NORRSKEN

Project Plan

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Project Management

Summary

Walking home late at night can be a daunting experience. The newspapers write about assaults and harassment, the northern winter climate contribute with shorter days and darker nights. Existing street lights helps with the problem but the feeling of uncertainty and fear persist. Norrsken will investigate how a technical solution could be applied to create an increased sense of safety. The project is carried out in collaboration with the municipality of Umeå and Umeå University as part of the courses Interactivity in Smart Environments and Project Management.

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Introduction

1.1 Purpose

Design a proposal for a safe smart city environment where individuals' personal preferences and needs are met, build a demonstrator and, maybe, translate the solutions to rural areas.

1.2 Background

Walking home late at night can be a daunting experience. The newspapers write about assaults and harassment, the northern winter climate contribute with shorter days and darker nights. Existing street lights helps with the problem but the feeling of uncertainty and fear persist. This project will investigate how a technical solution could be applied to increase safety. It is carried out in collaboration with the municipality of Umeå and Umeå University as part of the courses Interactivity in Smart Environments and Project Management.

Smart environments' purpose is to either improve abilities, control something or reduce/minimise unwanted events. It can therefore be interesting to see if the technology can be applied to the problem of security in urban environments.

In particular smart city technology, wearable computing or sensor networks can perhaps be used to solve the problem of security.

1.3 Goals

The goal is to, before December 15th, produce a concept as well as a model of a knowledge domain for a smart environment that, by being proactive and by considering the user's personal preferences, makes the user's stay at the campus area safer.

Fig. 1: SWOT analysis

Strengths • Extensive technical knowledge • 'Fresh eyes' on the problem • 2 Occupational therapist project members • USP: Increasing safety by creating a more interesting city
Weaknesses • No budget • Insufficient time • Low amount of experience in the specific area
Opportunities • Use of equipment in designated project room • Course supervisors and mentors • An increasing trend of technological infrastructure
Threats • Group member peripheral projects • Required technical equipment might not be available in time

SWOT Analysis

The SWOT analysis enlightens certain pressure points and gaps for the project. The group members' technical knowledge strength can be matched with the technical equipment opportunity. The limited experience in the area can be assisted by the course mentors which should provide a greater chance of success. The lack of budget could be problematic, but for this project all the required material should be provided, however there is a waiting time for materials that need ordering. The fact that the project aims to increase safety by making the city more interesting should be received positively by users and stakeholders in comparison of a surveillance-centered solution.

2.1 Limitations

The main limitation in the project is that it will only model a concept for a system. No actual system will be concretised beyond the model described in the goals-section. Furthermore, the solution proposal will only take the campus and surrounding areas with the the current residents into consideration.

2.2 Delimitations

Our focus is only on the university area of Umeå. We will also limit us to only making a proof of concept.

2.3 Aim and Research Questions

How can these smart environments (stretching over Ålidhem), and these individuals' activities be enriched with interactive, intelligent technology for increasing safety?

Some interesting questions to solve also as part of this problem is: How can we increase safety? How can we prototype a smart environment? What possibilities are there to make the campus and surrounding environment smart?

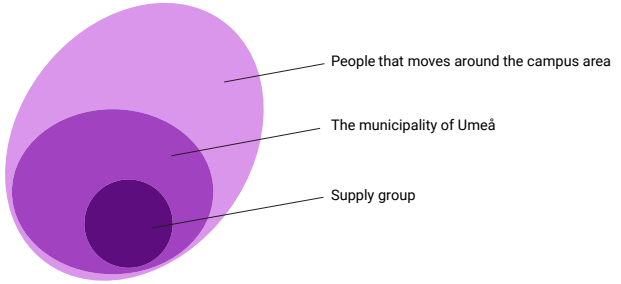
Anticipated Design Solution that will be Demonstrated January 10-11

The demonstration will consist of a prototype and a proof of concept. It will then be presented with a live performance.

Stakeholder Analysis & Organisational Structure

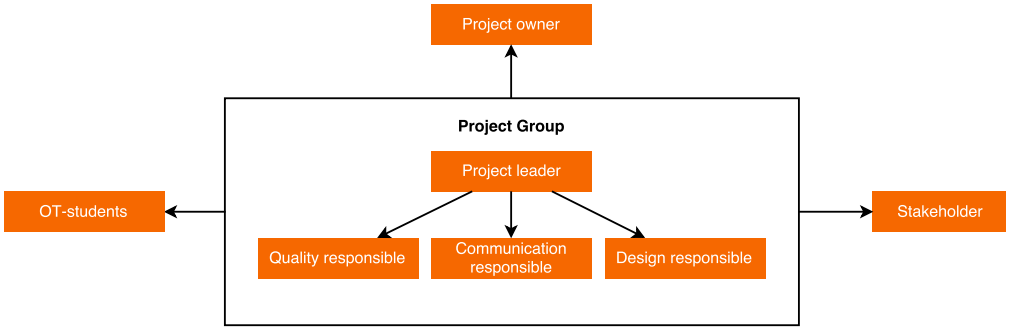
As shown in the image, our core stakeholders is the supply group. They are the ones that has the main interest in completing the project and also has the most influence over the project. Our primary stakeholders is the same as the projects clients, i.e. the municipality of Umeå. Lastly, the secondary stakeholders. Those who will be affected by the project somehow but will not take part in any decision making within the project.

Fig. 2: The stakeholder analysis



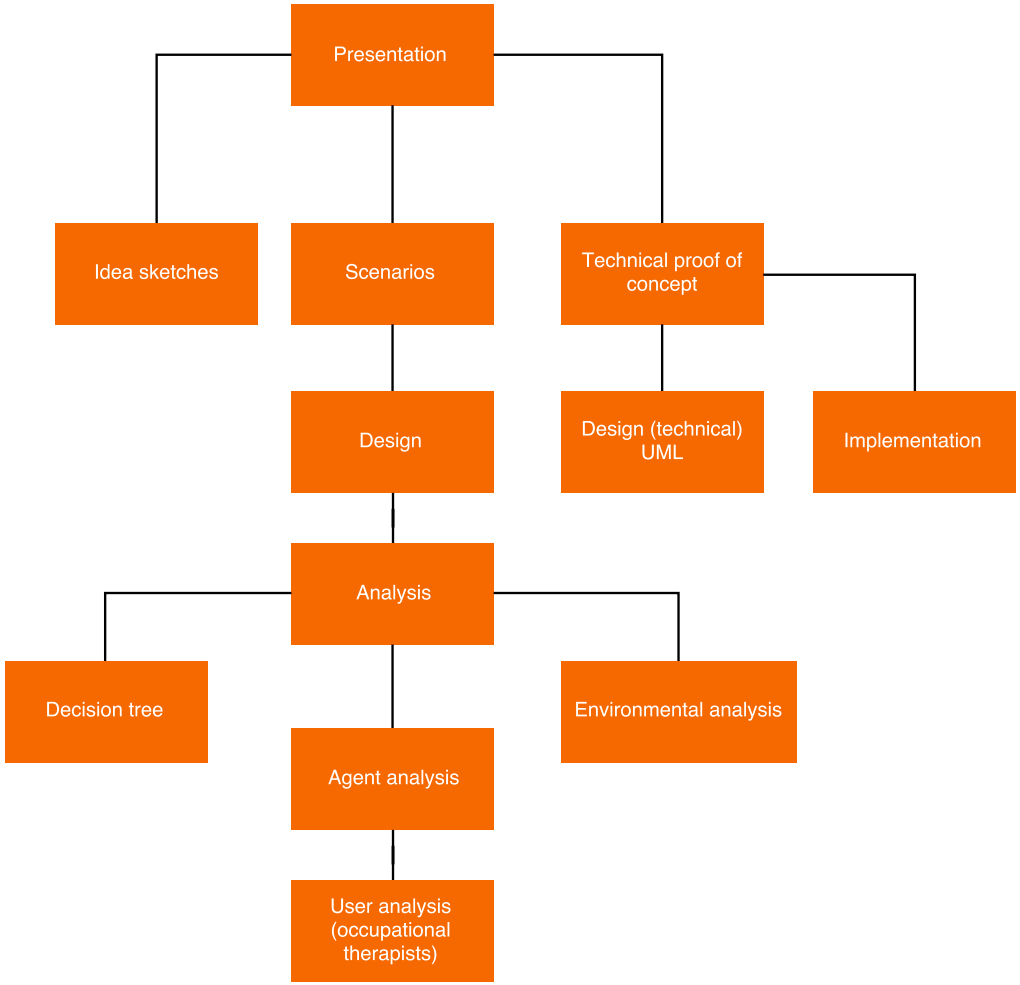
The figure clarifies how the communication should flow through the project. The project group make sure that they know everything they need to know from he project owner (Helena at the Interaction in Smart Environments course). They will also, together with the occupational students, communicate with the stakeholders at the municipality. In the project group, it is the project leader that makes sure that all the project members do what they are suppose to. Also the project group will talk to the OT-students to clear up uncertainties.

Fig. 3: Organisational structure



Work Breakdown Structure (WBS)

The Work Breakdown Structure shows the breakdown of the work that has to done. It shows all the essential steps that have to be performed to complete the task.



Communication Plan & Document Plan

5.1 Communication Plan

Fig. 4: Communication plan

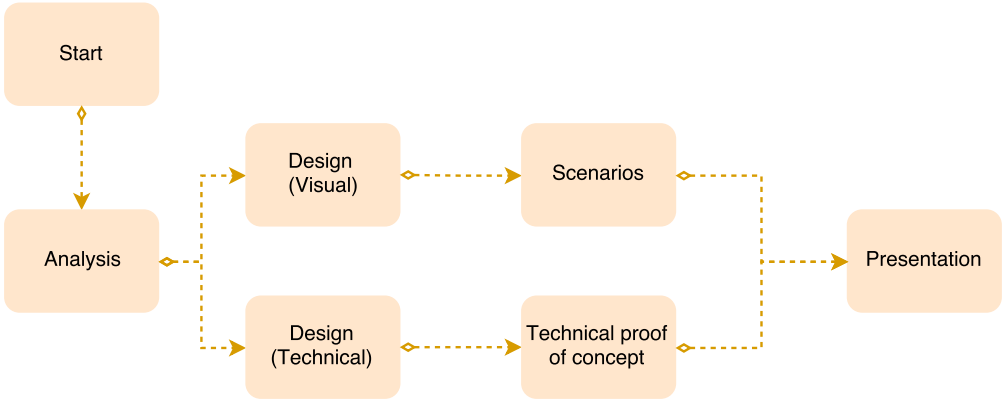
Who is the recipient?	Why?	What?	How?	When?	Who is responsible?
- Helena	- To get useful information from the project owner	- Status	- Messenger app	- When needed	- The project leader
- The municipality	- To get feedback from the stakeholders	- Results	- Project meetings	- At meetings	- The project members
- The project group	- To see what the OT students needs and contributes	- Presentations	- Presentations	- At deadlines	
- The OT-students		- Changes	- Email	- Continously	
		- Prototypes	- Report		

5.2 Document Plan

All documents are written in English and stored digitally in the Google Drive shared by all project members. The structure is as such that all pictures that can be used for the purpose of documentation and articles are stored in their respective folder in the resource folder.
All project management content is stored in their respective folder: pilot study and project plan, presentations, journal and meetings. The agenda for the meetings and making sure the journal is written is the responsibility of the one responsible for the documents, I.E. Marc.
All the documents that are sent to non-group members must follow a fixed latex template, for the pilot study and project plan it's Marc's responsibility to fix so the document follows the template.

Milestones

Fig. 5: Milestones



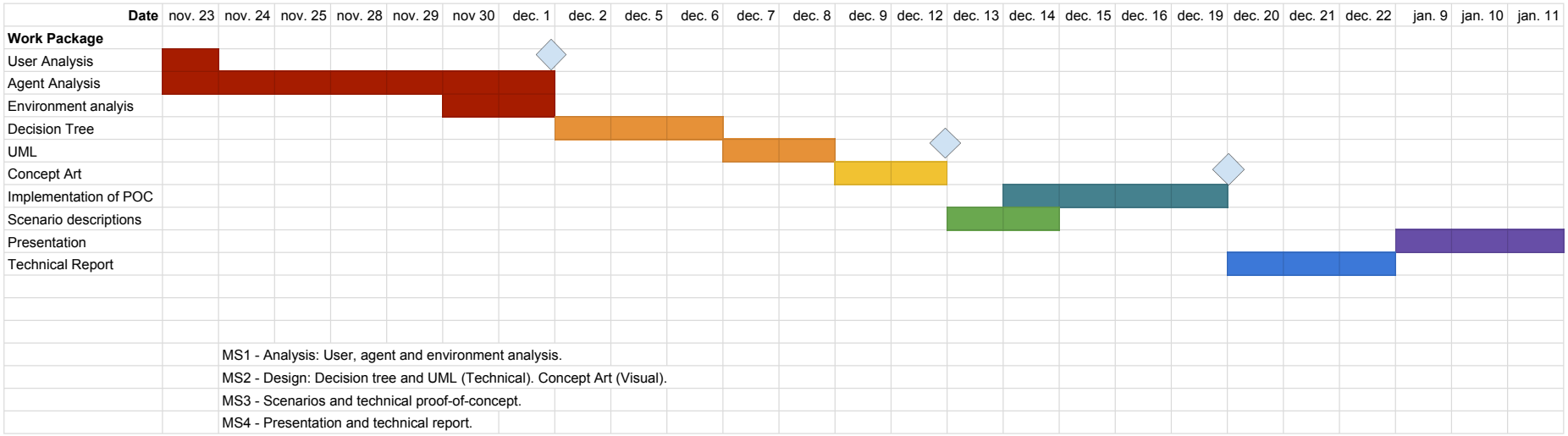
Time Plan - Gantt

The time schedule serves the purpose of determining how the project is progressing timewise. It consists of four milestones:
Milestone 1: Analysis of the user, environment and software agent of the system. Milestone 2: Technical design in the form of a decision tree and a UML class diagram. Visual in the form of concept art. Milestone 3: User scenarios and a technical proof of concept. Milestone 4: Presentation and technical report.
As the project progresses and a milestone is reached, the previous work is to be evaluated before the project group can move on to the following work packages. The first milestone is the analysis phase. The given problem is evaluated and the project structure is developed. This has to be completed in order for the next block of work packages can be tackled: the design.
The design of the solution in terms of functionality and visual features are developed with regards to the previous analysis work. The behaviour of the system is structured with a decision tree and a UML class diagram. The visual aspect of it will be represented with concept art.
As the design phase is complete, the project group are able to move on to building the techni-

UML (Unified modeling language) is a tool used by programmers for modeling the system so that it's easier to implement.

cal proof of concept and creating user scenarios. It is essential that the design is fully developed before this phase is initiated. For the proof of concept the technical design is required and for the user scenarios the interaction aspect of the system needs to be developed.
When milestone 3 passes evaluation, the final phase can be commenced. It consists of the project presentation and a technical report describing the different parts of the project. It is essential that this milestone is completed before the presentation deadline; 11 of January 2016.

Fig. 6: Gantt Chart



Risk analysis

8.1 Identification

The biggest danger to this project is the time constraints. The project has to be presentable on December the 15 and complete January the 11. The biggest threat is the lack of clear structure in the specification given by the teacher as well as limited technical knowledge. Overall anything unclear can make it difficult to be compliant with the time estimation. It's also important to watch out for potential problems with the scenario descriptions and sketches as they might not fulfill their purpose, I.E. explaining the product.

8.2 Evaluation

The mini-method risk gives us.

Scenario	Probability	Consequence	Risk value
Not done in time	1	1	1
Implementation issues	2	2	4
Unclear specification from teacher	3	2	6

8.3 Action Plan

The biggest hurdle to not being done in time is implementation issues and unclear specification from teachers. The action plan is then to be in constant contact with the teachers and supervisors, instead of wasting time trying to comprehend unclear instructions. As far as the projects sketches are concerned the way to avoid it is to have a strict review procedure with the entire group as well as evaluating if it's comprehensible for people who are outside of the project group.

Activity List

Fig. 7: Activity List. OT - Ocupational Therapists, PG - Project Group, PL - Project Leader, D - Design Responsible, C - Communication Responsible , Q - Quality Responsible

ID	Name	Description	Duration	Dependency	Resource	Responsible
1	User analysis	Identify user needs and problems	1 day	-	OT	OT
2	Agent Analysis	Come up with a smart agent that can solve the problem	1 week	1	PG	PG
3	Decision Tree	Make the internal intelligence for the system	2 days	2	PG	PG
4	Environmental analysis	Study the environment and come up with what we can use in it	3 days	2	PG	PG
5	Scenario descriptions	Draw illustrative scenarios	2 days	3-4	D-C	PL
6	UML	Make a UML of the technical proof of concept	2 days	3-4	Q-PL	PL
7	Implement proof of concept	Sensors, soldering etc.	4 days	6	PG	PG
8	Concept Art	Illustrative art of how the system should work	2 days	3-4	PG	PG
9	Presentation	Present the work on 11th of January + preparations	3 days	All	PG	PG
9	Technical Report	Wrap things up	3 days	All	PG	PG

Resources and Budget

The project goal is a presentation consisting of concept art describing the design and interaction of the system and a proof of concept describing some of its technological features. Due to the nature of the project, material costs will be able to be kept on a minimum and the vast majority of the outlay will be in the form of working hours. The ID-students will have the role of developers during the course of the project. They will have to spend more hours on the project and will therefore be the largest expense. The OT-students will assist by sharing their knowledge of their specific area and by contributing with valuable data by producing surveys. The OT-students part of the project will be the most intense during the onset of the project.

As for the specific cost of the different resources the costs are as such:

Lead developer: 740 kr/h a 58h Developer: 517 kr/h a 174h Assistant: 240 kr/h a 26h Material/Sensors: 5000 kr

Work Package	Date(s)	Resource Type	Hours	Cost per Hour (sek)	Total Cost (sek)
User Analysis	nov. 23	Lead Developer	2	740	1480
		Developer	2	517	1034
		Developer	2	517	1034
		Developer	2	517	1034
		Assistant	2	240	480
		Assistant	2	240	480
					5542
Agent Analysis	nov 23 - dec 1	Lead Developer	14	740	10360
		Developer	14	517	7238
		Developer	14	517	7238
		Developer	14	517	7238
		Assistant	7	240	1680
		Assistant	7	240	1680
					35434
Environment analyis	nov 30 - dec 1	Lead Developer	4	740	2960
		Developer	4	517	2068
		Developer	4	517	2068
		Developer	4	517	2068
		Assistant	4	240	960
		Assistant	4	240	960
					11084
Decision Tree	dec 2 - dec 6	Lead Developer	6	740	4440
		Developer	6	517	3102
		Developer	6	517	3102
		Developer	6	517	3102
					13746
UML	dec 7 - dec 8	Lead Developer	4	740	2960
		Developer	4	517	2068

		Developer	4	517	2068
		Developer	4	517	2068
					9164
Concept Art	dec 9 - dec 12	Lead Developer	4	740	2960
		Developer	4	517	2068
		Developer	4	517	2068
		Developer	4	517	2068
					9164
Implementation of POC	dec 14 - dec 19	Lead Developer	8	740	5920
		Developer	8	517	4136
		Developer	8	517	4136
		Developer	8	517	4136
					18328
Scenario descriptions	dec 12 - dec 13	Lead Developer	4	740	2960
		Developer	4	517	2068
		Developer	4	517	2068
		Developer	4	517	2068
					9164
Presentation	jan 9 - jan 11	Lead Developer	6	740	4440
		Developer	6	517	3102
		Developer	6	517	3102
		Developer	6	517	3102
					13746
Technical Report	dec 20 - dec 22	Lead Developer	6	740	4440
		Developer	6	517	3102
		Developer	6	517	3102
		Developer	6	517	3102

					13746
				Grand total (sek)	**139188**