DEVELOPMENT OF M-DELIVERY IN PT POS INDONESIA (Persero) BANDUNG AREA BASED ON ANDROID

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ABSTRACT

On systems that are running in PT Pos Indonesia (Persero) to update the status of shipments are still manually. Having finished sending courier consignment to the destination and has already noted the status of the delivery, the courier returned to the office to hand over the shipment status records to be included in the database by the head of the courier. Based on interviews with PT Pos Indonesia (Persero) loss from the absence of evidence in the form of goods GPS position of 60% can cause consumer distrust of PT Pos Indonesia (Persero). Following losses of inefficient use courier vehicle fuel by 60%, which should be returned to the office to submit a delivery report which has been recorded in the mobile phone carriers. Latest loss is no evidence in the form of photographs and digital signatures consumers by 60% raises suspicions of employees of PT Pos Indonesia (Persero) to the courier that can not be confirmed that the shipment has been received by consumers. In the description above, it takes an application to solve the problem with an android-based application where the application can generate the coordinates of the goods when the shipment is received or not received, along with their post consumer photos, print shipping reports, and consumer digital signature.
Keywords: PT Pos Indonesia, status updates, android, consumers, courier.

1. PRELIMINARY

1.1 Background

On systems that are running in PT Pos Indonesia (Persero) to update the status of shipments are still manually. Having finished sending courier consignment to the destination and has already noted the status of the delivery, the courier returned to the office to hand over the shipment status records to be included in the database by the head of the courier. In this case the courier is difficult to update the current delivery status of the shipment delivery is received.

Based on interviews with part of application development at PT Pos Indonesia (Persero) wanted to know if the courier has sent a shipment right on purpose, because there is no tangible evidence in the form of GPS position of goods when the shipment is accepted or not, images that the recipient has received the shipment, the digital signature recipient as proof of shipment has been received, and can print a delivery status report is successfully received or not successfully received. Therefore it takes an android mobile application that has a function to perform a status update and print the report. The meaning of the status update function is a feature for the courier transaction registry. The first feature is making the GPS positioning of goods by longitude and latitude after the courier scans the barcode or QRCode. The next feature is contained in the status update function is making digital signatures and consumer photograph along mails will be stored as a binary file so that the image can be accessed by multiple applications that already exist on the PT Pos Indonesia (Persero) Bandung region. Then the features contained in the report print function. The courier can print shipping reports how many items have been accepted by consumers, how many items he brought back to the warehouse or office because of failed delivery status via a Bluetooth printer or to a PDF format.

1.2 Purpose and Objectives

In the description above, it takes an application to solve the problem with an android-based application that utilizes GPS technology, camera, Bluetooth, and Touchscreen. Where the application can generate the coordinates of the goods when shipment is accepted or not accepted, and its consumer photo mails, print shipping reports, and digital signatures. The application will be poured into the final report entitled "Development of M-Delivery Applications at PT Pos Indonesia (Persero) Bandung Area-Based Android".

While the goal in this research is as follows:

1. Assist courier to be able to update the status of delivery.
2. Helping PT Pos Indonesia (Persero) to determine the exact GPS position items of interest via 2D point coordinates (longitude and latitude).

3. Helping PT Pos Indonesia (Persero) to obtain tangible evidence in the form of photographs and digital signatures consumers.
4. Helping PT Pos Indonesia (Persero) to view the status sent by courier from the report results.

1.3. Method of collecting data

The data collection techniques used consisted of two ways of collecting, namely:

1. Study of literature

Data collection techniques by reading literature, journals, documents and various references relating to the title of the study.

2. Field Study

This study was conducted by collecting data is done directly visit a research site. This includes:

1. Interview

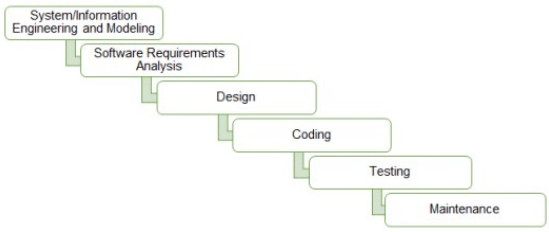
Data collection techniques by conducting interviews in writing, and answering questions directly, which has links with themes taken. As an informant in this research is the development of IT employees Operating Systems Application Development division Courier and Logistics PT Pos Indonesia (Persero).

2. Observation

Observation is the direct observation in a structured and requires recording the results as a result, with this observation method will be carried out observations of the performance of the courier who delivered the shipment to its destination.

1.4. Software Development Methods

In this application development method used is as a waterfall model of software development stage. As for the process among other things from the book Software Engineering: a practitioner's approach seven editon Roger S. Pressman [1]



Picture 1 Pressman Waterfall Model 2008

2. CONTENTS OF RESEARCH

2.1. Android

Android is a Linux-based operating system designed for touch screen mobile devices such as smart phones and tablet computers. Android was originally developed by Android, Inc., with financial support from Google, which then bought it in 2005. The operating system was released officially in 2007, in conjunction with the establishment of the Open Handset Alliance, a consortium of companies hardware, software, and telecommunications which aims to advancing open standards mobile devices. The first Android phone went on sale in October 2008. Android is an open source operating system, and Google release the code under the Apache License.

2.2. Android Studio

Android Studiois an Integrated Development Environment (IDE) for the Android operating system, which is built on software JetBrains IntelliJ IDEA and designed specifically for the Android development. This IDE is a replacement of the Eclipse Android Development Tools (ADT) which was previously a major IDE for application development android.

The principle of measuring distances on every instrument is essentially the same, namely taking a straight line from any point on an object observations [2]. From the results of each measurement, will get the distance were accurate enough to be used as needed.

2.3. Application Programming Interface (API)

Application Programming Interface (API) is a technology to facilitate the exchange of information or data between two or more software applications. API is the virtual interface between two software functions that work together. An API defines how programmers utilize a particular feature of a computer. APIs are available for windowing systems, file systems, database systems, and network systems.

2.4. Problem analysis

The difficulty courier to perform realtime status updates to be inefficient due to be completed first courier to deliver the shipment to a new destination to submit reports to the head of the courier delivery to be entered into the database. But the report was inaccurate because there is no evidence that the right shipment to destination and there are no reports in the form of tercetaknya.

2.5. Analysis Procedure The Ongoing

Currently ongoing procedures to update its status is still done by hand. Which is to update the status of current procedures are the chief courier and do in the office. The current procedure has no real Buktu digital convincing submissions have been received by the recipient.

With a procedure that is currently running felt still less effective in terms of status updates caused by several factors: the absence of tangible evidence

in the form of digital images and digital signatures consumers when the shipment has been received.

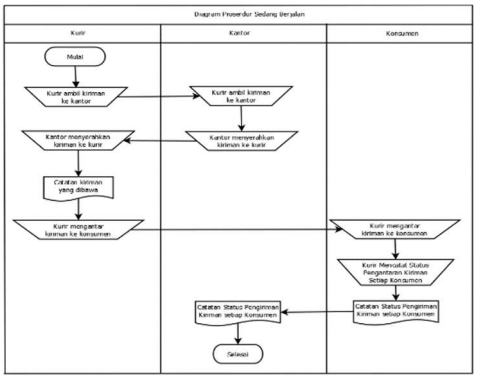


Figure 2 Procedures That Progress

With the description of the image as follows:

1. Courier to the office to send the mail.
2. Courier noted items were taken in the office.
3. Courier sent a shipment to the homes of consumers according to the address of items that were taken.
4. Courier recorded delivery status after the submitted documents.
5. Courier back to the office to submit documents to the person in charge of the delivery status of the courier.

2.6. Analysis Procedure To Be Built

Procedures that will be built to support the effectiveness of the courier in the status update to android based mobile application created. With the help of this application, the head of the couriers do not have to enter shipment data into the database system only live match data that has been entered by courier through this application. With this application, digital real evidence such as photographs and signatures of consumers can be obtained.

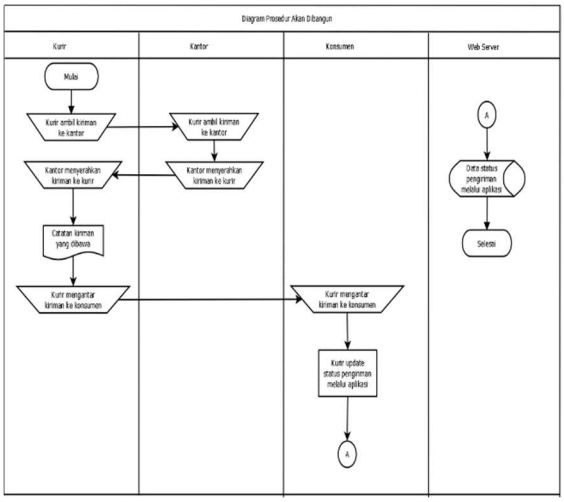


Figure 3 Procedures To Be Built

With the description of the image as follows:

1. Courier to the office to pick up the shipment.
2. Courier noted items were taken.
3. Courier delivering the shipment to the destination address.
4. Courier delivery status updates pass through the application of M-Delivery.
5. Delivery status in the insert by courier stored in the database web server.

2.7. Analysis Technology QRCode / Barcode

QR Code or Barcode technology in this app to store the data contained in the submission receipt. The stored data such as address, coordinates of an address, and the name of the recipient. To read the QR Code or Barcode needed a library to be able to read or scan the QR Code or Barcode. Library used was ZXing library.

```
private void scanBarcode(String mode) {
    try {
        Intent intent = new Intent("com.google.zxing.client.android.SCAN");
        intent.putExtra("SCAN_MODE",mode);
        startActivityForResult(intent,1);
    } catch (Exception e) {
        Uri marketUri = Uri.parse("market://details?id=com.google.zxing.client.android");
        Intent marketIntent = new Intent(Intent.ACTION_VIEW,marketUri);
        startActivity(marketIntent);
    }
}

public void onActivityResult(int requestCode,int resultCode,Intent data){
    if(requestCode == 1) {
        if(resultCode == RESULT_OK){
            textScan.setText("");
            String contents = data.getStringExtra("SCAN_RESULT");
            Toast.makeText(getBaseContext(),"Hasil :"+contents,Toast.LENGTH_SHORT).show();
            textScan.setText(contents);
        }
    }
}
```

Figure 4 Android Java Coding Fragment Library ZXing

2.8. System Architecture Analysis

The system architecture refers to the architectural model frontend and a backend application. Frontend application on the user side and backend on the admin side. In this system, the frontend application is a component that is active,

while the backend application acts as a receiver and data processor.

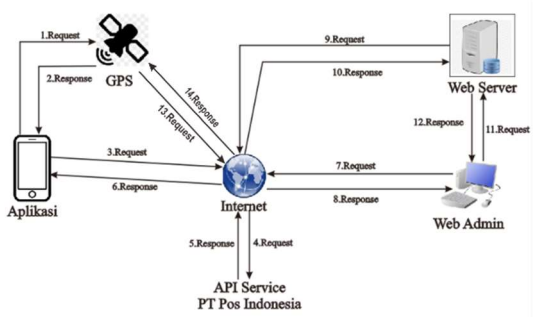


Figure 5 Frontend and Backend System Architecture

Description or explanation from the image above:

1. Applications requesting your current location via GPS smartphones.
2. GPS gives response to the application of the current location.
3. Applications requesting API Service PT Pos Indonesia through the Internet.
4. Requesting Internet Service PT Pos Indonesia API for applications.
5. API Service gives response to the Internet to connect with the application.
6. Internet gives response to the application in the form of API Service is used.
7. Web Admin is requesting the Internet to connect with the web server.
8. Internet gives response to Web Admin connection connected to the web server.
9. Web server requesting Internet network to connect to the web admin.
10. Internet gives response to the web server to connect to the web admin.
11. Web admin requesting data from a web server.
12. Web server gave the response data for the web admin.
13. GPS requesting final position through the Internet.
14. Internet network to give a response in the form of the current coordinates to GPS.

2.9 Examination

Testing is an important part in the development cycle or software development. The purpose of this test to ensure that the software is built to have good quality. The method used for testing on this software is a black box testing method. Black box testing focuses on functional requirements of the software. Black box testing method consists of two stages of testing, ie testing alpha and beta testing.

Alpha testing is conducted functional testing environment of development by a group of users who will use the system built. In the builder assist and record errors and problems perceived by the user. Alpha testing is performed on the backend systems and frontend systems.

table 1 Scenario Testing Backend

No.	Test item	Scenario	types of Tests
1	Login	username	Blackbox
		password	
2	Managing Data Update Status	See Data Update Status	Blackbox
		Clear Data Update Status	
		Change Data Update Status	
3	Managing Data Courier	Add a data courier	Blackbox
		Clear data courier	
		Change data courier	

table 2 Scenario Testing Frontend

No.	Test item	Scenario	types of Tests
1	Login	username	Blackbox
		password	
2	Register	username	Blackbox
		password	
		full name	
3	Status Update	no receipt	blackbox
		latitude	
		longitude	
		status	
		ket_berhasil	
		ket_gagal	
		ket_retur	
		ket_dipanggil	

		ket_ditahan	
		ket_diteruskan	
		photo	
		ttd_digital	
3	Check Rates	hometown	blackbox
		destinations	
		weight	
		long	
		wide	
		high	
		this type of shipment	
4	Track Shipments	Receipt Number / Destination	blackbox

Conclusion Blackbox Testing Results

Testing Login dmin

table 3 Testing Admin Login

Cases with correct test results			
Data Log	Which are expected	Observation	Conclusion
Username: elephant Password : 12345678	Login successful and go on the main page	Sign on the main page	succeed
Cases with any test results			
Data Log	Which are expected	Observation	Conclusion
Username: admin password : admin	An error message or error	Error message appeared	succeed

Testing Change Data Update Status

table 4 Testing Change Data Update Status

Cases with correct test results			
Data entry	Which are expected	Observation	Conclusion
No. resi: 12121212 Latitude: -6.8586561 longitude: 107.5270642 status: successfully Ket_berhasil: guard Photo: GABDASSDDGJYH656 Signed _digital: GABDA656RGGGGJN	The message data has been updated	The message data has been updated	succeed
Cases with any test results			
Data Log	Which are expected	Observation	Conclusion
No. resi: 12121212 Latitude: -6.8586561 longitude: 107.527064 2 status: successfully Ket_berhasil: guard Photo: image1.jpg Signed _digital: ttd1.jpg	The message failed to change the status update data	Not the message failed to change the status update data	Failed

1. Conclusion Beta Testing Results

Based on the results of beta testing it was concluded that:

a. Based on the results the percentage of users simply felt helped in terms of doing the update shipment status on the spot. This application also has been sufficiently reduce wasteful loss courier vehicle fuel from 60% to only 30% of any losses incurred. But there is still a shortfall for the print features not yet available and the update process has not worked with the maximum status.

b. Based on the percentage of the above, it can be concluded that the operation of this application is quite easy. Therefore helps courier to update shipment status quickly. But there is still a shortage of the display UX still monotonous.

c. Based on the percentage of the above, it can be concluded that the clerk or admin quite helpful to see shipment has proper destination or have not gone through the GPS position of the goods. There is still a shortage of the form has not been able to retrieve data from the database.

d. Based on the results of the above percentages, it can be concluded that the clerk or admin been helped in the selection of consumers who remain faithful to services between PT Pos Indonesia. There is still a shortage of such consumers can not sort properly.

e. Based on the above percentages can be concluded that the officers or administrators find it quite helpful to see how the number of items that have been accepted or failed to be accepted and descriptions were recorded when the courier to update the delivery status. But there is a lack of displaying the status of the database.

3. CONCLUSION

3.1 Conclusion

The conclusion that can be drawn from this study of the development application M-Delivery in PT Pos Indonesia (Persero) Bandung area based on Android are as follows:

1. Already assist courier to update its delivery status.
2. Has helped PT Pos Indonesia (Persero) in terms of knowing the exact GPS position items of interest via a 2D coordinate point.
3. Has helped PT Pos Indonesia (Persero) in the case to obtain concrete evidence in the form of photographs and digital signatures consumers.
4. Has helped PT Pos Indonesia (Persero) in regard to the status sent by courier from the report results.

3.2 Suggestion

The results of this test are advised to be developed better and can be implemented M-Delivery Application development for iOS and Windows Phone platforms.

The second suggestion is advisable to add features that are better and more needed by the users of this application.

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