Team CalSat proposal

Team members
Pepijn van Wees
Rens Verhaar
Axel Koning
Raphaël Lubbers
Silvan van Kampen
Stefan Mos

Mission overview

Secondary mission
Our secondary mission for the CanSat is to measure the difference in air quality between a densely populated location in the middle of Amsterdam and a less dense place, like the launch site of the CanSat rockets. The decrease of air quality is a big problem in the Netherlands and the modern world. World wide, bad air quality is responsible for every 1 in 8 deaths and we feel like there is not enough attention and research dedicated to solving this problem. With our mission, we hope to raise awareness for this problem, especially for people who live in big cities like Amsterdam.

Scientific and/or technical objectives
We are going to measure the difference in air quality by measuring the level of different gasses in the air. The main gasses we are planning on measuring are CO_2, particulate matter and NO_2. We are measuring these gasses because they have a high influence on the air quality. The gasses will be measured through the use of different sensors connected to the computer bord in the CanSat. After collecting the data from the sensors at both places, it will be used to make graphs and illustrations which will help with comparing the air quality of the two places.

Outreach program
For the Cansat competition, we plan to successfully tackle the outreach program as a team. We will do this through social media, advertising at our school, sending topics and findings to local newspapers and doing surveys among the public. Our target group with this project are the people who are interested in climate change and want to do something to change the situation as it is right now. We also want to focus on the younger generation, because they are the future generation who will decide about the climate, years from now. By targeting these groups, we hope to make them realize the problem of air quality and its consequences for the climate. We want to reach these people by forwarding our findings and plans to various newspapers and social media channels that match our topic. When we are satisfied with the end result of the competition we would like to use this for our individual portfolio. In our individual portfolios, each team member keeps track of his progress so that he can look back on this while discussing the process.

Project management

Team
We are a team consisting of six members and each of these members has their own skills, all these personal skills are described below.

Pepijn van Wees (Leader of the group/Designer)
As the team leader of this group, I'm responsible for coordinating everything that happens in the group, but that doesn't mean that I'm going to do nothing for the rest of the project. In addition to being the team leader, I'm also the designer of the team. I'm good with various 3D software and I know how to use the 3D-printer and the laser cutter to realize my designs. I also have experience with programming in different coding languages.

Rens Verhaar (Co-Leader/ Outreach/ Researcher)
Dear reader, I'm Rens Verhaar and in this team it is my job to make sure that communication, outreach and PR are as good as possible. During this project I participate fanatically in the brainstorming, because I think in a different way than many team members who are much more technical. I am also a co-team leader and I have to make sure that everything is double checked before certain assignments have to be handed in.

Axel Koning (Hardware/ Software Engineer)
I have experience with both hardware and software, and my job is to make sure the hardware and the software work well together. I can write software or install hardware, I have experience with both of them and I am confident that we will succeed.

Raphaël Lubbers (Software Engineer/ Data Analyst)
I am the software engineer and data analyst of the team. I have chosen to fulfill this task because I have an interest in both statistics and programming and especially in the overlap between these fields. I have experience with multiple programming languages, so I think I will be able to complete any software related task in this project.

Silvan van Kampen (Hardware Engineer/ Researcher)
As the hardware engineers of this team Axel and I are going to link all the hardware together which either goes in the CanSat, to accomplish the primary and secondary mission, or stays on the ground, to communicate all acquired data back to the team.

Stefan Mos (Data Analyst/ Researcher/ Design)
I have a lot of experience in a lot of different skills, but mainly I'm good at researching, analyzing data and designing. I have been doing projects in which I either research, design, analyze data or a combination of the above for over 5 years and I've gotten very handy with it. I know my way around building something with my hands using a drill, a laser cutter, a 3D-printer or just simply a hammer and some nails. Besides that I am very creative, energetic and have a positive attitude towards everything.

Tools and support
Here at our school "Calandlyceum" we have a workspace where we have access to almost every tool you could imagine such as drills, saws and soldering machines. We also have access to a 3D-printer and a laser cutter. In terms of support we have access to several teachers who could help us in many different areas such as the computer science teachers for programming support, the physics teacher for help with the physics side and the R&D teacher (who is also the teacher registered as team leader) who can help us realize the CanSat and write reports.

Planning

For the CanSat competition, we as a team use the time we have for our profile paper and master's thesis. This means that we have an average of 120 hours per person for the CanSat competition, a large part of which falls within the technasium class hours. We have 3 hours a week with the entire team, and beyond that we can also use the facilities of the technasium room. Some of us have overlapping free periods and we can also use those to work on the project.

- Each team member works on the project approximately 6 hours a week.
- The team consists of 6 team members.

We are planning on researching about building a CanSat in the early stages of our project. After we have researched everything about the CanSat we are going to design it with the use of a 3D-model and sketches. When we know exactly how we are going to build it and which materials we are going to use, we are going to gather all the materials needed and start constructing the CanSat. During the building process, we are going to test the different parts of the CanSat and once we have made sure everything works fine, we are going to test the whole CanSat. During this we will make sure to track our progress for our Progress Report.

Finance

In order to build a CanSat we are going to make quite a few expenses, for example all the hardware inside the CanSat and all hardware inside the CanSat. In order to fund this project we have two major ways:

1. Our school will finance the usual expenses during our project, for example:
    a. The transport to the launch sites
    b. The testing of the CanSat
    c. The use of 3D-printers and laser cutters
2. For all of the hardware which aren't included in the finances of our school the robotics division in our school will cover the costs, for example:
    a. Any hardware needed to carry out our secondary mission
    b. Any extra hardware needed for the CanSat

Because of the financial backup of our school and the robotics division we are confident that the financial part of this project will not be a big hurdle for our group to successfully finish our CanSat project.

As a team we are really looking forward to this project, and we hope that we can participate in this competition!