Document History

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HanDIYcraft App -Project Proposal-0.1.docx	-Introduction and Background	Draft	2/2/14	Advisor	NK, PS
HanDIYcraft App -Project Proposal-0.2.docx	-Update Introduction and Background - Business Review - Technology Review -Development Tools Review	Draft	8/2/14	Advisor	NK, PS
HanDIYcraft App -Project Proposal-0.3.docx	-Update Business Review - Quality Standard	Draft	27/2/14	Advisor	NK, PS
HanDIYcraft App -Project Proposal-0.4.docx	-Deliverables and Limit -Future Work	Draft	28/2/14	Advisor	NK, PS
HanDIYcraft App -Project Proposal-0.5.docx	- Motivation - Aim and Object - Architecture Review - Schedule and Milestone	Draft	3/2/14	Advisor	NK, PS
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HanDIYcraft App -Project proposal-1.1.docx	-Update Features -Update Deliverables -Update Technology Review -Update Development Tools Review	Draft	6/4/14	Advisor	NK, PS
HanDIYcraft App -Project proposal-1.2.docx	-Update Architecture -Update Business Review -Update Business Review -Update Benefits -Update Motivation -Update Objectives -Update Future Work	Draft	10/4/14	Advisor	NK, PS
HanDIYcraft App -Project proposal-1.3.docx	-Update Introduction and Background	Draft	12/4/14	Advisor	NK, PS
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Abstract

Expenditure recently tends to keep getting higher than before, so people turns to find a way to reduce their unnecessary expenses. DIY (Do it yourself) is a method to recycle, renovate, and repair old things. Many people love to build creative DIY artworks and share their idea to others. However, another problem is they do not know where exactly they should buy certain materials to do their DIY artworks.

HanDIYcraft application provides several functions helping users to explore and share DIY ideas. Also, it allows users to communicate among each other by commenting, and with the shopkeeper by private messaging. It provides map function to solve the problem on finding shops to buy needed materials. On the other hand, shopkeepers are also able to provide information in order to advertise their shops to gain more customers. This application requires a smart phone on Android Operating System to serves portability to the users. In addition, it uses Google Maps API to identify the location of shops, and Facebook API to let people share their favorite DIY tutorials.

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Chapter One |
Introduction and Background

Since the cost of livings has been getting higher and higher, expenditure seems to be more than earnings. People are now tends to figure out their way to manage their money and reduce their expenses as much as possible. One way to reduce their expenses is recycling items. The easiest and most interesting things to get recycled are the stuffs around them, from knickknacks to utensils.

DIY (Do It Yourself) is a method to build, renovate, modify or repair things without any professional skill. It has become very popular for people recently. There are many different medias, mostly websites that let people explore and share their DIY ideas. Those medias allow people to create their own tutorials and also be able to look at the others. In addition, they can communicate with each other by commenting. From this feature, the bloggers could have friends and share things they like. Also, they can catch up the artworks from other bloggers by following them. However, there is a problem that the blogger may not know where exactly should they get materials for their DIY artworks. Those websites did not provide any information on this point after all. For this reason, our application provides a feature to solve this problem. The bloggers can check out shops, which will provide information for each of them. The information will be consists of shop name, address, telephone number, details, pictures and location of the shop. Users who have registered as a shopkeeper would provide information about their shops and add their own location individually.

On the other hand, technology has become very popular and has more priority for people. In fact, it has become another important factor of people's life. Besides from giving and receiving calls, a smart phone also has various other abilities such as taking photos, playing music, access to the internet, and support many applications that would help users to live their life much easier. Therefore, we decided to develop an application on the Android operating system. Apart from that, this application uses Google Map API to identify the location for the map feature. So, the user can get the exact location and go without getting lost. This application also allows shopkeepers to promote their shops by providing information including photos, which would help them to attract and gain more customers. Moreover, the favorite tutorials can be shared to a social network like Facebook too. To be more comfortable for the bloggers, we also develop a web application for them to manage their tutorials.

The goal of HanDIYcraft is to help users avoid from wasteful and make them realize that they can reduce their expenditure by themselves. As well as helping them to know where to buy things they need. Plus, it would be handier for the user to do it on a portable device like a smart phone, which can access at anywhere and anytime.

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Chapter Two | Literature Review

2.1 Business Review

2.1.1 Overview

HanDIYcraft is an android application for smartphone that supports Android operating system. It is an application that guide users the method how to turn their old things, into a new one by themselves. This application provides several tutorials for users to learn. In addition, they also be able to make tutorials on their own and can follow other bloggers' artworks. Moreover, in case the users do not have the needed materials and have no idea where to buy, this application provides a feature to let the users check out the shops that sell related materials for making their DIY artworks. There will be shops' details including the location of them provided for the user. The location feature can be done via Google Maps API. On the other hand, the users that registered as a shop can create their own shops by themselves. They have to provide their information, such as name, address, telephone number, details, pictures and the shops' location. Apart from just exploring the shops' information, the users can also directly communicate with the shopkeepers by sending private messages.

2.1.2 Target

There are two main targets of this application. One is everyone who wants to explore and get some DIY ideas in order to renovating their old things. Another one is the related shops that want to advertise themselves to get more customers. However, the main factor for them is to have a smart phone to access the application.

2.1.3 Benefit

2.1.3.1 Users
- Users can take a look at the application before decided to register.
- Users can explore all provided tutorials.

2.1.3.2 Bloggers
- Bloggers can save more time to find needed materials by checking them out through provided shops.
- Bloggers can get an idea of shops' location and go there without getting lost.
- Bloggers can create their own tutorial as they wish.
- Bloggers can communicate among each other via comment.
- Bloggers and shopkeepers can communicate to each other through private message.
- Bloggers can give likes to the tutorial they like.
- Bloggers can follow the other bloggers.
- Bloggers can share their favorite tutorials to Facebook.

2.1.3.3 Shopkeepers
- Shopkeepers can promote their shops via the application.
- Shopkeepers can search the bloggers by their username to see their basic information.

2.2 Software Review

2.2.1 Instructable

Instructable is a mobile application that provides various kinds of DIY tutorial. The users can explore all of the DIY artworks and create their own tutorials from this application. Moreover, it allows users to follow the others' works too.
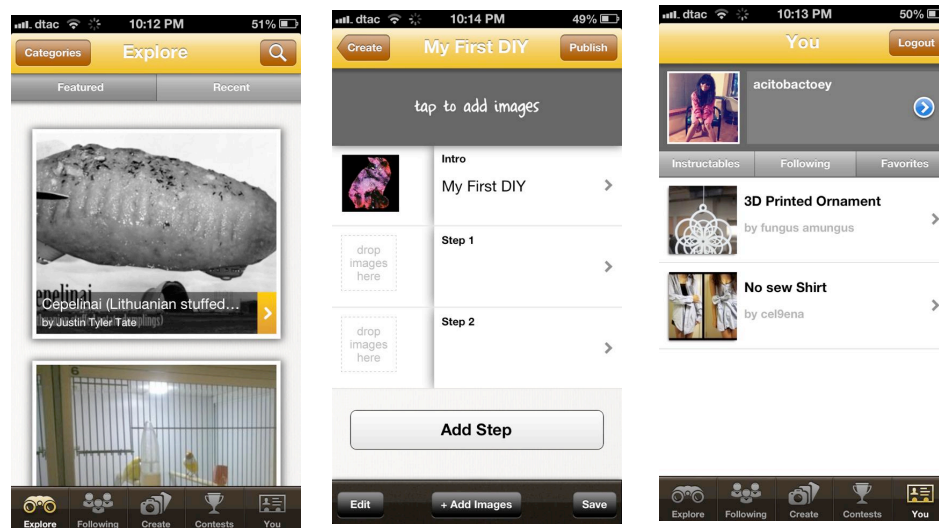

Figure 1.1.1: Instructable Graphic User Interface

Pros

- The system provides DIY artworks for users to explore.
- The system allows users to like, comment, and share the tutorial.
- The system provides various categories and subcategories.
- The system allows users to follow the others' artworks.
- The system provides uncomplicated user interface.
- The system is easy to learn for the new users.

Cons

- Unattractive user interface.
- Some feature requires users to log in to perform the task.
- No recommendation about needed materials for a certain tutorial.

2.2.2 Pinterest

Pinterest is a web application full with several kinds of DIY artworks. The users can explore DIY artworks and pin the favorite one into their own profile page. On the other hand, the users also able to upload their own artworks and let the others pin it. Moreover, users can follow the other people to catch up their artworks
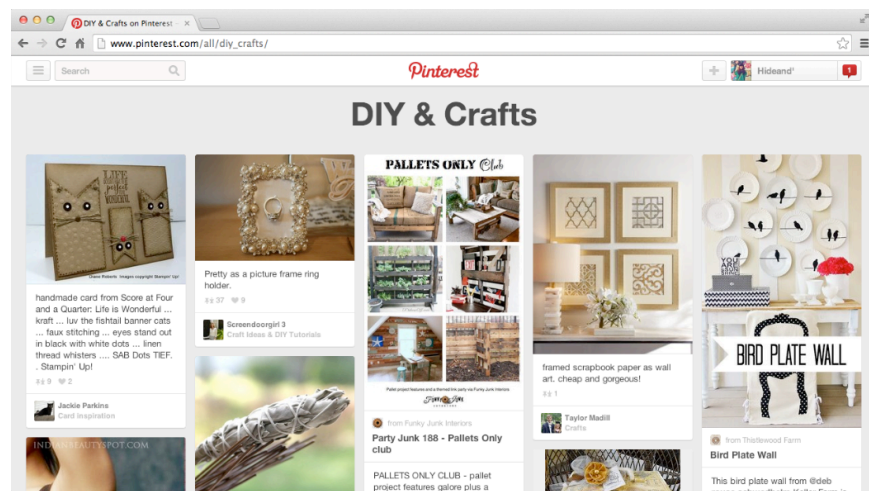

Figure 1.1.2: Pinterest Website Graphic User Interface

Pros

- The system provides a sign up with Facebook feature.
- The system provides alternative languages.
- The system provides many pictures to attract users.
- The system shows the related stuffs for that tutorial.
- The system allows users to create multi-boards for different kind of artworks.
- The system allows users to like tutorials.
- The system allows users to share tutorials to their Facebook, Twitter and web sites.
- The system is easy to learn for the new users.

Cons

- No categories for DIY and crafts
- The user can upload only one picture for one tutorial.

2.2.3 Paper and Stitch

Paper and Stitch gives many DIY artworks for people to explore. It provides pictures and explanation exhaustively. However, it does not allow users to create their own tutorials and share their idea. So, this website is more like someone's blog that let people come and take a look.
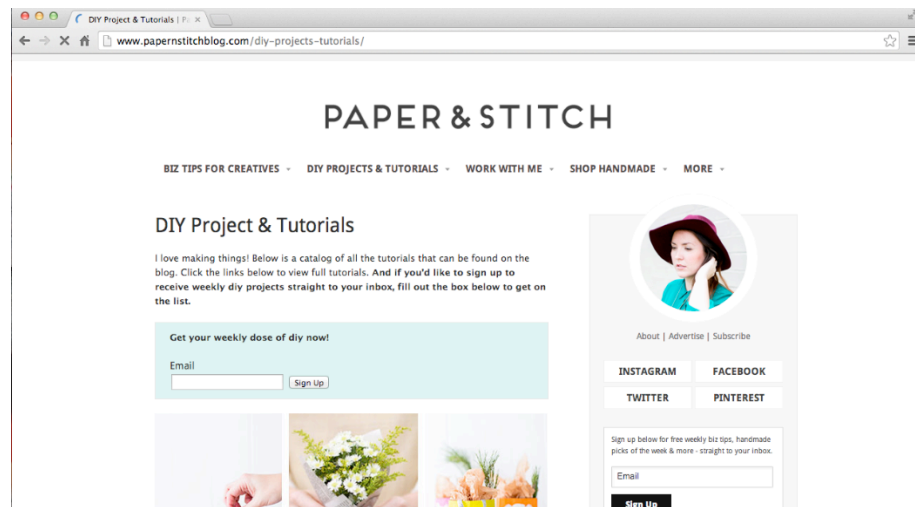
Figure 1.1.3: Paper and Stitch Website Graphic User Interface

Pros

- The system provides simple and attractive user interface.
- The system provides tutorials in pictures and texts.
- The system allows users to share tutorials on Facebook and Twitter.
- The system allows users to comment on tutorials.

Cons

- The system allows users to only look around.
- The system does not allow users to create their own tutorial.

2.2.4 DIY and Craft Tutorials

DIY and Craft Tutorials is an open web application for users to explore and share DIY artworks. The users can share their works by creating their own tutorials, and for this they do not need to be a member to done the task. Moreover, users can share their favorite artworks to their social medias like Facebook, Twitter, Google Plus, and Tumblr.
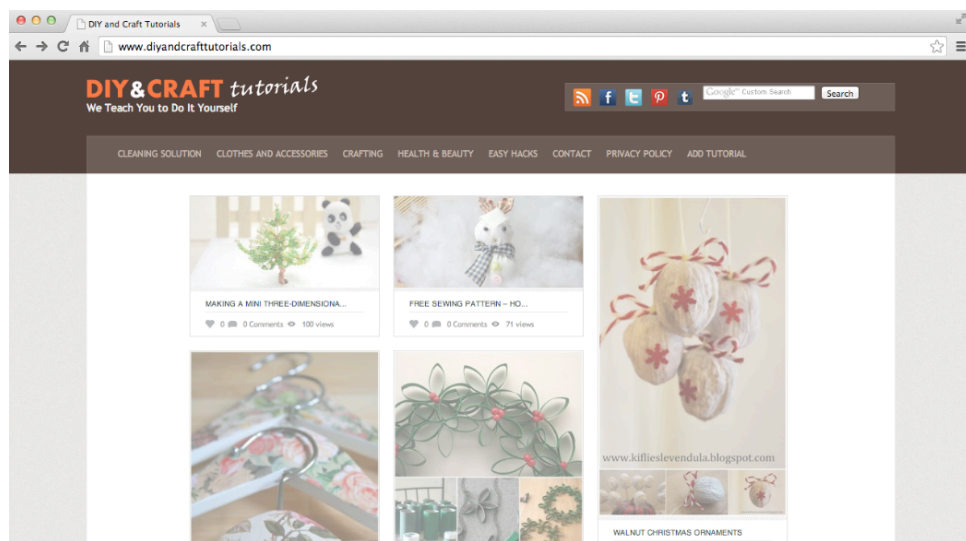
Figure 1.1.4: DIY and Craft Tutorials Website Graphic User Interface

Pros

- The users do not have to sign up to create tutorials.
- The system provides uncomplicated user interface.
- The system allows users to share tutorials on Facebook, Twitter, Pinterest, and Tumblr.
- Easy to learn for the new users.

Cons

- The system provides too many advertisements.
- The system provides lack of attraction point.
- No log in system to identify the blogger who post the tutorial.

2.3 Architecture Review

Figure 1.1.5: Architecture Review

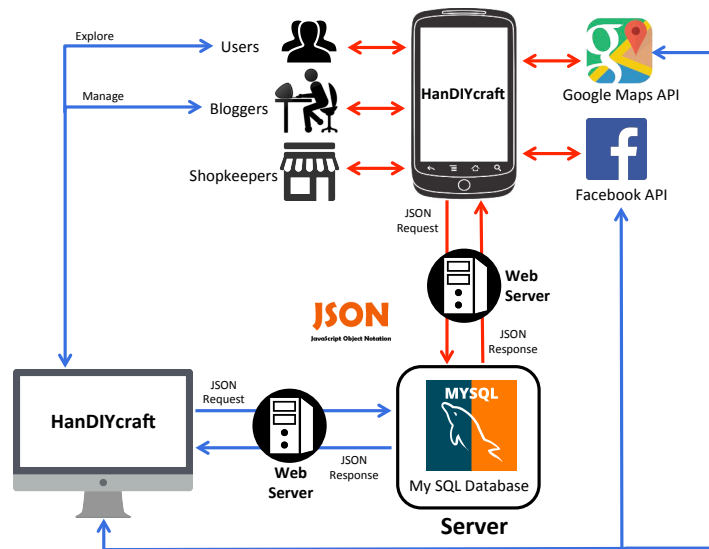HanDIYcraft application is a social application on Android OS smart phones and web application. Whenever the user interacts with the application, the system will query data through JSON from MySQL database system and response the result back to the user via the application's user interface.

Users, bloggers and shopkeepers can access to the data differently.
- Users will be able to only explore tutorials and shops' location that are provided in the application.
- Bloggers can manage (create/edit/delete) tutorials. They can communicate among each other via the comments, and to the shopkeepers via private messages. Also, be able to explore others' tutorials just like the users. On the other hand, they can do those activities on the web application, and be able to interact with Facebook too.
- Shopkeepers can manage shops, and be able to communicate with the bloggers via private messages. They can search to a specific blogger by using the blogger's username to reach the basic information.

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2.4 Technology Review

2.4.1 Android Operating System

Android is operating system that develops on a Linux-based for mobile devices such as smart phone and tablet. Android is open source, it is free for everyone who are interested to develop. Because Android has developed by Google, so it has a lot of Google services supported such as Gmail, Google Calendar, and Google Maps. [1]

Alternative Tools
  - iOS
  - Symbian
  - Window Phone
  - BlackBerry OS

The selection of this technology

Nowadays smart phones are very popular. For us we choose the Android OS because it is an open source operating system. It is free for developing and also support by many tools. It can directly be tested on the smart phones.

2.4.2 JSON

JSON (JavaScript Object Notation) is a lightweight data-interchange format. It is easy for humans to read and write. It is easy for machines to parse and generate. It is based on a subset of the JavaScript Programming Language, Standard ECMA-262 3rd Edition - December 1999. JSON is a text format that is completely language independent but uses conventions that are familiar to programmers of the C-family of languages, including C, C++, C#, Java, JavaScript, Perl, Python, and many others. These properties make JSON an ideal data-interchange language. [2]

Alternative Tool
- Extensible Markup Language (XML)

The selection of this technology

JSON makes us be more easy to read and write. It is not extensible because it does not need to be. Moreover, it is not a document markup language, so it is not necessary to define new tags or attributes to represent data in it. We can use JSON to store and retrieve data between Web-Service and our application.

2.4.3 Google Maps API

Google Maps is a <u>web mapping</u> service application and technology provided by <u>Google</u>, that powers many map-based services, including the Google Maps website, Google Ride Finder, Google Transit, and maps embedded on third-party websites via the Google Maps <u>API</u>. It offers street maps and a <u>route planner</u> for traveling by foot, car, bike (beta), or with public transportation. It also includes a locator for urban businesses in numerous countries around the world. [3]

Alternative Tool
- Bing Map

The selection of this technology

There are a lot of information of Google Maps API provided, such as source code samples and tutorials on the internet. Also, there is a complete code of the Google Maps provided for us to apply for our projects. Therefore, we do not have to waste our time writing the whole source code for this part again.

2.4.4 Facebook API

Facebook API let us reach and bring some information or features of Facebook to use in our application. We can use it in Log in system by letting the users log in with their Facebook ID. Also, use it to share information from our application to the users' Facebook wall. In addition, we can use it to access to information of the user too.[4]

Alternative Tool
-

The selection of this technology

We use Facebook API to let users share their information from our application to their own Facebook wall.

2.4.5 Cascading Style Sheets (CSS)

CSS is stand for Cascading Style Sheets. It defines how to display HTML elements. Styles are usually saved in external .css file. It gives comfortable to change the layout of all pages in web site. [5]

Alternative Tool

-

The selection of this technology

For the web application part of our system, CSS would help us in terms of decoration. Moreover, it provides us convenient for editing multiple web pages in one time.

2.4.6 PHP

PHP, stands for **"*H*ypertext *Preprocessor*"**, is a server-side, HTML embedded scripting language used to create dynamic Web pages. PHP offers excellent connectivity to many databases including MySQL, Informix, Oracle, Sybase, Solid, PostgreSQL, and Generic ODBC. [6]

Alternative Tool
- Perl
- Python
-ASP.NET
- JSP
- Ruby

The selection of this technology

PHP has many tutorials and examples of how to use it provided everywhere. Moreover, it is open source and does not too complicated to understand.

2.5 Development Tools Review

2.5.1 Eclipse

Eclipse is an IDE (Integrated Development Environment) or an editor that is popular in software development. It supports people in developing software in many languages, mostly Java. It provides a simple and understandable user interface. Moreover, the developers also be able to download many different plugins to work with Eclipse. For example, to develop an Android application, there will be plugins for Android development provided. Further than that, it is free. [7]

Alternative Tools
- Netbean
- IntelliJ IDEA

The selection of this technology

Not only because it's free, but also because it is easy to set up and find various plugins to work with. In addition, it supports Android platform too. Therefore, we decided to use this software as a tool for our project.

2.5.2 MySQL

MySQL is an open source relational database management system which used by many users around the world. It can create both standalone and server database. It can integrate with other product such as MySQL Workbench, MySQL Notifier and MySQL Connector. It also supports many development tool for create application such as Eclipse, NetBeans.[8]

Alternative Tools
- SQLite

The selection of this technology

Due to our application needs to connect the database with the web server. From this point, MySQL does support our need for our application. Not only Android OS that it supports, but also in other different platforms. In addition, it's free. Apart form that, there are many people has been using it, so there are many tutorial introducing us the software on the Internet. Therefore, if we have any problem, we can immediately figure it out.

2.5.3 GitHub

GitHub is a social network for programmers. Git is a distributed software management program created by Linus Torvalds, originally for the Linux Kernel Development. GitHub is a hosted Git repository. Github allows you to take part in collaboration by forking projects, sending and pulling requests, and monitoring development. [9]

Alternative Tools
- Dropbox
- Google Drive
- iCloud
- Sky Drive

The selection of this technology

We use GitHub as our repository to share and store our work. It provides free storage and also the history when there is something changed. The history will show all the details of the changes such as who changed it, what has been changed, when did it change and so on. More than that, it gives automatic version control too.

2.5.4 Adobe Dreamweaver CS6

Adobe Dreamweaver is a proprietary web development tool developed by Adobe Systems. It is the web design software that provides a visual interface for making and editing HTML websites.[10]

Alternative Tools
- TextMate
- Notepad++
- Coda2

The selection of this technology

Adobe Dreamweaver CS6 provides functions such as auto closes tags, code hinting, preview, which give ability for users to create a website easier. It can separate the code and design of the webpage at the same time. Moreover, CSS is also supported too.

Chapter Three |

Quality Standard

3.1 ISO29110 for Very Small Entity (VSE)

ISO29110 is a guide applies to a Very Small Entity (VSE), enterprise, organization, department or project up to 25 people, dedicated to software development. The Guide provides Project Management and Software Implementation processes which integrate practices based on the selection of ISO/IEC 12207-Systems and Software Engineering — Software Life Cycle Processes and ISO/IEC 15289Software Engineering – Software Life Cycle Process – guidelines for the content of software life cycle process information products (documentation) standards elements.

3.1.1 Project Management Process

The purpose of the Project Management process is to establish and carry out in a systematic way the tasks of the software implementation project, which allows complying with the project's objectives in the expected quality, time and cost.

Selected process

- Project Planning Process

- Project Plan Execution Process

- Project Assessment and Control Process

- Project Closer Process

3.1.2 Software Implementation Process

The purpose of the Software Implementation process is the systematic performance of the analysis, design, construction, integration and tests activities for new or modified software products according to the specified requirements.

Selected process

- Software Implementation Initiation Process

- Software Requirements Analysis Process

- Software Architectural Design Process

- Software Construction Process

- Software Integration and Test Process

- Software Delivery Process

Chapter Four |

Project Plan

4.1 Motivation

Nowadays, people give more interests on creating recycled artworks, or as known as DIY artworks by themselves. They tend to keep exploring ideas to do it. As a result, there are many applications and websites provided to let them explore and share their DIY artworks and give a tutorial how to do it. Although those medias seem to provide perfect and sufficient features for the users, there is one point that they did not concern. The problem is the users may not know where exactly they should buy the materials if they would like to do a DIY artwork. Therefore, HanDIYcraft application will help users to find out stores to buy needed stuffs. In addition, the users also be able to communicate with the stores via private message feature.

The reason we want to work on DIY is that it is becoming very popular for people to reduce their expenses. Apart from the money purpose, it also helps people in the way of relieving from tension and anxiety, increase more concentration, and more pride and happiness in their life.

Moreover, technologies have become an essential thing for people. Apart from the web application that can be accessed by various devices, there is a popular technology like smart phones too. There are several operating systems developed to support them, one of those operating systems that are well-known is Android OS. Due to it is an open source, there are many resources provided to develop, and it is easy to learn.

From this software project, we expect to get more knowledge and experiences in processing in order to develop new software. On the other hand, also to get the experience of working as a team and taking serious responsibilities, for the good of our working life in the future.

4.2 Aims and Objectives

4.2.1 Aims

The aims of HanDIYcraft application are to allow users to explore, and bloggers to share DIY artworks. Shopkeepers can advertise their shops in order to get interests from the users and get more customers than before. The development of this application will be done under the ISO 29110 software quality standard.

4.2.2 Objectives

- Develop an Android application using open source technology and development tools to give portability to the user.
- Develop a web application using open source technology and development tools for bloggers to manage their tutorials.
- Let the users learn the tutorials through explanations and pictures.
- Allow bloggers to create their own tutorials.
- Be able to seek for shops' information and location.
- Communicate among bloggers, and between blogger and shopkeeper.
- Let the shopkeepers present their shops by providing information and pictures.
- Let the bloggers catch up their favorite bloggers' artwork.
- Allow users and bloggers to share their favorite tutorials to Facebook.

4.3 Deliverables and Limits

4.3.1 Deliverables

Progress Report I

Feature 1: User's Profile and Authorization Management
- Develop register, log in, and log out system for bloggers. (On both web and mobile)
- Develop register, log in, and log out system for shopkeepers. (On mobile)
- Display blogger's profile which contain profile picture, username, email, number of following and follower people, and created tutorials, and let the him/her edit their information.
- Display shopkeeper's profile, which contain profile picture, username, email, and created shops, and let him/her edit their information.

Feature 2: Tutorial Management (On both web and mobile)
- Add a tutorial which contain pictures, descriptions, and a video by blogger.
- Manage(edit/delete) tutorials by blogger.
- Search tutorials title by keyword.
- Display tutorials that exist in the database by random, popular, and following.
- Display tutorial's detail, which contain tutorial owner username, number of likes, tutorial title, pictures, material, descriptions, a video, and comments.

Progress Report II

Feature 3: Shop Management (On Mobile)
- Add a shop which contain pictures, descriptions, and a video by shopkeeper.
- Manage(edit/delete) shops by shopkeeper.
- Search shop name by keyword.
- Display shops that exist in the database randomly.
- Display shop's detail, which contain shop name, shop owner username, branch, telephone number, information, shop's pictures, and location.

Feature 4: Map Management (On Mobile)
- See the shop's location via Google Maps.
- See shops' location near by the user via Google Maps.
- Pin shop's location via Google Maps by shopkeeper.

Feature 5: Communication Management (On Mobile)
- See and add comments on tutorials by blogger
- Communicate via private messages
- Search bloggers by username by shopkeeper.
- Giving and undo likes on tutorials by blogger.
- Follow and unfollow bloggers by blogger.
- See list of follower and following bloggers.
- Share tutorials to Facebook

Progress Show Pro

Feature 6: The system provides notifications. (On Mobile)
- Display list of news when there is new tutorial comment, tutorial like, or follower.
- Display a sign when there is a new message.

Final Progress

Ensure that the system and documents are complete.

Documents
- Proposal
- Project plan
- Software requirement specification
- Software design document
- Testing document
- Traceability record
- Software quality assurance document
- Demo of program
- Poster for presentation

4.3.2 Limits
- The application requires Android Operating System.
- Internet connection is required for the application to perform.
- Only the user that has registered as a blogger is able to create tutorials.
- Only the user that has registered as a shopkeeper is able to add shops.
- There is no security system to check the inappropriate information.

4.4 Future Work
- HanDIYcraft application should be able to operate in iOS.

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4.5 Software Process Model
4.5.1 Iterative Model

In Iterative model, iterative process starts with a simple implementation of a small set of the software requirements and iteratively enhances the evolving versions until the complete system is implemented and ready to be deployed.

An iterative life cycle model does not attempt to start with a full specification of requirements. Instead, development begins by specifying and implementing just part of the software, which is then reviewed in order to identify further requirements. This process is then repeated, producing a new version of the software at the end of each iteration of the model. [11]
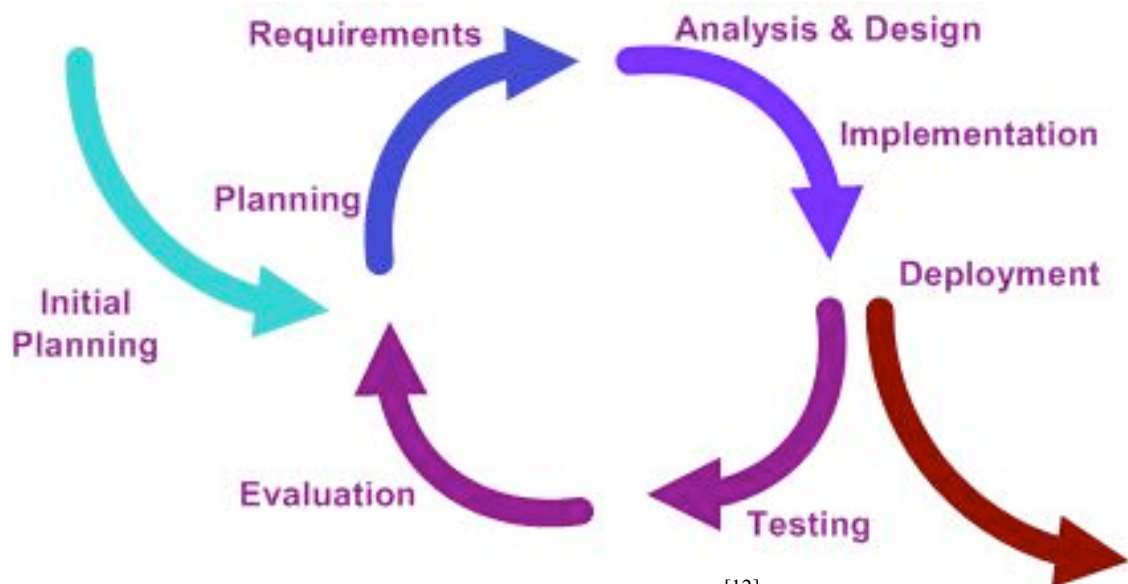

Figure 1.1.6: Iterative Model[12]

4.6 Schedule and Milestones
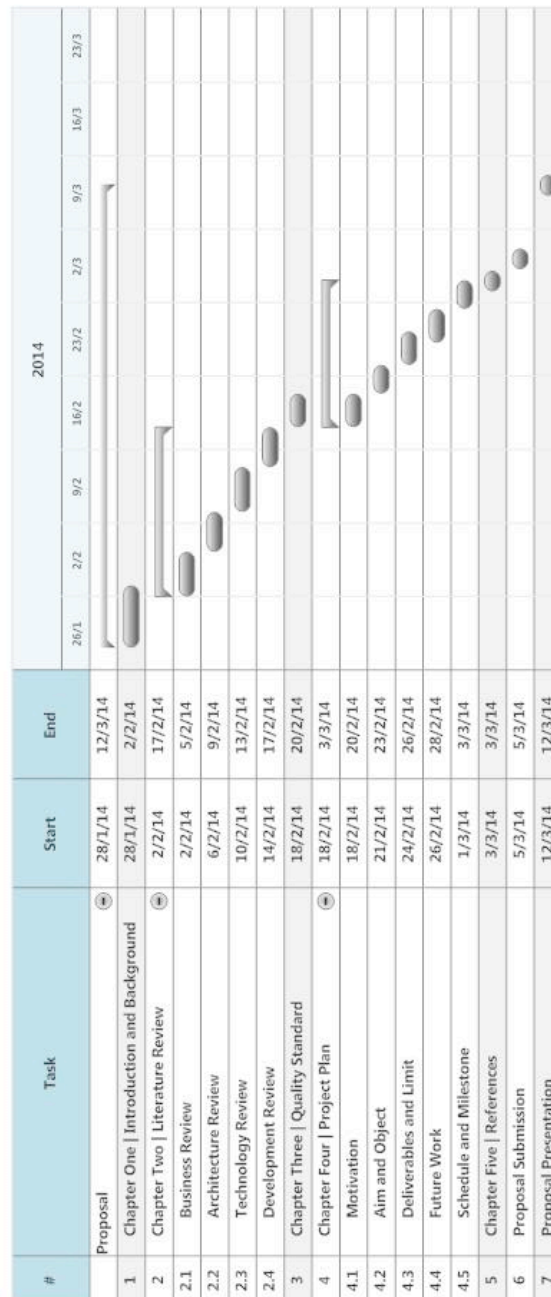
Figure 1.1.7: The Milestone of Initial Project

The following table represents the Gantt chart / milestone data shown in the figure:

#	Task		Start	End
	Progress # 1	①	4/5/14	6/5/14
1	Software Requirement Specification	①	4/5/14	4/8/14
2	Software Design	①	4/8/14	4/23/14
2.1	Use case Diagram		4/8/14	4/9/14
2.2	Activity Plan Feature #1,#2		4/10/14	4/14/14
2.3	Class Diagram Feature #1,#2		4/15/14	4/17/14
2.4	Sequence Diagram Feature #1,#2		4/18/14	4/23/14
3	Test plan	①	4/23/14	4/28/14
3.1	Data Test Feature #1		4/23/14	4/24/14
3.2	Data Test Feature #2		4/25/14	4/28/14
4	Trace ability record Progress#1		4/29/14	4/29/14
5	Implementation	①	4/30/14	5/13/14
5.1	Implementation Feature #1		4/30/14	5/6/14
5.2	Implementation Feature #2		5/7/14	5/13/14
6	Test Progress #1		5/14/14	5/23/14
7	Progress Report 1 submission		5/28/14	5/28/14
8	Progress #1 Presentation		6/5/14	6/5/14

Figure 1.1.8: The Milestone of First Progress Report

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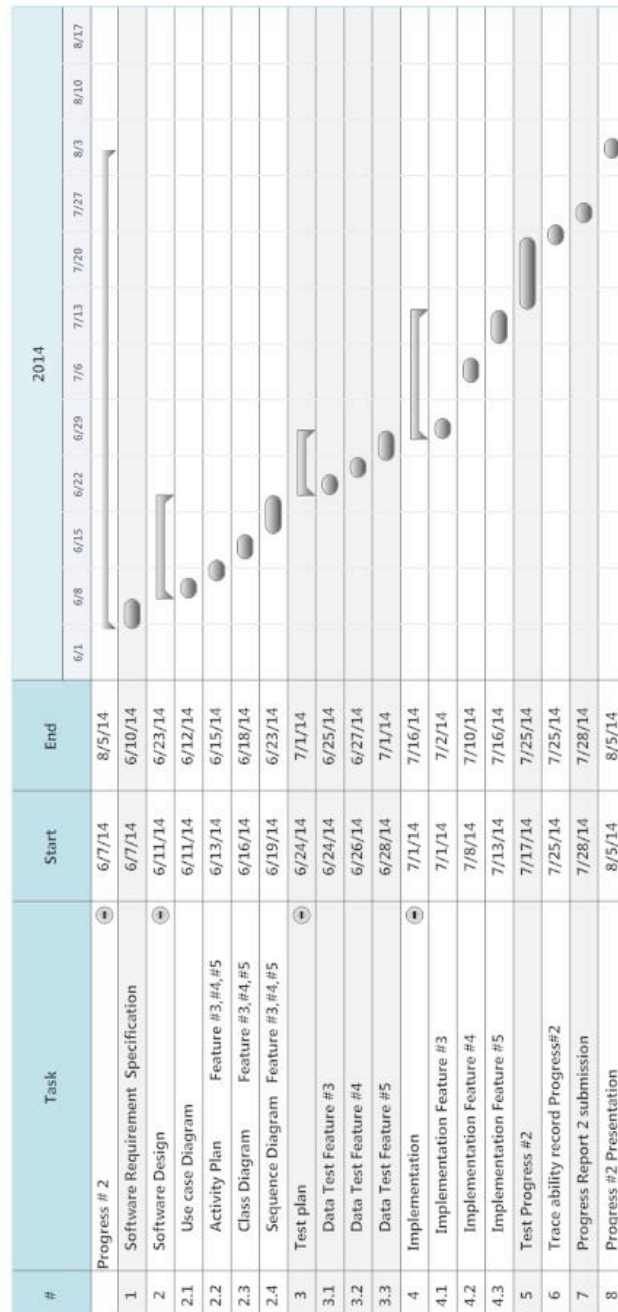
Figure 1.1.9: The Milestone of Second Progress Report

#	Task		Start	End
	SE ShowPro		8/6/14	9/15/14
1	Software Requirement Specification		8/6/14	8/6/14
2	Software Design		8/7/14	8/15/14
2.1	Use case Diagram		8/7/14	8/7/14
2.2	Activity Plan Feature #8		8/8/14	8/9/14
2.3	Class Diagram Feature #8		8/10/14	8/12/14
2.4	Sequence Diagram Feature #8		8/13/14	8/15/14
3	Test plan		8/16/14	8/23/14
3.1	Data Test Feature #8		8/16/14	8/23/14
4	Implementation		8/24/14	8/29/14
4.1	Implementation Feature #8		8/24/14	8/29/14
5	Test Progress#3		8/30/14	9/10/14
6	Trace ability record Progress #3		9/11/14	9/11/14
7	SE ShowPro		9/15/14	9/15/14
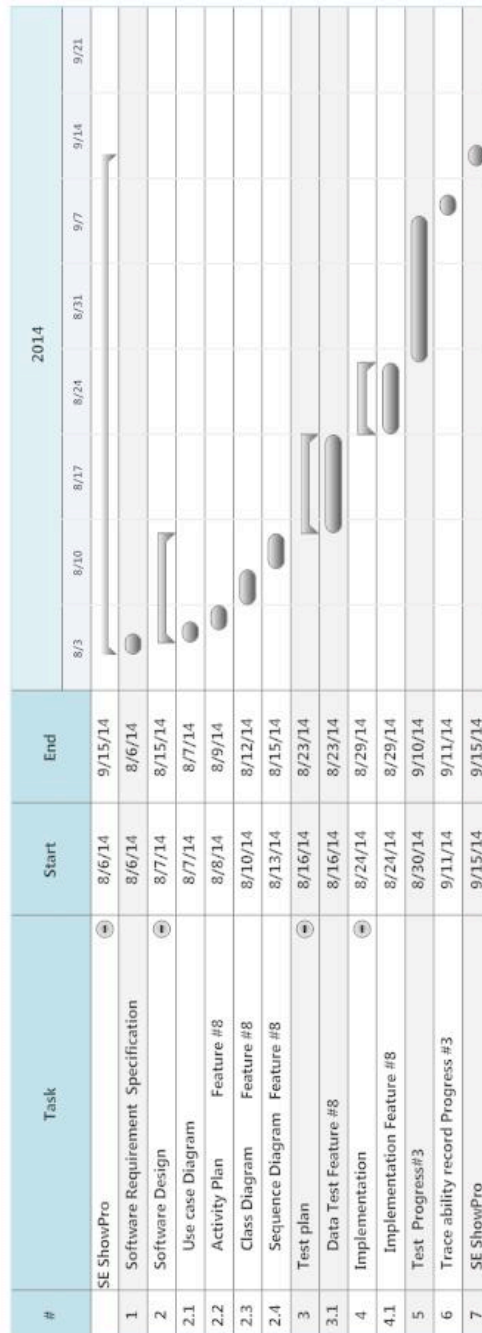
Figure 1.1.10: The Milestone of Show Pro Progress Report

Figure 1.1.11: The Milestone of Final Progress Report