

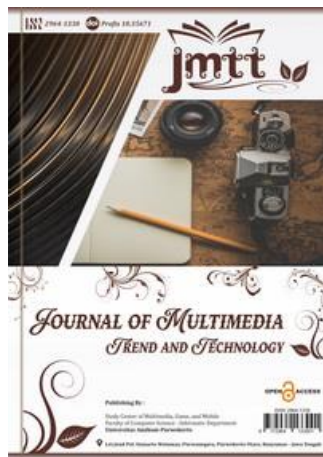
## Redesign of the "Si Bangsa" Application at the Purbalingga Narcotics Agency Using the Design Sprint Method

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### ABSTRACT

In the contemporary era driven by technological developments, global transformations encompass every aspect of human life, where the digital revolution, the internet, social media, and artificial intelligence are the foundations of change in communication, industry, and human interaction with the environment. While these developments bring significant benefits, they also pose challenges for privacy, security, and access gaps. In this context, the National Narcotics Agency (BNN) of Purbalingga Regency responded by launching the SiBangga application to improve efficiency in providing information and services related to the main tasks of the BNN through a mobile platform. Although this application is a progressive step, competitor analysis shows significant potential for development in terms of user engagement, responsiveness, and functionality. This study aims to identify areas that need to be updated in SiBangga to more effectively meet user needs and overcome competitor weaknesses. Using the Design Sprint method as the basis for the redesign, this study will produce an updated user interface to provide a better experience, ensure active engagement, and meet quality standards in the competitive digital technology market. Thus, this study not only responds to market and technology dynamics but also makes a positive contribution to the development of the SiBangga application for a more innovative and competitive future.

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## INTRODUCTION

Entering the contemporary era, technological developments have become the main driver of change underlying societal change[1][2]. The increasing number of technological breakthroughs has formed the foundation for a global transformation that encompasses almost every aspect of life[3][4]. This process began with the emergence of the digital revolution, which changed the paradigm of the physical world to digital, creating faster computing devices, wider data storage, and unlimited connectivity[5].

In an era driven by technology, communication has evolved. The internet, social media and instant messaging have removed geographical boundaries, enabling seamless communication[6]. Industries have also undergone fundamental changes thanks to technology, with automation and robotics accelerating production across sectors[7]. Furthermore, the development of artificial intelligence (AI) has integrated smart systems that are able to learn and make decisions, changing the way we interact with our surroundings[8]. While these benefits are evident, society also faces the responsibility of addressing the challenges of privacy, security and access inequality, to ensure that technological developments are in line with collective well-being[9].

The internet has become a primary means in various aspects of human life, including economic activities that facilitate interaction between users and companies[10]. In this context, it is important for companies that want to grow to continue to improve product quality and seek creative ideas that can be exploited through the internet to advance the company[7]. One crucial aspect connected to the use of the internet is the design of the user interface which must not only be attractive but also informative[11]. According to the journal, good user interface design not only improves the learning experience in the context of mobile learning but also reduces cognitive load, which in turn increases user satisfaction[12][13][14]. These findings emphasize the importance of a well-designed interface in supporting user satisfaction, which is a principle that can be applied in both educational and commercial contexts[15]. Therefore, companies can take advantage of effective interface design principles to ensure that their applications not only meet functional needs but also provide a satisfying user experience and positively influence product adoption[16].

The National Narcotics Agency (BNN) of Purbalingga Regency also follows the progress of digital technology by launching the SiBangga application, which is designed to provide information and services related to the main tasks of BNN more efficiently through a mobile platform. The SiBangga application functions to help its users submit a certificate of narcotics examination results, conduct consultations, provide a means for public complaints, and provide convenience in submitting socialization activities or internships/research activities that can be accessed using the SiBangga application. Since its launch, it has shown the importance of digital presence in increasing access to public services.



Figure 1. User Interface of the “SiBangga” Application

Figure 1 above is an application that has been published on the Playstore, and received a rating of 5.0 from 13 reviews. Although this application indicates a progressive step in providing services to the community, the results of the analysis of similar competitors show that SiBangga still has significant development potential. The competitor analysis process highlighted several areas where this application could be updated to improve user engagement, responsiveness, and overall functionality.

In response to market dynamics and rapid technological developments, this study aims to identify specific areas where the SiBangga application can be updated to more effectively meet user needs and expectations, as well as address weaknesses in its competitors. The study will use the Design Sprint method which aims to accelerate and focus the design process based on direct user feedback[12]. The results of this study are expected to be the development of a SiBangga application user interface that is not only attractive but also intuitive and responsive to user demands. Other studies have shown that user-centered design can increase user satisfaction by up to 80%, emphasizing the importance of a design approach that is responsive to user needs. Furthermore, similar research supports that UI/UX updates based on specific user needs analysis can significantly improve the effectiveness of the application in meeting user expectations.

## METHOD

This study aims to improve the user experience (UX) and user interface (UI) of the "SiBangga" application, a news information application developed by the National Narcotics Agency (BNN) in Purbalingga. This application has been downloaded more than 100 times and has received a rating above 4 stars on the Play Store. However, based on initial observations, there are several shortcomings in the appearance and UX applied. This application is still web-based and has limitations in terms of features. The public needs more than just BNN information and drug news, such as complaint services and real-time information that is easily accessible. Therefore, this study uses the Design Sprint method to improve navigation, add new features, and simplify and minimize the appearance of the application.

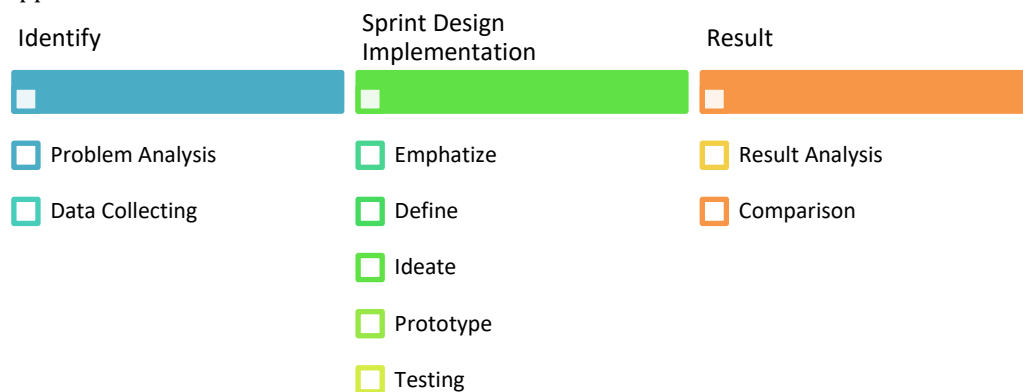


Figure 2, Concept and solution flow.

Researchers conducted direct observations from previously existing primary data to determine problems and needs related to the system and user experience of the "SiBangga" application. Data collection is the stage where researchers collect research results obtained from direct interviews and ask the BNN Purbalingga to fill in the user experience and user interface assessment of the "SiBangga" application.

This research uses the Design Sprint development method which consists of several stages as shown in Figure 3:



Figure 3. Design Sprint Development Method[17]

Source: Dam Friis & Siang Yu, 2020

- a. **Emphatize**  
The first step in the Design Sprint method is empathise, which aims to understand the needs and problems of users of the "Sibangga" application. At this stage, researchers conducted interviews with users to find out their experiences when using the application. In addition, observations were made on the use of the application to gain deeper insights. Feedback and reviews from the Play Store were also analyzed to find out complaints and suggestions from users[18]. The results of this stage are the creation of user personas and empathy maps, as well as a list of problems faced by users in using the "Sibangga" application.
- b. **Define**  
The second step is define, which aims to define the main problems faced by users based on data from the empathise stage. Researchers analyze interview data, observations, and user reviews to identify the most significant problems[11]. These problems are then formulated into clear and focused problem statements. This problem statement will be the basis for developing solutions in the following stages. Insights from user data are also summarized to provide a deeper view of user needs.
- c. **Ideate**  
The third step is ideate, which aims to generate various creative ideas to improve the UX and UI of the "Sibangga" application. At this stage, researchers conduct brainstorming sessions to generate ideas for new features and improvements to the appearance. Creative techniques such as mind mapping and sketching are used to develop initial concepts. The result of this stage is a list of feature ideas and initial sketches of the new appearance of the application. These ideas are then evaluated and prioritized based on user needs and preferences that have been identified in the previous stage.
- d. **Prototype**  
The fourth step is the prototype, which aims to create a prototype of the ideas that have been generated in the ideate stage. Researchers use design tools such as Figma to create an application prototype. Several versions of the prototype are created, ranging from a simple low-fidelity prototype to a more detailed and interactive high-fidelity prototype. This prototype will be used to test design concepts with real users. The prototype created must include new features that have been designed, such as complaint services and real-time information, as well as improvements to a simpler and more minimalist appearance.
- e. **Test**  
The fifth step is testing, which aims to test the prototype with real users to get constructive feedback. At this stage, researchers conduct usability testing by involving users in prototype testing. Users are asked to try new features and provide feedback on the ease of use and appearance of the application. In addition, questionnaires and A/B testing are used to measure the effectiveness of the changes made. Feedback obtained from users is used to improve and refine the prototype before it is implemented finally.

## RESULT & DISCUSSION

From the results of direct identification to users, there are several complaints both in terms of appearance and system. The problems found are as follows:

1. Menu access that is not easy for users to understand
2. There is no navigation between the main menus provided
3. The functionality for the needs of BNN complaint services is still unclear and not neatly arranged.

In the data collection process, it was carried out for approximately 2 weeks with direct application observation and interviews with the BNN regarding its needs. Based on interview data with the BNN, the main problems identified were the unattractive appearance of the application and non-intuitive navigation. In addition, the features in the application are still very limited, so they cannot meet the diverse needs of users. Users want additional features such as complaint services and easier access to real-time information. The research stage carried out by researchers using the design sprint method. The following is a description of the results of each stage of this method:

### 1. Emphatize

In the empathise stage, researchers focus on understanding the needs, desires, and problems faced by users of the "Sibangga" application. Researchers conduct direct observations of users and in-depth interviews to collect data on their experiences in using the application. In addition, researchers analyze reviews and feedback from users on the Play Store to gain additional insights. The result of this stage is a deep understanding of the background of the cases faced by users of the "Sibangga" application.

## SiBangga

BNNK PURBALINGGA

5.0★

13 reviews

100+

Downloads

Rated for 3+

3+

Install

Share

Add to wishlist

This app is available for some of your devices.

You can share this with your family. [Learn more about Family Library](#)



App support

Gambar 4. Jumlah Pengguna Aplikasi Mobile "SiBangga".

From the cases found, it shows that the "Sibangga" application, although it has been downloaded more than 100 times and received a rating above 4 stars, still has several shortcomings in terms of user experience and interface. This application is still based on a web display with limited features, so it does not fully meet user needs. The public wants more than just BNN information and drug news, such as complaint services and real-time information that is easily accessible.

### 2. Define

Researchers identify user criteria based on several aspects, namely demographics, geography, psychographics, and behavior. Examples of user criteria for the "Sibangga" application are as follows:

Table 1, User Criteria.

<b>Demographics</b>	Users are aged between 18-45 years, with the majority being male, with a minimum education of high school, and working as private employees or students.
<b>Geography</b>	Users mostly live in Purbalingga and its surroundings, both in urban and rural areas.
<b>Psychography</b>	Users have a high interest in information related to health, security, and local news. They tend to appreciate the ease of access to information and public services.
<b>Behavior</b>	Users routinely access news and social media applications, and use applications to get the latest information and file complaints.

Based on the identified user criteria, researchers created several user personas that represent the main user groups of the "Sibangga" application. Researchers created an affinity map to group data and findings from the empathy stage based on similarities and relationships between findings.

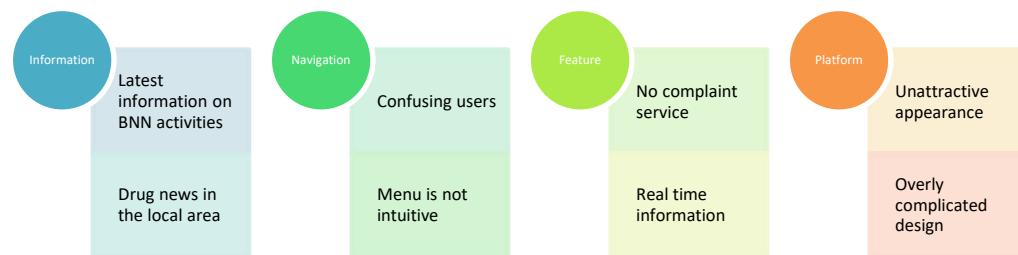


Figure 5, Affinity Map

Based on user needs insights, researchers formulate "How Might We" questions that will guide the solution design process. For example:

- How can we make application navigation more intuitive for users?
- How can we add an easily accessible complaint service feature?
- How can we present real-time information in an attractive and easy-to-understand way?

Based on user needs insights, researchers formulate "How Might We" questions that will guide the solution design process. For example:

- As Budi, a private employee, I want to get the latest information about BNN activities, so that I can stay updated with important news.
- As Siti, a student, I want to submit complaints easily through the application, so that I can participate in drug prevention programs on my campus.

### 3. Ideate

At the ideate stage, researchers focus on developing creative solutions based on the results of the analysis that has been carried out at the define stage. In the context of this study, researchers attempted to redesign the user flow of the Sibangga application and determine the priority of tasks that must be completed by the engineering team.

### 4. Prototype

In the process of redesigning the Sibangga application, it is important to determine the priority of tasks that must be completed by the engineering team. The following priority task table explains the tasks that must be done to achieve the Minimum Viable Product (MVP) target:



Table 2. Task Priority.

No	Problem	Task	Priority
1	Intuitive and Easy Navigation Access Latest News	Redesign the main menu with a clearer and more accessible structure.	High
		Add easy-to-understand icons and labels to each menu.	High
		Implement an efficient search feature to make it easier for users to find information.	High
2	Access BNN Purbalingga Profile Information	Provide a main page that displays the latest news and the latest updates from BNN.	High
		Implement news categories to facilitate navigation.	High
3	Easy to Access Complaints Service	Create a special page that contains the BNN Purbalingga profile, including its vision and mission.	Medium
		Provide clear navigation buttons to the profile page from the main menu.	Medium
4	Intuitive and Easy Navigation	Create a complaint feature that is easily accessible from the main menu.	Low
		Provide a complaint form with clear and easy-to-fill options.	Low

Color selection is an important aspect in system design because color can affect user perception and experience. Here is the proposed color palette for the "Sibangga" application.

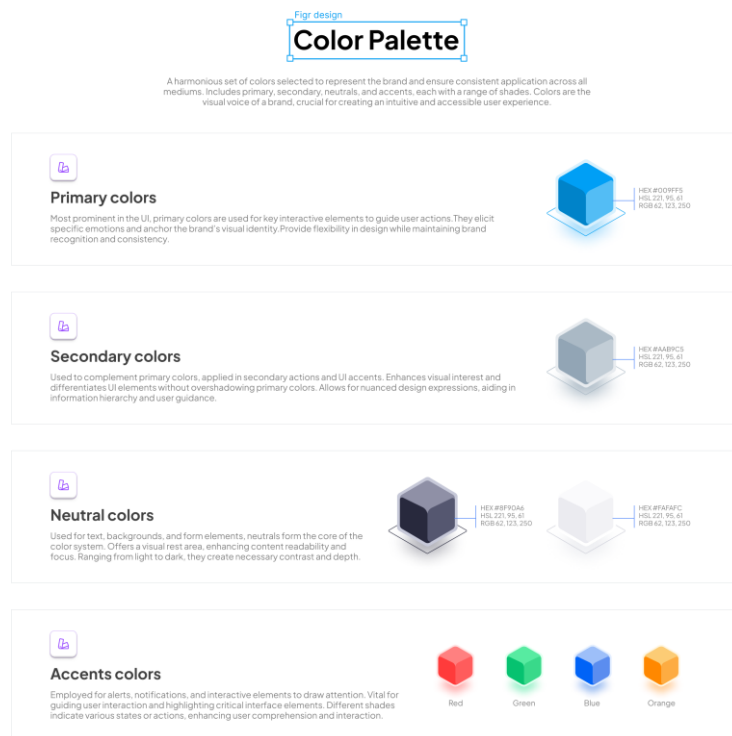


Figure 6. Platform Color Selection.

The font type chosen should support the readability and aesthetics of the application. Here are the font types proposed for the "Sibangga" application. Components are UI elements that are used consistently throughout the application. Here are some components proposed for the "Sibangga" application.

In the Design Sprint process, the prototype design stage is an important step that aims to visualize the solution that has been produced in the ideate stage. This prototype will help in testing and getting feedback from users before the final solution is developed. Prototype design consists of three main steps: creating a low fidelity prototype, a high fidelity prototype, and an interaction prototype.

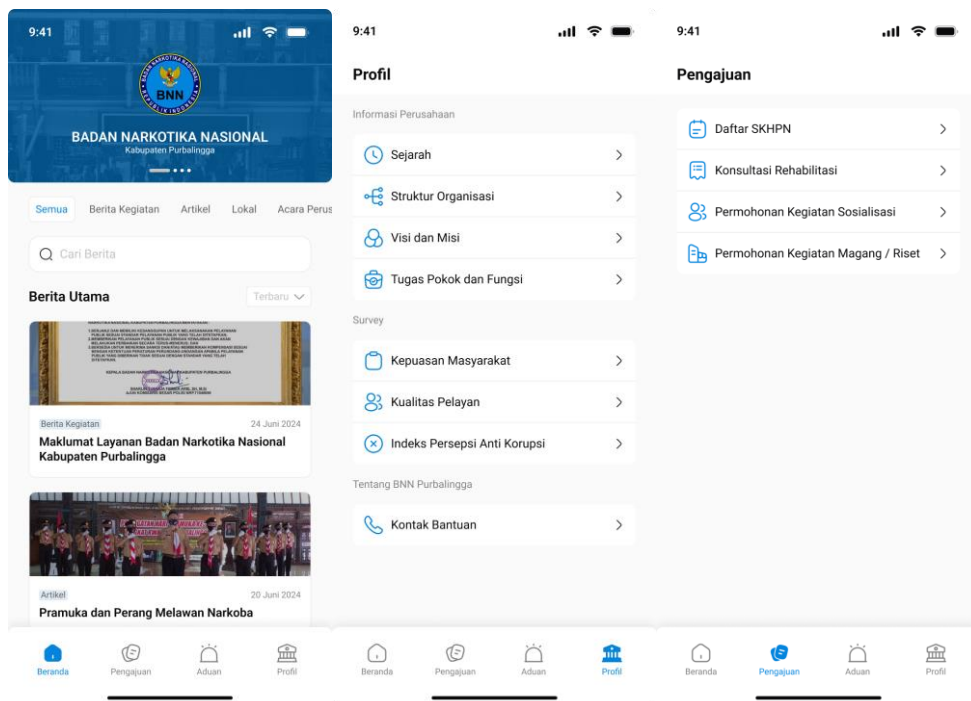


Figure 7, New proposed view.

## 5. Test

In the final stage of the Design Sprint method, namely the testing process, researchers test the prototype that has been designed to assess the effectiveness and efficiency of the design in meeting user needs. The main goal is to get direct feedback from end users, identify possible problems, and ensure that the resulting solution can be used properly. The calculation of the questionnaire results is done by calculating the total score of each value from strongly agree with a value weight of 5 and strongly disagree with a value weight of 1, followed by calculating the percentage with the total score of the existing questions. For example, in the question "Do you agree with the placement of the menu structure layout, icons and information content are in their place (do not change on each new page)" got 19 respondents answered strongly agree, 9 respondents answered agree, 5 respondents answered neutral, 0 respondents answered disagree, and 0 respondents answered strongly disagree.



## CONCLUTIONS

The UI/UX Design results contain solutions to the identified problems, namely by adding increasing system functionality with the needs of National Narcotics Agency users in the Purbalingga area and creating a new design plan with easy menu access and layout that is adjusted to a good hierarchy. The final evaluation process of the design plan uses a Likert scale with data calculations from the results of distributing questionnaires to respondents. The final design appearance is acceptable and is believed to be able to meet the needs of SiBangga application users. The final design results in the form of a prototype can be continued to be used and implemented into a real SiBangga application display. The results of this study can be used as reference material for creating other applications that have similarities such as the SiBangga application with a display and system flow that is easy for users to understand.

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