Course: Product Development

Bachelor of Information and Communication

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Group P3

PRODUCT DEVELOPMENT FINAL REPORT

– about summary of the product.

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—

Modern technology-based industries grow minute by minute. It is a good thing to learn about how this process is actually going, and we are now at the end of the introductory course for product development. This report focuses on four main points: 1) Summary of work carried out by team, 2) Report of the demo day, 3) Product development process and 4) Time-tracking of team members. Methods used are extracting our own records of events, such as members' individual works, demo day, etc., and some Internet-based research on issues raised by the resulted product as well, such as its intellectual property.

KEYWORDS:

Summary Work, Report, E-Market, product development, mobile app

CONTENTS

APPENDICES

None

PICTURES

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None

TABLES

LIST OF ABBREVIATIONS (OR) SYMBOLS

None

1 INTRODUCTION

1.1 OVERVIEW

This final report for the course Product Development included:

- Chapter 1: This introduction
- Chapter 2: Summary of the work carried out for our project and the timeframe of our work.
- Chapter 3: Report of the demo day for our group and evaluation of the other groups' demos.
- Chapter 4: Product Development Process.
- Chapter 5: Time-tracking of all the whole group and of each group member.
- Chapter 6: Conclusion

1.2 GENERAL CONTRIBUTION

The abstract is written by Hieu.

Chapter 1 had been divided as follows:

- Phan Duc: contribute for this chapter.
- Do Hieu: contribute for this chapter.

Chapter 2 had been divided as follows:

- Hung: responsible for point 2.1
- Phan Duc: responsible for the rest, 2.2 and 2.3

Chapter 3 had been divided as follows:

- Phan Duc and Ajit: responsible for this chapter.

Chapter 4 had been divided as follows:

- Phan Duc: responsible for point 4.1
- Binh: responsible for point 4.2
- Ajit: responsible for point 4.3

- Hung: responsible for 4.4

Chapter 5 had been divided as follows:

- Duc: checking all the tracking and responsible for all items in this chapter.

Chapter 6 had been divided as follows:

- Duc: writing the conclusion of the report.

Especially, Binh has a role that is to design the format of the report. And Duc Phan verifies and corrects the mistakes of the whole of the report.

1.3 METHODOLOGY

This report was done mainly by researching and analyzing through Internet resources, which has also been limited to Finland region where appropriated, because its content is related to the market where our product is intended to be used. There are parts in the report using our own records of members' contribution.

Also, all previous documentations will be used as our own material to create this final report.

2 SUMMARY OF THE WORK CARRIED OUT FOR PROJECT AND THE TIMEFRAME

2.1 DESCRIPTION OF THE PRODUCT IDEA AND TARGET

As college students, we understand the needs of saving money. The same can be said for working adults. Hence, buying second-hand items and hunting for discounts are good options.

There is already a Facebook group "Flea market Turku" for dealing with used items. However, there are many downsides with the group like uncategorized items, misinformation about the availability of the item, disappearance of the item due to large numbers of items etc.

Moreover, supermarket discounts cannot be known unless coming to the supermarkets or hearing about them through friends and acquaintances.

That is the reason we decided to develop this mobile app: to help students and working adults access the information mentioned above.

And there are the links 1 and 2 to explain about our idea and target of the product.

2.2 DESCRIPTION OF PROJECT PLAN

The project has been developing under Scrum methodology divided into 7 sprints. The section summarizes each sprint and its evaluation.

Table 1. Sprint 1 - Requirement Analysis

Description	- To analyze the requirements for the app. - To priority the importance of requirements.
Total volume of work	1 man-month
Leader	Duc Phan

Workers	Duc Phan
Progress	All members participated in analyzing and prioritizing the requirements for the product. There are many features could be included but the most important one is the products / items for customers.
Achievement	The most important requirements for the product is to allow users to select items and products from sellers and supermarkets in Turku city. These features will be developed in the first version of the App. Other features could be considered in future development.

Table 2. Sprint 2 - Design Wireframes

Description	To design wireframes for the App
Total volume of work	1 man-month
Leader	Duc Phan
Workers	Duc Phan
Progress	Basic wireframes had been designed for the first version.
Achievement	The wireframes were simple but they reflected all key features of the app.

Table 3. Sprint 3 - Design Layout

Description	To design layouts for the wireframes
Total volume of work	1 man-month
Leader	Duc Phan
Worker	Duc Phan

Progress	All layouts had been designed based on wireframes.
Achievement	The layouts gave a better visualization for the developer can implement the app.

Table 4. Sprint 4 - Develop Prototypes

Description	To develop the prototypes (front-end) of the app without back-end functions
Total volume of work	1 man-month
Leader	Duc Phan
Workers	Duc Phan
Progress	Based on the layouts, prototypes had been developed in two platforms: Android and maybe IOS.
Achievement	The prototypes also had some differences with the design, but they had enough for main-features.

Table 5. Sprint 5 - Develop Features

Description	To develop the features for the app, making it becomes functional
Total volume of work	1 man-month
Leader	Duc Phan
Workers	Duc Phan
Progress	Some basic features had been developed in a platform: Android.
Achievement	Unfortunately, not all features were finished because there is only one developer. Features for end-users were done, such as selecting options and viewing the products from sellers and supermarkets.

	However, there are many other features in the background need to be implemented before the release, such as auto-collecting data and put database to server with APIs.

Table 6. Sprint 6 - Deploy and Commercialize

Description	• To release the App to the Google store and everyone can download and use. • To publish the app for all over the world.
Total volume of work	1 man-month
Leader	Duc Phan
Workers	Duc Phan
Progress	Completed.
Achievement	Done.

Table 7. Sprint 7 - Report and Documentation

Description	Technical document, Marketing report, Final report, and user guide
Total volume of work	0.25 man-month
Leader	Duc Phan
Workers	All members
Progress	Reports, video advertisement had been distributed for each member to make.
Achievement	Most the documents had been received good evaluations from the teachers and tutors of the course.

2.3   EVALUATION OF PROGRESS AND GOALS

The scale and target of the project are suitable for the Product Development course. However, most of the group's members have no experience in programming, so the development process had been slowed down.

Fortunately, the leader who is also the developer had found a company with named Choose Your Future which is interested in mobile app development. This gives the E-Market App an opportunity to be developed and integrated with that company's product in the future.

3 REPORT OF THE DEMO DAY AND EVALUATION OF THE OTHER GROUP'S DEMOS

3.1 OVERVIEW

Demo of the groups product was held on 11th May in ICT building starting at 8:15 am. Our group have agreed to give a combine presentation and exhibition with group P2. Combine presentation gave a new idea of creating combine mobile application.

3.2 PRESENTATION

Final group's product was presented successfully combining with product of group P2 with the slide of Powerpoint Microsoft tool. The feature and advantage of E-Market application was explained well with demo video clips. An idea of creating combine mobile application called My Mobile Tutor app together with local company was demonstrated with the product of group P2. My Mobile Tutor app is combine application for people of Turku which almost covers the local needs like searching restaurants, bus route, product of nearest store, second hand items deal etc.

3.3 EXHIBITION

Aim of the exhibition was to introduce the final product of the group to the judges, students, parents and interested people in TUAS. Exhibition was carried out well. Explanation of the product to the judges was done nicely. Some students and parents have also visited our groups exhibition. Some judges gave nice response to the combine product My Mobile Tutor app.

3.4 EVALUATION

Along with our product demonstration, we have evaluated the product of other groups. Every group had come with the different ideas but we found some of them are better than others.

Table 8. Detailed evaluation about the others group product.

Group name	Product and Idea.	Final product	Remarks
E4	Hour Deal: This is an app which helps to notify the sales or discount offer of the nearest store to the users.	Final product seemed to be functioning nicely.	Idea of the product is nice. Beneficial to every people.
P2	Ilukkari: A mobile application which ease to see and manage timetable schedule of TUAS. Aimed to replace existing timetable schedule Lukkari of TUAS.	Final version of the application was functioning smoothly with some demo.	Great timetable management app for the teachers, students and staffs of TUAS.
D1	WIP: WIP (Where Is the Party) is a mobile application which shows the	Final product seemed to be functioning nicely.	Great idea and application for the party loving people. Not useful to everyone.

	nearest party event, location and time period to the users.		

4 PRODUCT DEVELOPMENT PROCESS

4.1 DESCRIPTION OF HOW THE PROCESS CAN BE CONTINUED IN THE FUTURE

Unfortunately, there are many features of the app have not been done. However, the Choose your future company has planned to develop the big App with named Mobile Mentor with the fund over 8000 euro from University of Turku combined E-market and iLukkari app of group P2. Therefore, we continue to develop the E-market and of course the Mobile mentor in the future.

4.2 COMPETITOR ANALYSIS

4.2.1 Methodology

This competitor analysis has been conducted by finding if there are any products that provided the same services as our product does on the market.

Furthermore, if there are any companies that may launch similar products in near future that will compete ours.

4.2.2 Results

By using internet, there are products with the similar services.

The only substitute product is the original Facebook group Flea Market Turku. This group can be accessed by the link: www.facebook.com/groups/TurkuFleamarket/

Picture 1. Flea market Group on Facebook

This is a closed group with 9083 members (recently join 18 persons). The group itself have been moderated with clear description and has a rule to operate.
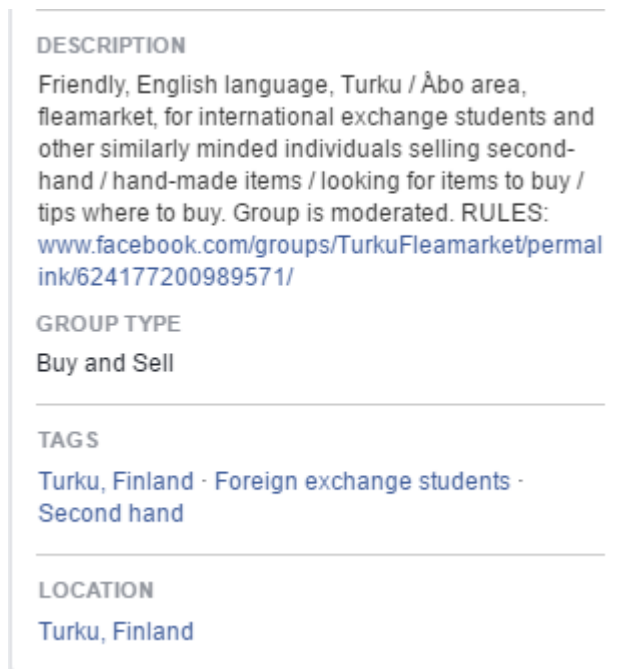
Picture 2. Description of Flea Market Group on Facebook

4.2.3 Analysis

Table 9. Comparison between our product and competitors'

Aspects	Our product	Competitor's product

Price	Free for trial/ Pay for more features	Free with features provided by Facebook
Quality	Good	Good
Image/Style	Excellent with UI designed	Depended on users
Value	Good	Good
Name Recognition	Easy	Depended on users, but mostly hard
Service	Provided by professional admin and staffs	Monitoring by some users that work for free
Convenience	Excellent due to it is a phone app	Easy to access due to it is based on Facebook

4.3   IPR ANALYSIS

4.3.1   Overview

IPR (Intellectual Property Rights) is the legal way to protect one's creative work and helps to manage and commercialize the result of development work. IPR owner have a right to deny other to use as well as to grant a license to utilize the object of the rights. In Finland, the Ministry of Education and Culture deals with matters relating to copyright issues related to IPR. (Finnish Patent and Registration Office 2017)

To avoid the copyright issues, we have conducted IPR/Patent research as below.

4.3.2   Methodology

Patent database searches has been conducted in Espacenet using key word 'mobile application' limiting the region Finland only. 6492 references have been found in the database where only the first 500 references were checked. (Espace net 2016)

4.3.3 Finding

Out of first 500 patent databases, not even a single application mainly featured as E-Market mobile application have been found as patented but there is an application whose main feature is similar to secondary feature of E-Market I.e. providing the product detail of nearby stores. (NAKKA CHINNI 2016)

Since, none of the product like ours has been found as patented, we conducted another research to find out what could be the challenges and opportunities for our product in local area in Turku region. We have found two website tori.fi and turunekotori.fi, excluding Flea market group in Facebook, which sells secondhand items in Turku region.

4.3.4 Challenges

E-Market mobile application was developed to replace Flea market Group of Facebook in Turku but meanwhile, it has to compete with other two websites. Main possible challenges we received from these websites are their content which are similar to E-Market's content and also available in Finnish language. Some of them also have home delivery service which is next challenge to our product.

4.3.5 Opportunities

Though our product seems to face some challenges, it has got some opportunities too. We have searched some items in two websites and in Facebook group and found that the price of similar items, excluding delivery charge, in websites are comparatively higher than in Flea market group on Facebook. This shows that contacting directly to the seller would be more beneficial than contacting third parties. None of these have a notification feature and items can't be searched per categories in Facebook group. Hence, it is quite possible that E-Market application gets market in local area in Turku.

4.4 CERTIFICATION TEST STUDY

4.4.1 Quality

- *Power consumption:* our application has little to no power consumption.
- *Mobile data consumption:* since our application is only the prototype using static database, we cannot test mobile data consumption effectively

4.4.2 Safety

- *Vulnerability to exploits:* none of them has been exploited yet.

4.4.3 Acceptance and Combability

- Cross-platform availability: only available on Android.
- Future supported platform: iOS

4.4.4 Certification Tests Table

Table 10. Certification Tests

• **Certification Tests**	**P3 App**
Visual design and User interaction	
Standard design	
The app does not redefine the expected function of a system icon (such as the Back button)	✓
The app does not replace a system icon with a completely different icon if it triggers the standard UI behavior	✓

If the app provides a customized version of a standard system icon, the icon strongly resembles the system icon and triggers the standard system behavior	✓
The app does not redefine or misuse Android UI patterns, such that icons or behaviors could be misleading or confusing to users	✓
Notification	
Android design guidelines	
Multiple notifications are stacked into a single notification object, where possible	-
Notifications are persistent only if related to ongoing events (such as music playback or a phone call)	-
Notifications do not contain advertising or content unrelated to the core function of the app, unless the user has opted in	-
Purpose	
Indicate a change in context relating to the user personally (such as an incoming message)	-
Expose information/controls relating to an ongoing event (such as music playback or a phone call)	-
Functionality	
Permissions	
The app requests only the absolute minimum permissions that it needs to support core functionality	✓
The app does not request permissions to access sensitive data (such as Contacts or the System Log) or services that can cost the user money (such as the Dialer or SMS), unless related to a core capability of the app	✓
Install location	
The app functions normally when installed on SD card (if supported by app)	-

Supporting installation to SD card is recommended for most large apps (10MB+)	-
UI and graphics	
The app supports both landscape and portrait orientations	✘
The app uses the whole screen in both orientations and does not letterbox to account for orientation changes	✘
The app correctly handles rapid transitions between display orientations without rendering problems	✘
User/app state	
The app should not leave any services running when the app is in the background, unless related to a core capability of the app	✓
The app correctly preserves and restores user or app state	✓
Compatibility, performance and stability	
Stability	
The app does not crash, force close, freeze, or otherwise function abnormally on any targeted device	✘
Performance	
The app loads quickly or provides onscreen feedback to the user (a progress indicator or similar cue) if the app takes longer than two seconds to load	✓
Visual quality	
The app displays graphics, text, images, and other UI elements without noticeable distortion, blurring, or pixelate	✓
The app displays text and text blocks in an acceptable manner	✓
Security	
All private data is stored in the app's internal storage	✓
All data from external storage is verified before being accessed	✓

5 TIME TRACKING

5.1 OVERVIEW

The tracking has been updated weekly by Hong-Duc PHAN.

There is a time-tracking to track the attending time of each member at classes and group's meeting. There is also a task-tracking, as the group is using Scrum method. This tools is used to organize and track member's tasks.

In this report, task-tracking will be converted into hours for an easier working estimation.

The detail of time-tracking is in management tracking group P3 and product development tracking group P3 and attention in class task-tracking is in this link and link. If you have problem accessing those links, please contact duc.phan@edu.turkuamk.fi.

5.2 GROUP P3

The Time tracking shows about 93:50 hours working at school of the group P3 for one member can attend in classes , including theory classes and group's meetings.

On the management tracking, it shows about 320 hours working for spending of the course.

The development tracking shows 428 hours for building the product of the Product development course.

5.3   MEMBERS TRACKING

5.3.1   Time Tracking

The table below shows the summary of attending time of each member. Duc Phan was the most active member because he had done extra works and was not absent at school.

Table 11. Time Tracking at school

Member	Total time(hours)	The absent times (per day)	Role
Duc Phan	93:50	0	Project manager / Leader
Binh Tran Trinh	85:50	3	Member
Hieu Quang Do	55:20	12	Member
Hung X. Hung	85:50	3	Member
Ajit	86:20	2	Secretary

5.3.2   Management Tracking

Table 12 is generated by YouTrack tool, showing the number of tasks of each members. All the tasks are assigned to a specific time label to show the amount of time a task could take. Therefore, the hours of working can be calculated as Table 13.

Table 12. Member's management task tracking

Time Lebel	Hung Nguyen	Binh Trinh	Ajit	Duc Phan	Hieu Do	Time(hours)
1h	42	36	36	28	25	1
4h	2	1	4	4	2	4
2h	1	3	0	3	0	2
3h	0	4	1	2	0	3

5h	1	1	0	1	2	5
7h	1	1	0	0	1	7
6h	1	0	0	1	0	6
8h	0	0	0	1	0	8

Table 13. Members' management tracking in hours

	Hung Nguyen	Binh Trinh	Ajit	Duc Phan	Hieu Do
	42	36	36	28	25
	8	4	16	16	8
	2	6	0	6	0
	0	12	3	6	0
	5	5	0	5	10
	7	7	0	0	7
	6	0	0	6	0
	0	0	0	8	0
SUM(hours)	**70**	**70**	**55**	**75**	**50**

5.3.3 Development Tracking

Table 14 shows the development task tracking using the Youtrack tool. There are the huge tasks had been done by Duc Phan as the Table 15.

Table 14. Product Development Tracking using Youtrack tool.

Time table	Duc Phan	Time (hours)
6h	2	6
8h	2	8
12h	2	12
10h	1	10

16h	1	16
1day16h	1	40
2day12h	1	60
4day4h	1	100
6day6h	1	150

Table 15. Product Development Tracking per hours

	Duc Phan
	12
	16
	24
	10
	16
	40
	60
	100
	150
Sum (hours)	**428**

Since other members are junior students, Duc Phan is the only developer who worked on developing the product. He also worked with an outside company, developed two products. The tracking assumed that each day has 4 hours and there are 5 days a week. But the developer had to work on weekends also. The tracking detail is in this YouTrack report.

5.3.4 Tracking Summary

The summary of the whole of the tracking for contribution above is as Table 16.

Table 16. Time tracking summary for contribution.

	Duc Phan	Binh Trinh	Hung Nguyen	Ajit	Do Hieu
Management	75	70	70	55	50
Development	428	0	0	0	0
Total(hours)	503	70	70	55	50
Percentage	67.24%	9.35%	9.35%	7.35%	6.68%

The summary of the whole of the attention time above is as Table 17.

Table 17. Time track for the whole of the course.

	Duc Phan	Binh Trinh	Hung Nguyen	Ajit	Do Hieu
Management	75	70	70	55	50
Development	428	0	0	0	0
Attention Time in class	93:50	85:50	85:50	86:20	55:20
Total(hours)	596hours 50 minutes	155hours 50 minutes	155hours 50 minutes	141hours 20 minutes	105hours 20 minutes

To sum up, according the table 17, Group P3 spent to total up to 1155 hours and 10 minutes for the course with the huge tasks assigned. As the table 16, Duc Phan took a significant amount of work during three months, required document-knowledge such as Project Plan, Research Market and Technical document and Duc Phan is the only developer who worked on developing the product. He also has worked with an outside Company with named Choose your Future, developed the E-Market and Mobile Mentor App. Therefore, Duc Phan is the only member who has enough skills to plan, initialize and summarize those technical related works on the course.

6 CONCLUSION

The Product Development course has given students a general knowledge about making a product. It is necessary for students to have a concept before they work on the workplaces in the future.

However, there are many students are first-year students and they lack technical skills to build products from ideas. For example, there is only one developer in Group P3 is able to develop mobile app. The same situation also happened with Group P1, P2, D1 and maybe other groups, making the leaders to find difficult to develop the products.

Confliction and disagreement sometimes happened between members causing difficulties for the leader. There is no management method which can satisfy all the members' claims. **But result can reflect the efficiency of the teamwork.**

However, during the course, the Group P3 was able to give a good idea and implement it with only 5 members, less than other groups about the number of members, due to the guide of teachers and Tutors. The prototype of the product was completed, and many weekly tasks of the group have received positive feedback from teachers. It means the Group P3 have worked smoothly, hard and been managed in a reasonable way.

Finally, we sincerely thank all the teachers who have helped us so much to successfully complete this course.

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