Process report

Introduction

Groep T and the Umicore Solar Team gives us the assignment to build a Small Solar Vehicle. It was not only the case to realise this car but also the theory behind was important. Each team member had its own qualities and skills. The combination of skills and knowledge should lead to a good result of the project.

We made this process report to evaluate the whole project of the SSV. In this report we compare the estimated planning to the actual planning and give some problems about the organisation and the cooperation. We give also a review of the activities of each team member and the skills they get before and after the project.

Planning

The Gantt chart we made in the beginning of the project corresponded well with the Gantt Chart we became on the end of the project. The only thing we forgot to implement our first Gantt Chart was the demonstration day. This is due to the fact that we had to demonstrate our SSV at the Race Day. But because of the weather we had to demonstrate our SSV a week before the Race Day.

We made our Gantt Chart in the first week. What we had to do for the EE4 project, wasn't completely clear. So there were a few things that we over- or underrated in the Gantt Chart.

For Case 1 the thing we totally underrated was the production of the different parts of the SSV. We actually made 2 different SSV's. Because the first one was too big and heavy, we changed our frame and axis. Because of this, we spend a lot more time on the production of our SSV than we expected.

For Case Simulink, the total expected hours matches with the total hours we spend on this case. Only the subcases differs a lot with what we expected. This is because we didn't knew the program 'MatLab' and so we didn't knew how much time it would take.

 In Case 2 we underrated the simulation of the drive shaft. This was a lot of work, because we had to implement a lot of theories from different lectures. We had to use theories that we hadn't seen yet, for example the theory of Von Mises. The technical drawings we totally overrated. From our experience with technical drawings in EE2, we thought we had to spend a lot of time in making this drawings. But after all, we only spend five hours to draw in Solid Edge.

The Enterprising and Educating parts matches good with what we expected. Because we already have a lot of experience from the earlier engineering projects, we knew very well what we had to do for this parts and how much time it would take. So we didn't made mistakes in our expectations.

We can conclude that we made some mistakes in the engineering part. The reason for this mistakes is because in the beginning we didn't always knew what we actually had to do. When we started

working on the different cases, it became immediately clear which parts we over- or underrated. The parts where we had already experiences with, were good estimated. So it's easier to estimate tasks when you have already some experience with.

Skills

Which skills were from the beginning of the project sufficiently present within the team?
- Enthusiasm
- Dedication
- Creativity
- Team-spirit

Which skills have you developed during the project?
- Problem solving
- FabLab knowledge
- Time managing skills

Which skills were insufficiently present?
- Procrastination was present
- Theoretical knowledge about some topics

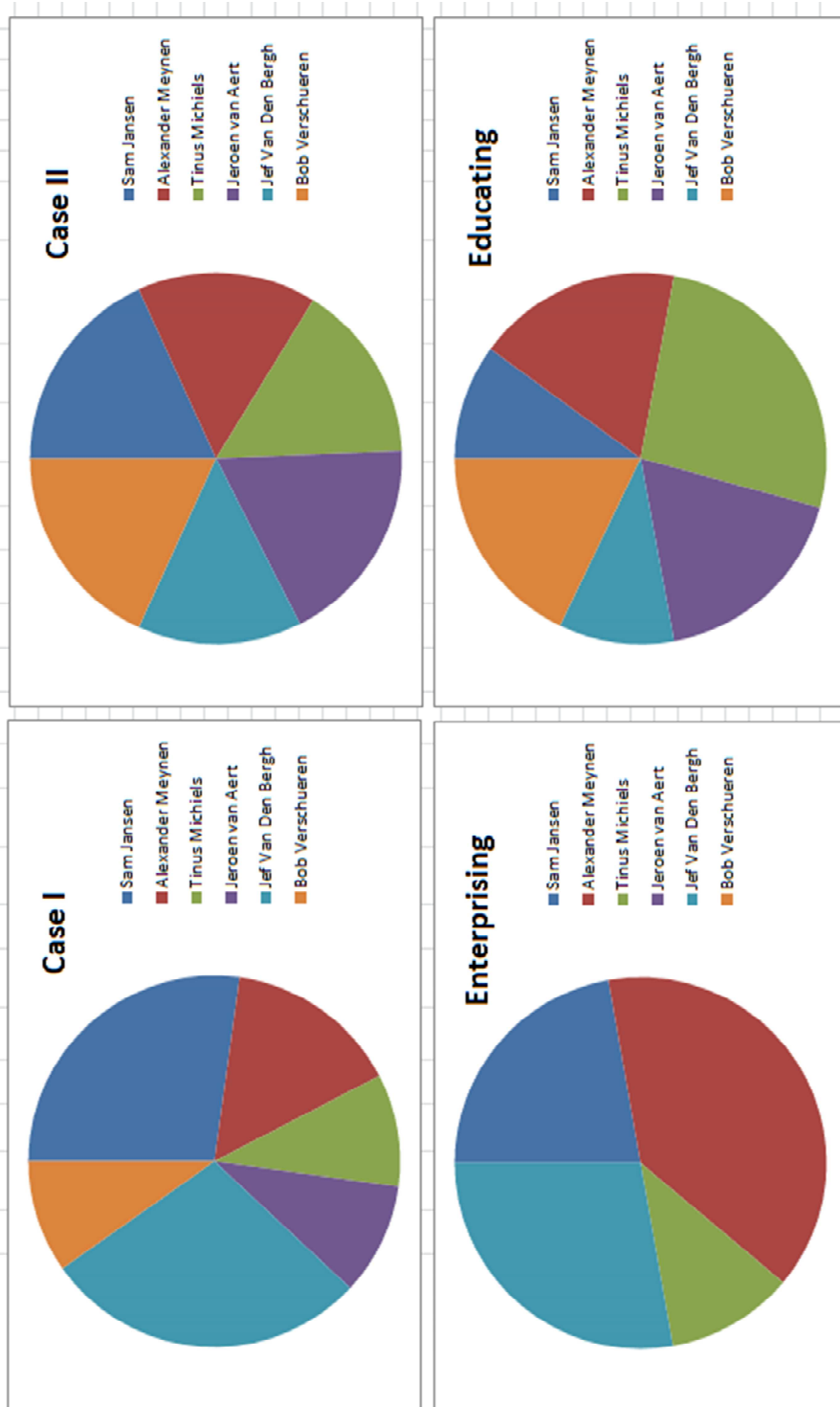### Which skills caused problems? How were those problems solved?

Procrastination: Each deadline we had to hurry to finish our report. However we were always able to finish them in time. There was little we could resolve about this issue.
Theoretical knowledge: This was a bigger issue about some topics like the sankey diagrams, Simulink and Von Mises, we did not have the theoretical knowledge required to complete these on our own. We had to search a lot to find some solutions online or ask help from one of the coaches.

Cooperation

We had the luck to have a very diverse team. Each and every one had his own specialty. On every case there were several different things to be done, so we separated the work equally so every member did what he does best.

Here are some pie charts to illustrate how much each member worked on each case. These are the actual numbers from the Gantt chart.

Case II

- Sam Jansen
- Alexander Meynen
- Tinus Michiels
- Jeroen van Aert
- Jef Van Den Bergh
- Bob Verschueren

Educating

- Sam Jansen
- Alexander Meynen
- Tinus Michiels
- Jeroen van Aert
- Jef Van Den Bergh
- Bob Verschueren

Case I

- Sam Jansen
- Alexander Meynen
- Tinus Michiels
- Jeroen van Aert
- Jef Van Den Bergh
- Bob Verschueren

Enterprising

- Sam Jansen
- Alexander Meynen
- Tinus Michiels
- Jeroen van Aert
- Jef Van Den Bergh
- Bob Verschueren

Conclusion

Now we are in the final weeks of the project we look back on the road we took that got us here. Looking back on the process we wouldn't have done much differently. Everything went pretty smooth, of course there were some problems but these we're as quickly solved as they came. The building of the car went pretty smooth as well, however we had to construct a final version of our SSV because the first prototype was not ideal for the task. At times the organization of the making of the documents could be more efficient, because it was hard to organize the several documents.

Now the project is nearly done, we see that we reached our goal and it met our expectations. The construction took some time, but in the end we reached a car which can reach the end of the track.

Looking at our SSV and comparing it to the others, we would have done some things differently. Some ideas were very good, like the use of Plexiglas en bearings. But on the other hand we have no collision system, something that we would definitely had incorporated if we thought of it more early. Another thing we could have done different was the use of thicker axles instead of thin 3 mm axles. Our design is simple and effective. When we look at the other vehicles we see amazing designs on the one side and rectangles with four wheels on the other. Our vehicle works fine and does the job. All by all, we love our little creation and wouldn't switch it for any other.

If we could decide to change some things about the project itself, we would change the several little things that came with the project and are not necessary for the final result. Things like a Gantt chart aren't used a lot in this project because the project is still guided a lot by the two big cases and the planning that is made by the coaches.