Abstract

The bachelor Course System Design is a course for third year students Mechanical Engineering at Buskerud University College. This document provides the program and exercises.
Program

**Step 1, 2 half days**
- Multi-view system design based on CAFCR method;
- Iteration and time boxing;
- Functional, Conceptual and Realization view
  - Functional decomposition, construction decomposition modelling

**Step 2, 2 half days**
- Customer objectives and application view
- Story telling
- Use cases and scenarios

**Step 3, half day (optional)**
- Life Cycle view
  - product creation process, manufacturing and logistics, life cycle model
**Didactic Model**

A time-box is a fixed amount of time allocated to perform one activity.

We iterate many times over different viewpoints. Every viewpoint is addressed multiple times with new insights from other viewpoints.

---

**Explanation**

A time-box is a fixed amount of time allocated to perform one activity.

We iterate many times over different viewpoints. Every viewpoint is addressed multiple times with new insights from other viewpoints.
Example Case: Tree Cutting Robot

Tree Cutting Robot

background:

Less young people are willing to work in the wild and mountainous areas in Norway, Canada, or USA to cut trees for wood production.

product:

Robot that supports the cutting and processing of trees so that less people are needed
Example Case: Explorer Inaccessible Spaces

**Explorer Inaccessible Spaces**

**background:**

When renovating houses and buildings the builder needs to know the construction and the position of infrastructure

**product:**

Robot that is flexible and remotely operated that can explore inaccessible spaces in houses and buildings
Examples of cases

- apple, tomato, or strawberry plucking robot
- apple, tomato, or strawberry sorting robot
- tree cutting robot
- spinach or lettuce harvesting robot
- robot that removes or kills lices, wasps, or mosquitos
- communication device for elderly people (80+ years old)
- automated loader for Electric Vehicle
- robot to help builders to look in inaccessible places
- robot to install cables in tunnels
- device to assist elderly people (80+ years) with washing, clothing, eating, drinking, getting in and out bed
Homework instructions

presentation

filename: BSEAR team<your teamnumber/name> homework<number>

   e.g. BSEAR team1 homework1.ppt

all team members on front page

upload homework to Canvas

Questions email to: <gerrit.muller@usn.no>

from/cc: <all email addresses of team members>
The homework for step 2 is to consolidate the work of the first step.
Make a presentation of specification and design, including a list of highlights and risks.
Note that this presentation is intended for the management team of your company.
Home work Step 2

The homework for step 3 is to consolidate the work of the second step. Make a presentation of customer context and product specification, including a list of conclusions and consequences for the design. Note that this presentation is intended for the management team of your company.