Course Work 2023
Final Report

Version 0.1

Version history

Version	Date	Description	Done by
0.1	27.4.2023	Applying TOL Final Report template version 0.3	PG

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1 Description of the Project

The main goal of the project was to create a map-based application that assisted new students to explore 5-10 restaurants in the city of Oulu, commissioned by the University of Oulu. The application developed following a software plan, after which a prototype was created, whose functionality and usability was then tested. In the future, the app will be fully functional with geo-location available to track the user's location while using the app. The language would be in English to answer the needs of international students not knowing Finnish, and it was planned to function properly on both iOS and Android operating systems. However, the project did not provide user training, and security issues were not the main focus of the project. The project used common technologies and programming languages to ensure compatibility and scalability in case of further development in the future.

This project's goal, to create an application to help new students introduce various Oulu restaurants in an engaging wang way was successfully achieved. The app is named OuluEats. We have built a fully functional app that has been tested thoroughly by the design team. The app introduces the restaurant in both grid and map form successfully and has 10 different restaurants and their menu that can be scalable. The team also added a gamification element to the app where the users can 'conquer' restaurants that are nearby. The app is available to download on Android, but we have faced several difficulties in iOS, starting from not being able to thoroughly test it in real-time since none of the team members own an iPhone, and that Apple store has more app applications and acceptance process than Android market. The team selected Amazon AWS as data storage since it can be scalable, but no security measures were considered besides that.

2 Results & Reviews

During the project we had no result reviews, yet one process review in form of a short SG meeting. The table of deliverables below shows the different course deliverables, and their review processes.

Result/ Deliverable	Date	Participants	Issues and Practices
Software Plan	w 17	SG	1st version reviewed before the 1st SG, after Sprint I. Priorities were placed on designing the digital files for the prototype, functionalities and its implementation.
Project Plan	w 17	SG	1st version reviewed before the 1st SG, after Sprint I. The quality criteria were made clear for functional and UX (User Experience) tests and observations to be conducted with the user together with the supporting template and required materials.
Prototype	w 17	SG	The process review included the acceptance of the prototype and demo by the clients in order to clarify the core content of the MVP target of the project.
Executive Summary	w 17/18	SG	Reviewed the Executive Summary and the project's current status during 1st SG. Returned the file to Moodle on week 18.
Meeting Minutes	w 18	SG	Returned the accepted Meeting Minutes after the 1st SG on week 18 by email.
Final Report	w 18	Course Teachers	The Final Report of the course work was returned to Moodle on week 18.

The table of project review below explains the review done for the project management. The review was done according to the plan.

Process Review	Date	Acceptance
I	w 17	Project's status together with the Project Plan was reviewed and accepted after a short SG meeting. Prototype was also reviewed during the meeting.

3 Assessment of Results

Results/Deliverables

Result/ Deliverable	Quality Target	Measurement
Prototype	Working	The client finds the application implementable. The app shows map form and grid form as well as wireframe of the location of UI and shows how UX will work. **Assessment: The client found the prototype implementable in 1st SG, week 17.**

Process

Quality Target	Measurement
Timeliness	Each member will not exceed more than +/- 20h of the weekly time assigned. **Assessment: The weekly hours spent by each member did not exceed more than +/- 20h.**
Roles	The roles of each member were evenly distributed and processed. **Assessment: The project roles were evenly distributed according to everyone's specialties.**
Within the schedule	For the schedule the maximum delay is 1 working day(s). **Assessment: The project had no delay, and all deliverables were returned on time. Therefore, this target was achieved as expected.**

Success criteria

Success	Measurement
Acceptable (ok)	The project results are met, and the app is functional with 5 restaurants in the app. The clients have no issue using the app. **Assessment: This criterion was met.**
Good	In addition to previous, the app has 10 restaurants in the list total, as well as having gamification elements and it's fully functional. It features pleasing UI and UX that is intuitive enough to not require a tutorial. The app works at least on Android. The app is good enough to make the client make decisions based on the demo, as well as restaurants accepting the usage of their brand name in the app to be used for the future. **Assessment: This criterion was met. The app has gamification elements as well as good UI and UX. The app is also visually pleasing and functions on the android phone.**
Excellent	In addition to the previous, the app is functional in iOS. The app is good enough that restaurants are willing to join in using the app and paying for sponsored advertisements in the app. **Assessment: The app was not available in iOS or in Apple store, due to store acceptance complications.**

4 Project Schedule

Original Schedule

Project tasks	vw11	w12	w13	w14	w15	w16	w17	w18
	I Sprint (software design)			II Sprint (prototype)				
Project management	R & S						Final Report	Final Report & Closing
Software Planning		Software Design		Prototype				
Preparing the SW project					Project Plan		SG meeting	Closing
				= milestone (start prototype)			= milestone (prototype ready)	

Planned Schedule

Project tasks	vw11	w12	w13	w14	w15	w16	w17	w18
	I Sprint (software design)			II Sprint (prototype)				
Project management	R & S					Final Report		Final Report & Closing
Software Planning		Software Design		Prototype				
Preparing the SW project			Project Plan	Project Plan			SG meeting	Closing
				= milestone (start prototype)			= milestone (prototype ready)	

Actual Schedule

Project tasks	vw11	w12	w13	w14	w15	w16	w17	w18
	I Sprint (software design)			II Sprint (prototype)				
Project management	R & S						Final Report & Closing	
Software Planning		Software Design		Prototype				
Preparing the SW project			Project Plan	Project Plan			SG meeting	Closing
				= milestone (start prototype)			= milestone (prototype ready)	

The main difference made to the schedule was starting to work on the Project Plan a couple of weeks earlier than originally planned. Other than that, we remained fairly well in the planned schedule, and remained on target throughout, except the work for the Final Report, which in the Planned Schedule was planned to start a week before what it actually did. This was because the Project Plan work took a bit longer than planned.

5 Project Resources and Workload

Project tasks	Total Planned	Actual	Total	Difference	PM planned	actual	re-plan	Person 2 planned	actual	re-plan	Person 3 planned	actual	re-plan	Person 4 planned	actual	re-plan	Person 5 planned	actual	re-plan
Project management	160	120	120	40	48	37	0	40	24	0	21	19,5	0	24	15	0	27	24,5	0
Resource usage and timetable planning	21	11,5	11,5	9,5	6	4		8	2		3	3,5		2	1		2	1	
Project meetings	40	40,5	40,5	-0,5	8	9,5		8	8		8	8		8	7		8	8	
Preparing the Final Report	76	49,5	49,5	26,5	22	11,5		16	12		8	6		14	7		16	13	
Other PM tasks	23	18,5	18,5	4,5	12	12		8	2		2	2		0	0		1	2,5	
Software Planning	212	150	150	62	22	11,5	0	22	22	0	66	40	0	64	59,5	0	38	17	0
Software Design	117	81,5	81,5	35,5	17	10,5		16	22		32	13		32	22		20	14	
Prototype	95	68,5	68,5	26,5	5	1		6	0		34	27		32	37,5		18	3	
Preparing the SW project	128	111,5	111,5	16,5	30	30,5	0	38	29	0	13	15	0	12	7	0	35	30	0
Planning the SW project	117	97,5	97,5	19,5	27	27,5		36	27		11	13		10	6		33	24	
SG meeting	11	14	14	-3	3	3		2	2		2	2		2	1		2	6	
Total	500	381,5	381,5	118,5	100	79	0	100	75	0	100	74,5	0	100	81,5	0	100	71,5	0
All numbers in hours						Total: 79			Total: 75			Total: 74,5			Total: 81,5			Total: 71,5	

The Resource Usage table was not updated too much after the first few weeks, mainly due to time constraints, as well as because other methods were used to keep tabs in the hours allocated to the course work. In the Weekly PG Meetings time spent and work remaining on

specific tasks were discussed, so spending too much time on arbitrary time allocation was deemed unnecessary. In the PG Meetings it was discussed and determined what things and tasks should be given more weight towards, and work was done accordingly. The resource usage table's actual hours were not too actively updated either, which made it harder to re-plan the planned hours in the end as well.

The biggest takeaway in the differences between the planned hours and the actual hours is that just over 75 percent of the planned hours were actually used. Drilling down to the differences in the different project tasks, it can be seen that the difference between the planned and the actual hours in those are fairly similar, ranging from around 70 percent to around 85 percent. This would indicate that while too many hours were allocated to the project itself (fixed amount), the division of hours between different tasks was decent.

In hindsight, Software Planning was probably the least accurate, having around 70 percent of the planned hours used. The difference seems to mainly come from the hours spent in that category focusing on two group members who had a great number of hours planned for that task, and two group members who only used around 50 percent of the planned hours to that task. With a slight re-plan, this could have been easily changed to match better, as it was pretty quickly agreed at the beginning of the course that most of the work on Software Planning would be done by two people. The reason why others had as many hours as they did is due to having some backup, if the main two people working on that task, realized they could not get it done within the timeframe, or they needed extra hands and efforts to close the project.

On the other hand, the task 'Preparing the SW Project' had most of the planned hours actually used, which would indicate that this was the most time-consuming task, as it notably was above the average. This task obviously included the Project Plan, which could be said to be the single most time-consuming task in this course. Granted, too few hours were spent working on this task, which unfortunately was realized when it was already too late. As to why that is, it relates to the overall lack of time to work on this course, as well as the late realization of all that the task actually had in its scope. Firstly, it took a lot of time to realize what is wanted and required from the Project Plan, and secondly when that was somewhat understood, the broadness of the Project Plan also surprised the group.

Regarding the overall actual hours being lower than the planned hours boils mostly down to one thing, time. Time left to work on the project after other courses, work, and a plethora of other things, including a group member leaving the course, just seemed not enough. In

addition, quite a lot of time went into trying to understand the different tasks and requirements and getting everyone to the same page regarding them. From a project managerial point of view, this was frustrating and exhausting, when even after weeks of working on something, it was realized to be different than what was initially thought.

Additionally, the project's scope/goals proved to be difficult, in the sense that too much focus was put into the wrong things, for example the prototype. While interesting and exciting, it was realized too late, that the prototype's complexity and "coolness" should not have been something to focus on as much as the group did. This unfortunately used up precious time from other things, that would have required more attention.

While some areas of improvement can definitely be identified, the common consensus was that the group performed extremely well and efficiently within the limited time in an unfamiliar territory. Communication worked well, and the group worked in unison, everyone getting to do their fair share of the work.

6 Risk Management

Risk management is an essential aspect of project management that involves analyzing, and mitigating potential risks that could impact the project's success.

- One major risk considered was "Communication Problems". Effective communication is crucial for a team project. Inadequate communication channels or lack of regular updates can lead to misunderstandings, delays in decision-making, and potential conflicts among team members. It was essential to establish clear communication protocols and promote open and transparent communication within the team.

- The other one was "Inadequate resource allocation". If the project plan does not accurately estimate the required resources, such as time, budget, or equipment, it can lead to delays, budget overruns, or insufficient tools for the team to complete the project effectively.

- Another risk is the "Inconsistency of Group Members". We sought answers to questions such as how we would divide the workload as a result of one of us dropping out of the course. And we planned an alternative sourcing. We've also decided to keep everyone in open communication to reduce the likelihood of this risk.

We did not have any 'red' considered risks. So, it was not a problem for us during the course work and project plan.

Some suggestions for future projects would be:

- Learn from past experiences and document lessons learned to improve risk management practices in future projects.
- Maintain a flexible project management approach that allows for iterative development and adaptation to changing requirements.
- Prioritize regular feedback collection to identify issues early and address them promptly.
- Stay updated on courses Moodle page and new information coming from the Teacher.

7 Project Facilities

7.1 Working Premises

The project team in this course worked on the development and implementation of the map-based restaurant application required a suitable classroom where they can receive lectures on the project. The working premises will need to be equipped with the necessary facilities and resources to support the development of the project.

Premise	Purpose
Class Room (IT138)	For the lectures and learning of the project work
Meeting Room (MA335)	For meetings between the project members and teachers
Teams	For online meeting with all team members

7.2 Hardware and Other Equipment

The project team should be equipped with laptops, smartphones, high-speed internet and comfortable seating arrangements. The hardware and equipment will be essential for the development and implementation of the coursework.

Hardware/equipment	Purpose	Stakeholder

Laptops	Workstation for each team member	Personal
Smartphones	For testing purpose	Personal
High-speed internet	Communication Connectivity	Uni Oulu / Personal

7.3 Software

The list of software used in course work include:

Software	Purpose	Licence
Moodle	Location for course resources and track progress of the study	University of Oulu, Free for students
Microsoft Outlook	Formal communication (f.ex. SG)	Free
WhatsApp	Communication within PG	Free
Microsoft Teams	Communication within PG	Free
One Drive	Documentation	Cloud Service, Free
Figma	Design and wireframe	Cloud Service, Free

8 Project Stakeholders and Organisation

In this section we will focus on the project (course work) stakeholders and organization, including the roles and responsibilities of the project team members and stakeholders involved in the development of the map-based restaurant application.

8.1 Stakeholders

Organisation	Expectations/priorities
Project team (Students)	The group responsible for taking the course
Teacher(s)	The main instructor and evaluator of the course work.

8.2 Steering Group (SG)

The steering group for this project will consist of the following representatives.

Name	Organisation	Role (and expertise)
Essi Lehto	University of Oulu	SG, Product Owner, Client Representative
Lila Hummelin	University of Oulu	SG, Client Representative
Tonja Molin-Juustila	University of Oulu	The supervisor of the group, university lecturer, expert on project management.

8.3 Project Group (PG)

The roles and responsibilities of the project team members are as follows:

Role	Responsibilities
Project Manager	Responsible for managing the project schedule, budget, and scope. This includes communicating with stakeholders, identifying and managing risks, and ensuring that the project is completed on time and within the budget.
Scrum Master	Responsible and accountable for establishing Scrum. Ensures that Scrum events (Sprints, Daily Scrums, Sprint Reviews etc.) are held. Improves productivity, enables agility, and acts as coach and mentor.
Quality Assurance Engineer	Responsible for testing the application. This includes designing and executing test plans, identifying and reporting bugs, and ensuring that the application meets the necessary quality standards.
UI/UX Designer	Responsible for designing the user experience of the application. This includes creating wireframes, prototypes, and user flows, and ensuring that the application is easy to use and navigate

The project team will consist of the following members:

Name	Role and responsibilities (and expertise)
Elmeri Jokinen	Project manager (PM)
Mohammad Azizul Kawser	Scrum Master & Team member responsible for project documentation, technical requirement analysis.
Derin Ergönül	Team member responsible for documentation and Quality testing
Jinyoung Jeon	Team member responsible for Graphical Design, UX testing.
Isaiah Kodjo	Team member responsible for Graphical Design, UX testing.

8.4 Subcontractor(s)

Not applicable.

8.5 Supplier(s)

Not applicable.

8.6 Other Expert(s)

Not applicable.

9 Other Experiences

Our main line of communication throughout this project was WhatsApp messaging, especially for minor issues and questions, that might have needed a quick response. Our secondary, more formal, communication channel was Microsoft Teams, where all Weekly Project Group Meetings and other meetings or calls were held.

Some suggestions for future projects would be:

- Learn from past experiences and document what went well, what did not, and lessons learned to improve for example risk management practices, as well as other practices in future projects.

- Maintain a flexible project management approach that allows for iterative development and adaptation to changing requirements.
- Use of Communication Tools: Utilize project management and collaboration tools like Microsoft Teams to facilitate effective communication and keep everyone updated. We believe that we did a decent job in this part, because we had a chance to keep everyone updated. Although it is important to focus on and limit the communication channel for organizational purposes, it is also important to consider other methods of communication and collaboration tools due to the nature of technology, where better and easier things are created and mixed every year.
- We followed industry-standard coding practices, including proper documentation and version control. The suggestion is to make sure to check in with team members regularly to make sure that everyone is on the same page and that there are no misunderstandings.
- Regularly review and adjust standards and practices as needed. This will help to ensure that we remain effective and relevant throughout the project.

10 Lessons Learned and Personal Experiences

Here are some core lessons learned during projects:

1. Communication is key: Clear and effective communication between team members and stakeholders is critical for the success of the project.
2. Planning is crucial: Proper planning, including setting clear goals, creating a timeline, and assigning roles and responsibilities, is essential to keep the project on track and ensure timely delivery.
3. Flexibility is important: Being flexible and adaptable is crucial when dealing with unexpected challenges that may arise during the project.
4. Documentation is critical: Proper documentation of the project helps ensure that everyone involved is on the same page, and it also helps with future maintenance and development.
5. Technical excellence is a must: Creating technically sound and efficient software is vital for the project's success and long-term viability.
   a. Also knowing the extent of technicality prowess is important. For example, we had to learn a new tool called Figma to make an interactable demo of the app. The designers did not know of such a tool before it was introduced by one of the members. Although it wasn't an easy task to learn the program, it

turned out to be an excellent tool to make a detailed and interactive application demo.

6. User experience matters: Creating a user-friendly and intuitive interface is crucial for ensuring that the software is adopted and used by the target audience.

7. Team collaboration is key: Collaboration and teamwork are essential for the success of the project. Ensuring that everyone is working together towards a common goal can help avoid misunderstandings, delays, and other issues that can derail the project.

   a. Although design should be the main priority, it would have been better if the design and UX testing team also actively participated in documentation and helped in managing the project in a more effective way. As a student who took the designing of the app, I feel like I put too much of a burden on the project manager and could have actively tried to reduce the workload by participating more actively.

8. Resource (and budget) management is crucial: Proper management of the project resources and budget is necessary to ensure that the project stays on track and within budget.

9. Continuous improvement is necessary: Once the project is completed, it is essential to gather feedback, analyze the results, and use that information to improve the software and the development process for future projects.

10. Stakeholder engagement: Engage and involve stakeholders throughout the project to gather feedback, manage expectations, and ensure their needs are met.

11. Productive and efficient meeting practices: Coming prepared to meetings helps the flow of the meeting. Doing due diligence before the meeting helps being able to take part in conversation and reduces time spent on trivial questions.

12. Taking initiative: All members of the project groups should be aware of what was discussed last week and what was agreed for the targets for the upcoming week. Objectives should be clear, and everyone should be familiar with course objectives and targets week-by-week.

13. Constant and frequent interaction: Although our group work was done once a week, completely online (except for SG meeting), more meetings or face-to-face gatherings could yield more productive and interactive conversations.

Appendices