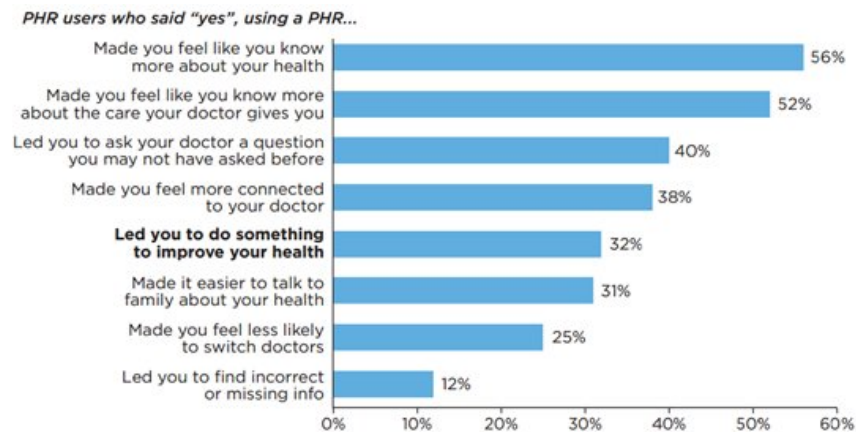# 1. Introduction

1.1 Background

Far too often, technical roadblocks make medical system process more challenging than it needs to be. It isn't easy to getthe right information and record into the hands of caregivers, because most of this information is still in paper form or can't be distributed.Complicating matters further, healthcare is a high-intensity environment that demands precision and grace under pressure. When historical information is difficult to find or access, doctors and nurses often order redundant tests to gather the information they need to determine the best course of treatment and achieve the desired clinical outcome. This approach has grown too expensive, wastes precious time and resources.

One of the solution that usually use to alleviate this problem is to make Personal Health Record (PHR). PHR is is a health record where health data and information related to the care of a patient is maintained by the patient. PHR are not the same as Electronic Health Record (EHR). Like the data recorded in paper-based medical records, the data in EHRs are legally mandated notes on the care provided by clinicians to patients in some health care providers.There are two models of PHR, tethered and untethered. PHRs tethered are typically populated with accurate information, but the information is usually just from a single source from EHR of some provider. Different with tethered, untethered PHR is under the control of the patient. The patient controls access and must grant privileges to others for them to use the PHR.

There were still a lot of problem that comes in PHR development. Despite the continued buzz and some well-publicized initiatives, the reality is that we are still no closer to a true personal health record than were 5 or 10 years ago. There are still

inherent barriers to all PHR models. A tethered PHR model might not provide information related to care delivered by another physician; a typical tethered PHR might list the last time a test had been performed based on claims data, but not the actual result. The main problem of this model is patients usually have limited control over the information included, and access is often contingent on remaining a member of provider.An unthetered PHR also have their own problem. In this PHR, patient must enter manually all information or arrange for the information to be transferred from a specific source like a laboratory or pharmacy, and the data may not be as accurate as tethered PHR. Because the most reliable source of data and information is from EHR provider or hospitals, the one who know the real condition of patient.

Despite form the fact and condition above, many people still use PHR for their own safety now. According to the 2010 study sponsored by the California HealthCare Foundation, more than half of PHR users said that using a PHR made them feel like they know more about their health and less than a third said using a PHR actually led them to do something to improve their health.

Table 1. 1Patient Reaction Using PHR

PHR users who said "yes", using a PHR...

Made you feel like you know more about your health	56%
Made you feel like you know more about the care your doctor gives you	52%
Led you to ask your doctor a question you may not have asked before	40%
Made you feel more connected to your doctor	38%
Led you to do something to improve your health	32%
Made it easier to talk to family about your health	31%
Made you feel less likely to switch doctors	25%
Led you to find incorrect or missing info	12%

This problem actually can be solved but something have to change before a true personal health record is possible to create. There are minimum 4 characteristics that needs to be included in a PHR: comprehensive, interactive, patient-controlled, and secure. This means clinical information needs to be available electronically, accurate, interactive, complete and secure from vast majority of providers. Providers also need

to think of PHRs as more than just repositories for information. The PHR should be viewed not only as a vehicle to provide patients with health information, but also as a source of data. The data that come from PHR also have to be easy and flexible for patient to read like using mobile phone. Mobile phone is one of the device that greatly sped and its users is increases from one year to another year. The data from eMarketer (2011) shows that almost half of population in 2013 is mobile phone users.
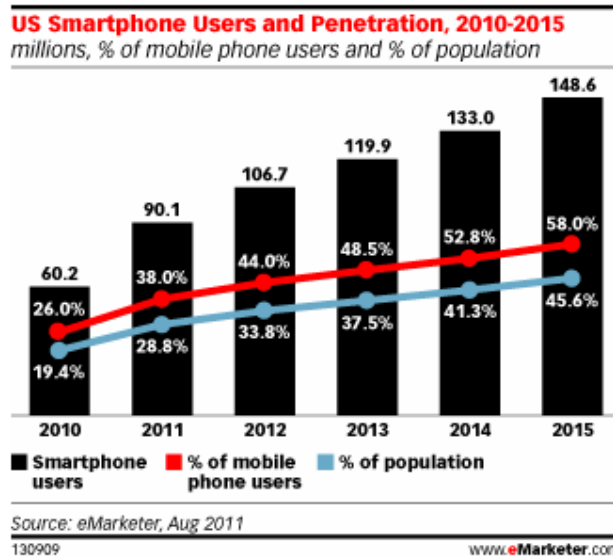

Figure 1. 1Smartphone and Mobile Phone Users Statistics

Therefore, this researchwill implement and develop a PHR applications based on two models of untethered and tethered by taking advantages of both models using test-driven development method to cover all the main characteristics and features in designing the mobile application. This application is expected to help and facilitate the patient in controlling their own medical record easily and comprehensively.

1.2 Problem Formulation

From the background describe above, the problem statement that will be discussed is howto develop personal health record for patient in order to control their own

medical record based on four main characteristic of PHR, comprehensive, interactive, patient-controlled and secure.

1.3 Research Purpose

The purpose of this research is to develop integrated mobile-based personal health record for patient in order to control their medical recordbased on four main characteristic of PHR, comprehensive, interactive, patient-controlled and secure

1.4 Research Benefit

The benefits of this research are:

a. To create health application that can help users to control and access their own information.

b. To improve patient access and control to a wide array of health information, data, and knowledge.

1.5 Problem Limitation

Limitations of the problem in this study include:

a. The list of information that will be included in this PHR application focuses only on emergency contact, regular doctors, search hospitals, medical conditions, news, make an appointment, and date of last illnesses.

b. The result of this application will not be tested until beta test.

1.6 Writing Systematics

The preparation of this study consists of 6 (six) chapters where each chapter is divided into several sections.

CHAPTER 1   Introduction

This chapter explains about the background of selection topic, research scope, objectives and benefits of the research, methodology used in the study as well as systematic that explain the main points of discussion of each chapter.

CHAPTER 2   Scientific Literature

This chapter explains about theoretical foundation used as basis to discuss the problems at this study. Some of them are basic theory, general theory, and theory of particular relevance with PHR and test-driven development framework.

CHAPTER 3   Research Methodology

This chapter explains about research methodology that will be used to create PHR application and analyzing the current system in both PHR model.

CHAPTER 4   Proposed System Design

This chapter explains about design of a new application system which includes explanation about software requirement, design pattern, data implementation, and user interface design.

CHAPTER 5   Implementation

This chapter explains about an overview of the conclusions obtained from the results of the analysis based on the facts and truth. Suggestions are very useful for the development in the future.

CHAPTER 6   Conclusion And Suggestion

This chapter explains about an overview of the conclusions obtained from the results of the analysis based on the facts and truth. Suggestions are very useful for the development in the future.