

White paper: Breaking in to OEM.

How to get added as a supplier to an OEM.

Introduction

How do you get in with an OEM as a 'maker'?

That is a question we hear from many makers and especially the small and medium-sized enterprises (SMEs).

The answer to this question is surprisingly simple. Why would an OEM want to buy a product or service from your company? What do you have to offer that will unburden the OEM? Do you know what the OEM needs? Do you know how it designs its products?

Summary

If an SME in the supply industry puts enough energy into understanding the needs of the customer (OEM), then he/she will also know whether his/her product or service is desired. Only then is it possible to 'enter' an OEM. This letter also emphasizes the changed role of the sales organization of an SME.

You no longer sell a product or service. You unburden the customer.

This letter explains how, given the current digital revolution, an order is created in the supply industry. By responding flexibly and efficiently to the real customer needs, it is possible for supply companies to get in touch with an OEM. On the internet, almost all purchase-sales information, which used to have to be obtained in a one-on-one conversation, is already fairly easy to find. This radically changes the role of salesperson. The new role of a salesperson is more like that of a specialist who thinks like a designer.

The first step to getting to an OEM is to determine what you have to offer them. What problem do you solve for them?

After that, it is useful to have knowledge of the 'Parts Generation Process' with them.

Then comes the third step: influencing the decision-makers. The design engineers, purchasing managers, and operations managers. Traditional sellers are very familiar with this[1].

This white paper describes the way of working at an OEM to design products.

Problem definition

How do you get in touch with an OEM as a supplier? This is a question we hear from many makers and especially the smaller SMEs. Before answering this question, it is good from the point of view of the markers to tell a little more about the methodical design process. About how something is designed. This design process determines how a product is created. If you have a production process at your disposal as a maker, then the question is whether this production process covers the needs of the design specification?

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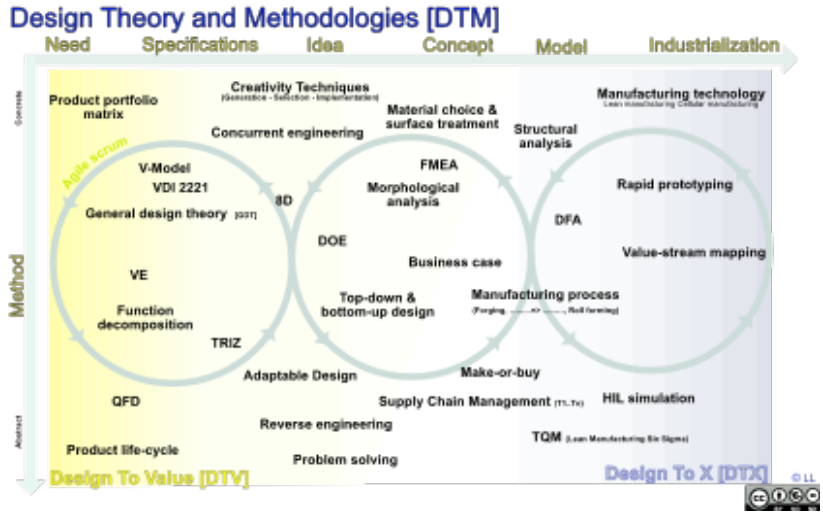
[1] How to Get Added as a Supplier to an OEM | Industrial and Manufacturing Marketing Tips https://youtu.be/_EW7bmbIrpY

Methodical design

Below is a brief overview of the methodical design process. In this letter, the overview is shown to indicate that there are many methodologies that can or cannot be used.



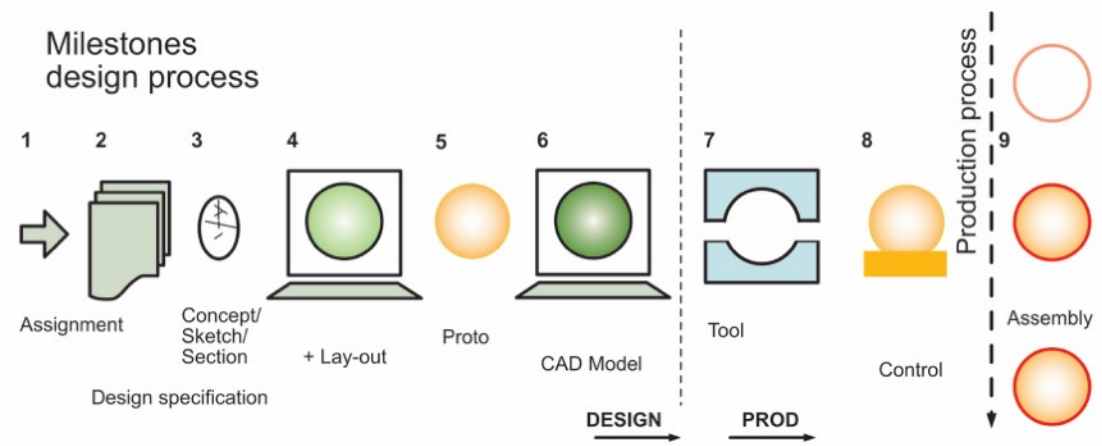
Design methodologies.

The diagram provides a total overview of the methodical design process at a glance. The phases are depicted on the horizontal axis. Vertically the methodologies. In methodical design, you go from left to right. The lower in the overview, the more abstract the methodology is. Not all methodologies are used for a particular design. The application depends on the type of product.

This letter does not discuss this further[2]. It is important to remember that the design process, especially in the beginning, is based on the function of the product. This is the left side of the matrix. 'Design For Value [DFV]'. The right side is based on the manufacturing process. 'Design To X [DTX].

Milestones development process

The image below shows the methodical design in phases. Each stage has a milestone. The methodical design process of a plastic injection moulded product was chosen as an example.



Visualization milestones design process.

[2] Further reading see the book: Methodical design explained. Insights into the methodical design process as it is applied in companies. Laurens van Lieshout 2022 ISBN: 9789403679723 (EPub 9789403729435)

The methodical design process starts with an assignment. After the assignment, a design specification follows. Then a layout is made. To ensure that the design meets the requirements, a prototype[3] is made. Usually, after the assessment of the proto, the necessary changes follow. These are then adjusted in the digital CAD model. This is the detail design phase. For a plastic product, a mould, a tool for an injection moulding machine, is then made. Often a control mold is made to guarantee quality. The product is now ready to be included in a production process.

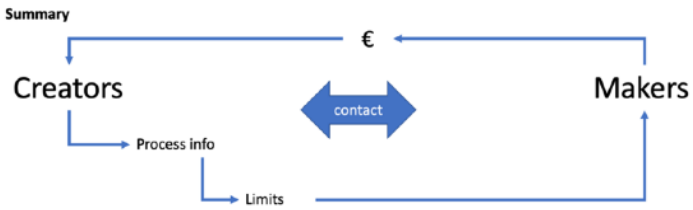
For a full description of the methodical design process, see the White paper: Design Methods Applied in the Design Process.

Supplier choice

The choice of a maker, the supplier of the product, is fixed early in the design. The design specification already indirectly determines the frameworks that the manufacturing process must meet. The designers use the following electoral methodology.

- The choice of material.
- The choice of the manufacturing process and the
- The choice of surface treatment.

These choices are an iterative process. It often happens that the process has to be repeated several times. If a choice for a supplier, and therefore the manufacturing process, is chosen too early, this will cause limitations in the design process. The creative process then dictates the design. This is where the crux lies in choosing a supplier. The designer is focused on fulfilling the function while the maker (manufacture) is focused on the production process.



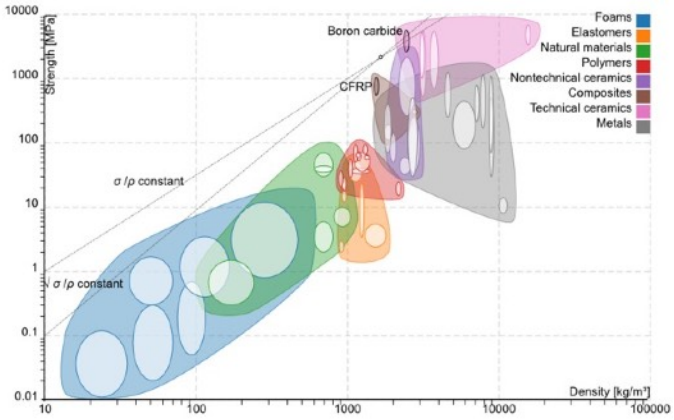
Interactie between the Makers and Creators.

The image above shows a simple representation of how the information flow is between the creators and the creators. The inventors want information about the process limits. What is the maximum that can be done with process X or what is the maximum load of product Y. The creators, in turn, are keen to monetize their information. After all, the chimney of their company must continue to smoke.

Choice of material

It is impossible for a designer, or the design team, to know all the materials. When choosing a material for the design, one proceeds methodically. An example of such a method is the ASHBY methodology.

[3] Nowadays, a virtual model is also often made.



Example[4] of a graphical overview of material groups and their properties[5].

The choice of material cannot be made independently of the choice of the process by which the material is to be made; formed, joined, finished and otherwise treated. It is an iterative process. As an example in addition to costs, aesthetic aspects such as: shape, texture, feel, color, the decoration of the product play a major role.

Design issues are almost always open-ended. They don't have a unique or 'right' solution. Good designs are always an optimum of all properties.

Choice of manufacturing process

The design team, the inventors, must know an overview of all manufacturing processes, just as with the choice of material. Here too, it is impossible to know all the processes in detail. When choosing the manufacturing process, it is important to know the frameworks or limits of the process. An example is the relationship between costs and batch size. Another example is the maximum dimensions of the product to be made. The inventors, the designers, must take all these aspects into account when choosing the manufacturing process.

Manufacturing knowledge cost & serie size.

In the overview, the manufacturing processes are positioned on the basis of costs and batch size. Please note: this is indicative. Also, not all possible processes are listed.

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[4] The mechanical properties of natural materials. I. Material property charts / Michael Farries Ashby , L. J. Gibson , U Wegst and R Olive / Published:08 July 1995

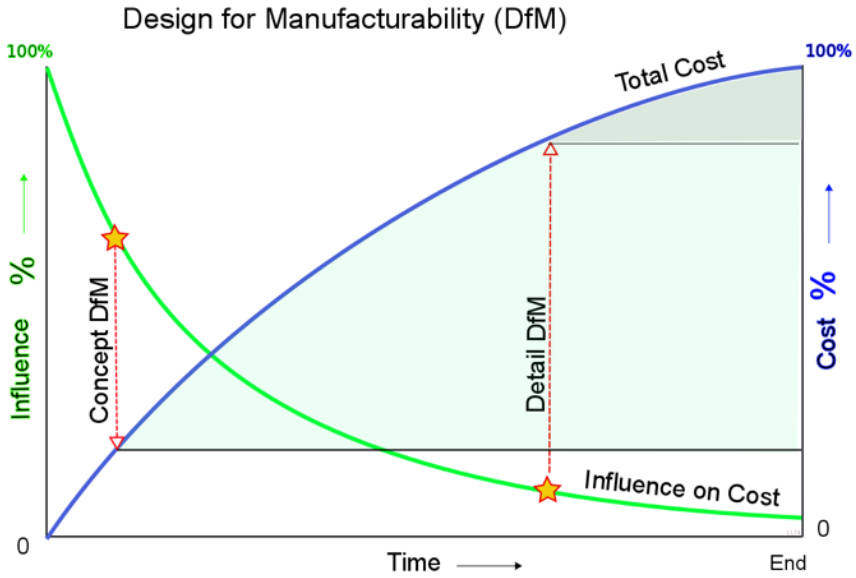
[5] For more information see: https://en.wikipedia.org/wiki/Material_selection

Various lists of manufacturing processes are available on the internet. Examples are: Wikipedia[6], Knowledge Sharing Centre [KSC][7], ManufacturingGuide[8]. Because the manufacturing process is so diverse, there is no good classification overview of all manufacturing processes (yet). A very useful overview is that of the KSC manufacturing knowledge. See Appendix 1.

Here too, if contact is made too early, there is a chance that the future producer will push the design too much in his direction. As a result, there is a chance that other and possibly better manufacturing methods will be ruled out too early. If the material, manufacturing process and surface treatment have been chosen in the design, the elaboration follows. The detail development or the design phase. In practice, it is often only in this phase that the makers are involved in the design.

Design Cost

In the development phase, 80 to 90% of the costs have already been determined. If a supplier still has to be chosen in this phase, only 10 to 20% of the costs can still be influenced.



Influence on cost.

The figure above shows the degree of influence in the duration of the project. As is abundantly clear, the influence on the costs of the design is greatest at the beginning of the project.

Maximum use specification tolerance

Another example is the maximum use of the limits specified in the specification.

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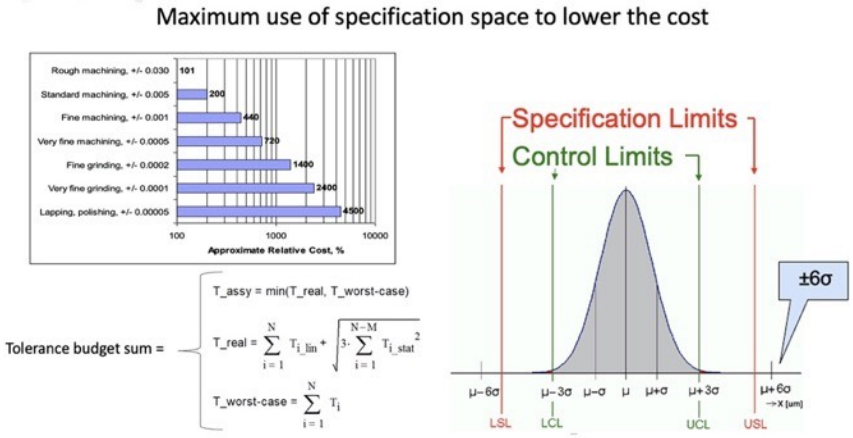
[6] https://en.wikipedia.org/wiki/List_of_manufacturing_processes & https://nl.wikipedia.org/wiki/Lijst_van_vormgevingsprocessen
[7] https://www.knowledgesharingcentre.com
[8] [8] https://www.manufacturingguide.com/en



Maximum use of the tolerance space.

It often happens that when choosing the manufacturing tool, an 'overkill' takes place. This creates unnecessary costs. Here too, it is advisable to contact the makers on time.

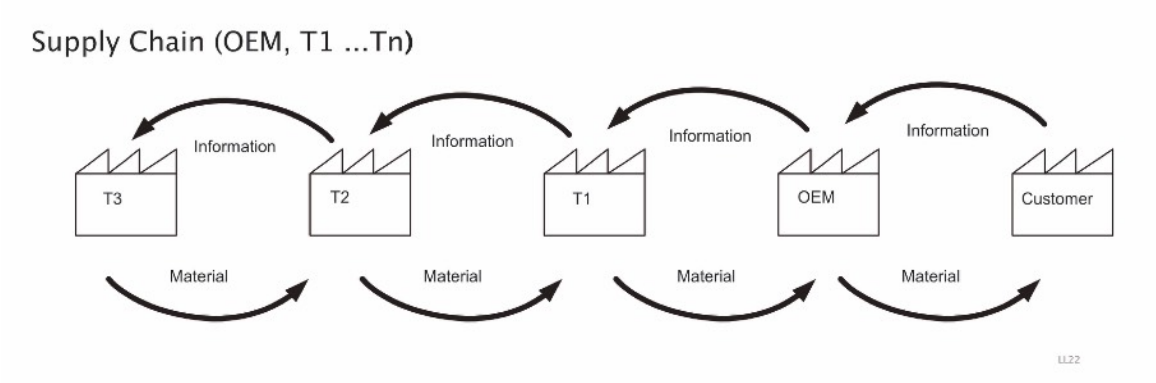
Shaping phase

The detail development, also known as the shaping phase, is the phase where the design takes its final shape. The starting point for the detailed development is the concept. The beginning of the detail development phase is that you start to make everything concrete. In the available professional literature on methodical design, almost no attention is paid to this. Translating a concept design into a detailed design, which can be made without any problems is an art, a craft in itself. It requires thorough knowledge of the manufacturing (make) process. Here, the help of the maker, the producer, is very welcome. Depending on the manufacturing process, the design can be adjusted within existing boundaries. This letter does not discuss this further. For more detailed information see the book: '[Design for Manufacturing (DfM) Influence on Quality and Cost]' Insight into the production aspect of the design. ISBN: 9789403777726.

As mentioned earlier, the maker, the producer, is usually only involved in the project in the shaping phase. From the historical point of view, it was customary to first make the design and then approach the suppliers for a quotation via the purchasing department. Usually a percentage of 5 to 10% reduction on the quotation was negotiated. Unfortunately, this is still the case with many companies. In the chapter 'role purchasing' and 'role sales' I will discuss this in more detail.

Supply Chain (OEM, T1 ...Tn)

The supply chain. This is how the logistics process for making and marketing a product is and is managed. T stands for Tier. Tier is a branch. A T1 supplier supplies an OEM (Original Equipment Manufactor). This is a supplier that brings something to the market. No company can make everything itself. Each product is composed of parts that in turn are also a composition of supply parts.

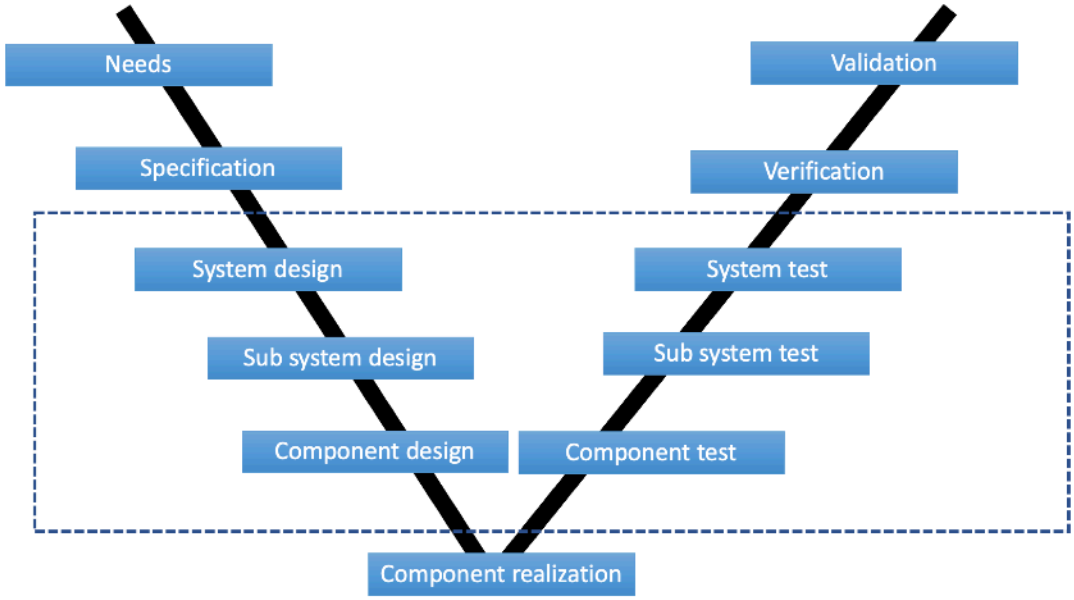


Value stream map supply chain.

In the diagram above, the flow of material versus the flow of information between the different supplier is clearly visible. In order to be able to supply material as a supplier, it is important to be aware that there is a reverse information flow. As a supplier, you deliver something that the customer demands. This diagram emphasizes the importance of having solid knowledge of the customer's needs. What is the added value of your product or service for the customer? How do you unburden your customer?

V model

In complex designs, the "V" Model is used.



V model.

The V-model breaks down the design of a complex system, in both time and complexity levels. This allows the design to be planned for the specialists and generalists. By working with multiple layers, it is possible to work in more and more detail in phases. Start is made at the top left of the V-Model. Step by step, the left side of the V-model is traversed up to the component level. Then on the right side the V is run again, but now from bottom to top.

Needs & validation

On the top layer of the V-Model, the needs are determined. As an example, a truck. The owner of the truck has the needs to transport cargo from A to B safely, economically and over a long period of time. Later, when the product has been made, it is examined whether it meets the needs.

Specification & verification

The needs are translated into concrete requirements and wishes. These are tested later, after the product has been realized. As an example, the fuel consumption of a truck is measured in practice.

System design & system test

In the top layer 'System Design', the functional requirements of the total product are determined and translated into system specifications and subsystem requirements. In the 'System Design' layer, the different subsystems are integrated into an entire system and the performance of the total system, once it is created, is tested (system test) and verified.

Subsystem Design & Subsystem Test

In the "Subsystem Design" layer, these subsystem requirements are translated into subsystem specifications and requirements for the detailed elements. In this layer, the subsystems are also tested to verify whether they meet the set requirements. A subsystem is like, for example, a tire of a car. This can be extensively tested on a roller test bench.

Component design & component test

This is where the complete specification of the component is determined. This is the layer where the designer creates the model and the drawing, the detail design. The component test then validates whether the components meet the set requirements. This can be, for example, measuring the product.

System supplier & Jobber

Often a system or subsystem is purchased completely from a supplier. This supplier is also called a '**system supplier**'. He is therefore responsible for realizing the specifications. This is in contrast to a '**jobber**'. A jobber is a supplying production company that manufactures a part or a series of parts on behalf of a machine factory or equipment builder. The client provides the product specifications and often also the necessary input materials. To switch from a jobber culture to a system supplier culture, a lot of knowledge and skills are required. Developing products is expensive and time-consuming. It is risky and sufficient margins, such as mark-ups on the product price, are therefore necessary to achieve this. Often, lengthy negotiations are necessary to achieve this.

Now that we have roughly outlined the frameworks of the development process, we can investigate the different roles and points of view in the choice of a supplier in the design process.

Supplier choice

Seen from the designer's point of view.
The choice of a supplier is usually based on existing knowledge of the production chain of similar products. For a designer, minimizing risks is important. Why choose a supplier that does not yet exist? It's a hassle. It takes energy to get to know the new supplier. How reliable

is the new supplier? What is the delivery reliability? Does the new supplier have sufficient knowledge of the subject matter? Usually the first contacts with the 'sellers' are not effective. Often the salespeople are not the professional discussion partners who have added value for the designer.

Seen from the buyer's point of view.
In the literature, the role of procurement is defined as follows:

The six steps of the procurement process

1. Specifying the purchasing requirement.

2. Selecting the suppliers.

3. Negotiating and contracting.

4. Order.

5. Monitoring the correct delivery.

6. Aftercare.

Why choose a new supplier?

Do you know how much extra work (for me) this is!

Seen from the seller's point of view.
Salespeople are often ambassadors of their product or service. They proudly tell us that they have purchased a new machine. Or that they can provide a new service. At trade fairs, they proudly show their machine or their product range. It is the selling of standardized products or services. It is a 'push' culture. Creating a (not yet present) need for his product or service.

IP culture.
The seller also often thinks that their product and/or process is unique. Sharing information about this is then difficult. Soon the fear arises of revealing trade secrets that the competitor can use. Sharing knowledge is an art in itself. An art that can be learned.

The designer is not interested in: how you do something. He or she is interested in: what you do. Sharing this 'what' information can then be done without disclosing the 'how' trade secrets. Due to the digital revolution, among other things, the role of salesperson will change and respond flexibly and efficiently to customer needs. On the internet, almost all the information that used to have to be obtained in a one-on-one conversation is already quite easy to find.

The new salesperson.
Is a patient listener, an advisor, a trusted partner, a networker, an analyst and above all a techie. A technician who can respond to the needs of the designer. Someone who can think functionally. Someone who can ask questions to find out the needs of a potential customer. Someone who knows how to gain the trust of the customer. And above all, has the much-needed business creativity that provides creative solutions for the customer that they would not have thought of themselves.

Creating needs => fulfilling needs.

Sales reps need to change from creating customer needs to delivering things that the customer really wants. This makes them think like designers!

Lessons learned

What is the role of the in-seller in the manufacturability of the design?

The discussion, following my lecture @Exakt precision mechanics (2021) on '**the manufacturability of the design**', shows that the buyers and sellers often play a negative role in this. In the past, it was common for the designers not to have early contact with the makers. And certainly they were not allowed to have any knowledge of the costs! To my great surprise, this still appears to be the case at many (large) companies!

One of the solutions is to get in touch with each other at an early stage of the design. For this it is important, not only for the inventors and makers, but also the buyers and sellers to have knowledge of the methodical design process. This knowledge creates common interests. The in-sellers are both the problem and the solution.

For the makers, the advice is: immerse yourself in the needs of the customer.

- **The question is not: How do you, as a supplier, get in touch with an OEM?**

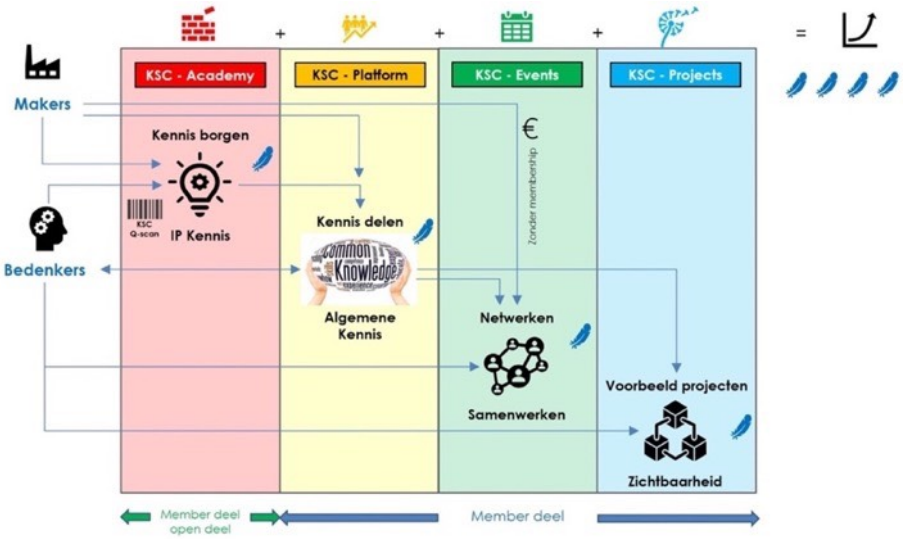
- **The question is: What does the OEM need?**

Don't tell yourself how good you are. Let others tell you that you are good.

justification

This white paper was created to emphasize the importance of knowledge sharing for the manufacturing industry.

This letter was written by Laurens van Lieshout. https://lieshoutconsultancy.nl He is a member of the https://www.kscacademy.nl/ .



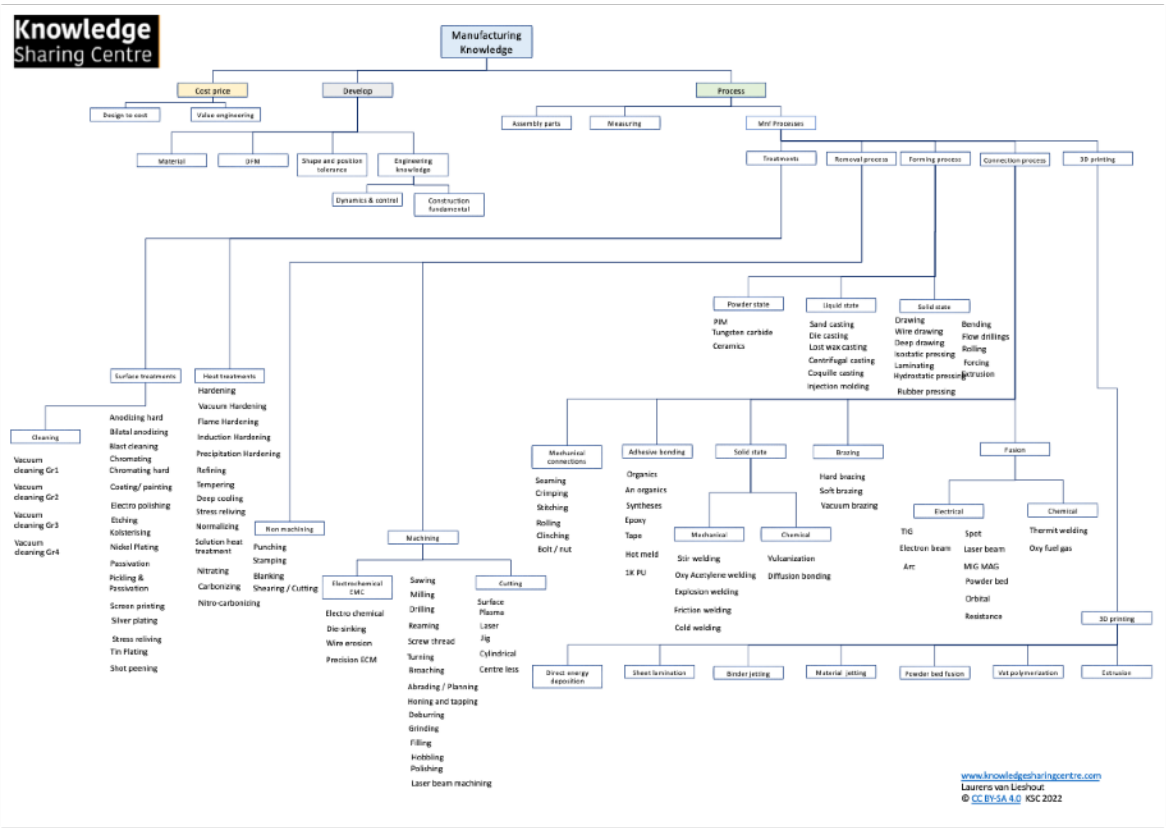
The aim of the KSC academy is to provide support to companies and organizations in the above area.

Laurens van Lieshout

Original publication in the Dutch language (2022)
Keuze van het maakproces (Choice manufacturing process) Hoe kom je als 'maker' binnen bij een OEM-er? (Gettin an order from a OEM er)

Appendix

KSC-manufacturing knowledge



Methodisch design

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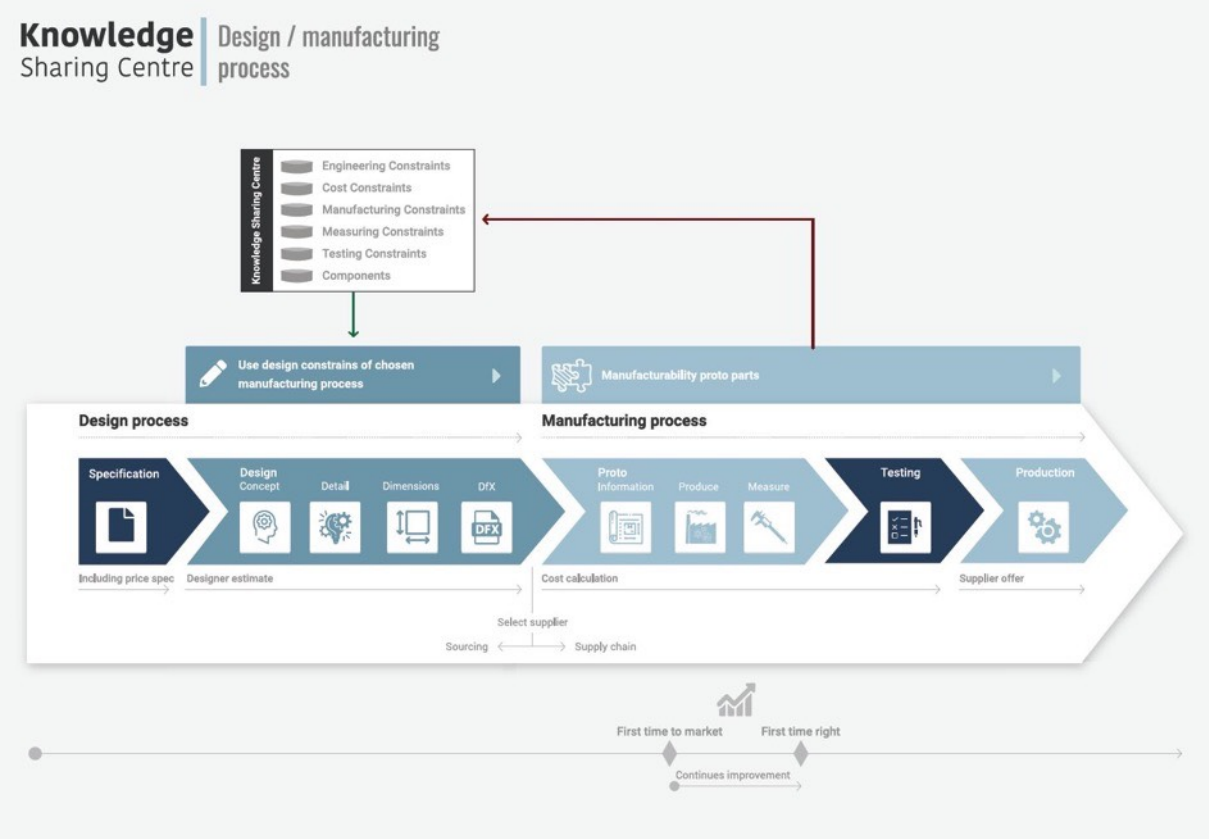
Design process



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