

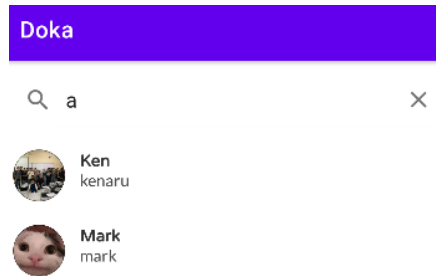


Fig. 7 Menu Search Users

Users can search for other registered users using their username. In this search menu, to provide convenience and speed in finding other user usernames, each username has an alphabet that is typed, it will immediately appear.

3.6 Messages Page

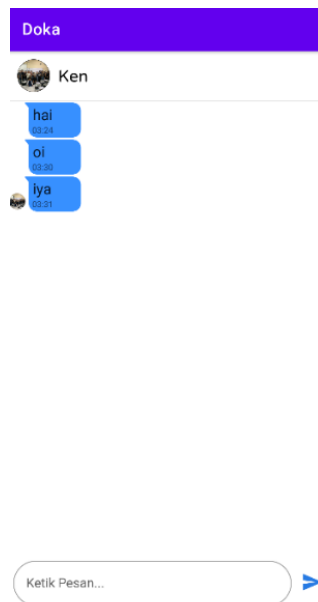


Fig. 8 Private Messages page



This page serves as a private chat function for users, enabling them to communicate privately without the risk of other users being able to see or read the contents of messages.

3.7 Add Posting

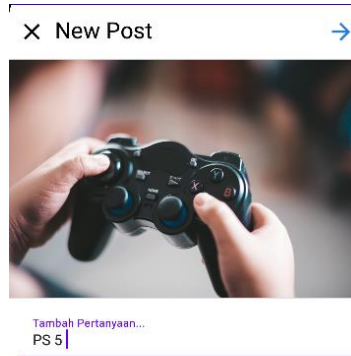


Fig. 9 Add new posting

The main menu of this e-sports forum extracts user-generated content. The post's topic is exclusively about e-sports, ranging from informational delivery to generating content or asking questions related to the e-sports realm. This menu serves as a communication tool between members, allowing them to engage in discussions or express appreciation for other users' posts. Additionally, each post receives feedback through votes or support from other users. Posts can also be widely shared or saved to the favorites page. To make it easier for users to add posts, there are two options, namely posting using images with descriptions and the second option is posting only text without images.

3.8 Comment Page

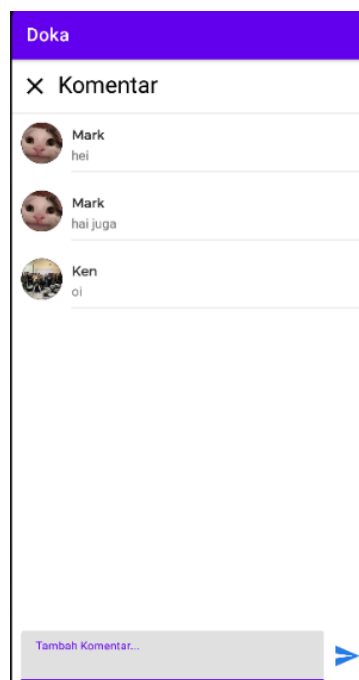


Fig. 10 Comment page



The comment section on each post enables users to discuss the topic at hand. If the user desires more in-depth communication, they can utilize the private chat feature to speak directly with the individual who posted the topic.

IV. CONCLUSION

In this paper, we are introducing Doka, an online forum created for e-sports enthusiasts, gamers, and players to share information, communicate and discuss. Additionally, Doka has been developed as a social media platform dedicated to e-sports. We have successfully launched the first version of the mobile-based e-sports forum application. Some of its features include the ability to add posts in the form of images or texts, provide feedback on each existing post, private chat, support or appreciation for each post, the ability to follow other forum users, search for desired topics or posts, and save posts. We have used Java as the primary programming language and Firebase as a secure and fast real-time database with features that aid the operation of e-sports social media. Our e-sports forum application has an easy-to-use, modern, and intuitive design that is ideal for beginners, providing a positive user experience. This paper presents an original concept and overview of the considerable possibilities of developing a mobile-based e-sports forum application. The report emphasizes the need for further research and development to fully realize the potential of this mobile e-sports forum application.

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