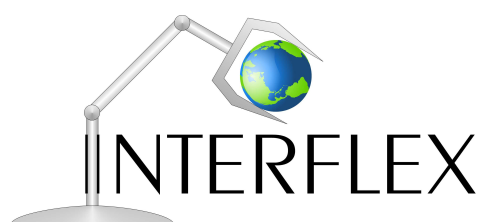


Intelligent waste sorting robot

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1 Collaboration

1.1 Belbin

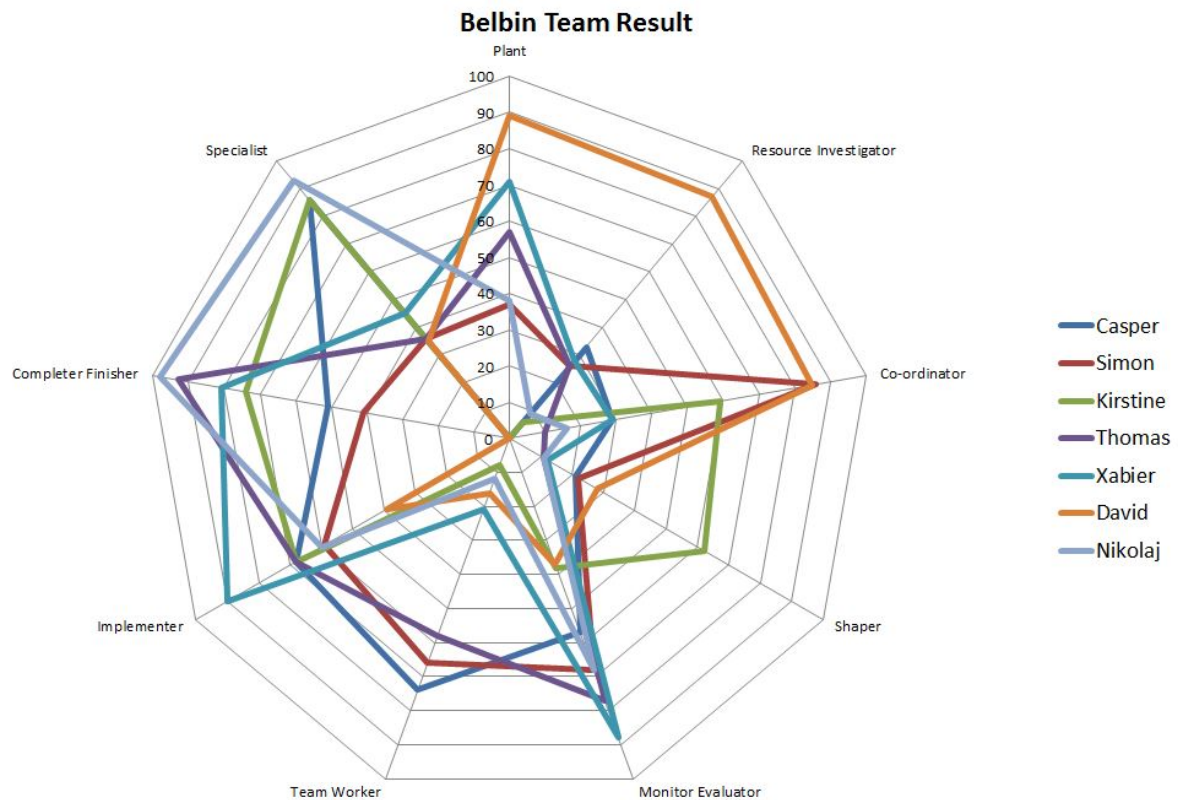


Figure 1.1: Belbin Self-perception "Spiderweb"

This table (table 1.1) is based on the results of the individual tests, which is also reflected by the spider web chart (figure 1.1). The table shows the strong and weak roles for the team profiles.

It is very clear that the group has a major potential when it comes to developing solutions to perfection, while being able to investigate the different possibilities. This could be explained by the amount of specialists in the group.

It is also very clear that the group lacks drive and a key person to set the pace of the work processes. The group has to be aware that the beginning of project is the vulnerable timespan. This is due to the missing Plants who provide creativity and innovation to the group, together with the resource investigators who makes sure the actual ideas are possible at all.

<i>Contribution:</i>	<i>Allowable Weaknesses:</i>
Top 3 roles:	
Monitor Evaluator	
Sober, strategic and discerning. Sees all options and judges accurately.	Lacks drive and ability to inspire others. Can be overly critical to others.
Implementer	
Practical, reliable, efficient. Turns ideas into actions and organizes work that needs to be done.	Somewhat inflexible. Slow to respond to new possibilities.
Completer Finisher	
Painstaking, conscientious, anxious. Searches out errors. Polishes and perfects.	Inclined to worry unduly. Reluctant to delegate.
Worst 3 Roles:	
Shaper	
Challenging, dynamic, thrives on pressure. Has the drive and courage to overcome obstacles.	Prone to provocation. Offends people's feelings.
Plant	
Creative, imaginative, free-thinking. Generates ideas and solves difficult problems.	Ignores incidentals. Too preoccupied to communicate effectively.
Resource Investigator	
Outgoing, enthusiastic, communicative. Explores opportunities and develops contacts.	Over-optimistic. Loses interest once initial enthusiasm has passed.

Table 1.1: Top/Worst 3 Belbin Self-perception for the group

1.2 SWOT

The SWOT-table (table 1.2) is a combination of all group members individual SWOT-tables. By combining each SWOT-table into one, we get a very good overview of the strengths and weaknesses for the group.

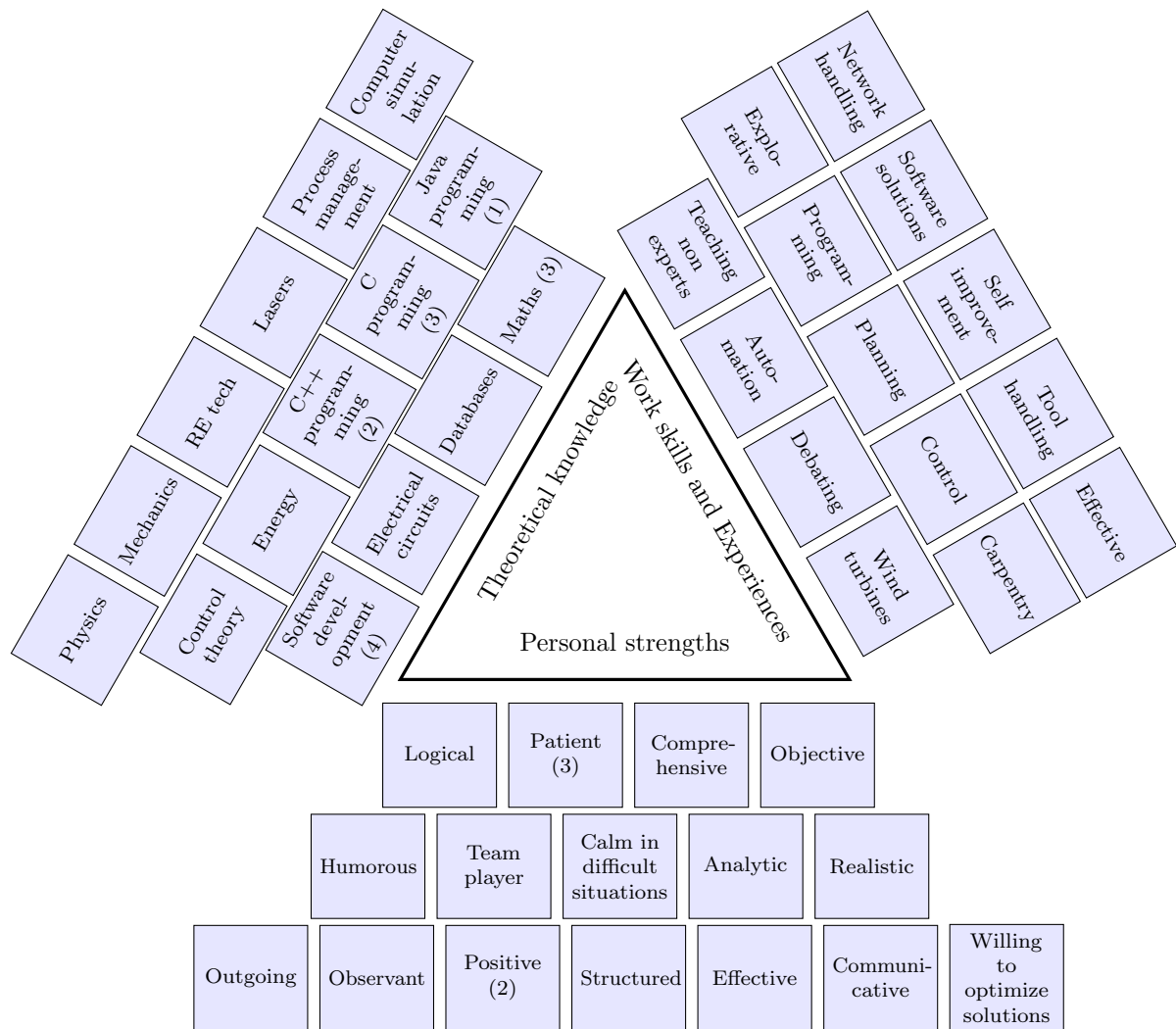
By looking at the two boxes with strengths and oppotunities we see that there is a lot of words and sentences that indicates that our team is great at solving and working with problems and furthermore is very well structured. The two boxes that contain weaknesses and threats indicates that the team is marked by stubbornness, non-shapers and non-innovative members. This implies that the team probably will have a hard time getting ideas and to start working on a problem.

It is a kind of a paradox when we take a look at the strengths and weaknesses of the team. We are very good at solving and working with problems, but at the same time we are having difficulties finding and or creating these problems. This means that the team should be aware of difficulties in the beginning of the projekt and not so much later on.

Strength	Opportunities
Patient(2) Tolerant Open minded Working with others Communicative Strong work ethics (2) Adaptable Team player Open minded Communicating On time Social Experience (work) Effective Technically skilled Clever Logic thinking Able to prioritize Well organized Decisive(2) Ambitious Thorough Decisive Dedicated to solving issues/problem Comprehensive Discipline on my own Creativity and innovation	Problem solving(3) Good presenter Broad contacts Interested in management Solve problems on time Able to structure the report Can finish a project. Can work from somebody's schedule Can work late Not afraid to delegate and face impacts Mindful of others and open for communication for instance the workload Can work in different areas Idea generation Technical skills Easily can learn other subjects Team worker
Weaknesses	Threats
Stubborn(2) Impatient Inflexible Being on time Express my ideas Unwilling to recognize the value of my work Not starter (If goal is unclear)(2) Loses focus easily(3) Not very innovative/creative (2) Overview Working fully on my own Skeptical within my area Not a perfectionist Bad at keeping track of who knows what Meeting deadlines Uncomfortable with uncertainty	Not a specialist Easily get stressed Impatient, if others don't understand Might be difficult to understand Bad at solving problems myself Bad at remembering details Might ignore good suggestions when focused on other/own ideas The development phase might be slowed down Reduced working time I like parties and going out/I prefer fun over work Focus on too many areas We might never get started Bad at getting ideas to startup a project Losing focus Need things planned in good time Get stalled in some point of the project Don't finish on time

Table 1.2: SWOT-table

1.3 Competence triangle



In order to learn more about each group member a competence triangle was created. The competence triangle separates competences that are on a personal, theoretical and experience level. This is done to get a better understanding of how people view themselves and what their education involves. Each member wrote down 2-3 things about themselves and each item was discussed and how it related to the project. The group have a lot of math and programming focused people. The group does not have a lot of business oriented people.

1.4 Conclusion

The team has had a lot of difficulties finding a problem that we wanted to work with. We have been using innovative tools including brainstorming to come up with ideas particularly around e-waste but we never got anything useful. After a meeting with the supervisors who told us that we needed to move forward, we decided to work with an idea that was mentioned in the introduction of the project.

By looking at the results from the Belbin and SWOT-table it is not surprising that the team ended in the situation that we did. It is apparently very clear that the team has a weakness when it comes to idea generation and as well a strength in problem solving. Prospectively it would be a good idea to look at the results from the team tests so we don't end up in the same situation as we already have.

2 Innovation and business

2.1 Pictures

For an idea generation process we all sat around the same table and passed around pictures. We started with the pictures faced down so we would pick them at random. When passing the pictures around, each of us said what came to mind when looking at the pictures, always keeping in mind that we were to make a creative functional robot. We made sure not to comment on each others thoughts so all thoughts were allowed.

It was very interesting to see how different pictures generated different thoughts. There was a picture of an opera singer, and the thoughts there were: "Loud", "Hard work", "Love for your work", "Human interaction", "Service provider", "Sound recognition" and "Training algorithms". Another picture was of a cellphone and the thoughts there were: "Interface", "Monitoring", "Portability", "Connectivity", "Extension/Multi-functional", "Compact", "User experience", "New experience", and "Awareness/focus".



(a) Picture of opera singer used in the idea generating process. (b) Picture of cellphone used in the idea generating process.

Figure 2.1: Pictures used in the idea generating process

In the beginning of this process several of us found it to be some what a waste of time. It was difficult to see how a picture of an opera singer should help us design a robot. After the process, however, we all agreed that we had come up with some really good words, and a lot of them were words that we would like to describe our product, e.g.: "Mobility", "Safety", "Combined knowledge", "Service provider" and "Precision". Other words we would have to make sure would not end up describing our product, e.g.: "Loud", "Danger", and "Legal issues".

3 Expert skills