

Design Strategy – A Starting Point for Integrated Product Development.

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Abstract

Integrated Product Development (IPD) includes technology, tools, procedures and management for increased efficiency and learning in industrial product development processes. IPD has the goal to reduce development cycle time and improve product quality and value. The approach is based on the idea to consider competitive factors such as feasibility, testability, supportability and quality from the very start of the product development and design them into the product.

All organizations apply IPD to some degree, however, the question is how to develop and improve these processes further. In the curricula arena, development requires a formal, structured approach for future designers to implement IPD, which must be based on a comprehensive understanding of the essential principles and methods that IPD includes.

In the industrial design study by NTNU, we have experienced that the starting point of an IPD process is very important for the outcome of the process, and during the last years, the starting point has become more detailed, containing more information. This makes the process more specific with a shorter launch time and less risk for failure during the process. The management of identifying and starting up an IPD-process according to the company's vision and strategies, can be defined as the company's design strategy. This paper will discuss this theme further.

Keywords: Design strategy, corporate identity, market strategy, product design program, design management.

Introduction

In line with IPD goals, methods and strategies, this presentation analyses the course "Product Design 8 – Design Strategy", as an approach to introduce integrated product development as a part of the fourth year of the master study Industrial Design Engineering at NTNU, and the course focus on the starting point of the process.

The aim of the course was to provide students with practical knowledge in IPD and an environment where designers, engineers and producers collaborate to develop useful, usable and desirable products. The course has been case oriented, focusing on one company each year, and the students developed a design strategy for the company. This has been done according to a model designed for management purposes, which will be presented too. The

model is supplied with product design elements like corporate and product identity, design strategy and technology strategy.

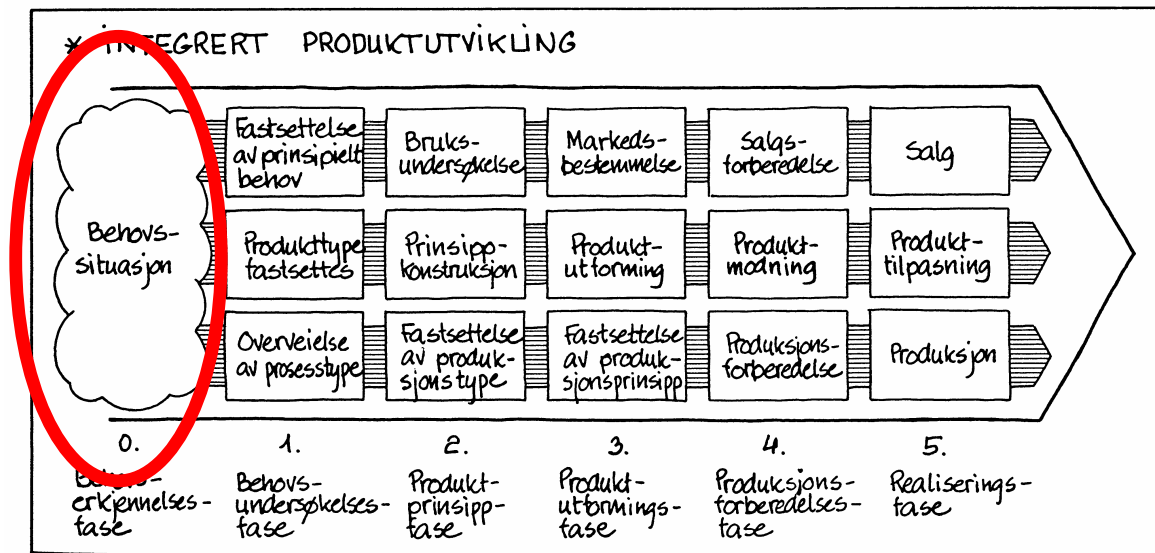


Figure 1. Focal point of PD8, the Starting Point for Integrated Product Development, illustrated in the classic model of IPD. [1]

The analysis of PD8 will focus on how we approached the following questions:

1. How is product development activities identified and started?
2. What are the company's strategies, and how are they expressed in the start point of a new product development project?
3. Who is participating in the foregoing activity, and how is it organised in the company?

Themes that are discussed in relation to these questions are:

- Design strategy
- Market understanding and choice of markets
- Corporate identity
- Product identity
- Design programme
- Convention map

Further, we will evaluate research activities connected to PD8 and their impact to strengthen the course and to improve professional skills in IPD teaching.

We will summarise our experiences by showing the connection between long term management and strategies and the initialisation of design projects in a company by an example.

Design strategy

The new PD-8 course started without a definition of *Design Strategy*, but a statement and a search for content:

“The result of a design strategy is a company with the right products in the right markets with the right quality and the right price, at all times.

The term right shall reflect the company’s values”. (Baggerud 2003)

We are still searching for a good definition, but we are gradually getting a stronger feeling of what it ought to be.

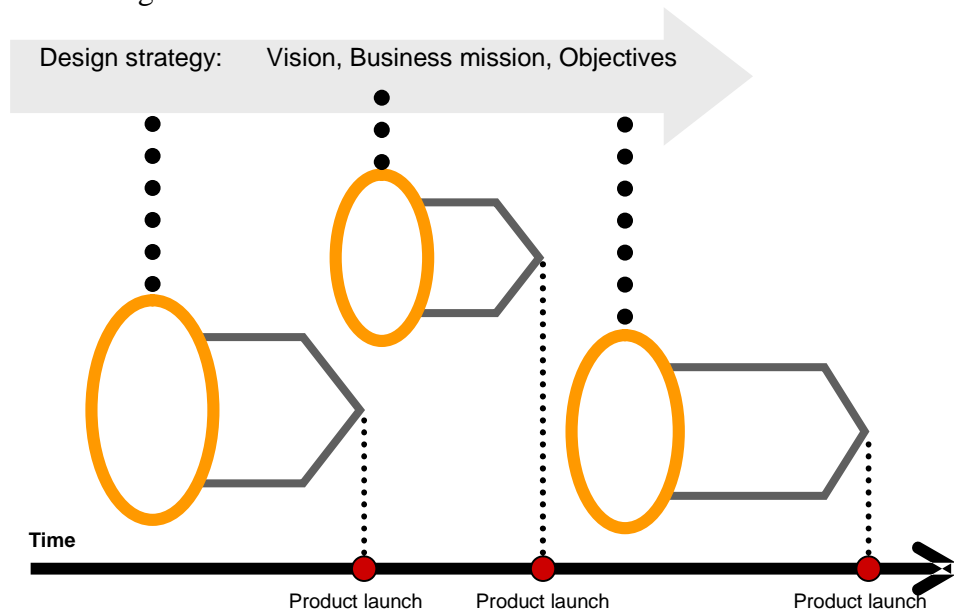


Figure 2. Design strategy as identification, management and planning of the product development processes.

A design strategy is a long term process that identifies, manages and forms plans for the IPD processes according to the company’s vision, business mission, product portfolio and market situations.

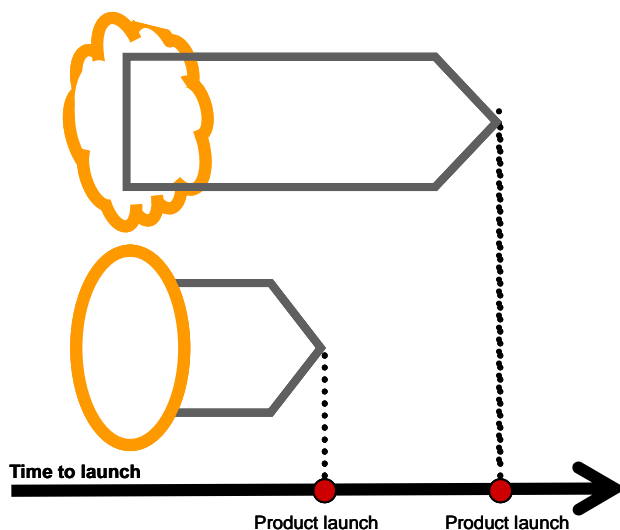


Figure 3. Decreased time to product launch with focused starting point.

The classic IPD model was developed in a time when the market needs for products were in focus, and the sky in the model was a rather vague starting point for the process. Today the market situation is more complex, we have got a more global market, the segmentation by identity is stronger, the need for being seen is stronger, and time to market is shorter. We have been working with identification of the type of information that ought to be represented by the start of a product development process, and what form it ought to be in. Much of this information is company/market/user/brand specific and will be the same for many products. This will ensure continuity in the product identity for a company if wanted, and will make the IPD-process more specific and efficient. Many design decisions will be taken at a higher level, and have value for more products. This will be important especially for small and medium sized enterprises, SME, having few resources for product development.

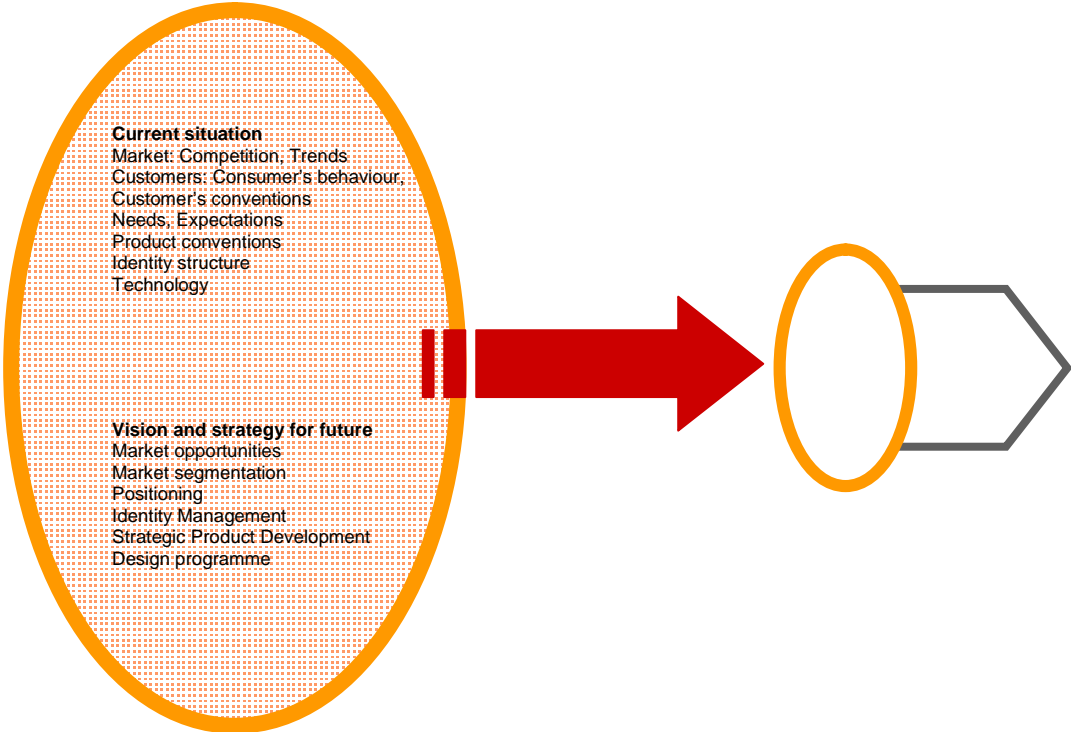


Figure 4. Example of a focused starting point for an IPD-process.

Market understanding and choice of markets

In order to be able to set direction for the development of strategies within the company including design strategy for product development projects, a solid understanding of the market must be present. A market will consist of other companies, some of them competitors, a vast range of products and customer groups. An understanding of each of the elements and how they influence each other is essential for successful product launch and sales. With this understanding as a basis, new opportunities for the company can be identified and incorporated into the company vision.

A strategy for how to handle these aspects must be deliberate and well thought through. A company's probability of surviving in a tough and demanding market increases with well-defined, continuously updated and clear objectives and strategies. This strategy must be conveyed back to the market, customers and competitors clearly and consistently across all contact surfaces: communication, behaviour, surroundings and products as previously

discussed. The identity management defines how to manage this communication based on company, product and brand identity.

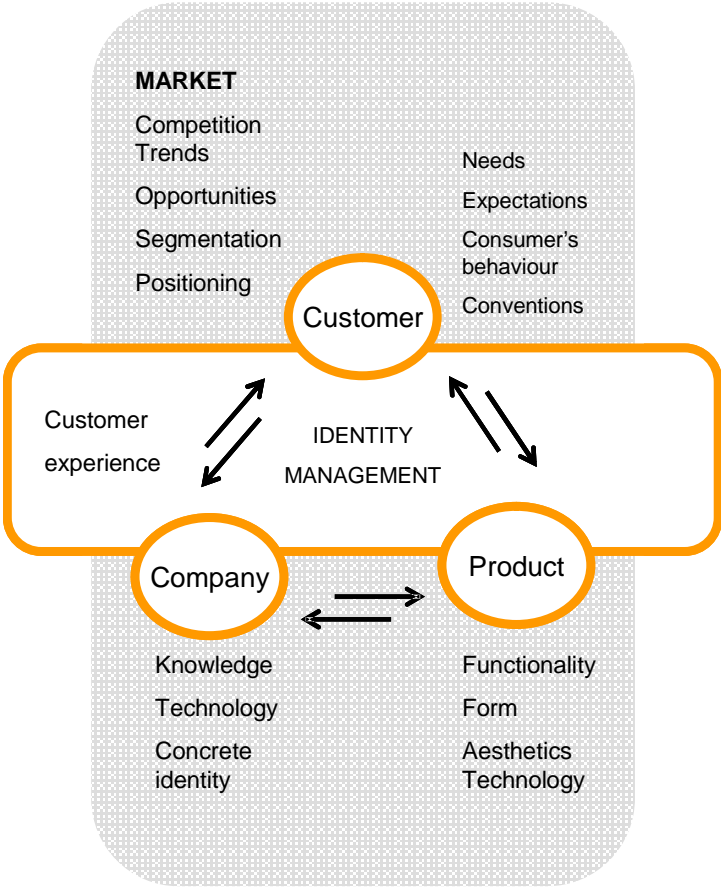


Figure 5. Important elements that make up the market and influence the design strategy.

Identity

In the course identity management is divided into Company identity, Product identity and Brand identity. The Olins [2] model where companies are expressing their identity through products or services, environment, people and communication forms the basis of the identity management.

Table 1. Elements of the company’s definite identity, Parr [3], based on Olins [2].

How should the company products and services appear?	How should the surroundings of the company appear?	How should the company communication appear?	How should the people within the company appear?
Functionality	Structural architecture	Graphic elements	Behaviour
Design	Offices	Publications	Dress regulations
Packaging	Receptions	References in media	Service department
User manual	Sales base	Advertising	Serving staff
Technology	Factories	Publicity	Salespeople
Interaction	Vehicles	Information	Management

The identity development process consists of both an abstract and a definite part. The abstract part is handled early in the process. Mission statement, corporate values and philosophies are

developed in order to choose market segmentation and positioning strategy. The definite part regards strategies such as value chain, relationships, price, distribution, technology and research. The identity process must obtain consistency between abstract and definite identity, and between all elements of the definite identity. During this phase, the vision is used as focusing force.

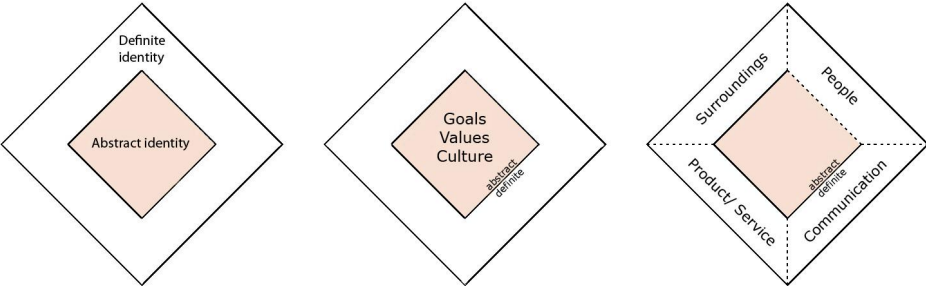


Figure 6 Abstract and definite company identity, Parr [3], based on Olins [2].

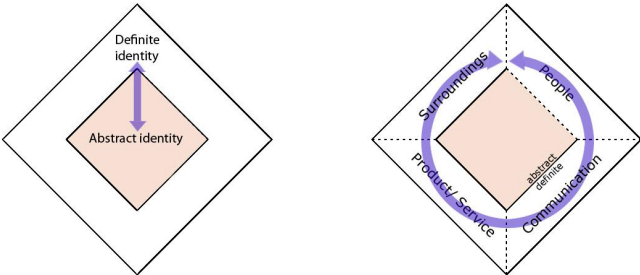


Figure 7. Consistency of identity, Parr [3], based on Svengren[4]

Design programme

In order to communicate the company’s common design strategy, it becomes more usual to make a design programme. It is important that it has clear guidelines, but still invite to artistically impression. The following example in Figure 8 includes the company’s core values, its different strategies, and guidelines for esthetical mapping into products.



AS Oslo Sporveier

Designstrategi

Kjerneverdier



Sikker og forutsigbar

Urban og effektiv

Imøtekommende og trygg

Ren og miljøvennlig

Generelle retningslinjer

Funksjon: Helhetlig reisetilbud er godt alternativ til privatbil - pålitelighet, kostnad og tid. Sporveiens produkt er hele reisen - fra A til B.

Estetikk: Helhetlig reiseopplevelse på tvers av transportformer. Tradisjonsbunden utvikling - formtradisjoner videreføres og moderniseres. Tilknytning til Oslo by.

Organisasjon: Innkjøp av materiell i samsvar med designstrategi. Designansvarlig iverksetter og følger opp eksterne designtjenester.

Funksjon

Rullende materiell

Vi skal strebe etter pålitelighet, frekvens og kortere reisetider. Rullende materiell skal være komfortabel og renslig for passasjerer, samt økonomisk og miljøvennlig i drift.



Hovedfarge: Rullende Materiell: Lyseblå

Stasjoner

Et imøtekommende sted som er innbydende også uten tog ved plattformen. Stasjoner skal være lettlesle og forståelige. God belysning gir oversikt og trygghet. Innslag av kunst og kultur gjør reisen lettere. Enkelt renhold og vedlikehold.



Urban Nature

Informasjon

Riktig beskjed på riktig sted til riktig tid - samspill på tvers av alle informasjonskanaler. Informasjonssystemet gjør Oslo til en leselig by - for alle. Informasjonssystemet er Oslos bruksanvisning.



Hovedfarge Informasjon: Mørk Blå
Hvit, Vann, Skog

Estetikk

Rullende materiell er et bindende element - formgivning i familie på tvers av transportformer. Trikkelyseblå på bakgrunn av naturlige farger. Feminin appell, varme farger og varmt lys i kundeflater. Maskulin kraft i tekniske konstruksjoner.

Stasjonsarkitektur er spesifikt tilpasset stasjonens omgivelser og knytter transportsystemet til Oslo by. Hver stasjon er unik - samtidig er det felles trekk. Byen bringes ut i forstedene - naturen bringes inn i byen. Naturlige materialer som eldes med verdighet. Vekt på horisontale linjer.

Informasjon er et bindende element - felles formgivning på tvers av transportformer. Fargekodingsystem basert på tradisjonelle Oslo Sporveier-farger skaper kontinuitet - settes på bakgrunn av naturlige farger og gråtoner. Transparens knytter informasjonssystemet til Oslo by.

Organisasjon

Oslo Sporveier utvikler ikke selv rullende materiell. Kontrakter med eksterne leverandører må skreddersys i samsvar med designstrategi. Ved siden av grunnleggende funksjonskrav kreves farger, belysning og tilrettelegging for informasjon tilpasset. Kontaktpersoner i Oslo Sporveier har kjennskap til designstrategi.

Større prosjekter for nye stasjoner eller utbedringer legges ut på anbud (både arkitektonisk program og byggekontrakt). Designstrategi overholdes gjennom nært samarbeid med representant i Oslo Sporveiers datterorganisasjoner (buss, trikk, t-bane). Vedlikehold og mindre utbedringer gjøres av datterorganisasjonene selv.

Oslo Sporveier er selv ansvarlig for design av informasjonssystem. Designarbeide gjennomføres av egen designansvarlig i Oslo Sporveier. Produksjon av fysiske elementer settes ut på kontrakt.

Utdrag av forslag til designstrategi for Oslo Sporveier - med utgangspunkt i prosjektene "MetrOslo", "Urban Nature". Kilde: forfatteren.

Figure 8. Example of design programme for a company.

The model for development of design strategy

We have chosen a model for client oriented market development, the BASO-model [5]. It is a holistic model, integrating standard tools for development of each level. For the course we have a book describing each step, and a web oriented toolbox for development of the model. Each of the levels of the toolbox has a template for the solution, and one template for evaluation of the solution according to the theory and the value of the choices that have been taken.

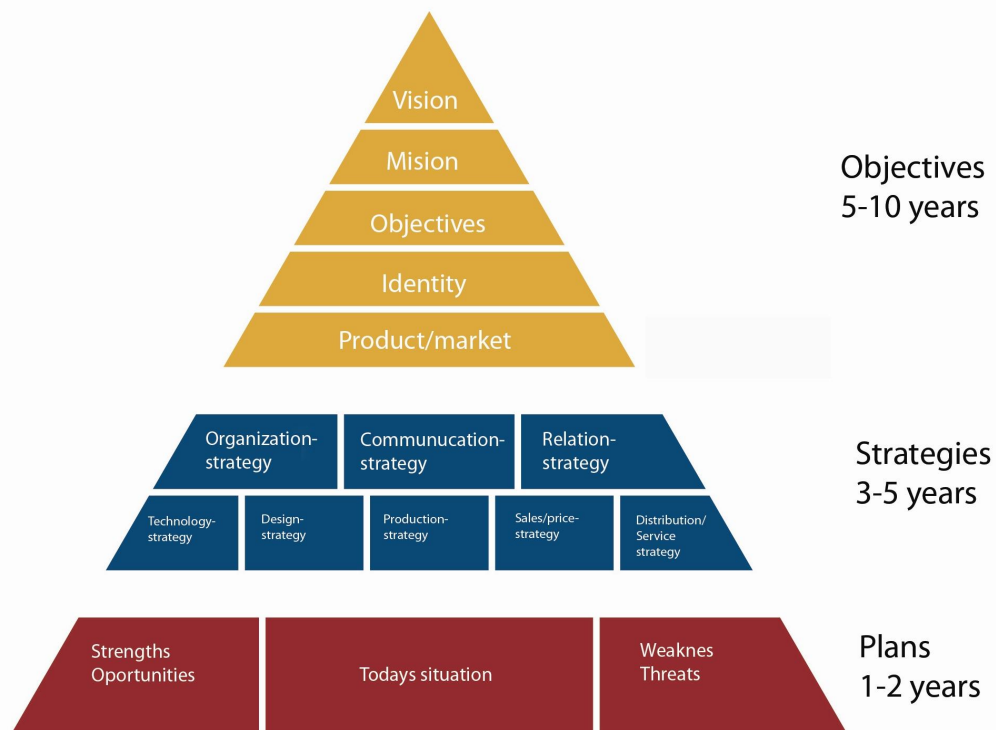


Figure 9. The BASO-model for organizing the company.

In the course PD-8, we bring in an existing company, and analyze its situation today, ending up with a SWOT analysis. This is done in plenum, and all students have the same basis for the further work. Then we divide them into small groups with 3-5 students in each. Each group will act as the board of the company taking all decisions in the reorganization of the company. The groups will mark up their choice of focus in the SWOT, and bring in a new vision for the company. Then the groups develop all the objectives, identity philosophy and different strategies, all focused by the vision and based upon the chosen factors from the SWOT analysis.

As a final part of the course, every student take the leadership of the “new” company by developing a design program and a future design plan, and present the “NEW COMPANY”, using the design of the presentation itself to visualize, exemplify and communicate the company’s new identity.

Case study

In 2004 we worked with a producer of electrical heaters as company case. 12 students made a common analysis of the existing company, and then divided into 3 groups. Each group then developed a “NEW COMPANY” beginning with a new vision.

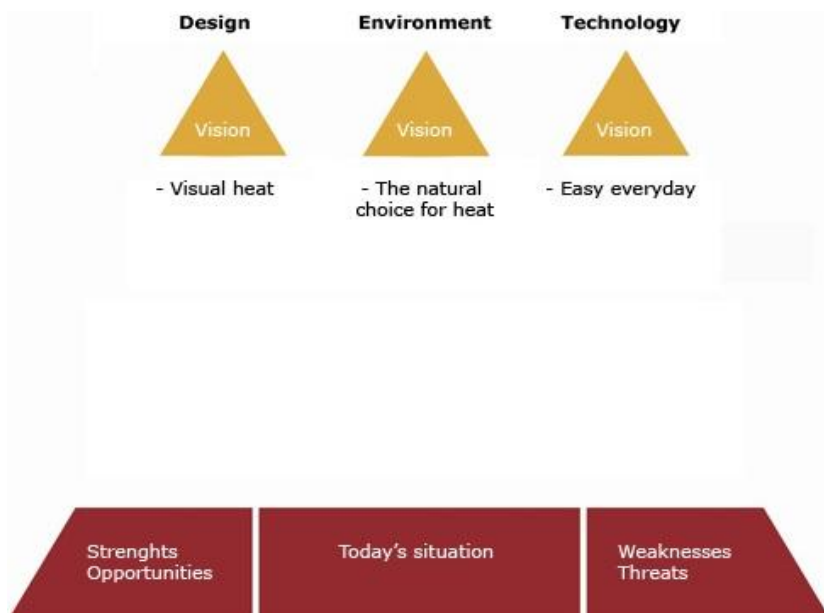


Figure 11. Three groups, starting with three different visions.

The groups made a framework of three future companies with totally different profiles, in three different markets. Three new companies that could have collaborated more than competed. All of the new companies seemed to have a realistic and bright future. A vision based company and product design seems to be an efficient way of focus development efforts.

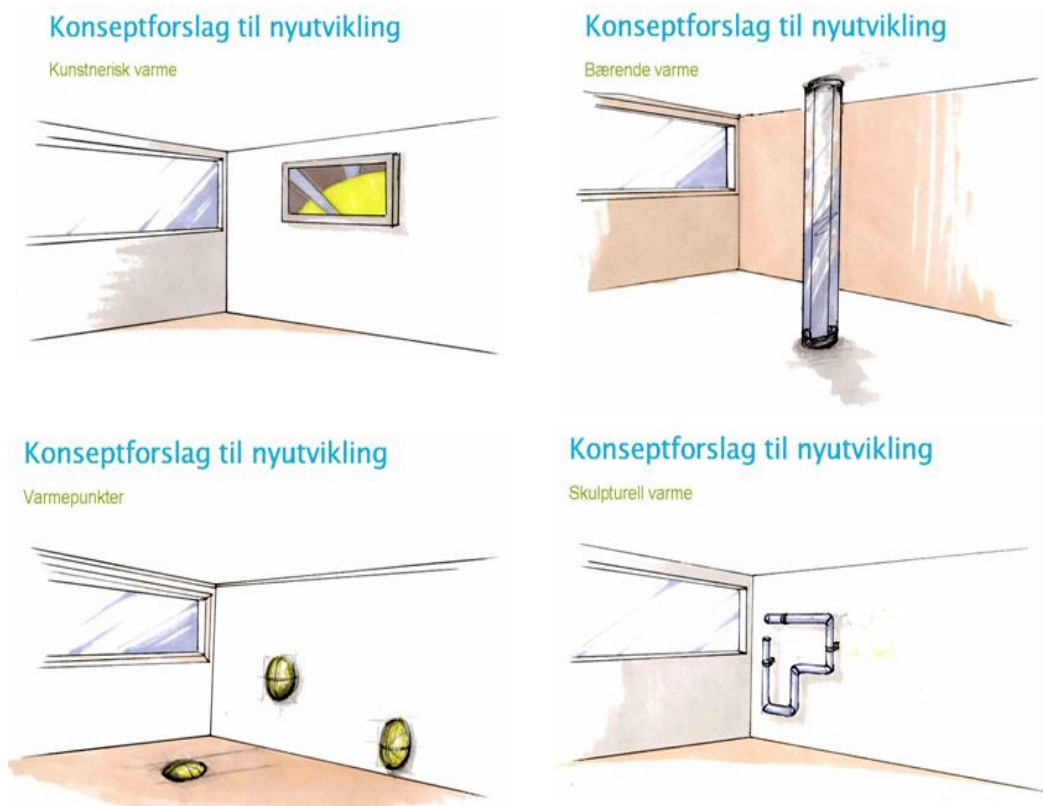


Figure 12. Sketches of possible products for the company with vision “Visual heating”, made by Silje Evensen.



Figure 13. Identity example, illustrating the vision “the natural choice of heating”, by Sigrun Lurås.

Conclusions

Using the vision as a strong focusing force in reorganizing or revitalizing a company seems to be a promising methodology to obtain an efficient and proactive product design and development. Experience shows that different visions generate different design strategies leading to different company development. Use of the BASO-methodology seems to be a tool for companies to make plausible future scenarios for long term decision-making. The scenarios are based on today’s situation, are well focused, easy to evaluate, and form a solid platform for future product design and development.

The model seems promising to fit SME, and during 2006 we will try out the model together with three norwegian SMEs.

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