

**Cross-functionality
at Teijin Aramid;
how to get the
Automotive Taskforce
up and running**

**Master Thesis
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November 2016**

Acknowledgements

These past few months have been incredibly busy for me with research, writing up results, interviews and finalizing this thesis. Now that I can look back on it, however, I can say that, even though it has been hectic at times, this has been a very educational and inspirational period in which I learned a lot. Not only about my research topic, but also about myself, work ethics and the people that I had the pleasure to work with.

I would like to take the opportunity to thank Teijin Aramid and especially Ton de Weijer and his team for taking me in during my research period. Their guidance, help and insight has helped me shape this research.

Furthermore, I would like to thank my family for their unwavering support. Your good intentions were always felt, although appreciation may not always have been vocalized, I really do appreciate all your support and help.

Lastly, a special mention for my fellow students Lisa Bakir, Daniek Bosch & Iris Geerdink. The fact that we were all in the same situation was a great support. Whenever I would have a standstill or run into problems I know that I could fall back on their opinion and support. Thank you for that.

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Introduction

This master thesis will show you the path of my research at the Teijin Aramid organisation. I have conducted research there for 5 months with regards to their Automotive Taskforce group. The organisation is at this moment still divided in separate silos that each have their own approach for customers.

The management team in the headquarters in Japan conceived the idea of creating a cross-functional team in the form of the Automotive Taskforce. This team would then facilitate working together and sharing knowledge and information about the automotive industry. This means that different silos that cater to the automotive industry would be able to work together.

Even though the Japanese headquarters have already put together a small group of people to form the Automotive Taskforce, there is also a need to involve the European side of the Teijin organisation, namely Teijin Aramid and Toho Tenax Europe. This is where the issue arises. Currently, the Automotive Taskforce does not speak to the employees in the Teijin Aramid organisation. My research is to find out why the Automotive Taskforce is not taking off here in Europe and what can be done to make it work.

In this introduction I will be providing some context as to what the Teijin and the Teijin Aramid organisation look like. Furthermore I will give some background into how the Automotive Taskforce was set up in Japan and what it is that they are currently busy with.

Context: a look at the organisation

The research for this master thesis will be done at Teijin Aramid. To provide some context into the problem and the research, an overview of the company will be given.

Teijin is a multinational company with locations all around the world. Its headquarters are situated in Osaka, Japan. However, operations occur worldwide, with facilities in Europe, North America and Asia. In total Teijin is comprised of around 152 companies around the globe. One of these companies is Teijin Aramid, with three locations in the Netherlands. Arnhem is the head office, with two production plants that are situated in Emmen and Delfzijl. For an organisational chart, please refer to appendix 1.

A different company that is also part of the Teijin Group is Toho Tenax. This company was also acquired by Teijin in 2000 and has three different divisions; Toho Tenax Japan, Toho Tenax Europe and Toho Tenax America. Their main product is carbon fibres and composites.

Both Toho Tenax and Teijin Aramid are positioned in the Advanced Fibres and Composites Business Group within the Teijin group. For reference, please see appendix 2.

Teijin Aramid was bought by Teijin in 2000 from Akzo Nobel. Teijin Aramid was absorbed into the high performance fibre business unit (HPFBU). At Teijin Aramid, there are sales & marketing, production and R&D activities. These R&D activities can be split up in the type of aramid. The groups are broken down into a para-aramid group, a meta-aramid group, a process team and different groups categorized by expertise. Please refer to appendix 3 for the organisational chart of Teijin Aramid.

Aramids

The main activity of Teijin Aramid is to produce aramids. Aramids are high performance fibres that

were first applied commercially in the early 1960s. The properties of the aramid depends on the type. Teijin Aramid produces two types of aramid. The para-aramid and the meta-aramid. The para-aramid has high tensile strength properties and modulus behaviour. Meta-aramids on the other hand have a high resistance to high temperatures, chemical degradation and abrasion.

The aramids produced at Teijin Aramid are Twaron, Sulfron and Teijinconex. Twaron and Technora are both yarn that is spun in the factory with a specific dry-jet wet-spinning method. Sulfron is an aramid in the form of small cylinders. Teijinconex looks like shredded versions of the other aramids.

These different aramids can be used for different end applications. At Teijin Aramid, they have divided up the activities based on application. This has led to five different business units, or resorts as they are referred to within Teijin Aramid. These are Tires & Mechanical Rubber Goods (MRG), Friction, Ballistics, Optical Fibre Cables & Composites (OFCC), and Protection & Safety.

At this moment there is no interaction between the units with regards to dealing with customers. Each unit has their own technical and sales team that go to the customer to speak about the specific application of aramids for their own unit.

Co-operation between Teijin Aramid & Teijin

Teijin Aramid has a rather autonomous position within the Teijin Group. The CEO of Teijin Aramid reports to the HPFBU-manager in Japan. There is some involvement of Japan, however, there is a lot of freedom in the decision-making. Part of the reason why Teijin Aramid can take such an autonomous role is that it is a very profitable company compared to other overseas companies that Teijin has under their control.

A thing to note is that when Teijin bought Teijin Aramid in 2000, no real efforts were made to unify corporate identity and culture. There is no real argument or reason that the employees can point to as to why this choice was made. However, later in this thesis, it will become clear that communication is not always optimal and this can sometimes interfere with daily business.

Recently, an effort is being made to bring the different entities within the Teijin Group closer together. This is done thanks to a program called One Teijin. One Teijin promotes cooperation, communication and transparency between the different entities.

Current business

At this moment Teijin Aramid is a raw materials supplier. This means that in the value chain they are positioned rather in the front. At this moment, the contact with the end user is rather minimal.

Teijin Aramid has had some difficult years in 2009 and 2011, however, business is picking up again. In the 2015 annual report, the high-performance fibres sales are steadily rising or recovering from the lesser years. However, the CEO of Teijin, Jun Suzuki, has laid out a vision for the future. The idea is to move further down the value chain and provide more solutions for the end users with a future focus. As a trial, it was decided to first try this new business model with only one business segment. For that the automotive industry was selected. The idea is to have a team that will focus on making contacts with the end users in the automotive industry, like Nissan, Volkswagen, Toyota, etc. in order to map needs that will be relevant between now and the coming 10 to 20 years. A more detailed explanation into how this is envisioned will be discussed in the next segment.

Context: the Automotive Taskforce

As explained previously, the origin of the automotive taskforce lays in the fact that it was recognized by the CEO that the current way of doing business, although profitable, might not last forever. An analysis performed by the Teijin corporation lead to a few realizations. Firstly in the automotive industry it can be seen that although in general the business is more profitable, this does not translate in higher and better sales numbers for Teijin (Aramid). Secondly, customers are not getting maximal value from the current form of organisation, with every business unit separately contacting the customers.

After this analysis, the CEO set out to promote more unity and a more end-user focus approach. This has been realized in the automotive taskforce. The automotive taskforce will set out to provide a new approach to end users in such a way that it can provide added value. Part of this is moving away from the single sided approach. In the automotive taskforce, this means that a cross functional team will be set up. This team will work together in contacting the OEM, and finding out the needs. By then combining the knowledge and techniques from the different units together with, if needed, other tier 1 suppliers, the automotive taskforce will aim to provide solutions for the identified needs of the OEM.

At this moment the taskforce is taking up a virtual form at the Teijin headquarters. This means that there is no full time dedicated team at this moment. There are two full-time assigned members at this moment. The leader of the taskforce and the deputy. Besides these two members there are part-time team members who participate in and contribute to the automotive taskforce next to their regular function within Teijin. The other members of the taskforce are all business unit leaders of the different respective business units and have a background in either sales or research.

Initial definition and assumptions for the Automotive Taskforce

What is most important to know at this moment is what the scope of the automotive taskforce will be, how it will be defined within the organisation and what kind of work the taskforce will perform. Some of the explanation of the scope and the work of the taskforce may overlap with the problem analysis and the interview data.

As mentioned previously, the automotive taskforce will be set up like a cross-functional team. In this cross-functional team there will be a mix of both sales and technical people. The aim of the automotive taskforce is to get into contact with the OEMs of the automotive industry. After this contact has been established, the automotive taskforce will set out to schedule a meeting. During these meetings, Teijin and the portfolio will be introduced. The portfolio and discussions do not limit themselves to Teijin Japan or Teijin Aramid, but rather take a birds' eye view and discuss the whole of the portfolio.

During these discussions, the aim is to uncover what will be the needs and problems of the OEM in the coming twenty or-so years. These uncovered needs and problems will form the basic framework that the automotive taskforce will work with.

The automotive taskforce's goal is to use the portfolio and technologies of the entire Teijin group to their best advantages in order to provide the best solution to the needs and problems of the OEM. However, should the need or time arise that the Teijin portfolio is not sufficient, then the automotive taskforce is also open to collaborating with other (tier 1) suppliers in order to achieve the best possible solution.

The aim of the automotive taskforce is not to ensure that Teijin will become a tier 1 supplier in the automotive industry, but rather to work with the OEMs and from time to time with the tier 1 suppliers. This was labelled tier 1.5 by one of the members of the automotive taskforce. Essentially, what is meant is that Teijin will not take over a tier 1 spot, but rather work together with other tier 1 suppliers and support them, whilst on the same time promoting Teijin's own products.

According to the leader of the Automotive Taskforce, the information that is collected and used to compile a needs list is collected in different ways. One is by scheduling regular meetings with the OEMs. This is done when previous contact has already been established. This also allows for continuous discussions. The second way of information collecting is by application. This happens when the OEMs are looking for raw materials that they need for their production. When they have made contact with Teijin and a meeting has been held, further discussions can be held to compile information and perhaps a needs list for the coming years. The third method of collection information is to actively seek out the OEM and attempt to make contact. This way meetings can be scheduled to set up a conversation that will be useful for the Automotive Taskforce and, in the end, Teijin.

The information that is obtained from the OEMs is not universal. There is not a checklist that the members of the Automotive Taskforce check when asking questions or during a meeting with the OEM. According to the leader, Akihiko Kumaoka [hereafter Kumaoka], the questions and conversations should be flexible. General information is always obtained, however, depending on the product, the OEM and the application of Teijin materials for that specific OEM, questions can and will differ.

Research question and assumptions

Based on the background information that I was given by the supervisor at Teijin Aramid, my research question will be *What are the reasons that the Automotive Taskforce is not implemented at the Teijin Aramid organisation at this moment and how can it be implemented?*

Before starting the research at Teijin Aramid there were assumptions and expectations from my side with regards to the Automotive Taskforce.

These assumptions were based on the things that I was told during the first meeting before starting my research. These assumptions were mainly that there was a resistance to knowledge sharing within the Teijin organisation and that this was the main root as to why the Automotive Taskforce has not been picked up yet by the Teijin Aramid organisation. Another assumption that I had before starting this research was that organisational culture and cultural differences might also have influence on why the Automotive Taskforce is not yet picked up in the European branch of the Teijin organisation. The assumptions can be summarized as follows:

1. There is a resistance to knowledge sharing. This inhibits the implementation of the Automotive Taskforce at Teijin Aramid
2. There are difficulties in cooperation between Teijin Japan and Teijin Aramid.
3. There is little awareness or knowledge about the Automotive Taskforce at Teijin Aramid. This leads to people being hesitant about implementing the Automotive Taskforce.

These assumptions are further explored during the interviews I conducted at Teijin Aramid. In the next section I will cover more in depth which items were discussed during the interviews.

Research design and methodology

After articulating the assumptions and defining the context of the problem it is time to define the structure of the research. This can be done with a research design. According to D. R. Cooper, Schindler, and Sun (2003) the research design is the procedural outline for every research activity. However there are different types of research design. It is important to know what kind of study will best be suited to get the best results suited for the purpose of the study.

The type of study

The type of study should first be defined. A distinction can be made between exploratory, descriptive and explanatory research. Exploratory studies are useful when there is a lack of clear ideas of the problems that will be faced during the study (D. R. Cooper et al., 2003). This also means that the key variables are yet unknown or undefined. Descriptive studies are concerned with finding out *who, what, where, when, or, how much* (D. R. Cooper et al., 2003). With this type of study, the key variables are defined. Lastly, explanatory studies are concerned with learning why. i.e. how one variable produces changes in another. With explanatory studies, relationships between and among variables are explained (D. R. Cooper et al., 2003). The key variables and relationships should be defined in this type of study.

In the case of this particular research at Teijin Aramid, the problem itself is not yet clearly defined and as such, neither are the key variables that should be studied. This means that exploratory study would be best suited for this research.

According to Creswell and Clark (2007), in an exploratory design, first qualitative data is collected. This can then be analyzed and used in phase two to design an instrument or typology. Lastly in the third phase, this instrument can be tested.

In the case of this particular research the typology that I hope to design are recommendations on how the Automotive Taskforce can function in the current organisation and what changes and implementations will be needed for that. This typology will be verified in the end with a validation session with identified stakeholders.

Qualitative research techniques include individual interviews, which are usually more conversational than structured (D. R. Cooper et al., 2003). Document analysis and case studies can also be included as qualitative research techniques (D. R. Cooper et al., 2003).

Interview items

After the selection of the stakeholders, the next point was to select the items for the interviews. The answers of the interviewees should pinpoint the issues that they are currently experiencing with the Automotive Taskforce and why it is not working in the Teijin Aramid organisation, whilst it is already being used in Japan. As mentioned before, the initial assumptions that I held helped shape the items for the interviews. Because of these assumptions, the items for the interviews can be categorised as follows:

- Questions regarding knowledge sharing and resistance to knowledge sharing
- Questions regarding cooperation between the different entities
- Questions regarding the success and failure factors of the Automotive Taskforce
- Questions regarding their previous knowledge about the Automotive Taskforce.

Stakeholders

At Teijin Aramid, I chose to conduct interviews with stakeholders. In this case, stakeholders are defined according to the business dictionary as a person, group or organisation that has interest or concern in an organisation. Stakeholders can affect or be affected by the organisation's actions, objectives and policies.

Because of the interview items identified the selection criteria that I used for the stakeholder interviews is that the participants should be involved in the automotive industry. Furthermore, it is important to include people over the broader spectrum of the organisation. The reason for this is that Teijin wants to create a cross-functional team that will include people from both the sales and marketing side as well as people from the R&D side of the organisation. This is why I selected people from different departments of the organisation. The selection was based on how much and how close the people work with the automotive industry. For the sales and marketing side the following people were selected:

- The sales director of Teijin Aramid, who is also part of the management team
- Sales manager for mechanical rubber goods
- Key account manager for mechanical rubber goods
- Business unit manager for mechanical rubber goods
- Business manager for cable and composites
- The automotive business group manager at Toho Tenax Europe
- Two eco-efficiency specialists

For the research and development side of the organisation the following people were identified as stakeholders:

- The R&D director, who is also part of the management team
- Business development manager for mechanical rubber goods
- R&D program coordinator for pulp

Since the concept of the Automotive Taskforce began in Japan and the Japanese head office of Teijin already has a project team in place, Japan is also a major stakeholder. Within the Japanese organisation the following people were identified as stakeholders:

- The leader of the Automotive Taskforce project
- The General Manager of the R&D department and member of the Automotive Taskforce
- Assistant to the General Manager of the High Performance Fiber Business Unit and former VP of Teijin Aramid
- A strategy office employee

These people were chosen because of their involvement with the Automotive Taskforce, their connection with Teijin Aramid and overall overview of the strategic outlook of the organisation as a whole and how the Automotive Taskforce could fit within that strategic outlook. /

Next to people who work with the automotive industry that will be directly affected by the Automotive Taskforce, it is also important to better understand the organisational impact that the Automotive Taskforce will have on Teijin Aramid. For this reason people were selected for interviews that can shed light on organisational dynamics that are currently in place as well as how the Automotive Taskforce might impact the organisation. For this reason the following people were selected:

- The team leader of Solutions 2.0, the new business development team

- The president of the Teijin Holding company
- The CFO
- The deputy chief human resources officer

Triangulation

To understand triangulation and what it can do for this research, it is important to first get a definition of the concept.

Triangulation is defined by Denzin, back in the 70s as a research method involving varieties of data, investigators and theories, as well as methodologies (Denzin, 1973).

According to Denzin (1973) data triangulation means that researchers search for as many different data sources as possible which bear upon the events under analysis. In his book *Research Methods for Education* (Newby, 2010), Peter Newby defines triangulation as the process of validating a claim, process, or outcome through at least two independent sources.

Data triangulation can be beneficial for research by giving more insight into a topic. Furthermore, multiple sources can provide verification and validity ("Data Triangulation: How the Triangulation of Data Strengthens Your Research," 2012).

In my case, my main data source comes from interviews that I have conducted with the previously identified stakeholders. In order to validate and verify data obtained from these interviews, I used other data sources such as documents obtained from the organisation and a survey which was sent out to the entire company. Using these additional data sources will allow me to verify and check whether the things that were stated during the interviews were observed by more people in the company, or just a stand-alone opinion.

The items described above combined make for a useable blueprint for the first phase of the exploratory research, namely the problem analysis. This will be based on the qualitative interviews that I have done with the identified stakeholders.

At the end of the problem analysis I will define the key variable that will facilitate the literature search. This literature search will in turn facilitate the design of the instrument that can help Teijin Aramid for the implementation of the Automotive Taskforce.

Problem analysis: what is the issue?

After understanding the context of the research and the design and type of study that will be conducted, it is time to get to the root of the problem.

Even though some assumptions were present before starting the research, the problem itself was not fully articulated in an understandable way with key variables and items to facilitate literature search. Because of this it is important to first get the issue defined with key variables in order to facilitate the literature search. This will help to provide a solution for solving the problem.

One way to approach problem analysis is through the problem structuring method. In their research Franco and Meadows (2007) looked at how groups used PSM to make decisions. Usually participants either generate ideas and/or plans and continue to negotiate those plans when there are conflicting views or interests. Another way is to generate through information gathering and then structure and evaluate the relative advantages and disadvantages of the different strategic options before selection a problem focus or course of action. (Franco & Meadows, 2007)

When applying this PSM to this research, the second PSM can be applied here. First, information will be gathered. This is done in the form of interviews, documents, surveys. Then through a literature search and validation session the different options are analyzed and selected.

Another way to help articulate the problem is the Root Cause Analysis method. With this method, the problem can be identified and, hopefully, solved with five steps. The people from MindTool in their article *Root Cause Analysis* ("Root Cause Analysis," 2007) describe the steps as follows:

1. Define the problem
2. Collect data
3. Identify possible causal factors
4. Identify root cause(s)
5. Recommend & implement solutions

In this step-by-step method of problem analysis, step 5 can be seen more as problem solving, which is not yet at hand in this section.

The reason that MindTools state that Root Cause Analysis is an often-used technique in business is because it helps answer the question of why the problem occurred ("Root Cause Analysis," 2007). Root Cause Analysis attempts to identify the origin of the problem to determine what happened, why it happened and what to do to reduce the likelihood of it happening again ("Root Cause Analysis," 2007). This can be done through the steps previously mentioned.

If these steps are then applied at Teijin Aramid to complete the problem analysis, the following can be seen:

Problem definition

Based on the assumptions mentioned earlier and the general story that was told before starting the research, the problem can shortly be defined as follows; the Automotive Taskforce is not being implemented at Teijin Aramid.

Data collection

The data for the root cause analysis is collected through interviews, documents and a survey.

The interviews were held at Teijin Aramid, the Teijin corporate headquarters in Japan and one interview was held at Toho Tenax Europe. The interview items that were discussed could be seen in the previous chapter.

The interviews

As was stated in the previous section, the ultimate goal of the Automotive Taskforce is to be a cross-functional global team. At this moment, the only active members of the Automotive Taskforce reside and work in the head office in Tokyo. This means that currently, although the taskforce can be multi-disciplinary, it is far from being an integrated global team. In order to create synergies it is preferable to have the integration of the Automotive Taskforce also take place on a global level.

These interviews help with gathering data on the causes for the implementation of the Automotive Taskforce not taking place at this moment in the Teijin Aramid organisation.

Documents

To understand how the Automotive Taskforce came to be and what its current activities are, company documents with regards to the Automotive Taskforce were used. These documents include minutes of meetings, Taskforce design documents and excel sheets with activities. Because of the confidentiality nature of these documents, these will not be included in this thesis, however, these documents helped shape the assumptions about the Automotive Taskforce and create an image about what the current state is of the Automotive Taskforce. This initial scope serves as the departure point for implementation of the Automotive Taskforce at Teijin Aramid. Any recommendations mentioned further in this thesis will be recommended based on this initial scope mentioned in the context chapter.

Survey

A survey was held to determine whether or not communication issues in the Teijin Aramid organisation with regards to Japan was a problem only encountered by the Automotive Taskforce, or if it is an organisational-wide problem. The survey was filled in by 34 people from across the organisation. The survey can be found in appendix 6. The overall view from the respondents is that language and culture do make it more difficult to communicate with Japan.

Interviews at Teijin Aramid

People from different levels in the organization with different functional backgrounds were interviewed. These include the management team, the sales and marketing department, and the R&D department.

The people that were interviewed were all identified as stakeholders or possible team members for the automotive taskforce, if and when a European would be set up. The reason for this is that in their current activities they are all in some way related to the automotive business. This will provide a good knowledge and information basis that could prove to be useful for the automotive taskforce.

Next to people that have the potential to play an active role in the automotive taskforce, a different group of people was interviewed. These people include the deputy HR officer, the president of the Teijin Holding organisation and members of the solutions 2.0 team. These people come from different functional backgrounds, but have a good overview of Teijin and Teijin Aramid as an organization, its context, structure, culture and where potential bottlenecks may arise. It was important to include these people to gain insight on the organisational structure, its context and to help in gaining insight on the issues that may or may not exist when the Teijin Headquarter in Japan and Teijin Aramid cooperate.

During these interviews questions were asked with regards to their daily activities within the organisation, transparency and knowledge sharing within Teijin Aramid, as well as on an intra-organisational level. Furthermore, they were asked for factors that, in their opinion, could contribute to the success or failure of setting up such a taskforce, cooperation on an intra entity level and their knowledge and opinion on the automotive taskforce. For the people that do not immediately work with the Automotive Taskforce, their opinion was included from a peripheral point of view and more from the broader organisational point of view.

A matrix with a short summary of answers can be found in appendix 4.

There are several things that most of the interviewees have in common. One of these things is the awareness of the automotive taskforce. With the stakeholders there is some knowledge of the automotive taskforce. They have heard of the concept and are sometimes familiar with the big picture, but there is no detailed information that they have access to or have heard from. There were some exceptions to this. These were on the management team and a member of the solutions 2.0 team. The reason for this, however, is that these people have had direct contact with the automotive taskforce leader in Japan. They have heard first-hand what the automotive taskforce is supposed to achieve and how it is going to work.

The opinions on the automotive taskforce are mixed. From the interviewees there are people who say that the automotive taskforce is a good initiative. They see a necessity for such a team and feel that this is a good initiative to prepare Teijin for future business. On the other hand, there were also interviewees that are skeptical, or do not see enough value in the automotive taskforce to support it at this moment.

“I’m a bit skeptical, it sounds not well thought through, there is no sufficient support and very little communication about the taskforce”

-CFO, Teijin Aramid

One comment that is frequently heard from the interviewees is that the automotive taskforce would be good for promoting cooperation between entities and would help in creating more transparency. At this moment people experience that not everything is open and transparent between entities, even though they are working in the same industry and sometimes even the same customer. The automotive taskforce could help in increasing communication, cooperation and create a more transparent environment where knowledge and information can be shared more easily.

More skeptical comments include the lack of information at this moment about the automotive taskforce. At this moment very little is known at Teijin Aramid about the automotive taskforce. There is not a lot of communication from Japan about the plan for the automotive taskforce or what the goal and the scope is.

“We need more communication and we have to discuss what would be the good approach to set up such a platform in Europe as well and the communication between Japan and Europe.”

-Global Sales Manager

Furthermore, in the opinion of the interviewees, it is not known what the added value will be. People are afraid that the automotive taskforce will be just an idea, thought of in Japan, without well founded arguments. The skeptical people feel that participating in the taskforce like this will only end up costing them more time, without getting real results in return. The combination of this makes

them hesitant or skeptical about what the automotive taskforce is trying to achieve and if they should play a role in it.

When asked about conditions that inhibit the success of the automotive taskforce, or factors that will make it a success, the interviewees had a lot of common views and opinions. The first and most mentioned condition is communication. This is communication in many forms. It is the communication from the management team to the employees, it's the communication between Japan and other entities, it's the communication from the automotive taskforce to other employees. This gives a signal that communication is one of the things that is lacking. However, it also shows that communication is needed in order to make synergies with Japan work as well as create more awareness and understanding for the taskforce.

"[...] I think the communication from japan is always very fragmented or incomplete. Because of the cultural differences and language difference."

-Team Leader Solutions 2.0

Another condition that was identified by most people is the importance of (showing) added value. At this moment, especially in Europe, it's very unclear what exactly the added value is of the automotive taskforce. The interviewees mention that it is important to show data, figures, or information that testify to the value created by the automotive taskforce. By showing this information, people in the organisation will more easily and readily participate in the taskforce or lend their time and information to the automotive taskforce.

Furthermore, it was mentioned that a scope and definition of the taskforce is needed. This is especially important because of the current business that Teijin Aramid is also doing in the automotive industry. If the scope is not defined this could cause friction. Especially if current customers are a supplier to the OEM and could thus feel bypassed. In order to prevent such damage, a scope and definition is needed to mark what falls in automotive territory and what does not.

A last thing that was mentioned with regards to success conditions was ownership. A reporting line and responsibility is needed. This makes it easier for the members of the taskforce, as well as regular employees to know who to contact and where to direct questions to. Furthermore, ownership will help with responsibility and decision making.

With regards to knowledge and information sharing, the general opinion is that knowledge sharing and more transparency is a good thing. However, some differences can be discovered with regards to how the interviewees see knowledge and information sharing within Teijin Aramid as a whole. The interviewees from the sales & marketing department found that knowledge and information sharing is a good thing. Furthermore, in their opinion, knowledge sharing is already good within Teijin Aramid and they experience little objection towards knowledge and information sharing.

The interviewees from the R&D department have the same view with regards to knowledge and information sharing, that it is a good thing that will only be beneficial for the company and the employees. However, the interviewees from the R&D department are more sceptical towards their colleagues. They have the feeling that not everyone will be open to knowledge sharing, due to organisational culture and tradition perhaps. The interviewees however did state that with the right motivation, examples and a positive experience in general, people might be more open for knowledge and information sharing.

Another interesting thing that was mentioned is the cooperation between the different entities. The most heard comment is that cooperation at this moment with other entities within the Teijin group is not easy. There is cooperation on some levels, but it is either fragmented, or it is hard to identify the correct persons to work with. This goes for both entities within Europe, as well as the corporate headquarters in Japan.

However, most of the opinions were aligned that cooperation could be better and that it would be nice to have a better overview of what each of the entities is working on in the automotive industry. The interviewees feel that with the right training, with proper communication the cooperation between entities can also be improved thanks for the taskforce.

Interviews at Teijin Corporate headquarters in Japan

Next to interviews at Teijin Aramid in Europe, there were also interviews conducted at Teijin Corporate at the head office in Tokyo, Japan. Interviews were held with four people. Of those four, two are directly involved with the automotive taskforce as the taskforce leader and one of the technical team members. The other two people that were interviewed served for an outsider perspective. These two people have both worked as expats in the Teijin Aramid organization for a considerable amount of time. This gives them a good overview of both the organisation in Japan, as well as the organisation in Europe.

A matrix with short summaries of the answers can be found in appendix 5.

From the interview with the leader of the automotive taskforce the scope and goal of the automotive taskforce is better envisioned. It is meant as a platform with a focus on the future. In the taskforce team different departments, entities and, if needed, companies can work together to provide optimal value and solutions for the needs of the OEMs of the automotive industry. The needs identified by the leader of the automotive taskforce are not short-term based needs. These, in his vision, will continue to be tackled by the current business. It is however the vision and goals for the long-term that is interesting for the taskforce.

Furthermore, the leader of the automotive taskforce stressed the importance of an open flow of information both to and from the automotive taskforce to ensure that all relevant information is accessible by members of the automotive taskforce.

“Open flow of information is important, for two way information flow. This can increase the understanding”

-Leader Automotive Taskforce

Relevant information obtained by the automotive taskforce when speaking with the OEMs should also be readily shared with the business units. This way the current business can also benefit from an open information flow. A thing that he did note while saying this is that at this moment because of barriers such as language, different information systems and the automotive taskforce not being part of the actual organisation yet, this is not something that is easily realized. At this moment, the automotive taskforce is not in use in Europe. It is being worked on in Japan, however it is not part of the actual organisational structure yet, but rather takes on a virtual organisation form.

Another interview was held with the General Manager of the R&D department of the High Performance Fiber Business Unit, who also does some activities on the Automotive Taskforce. The opinion that they had on the taskforce is overall positive. The interviewee can see why the automotive taskforce activities can be beneficial to Teijin as a whole and, in their opinion, these activities should be continued. A critical note from the team member at this moment however is that

it is thought to combine the work for the automotive taskforce with the responsibilities and tasks at hand in their main job. The interviewee however also mentioned that, in his opinion, his role as a technical team member of the automotive taskforce may not necessarily require full time dedication.

With regards to transparency and knowledge sharing, the opinion is that Teijin is not transparent at this moment. Furthermore, the interviewee classified Teijin as a rather conservative and risk-adverse company. These factors might cause integration of the taskforce between Teijin corporate in Japan and Teijin Aramid in Europe slightly more difficult. Also, because of the risk-adverse-ness and conservative nature of Teijin, decision making can take a long time. The team member interviewee stated that especially the slow decision making is not desirable for the automotive taskforce.

When asked about conditions that can make the taskforce successful, the team member interviewee mentioned that the setting of milestones or cut-off points is important. At this moment the automotive taskforce has a few projects that they are working on with OEMs, however, in the opinion of the interviewee, the projects now usually linger on without structured decision making on whether some parts of the project are better off stopped or not. In his opinion, for the future of the automotive taskforce, such vigour is needed. In the opinion of the interviewee this kind of vigour can prove useful when the automotive taskforce will have more projects. By extension of this view, the interviewee also stated that a leadership position is needed. The leadership position will prove useful in these decision making processes that will play a bigger part in the future.

As mentioned previously, next to people working directly for or with the taskforce, interviews were held with people who are not a stakeholder in the automotive taskforce, but can provide an outsider perspective. Because of this, they were not able to give specific opinions with regards to the automotive taskforce, the way it functions, its processes or what conditions for success or failure might be. However, they did provide good insight on how the concept of the automotive taskforce could fit in with the Teijin Corporate organisation, as well as perhaps eventually the Teijin Aramid organisation. Furthermore, insights were provided on the communication and collaboration at this moment between Teijin Aramid and Teijin Corporate.

“Processes and work ethic is very different between the Netherlands and Japan. This can be both good and bad for the Automotive Taskforce, as well the organisation as a whole.”

-Strategy Office worker

The most striking thing that both of the interviewees mentioned is that communication is really the Achilles heel of the Teijin group. This could be due to a language barrier, but perhaps also due to the organisational structure. What the interviewees noticed themselves is that communication between Teijin Aramid and Teijin corporate does not happen unless there is absolutely no other way.

“Language is an issue, which also creates a barrier for understanding each other”

-Assistant General Manager High Performance Fiber Business Unit

Interview at Toho Tenax Europe

An interview was also held at Toho Tenax Europe. As stated before, Toho Tenax Europe is also part of the Teijin group. An interview was held with the Automotive Business Manager with the same purpose as the interviews at Teijin Aramid.

The interviewee at Toho Tenax Europe stated that at this moment working together and creating synergies through the Automotive Taskforce is not a priority for them. The reasons that he points out for this point of view is that he currently does not see any opportunities or cases that show the potential of utilizing the Automotive Taskforce. Hence, for him, there is no added value at this moment.

When asked about the usefulness of the Automotive Taskforce, he does comment that it will be helpful for the business to get more integration and cooperation, but he does not see it happen at this moment because the market is very focused, leaving little room and opportunity for integration and cooperation of the different business units, i.e. Teijin Aramid or Teijin Headquarters.

About working together and transparency, the interviewee stated that he himself had no problems with working together with people outside of his organisation. He has regular contact with Teijin Kasei and has experienced no hurdle to finding contacts outside of his organisation. What has helped with this was the One Teijin project.

When asked about factors that can make the Automotive Taskforce work or fail he replied that at this moment the whole concept of the Automotive Taskforce is still too vague. What is needed, in his opinion, is to sit together to get a clear idea of what the vision and goals will be of the Automotive Taskforce. Without this, there will be low willingness from his side to participate or invest his time and resources. This is also the case because the value at this moment is not fully understood.

Another factor that was mentioned by the interviewee is that the Automotive Taskforce should not just be organized top-down but also have some bottom-up response. By sitting together with the people that could make up the Automotive Taskforce team in Europe, more insights can be found and people will have a better view of the value and goal. This is preferred and will improve willingness to cooperate.

What also was mentioned by the interviewee is that at this moment there is very limited information and communication about the Automotive Taskforce. There has been an instance where the leader of the Automotive Taskforce came to the Toho Tenax Automotive Business group to have discussions about the Automotive Taskforce, but after this not much contact has been had. The interviewee states that it is not known to him, nor anyone on his team what the Automotive Taskforce is now actually doing and what the results are of their activities. These kind of communications are important to gain support.

The interviewee stated that in order to gain more support from the business units in Europe (i.e. Teijin Aramid, Toho Tenax Europe) it can be beneficial for the Automotive Taskforce leader to personally come by and talk to the stakeholders in each business unit and explain value and information. This way, perhaps a sort of “brainstorm” session can be conducted to gain support for the Automotive Taskforce.

Root cause identification

After analyzing the interviews with the different people within the Teijin organisation, some of the issues are already surfacing.

First of all, a problem that has been recognized by all parties is that communication is not the strong point in the Teijin organisation. Although this is of course at this moment an opinion voiced by the interviewees. In order to see if there really is a communication issue within the organisation, a survey was held. The survey was distributed through the entire company and had a response of 15

respondents. The survey results are listed in the appendix.

The survey shows that the communication issue is recognized by people in all the layers of the organisation.

Another issue that most of the interviewees struggle with is the lack of information. There is no information as to what the scope of the taskforce will be, nor any information regarding the added value and experiences that the taskforce has had over the past year. This lack of information leads to the stakeholders being a little bit more on the fence with regards to the automotive taskforce project. This could also be one of the reasons why the taskforce is not gaining traction in Europe.

Lastly, during the interviews I touched upon the subject of knowledge sharing. This was done to detect whether or not stakeholders and people in the company have an issue with sharing information and specific knowledge. It turns out that the interviewees do not have an issue with sharing of knowledge and information, as long as it is known to them why the information needs to be shared, or to really show the value that is gained by sharing this information.

The issue with added value can be further traced to the automotive taskforce itself. The interviewees agree that the added value of the taskforce needs to be known or shown in order to really make participatory commitments. At this moment in time, due to the lack of information, people are not willing to make this commitment.

In short, thanks to the interviews and survey a couple of problems have been unearthed that could point into the direction as to why the automotive taskforce has not yet landed as well in Europe, while work is already being done on it in Japan.

These problems are:

- Communication, or rather, the lack thereof.
- Lack of information and details on the taskforce, in other words, there is no structure at this moment.
- Added value.

These problems need to be operationalized for research purposes. Therefore, the communication problem variable was defined as *the amount of communication between involved parties*. This includes the people from Teijin Aramid and the Teijin Headquarters who are involved or play a role in the Automotive Taskforce. The lack of information and details on the taskforce was defined as *clarity of the structure and processes of the Automotive Taskforce*. Lastly since the added value was not clearly understood, this variable will be defined as *a clear understanding of the added value of the Automotive Taskforce*. By clear understanding, it is meant that the stakeholders should easily be able to find what the added value is of the activities of the Automotive Taskforce. This can be achieved through analyzing changes in KPIs compared to when the Automotive Taskforce was not yet being used.

For clarity, I have put all the factors that influence the willingness to participate in the Automotive Taskforce in a scheme, this can be seen below in figure 1.

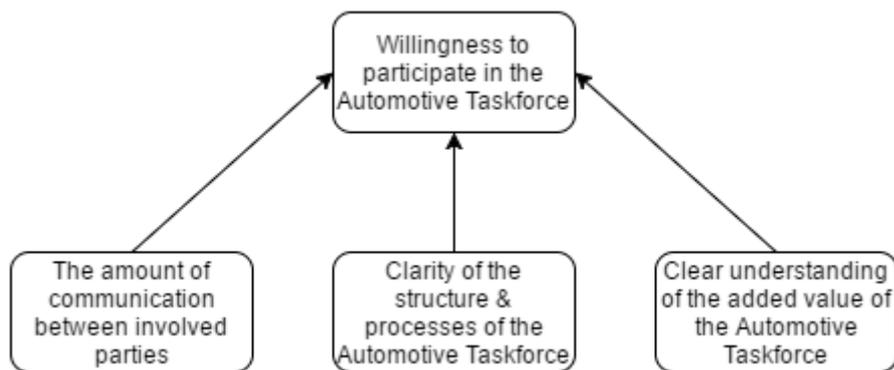


Fig. 1: Root causes

In the opinion of the interviewees at Teijin Aramid (part of) the reason why there has been little to no involvement in the Automotive Taskforce is because of the reasons above. Therefore, if the Automotive Taskforce is to gain more ground in Europe and really work together with the established group that is already active in Japan in order to create synergies and really embody the vision that was spoken out by the leader of the Taskforce and the CEO, these problems need to be addressed first.

In the next section, a look into literature will be provided to see how cross-functional, global teams can or should work and if there are any best practices that can provide lessons for Teijin to learn. Furthermore, since the lack of information and communication seems to be an issue, a look into knowledge and information sharing will also be provided.

Literature search: how can previous literature help?

In order to ensure that the literature is a good fit with the problem at hand, a systematic literature search will be performed.

As a blue print for this literature search, I have looked at the work of Crossan and Apaydin (2010) in their paper *A multi-dimensional framework of organizational innovation: A systematic review of the literature*.

In this work Crossan and Apaydin (2010) perform a systematic search for literature in three steps: The first step is that they take is to identify the initial selection criteria by defining key words and search terms

After this, the second step is to group the findings that come forward. apply identification criteria based on what they want to achieve with their research.

Lastly, after grouping all the papers found with the search terms identified, go on to weed out the useful papers from the useless to remain with a literature list that is applicable for their research.

When applying these same steps for my literature search, the first and most important thing to identify is search terms. Based on the issues identified during the problem analysis, the literature search will focus on the following search terms:

- Cross-functional teams, which includes the following:
 - Structure & processes of cross-functional teams
 - Communication within/of a cross-functional team
 - Knowledge sharing (in a cross-functional team)
- Participation (willingness) in a cross-functional team
- Added value of a cross-functional team

When using Web of Science and entering these search terms, for each of them, the results that returned can be seen in table 1. After these results, it is important, like Crossan and Apaydin, the results need to be sorted according to useful groups. Since the subject at hand is business and management related, I have decided to further narrow down the search to only business and management related publications. All of this sorting can be seen in table 1.

Search term used	Results	Results after sorting
<i>Cross-functional team</i>	1011	711
<i>Structure, cross-functional team</i>	165	145
<i>Communication, cross-functional team</i>	173	162
<i>Knowledge sharing, cross-functional team</i>	60	49
<i>Participation*, cross-functional team</i>	32	20
<i>Added value, cross-functional team</i>	18	8

Table 1: literature search results

*participation willingness did not yield any results, therefore, the term was adjusted to participation.

Especially with regards to the cross-functional team, a lot of results still remained, even after filtering. Because of this reason I decided to also do a forward search for some of the papers that I had already read. These papers are the work of Denison, Hart, and Kahn (1996) and Holland, Gaston, and Gomes (2000). These two papers were selected for forward search since they are on topic with the first search term of the cross-functional team, as well as its structure, communication and knowledge sharing. The only downside was the fact that these articles are a bit dated. For this reason a forward search for these two papers was conducted in order to include more recent literature. After the initial search, the selection was made on articles that were published in 2010 or later. The results of this forward search can be found in table 2.

Original paper	Forward search results	Results after sorting
<i>From chimneys to cross-functional teams: Developing and validating a diagnostic model</i>	171	47
<i>Critical success factors for cross - functional teamwork in new product development</i>	200	89

Table 2: Forward search of selected papers.

After these selections, I summarized findings of articles and papers that I found relevant for the topic at hand. This can be found in each of the subchapters below.

The structure for cross-functional teams

In the previous section, an outline was given of the automotive taskforce. In this outline, the scope, definition and how it is supposed to work is given. In this section, I will look at what the literature has to say about cross-functional or multidisciplinary, global teams. How they can be successful, what they need, if there is a best practice or best way to approach these kind of platforms.

Govindarajan and Gupta (2001) for example identify three different factors that contribute to the success of high-performance global teams. They state that an effective team charter, team composition and team process will lead to a better performing global business team. They go in further details as to how these three factors should be worked out by the organisation to fully benefit from them and thus create the best global team possible. This includes; defining the team charter correctly, framing it correctly and making sure it's understood. As well as making sure that the team has enough cognitive diversity whilst minimizing behavioral diversity, getting the right team size and selecting the appropriate leader. Lastly, team processes can be managed by paying attention to language and communication barriers, agreeing on the norms of behavior that should be instilled in each team member and cultivating a culture of trust.

According to Govindarajan and Gupta (2001) using these practices will allow organisations to create an effective global team.

A different paper that also touches upon the subject of cross-functional teamwork is that of Holland et al. (2000). In this paper, Holland et al. (2000), based on extensive literature review, identify critical success factors for cross-functional teams, especially in a new product development environment. These critical success factors can be categorized into six categories; task design, group composition,

organisational context, internal processes, external processes and group psychosocial traits (Holland et al., 2000). Each of these six categories is then further broken down into what could help cross-functional teams in that specific category.

Holland et al. go on to design a model of cross-functional teamwork with the factors that they've identified. In this model, Holland et al. (2000) show that mostly organisational context, task design and group composition have an influence on effective cross-functional teamwork. A full breakdown of each categories with factors that go with them can be found in the appendix.

Based on these factors, Holland et al. (2000) developed a model to visualize which factors have an influence on effective cross-functional teamwork. This model can be seen in figure 2.

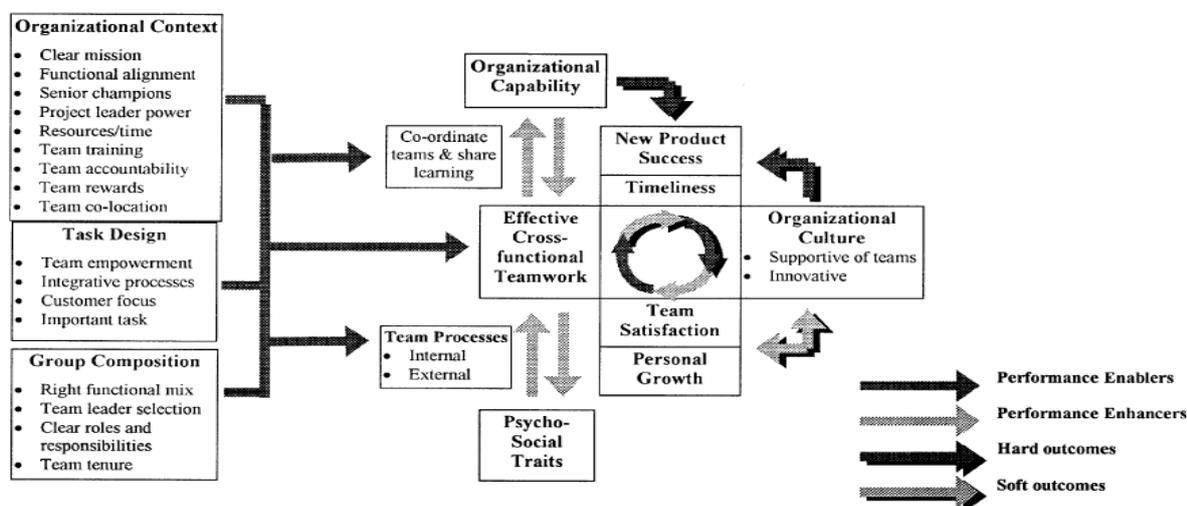


Fig 2: Cross-functional team success factors (Holland et al., 2000)

Based on this model, the categories that enable the performance of effective cross-functional teamwork are organisational context, task design and group composition. Other identified factors such as team processes or psycho-social traits are performance enhancers. Based on this framework, new cross-functional teams should focus on the performance enablers to ensure effective teamwork and enhancers should have second priority in that sense.

Denison et al. (1996) also proposed a method for how organisations can move from isolated chimneys to a more integrated cross-functional team structure. In their research Denison et al. attempt to find out what is needed to form an effective cross-functional team from an isolated basis. Based on their research they conclude that there are three factors that influence cross-functional team effectiveness. These are context, process and outcomes (Denison et al., 1996). Each of these factors has their own subsections. These will be briefly discussed in order to provide a better background on what makes an effective cross-functional team.

Denison et al. (1996) state that context need for a cross-functional team to function effectively consists of coordination with other teams, autonomy and power, linkage to functions, resources, mission & direction and reward for team performance.

Processes for effective cross-functional teams are important to deal with the conflicting demands that are inherent in the organisational context (Denison et al., 1996). The processes needed by cross-functional team-members that Denison et al. identified mainly demand both functional representation, creativity, the need to develop team identity and normative expectations if there is

collective responsibility for resolving demands (Denison et al., 1996). Lastly, the third category outcomes points to what is expected from a cross-functional team. According to Denison et al. (1996) this is a wide range from innovation, learning and new capabilities to compressing time and hitting task targets that may be stringent.

In summary, based on the research and factors brought up by Denison et al. an effective cross-functional team needs organisational context that that does not limit autonomy, has sufficient resources, a clear mission & direction, as well as creating a team identity, norms and expected outcomes in the form of information creation, innovativeness, new capabilities and new learnings.

Organisational communication in a cross-functional team

As stated previously, the interviewees at Teijin also felt that communication within stakeholders for the Automotive Taskforce can and should be better. At this moment, there is limited information coming from the Automotive Taskforce, going through each member. Literature says the following about communication within a cross-functional team; Staples and Webster (2008), for example, base their framework on the social exchange theory of Blau to explain non-contractual interactions between people (Staples & Webster, 2008). Staples and Webster (2008) state that interpersonal trust in other members of the team will have a positive effect on knowledge sharing.

In other research Tekleab, Karaca, Quigley, and Tsang (2016) state that functional diversity will have an influence on team cohesion. Functional diversity can be described using a definition from Govindarajan and Gupta (2001). They state that this type of diversity can also be called cognitive diversity. It refers to differences in the substantive content of how members perceive the team's challenges and opportunities, options to be evaluated and optimal course of action (Govindarajan & Gupta, 2001). Tekleab et al. (2016) define team cohesion as the tendency of a group to stick together and remain united in the pursuit of its instrumental objectives. Their research has found that although there is initially a negative effect of functional diversity on team cohesion, this will eventually become a positive effect and increase team effectiveness (Tekleab et al., 2016).

According to Hirunyawipada, Beyerlein, and Blankson (2010) cross-functional integration can only be possible if knowledge and information is disseminated amongst the team in a good way. Hirunyawipada et al. (2010) state that the tacit knowledge that each individual possess can be used in a cross-functional team through socialization. Even though a cross-functional team may possess some advantages towards socialization of knowledge, it does not do so automatically (Hirunyawipada et al., 2010).

A different study by Pinto and Pinto (1990) found a relation between communication of a cross-functional team and its effectiveness. Pinto and Pinto (1990) found that groups using informal communication methods like the telephone or informal discussions would exhibit higher cooperation. They also found that teams with strong intra-team cooperation are able to devote more time to project related communication, as opposed to a team that needs to devote more time to resolving interpersonal difficulties between group members (Pinto & Pinto, 1990).

In summary, communication will help in creating a more cohesive team that can benefit from diversity, can benefit from socialization of each individual's tacit knowledge and use more time for task and project related communication, rather than personal problem solving.

Knowledge sharing in a cross-functional team

During the interviews with employees from Teijin Aramid and Toho Tenax Europe, one comment often heard by almost every participant; the lack of information. This sometimes stems from lack of communication as well, but overall, there is little to no information available to the people in the European branch of the Teijin Group, even though these persons have the potential to be valuable contributors to the Automotive Taskforce. As explained previously the current Automotive Taskforce is built up of only Japanese team members. Since cultural difference has been quoted by people in the company as a barrier to communication and information sharing, it could be that this is part of why there is a lack of information.

In their article about the influence of culture on knowledge sharing in intercultural networks, Möller and Svahn (2004) define knowledge sharing as not only sharing codified information (explicit knowledge), but also management beliefs, images, experiences and contextualized practices (Möller & Svahn, 2004). Möller and Svahn go on to describe three types of strategic networks with their own specific method of knowledge sharing. These can be defined by the value system they are trying to establish. That could be stable, well-defined value systems, established value systems and emerging value systems (Möller & Svahn, 2004). The figure below shows features of each of the systems. Möller & Svahn state that for the stable, well-defined system, knowledge sharing is essential to exploit current member-firm competencies. The emphasis lies in existing, primarily codified and codifiable knowledge. For the emerging value system, the role of tacit knowledge is much bigger. There is a bigger focus on co-creation of knowledge through exploration because of the dynamic environment for the emerging value systems. The established value system is in between the aforementioned value systems. This leads to a balance that needs to be struck with knowledge exploration and knowledge exploitation (Möller & Svahn, 2004). Möller and Svahn do note however that the value systems as they have proposed them are an ideal. In practice it is more common to find firms that have a combination of two value systems and overlap between the value systems is inevitable.

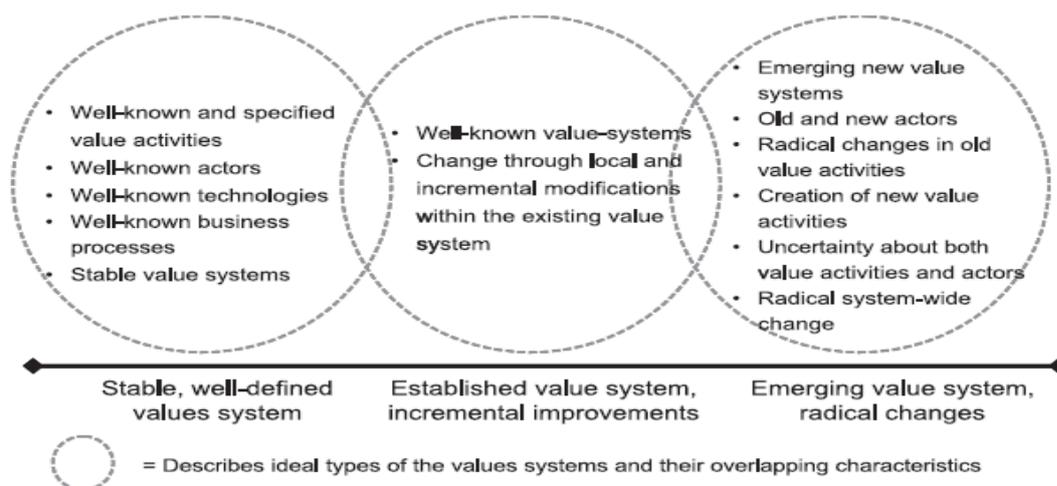


Fig 3: Value systems and their characteristics (Möller & Svahn, 2004)

With each value system needing a different type of knowledge and knowledge sharing, what is the best way to go about this when this needs to be done in a multicultural environment? Möller & Svahn look into how culture influences knowledge sharing by determining four culture types.

These are vertical individualism (VI), vertical collectivism (VC), horizontal individualism (HI) and horizontal collectivism (HC) (Möller & Svahn, 2004). In this distinction Japan would classify as horizontal collectivism whereas the Netherlands would be more in league horizontal individualism (Möller & Svahn, 2004).

These four cultural classifications can be applied on the value systems and the knowledge sharing methods. Möller & Svahn state that, for example, stable well-defined value systems are better applicable in horizontal collectivist or vertical collectivist cultures and make knowledge sharing more easy because of hierarchical governance.

Exactly how culture influences knowledge sharing can be seen in figure 4.

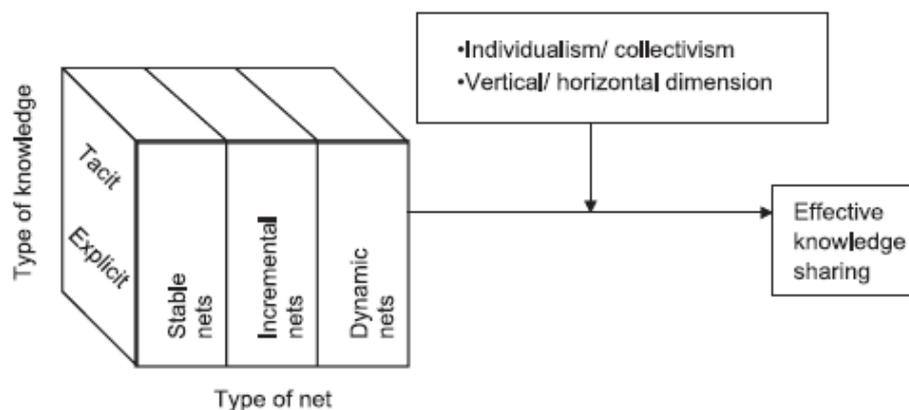


Fig 4: How culture influences knowledge sharing (Möller & Svahn, 2004)

Möller & Svahn state that knowledge sharing within a network is easiest when both parties in the network are from a similar culture type. Difficulties will arise when the culture types differ significantly. This will become more obvious in a network with individualism and collectivism, because of the uncertainty avoidance of collectivist cultures and the risk-taking factor of individualistic cultures. Möller & Svahn conclude that the best option for emerging value systems will be to combine the individualism and collectivism into one system to benefit from both positive aspects and to play down the negative aspects. However communication-wise, this may provide problems because of cultural differences.

Another research by Majchrzak, More, and Faraj (2012) looks more into what is necessary for cross-functional teams to integrate knowledge. They observed three cross-functional teams. Majchrzak et al. (2012) then go on to observe how knowledge is integrated when creating intermediate scaffolds. In this literature the scaffold is used as the product that a cross-functional team needs to work with and share knowledge on creation of said scaffold, however, the practices that are identified can be generalized for knowledge sharing in different projects as well. They state that five practices can be identified in which cross-functional teams integrate their knowledge to co-create a solution (Majchrzak et al., 2012). These practices are the following:

- Voicing fragments: with this practice each member assembles part of the solution without discussing, clarifying or resolving knowledge differences.
- Co-creating a scaffold: this allows teams to develop collective team orientation to the problem-solving effort.
- Dialoguing: this allows for the surfacing of previously unappreciated tensions that fostered creative solution generation without creative abrasion between individuals.

- Moving the scaffold aside: this allows for further co-creation to account for complex implementation requirements of external stakeholders.
- Sustaining engagement throughout the problem-solving effort: this helps to maintain energy and focus needed to continue the process of personally transforming one's knowledge to collective knowledge.

Majchrzak et al. (2012) conclude that by making use of these practices, it will be easier for cross-functional teams to integrate knowledge, as well as share it.

Willingness to participate in a cross-functional team

In his research with regards to managing knowledge sharing across boundaries Carlile (2004) found that members of different teams were less willing to participate in such a sharing team at times of a conflict of interest. When interests are in conflict, the knowledge developed in one domain generates negative consequences in another. The costs for any actor are not just the costs of learning about what is new, but also the costs of transforming "current" knowledge being used. These costs negatively impact the willingness of an actor to make such changes (Carlile, 2004). In short, if the cost of the conflict of interest is negative or high, the team members will not make the changes necessary.

The added value of a cross-functional team

In his paper Daspit, Justice Tillman, Boyd, and Mckee (2013) sets out to look what the actual effectiveness is of a cross-functional team. He states that much has been researched with regards to the structure and success factors, the research has been inconsistent in stating exactly which factors contribute to success (Daspit et al., 2013). Based on a literature review, the authors then come up with several hypotheses of which factors they believe add value to a cross-functional team in the form of effectiveness. The identified factors by Daspit et al. (2013) include team cohesion, shared leadership and internal team environment.

However, after conducting the research Daspit et al. (2013) found no relation between internal team environment and team effectiveness. They did however find that team effectiveness is enhanced when individuals engage in shared leadership (Daspit et al., 2013).

Application of the literature; finding a solution for the Automotive Taskforce

After looking at the literature, a comparison can be made between the current situation at Teijin with regards to the Automotive Taskforce and the ideal situation that is laid out in the literature.

This leads to a gap with things that are lacking in the current way that the Automotive Taskforce is organized and the way that it could or should be organized according to the literature.

Charter

As mentioned before Govindarajan and Gupta (2001) state that in order to be a successful global business team, an understandable team charter is needed. This is to make sure that communication problems and trust issues will be as little of a problem as possible.

For clarification of the term team charter, the definition from ice.com will be taken. A team charter is a document, developed in a group setting that clarifies team direction while establishing boundaries. It is developed early during the forming of the team. The charter should be developed in a group session to encourage understanding and buy-in.

As for the Automotive Taskforce, at this moment there is no such thing as a team charter. There is a document which states the vision of the Automotive Taskforce and what the plan is from start up to actually being active. However, things that are lacking are scope, boundaries and group development. Direction is mentioned in the documents, however, it is all still very vague and uncertain. In order to really kick off activities and start working as a more successful team, there needs to be a transparent scope to state what will be included in the activities of the Automotive Taskforce and what will not. In order to get the European branch of Teijin on board as well, this charter should be developed in cooperation between the Automotive Taskforce leader and the stakeholders in the Teijin Aramid and Toho Tenax organisation. This will encourage understanding of the activities and create a team that people are willing to participate in and put their efforts in.

This charter can for example include guidelines with regards to the activities that will fall under the Automotive Taskforce. This will prevent the fear that some interviewees expressed that there might be overlap with current activities. Furthermore, the charter can give rules and guidelines with regards to participation, rewards and time allocation. This will prevent the conflict of interest mentioned by Daspit et al. (2013) and will ensure that (knowledge sharing) practices will be implemented rather than ignored.

Processes/Task design

As mentioned before, Holland et al. (2000) state that task design, and the processes that come with it, is one of the main influencers of effective cross-functional teamwork. This will include things like team empowerment, which is labelled as autonomy or power over the team. This can also be undermined by meddling by functional managers and micro-managing by senior managers. Furthermore, formalized processes are needed for clarity in direction, decision-making authority and information. A good way to structure all these three influencers on processes is a stage gate process to determine go/no go decisions in a structured way. Figure 5 shows an example of what the stage gate process looks like.

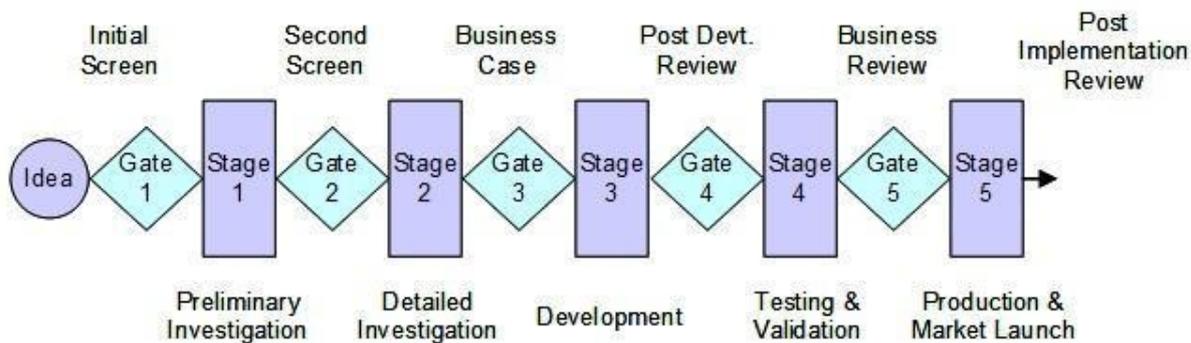


Fig 5: stage-gate process model by R. G. Cooper, Edgett, and Kleinschmidt (2002)

When looking at the Automotive Taskforce, it already has a few of the criteria posed by the literature. There is a budget and decision-making power. However there are also things that are still lacking or that could be improved. One of these things is decision making. One of the team-members in Japan stated the following:

‘it’s not always clear if a project should be stopped or not. Therefore, decisions are dragged out and projects continue for a long time. But for the goals to be met, concrete targets should be set and decision making should be more clear cut and the responsibility should be with the leader of the Taskforce’

-General Manager R&D High Performance Fiber Business Unit

If the Automotive Taskforce at this moment is struggling with setting milestones and targets to meet the goals, and subsequently making decisions on whether or not to continue with certain projects, then the stage gate process model could be a great help for the Automotive Taskforce to increase decision making power and to avoid two things: 1. Projects that drag on for too long without any added value or benefit and 2. Well argued, transparent decision-making.

Organisational context

According to Holland et al. (2000) organisational context includes amongst others team training, resources, strategic alignment of functions and rewards. These contextual factors can help in creating an atmosphere for the cross-functional team to increase their performance.

In the case of the Automotive Taskforce, there are some contextual factors that are already in place, such as resources. However there are other things, such as team training and alignment of the functions that can still be improved. Holland et al. (2000) state that most companies spend more time in the structure of a cross-functional team, but forget training that will allow the members of the cross-functional team to function effectively together.

The Automotive Taskforce can benefit from team training to better coordinate cooperation between its members. This will be especially significant once the team will expand beyond Japan.

With regards to the strategic alignment, Holland et al. (2000) state that with strategic alignment, the senior management can align the level of support and prioritization of projects for the Automotive Taskforce. This will be also be relevant for the Automotive Taskforce, especially when there are different entities involved within the Teijin business group.

Another thing that can increase the performance of the Automotive Taskforce is the rewards.

Denison et al. (1996) state that team rewards can help improve the performance of a cross-functional team and help create more cooperation because the reward is based on a team effort,

rather than individual performance. Therefore it would be wise for the Automotive Taskforce to implement team rewards.

Team composition and diversity

Govindarajan and Gupta (2001) state that there are two types of diversity, namely cognitive and behavioral diversity. Whilst cognitive diversity deals with different views in challenges, options, opinions etc., behavioral diversity deals with differences in languages as well as culture-driven norms of behavior. These two different types of diversity have their own influence on a cross-functional and global team as well as the team dynamic and how effective the team will function.

Govindarajan & Gupta (2001) state the behavioral diversity as a necessary evil, which should be minimized as much as possible. However, the right amount of cognitive diversity will allow for an interesting mix of viewpoints for opportunities, challenges and opinions in the cross-functional team that will allow the team to function more effectively, by bouncing different viewpoints off each other.

In the case of the Automotive Taskforce, at this moment, there is very little behavioral and cognitive diversity, this is because the team, at this moment, only consists of Japanese members. With the addition of members from the European branches of the Teijin organisation, the behavioral diversity will increase because of the large difference in culture. However, the cognitive diversity will also increase. The key in this case will be to balance out the gain from cognitive diversity whilst offsetting the struggles from behavioral diversity. One thing that can help with that can be sessions where the team members work together in the same location for the first two weeks. Another thing that can help decrease the burden of behavioral diversity is cultural training to create better understanding for the team members in how and why certain behavioral norms exist. In a survey held to determine the communication within the Teijin Group it was noted by the employees of Teijin Aramid that the barriers to collaboration that they experience are mostly language and culture.

Knowledge sharing

In order to ensure that all knowledge that each individual team-member brings in is properly integrated, the Automotive Taskforce can make use of the practices of Majchrzak et al. (2012). This will allow for better integration of knowledge from different sources.

This integration of knowledge in turn, will have the effect that the cost of conflict can be perceived as less negative. This will also make the members of the Automotive Taskforce more willing to participate in projects.

Added value

The team's effectiveness and with that the added value can best be seen after it has been implemented. Since there are no significant results to report at this moment, the added value issue will still be relevant. However, by ensuring that the team operates as effective as possible, added value might be guaranteed in the future.

As mentioned in the literature chapter, Daspit, Justice Tillman, Boyd, and Mckee (2013) state that shared leadership and team cohesiveness will influence the effectiveness of said team. The issue for the Automotive Taskforce will then be on how to design this shared leadership and team cohesiveness. Furthermore, it must be measurable in order to see if it is improved from the old situation or not. Team cohesiveness could have a connection with the before mentioned team composition. When the team composition is optimal, the cohesiveness will follow and improve. This in turn will improve the effectiveness and as such the added value of the Automotive Taskforce.

Another thing that the Automotive Taskforce can look at to prove added value is the KPIs. By showing if and how much the KPIs have improved by this project team, the added value will become more clear and stakeholders in the Teijin Aramid organisation will be more willing to participate. KPIs that the Automotive Taskforce can use can include sales turnover, demographic analysis of approval and rejection levels of (potential) customers. By keeping track of the KPIs and how they change over time as the activities of the Automotive Taskforce increase, it can be seen what the concrete added value of the Automotive Taskforce will be.

Validation and discussion

In this section the results will be discussed, this will also be done through a validation session that has been held. Afterwards, a short summary of the conclusions and final findings will be listed and lastly the limitations of this research.

Validation session

In order to ensure involvement and relevance of the results and recommendation based on the literature, a validation session was held. The participants in this validation session were people that have been previously interviewed during the problem analysis phase. Within this selection a second selection was made for participants that would directly come in contact with the Automotive Taskforce, should it be instated. This would total to seven participants. Out of these seven participants, due to scheduling and conflicting appointments, three participated in the validation session.

In this validation session a brief summary of the problem analysis and the literature was discussed. After this, the recommendations were presented to the participants. After the recommendations were put on the table, the participants were free to discuss their thoughts and opinions on the recommendations. This would include things they found lacking, things they thought would or would not work, etc.

The first thing that was mentioned by the participants was that they felt the issue at hand with the Automotive Taskforce was rightly worded and pinpointed. However, it was stated that the Automotive Taskforce is not “alive” at all with the gross population of the Teijin Aramid organisation. In order to increase awareness overall, it was suggested to appoint people here to carry out and spread the Automotive Taskforce initiative.

It was stated that the management team at this moment does not see the need to invest in the Automotive Taskforce, because the value is unknown to them. To make the management team more enthusiastic, it would help to ensure that there is commitment and investment coming from the current Automotive Taskforce. This commitment can start with a presentation and transparency to show what the Automotive Taskforce has been doing so far. Next to that, the Automotive Taskforce will then be responsible for appointing two persons per entity (two people at Teijin Aramid, two people at Toho Tenax) to ensure good communication and optimization of the cross-functionality that the Automotive Taskforce brings.

The summary of the validation session can be seen in table 3.

Requirements based on the interviews	Recommendations based on literature	Validation
<i>Structure and processes of the Automotive taskforce are unclear/unknown</i>	Draft a team charter	Positive, this is needed to provide structure and clarity
	Implement stage-gate process for decision making	Positive, no set decision making at this moment
	Strategic alignment of Automotive Taskforce and management vision for the entire organisation	Positive, however, this also requires commitment from the management team to support this initiative.
<i>Communication between involved parties can complicate cooperation</i>	Use organisational context for support, i.e. training	Positive
	Careful selection of team-members to facilitate communication and cooperation	Positive, this will help in cooperation. This however, also requires commitment from the Automotive Taskforce. They need to show commitment by investing in this.
<i>Added value is not known at this moment</i>	Ensure team effectiveness for future added value.	Cannot tell at this moment.

Table 3: Summary of validation session

After the recommendations were validated, the participants of the validation session stated that the solution for the Automotive Taskforce would be more threefold; a strong support from the management team is needed in order for the Automotive Taskforce to take off in Europe. This support can be attained by on the one hand clarifying structure and processes surrounding the Automotive Taskforce and on the other hand getting commitment and transparency from the current Automotive Taskforce in Japan.

The figure below shows how the participants of the validation session envision their willingness to participate in the Automotive Taskforce.

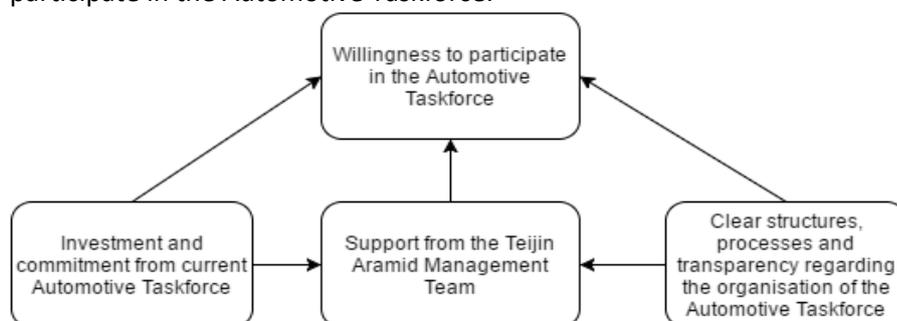


Fig 6: results of validation participants.

They feel that the commitment from the current Automotive Taskforce and the structure, processes and transparency will help hugely in getting support from the management team of Teijin Aramid. All these three factors are needed for them in order to participate or cooperate with the Automotive Taskforce.

Discussion

In this section I will discuss what the academic contribution of this research is, as well as challenges that I have run into.

This research has academic contributions in problem analysis of organisational cross-functionality problems. During my literature search I came across a lot of literature with regards to cross-functionality and cross-functional teams, however, this research all already started from the point of well-defined variables and a clear problem. This research however had a more vaguely defined problem and thus had a very different start point.

This research provides a blueprint for problem analysis; from identifying assumptions, to identifying variables and using those to find a solution, this research can contribute in the approach that researchers and organisations can take in analyzing problems.

A problem that I ran into while doing this research is the amount of new research. Especially with regards to structure and processes of cross-functional teams, a lot of research was dated from 1996 until 2004. After this the amount of literature and research on this subject decreases and it was harder to find relevant literature that was also fairly recent. This of course also influences the recommendations made, because they are based on literature that was written 10 years ago. Of course, recent literature is included, but the bulk of literature that I found during my literature search was at least older than 5 years. This problem was not really apparent when looking for research with regards to knowledge sharing.

Conclusion

Based on the findings of the literature and the results of the validation session, the following final conclusions can be made with regards to the Automotive Taskforce:

The processes and structure of the Automotive Taskforce need to be well-defined to provide a transparent overview for its (future) members. Based on the validation session, this will help in making people at Teijin Aramid more willing to participate in the initiative.

Next to that, there needs to be more investment and commitment from the Automotive Taskforce itself. This can be done in the form of selecting people to participate and using the Automotive Taskforce budget to pay for it. However, based on the validation, the people in the Teijin Aramid organisation feel that this will show the people at Teijin Aramid that this is a serious initiative and it will not waste time.

Lastly, the management team will need to also show their support for the initiative and allow for people to participate in the Automotive Taskforce team, should they want to. This will, again, show that it is a serious initiative and that people will not invest their time and money for nothing.

Limitations

The first limitation that this research has, is its scope. It is conducted at a single organisation. Furthermore, not the entirety of the company was taken into consideration. The focus was put on Japan and Europe, and within Europe more-so on the Netherlands. Therefore the results are not generalizable and if Teijin wants to expand the Automotive Taskforce further to its other entities in North- and/or South-America, new analyses might be necessary.

The scope of the research may also make it difficult to generalize the findings and results for other organisations and companies.

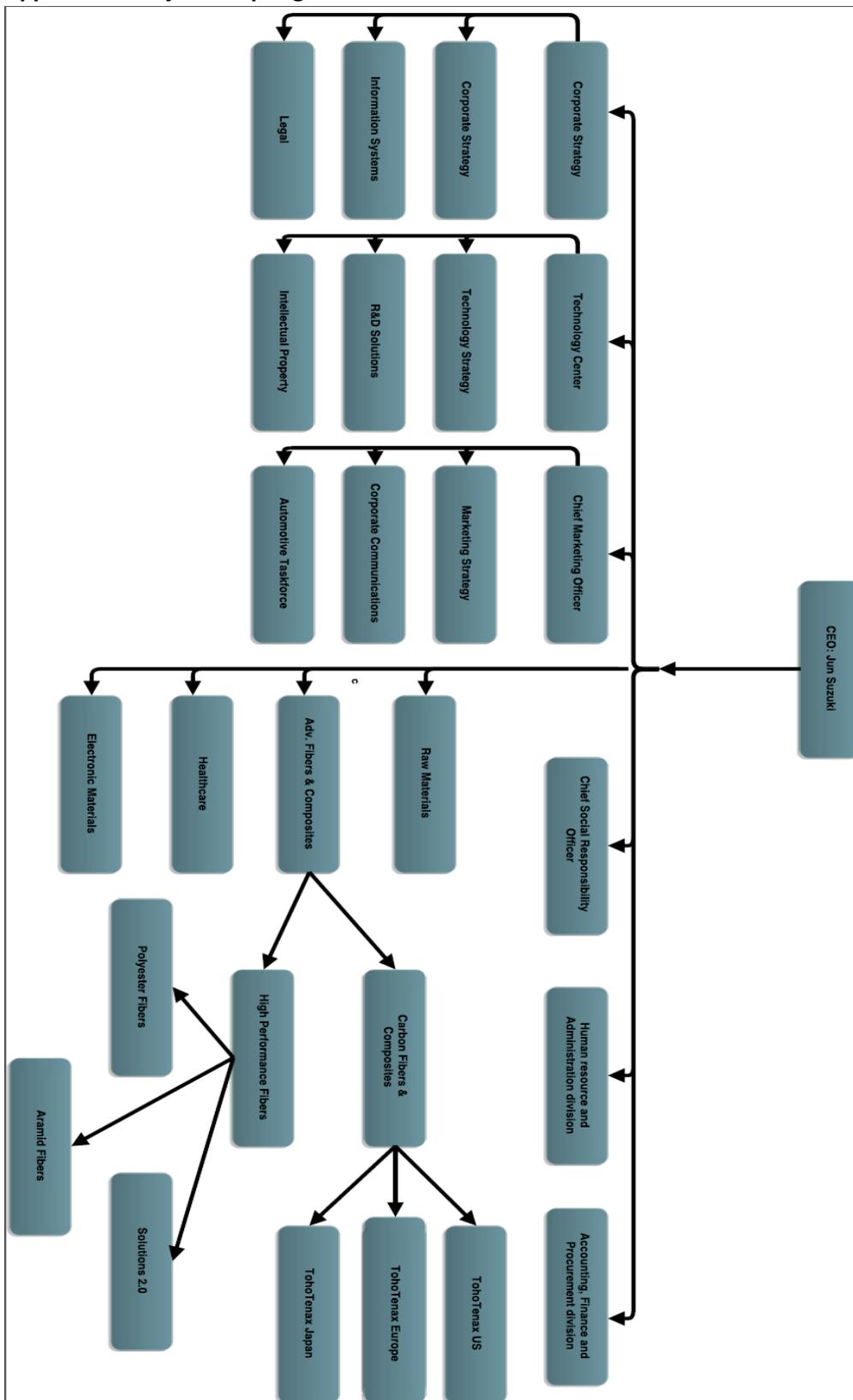
As mentioned before, some of the literature with regards to cross-functional teams is dated. This can also have consequences for implementation in practice of the recommendations made.

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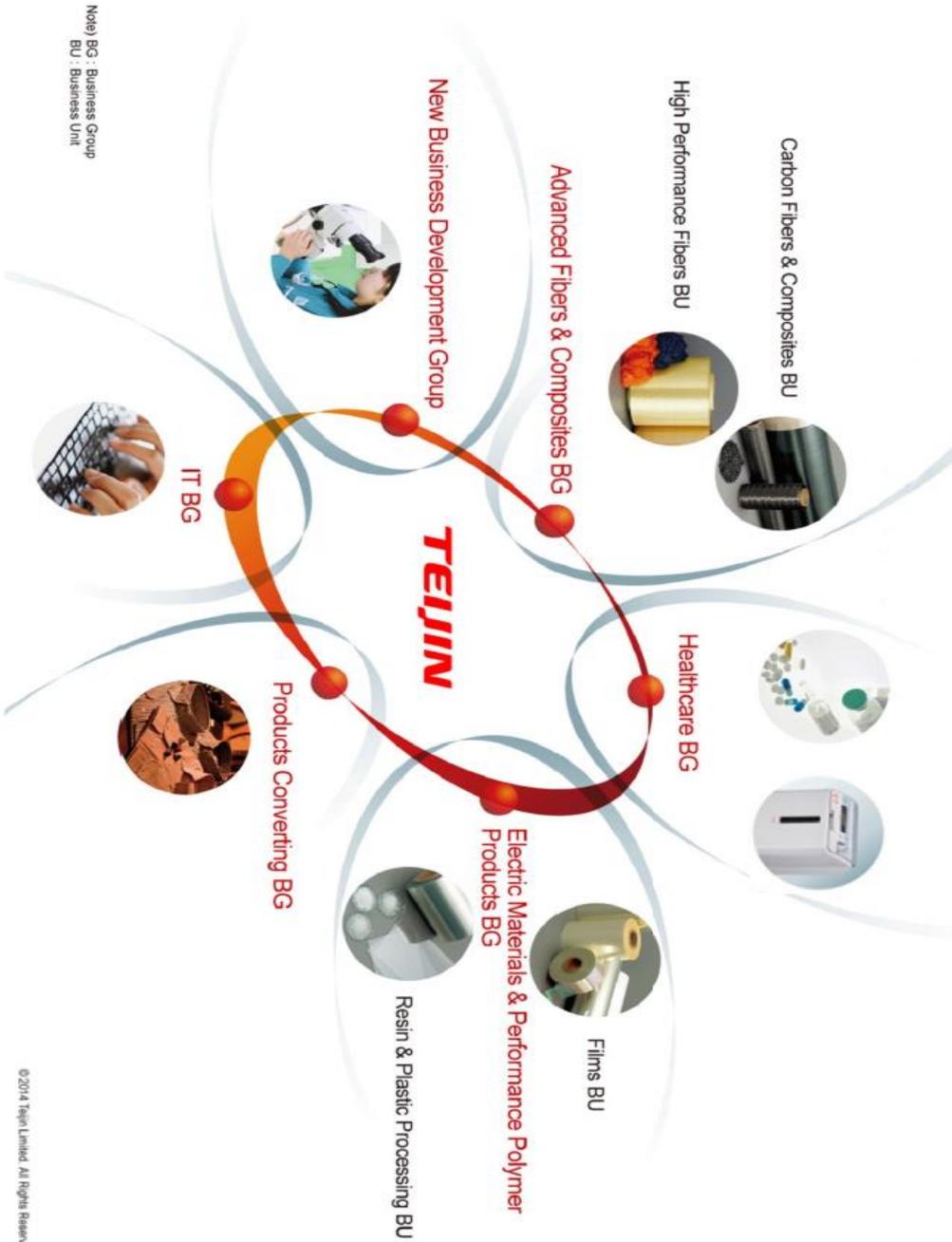
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Appendices

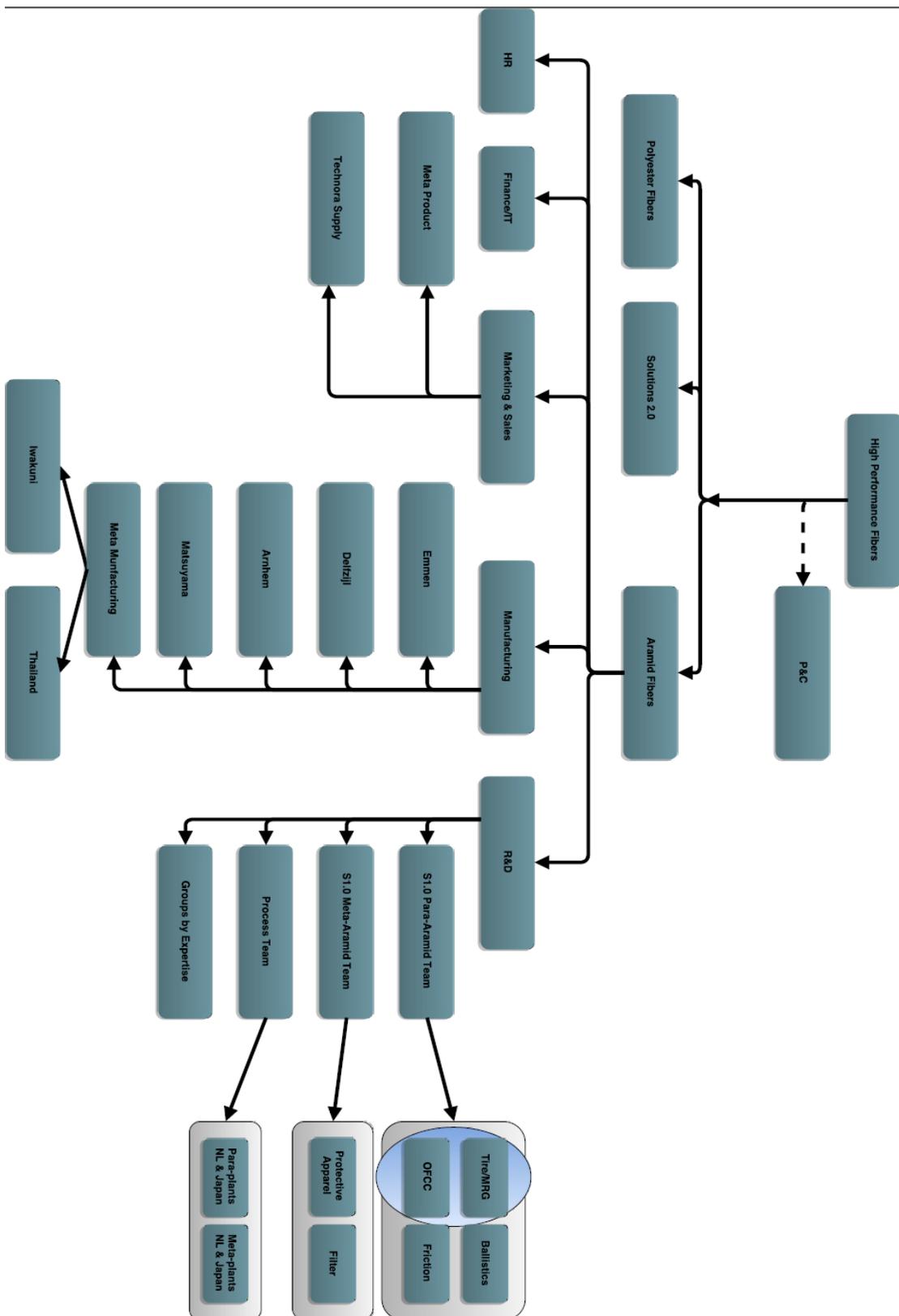
Appendix 1: Teijin Group organisational chart



Appendix 2: Teijin Group business groups and units



Appendix 3: Teijin Aramid organisation chart



Appendix 4: Interview answer summary Teijin Aramid matrix

Marketing & Sales	Do you know about the platform?	What's your opinion?	How can it work?
<i>Key Account Manager</i>	I was not aware that we have such a platform	No full understanding yet, so no clear opinion. But I see a lot of overlap with what we're doing already so no real need.	We have other challenges and priorities that I think are more important than the taskforce
<i>Global Sales Manager</i>	I was not aware of this initiative.	It could be beneficial for Teijin to present us as one Teijin also to the customers; our customers in between the car manufacturers and Teijin.	Good communication, better understanding of the Teijin strategy. Support from management
<i>Business Unit Manager, Mechanical Rubber Goods</i>	Yes, I've heard of it before.	I think it's good to combine forces and has a lot of advantages to develop new products.	To have an overarching reporting line that oversees this platform that you report to, and more interaction between the different entities and more contacts on a director level with the OEMs.
<i>Business Unit Manager, Cables and Composites</i>	Through the grapevine, but it's not something I'm focusing on right now.	It's a good initiative, but it might make the organization more complex	It shouldn't be a platform, that will keep it virtual. Organize it as business units with the end market focus. Furthermore a responsible bottom line is also important. First implement maybe only in the aramid organization and later expand to other European entities. Clear communications and instructions from management as well.
<i>Automotive Business Group Manager</i>	Yes, the leader of the ATF has come by to talk about it.	It's not a priority for us at the moment. We do not see an opportunity for it.	Integration will be difficult at this moment. So a session with all involved parties will be important. Give examples of added value. Define scope, goal and vision before starting to work with it.
<i>Sales & Marketing Director</i>	Yes, but not much.	At this moment it seems like it's organized inside out, but outside in would be more relevant. I don't see the added value at this moment	It's a big step to jump the value chain, so it should be well thought out. A strategy is important. It should be a dedicated unit that's not connected to the current units.

Marketing & Sales	Opinion on knowledge sharing	Tie-in with One Teijin	Cooperation with other entities
<i>Key Account Manager</i>	Yes, it would be nice to have things more transparent and know what the other departments are doing.	It would be nice to be able to give a broader, portfolio wide overview to customers about what we can do in automotive, so there One Teijin can be useful.	No real transparency at this moment. We don't know what the others are doing and that would be nice to have.
<i>Global Sales Manager</i>	I am open to knowledge sharing, but it shouldn't just be a database, but also regular meetings and have personal interaction and share on that level.	Yes, because now I get questions about other products but don't have any knowledge, but with the platform, we can give a more holistic view.	Not easy at this moment, we don't have the right contacts and we don't understand each other's market and applications well enough.
<i>Business Unit Manager, Mechanical Rubber Goods</i>	I think it would be good, open information leads to more learning, but I can understand if people are afraid of their position when sharing knowledge.	This could be a good tie in, because they talk about it, but there's no plan or budget behind it.	It's sometimes difficult to organize because you don't know the people outside your own legal entity. Furthermore, it's not part of their bottom line, which could also make it more difficult.
<i>Automotive Business Group Manager</i>	Knowledge sharing is always good, it's important to know what everyone is working on and what they are doing.	At this moment I don't see a possibility for integration because the market is very focused. But it can be helpful at a later stage.	There are connections, but no shared activities at this moment. Personally I don't find it difficult to communicate with other entities because of my contacts.
<i>Sales & Marketing Director</i>	There is knowledge in the company, but it might be too collectivistic. Sharing is good, should be encouraged, but be careful with competitive advantage knowledge	Teijin might not be ready yet for a global tie-in, too conservative to change.	It's difficult to be on the same page sometimes. Of course also because of the language barrier, but maybe the cultural difference is too big.

R&D	Do you know about this initiative?	What's your opinion?	How can it work?
<i>R&D Team Member,</i>	No, now is the first time.	I can see some advantages, but the	It's difficult to align because the direct customers are

<i>Mechanical Rubber Goods</i>		OEMs, they are not our customer. You learn most from your direct customer. The OEMs are more for a long term orientation.	more important and they are very different from each other. Maybe it can work better if you use it for working together in the marketing application.
<i>R&D Team Leader, Friction</i>	Yes, I was in Japan in December and met with Kumaoka-san	I think it's a good approach, but it will have a couple of challenges.	Getting people to work together. The added value should be clear. Support from the management team as well.
<i>R&D Director</i>	Yes, I spoke with Kumaoka-san about this in December.	Yes, it's a good initiative, but there could also be drawbacks and challenges.	Clear communication both internally and externally towards your current direct customers to prevent problems, show the added value, define a clear scope

R&D	Knowledge sharing	Tie-in with One Teijin	Cooperation with other entities
<i>R&D Team Member, Mechanical Rubber Goods</i>	I think that's always good, but people now might be a bit reluctant to sharing, maybe it's a culture thing, but I feel there's a 'knowledge is power' feeling with some people still.	I think it could tie in, but at this moment I don't see so much from the One Teijin effort.	It has added value in finding the right people in the other entities that now may be hard to find.
<i>R&D Team Leader, Friction</i>	I have no principal objections, but others might if they don't see the added value or purpose. Maybe a change of mind set and positive experience can change that	Yes, you need the other entities to make this work, to combine and for me that is One Teijin.	Not much contact at this moment, but I would like to strengthen those bonds.
<i>R&D Director</i>	It could be a problem, in my experience, Japanese are still a bit secretive and you have to go around to get information you need or want.	Yes, it could act as a promoter or vehicle for One Teijin.	With Japan it can sometimes be difficult, but the contact with Toho Tenax Europe is quite good, although that is mostly in the aerospace field, not automotive.

Outsiders	Do you know about the platform?	What's your opinion?	How can it work?
<i>Leader Solutions 2.0</i>	Yes, because I've been involved from the early stage	I strongly believe that this is the way to move forward	Good definition and scope of the TF, support from MT, investment in people and time. Better communication
<i>President Teijin Ltd. Holdings</i>	Yes, a little bit	Positive, but there is no room at this moment. People at Teijin Aramid are maybe not ready for it?	It's important to show the relevance of aramid in order to make the collaboration easier. Practical examples that can show the relevance.
<i>Deputy HR Officer</i>	I've heard a little bit about it	It's a challenging project with regards to the size of the company.	Determine the purpose, training might be necessary. Maybe implement a tool for translation to help communication and understanding
<i>Eco-efficiency team</i>	Have heard about it before	Value for eco-efficiency is not clear yet, but could provide added value. Akzo Nobel also had an automotive platform, that got disbanded, maybe take learnings from there to not make the same mistakes.	Dedicated owner of the task force, really cooperate together with Japan. Open communications. Everyone is kept in the loop, that is important to the TF.
<i>CFO</i>	Yes, I have heard of it before.	At this moment I don't think that there's a business case for it. I don't see the added value yet.	Show early gains and more involvement. Create a business case to show what the value is, so that investment from management team is easier.

Outsiders	Opinion on knowledge sharing	Tie-in with One Teijin	Cooperation with other entities
<i>Leader Solutions 2.0</i>	Sharing of information is important. Good cross entity information exchange is needed, which is easy on a technical level, but more difficult on a marketing or sales level.	Very good tie-in, because of the relation of Toho Tenax with automotive industry	At this moment there is a fragmented cooperation.
<i>President Teijin Ltd. Holdings</i>		There's not really a One Teijin mind set at Teijin Aramid, but it's important to show practical	Might be difficult at this moment, but is improving, will only improve more if you do it step by step and

		examples. This can help in that.	show practical examples that show the relevance of working together.
<i>Deputy HR Officer</i>	Good, there might be training necessary. A tool perhaps to translate documents and information from Japanese to English and/or vice versa	Challenging, but this can show examples and just start working together.	Again, training will be necessary, but it can provide a good working together, but now there's still very much separate activities.
<i>Eco-efficiency team</i>	It can have added value to have different disciplines work together and share information.	Maybe not at this moment yet.	Sometimes we are kept out of the loop, example of the VW project. We don't hear anything anymore from Japan. So that's a bit difficult sometimes
<i>CFO</i>	It is encouraged and we think it's important, but we're working on it continuously	Good synergy with the One Teijin projects to show more that there is one global company. ATF can be a good practical example	Difficult at times. Language is a big barrier. Cultural differences also make it difficult. There are learnings for and from both sides. It can be overcome easily if people put their mind to it.

Appendix 5 : Interview summary at Teijin Corporate Headquarters

	Do you know about the Automotive Taskforce	What is your opinion on this concept?	How do you think it can work
<i>Leader of the Automotive Taskforce</i>	Of course	It's a good concept, but it's not streamlined yet. There are still things we need to figure out.	Fulltime dedication is important. More open information flow, more cooperation also with tier 1 suppliers of OEMs. Information sharing between ATF and Business Units is important. Speed is also relevant to respond to customers' needs. This can be done through i.e. a dedicated product development center.
<i>General manager R&D High Performance Fiber Business Unit</i>	Yes	Good to have the network and interaction across activities. However, it's not yet transparent.	More focus from the leader, regular meetings. Set clear milestones that the taskforce should work towards. Examples that show added value.
<i>Assistant General Manager High Performance Fiber Business Unit/Former VP Teijin Aramid</i>	Yes, I have heard of it before	I am not sure of its purpose. I'm not deeply involved and am not always on the same page as the leader of the Automotive Taskforce.	Reconsider the evaluation system carefully. Also make sure that there is full dedication, because if there is no support, it can be irritating for members. Review and clearly state the mission of the taskforce. Make sure that there is no overlap with the current business.
<i>Strategy Office Worker</i>	Little bit, but not so much	I can't really judge it, but the basic idea is very good. However the ATF needs to have more activities and develop more, since there is very little follow up at this point.	Communicate and involve. Focus is needed for stability of the taskforce team. Right now there might not be enough people or time to spend on the Automotive Taskforce yet.

Appendix 5 (cont.)

	Cooperation with other entities	What can be done to improve cooperation between entities?
<i>Leader of the Automotive Taskforce</i>	Working together is not always easy. It's hard sometimes to get the right information because of translations	Sharing more knowledge, communicating. Having a dedicated team with dedicated members will improve cooperation for the Automotive Taskforce.
<i>General manager R&D High Performance Fiber Business Unit</i>	The relationship is good. Most contact via e-mails and video conferencing	Direct face-to-face contact can make working together more easy. It also helps in clearing up misunderstandings.
<i>Assistant General Manager High Performance Fiber Business Unit/Former VP Teijin Aramid</i>	Language is an issue, which also creates a barrier for understanding. Established culture and history create different working styles. It's hard to lose the Japanese mentality	Groups can be more unified by expats both to and from Japan. This will create more understanding for each other's work ethic.
<i>Strategy Office Worker</i>	The communication with Teijin Aramid has improved, but there are still big walls. Language and cultural difference plays a big role. Communication within the High Performance Fiber Business Unit is better than corporate communications.	More exchange. Management is very typically Japanese. Involve both parties more and communicate.

Appendix 6: survey results

Vraag:			What department do you work for at Teijin Aramid?	How frequently do you communicate with Japan?	How frequently do you communicate or have contact with other Teijin entities...	What are barriers to communicating or having contact with Japan?	What are barriers of communication or having contact with other entities in...	Barriers to communication make it more difficult to work together with Japa...	It is very easy to communicate with Japan/Japanese colleagues	It is very easy to communicate with other entities within Europe (i.e. Toho...	I don't communicate/work together with Japan as often as I could because of...	Better communication would lead to more synergy	Do you know of the Automotive Taskforce?
Legenda			1 = Never	1 = Never			1 = 1	1 = completely disagree	1 = completely disagree	1 = completely disagree	1 = completely disagree	1 = completely disagree	1 = Yes
			2 = Rarely	2 = Rarely			2 = 2	2 = somewhat disagree	2 = somewhat disagree	2 = somewhat disagree	2 = somewhat disagree	2 = somewhat disagree	2 = I have heard of it, but don't know what exactly it is.
			3 = Sometimes	3 = Sometimes			3 = 3	3 = neutral	3 = neutral	3 = neutral	3 = neutral	3 = neutral	3 = No

			4 = Often	4 = Often			4 = 4	4 = somewhat agree				
			5 = Always	5 = Always			5 = 5	5 = completely agree				
Respondent 1		C&MC	4	3	Cultural differences	There are no actual barriers of communication	4	2	4	3	5	3
Respondent 2		FDQ1	3	1	You should ask very specific questions and give answer to the question, nothing more	no experience	4	3	0	1	4	3
Respondent 3		QBI business development	4	3	Different mentality		3	4	5	1	2	3
Respondent 4		QHSE	4	2	Language and to low global orientation on Japan site	?	5	1	4	4	5	3
Respondent 5		Solutions	3	4	Language, limited insight in structure of organisation	None	5	1	4	4	3	1

					(who to contact for what)								
Respondent 6		Endumax	4	3	Language	Traditionally Teijin groups are very closed to outside. Besides that it is unknown who does what in the European companies	1	4	3	1	5	2	
Respondent 7		Sales	4	3	12 hours of time difference, indeed and also some cultural differences.	With Europe is quite easy.	4	2	4	3	5	3	
Respondent 8		Marketing & Sales	4	1	Cultural differences: Dutch tend to be too direct, Japanese too polite. Also, the level of detail asked by Japanese is often too high which	not applicable	4	2	3	4	4	3	

					leads to frustration by Dutch. Third, the decision making process is different : Japan top-down whereas Dutch put more influence on taking initiatives at the lower levels.							
Respondent 9		Endumax	3	2	language and culture	none	4	2	5	3	5	2
Respondent 10		QHSE	3	1	time zone; expectations on response time; need for details		4	3	3	3	4	3
Respondent 11		EMEA SALES OFFICE	3	1		I don't know them , no contact details	4	2	1	2	2	3
Respondent 12		Solutions 2.0	5	4	Mutual recognition of Synergies	Difference is Stakeholder Values	3	2	4	1	4	1

					to act. Quite often I got the same question again a year later..							
Respondent 16		Human Resources	3	2	none	none	3	2	3	1	3	2
Respondent 17		Sales & Marketing	3	3	Mostly language barrier	I don't encounter serious problems here	4	3	4	1	5	2
Respondent 18		Information management	2	2	Not everyone is speaking correct English	Not everyone is speaking correct English or German	4	3	3	3	4	2
Respondent 19		information management	3	2	only a few common issues	only a few common issues	4	2	5	4	4	3
Respondent 20		department delfzijl	1	1	no barriers	no barriers	5	2	2	2	4	2

Respondent 21		CSR/QHE	4	2	not knowing what is done with the information	limited necessity, added value not always clear, not knowing their expertises	4	3	4	2	4	3
Respondent 22		CSR/QHE	4	3	Language and exact overview of responsibilities/tasks of Japanese colleagues/departments	N/A	4	3	0	1	5	2
Respondent 23		Eco Efficiency Services	3	3	Videoconferencing has limitations, face to face would be better, but is hardly possible due to travelling distance and costs. Some Japanese colleagues do not speak English very well. Cultural aspects also play a role	Everyone is very busy, it adds up to your and their tasks, while often it is not from the beginning clear what the cooperation will	5	2	3	4	4	1

						bring. It is an investment with no guaranteed success. Also often contact by phone or video, not optimal.						
Respondent 24		marketing and sales	3	1	language, freedom to express what one thinks, access to the right dm	na	5	1	3	5	3	1
Respondent 25		Teijin Aramid Delfzijl(FZQ)	3	1	Poor english from the Japanese	Poor english from the Japanese	4	3	0	2	4	3
Respondent 26		EMEA	2	3			4	2	3	0	3	3
Respondent 27		Sales	3	1	Poor English skills many Japanese colleagues; no explanations/background given in their answers	Little response	5	2	2	4	5	2

Respondent 28			Marketing & Sales	5	1	Their low level of English (some of them), and my lack of Japanese language skills		2	5	0	1	4	2
Respondent 29			Logistics	5	4	The language	The language	4	2	3	1	5	3
Respondent 30			Engineering	1	1	No barriers, thusfar no further contact needed	No barriers, thusfar no further contact needed.	3	3	3	3	4	2
Respondent 31			QRI	4	3	Barriers are higher than language or general culture: hierarchy and communication within Japanese organisation are sometimes quite invisible to us, communication over the boundary of business units is very restricted	none, in my limited experience (with TTE)	4	3	4	4	5	3
Respondent 32			production	2	1	language / not exactly understand what	na	4	2	3	2	4	2

					the meaning of a question is							
Respondent 33		QCI	3	2	cultural not language	NA	3	4	0	1	4	3
Respondent 34		HR&O	4	4	different time zones, languages, national cultures, corporate cultures	different national cultures, different context (legal, labor relations etc.)	4	2	3	2	4	1