ICFICE 2022

THE 14TH INTERNATIONAL CONFERENCE ON FUTURE INFORMATION & COMMUNICATION ENGINEERING

12-14th January, 2022
Ramada Jeju City Hall, Jeju

Proceedings
QR Code

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THE KOREA INSTITUTE OF INFORMATION
AND COMMUNICATION ENGINEERING

Ministry of Science, ICT
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Welcome Message from General Chair

Dear respected scholars and professionals,

On behalf of the conference committees, it is my great pleasure to welcome all of you to ICFICE2022, the 14th International Conference on Future Information & Communication Engineering that is being held in Jeju Island, on 12th-14th January, 2022.

As new and diverse technologies continue to appear after the COVID-19 pandemic, it is now an era in which everyone should study technology.

As the spread of vaccines and the development of therapeutics become visible, it is time to think about life after the pandemic. Humanity, who has been living in a pandemic for about two years, is no longer the same as before. Our ICT researchers and companies are paying attention to the desires of people who are accustomed to a world that crosses online and offline, virtual and reality, and are preparing more diverse and interesting technologies and services than ever before.

Information and communication researchers should select six industries (metaverse, streaming, ESG, AI, network, finance) where pent-ups are concentrated and predict and prepare for changes in IT technology trends and the future.

As the general chair of ICFICE2022, I am pleased to announce that notable papers have been published here and several have been published in relevant SCOPUS indexed journals, including JICCE, to share their work with researchers around the world. We would like to thank the Program Committee and Organizing Committee members, keynote speakers, judges and authors who contributed to the success of this conference. I hope this conference will be a meaningful and happy time for you.

Dr. Seong-Yoon Shin
General Chair of ICFICE2022

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Conference Schedule Overview

◉ 12th January, 2022

・Registration

- Time : 15:30 ~ 16:30 (12th, January, 2022)
- Place : Meeting Room B(B2), Ramada Jeju City Hotel, Korea

・Opening Ceremony / Keynote Speech

- Time : 16:30 ~ 18:00 (12th, January, 2022)
- Place : Ball Room(B2), Ramada Jeju City Hotel, Korea
- Keynote Speech

  Title : Scalable Predictive Analysis using Multiple GPUs leveraging Big Data
  Speaker : Prof. Jongwook Woo
  (California State University College of Business&Economics, USA)

・Dinner

- Time : 18:00 ~ 20:00 (12th, January, 2022)
- Place : Restaurant(1F), Ramada Jeju City Hotel, Korea

◉ 13th January, 2022

・Registration

- Time : 9:40 ~ 12:00 (13th, January, 2022)
- Place : Meeting Room B (B2), Ramada Jeju City Hotel, Korea

・Chair. Meeting

- Time : 10:20 ~ 10:40 / 13:00 ~ 13:20 (13th, January, 2022)
- Place : Ball Room (B2), Ramada Jeju City Hotel, Korea

・Technical Session

- Time : 10:40 ~ 12:00 / 13:20 ~ 15:30 (13th, January, 2022)
- Place : Ball Room / Meeting Room A(B2), Ramada Jeju City Hotel, Korea

・Lunch

- Time : 12:00 ~ 13:00 (13th, January, 2022)
- Place : Restaurant(1F), Ramada Jeju City Hotel, Korea

◉ 14th January, 2022

・Business Benchmarking

- Time : 9:30 ~ 13:30 (14th, January, 2022)
- Place : KAKAO Corp.

Designing of Mobile Interface for Thesis Management System by Enterprise Portal

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Abstract

The COVID-19 pandemic situation has encouraged every university to provide virtual services to their students, such as registration, teaching and learning activities, examination, and graduation. The virtual services must be supported by collaboration between divisions at the university such as academics, facilities and infrastructure, human resources, and finance. An enterprise portal is an enterprise-scale application that covers all or part of the organization's divisions and interacts with each other to meet each other's data and information needs. SIKAPETA is an enterprise-scale portal to access thesis services only through the website. The use of smartphones to access thesis has become an unavoidable necessity. In order to provide more optimal services, the university is expected to be able to provide services via mobile applications for its students. This research was conducted using innovative methods to describe enterprise portals that can show interactions between divisions through existing information technology infrastructure and prototyping methods to design informative mobile application interfaces.

Index Terms: Enterprise Portal, Mobile interface, Mobile prototyping, and Thesis

I. INTRODUCTION

Numerous methods are used to design mobile application interfaces with various approaches to produce designs that are stated according to user needs, but what if the required mobile application is an extension of the existing services on the website platform. This research does the design by utilizing an enterprise portal in the form of a website called SIKAPETA and is used as a requirement to design an application interface on a mobile platform. This is considered important because there are many services on the website whose notifications can only be seen if the user logs into the website. Some services are needed to provide real-time information by the user, so this is why mobile applications are important because they can provide notifications anywhere and anytime. Based on these things, this research was conducted to expand services from websites to mobile applications using the prototyping method and utilizing SIKAPETA as an enterprise portal.

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* Corresponding author

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II. SYSTEM MODEL AND METHODS

The system model that is the object of this research is an enterprise-scale application website called SIKAPETA. The interaction between SIKAPETA users involves students, thesis supervisors, TU Staff, Academic Coordinators, and Financial Managers who are interrelated with each other taking care of student thesis guidance activities starting from registration to graduation.

The method chosen to solve the current problem is the prototyping method used to design a mobile application interface that runs to make the application interface. Even then, it is not provided for all users because the current mobile application service is only needed by thesis supervisors and students

A. SIKAPETA As Enterprise Portal

An enterprise portal is one of the solutions to integrate dispersed applications and data, as well as to support business goals [1]. Enterprises today have broad interconnections, namely, all internal and external enterprise value chains, including consumers, partners, suppliers, governments, and communities, connected to information technology systems [2]. Broad connectivity will enable supply chain networks, customers, and other entities worldwide to plan and make decisions interactively [2].

SIKAPETA (*Sistem Informasi KP dan TA*) is a website portal that acts as a means of information technology created to support practical work (*Kerja Pratek*) and thesis (*Tugas Akhir*) services at a university (KP stands for *Kerja Praktek* and TA Stands for *Tugas Akhir*) [3]. SIKAPETA has services provided for thesis supervisors, students, administrative staff, academic coordinators, and financial managers [4]. The SIKAPETA service described in this study is limited only to thesis Supervisors and Students because SIKAPETA itself is being developed, and mobile application services are needed by thesis Supervisors and Students. The services provided for students are as follows 1) Making guidance notes; 2) Seminar schedule information; 3) Seminar/trial registration; 4) View seminar/trial result. Then the services provided for thesis supervisors are as follows 1) See the list of KP/TA participants; 2) Seminar/trial schedule information; 3) Input the result of the seminar/trial; 4) Ratification of the minutes of guidance

B. Prototyping

Developers use prototypes to get feedback and experience about systems that are not yet fully built. The prototyping process does not follow a specific set of rules: A prototype can be used to explore whatever information is most relevant to the developer at a given stage. A prototype does not need to be polished or finished; because it can be made in any form, which can get feedback on design decisions. The earlier the decision is tested, the easier it is to consider the insights generated in further development.

A prototype is an early version of a software system used to demonstrate concepts, try out design options and generally find out more about a problem and its possible solutions [5].
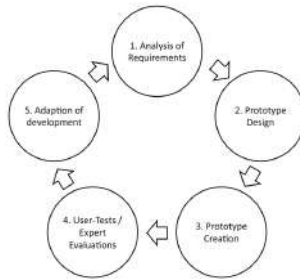
Fig. 1. Usability Engineering Lifecycle

The cycle begins with an Analysis of Requirements for the current status of the product and planning the iteration cycle at the next stage. Based on this, the prototype is designed to meet the identified requirements, in other words, ask questions about the current status of the product [5].

III. RESULTS
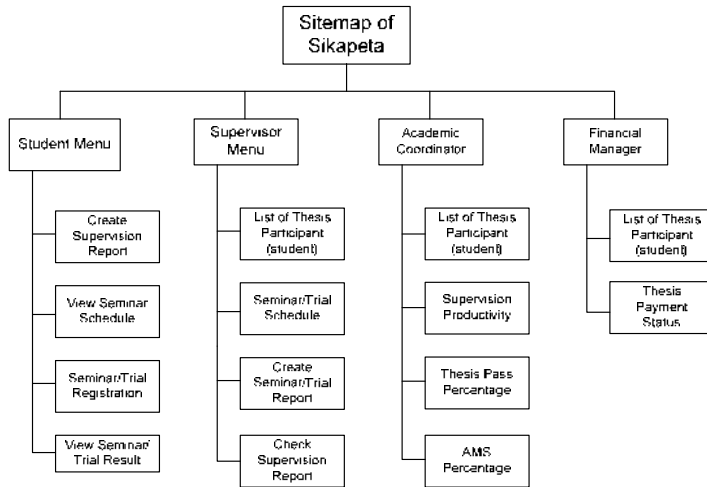
A. Requirement Analysis

Fig. 2. Sitemap of SIKAPETA

Based on the implementation stages of the Prototyping method, the design of the mobile application interface for Thesis Management System services can be started with the requirement analysis stage, and then the analysis begins by describing the services provided by the SIKAPETA portal.

There are four services, namely thesis supervisors, students, academic coordinators, and financial managers, but the scope of mobile application development is currently only

needed for thesis supervisors and students. The other part is still using the website platform and does not require a mobile application.

B. Prototype Design

This interface is made in Indonesian, and the design is done by making a mobile device interaction design using the Balsamiq Wireframe application version 4.2.1.

Fig. 3. Supervisor Menu

The menu on Fig. 3 is the menu for the thesis Supervisor who has logged in. In accordance with the needs analysis results, there are four services that can be accessed by the thesis supervisor, such as information about the seminar/thesis trial schedule, thesis participants, creating seminar/trial report, and checking Supervision Report.

Fig. 4. Student Menu

The menu in Fig. 4 is the menu for Students who have logged in. There are four services that Students can access, such as creating supervision reports, seminars/ trial registration, viewing seminar schedules to attend participant seminars as a requirement for seminar registration, and viewing the results of seminars/trials.

IV. DISCUSSION AND CONCLUSIONS

Designing an interface for a mobile application using a prototyping method involving an enterprise portal turned out to be very doable. However, not all services on the website can be made on a mobile platform because it depends on the requirements needed by the user. In addition, the prototyping method (Fig. 2) used in this study has been carried out up to stage two and can still be continued in the next stage. In addition, the interface design can be continued for all services provided by SIKAPETA on the mobile platform with the additional feature of using a pin code or scanning QR code for each data verification process.

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Design of Self-Evaluation Model for Smart City in Bandung

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[Email: aisyahnuraeni20@gmail.com]

Abstract

Smart City Self-Evaluation is used to measure the implementation of smart the city independently. This measurement aims to determine the level of stability of the cities application to make improvements or stimulation in achieving the desired smart city goals by utilizing Information Technology and Technology (ICT) and can be innovative potential in solving various urban challenges in all fields. This research focuses on designing self-assessment software to simplify data collection as smart city assessment entry. This study uses an object-oriented concept with development requirement analysis, software design, and design evaluation for the research stages. The result is a software design consisting of process business, use cases, and user interface tailored to the needs of the local government of Bandung in supporting the smart cities concept.

Index Terms: Design, Smart City, Self-evaluation, Bandung, Object Oriented

I. INTRODUCTION

City is the center of human civilization with various facilities and facilities provided. Its existence continues to develop into a magnet for residents to come and stay in urban areas. In 2025 Indonesia is currently around 59.35% of the population living in urban areas is estimated to be 67.66% and will reach 82% in 2045[1]. As the population grows, City continues to grow significantly and raises problems such as housing, education, health, public services, etc. And to solve the problem, various solutions have been developed, one of which is the concept of Smart City [2].

The performance of local governments to be faster, responsive, innovative, and trustworthy solutions for rapid development of cities and regencies in Indonesia requires. To bring this speed, like it or not, the Regional Government needs technological assistance. The Government of Indonesia has implemented a Smart City initiation policy that utilizes Information Technology and Technology (ICT) which is one of the technologies that has innovative potential to solve various urban challenges effectively on all sides of the Regional Government [3].

The City Regional Government has carried out various initiatives and has a Grand Design towards a Smart City that focuses on the use of ICT to ensure effective and efficient use of resources, city administration, public services and can solve various city challenges using innovative, integrated solutions, and sustainable to provide infrastructure and provide urban services that can improve the quality of life and meet the needs of the population [4]. The

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problem is that cities have not been able to carry out an independent evaluation of the implementation of a smart city in a measurable manner according to the city's needs [5]. However, it requires advanced support for the development and operation of applications in a complex and dynamic environment [6].

Through this study, a software design will be developed that can assist in collecting data on the evaluation indicators for measuring the implementation of smart cities so that the city gets an initial picture and can determine strategies in increasing the value of implementing smart cities following city goals.

II. SYSTEM MODEL AND METHODS

RAD (Rapid Application Development) was chosen as a system development model because it requires a little time in its development and analysis of the requirement has been identified. Tailored with the pressman says that the application of the RAD method will run optimally if the application developer has formulated the needs and scope of application development [7].

While the system development model uses UML (Unified Modeling Language), which can help analysts define, visualize, and document software system models, including their structure and design, by meeting all software requirements and helping analyze and design appropriate solutions. [8].

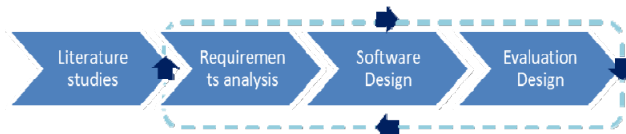The following are the stages of the research that has been carried out

Fig. 1. Research Stages

III. RESULTS

A. Process Business

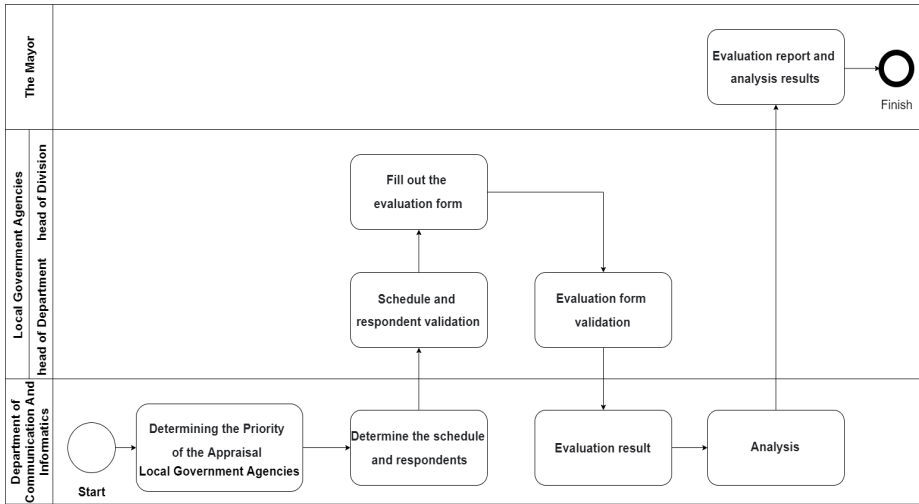There are 8 stages in smart city self-evaluation process business.

Fig. 2. Process Business for Bandung Smart City self-valuation model

B. Use case

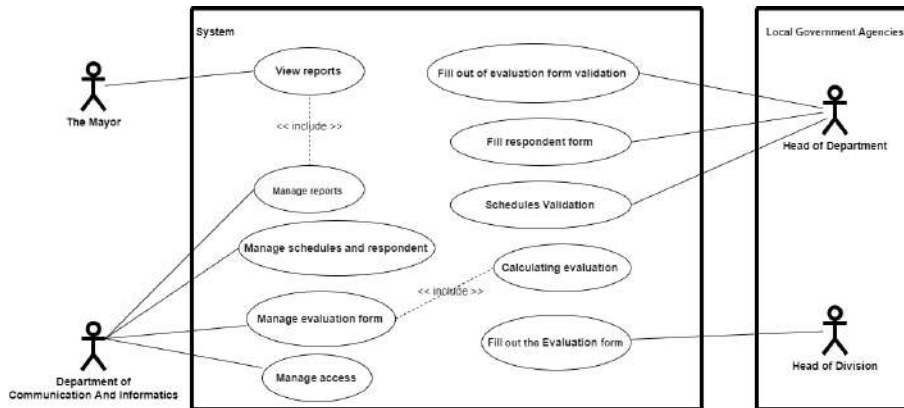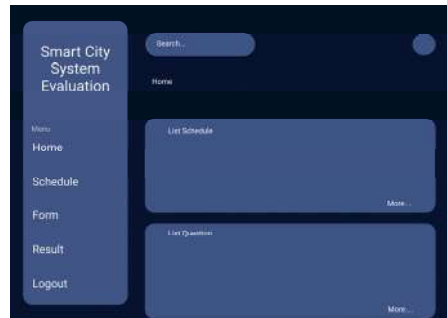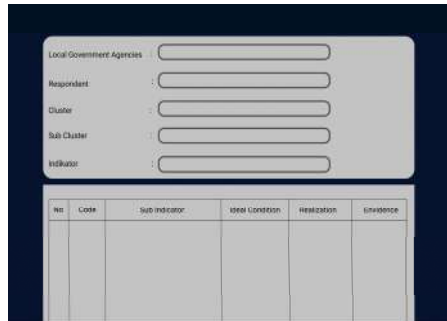There are 10 use cases and 4 actors in smart city self-evaluation.

Fig. 3. Use case for Bandung Smart City self-valuation model

C. User Interface design

(a)

(b)

Fig. 4. User interface design for Bandung Smart City self-valuation model, dashboard (a), evaluation form(b)

IV. CONCLUSIONS

Based on the research that has been done, it can be concluded that:

a. Design application following Bandung Smart City Evaluation Model.

b. Design through the stages of literature study, requirements analysis, software design and evaluation.

ACKNOWLEDGMENTS

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