

# BU5300 IT Project Management

## Home Exam V24



7/5-8/5 2024

Candidate: 57

## Innholdsfortegnelse

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## Assignment 1 – Project Constraints

To estimate the constraints for this project, I will use the Time/Cost/Scope triangle. It is important to balance these three, because one will affect the other. (Lecture 01, PowerPoint presentation page 14, Jefferson Seide Mollèri)

This is the estimated constraints for the CleanBee project:

### Time

Start Time:	1 <sup>st</sup> August 2024
Release and Testing Date:	1 <sup>st</sup> June 2025*

\*Changes may occur

This project has an estimated time frame of just over one year. Since this is a hardware project, it is important to emphasize that we are facing different challenges than in a software project. This may involve development, implementation and testing. Since the world is moving very fast when it comes to AI, the time may be a critical factor. We probably must have accelerated certain phases of the project, so it will not affect the quality. This will include testing and developing. According to (author here), *“projects that are pressured to reach the market within a certain time, If the project’s aim is to get a system in very quickly so that the customer can secure some competitive advantage, then time will tend to be the dominant factor.”* Referring to the nominal interest rate which is 8.20% after the project is complete.

### Scope

Scope:	Develop and implement a cleaning robot swarm, which is also efficient.
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When it comes to competition, the customer may get higher expectations, or it can be new and better features that the competitors are using. To manage this, we need to look at the project scope regularly, so that we do not go over budget.

### Budget

Budget:	5 million NOK
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It may be necessary to require additional investments to maintain the market, when it comes to competitiveness. We could explore the option for supplementary fundings, but any adjustments need to be carefully evaluated, to make sure it will not affect the others.

## Assignment 2 – Budget Planning

### Recurring Costs

### One-time Costs

Staff Salary	30%	Software license	15%
Marketing	10%	Research and development	20%
Data Storage and analysis	5%	Training and onboarding	5%
Quality Assurance and testing	5%	Customization and integration	10%
		Equipment for prototyping	10%
<b>Total</b>	<b>50%</b>	<b>Total</b>	<b>50%</b>

### Recurring Costs

These costs are based on their importance to sustaining project operations and ensuring continued progress throughout the project lifecycle.

### One-time Costs

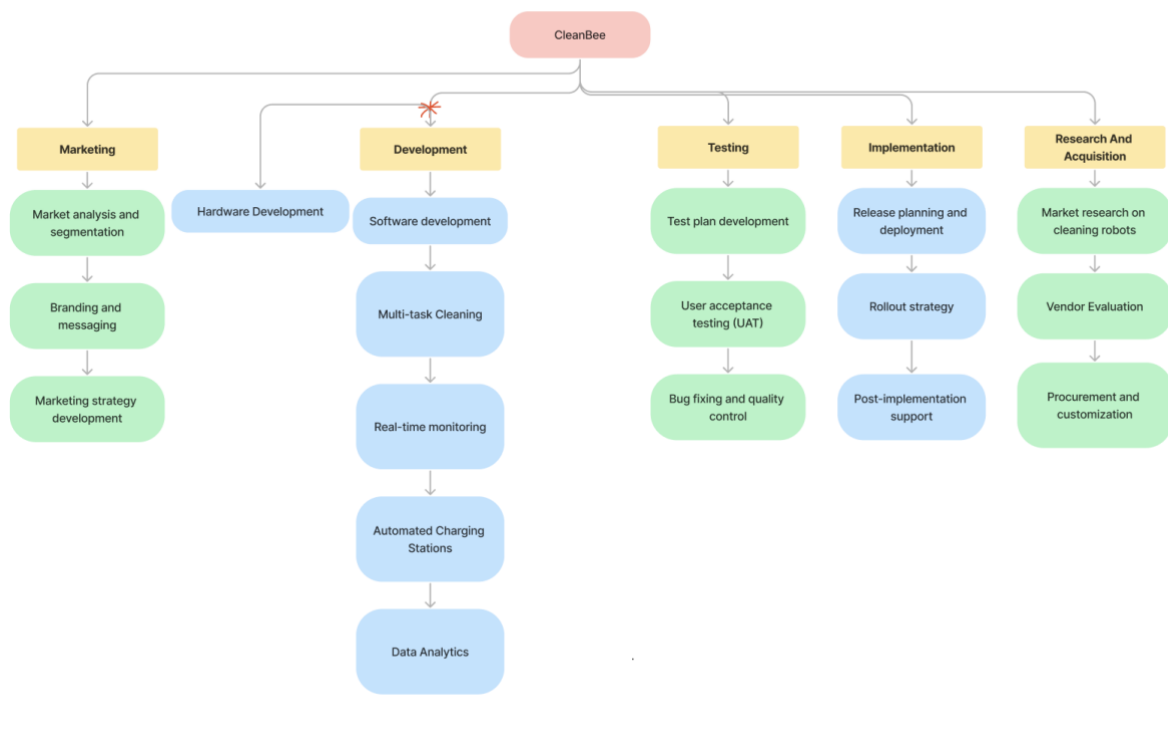
These one-time costs are crucial for the project's success.

By cover the expanses across these categories, we strike a balance between short-term operational needs and long-term strategic investments.

## Assignment 3 – Scope Definition

The Work Breakdown Structure means to break down the work into smaller pieces, or work packages (*Cadle & Yates, p. 117*)

The Work Breakdown Structure (WBS) below illustrates the hierarchical decomposition of the CleanBee project into its constituent parts. The project aims to revolutionize the cleaning industry by deploying a fleet of autonomous robots capable of efficiently cleaning large public areas, targeting hotels and hospitals. The WBS encompasses the five main features of CleanBee, along with research and acquisition efforts to identify and procure suitable cleaning robots. In the real world, it would have to be breaking down further.



## Assignment 4 – Effort Estimation

I discussed back and forth with myself, to find the most suitable method. I figured we could use different ones, but I chose to go with the “Direct estimation based on project breakdown”, because this method is “*generally used in developing plans for the immediate stage or sub-stage of a project*” (Cadle & Yates, p. 146). The work package (Research and Acquisition) is at the beginning the project, and not dependent on any other aspects, so that’s why I thought this was a suitable choice.

### Lifecycle Approach

I feel it was difficult to choose *one* lifecycle approach, especially since it’s both hardware and software involved. The most reliable one would probably have to be a combination between the b model and waterfall model.

The B model (Cadle & Yates, p.71) is well-suited for hardware development due to its emphasis on formal methods and verification. Hardware components often require rigorous testing and verification to ensure reliability, safety, and compliance with specifications. By adopting the B model for hardware development, engineers can systematically design, verify, and validate hardware components, minimizing the risk of defects and ensuring robust performance.

The waterfall model Cadle & Yates, p.69) provides a structured approach to software development, with distinct phases such as requirements analysis, design, implementation, testing, and maintenance. This sequential approach is particularly

beneficial for software development, allowing for clear delineation of tasks and deliverables at each stage. It facilitates thorough requirements gathering and documentation, which are essential for complex software systems.

## Effort Estimation

### Market Research:

1. *Analyzing Market Trends:*
  - i. Studying and interpreting patterns, behaviors and changes in the market relevant to the CleanBee project. This will include customer preferences, and potential opportunities and threats.
2. *Competitor Analysis*
  - i. Researching and evaluating the strengths, weaknesses, strategies, and offerings of competitors in the cleaning AI industry, particularly those targeting hotels and hospitals. This is to gain insights into the competitive aspects, identify market gaps or opportunities.
3. *Gathering Customer Feedback*
  - i. This will involve collecting feedback, opinions, and insights from potential customers, such as

### Vendor Evaluation:

1. *Identifying Potential Vendors*
  - i. Identifying potential vendors or suppliers who can provide the necessary products or services for the project. This may include contacting industry contacts, searching online or attending trade shows. The goal is to create a list of qualified vendors who meet the projects requirements.
2. *Evaluating Product Features*
  - i. After potential vendors are discovered, this focus on evaluating the features and capabilities of their products or services. This may involve product trials and comparing different offerings against the project's requirements. The goals I to determine which vendors product that fit the needs of the project.
3. *Assessing Pricing and Contracts*
  - i. This activity involves analyzing pricing proposals, negotiating terms offered, and reviewing contract agreements to ensure they are fair and in line with the projects budget.

### Procurement:

1. *Researching and Selecting suppliers*
  - i. The goal is to identify a pool of qualified suppliers that meet the project's requirements and specifications. This involves a more in-depth and comprehensive analysis of potential suppliers. It includes conducting detailed research on the identified vendors to assess their capabilities, track record, quality standards, pricing, and other relevant factors. Additionally, it encompasses the

selection process, where vendors are evaluated based on predefined criteria to determine the best fit for the project's requirements. The goal is to choose suppliers who offer the best value proposition and meet the project's needs effectively.

2. *Negotiating Contracts and Terms*

- i. Once potential suppliers are identified, this activity focuses on negotiating the terms and conditions of the procurement contracts. It involves discussions with suppliers regarding pricing, delivery schedules, payment terms, warranties, and other contractual terms. The negotiation process aims to secure favorable terms that provide value for money while mitigating risks and ensuring compliance with project requirements.

3. *Finalizing Purchase Orders*

- i. In this activity, the focus is on finalizing and formalizing the purchase orders with the selected suppliers. It involves preparing the necessary documentation, such as purchase orders, contracts, and agreements, based on the negotiated terms. The purchase orders detail the specific goods or services to be procured, quantities, prices, delivery dates, and other relevant terms. The goal is to ensure clarity, accuracy, and legal compliance in the procurement process.

### Research And Acquisition Estimation Breakdown

1. Market Research

<b>Task:</b>	<b>Estimated Effort:</b>
Analyzing Market Trends	20 person hours
Competitor Analysis	25 person hours
Gathering Customer Feedback	15 person hours
<b>Total:</b>	<b>= 60 person hours</b>

2. Vendor Evaluation

<b>Task:</b>	<b>Estimated Effort:</b>
Identifying Potential Vendors	15 person hours
Evaluating Product Features	30 person hours
Assessing Pricing and Contracts	20 person hours
<b>Total:</b>	<b>= 65 person hours</b>

3. Procurement

<b>Task:</b>	<b>Estimated Effort:</b>
Researching and Selecting Suppliers	20 person hours

Negotiating Contracts and Terms	30 person hours
Finalizing Purchase Orders	15 person hours
Total:	<b>= 65 person hours</b>

60 + 60 + 65 = 185 person hours in total, under the work package “Research and Acquisition”

## Assignment 5 – Time Scheduling

Since this is a complex project, I could use a PERT chart. But since this assignment only focus on the time schedule, I chose a Gantt chart. This is because it provides a clearer visualization of the timeline, allowing stakeholders to easily understand when tasks will be performed and how they overlap. I chose to have a team of 4 employees in this work package, because it is important that it will be time efficient, so that we can get the other work packages going. It is important to emphasize that this is just an example. It is important to emphasize that the negative aspects with this chart, that it does not show it dependencies.





## Assignment 6 – Risk Management

First, we must identify the risk. This can be easier said than done. (Cadle & Yeates, p. 260) Risk management is an ongoing process. Any risk management should also be involved with the stakeholder to analyze the risks together. I have set the risk probability and severity from 1-5, where 1 is low, and 5 is high.

Risk (1-5)	Probability	Severity	Description	Mitigation	Contingency Plan
Schedule <i>time</i>	3	5	Delay in the delivery from the suppliers	Have a communication plan with suppliers to have a smooth delivery. Regularly follow up if it's any delays.	If significant delays occur despite mitigation efforts, we must explore alternative suppliers or expedited shipping options to minimize impact on project schedule.
Budget <i>budget</i>	3	5	Since we are working with hardware, it can be that some tools can be broken etc.	Robust control system to monitor and identify deviations early. Have a budget buffer.	In case of budget overruns due to tool damage, we will prioritize essential repairs and seek additional funding through project sponsors or stakeholders.
Scope <i>scope</i>	3	5	Changing the requirements from stakeholders could lead to confusion and constraints	Implement a change control process to manage requirements changes systematically	In case of budget overruns due to tool damage, we will have to prioritize essential repairs and seek additional funding through project sponsors or stakeholders. If scope changes are unavoidable, conduct a thorough impact assessment and seek stakeholder approval before proceeding. Adjust project timeline

					and resources as necessary to accommodate changes.
Technology <i>time/budget</i>	4	5	Testing of robot technology or errors in software configuration could result in malfunctions and performance issues	Implement an iterative approach to development to allow for rapid bug fixing and iteration	If critical software errors are discovered during testing, we will prioritize bug fixes and allocate additional resources to meet project deadlines. Consider delaying non-essential features or functionalities to focus on resolving critical issues.
Staff <i>budget/time</i>	2	3	If someone in the staff is dropping out of the project could lead to delay	Implement a plan to identify critical roles and potential replacements	If key staff members unexpectedly leave the project, we will quickly find replacements and redistribute workload to minimize disruption to project progress.

## Resources

Cathrine H, Oct 26 2023,

[https://github.com/CatrineH/BU5300\\_IT\\_Project\\_Management\\_Exam/tree/main](https://github.com/CatrineH/BU5300_IT_Project_Management_Exam/tree/main)

Cadle, J., & Yeates, D. (2007). Project Management for Information Systems, Pearson Education

Lecture 01 IT Project Management BU5300, 13.01.2024, PowerPoint presentation page 14, Jefferson Seide Mollèri