

Call for Paper Information Broadcast Based on Android Application

Fenny Destasia Chan¹, Andreas Handoyo^{1,2}, Hanny Tabita Listyani¹, Ivan Aldinata¹, Felicia¹

¹Informatics Engineering Department, Petra Christian University, Surabaya, Indonesia.

²Mobile Computing Research Center, Petra Christian University, Surabaya, Indonesia.

handojo@petra.ac.id

Abstract—A reliable information is a crucial thing in every event. Participants and the committee expect the fulfillment of information. In this research, writers use smartphone technology to facilitate call for paper information broadcast. The development of call for paper information broadcast application is based on the usage of Android smartphones that are relatively popular device to be used by the people in this era. On this application, there are some features that can facilitate the users to get the best reading experience. This application also grants the committee some rights to manage the event through website. The design and development of this application are going through three phases. Analysis, interface design, and code writing. The website is based on HTML 5 and the mobile application is based on Ionic Framework for smartphone application based on Android, and MySQL as database manager and also a test conducted through automatic email, SMS gateway, and push notification on smartphone. In this research, a call for paper application was developed to facilitate information broadcast. The application helps the participants to get information through SMS, notification, and email from their smartphone. After going through the testing process, this application can run their features inside the application smoothly.

Index Terms—Android; AngularJS; Call For Paper; Ionic Framework; Mobile Application; Notification; SMS Gateway.

I. INTRODUCTION

Technological developments in this era have entered an era where the use of smartphones and applications that exist in the smartphone into the needs of people. With the needs of everyone, the smartphone can provide convenience for many people in the activities and daily activities, so the delivery of information that is needed quickly and accurately, can be easily met.

In the Call for Paper Organizer, an application is needed to help the committee in delivering information to the user (participants) quickly, accurately, and up to date. For that, through this research will be discussed the development and design of Call For Paper mobile applications with email-based services, SMS and notification (alert) which will be displayed on the smartphone screen.

Call For Paper administrator's website assist Call For Paper committees in delivering information to users quickly, accurately, and up to date, with email-based services, SMS and notification (alert) which will be displayed on the participant's smartphone screen who had downloaded the Call for Paper application. Nevertheless the mobile application, users will find it easier to find out important information, reminders for future schedules and provide information on the status of submitted papers.

For now, there is no application that can deliver important information related to Call For Paper to the participants up to date. This application is used to facilitate the delivery of information system by utilizing technology and communication as media liaison between user and committee of Call For Paper, so that expected delivery of information can be done more quickly and efficiently.

II. LITERATURE REVIEW

Nowadays Android is the most widely used operating systems in mobile devices. Gartner [1] says sales of smartphone grew 20% in the third quarter of 2014. Based on Gartner's analytic, 83.1% of mobile device use Android operating system. Android is mostly used by developers to create their apps because it is free and open platform operating system. In the context of information broadcast using android application, there are many existing research have been conducted such as tourist guides [2, 3, 4], education [5, 6, 7], and health [8, 9], that are using a mobile phone to broadcast specific and important information to/from user. Usually their mobile phone application based on the Android operating system.

Android is an operating system based on Linux for mobile devices that includes an operating system, middleware and applications. Android provides an open platform for developers to create their applications. In the beginning, Google Inc. bought Android Inc., which is newcomers who make software for mobile phones/smartphones. Then to develop Android, Google formed the Open Handset Alliance, a consortium of 34 hardware, software, and telecommunications companies, including Google, HTC, Intel, Motorola, Qualcomm, T-Mobile, and NVIDIA [10].

Android architecture consists of the Applications, Application Framework, Libraries, Android Runtime and Linux Kernel Architecture as can be seen in Figure 1.

Because of the growth of the Android operating system, developers now can make Android apps easily with a cross-platform framework [12]. This framework can overcome the limitations of native tools in many aspects. Despite native code and framework, this application integrated some hybrid frameworks to implement a mobile application that looks like the original that is Ionic framework. [13] Ionic is an HTML5 based mobile app development framework, which is in focus on the appearance of the application such as user experience (UX) and user interface (UI). Apache Cordova is used to run and wrapped ionic app, not just apache Cordova ionic using AngularJS for developing their UI and UX of web application front-end. AngularJS [14] is probably the most popular

frameworks with the following Model-View-Controller (MVC) architecture pattern based on the Google search number (the most queried frameworks since 2013).

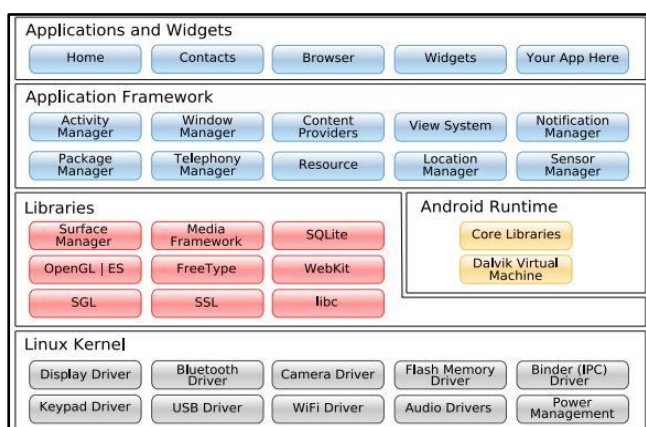


Figure 1: Android architecture [11]

AngularJS using specific directives HTML markers used in template to define the UI. ng-app attribute is an AngularJS directive that specifies the root node of the application. AngularJS can also generate dynamic pages without having to create multiple web page. AngularJS is based on the JavaScript framework. JavaScript itself is an object-oriented scripting language embedded in HTML code, because of JavaScript processed on the client side, JavaScript can quickly respond to user commands and make the web more responsive.

Android application must use a database to store the data, in Ionic framework we use MySQL database. According to Raharjo [15], "MySQL is an RDBMS (or database server) that manages the database quickly accommodates in very large numbers and can be accessed by many users". MySQL is the standard for many shared hosting services and is part of the standard (L) AMP stack Apache web server, MySQL database, and PHP scripting that runs many websites. MySQL data access is based on SQL, a query language developed in the 1970s [16].

In nowadays mobile application, almost all the application using notification, it can be push mail notification or text notification but mostly it uses text notification. Text notification or we can call it SMS gateway is an SMS media used to send or receive SMS in bulk using the game engine. Gammu is an open source application under the GPL (General Public License) license used to build SMS Gateway. By using Gammu you can build SMS Gateway application as needed from SMS, SMS bulk send, auto SMS sending, SMS auto response, and make SMS scheduled.

III. RESULT AND DISCUSSIONS

The first step to make Call for Paper application is requirement survey. In this step, writers interview committee and participants who had attended Call for Paper to get the concept of the system which is used in Call for Paper. After getting the concept, this research continues to search the background and the flow of the seminar of Call for Paper from the registration until the end of the seminar. After that, this research continues with analyzing some Call for Paper websites to get the idea of to be created database. This research was built because of the need for user and committee in running Call for Paper event. It is important for this

research to determine the concept with the Call for Paper database structure as framework first, because it is the beginning foundation before starting the application development.

We consult with the seminar's committee and participants for making sure about the information system which is needed for Call for Paper seminar information deployment, so it can be used for the next committee of Call for Paper. ERD (Entity Relationship Diagram) design and its relation are made based on the analysis of Call for Paper website and result of consultation with a committee and participant of Call for Paper event.

After finishing doing the database design, analysis team starts developing the administrator and mobile interface design. Interface design is the development of basic page and relation of pages design. After finishing interface design, research continued with having a meeting with the committee to give several Call for Paper interface mobile and administrator website design alternatives, and the committee chooses the most suitable design for Call for Paper needs. After that, interface design revision is done and continued with meeting with a client to show the interface which is expected most suitable for Call for Paper needs, and also showing the progress and accepting the critics and suggestion.

After the interface undergoes a revision phase, this research continues with coding phase. The coding process is divided into two parts: coding for administrator's website and mobile application coding. After performing the coding stage, then, will be doing the test process and then after finding an error, then the coding will be in revision. Furthermore, this research is more focused on the stage of finishing because at this stage the team will make matching with website administrator, try all the existing features, and keep on continue with the task of writing manual analytical writing. The client, for the finishing stage this time is a committee Call for Paper, because the team wanted to confirm information available in the application whether in accordance with the needs because the possibility during the process of making the Call for Paper application has additional information needed. Call for Paper application process can be seen in Figure 2.

Call For Paper application uses Android Studio as Platform because Android Studio has many features that ease the work features, Android Studio also has many libraries that are run making this application. In addition to having many libraries to use. In addition, the ease of building applications based on Android is the reason, this application is built using Android Studio. And when we compile and run our application, APK file is automatically formed so that we do not need to work twice to build the application.

Users use the Call For Paper mobile application that can be accessed via Android-based smartphones. The Call For Paper mobile application is built using Ionic Framework, which integrates well with the Website's apps managed by the activity committee. Application's usage begins with the installation of the app, then the app's usage tutorial when the user uses the app for the first time. After the tutorial, the user can directly enter the main page (dashboard) application that contains important information and updated news. The app has a menu that only the user needs to select as needed, view the latest news sets, gallery and event documentation, the list of attendees who attend the event, the keynote speaker list being the speaker, and the place and location detail activities are all available in the application side-menu.

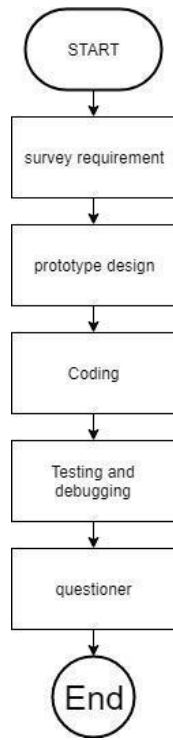


Figure 2: Call for paper application process

The application is supported by the administrator website. Call For Paper event committee can manage the websites that have been connected MySQL database and use PHP programming language in retrieving and writing data to be informed to users who use mobile applications Call For Paper. Application administrator can create, read, update, and delete data that will be displayed in the application. Each delivery notification via administrator website then the data will enter into the database. Then after entering into the database, the notification will be accepted by the participants in their respective mobile. Each participant who submits a paper then the participant will get the participant paper id on the entity participant and according to the current information system, it is possible that each participant will have several papers. All participant data and paper are filled by the administrator and the data will go into the database.

In Figure 3, Call for Paper has a database server that can be accessed by Call for Paper website and application. Website is used by the activity committee, taking data from call for paper databases, then if the data is to be added, modified or deleted, then the data will be directly stored in the database. Databases can be accessed via internet by mobile call for paper applications, but applications can only display the data that the user wants, and the data is guaranteed to be accurate because it matches the data residing in the database.

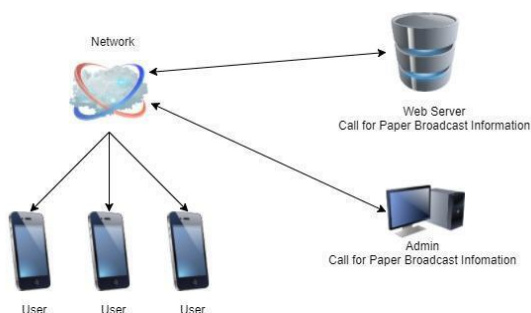


Figure 3: Call for paper design architecture

IV. TESTING AND ANALYSIS

A. Application Testing

User Interface testing is done by checking its operation in android device. Application testing is done by checking its features. Overall, this application is tested. One of the testing processes is the Committee Page of the application and can be seen in Figure 4. Users can see the committee list, and get committee's contact.

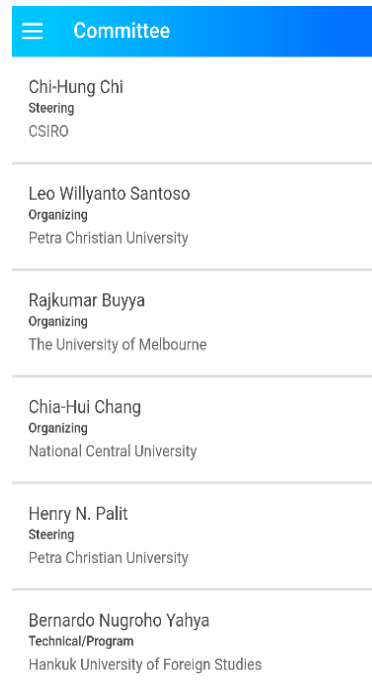


Figure 4: Committee page

Another page used in the test is a Maps page showing the place where the Call for Paper takes place using Google Maps. Map's page as can be seen in Figure 5.

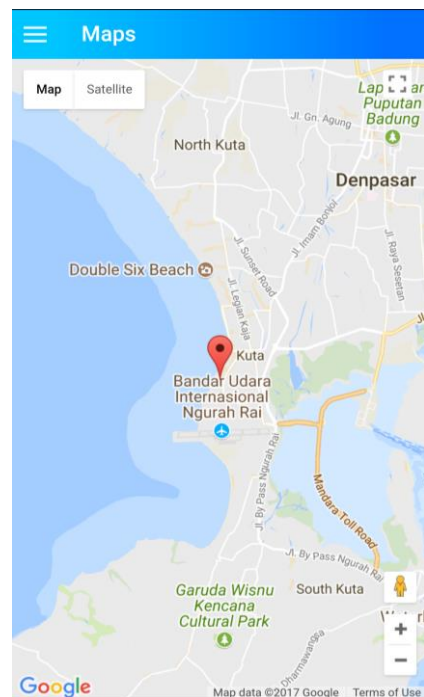


Figure 5: Maps page

Testing is also done to mobile application pages that display the important dates of the event. These dates integrated with Google Calendar, where Google Calendar can allocate event time with each user. A schedule that already exists as a reminder or reminder for application users, so users can follow the event in accordance with a compiled schedule. Important dates as can be seen in Figure 6.

Another page build for testing is *administrator Dashboard*. This page was made to help administrator to show general and important information about usual thing needed for administrator. In dashboard there is a send alert feature which is to help administrator to send urgent notification in short time. In this page showed growth of data, how much attendees, keynote speaker, committee, and registered person. The display for the administrator dashboard as be seen in Figure 7



Figure 6: Important date page

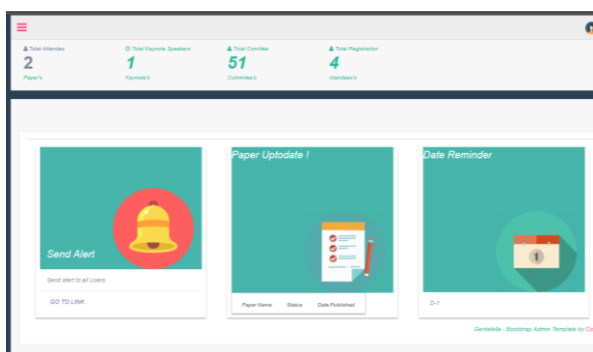


Figure 7: Dashboard page

The next feature that is done testing, is part to display photo gallery. Administrator enters data on Call for Paper galleries, and after completion of entering, the system will manage the data and stored into the database, users can view the Call for Paper gallery through the application they have installed in their respective mobile phone. Administrator is also assigned to add photographs according to the existing gallery in the

database, each database has a photo each distinguished by the year Call for Paper is held, after finished inserting the photo, the system will manage the image so that stored in the database in accordance with the desired gallery. Administrator has access to search, change, as well as delete gallery and photos in the database. Gallery Photos as can be seen in Figure 8.



Figure 8: Gallery photos page

In its application, the Call For Paper application uses the Phonegap plugin to accept native push notification. When installing the plugin, it must use SENDER_ID that is integrated with FCM (Firebase Cloud Messaging). Notification Testing is to send notification messages that want to be accepted by user through smartphone user. Notification messages will be performed by the administrator section. After the user, press send key, then all smartphone that have this application can receive notification. The display for the push notification form can be seen in Figure 9.

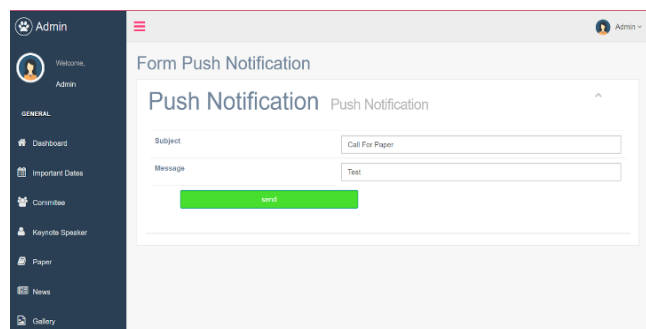


Figure 9: Push notification page

For the result of receiving notification messages in the mobile application can be seen in Figure 10.

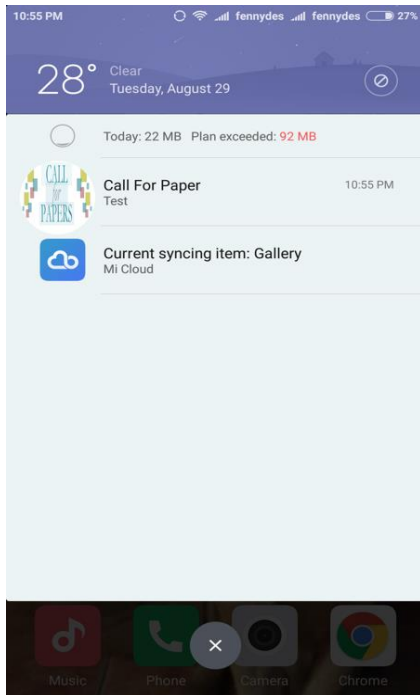


Figure 10: Notification message

Any change of paper status of users will get email. Information the user gets about news for the latest paper status and information for important dates. Status changes are performed by the administrator section. One of the testing processes is the Committee page of the application and can be seen in Figure 11.



Figure 11: E-mail information

In its implementation, the Call for Paper website uses SMS Gateway to pass information manually to each participant. with the SMS gateway that serves as a reminder and providing information, can be useful for participants who cannot use mobile call for paper applications so that participants will not be left behind important information, especially related to paper status, and implementation of such activities.

B. Questionnaire Testing

Questionnaire testing was shown to participants and committee who had attended Call For Paper event. Testing the questionnaire is to provide a questionnaire about user satisfaction of Call For Paper application to participants and

the committee. Participants in question are participants who have signed up and have submitted papers to available Call For Paper workshops. And the committee in question is the people who served in carrying out the activities of Call For Paper, including the administrator. Questionnaire testing is provided by providing 5 questions that can be answered by selecting the level of satisfaction given in the form of numbers.

The calculation is done by correlating between the item score and the total item score. The standards of the categories are divided into 7 categories with values of : no correlation, very weak correlation, enough correlation, strong correlation, very strong correlation, perfect correlation.

Application Performance Call for Paper the questions used in the test questionnaire are as follows:

- Accuracy of news information Call For Paper
- App Display Call for Paper
- User-Friendly Level Application All For Paper
- Comfort Level Use of Call for Paper Application
- Call for Paper Application Performance

Based on the results of the questionnaire test can be concluded as much as 86% of users agree that the application call for paper can provide information precisely because in accordance with the information to be conveyed by the committee and the information stored in the database. Then on the look and level of user friendly, it can be concluded as much as 92% of application users feel that the application is easy to understand and easy to use by its users, as well as display the features contained within the application is well ordered and supports the use of users in using this application. In the comfort level, 84% of users feel that the application is comfortable to use, easy to learn and information to be conveyed can be delivered properly. As well as 88% of users agree that the performance of the Call for Paper application is running well, all features can run well, can receive notifications and users receive the information submitted.

Questionnaire Testing can be concluded that Call for Paper Application enables users to receive information about the activities, participants can take advantage of existing features such as reminder, checking paper status, and other features that assist users in receiving information and facilitate the committee in delivering information to participants.

V. CONCLUSION

Based on testing of mobile applications and website administrators it can be concluded that the administrator who has been managing the information by using the website, can easily provide information to users, that is by using notification and reminder users, so users get the most recent information. Such information is obtained and displayed in accordance with the data stored in the Call for Paper database. Each feature in the Call for Paper application is already running in accordance with its function, and for push notification feature is integrated with the application call for paper so as to provide notification in accordance with the filing messages made through the website administrator.

In the look of the Call for Paper application, all the existing features are well organized and not complicate the user in using this application. With this application, can facilitate users in obtaining information during the event, and it is expected the future of this application can further assist users in receiving information with the additional features that can be developed again, such as the existence of live chat as a

means of users to communicate to the committee activities , and the presence of a tracker that detects the user's location, so that users outside the event will get a warning if the event is about to begin.

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