**MINISTRY OF EDUCATION AND TRAINING**

**FPT UNIVERSITY**

Capstone Project Document

Anki Pan

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**Acknowledge**

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*We also thank to our families and friends. Their encouragement has helped us to overcome many pressure to complete our product.*

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Anki Pan Final Report ver1.0 **ACRONYMS & ABBREVIATIONS**

**Abbreviations Description Note**

AKP Anki Pan

CI Configuration Items

OCR Optical Character Recognition

MM Meeting Minute

PM Project Manager

PMP Project Management Plan

SDD Software Detail Design

SRS Software Requirement Specification

SUM Software User Manual

W# Week#

WR Weekly Report

SAD Software Architecture Design

FRS Functional Requirement Specification

QA Quality Assurance

PM Project Manager

SRS Software Requirement Specification

TM Team Member

De Designer

DB Database

.db SQLite Database file extension

.ico Icon file extension

PK Primary Key

FK Foreign Key

1

Anki Pan Final Report ver1.0 **I. INTRODUCTION**

**1. PROJECT INFORMATION**

❖ **Project name:** Anki Pan

❖ **Project code:** AKP

❖ **Project type:** Android application

❖ **Project category:** New development

❖ **Business domain:** Education

❖ **Project manager:** Bui Hong Nhung

❖ **Time line:** May 4th 2015 to August 15th 2015

**2. PROJECT TEAM**

❖ **Supervisor**

**Name Email Title**

**Tran Binh Duong** duongtb@fpt.edu.vn Supervisor

❖ **Team member**

**Name Student**

**Roll**

1 **Email Role**

**Bui Hong Nhung** SE02082 NhungbhSE02082@fpt.edu.vn Leader

**Vu Hong Thai** SE02654 thaivhSE02654@fpt.edu.vn Member

**Le Thanh Binh** SE02917 binhltSE02917@fpt.edu.vn Member

**Nguyen Duc Huy Hoang**

SE02651 HoangndhSE02651@fpt.edu.vn Member

**Pham Trong Nghia** SE02781 NghiaptSE02781@fpt.edu.vn Member

**Ngo Thi Mai** SE02218 MaintSE02218@fpt.edu.vn Member

Anki Pan Final Report ver1.0 **3. INITIAL IDEAL**

**3.1. Background**

Japan is one of the most advanced countries in the world. In addition, Japanese culture is spreading very quickly to other countries through manga, anime,... Therefore, more and more people study Japanese. A research of JPF (Japan Foundation for Culture Exchange) shows that until 2012, there are 3,985,669 people studying Japanese, 63,805 Japanese teachers and 16,046 Japanese educational institutions. Those numbers are still constantly growing bigger and bigger.

(機関:Organization 教師:Teacher 学習者:Student)

*Figure 1: JPF research in 2013*

Most of people who study Japanese find it difficult to read Japanese document. Japanese includes a lot of Chinese-like characters called Kanji. Without knowing how to read the Kanji, it will be difficult to type those Kanji to search for their meaning.

We conducted a research among students who are studying Japanese. Those students often read books, comic, newspapers written in Japanese (see Chart 1). The result shows that 88.2% out of 78 students doing the survey find it difficult to read Japanese document (see Chart 2).

**Do you often read Japanese document?**

Almost of the students want an application that can scan Japanese in documents. More than 60% of them need help in translate the document, and search for the meaning of words. *(See AK\_SurveySummary in Appendix for detail about this survey)*

2

48.7 15.8

Not hard 35.5**Chart 1**

Often

Sometimes

Rarely

**Is it hard to read Japanese?**

**Chart 2**

11.8

88.2

**Chart 2**

Hard

Anki Pan Final Report ver1.0 **3.2. Existing Products**

**3.2.1. Google translate[2]**

Google translate is considered as the best application in language processing. It provides user a completed services including character recognition, speech to text and translate.

**Functions:**

- Scan printed document and detect characters of many language, include Japanese - Allow user to import image to detect characters - Translate to many other language - Convert speech to text and translate - Save translated words and documents - Bookmark words / documents - Copy words / documents - Turn on flash to take image

**Some screenshots of Google translate:**

Main screen

3

Anki Pan Final Report ver1.0 Scan and recognize text:

Translate to other languages:

4

Anki Pan Final Report ver1.0 Speech to text

Save to history and bookmark

**Pros:**

- Interface design is simple and easy to use - Document scanning is fast - Character recognition is in high correction rate - Recognize many language - Translate from / to many language

**Cons:**

- Require Internet access for character recognition and translation

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Anki Pan Final Report ver1.0 - Translation may return wrong meaning of words - Does not provide other information about words (word-class, examples,...). Only the meaning of words may not satisfies people who study Japanese and want to understand the words deeply.

**3.2.2. CamDictionary[3]**

CamDictionary is another good application in character recognition

**Functions:**

- Scan and recognize printed characters of many languages in three ways:

+ User touch somewhere in the screen to show application the area to scan + User move the application eye to the text area that they want to scan + User capture to document, and then choose a part of the document to scan - Allow user to import image to detect characters - Turn on flash to take image - Translate from / to many other languages - Save translated words to History or My Vocabulary - Download dictionary and search words in dictionary - Send words and words’ meaning through message or email

**Some screenshots of CamDictionary:**

6

Anki Pan Final Report ver1.0 Scan and recognize text:

Translate:

7

Anki Pan Final Report ver1.0 Save to history or my vocabulary

Download dictionary:

8

Anki Pan Final Report ver1.0 Send through email or message:

**Pros:**

- The application is interactive. User can choose to scan document in 3 ways. The

design for scanning screen is interesting. - Text scan and character recognition is highly correct. - The scanning function works offline - User can purchase dictionary to search words, which give a more correct meaning

and other information like word-class, example,...

**Cons:**

- Require Internet access for translation - User has to pay for the dictionaries

**3.2.3. JDict[4]**

Jdict is one of the most popular Japanese – Vietnamese dictionary application

**Functions:**

- Look up words in Japanese – Vietnamese dictionary, Vietnamese – Japanese

dictionary and Kanji dictionary - Save words to history - Bookmark words

**Some screenshots of JDict**

9

Anki Pan Final Report ver1.0 Search words in dictionary

Save to history and bookmark

**Pros:**

- Simple and easy-to-understand interface design - Give detail meanings, examples, word-class, pronunciation of words - Can search for about 700.000 Japanese words, and almost Kanji - Explain words’ meaning in Vietnamese, which is helpful for Vietnamese people.

**Cons:**

- User has to input words to search for the meaning. If they do not know how to

read Kanji, they can not type the Kanji to search. It will take time to draw the Kanji from keyboard.

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Anki Pan Final Report ver1.0 **3.2. Our Proposal**

We will develop a single application that support people who studying Japanese everything they need for reading printed Japanese document. The application will have the below main functions: - Scan text in Japanese document - Recognize Japanese characters - Allow user to download free dictionaries - Search for meaning of words, Kanji in dictionary - Save words to history for user’s later review - Add words to favorite list

The application will be interactive, easy to use and work offline.

*Figure 2: Doraemon's copying toast*

We name the application Anki Pan, which means copying toast in English. Anki Pan is a Doraemon’s gadget which allows user to memorize any contents ‘printed’ on it. To use the copying toast, one should press one side of the toast on a book page. The text on the book then will be printed on the toast. Eating the toast later, eater can remember everything that has been printed on the toast. Just like how to use the copying toast, user using our application will take their phone above the book page and press the capture button. The book page with text on it then will be saved (printed) to the application. The application will extract text from the book page so that user can require application to translate or to look up meaning of words. By doing this, user can understand the content of the book, remember words and their meaning, just like swallowing the content of book by eating a toast.

Our application in compare to Google Translate, CamDictionary and JDict:

11

Anki Pan Final Report ver1.0 **Function Translate Google**

**CamDictionary JDict Anki Pan**

Scan and recognize text

12 Many language Many language ✖ Japanese

only

Translate ✔ ✔ ✖ ✖

Search words in dictionary ✖ ✔ ✔ ✔

Free Dictionary ✖ ✖ ✔ ✔

Save words to history ✔ ✔ ✔ ✔

Bookmark words ✔ ✔ ✔ ✔

Work offline ✖ ✖ ✔ ✔

Anki Pan Final Report ver1.0 **II. PROJECT MANAGEMENT PLAN**

**1. PROJECT OVERVIEW**

**1.1. Project description**

In this project, we will develop an Android application that support Japanese learner in reading Japanese book. User can use this application to scan Japanese in a book page and look up for the meaning of each words. This will save user’s time for searching words in the book that they do not understand, because they do not have to type every single words. The Application will be design so that user have to do least but receive best result. Beside, we will also develop a business service for admins to manage dictionary database.

**1.2. Scope**

This project covers all processes, from planning, requirement specification, design, development, to testing.

Project team will develop an Android Application for user to scan Japanese document and search words’ meaning, and a server to manage dictionary database and provide dictionary download service for the Application.

❖ **Functional requirements:**

The Application allows user to scan text in Japanese documents and search for words’ meaning in dictionaries. All searched words will be saved to history. User can also add a word to their favorite list. Application provides dictionary packages for user to download and use for searching word.

The server is developed for Admins and Roots Admins of Anki pan system. Admin / Root Admin can login, logout, manage their profile, manage dictionary packages (upload, edit, delete). Root Admin can add / edit / delete Admins’ accounts.

❖ **Non-functional requirements:**

The Application must be design for user’s convenience. It should require no internet access to run, except for downloading dictionary package. Interface design should be good looking and easy to understand. Time delay for image processing and text recognition must be optimized.

**1.3. Standard Objectives**

- This project must be finished no later than 15/08/2015

- The final Application covers 100% of requirements

- The 6 team members give best effort to complete the project

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Anki Pan Final Report ver1.0 **1.4. Milestones and Deliverables**

**1.4.1. Milestones**

**No. Task Start date End date**

1 Approve Project’s initial idea 11/05/2015 11/05/2015

2 Create and submit Report 1:

Introduction

14 18/05/2015 22/05/2015

3 Create and submit Report 2: Project

Management Plan ver1.0

28/05/2015 1/06/2015

4 Create and submit Report 3: Software Requirement Specification ver1.0

2/06/2015 5/06/2015

5 Design interface ver1.0 3/06/2015 5/06/2015

6 Create Report 4: Software Architecture

design ver1.0

5/06/2015 5/06/2015

7 Create and submit Test plan ver1.0 8/06/2015 10/06/2015

8 Evaluate Increment 1 12/06/2015 12/06/2015

9 Design database ver1.0 17/06/2015 22/06/2015

10 Report result of testing Tesseract

library

23/06/2015 23/06/2015

11 Complete Scan screen 9/07/2015 9/07/2015

12 Evaluate Increment 2 13/07/2015 13/07/2015

13 Complete server 22/07/2015 22/07/2015

14 Create & execute & report ST of server 20/07/2015 24/07/2015

15 Complete Dictionary screen 23/07/2015 23/07/2015

16 Complete Result screen 23/07/2015 23/07/2015

17 Complete image processing library 29/07/2015 29/07/2015

18 Complete History screen 30/07/2015 30/07/2015

19 Complete Setting screen 31/07/2015 31/07/2015

20 Create & execute & report IT 30/07/2015 2/08/2015

21 Evaluate Increment 3 3/08/2015 3/08/2015

22 Create and submit Report 6: User

manual

5/08/2015 6/08/2015

23 Execute & report ST of Application 5/08/2015 7/08/2015

24 Submit final report of Testing 7/08/2015 7/08/2015

25 Submit final report 14/08/2015 14/08/2015

Anki Pan Final Report ver1.0 **1.4.2. Deliverables**

**No. Deliverables Format Delivery**

**date**

15 **Verified by**

**Deliver Medium**

❖ **Initial**

1 Introduction ver1.0 .pdf 22/05/2015 Supervisor Email

MM\_15052015 .pdf 15/06/2015 Supervisor Email

MM\_22052015 .pdf 22/05/2015 Supervisor Email

WR\_W1\_22052015 .pdf 22/05/2015 Supervisor Email

❖ **Increment 1**

Communication matrix ver1.0

.xls 1/06/2015 Supervisor Email

Risk register ver1.0 .xls 1/06/2015 Supervisor Email

Work schedule .mpp 1/06/2015 Supervisor Email

Project management plan ver1.0

.pdf 1/06/2015 Supervisor Email

Software requirement specification ver1.0

.pdf 5/06/2015 Supervisor Email

Component design .asta 5/06/2015 Supervisor Email

Test plan ver1.0 .pdf 11/06/2015 Supervisor Email

MM\_01062015 .pdf 1/06/2015 Supervisor Email

MM\_12062015 .pdf 12/06/2015 Supervisor Email

WR\_W3\_29052015 29/05/2015 Supervisor Email

WR\_W4\_05062015 05/06/2015 Supervisor Email

WR\_W5\_12062015 12/06/2015 Supervisor Email

❖ **Increment2**

Design of database .jpg 22/06/2015 Supervisor Email

Result of testing Tesseract

.xls 23/06/2015 Supervisor Email

MM\_15062015 .pdf 15/06/2015 Supervisor Email

MM\_29062015 .pdf 29/06/2015 Supervisor Email

WR\_W6\_19062015 19/06/2015 Supervisor Email

WR\_W7\_27062015 27/06/2015 Supervisor Email

WR\_W8\_12072015 12/07/2015 Supervisor Email

Anki Pan Final Report ver1.0 ❖ **Increment 3**

Software requirement specification ver2.10

16 .pdf 14/07/2015 Supervisor Email

Work schedule ver2.0 .mpp 14/07/2015 Supervisor Email

Project management plan ver2.0

.pdf 14/07/2015 Supervisor Email

Introduction ver2.0 .pdf 16/07/2015 Supervisor Email

Screen design ver1.0 .pdf 29/07/2015 Supervisor Email

MM\_20072015 .pdf 20/07/2015 Supervisor Email

MM\_28072015 .pdf 28/07/2015 Supervisor Email

WR\_W10\_19072015 .pdf 19/07/2015 Supervisor Email

WR\_W11\_26072015 .pdf 26/07/2015 Supervisor Email

WR\_W12\_02082015 .pdf 02/08/2015 Supervisor Email

❖ **Increment 4**

User manual ver1.0 .pdf 6/08/2015 Supervisor Email

Database design ver1.1

.pdf 6/08/2015 Supervisor Email

Software detail design ver2.0

.pdf 7/08/2015 Supervisor Email

Final report of Testing .xls 7/08/2015 Supervisor Email

Final report

.pdf 13/07/2015 Supervisor Email

hard copy

14/07/2017 FPT

University

Direct

WR\_W13\_09082015 .pdf 09/08/2015 Supervisor Email

WR\_W14\_16082015 .pdf 16/08/2015 Supervisor Email

Anki Pan Final Report ver1.0 **2. PROJECT ORGANIZATION**

**2.1 Software Process Model**

*Figure 3: Incremental and Iterative Model*

In this project, we apply Incremental and Iterative model as development process model.

**2.2 Project Lifecycle**

This project is divided into 6 phases: Initiation, Increment 1, Increment 2, Increment 3, Increment 4, Closing. Each Increment goes through planning, requirement specification, analysis and design, development, testing and evaluation. In each Incremental we bases on result of the previous Increment to plan and specify requirement and develop additional function for the system. Project manager monitors and controls the progress of project team through out the project.

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Anki Pan Final Report ver1.0 **2.3 Roles and Responsibilities**

*Figure 4: Organization structure*

**Role Full name Responsibility**

Instructor Tran Binh Duong - Give instruction for project team

- Verify deliverables - Supervise project team’s status

PM Bui Hong Nhung Have overal responsibility of the project

- Create project plan - Assign task to team members - Tracking team member’s work - Report work status to the instructor

❖ Requirement analysis team

SRS leader Nguyen Duc Huy

Hoang

18 Complete SRS document and submit to PM

Member #1 Bui Hong Nhung Create user case diagram

Member #2 Vu Hong Thai Specify non-functional requirent

❖ Design team

Main designer

Le Thanh Binh Design interface for Application and server

Anki Pan Final Report ver1.0 Designer #1 Vu Hong Thai Support in design for Application

Designer #2 Nguyen Duc Huy

Hoang

19 Support in design for server

❖ Development team

Technical leader

Vu Hong Thai - Train other member of Android

development - Create coding convention - Decide technique and tools to be used - Develop android Application - Create SDD

Developer #1 Nguyen Duc Huy

Hoang

- Code server

Developer #2 Pham Trong

Nghia

- Design database - Code for database related functions of

android Application

Developer #3 Bui Hong Nhung - Develop image processing library

❖ Test team

Test leader Ngo Thi Mai - Create test plan

- Create test cases - Execute text cases - Report test result

Tester #1 Le Thanh Binh - Create test cases - Execute test case

**3. TOOLS AND INFRASTRUCTURES**

**3.1. Hardware**

- Personal computer for coding and testing with minimum configuration of 2GB

RAM, 80GB of hard disk, Intel core 2 Duo

- Smart phone run on Android operating system

- Internet network connection

Anki Pan Final Report ver1.0 **3.2. Software**

**Category Software name Version**

Operating system Microsoft Windows 7 Professional

Office tools Microsoft Word 2010

Microsoft Excel 2010

Microsoft Power point 2010

Management tool Microsoft Project 2010

Trello

Google Driver

Design tool Astah 6.8.0

www.draw.io

Adobe Photoshop CS6

Development tool Eclipse

Database tool SQLite manager 0.8.1

MySQL

Source code management tool

20 Github.com

Anki Pan Final Report ver1.0 **4. SCHEDULES**

**4.1. Detail Schedules**

ID Task Name Duration Start Finish Predecessors Resource Names

1 **Pre-initiate 6 days Mon 04/05/15 Sun 10/05/15** 2 Training on Android development 5 days Mon 04/05/15 Fri 08/05/15 NghiaPT,BinhLT 3 Research on Japanese detection library 5 days Mon 04/05/15 Fri 08/05/15 HoangNDH,NhungBH,ThaiVH 4 **Initiate 9.5 days Mon 11/05/15 Fri 22/05/15** 5 **Kick off meeting 0.5 days Mon 11/05/15 Mon 11/05/15 BinhLT,HoangNDH,MaiNT ,NghiaPT,Nhun** 6 Approve Project's initial idea 0.25 days Mon 11/05/15 Mon 11/05/15 7 Define member's responsibiliies 0.25 days Mon 11/05/15 Mon 11/05/15 8 Set up tools 1 day Tue 12/05/15 Tue 12/05/15 9 **Training 7 days Wed 13/05/15 Thu 21/05/15** 10 Training on Android development 7 days Wed 13/05/15 Thu 21/05/15 NghiaPT 11 Study OpenCV library & image processing

steps

21

04 May '15 M7 days Wed 13/05/15 Thu 21/05/15 HoangNDH,NhungBH

12 **Meeting with instructor 0.5 days Fri 15/05/15 Fri 15/05/15 BinhLT,HoangNDH,Instructor[10%],MaiNT** 13 Review project's idea 0.5 days Fri 15/05/15 Fri 15/05/15 14 Discuss on technique to be used 0.5 days Fri 15/05/15 Fri 15/05/15 15 Note for project's deliverables 0.5 days Fri 15/05/15 Fri 15/05/15 16 **Create project introduction document 4 days Mon 18/05/15 Fri 22/05/15** 17 Research on Japanese study in Vietnam 1 day Mon 18/05/15 Mon 18/05/15 MaiNT ,NghiaPT 18 Do survey on Japanese study in Vietnam 3 days Mon 18/05/15 Wed 20/05/15 MaiNT ,NghiaPT,NhungBH 19 Research on existing product 1 day Mon 18/05/15 Mon 18/05/15 ThaiVH 20 Create project introduction document 1 day Thu 21/05/15 Thu 21/05/15 17,18,19 NhungBH 21 Submit Introduction document 0 days Fri 22/05/15 Fri 22/05/15 20 NhungBH 22 **Meeting with instructor 0.5 days Fri 22/05/15 Fri 22/05/15 BinhLT,HoangNDH,Instructor[10%],MaiNT** 23 Comment on Introduction document 0.5 days Fri 22/05/15 Fri 22/05/15 24 Discuss on Keypoint detection of OpenCV 0.5 days Fri 22/05/15 Fri 22/05/15

*Figure 5: Schedule for Pre-initiate and Initiate phase*

Anki Pan Final Report ver1.0 ID Task Name Duration Start Finish Predecessors Resource Names

25 **Increment 1: Understand team's ability 14.5 days Mon 25/05/15 Fri 12/06/15** 26 Planning **3 days Thu 28/05/15 Mon 01/06/15** 27 Create PMP **3 days Thu 28/05/15 Mon 01/06/15** 28 **Choose process model** 0.25 days Thu 28/05/15 Thu 28/05/15 NhungBH,ThaiVH 29 **Create work schedule** 0.75 days Thu 28/05/15 Thu 28/05/15 NhungBH 30 Create risk management plan 0.5 days Fri 29/05/15 Fri 29/05/15 BinhLT,NhungBH 31 Create communication management plan0.5 days Fri 29/05/15 Fri 29/05/15 HoangNDH,NhungBH 32 Complete project plan 0.5 days Mon 01/06/15 Mon 01/06/15 NhungBH 33 **Submit PMP to Supervisor** 0.5 days Mon 01/06/15 Mon 01/06/15 32FF NhungBH 34 Requirement **3 days Tue 02/06/15 Fri 05/06/15** 35 Create SRS 3 days Tue 02/06/15 Thu 04/06/15 NhungBH,HoangNDH 36 **Submit SRS to supervisor** 0 days Fri 05/06/15 Fri 05/06/15 35 NhungBH 37 Analysis and design **2 days Thu 04/06/15 Fri 05/06/15** 38 Interface design **2 days Wed 03/06/15 Fri 05/06/15** 39 Design dictionary screen 2 days Wed 03/06/15 Thu 04/06/15 35FS-2 days BinhLT,NghiaPT,ThaiVH 40 **Submit design to group** 0 days Fri 05/06/15 Fri 05/06/15 39 BinhLT 41 Architecture design **1 day Fri 05/06/15 Fri 05/06/15** 42 Design components structure for

application

22

04 May '15 M1 day Fri 05/06/15 Fri 05/06/15 35 ThaiVH

43 Implementation **14 days Mon 25/05/15 Thu 11/06/15** 44 Study **5 days Mon 25/05/15 Fri 29/05/15** 45 Study SQLite 5 days Mon 25/05/15 Fri 29/05/15 NghiaPT 46 **Study test process & test related term** 5 days Mon 25/05/15 Fri 29/05/15 MaiNT 47 Study more about photoshop 4 days Mon 25/05/15 Thu 28/05/15 BinhLT 48 Coding **4 days Mon 08/06/15 Thu 11/06/15 39,47 ThaiVH** 49 **Demo of dictionary functions** 3 days Mon 08/06/15 Wed 10/06/15 NghiaPT 50 Image processing library ver1.0 3 days Mon 08/06/15 Wed 10/06/15 NhungBH 51 Demo application 1 day Thu 11/06/15 Thu 11/06/15 49,50 ThaiVH 52 **Testing 4 days Mon 08/06/15 Thu 11/06/15** 53 **Create test plan** 3 days Mon 08/06/15 Wed 10/06/15 35FS+1 day MaiNT 54 Submit test plan to PM 0 days Thu 11/06/15 Thu 11/06/15 53 MaiNT 55 Review test plan 1 day Thu 11/06/15 Thu 11/06/15 53 NhungBH 56 Evaluation **0.5 days Fri 12/06/15 Fri 12/06/15 48 BinhLT,HoangNDH,Instructor[10%],MaiN** 57 **Evaluate demo application** 0.5 days Fri 12/06/15 Fri 12/06/15 58 Set goals for next increment 0.5 days Fri 12/06/15 Fri 12/06/15

*Figure 6: Schedule for Increment 1*

Anki Pan Final Report ver1.0 ID Task Name Duration Start Finish Predecessors Resource Names

59 Increment 2: Develop main functions **20.5 days Mon 15/06/15 Mon 13/07/15** 60 **Planning 1 day Mon 15/06/15 Mon 15/06/15** 61 Review and update PMP 1 day Mon 15/06/15 Mon 15/06/15 NhungBH 62 Requirement **2 days Mon 15/06/15 Tue 16/06/15 HoangNDH** 63 Add more user cases 2 days Mon 15/06/15 Tue 16/06/15 HoangNDH 64 **Analysis and design 11 days Wed 17/06/15 Wed 01/07/15 62** 65 Database design **4 days Wed 17/06/15 Mon 22/06/15** 66 Design Database for web service 1 day Wed 17/06/15 Wed 17/06/15 NghiaPT,HoangNDH 67 Design database for dictionary 2 days Thu 18/06/15 Fri 19/06/15 NghiaPT,ThaiVH 68 Review and Re-design database for

dictionary

23

04 May '15 M1 day Mon 22/06/15 Mon 22/06/15 Instructor[10%],NghiaPT,ThaiVH

69 Approve on database design 0 days Mon 22/06/15 Mon 22/06/15 68FF NhungBH,ThaiVH,Instructor[10%] 70 **Architecture design 2 days Tue 23/06/15 Wed 24/06/15** 71 Design for web service 1 day Tue 23/06/15 Tue 23/06/15 ThaiVH,HoangNDH[50%] 72 Design for application 1 day Wed 24/06/15 Wed 24/06/15 63,69,71 NghiaPT,ThaiVH 73 **Interface design 7 days Tue 23/06/15 Wed 01/07/15** 74 Design Dictionary, History screen 3 days Tue 23/06/15 Thu 25/06/15 BinhLT 75 Re-design application screen 3 days Mon 29/06/15 Wed 01/07/15 BinhLT 76 **Implementation 19 days Tue 16/06/15 Fri 10/07/15** 77 **Test Tesseract library 6 days Tue 16/06/15 Tue 23/06/15** 78 Develop tool for creating text image 3 days Tue 16/06/15 Thu 18/06/15 NhungBH 79 Create test data 3 days Tue 16/06/15 Thu 18/06/15 MaiNT 80 Test Tesseract with created image set 1 day Fri 19/06/15 Fri 19/06/15 78,79 NhungBH 81 **Summarize test result** 1 day Mon 22/06/15 Mon 22/06/15 80 MaiNT ,NhungBH 82 Report test result 0 days Tue 23/06/15 Tue 23/06/15 81 83 Develop image processing library **8 days Mon 29/06/15 Wed 08/07/15** 84 **Improve functions to extract text and**

5 days Mon 29/06/15 Fri 03/07/15 82 NhungBH **text line** 85 Convert image to threshold image 3 days Mon 06/07/15 Wed 08/07/15 86 Develop functions of web service 12 days Wed 24/06/15 Thu 09/07/15 66,71 87 Develop application **12 days Thu 25/06/15 Fri 10/07/15** 88 **Code Dictionary screen** 12 days Thu 25/06/15 Fri 10/07/15 69,72 NghiaPT 89 Code Scan and Result screen 8 days Tue 30/06/15 Thu 09/07/15 69,83FF+1 day ThaiVH 90 Testing **13 days Wed 24/06/15 Sat 11/07/15** 91 Create ST test case for dictionary 2 days Wed 24/06/15 Thu 25/06/15 63 MaiNT 92 Create ST test case for history screen 2 days Fri 26/06/15 Mon 29/06/15 MaiNT 93 Create & execute UT test case for image

1 day Thu 09/07/15 Thu 09/07/15 83 NhungBH processing library 94 **Create & execute UT test case for web service**1 day Fri 10/07/15 Fri 10/07/15 86 HoangNDH 95 Create & execute UT test case for Scan functions 1 day Fri 10/07/15 Fri 10/07/15 89 ThaiVH 96 Create & execute UT test case for

Dictionary functions

*Figure 7: Schedule for Increment 2*

1 day Sat 11/07/15 Sat 11/07/15 88 NghiaPT

97 **Report UT result** 0 days Sat 11/07/15 Sat 11/07/15 94,93,96,95 ThaiVH 98 Evaluation **0.5 days Mon 13/07/15 Mon 13/07/15 76 BinhLT,HoangNDH,Instructor[10%],Mai** 99 Report result of AKP\_ImageProcessor 0.5 days Mon 13/07/15 Mon 13/07/15 NhungBH 100 **Evaluate application** 0.5 days Mon 13/07/15 Mon 13/07/15 101 **Evaluate web service** 0.5 days Mon 13/07/15 Mon 13/07/15

Anki Pan Final Report ver1.0 ID Task Name Duration Start Finish Predecessors Resource Names

102 Incremental 3: Complete all functions **14.5 days Tue 14/07/15 Mon 03/08/15 59** 103 Planning **1 day Tue 14/07/15 Tue 14/07/15** 104 Review and update PMP 1 day Tue 14/07/15 Tue 14/07/15 NhungBH 105 **Requirement 3 days Tue 14/07/15 Thu 16/07/15** 106 Review and update SRS 1 day Tue 14/07/15 Tue 14/07/15 HoangNDH 107 Update Introduction document 2 days Wed 15/07/15 Thu 16/07/15 NhungBH 108 **Design 12 days Tue 14/07/15 Wed 29/07/15** 109 Interface design **12 days Tue 14/07/15 Wed 29/07/15** 110 Re-design interface for application 2 days Tue 14/07/15 Wed 15/07/15 BinhLT 111 Design interface for web service 2 days Wed 22/07/15 Thu 23/07/15 BinhLT 112 **Create screen design document** 3 days Mon 27/07/15 Wed 29/07/15 BinhLT 113 Submit screen design document to PM 0 days Wed 29/07/15 Wed 29/07/15 112FF BinhLT 114 Implementation **13 days Wed 15/07/15 Fri 31/07/15** 115 Web service **10 days Wed 15/07/15 Tue 28/07/15** 116 Fix error in changing password 3 days Wed 15/07/15 Fri 17/07/15 HoangNDH 117 Complete web service' functions 3 days Mon 20/07/15 Wed 22/07/15 HoangNDH 118 **Implement interface for web service** 3 days Fri 24/07/15 Tue 28/07/15 111,117 HoangNDH 119 Application **12 days Thu 16/07/15 Fri 31/07/15** 120 Complete Dictionary screen 6 days Thu 16/07/15 Thu 23/07/15 110 NghiaPT 121 **Complete History screen** 5 days Fri 24/07/15 Thu 30/07/15 120 NghiaPT 122 Complete result screen 6 days Thu 16/07/15 Thu 23/07/15 ThaiVH 123 Code setting screen 5 days Mon 27/07/15 Fri 31/07/15 ThaiVH 124 **Add functions to crop selected text area**2 days Tue 28/07/15 Wed 29/07/15 NhungBH 125 **Testing 14 days Tue 14/07/15 Sun 02/08/15** 126 Review and update test plan 1 day Tue 14/07/15 Tue 14/07/15 MaiNT 127 Submit test plan 0 days Tue 14/07/15 Tue 14/07/15 126FF MaiNT 128 Add ST test case for application 3 days Wed 15/07/15 Fri 17/07/15 MaiNT 129 **Create ST test case for web service** 3 days Mon 20/07/15 Wed 22/07/15 128 MaiNT 130 ST web service 2 days Thu 23/07/15 Fri 24/07/15 129 MaiNT 131 Report web service test result 0 days Fri 24/07/15 Fri 24/07/15 130FF MaiNT 132 **Create & execute UT Result screen's functions** 0.5 days Fri 24/07/15 Fri 24/07/15 122 ThaiVH 133 Create & execute UT History functions 0.5 days Fri 31/07/15 Fri 31/07/15 121 NghiaPT 134 Create & execute UT Dictionary functions 0.5 days Fri 31/07/15 Fri 31/07/15 120 NghiaPT 135 Create & execute UT functions of cropping

text area

24

04 May '15 M0.5 days Thu 30/07/15 Thu 30/07/15 124 NhungBH

136 **Create & execute UT Setting functions** 0.5 days Sat 01/08/15 Sat 01/08/15 123 ThaiVH 137 Create IT test case 2 days Thu 30/07/15 Fri 31/07/15 BinhLT 138 Execute IT test cases 1 day Sat 01/08/15 Sat 01/08/15 123 MaiNT ,BinhLT 139 Report UT result 0.5 days Sun 02/08/15 Sun 02/08/15 NghiaPT,ThaiVH 140 Report IT result 0 days Sun 02/08/15 Sun 02/08/15 138 MaiNT 141 Evaluation **0.5 days Mon 03/08/15 Mon 03/08/15 BinhLT,HoangNDH,Instructor[10%],MaiNT** 142 **Evaluate web service** 0.5 days Mon 03/08/15 Mon 03/08/15 143 Evaluate application 0.5 days Mon 03/08/15 Mon 03/08/15

*Figure 8: Schedule for Increment 3*

Anki Pan Final Report ver1.0 ID Task Name Duration Start Finish Predecessors Resource Names

04 May '15 M144 Increment 4: Refine **10 days Sat 01/08/15 Sat 15/08/15** 145 **Planning 1 day Tue 04/08/15 Tue 04/08/15** 146 Review and Update plan for Increment 4 1 day Tue 04/08/15 Tue 04/08/15 NhungBH,BinhLT,HoangNDH,MaiNT ,Nghi 147 Implementation **10 days Sat 01/08/15 Fri 14/08/15** 148 **Complete all document 3 days Wed 05/08/15 Fri 07/08/15** 149 **Create user manual** 2 days Wed 05/08/15 Thu 06/08/15 NhungBH 150 Review and Complete database design

document

*Figure 9: Schedule for Increment 4 and Closing phase*

**5. COMMUNICATION MANAGEMENT**

**5.1. Stakeholders and Contacts**

**Name Title Role Contacts**

Tran Binh Duong Mr. Supervisor duongtb@fpt.edu.vn

(84) 936-168-165

Bui Hong Nhung Mrs. PM Nhungbhse02082@fpt.edu.vn

(84) 166-7762-099

Vu Hong Thai Mr. Technical Leader Thaivhse02654@fpt.edu.vn

(84) 169-820-4900

Le Thanh Binh Mr. Main Designer Binhlnse02917@fpt.edu.vn

(84) 914-465-993

Nguyen Duc Huy Hoang

25 2 days Wed 05/08/15 Thu 06/08/15 NghiaPT

151 Review and Complete SDD 3 days Wed 05/08/15 Fri 07/08/15 ThaiVH 152 Refine application **10 days Sat 01/08/15 Fri 14/08/15** 153 **Update result screen** 2 days Sat 01/08/15 Sun 02/08/15 ThaiVH 154 Fix bugs detected by testing 5 days Mon 10/08/15 Fri 14/08/15 NghiaPT,ThaiVH 155 Testing **3 days Wed 05/08/15 Fri 07/08/15** 156 **System test: Test application** 3 days Wed 05/08/15 Fri 07/08/15 BinhLT,MaiNT 157 Report application test result 0 days Fri 07/08/15 Fri 07/08/15 156FF MaiNT 158 Submit final report of testing 0 days Fri 07/08/15 Fri 07/08/15 NhungBH 159 Create final report **4 days Wed 12/08/15 Sat 15/08/15** 160 **Create final report** 2 days Mon 10/08/15 Tue 11/08/15 NhungBH 161 Get Instructor's approve on final report 0.5 days Thu 13/08/15 Thu 13/08/15 148,157 Instructor[10%] 162 Submit final report to FPT universtiy 0 days Fri 14/08/15 Fri 14/08/15 161 NhungBH 163 Closing **1 day Mon 17/08/15 Mon 17/08/15** 164 Presentaion BinhLT,HoangNDH,MaiNT ,NghiaPT,Nhun

Mr. Developer Hoangndhse02651@fpt.edu.vn

(84) 965-957-811

Pham Trong Nghia Mr. Developer Nghiaptse02781@fpt.edu.vn

(84) 982-822-412

Ngo Thi Mai Mrs. Test Leader Maintse02218@fpt.edu.vn

(84) 966-656-692

Anki Pan Final Report ver1.0 **5.2. Communication Management Approach**

Project team communicate frequently to ensure the progress of each member’s work. Project manager report to the Supervisor frequently and honestly so that the Supervisor can track the team’s work and give support/advice as need.

All request for change or proposal of new ideal must be discussed in team. If project team agree to change, project team must then discuss with the Supervisor. Once the change is approved, project manager will update the plan and to project team and Supervisor.

The communications requirements are documented in the Communications Matrix of this document. The Communications matrix will be used as guide for what/when/how/who/whom to communicate through out the project.

**5.3. Communication Requirements**

The project manager will communicate with the Supervisor in order to determine his preferred frequency and time of communication.

As all project team members still take part in classes while doing project, project manager should communicate to understand their schedule, and therefore specify appropriate communication plan for the team.

**5.4. Communication Method and Technologies**

- Create a Facebook private group for team member to discuss and share informal information and activity. This would be a place for member to communicate freely, and therefore would help in strengthen relationship between members.

- Use Google docs to share documents

- Public weekly reports of team members in Google docs to keep them writing report. This will help project manager in tracking work of team members, and also help team member understand progress of the others.

- Update Work schedule before weekly meeting with Supervisor

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**5.5 Communication Matrix**

**Communication Type**

27 **Objective Medium Frequency Audience Owner Deliverable Format**

Kickoff Meeting Discuss and agree on

project objective, and scope

- Face to face Once (At the

start of the project)

- Instructor - Project Team

Project Manager

- Meeting Minutes - Soft copies on

Microsoft Word

Project Team Meeting

Review status of the project. Discuss solutions for any raised issues. Assign tasks for team members

- Face to face - Email - Conversation

(Skype)

3 times per week, base on personal schedule.

- Project Team Project

Manager

- Project schedule - Assigned tasks

- Soft copies on

Microsoft Word - Assigned tasks on

Trello

Project Plan Meeting

Discuss and planning project process

- Face to face - Email - Conversation

(Skype)

As needed - Project Team Project

Manager

- Meeting Minutes - Project Management

Plan

- Soft copies on

Microsoft Word - WBS on Microsoft

Project

Architecture Design Meeting

Review prototype Discuss, contribute and review System Architecture Design

- Face to face - Email

As needed - Project Team Technical

Leader

- Meeting Minutes - System Architecture Design Document

- Soft copies on

Microsoft Word - System

Architecture Design on Astah

GUI Design Meeting

Discuss, contribute and review GUI Design

- Face to face - Email

As needed - Project Team Technical

Leader

- Meeting Minutes - GUI Design - Document

- Soft copies on

Microsoft Word - GUI Design on

Photoshop

Database Design Meeting

Discuss, contribute and review Database Design

- Face to face As needed - Project Team Technical

Leader

- Meeting Minutes - Database Design

- Soft copies on

Microsoft Word

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Test Plan

Discuss, and review

- Face to face As needed - Project Team Technical

- Meeting Minutes

- Soft copies on Meeting

Test Plan

Leader

- Test Plan

Microsoft Word

Bug Report Report found bugs to

- Bug Report - Soft copies on team members and

Microsoft Excel assign fix tasks

Personal Weekly Report

28 - Face to face

As needed - Project Team Test - Email

Leader

- Soft copies on

Microsoft Excel

Project team weekly report

Report task status

- Email

Every Friday - Project team Project

- Personal Weekly (what is done, what

- Google driver

Manager

Report will be done next week, any issue) of personal work

- Weekly report - Soft copies on

Microsoft word

Meeting with Instructor

Report task status

- Email Every

- Instructor Project (what is done, what

Saturday

manager will be done next week, any issue)

- Soft copies on

Microsoft Word

Unexpected Issue

Report project status

- Face to face

Every

- Instructor

Project

- Meeting Minutes of team’s work to

- Email

Monday

- Project Team

Manager

- Team Weekly Report instructor Get advices for project from instructor

Find a solution for

- Face to face

As needed - Instructor

Project

- Meeting Minutes - Soft copies on any unexpected

- Conversation

- Project Team

Manager

Microsoft Word raised issues.

(Skype) - Facebook

private group

Anki Pan Final Report ver1.0 **6. RISK MANAGEMENT[5]**

**6.1. Risk Management Approach**

The approach to manage risks for this project is the process by which project team identifies and ranks the various risks. The most likely and high impact risks will be added to the risk register and will be delivered to all team members, to ensure that every member perceive of these potential risks. Project manager must pay attention to all items in risk register during project and take appropriate action when a risk triggered. Upon the completion of the project, project manager will analyze each risk as well as the management process. Base on this analysis, project manager will identify any improvements that can be make to risk management process, and capture these improvements as a part of lessons learned.

**6.2. Risk Identification**

Risk identification will be conducted in the first project team meeting. The method used by project team to identify risk will be brainstorming. Every team member raise their idea about any risk that might happen. PM will note down team member’s idea. There must be no judgment or bias during brainstorming. When there is no other idea, project team will review all risks that have been note down. Risks that is almost unlikely to happen will be erased. Risks with high impact or most likely to happen will be kept. There should be no more than 10 risks to be kept. Besides, project team will review other capstone project in order to determine the most common risks and the strategies used to mitigate those risks.

**6.3. Risk Qualification and Prioritization**

In order to determine the severity of the risked identified by the project team, a probability and impact factor will be assigned to each risk. PM then will prioritize risks base on their probability and impact. Finally, PM will create a probability – impact matrix.

**6.4. Risk Monitoring**

Risk monitoring will be a continuous process through out the project. Avoidance plan should be taken carefully from start of the project. In case a risk is about to happen, PM will apply contingency plan to prevent risk. If risk is already happen, PM apply fall back plan to minimize impact.

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**6.5. Risk Register**

**6.5.1. Risk description**

**No. Risk Name Description Category Route cause Probabil**

**ity Impact Trigger**

Lack of skills and

R1

ability for a specified work

30 Team members are unable to complete work because they do not know how to do Human

Team members have not studied or experienced similar work Medium High

Team members take a lot of time to do their task / Team member informed that they can not do the task

R2

Team member conflict

Team member disagree with each others and refuse to work Human

Unclear requirement specification. Team members do not unify on solutions when problem occurs.

When somebody does not work because of disagreement

R3

Medium High

Requirement changes

The scope may change, unplanned get added requirements may

Requirement

Request from Supervisor or team member for new function, or to change requirement

When Supervisor or team member request to change requirement

R4

Medium High

User reject the product

Unfriendly GUI Large for downloading Application is not suitable with market trend

Lack of graphic design skill Does not optimize code Medium High

User complaint about the application

R5

Requirement

Team member distraction

Team members do not pay enough time for the project Human

Team members are busy with studying while doing project Medium High

Team members does not spend time for work and tasks are not completed on time

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Schedule flaws Time for one task may too

The project is planned

Somebody have much time to long or too short

assuming that all will take the

free and some did not finish R6

Trouble may occurs during

Estimates

most optimistic path possible

High Medium

their task on time process that makes task

Poor plan analysis longer than expected

Poor tem member assessment

R7 Unrealistic

expectation

31 Project team expects more than what they can do Requirement Team overestimated members' abilities are

Low High When nobody known how to

reach the goal

R8

Lack of

Supervisor may have not

Communicate with Supervisor

It takes 2 day or more for mail Supervisor

enough time to support

inefficiently

response. support

project team Human

Supervisor is busy personal

Meeting with Supervisor is business, and support many

hard to arranged. team at the same of time

**6.5.2. Probability – Impact matrix**

**High** R6

**Medium** R1, R2, R3, R4, R5

**Low** R8 R7

**Low Medium High**

**Impact**

Low Medium

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**6.5.3. Risk response plan & Risk status**

**No. Risk name**

32 **Risk response**

**Status Avoidance plan Contingency plan Fall back plan**

R1 Lack of skills and

ability for a specified work

Do well at training phase. PM should understand ability of each team member and assign right work for right person.

Assign more team members to support or to do the task.

Ask for support of external interfaces.

Activated / Solved

R2 Team member conflict

Clear requirement. Pay attention on team building activities.

Negotiate to deal with conflict. Report to Supervisor Not yes

active

R3 Requirement

changes

Specify software requirement between Supervisor and project team before start of development. Give special consideration in requirements.

Discuss with Supervisor to decide if project teams can follow old requirement.

Change requirement. Develop for new required functions.

Activated/ Solved

R4 User reject the product

Conduct a market survey Follow coding construction

Listen to users' complaint and find solution

Change requirement Not yes

active

R5 Team member

distraction

Understand team members' schedule and assign suitable tasks and set appropriate deadlines. Require team member to set high priority for the project.

Arrange team work frequently. Sketch deadline for the assigned tasks.

Assign task to other member.

Activated / Solved

R6 Schedule flaws Get to known team member skill

Use Microsoft Project tool

Member who has free time involve in and support to finish

Create new time schedule Activated /

Solved

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Add slack time for importance task task

If there are some task that has more time than usual, member who take responsibilities should help each other

R7 Unrealistic

expectation

33 Understand members' ability. Set appropriate goal and all team member should agree on common goal

Remove unnecessary functions, and focus on key functions

Change project Activated /

Solved

R8 Lack of Supervisor

support

Define a meeting schedule with Supervisor Use communication medium effectively

Reference from other source. Ask for support of other

interfaces.

Not yes active

Anki Pan Final Report ver1.0 **7. QUALITY MANAGEMENT**

**7.1. Quality Management Overview**

**7.1.1. Organization, Responsibilities, and Interfaces**

**Name Role Responsibilities**

Tran Binh Duong Supervisor - Helps define product quality

expectations. - Determines final acceptance of

product’s quality.

Bui Hong Nhung PM - Create quality plan

- Facilitate resolution of quality

issues, escalating as needed

Ngo Thi Mai Test leader Provide test and test management

Team members: - Vu Hong Thai - Pham Trong Nghia - Nguyen Duc Huy Hoang - Bui Hong Nhung

34 Developer - Provide feedback on quality plan,

help determine metrics and criteria for this project - Be a part of quality reviews and

provide feedback on deliverables

**7.1.2. Tools, Environment, and Interfaces**

**Tool Description**

**Cause-and-effect diagram**

Used to find the root cause problem when their is a complaint about quality problem.

**Flowchart** Used to illustrate a solution model for a problem.

**Control chart** Used to detect logical error of functions. Apply Seven Run

Rule.

**7.2. Quality Planning**

**7.2.1. Define Project Quality**

- ***System output***:

+ A server to manage dictionary package and provide download service for the application

+ An Android application supports end-users in scanning Japanese document and searching for words’ meaning.

Anki Pan Final Report ver1.0 - ***Functionality***:

+ Server allow admin / root admin to login, upload / edit / delete dictionary package. It also provide service to download dictionary package.

+ Android application has main functions: scans and recognize Japanese characters, translates, searches words in dictionary, and downloads dictionary packages from server.

- ***Performance***:

+ Time delay for image processing is less than 10s

+ Other functions of server perform well while dictionary package is downloading to the application

- ***Reliability***:

+ The application is available 24/7

+ Server can handle a least 1000 clients concurrently

+ The accuracy of Japanese detection is at least 80%

- ***Maintainability***:

+ Android application is easily to be updated without any crashes. Source code is readability, complies with coding convention.

+ System has to be design to be easy to extend.

- ***Security***

+ Information of admins / root admins on server is secured

**7.2.2. Measure Project Quality**

**Metric Goal**

Accurate - The accuracy of text line detection is at

least 80% - The accuracy of text recognition is a least equal Tesseract accuracy for image with out pre-processed.

Response of mobile application Time delay for image processing <= 10s

Bugs/Lines of Code UT: 8 – 9 bugs / KLOC ST: 2 – 4 bugs / KLOC *( based on Fsoft norms)*

Maximum deep of loops <= 4

Android Program Size <= 100 MB

Algorithm complexity <= O(n^2)

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Anki Pan Final Report ver1.0 Android version support Support Android version 4.4.2 Kitkat to

5.0.1 Lollipop

Android screen support Multiscreen

Must be tested on 320x480, 768x1024, 768x1336, 1080x1920 screens

Website support browser Support Chrome version 41.0.xxx, Firefox

version 36.0 or later.

**7.3. Quality Assurance**

**7.3.1. Analyze Project Quality**

**Milestone Deliverables Goal Review and**

**Approved**

5/06/2015 Interface design

ver1.0

36 - Good looking & easy-to-use - Cover all functions specified in

SRS

HoangNDH MaiNT

5/06/2015 Software

architecture design ver1.0

Design to be easy to extend Supervisor

23/06/2015 Result of testing

Tesseract library

- Tested with Hiragana, Furigana,

Kanji - Tested by single word and

sentence - Tested with different text size

ThaiVH Supervisor

22/07/2015 Server - Reveal API for use.

- Information of admins / root

admins on server is secured

MaiNT ThaiVH

23/07/2015 Dictionary

screen

Time delay for searching a word <= 1s

MaiNT

23/07/2015 Result screen The accuracy of text recognition is

a least equal Tesseract accuracy for image with out pre-processed.

MaiNT

29/07/2015 Image

processing library

- The accuracy of text line detection is at least 80% for image with text only - Text line extraction is <= 10s

ThaiVH MaiNT

2/08/2015 Integration test

report

30 – 34 test cases / KLOC 2 – 4 bugs / KLOC

NhungBH

7/08/2015 System test

report

30 – 34 test cases / KLOC 2 – 4 bugs / KLOC

NhungBH

Anki Pan Final Report ver1.0 **7.3.2. Improve Project Quality**

**Issue Action**

Difficult to track project’s progress

37 - Weekly report, team work 3 days / week - Using Trello to track team members’ work

Maintainability - Specify coding conventions document

- Concentrate on architecture design

Low quality code - Unit Test

- Peer review, peer coding among developers - Using Open Source and Framework: OpenCV,

Tesseract, Spring framework

Hard to gain 80% accuracy of text line extraction

Early study algorithms and combines some algorithms together to get higher precision

Reward and discipline - Teambuilding to increase communication ability

between project’s members - Have punishment rules when:

+ Submit terrible code (which causes to re-coding more than 10%) + Miss deadline

Acceptance of users Do survey to discovery what features user want from

this projects. Do it before design progress.

**7.4. Quality Control**

**Deliverables Goal Quality control**

**Frequency / activity**

**Interval**

Interface design - Good looking & easy-

to-use - Cover all functions specified in SRS

Designer has to: - Ask for advice of

some other designer - Take comment from

friends on completed work - Have approve from

SRS leader

Each time design a new screen

Software architecture design

Design to be easy to extend

Have review and judgment from Supervisor

On completion

Result of testing - Tested with Hiragana, Have approve from On completion

Anki Pan Final Report ver1.0 Tesseract library Furigana, Kanji

- Tested by single word

and sentence - Tested with different

text size

38 Test leader and Technical leader

Server - Reveal API for use

- Information of admins

/ root admins on server is secured

Testers execute security test

On completion

Dictionary screen

Time delay for searching a word <= 1s

PM requires developer to report to technical leader about method to be used

Report before and after coding

Result screen The accuracy of text

recognition is a least equal Tesseract accuracy for image with out pre- processed.

Technical leader , test leader review and evaluate image processing algorithm

Every new version of image processing library

Image processing library

- The accuracy of text line detection is at least 80% for image with text only - Text line extraction is

<= 5s

Technical leader , test leader review and evaluate image processing algorithm

Every new version of image processing library

Integration test report

30 – 34 test cases / KLOC 2 – 4 bugs / KLOC

PM requires testers to report on work

Weekly

System test report

30 – 34 test cases / KLOC 2 – 4 bugs / KLOC

PM requires testers to report on work

Weekly

**7.5. Action Plan**

**What Who When How Output**

Define coding convention

NhungBH 28/05/2015 Read standard coding

convention of Oracle Extract and modify to reuse it

Coding Convention *(10.1 in this document)*

Anki Pan Final Report ver1.0 Training

All team 13/05/2015 ThaiVH guides team Trello

members how to use Trello

Market

Survey summary research

Traning OpenCV

39 NhungBH

18/05/2015

Do survey to find out what NghiaPT

to functions users need MaiNT

22/05/2015

- OpenCV

Training Report - HelloWorld

Source Code Example

Research for image processing algorithms

NhungBH

13/05/2015

- Read OpenCV documents ThaiVH

to - Find out how to set up and HoangND

21/05/2015

complete ‘Hello World’ tutorial. - Try some core class and

functions for image processing.

Report on image processing library (steps, algorithm)

Training Unit Test

NhungBH 8/06/2015

- Research many to algorithms includes: 8/07/2015

+ Detect contours + Remove noise + Convert image to threshold - Actively discover and

evaluate each algorithm and decide what to use - Get Advice from

Supervisor and Experts

ThaiVH

13/05/2015 Training how to create and

Training Report NhungBH

perform Unit Test HoangND NghiaPT

Anki Pan Final Report ver1.0 **III. SOFTWARE REQUIREMENT SPECIFICATION**

**1. INTRODUCTION**

**1.1 Purpose**

This document provides developers, testers, QAs a complete and comprehensive description of both the functional requirement and non-functional requirements of the Anki Pan System. Developers base on this document to develop the system, and testers base on this to assure the quality of the output system. Project manager base on this document to create schedule and assign task to team members.

**1.2. Scope**

This document define all functional and non functional requirements for Anki Pan system.

**1.3. Overview**

Section 2 of this document provides overall information of the project, while excluding the specific requirements. Instead, it provides the background for those requirements, which are defined in Section 3

Section 3 describes all the requirements in detail, including functional requirements and non-functional requirements. Each function is described based on the following format:

- Use Case: the detailed description of all use cases

- Screen: The mockup/prototype of the screen which describes the workflow

of the Use Case

**2. OVERALL DESCRIPTION**

**2.1. Scope of work**

Project team will develop an Android Application for user to scan Japanese document and search words’ meaning, and a server to manage dictionary database and provide dictionary download service for the Application.

The Application includes below main functions: - Capture image - Detect Japanese characters in image captured by users - Select text in captured image - Search for meaning of Japanese words and Kanji in dictionaries

40

Anki Pan Final Report ver1.0 - Download dictionary: allow user to download dictionary package, each package

include a Japanese dictionary and a Kanji dictionary. - Save words to history - Bookmark words

The diagram below shows the flow of interact between user and application from capturing document to search word in dictionary.

*Figure 10: Flow of scan image and searching word*

The server is developed for admins of the system, with below main functions: - Login as admin or root admin - Logout - Manage user’ profile (add, delete, edit information) - Upload dictionary packages, each package includes 2 kind of dictionaries:

Japanese dictionary and Kanji dictionary - Manage dictionary packages (edit, delete)

Project team use open source for Japanese recognition. Dictionary database will be download from Internet.

**2.2. Assumptions**

N/A

41

Anki Pan Final Report ver1.0 **3. FUNCTIONAL REQUIREMENTS**

**3.1. Android application**

**3.1.1. User Case Diagram**

*Figure 11: User case diagram of Application*

42

Anki Pan Final Report ver1.0 **3.1.2. Functions**

**3.1.2.1. Main menu**

**3.1.2.1.1. User cases**

*UC – 1. View Main Menu*

*Figure 12: Screens of UC - 1*

Use Case ID UC-01 Use Name View main menu Actor User Description User views list of Screens in Anki Pan application Precondition N/A Trigger N/A Post-Condition View list of Screens in Anki Pan application Main flow Step Actor Action 1 User Tap the Menu icon on the top left corner of the screen 2 System Show list of Screens include:

1. Scan 2. Dictionary 3. History 4. Setting 5. Exit Each item go with its own icon

43

Anki Pan Final Report ver1.0 Alternative flow Exceptions N/A

*UC – 1.1 Select screen*

Use Case ID UC - 1.1 Use Name Select screen Actor User Description User selects a screen Precondition N/A Trigger N/A Post-Condition View screen that user selected Main flow Step Actor Action 1 User Tap on the entry of the screen in the Menu list that he

want to open 2 System If user tap on Scan, direct to scan screen

If user tap on Dictionary, direct to tab Result of Dictionary screen If user tap on History, direct to tab Favorite of History screen, and show all history If user tap on Setting, direct to tab Dictionary Setting of Setting screen Alternative flow Exceptions N/A

**3.1.2.1.2. Screen description**

**Field**

**Description Mand Name**

**atory**

44 **Length**

Header Include Main menu icon

and the title of the application, as describe below.

**Read only**

**Control type**

**Data Type**

- - - -

Title bar Show application name:

Anki Pan

- - Label - -

Menu button

The main menu button, tapping on this button will extend the menu list from the left of the screen, tapping on it again will hide the menu list

- - Button - -

Anki Pan Final Report ver1.0 **Field**

**Description Mand**

**Read**

**Length Name**

**atory**

**only**

Menu items list

45 **Control type**

**Data Type**

The list of the main menu - - List - -

**3.1.2.2. Scan**

**3.1.2.2.1. User cases**

*UC – 2. Scan document*

*Figure 13: Screens of UC - 2*

Use Case ID UC - 2 Use Name Scan document Actor User Description User scans a Japanese document Precondition User select Scan screen in UC – 1.1 Trigger N/A Post-Condition View document with all text lines have been

surrounded by rectangles Main flow Step Actor Action 1 System Show scan screen with a line in the middle and

Camera button 2 User User bases on the line shown on the screen to adjust

Anki Pan Final Report ver1.0 he smart phone so that the document is not so skew

User presses the Camera button 3 System Direct to Result tab of the Dictionary screen

Show the document with all text lines have been surrounded in rectangles Alternative flow Precondition 1 User In step 2 of main flow, user taps the Menu icon and

selects another screen 2 System Direct to the screen that user selected

If user selects Dictionary screen and he had scan a document before this, view the Result tab with the last status Exceptions N/A

**3.1.2.2.2. Screen description** Description of Scan screen:

**Field**

**Description Mand Name**

**atory**

46 **Length**

Header Include Menu icon and

the title of the application

**Read only**

**Control type**

**Data Type**

- - - -

Camera button

When tapping on this button, the system will capture image and perform image processing

- - Button - -

Tab bar The tab bar of the

dictionary feature, contain 3 items: Scan Result, JV Dictionary, Kanji Dictionary

- - Button - -

Anki Pan Final Report ver1.0 **3.1.2.3 Dictionary**

**3.1.2.3.1 User cases**

*UC – 3 Select text*

*Figure 14: Screens of UC – 3*

Use Case ID UC – 3 Use Name Select text Actor User Description User selects text on scanned image Precondition UC – 2 Trigger N/A Post-Condition Selected text area is surrounded by a rectange and

selected text is written on the text bar on top of screen Main flow Step Actor Action

47

Anki Pan Final Report ver1.0 1 User Tab finger on the first point of the text area that he want

to select and move the finger until the last point of the text area. 2 System View a Manifier with the zoomed out image of the area that user’s finger is on while his finger is moving on the screen so that user can see the text clear in case the text on the document is small. 3 System When user lifted up his finger, extract the exact text

area that user want to choose. User may missed some strokes of the first or last characters in the selected area. System check to extract the area that include all characters that user may intended to choose. 4 System Surround the exact text area by a rectangle 5 System Recognize text in the exact selected area and write to

the text field in top of the screen. Alternative flow Precondition UC-02 1 User Just makes one tap on the screen 2 System Do nothing. Keep the screen on current status Exceptions N/A

48

Anki Pan Final Report ver1.0 *UC – 4 Search in Japanese dictionary*

*Figure 15: Screens of UC – 4’ main flow*

49

Anki Pan Final Report ver1.0 *Figure 16: Screens of UC - 4' alternative flow 1*

Use Case ID UC – 4 Use Name Search in Japanese dictionary Actor User Description User searchs for word’s meaning in Japanese dictionary Precondition System is in dictionary screen Trigger N/A Post-Condition Show information of the word

Save the searched word, if it is available in the dictionary, to History Main flow Step Actor Action 1 User Tap to open tab Japanese dictionary 2 User Tap on the magnifier icon in the right of the text field on

top of the screen

50

Anki Pan Final Report ver1.0 3 System Show keyboard 4 User Type the word his want to search, then press Search key 5 System Search the word in text field in Japanese dictionary

- If the word are Hiragana / Katakana / Kanji: Search

all the words which have the first part matchs the searching word. For example: search for 交通 will return - If the word are Romaji: Search all the words which’s Hiragana writting have the first part matchs the searching word. For example: search for Aki will return 空き(あき)、あきあきました、秋風(あ きかぜ)

6 System Show a list of output words in form of extendable list

view, each entry includes a Star icon, word, its reading, the first meaning and word class. 7 User Tap on the Extend Icon of a entry 8 System Extend the entry and view full information of the word

(word, star icon, Hiragana writting, meaning, example...) Save the word in this entry to History Alternative flow 1 Precondition System is Dictionary screen 1 User User selects text in scanned document as in UC – 3 2 System Write the recognized text in user selected area to the

text field in the top of Dictionary screen 3 User Tap the tab Japanese dictionary 4 System View Japanese dicitonary tab. 5 System Follow steps 5 to 8 in main flow Alternative flow 2 Precondition User has typed a word and searched in Kanji dictionary

tab 1 User Tap the tab Japanese dictionary 2 System Follow step 5 to 8 of the main flow Alternative flow 3 Precondition 1 User After step 8 of the main flow, user tap the Extend icon of

the extending entry 2 System Change the entry to the short form with Star icon, word

and a brief information Exceptions In step 6 of main flow, if there is no word found, display

message “There is no result!”

51

Anki Pan Final Report ver1.0 *UC – 4.1 Add to favorite list (Japanese dictionary screen)*

*Figure 17: Screens of UC - 4.1*

Use Case ID UC – 4.1 Use Name Add to favorite list Actor User Description User add a word in Japanese dictionary to favorite list Precondition System is in tab Japanese dictionary

User has searched a word in Japanese dictionary, and System is showing a list of words, as in steps 6 of main flow of UC - 5 Trigger N/A Post-Condition The word is added to favorite list Main flow Step Actor Action 1 User Tap on the grey start icon in the entry of the word that

he want to add to favorite list 2 System Change the star to yellow

Add the word in the entry to favorite list in database Alternative flow 1 Precondition System is Japanese tab

User has expanded a entry, as in steps 8 of main flow of UC - 5 1 User Tap on the grey star icon of the expanding entry 2 User Change the star to yellow

Add the word in the entry to favorite list

52

Anki Pan Final Report ver1.0 Exceptions

*UC – 4.2 Remove from favorite list (Japanese dictionary screen)*

*Figure18: Screens of UC - 4.2*

Use Case ID UC – 4.2 Use Name Remove from favorite list Actor User Description User removes a word in Japanese dictionary form

favorite list Precondition System is in tab Japanese dictionary

User has searched a word in Japanese dictionary, and System is showing a list of words, as in steps 6 of main flow of UC - 5 Trigger N/A Post-Condition The word is removed from favorite list Main flow Step Actor Action 1 User Tap on the yellow start icon in the entry of the word

that he want to add to favorite list 2 System Change the star to grey

Remove the word in the entry from favorite list Alternative flow 1 Precondition System is Japanese tab

User has expanded a entry, as in steps 8 of main flow of UC - 5

53

Anki Pan Final Report ver1.0 1 User Tap on the yellow star icon of the expanding entry 2 User Change the star to grey

Add the word in the entry to favorite list in database Exceptions

*UC – 5 Search in Kanji dictionary*

*Figure 19: Screens of UC - 5' main flow*

54

Anki Pan Final Report ver1.0 *Figure 20: Screens of UC - 5' alternative flow 1*

Use Case ID UC – 5 Use Name Search in Kanji dictionary Actor User Description User searches for Kanji information in Kanji dictionary Precondition System is in Dictionary screen Trigger N/A Post-Condition Show information of all Kanji in user’s input

Save the searched Kanji, if it is available in the dictionary, to History. Main flow Step Actor Action 1 User Tap to open tab Kanji dictionary 2 User Tap on the magnifier icon in the right of the text field on

top of the screen 3 System Show keyboard 4 User Type the word his want to search, then press Search key 5 System If the text in the text field is Japanese characters, extract

all Kanji from the text. For example: Extract Kanji from 秋は涼しい return 2 Kanji 秋、涼. Search for these Kanji in Kanji dictionary If the text in the text field is not Japanese, search all the Kanji that have other reading the same as the text. 6 System Show a list of found Kanji. With each Kanji, show Kanji,

On yomi, Kun yomi, meaning, other reading (if the Kanji

55

Anki Pan Final Report ver1.0 has) and Star icon

Save all Kanji to History Alternative flow 1 Precondition Dictionary screen 1 User Select text in scanned document as in UC – 3 2 System Write the recognized text in user selected area to the

text field in the top of Dictionary screen 3 User Tap the tab Kanji dictionary 4 System View tab Kanji dicitonary 3 System Follow steps 5 to 6 in main flow Alternative flow 2 Precondition User has typed and searched a word in Japanese

dictionary 1 User Tap the tab Kanji dictionary 2 System Follow step 5 to 6 of the main flow Exceptions In step 6 of main flow, if there is no word found, display

message “There is no result!”

*UC – 5.1 Add to favorite list (Kanji dictionary screen)*

Use Case ID UC – 5.1 Use Name Add to favorite list Actor User Description User adds a word in Japanese dictionary to favorite list Precondition System is in tab Kanji dictionary

User has searched Kanji dictionary, and System is showing a list of words, as in steps 6 of main flow of UC - 6 Trigger N/A Post-Condition The word is added to favorite list Main flow Step Actor Action 1 User Tap on the grey start icon in the entry of the word that

he want to add to favorite list 2 System Change the star to yellow

Add the word in the entry to favorite list in database Exceptions

*UC – 6.2 Remove from favorite list (Kanji dictionary screen)*

Use Case ID UC – 5.2 Use Name Remove from favorite list Actor User

56

Anki Pan Final Report ver1.0 Description User removes a Kanji from favorite list Precondition System is in tab Kanji dictionary

User has searched in Kanji dictionary, and System is showing a list of words, as in steps 6 of main flow of UC - 6 Trigger N/A Post-Condition The word is added to favorite list Main flow Step Actor Action 1 User Tap on the yellow start icon in the entry of the word

that he want to add to favorite list 2 System Change the star to grey

Remove the word in the entry from favorite list Exceptions

**3.1.2.3.2. Screen description**

Description of Result tab

**Field**

**Description Mand Name**

**atory**

57 **Length**

Header Include the Menu icon

and the title Anki Pan

**Read only**

**Control type**

**Data Type**

- - - -

Document area

Show the document that user captured. Text lines in the document are surrounded by white rectangles.

- - Image - -

Magnifier Zoom in the area that

user’s finger is on when he is selecting text.

- - - -

Description of Japanese tab

**Field Name**

**Description Mand atory**

**Length**

Header Include the Menu icon

and the title Anki Pan - - - -

Input text are

**Read only**

**Control type**

**Data Type**

Text area for user to input words

N N Text Text -

Word lists Show a list of words that

match user’s input

- - Extenda

ble list

- -

Anki Pan Final Report ver1.0 **Field**

**Description Mand**

**Read**

**Length Name**

**atory**

**only**

Star icon User taps on Star icon to

add / remove words from favorite list

58 **Control type**

**Data Type**

- - Image

icon

- -

Extend icon

User taps on Extend icon to view full information of words (word type, example, meaning,...). Tap again to back to short form.

- - Image

icon

- -

Description of Kanji tab

**Field Name**

**Description Mand atory**

**Length**

Header Include the Menu icon

and the title Anki Pan - - - -

Input text are

**Read only**

**Control type**

**Data Type**

Text area for user to input words

N N Text Text -

Word lists Show a list of Kanji in

user’s input. Each Kanji is show with the Kanji in big size, On yomi, Kun yomi and the meaning of the Kanji, and other way of reading if any.

- - List - -

Star icon User taps on Star icon to

add / remove words from favorite list

- - Image

icon

- -

Anki Pan Final Report ver1.0 **3.1.2.4 History**

**3.1.2.4.1. User cases**

*UC – 6 View History*

*Figure 21: Screens of UC – 6*

Use Case ID UC - 6

59

Anki Pan Final Report ver1.0 Use Name View history Actor User Description User view all words that he has searched Precondition N/A Trigger N/A Post-Condition All words in history are shown on screen Main flow Step Actor Action 1 User Tap on the Menu icon in the top left of the screen 2 System Show the screen list 3 User Tap on entry History 4 System Show History screen with all words user has search, in

form of extendable list view. - In the entry of Japanese word: show Star icon, the

word, its reading, the first meaning and word class (as in step 6 of UC – 5. Search in Japanese dictionary) - In the entry of Kanji: show Star icon and the Kanji If there is no word in History, show message “There is no word in History”

Alternative flow 1 Exceptions N/A

*UC – 6.1 View word’s information (History screen)*

60

Anki Pan Final Report ver1.0 *Figure 22: Screens of UC - 6.1*

61

Use Case ID UC – 6.1 Use Name View word’s information Actor User Description User looks for information of a word in history Precondition System is in History screen Trigger N/A Post-Condition Information of the word is shown on screen Main flow Step Actor Action 1 User Tap on the Extend icon on the right of the entry of the

word that he want to see detail information 2 System Extend the entry and view detail information of the

word - If the word in the entry is from Japanese dictionary,

Anki Pan Final Report ver1.0 then search in Japanese dictionary, and show all its

information (Star icon, word, Hiragana / Kanji writing, meaning, word class, example...) as show in step 8 of UC – 5. Search in Japanese dictionary - If the word in the entry is from Kanji dictionary,

then search in Kanji dictionary and show Kanji, On yomi, Kun yomi, other reading (if it has), meaning, as show in step 6 of UC – 6. Search in Kanji dictionary Alternative flow 1 Precondition 1 User Tap on the Extend icon of the entry again 2 System Show short form of the entry

- if the word in the entry is Japanese word: show Star

icon, word, its reading, the first meaning and word class. - if the word in the entry is Kanji: show Star icon and

the Kanji Exceptions N/A

*UC – 6.2 Add to favorite list ( History screen)*

*Figure 23: Screens of UC - 6.2*

Use Case ID UC – 6.2 Use Name Add to favorite list Actor User

62

Anki Pan Final Report ver1.0 Description User adds a word favorite list Precondition System is in History screen Trigger N/A Post-Condition The word is added to favorite list Main flow Step Actor Action 1 User Tap on the grey start icon in the entry of the word that

he want to add to favorite list 2 System Change the star to yellow

Add the word in the entry to favorite list in database Alternative flow 1 Precondition System is in History screen 1 User Tap on the Extend icon on the right of a entry 2 System Expand the entry and show detail information of the

word in the entry, as in step 2 of UC – 7.1 3 User Tap on grey star icon in the entry 4 System Change the star to yellow

Add the word in the entry to favorite list Exceptions

*UC – 6.3 Remove from favorite list (History screen)*

*Figure 24: Screens of UC - 6.3*

Use Case ID UC – 6.3 Use Name Remove form favorite list

63

Anki Pan Final Report ver1.0 Actor User Description User removes a word form favorite list Precondition System is in History or Favorite screen Trigger N/A Post-Condition The word is removed from favorite list Main flow Step Actor Action 1 User Tap on the yellow start icon in the entry of the word

that he want to remove from favorite list 2 System Change the star to grey

Remove the word in the entry from favorite list in database Alternative flow 1 Precondition System is in History or Favorite screen 1 User Tap on the Extend icon on the right of a entry 2 System Expand the entry and show detail information of the

word in the entry, as in step 2 of UC – 7.1 3 User Tap on yellow star icon in the entry 4 System Change the star to grey

Remove the word in the entry from favorite list in database Exceptions

*UC – 6.4 View favorite words only*

*Figure 25: Screens of UC - 6.4*

64

Anki Pan Final Report ver1.0 Use Case ID UC – 6.4 Use Name View favorite words only Actor User Description View all word that user put to favorite list Precondition System is in History screen Trigger N/A Post-Condition View all word in favorite list Main flow Step Actor Action 1 User Tap on the Favorite button 2 System Show all words in favorite list. The words are shown in

form of extendable list view. - In the entry of Japanese word: show Star icon, the

word, its reading, the first meaning and word class (as in step 6 of UC – 5. Search in Japanese dictionary) - In the entry of Kanji: show Star icon and the Kanji Alternative flow 1 Precondition 1 System If there is no word in Favorite list, show message

“There is no word in Favorite list” Alternative flow 2 Precondition 1 User After step 2 of the main flow, user tap the Favorite

button again 2 System Back to History screen with all favorite and not favorite

words in the History Exceptions N/A

65

Anki Pan Final Report ver1.0 *UC – 6.5 Delete a word from history*

*Figure 26: Screens of UC - 6.5*

Use Case ID UC – 6.5 Use Name Delete 1 word from History Actor User Description User deletes one word from History Precondition System is in History screen Trigger N/A Post-Condition The deleted word is delete from History table of

database Main flow Step Actor Action 1 User Tap on one entry in the History and swap it to the left 2 System Show confirm message form “Do you want to delete the

word?”, with 2 button “Yes”, “No” 3 User Press “Yes” button 4 System Remove entry with the word from screen

Delete the word in History table of database Alternative flow Precondition 1 User In step 3 of main flow, user press “No” button 2 System Close confirm message form Exceptions N/A

66

Anki Pan Final Report ver1.0 *UC – 6.6 Delete all history*

*Figure 27: Screens of UC - 6.6*

67

Use Case ID UC – 6.6 Use Name Delete all History Actor User Description User deletes all words from History Precondition System is in History screen Trigger N/A Post-Condition All words are deleted from History table of database Main flow Step Actor Action 1 User Tap on Clear history button

Anki Pan Final Report ver1.0 2 System Show confirm message form “Do you want to delete all

history?”, with 2 button “Yes”, “No” 3 User Press “Yes” button 4 System Show message “There is no word in history” Delete all words in History table in database Alternative flow Precondition 1 User In step 3 of main flow, user press “No” button 2 System Close confirm message form Exceptions N/A

**3.1.2.4.2 Screen description**

**Field Name**

68 **Description Mand atory**

**Length**

Header The title bar of the

application

**Read only**

**Control type**

**Data Type**

- - - -

Favorite button

The favorite button of each word or kanji entry. Tapping on this will add or remove the favorite state

- - Button - -

Word (Kana)

The word entries from searching query, always written in Hiragana or Katakana, there may be some entries have the same value

Y Y Label Text 10

Word (Kanji)

The word entries above written in Kanji, no entries have the same value.

N Y Label Text 7

Meaning The meaning of the word entry. Also contain word type (noun, verb, adjective,...)

Y Y Label Text 30

Extend button

The extend button for each word. Tapping on this will expand or collapse the content of the words to displays examples. The button direction is reserved after each time user tap

- - Button - -

Anki Pan Final Report ver1.0 **Field**

**Description Mand**

**Read**

**Control**

**Length Name**

**atory**

**only**

**type**

on it.

Example The example area of each

word entry. Example contains a Japanese sentence following by a Vietnamese sentence translated from the above one.

69 **Data Type**

Y Y Label Text 200

Confirmati on box

The dialog box appears when user choose to clear history entry(ies)

- - Dialog

box

- -

**3.1.2.5 Setting**

**3.1.2.5.1. User cases**

*UC – 7: View Setting screen*

*Figure 28: Screens of UC - 7*

Use Case ID UC – 7 Use Name View Setting screen Actor User Description User views setting scrren Precondition Trigger N/A

Anki Pan Final Report ver1.0 Post-Condition Setting screen is shown Main flow Step Actor Action 1 User Tap on Menu icon in top left of the screen 2 User Tap on Setting item 3 System Open tab Dictionary setting of Setting screen

In tab Dictionary setting, list all dictionary packages that user has downloaded. The dictionary package is choosen to use for searching word’ information in Dictionary screen is marked.

Exceptions N/A

*UC – 7.1 Select a dictionary package*

*Figure 29: Screen of UC - 7.1*

Use Case ID UC – 7.1 Use Name Select a dictionary package Actor User Description User select a dictionary package to use in Dictionary

screen Precondition System is in Setting screen Trigger N/A Post-Condition The selected dictionary package is used in Dictionary

screen

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Anki Pan Final Report ver1.0 *UC – 7.2 Delete a dictionary package*

*Figure 30: Screens of UC - 7.2’ main flow*

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Main flow Step Actor Action 1 User If system is not in tab Dictionary Setting, tap on tab

Dictionary Setting 2 System Show tab Dictionary Setting with all dictionary package

that user has download, and the dictionaray package which is in used is marked. 3 User Tab on the dictionary package that he want to use in

Dictionary screen 4 System Mark the selected dictionary package

Change the dictionary package use for Dictionary screen to selected one. Exceptions N/A

Anki Pan Final Report ver1.0 *Figure 31: Screens of UC - 7.2' alternative flow*

Use Case ID UC – 7.2 Use Name Delete a dictionary package Actor User Description User delete a dictionary package that he has

downloaded Precondition System is in tab Dictionary setting of Setting screen Trigger N/A Post-Condition The deleted dictionary package is removed from

database Main flow Step Actor Action 1 User Tap on Delete button of the dictionary package that he

wants to delete 2 System Show confirm message form: “Do you want to delete

[Dictionary package’s name] dictionary package?” with 2 button “Yes” and “Cancel” 3 User Tap on Yes button 4 System Remove the dictionary package from screen

Delete the dictionary package from database Alternative flow 1 Precondition 1 User In step 3 of the main flow, user tap on “Cancel” button 2 System Close confirm form Alternative flow 2

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