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# EXPLORATION TO TRENDS & PRODUCT DEVELOPMENT

A FRAMEWORK TO GUIDE TREND &  
CONSUMER DRIVEN CONCEPT DEVELOPMENT

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# EXPLORATION TO TRENDS & PRODUCT DEVELOPMENT

A FRAMEWORK TO GUIDE TREND &  
CONSUMER DRIVEN CONCEPT DEVELOPMENT

MASTER OF ARTS THESIS  
PATRICK JUSELIOUS  
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AALTO UNIVERSITY  
SCHOOL OF ART, DESIGN AND ARCHITECTURE  
DEPARTMENT OF DESIGN  
DEGREE PROGRAMME OF APPLIED ARTS AND DESIGN

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# PREFACE

## BACKGROUND FOR THIS THESIS

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A combination of trends and product concept development has interested me and driven my work since 2009 when I started my studies in The International Design Business Management program (IDBM). This Master of Arts thesis concludes my studies and work done in this field so far.

This Masters' of Arts thesis for The Applied Arts and Design - Masters of Arts program is a combination of my prior creative and design managerial studies in The Aalto University the school of Art and Design, as well as studies in IDBM and The School of Economics.

This thesis is divided into five parts and as a whole it suggests that by combining trend information with product development, it is possible to conduct more desirable consumer products to market and also streamline the first stages of product development process from the viewpoint of design management.

This thesis is a combination of design, business, and strategic thinking and suggests that the framework would work as a supportive tool for design managers throughout the whole product development process.

This Thesis would not have come to life without my loving family and close friends as well as my dear colleagues in the field of design, people in the IDBM-program, Aalto University of Art and Design. Special thanks to my thesis supervisor Heidi Paavilainen for great advice and patience, Professor Timo Salli for endless support, and last but not least thanks to the whole MacWell Creative -team for their caring support in the last steps of the process.

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# CONTENTS

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PREFACE

CONTENTS

SUMMARY

**TRENDS & PRODUCT DEVELOPMENT**  
Integrating Trends to Product Development  
processes

**FUTURE AND TRENDS**  
What is Trend and Future Research  
Diffusion of Innovations  
Social systems and Diffusion of Trends

**KNOWLEDGE AND NETWORKS**  
Knowledge arises from Data  
Networks

**TRENDS TO PRODUCT CONCEPTS**  
Trend analysis

**KNOWLEDGE TO PRODUCTS**  
Concepts and Product Development

CONCLUSIONS

SOURCES

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# SUMMARY

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My aim in this thesis is to find new ways to gather and use trend information in product development process. I find that trends and especially weak signals - one of the most important initiating sets of signals - when used correctly, would give more value to the whole product development process.

Trends are mainly communicated and explicated through trend reports in visual and written form. The explicating process or knowledge transfer of trends is not an easy thing to do - it requires conventional and unconventional communication processes.

The main goal of this thesis is to create and suggest a framework which would help design managers and project managers to communicate emerging trends to designers, decision-makers and marketing communications. Finally, the same sets of trend knowledge are communicated to customers along with the designed product and its marketing strategy.

This thesis consists of theoretical backgrounds from trend, innovation, and product concept design theories that are woven together into a process-like framework. The framework is suggestive in its nature, giving tools and suggestions to integrate trend information and trend research activities with the first stages of the product development process.

The usage of this framework is focused on consumer products, concepts and services. This thesis is not directly focusing on Product design in a sense of interplay between art and design, even though those are always present in designers' mind-sets.

The suggested framework combines theories and frameworks from product development processes, trend adoption processes and theories. Traditional qualitative & quantitative consumer research is also important for data gathering methods in order to get the full picture of the current and future situation of consumers and their consumption habits, but those processes are not considered or focused on in this thesis.

I believe that new consumer products should not be designed merely from a designer's own creative point of view in order to gain success in the market. Therefore, I am focusing on commercial consumer products that seek to make profit and acceptance on a wider market.

Often the initial spark to the product development process comes from a noted gap in the product pipeline, innovations, or a noted signal in the market environment. A design brief is one way of giving guidelines to the designer or design team. At best, the design brief is an interpretation of a company's strategic decisions, noted gaps in the product pipeline, innovations, new consumer segments, noticed changes in lifestyle and so on. This thesis is focusing on the notification of these signals, and how they are transformed into concepts.

These noted signals of change in the market, consumer behaviour, product usage and needs, or emerging trends and concepts can be researched by trend research methods. Trend research combines analytical thinking, creativity, data collection and analysis into a comprehensive collection of possible future scenarios in the researched area. Trend research does not seek to give one single right answer, but give likely future paths as answers.

One way to handle fast-paced design processes is to take consumer and trend information as a baseline for all activities in the company. By this I am not stating that consumers are the only aspect to consider, but to take also trends and the so-called designers' toolbox as additional inputs into corporate strategy and working habits.

In this research, the consumer and consumer research is seen from the designer's point of view in the context of product usage, functionality and desirability. By integrating the designer's way of thinking, trend research and consumer research together into one additional guiding tool, designed products can meet the target audience's needs better.

# TRENDS & PRODUCT DEVELOPMENT

INTEGRATING TRENDS TO PRODUCT DEVELOPMENT PROCESSES

## SUGGESTED FRAMEWORK FOR INTEGRATING TRENDS TO PRODUCT DEVELOPMENT PROCESSES

This chapter presents a new suggested framework that is gathered from a combination of existing frameworks and theories that have been researching for this thesis. This chapter explains ideas and suggested frameworks and tools that provide more insight and trend-related data to the product concept development process as a whole. This chapter gives a coherent picture of the process that I am suggesting be taken in account when designing new product strategies and concepts. The rest of this thesis gives supportive and descriptive tools to execute the suggested framework.

The suggested framework is categorized into three main themes: trend research from a sociocultural viewpoint, adaptation of designed concept to overall strategy, and product concept execution. I have gathered my remarks and recommendations from the consumer and trend research viewpoint to the specific areas of the product/concept development process.

The framework of tools and recommendations seek to give advice to design managers, designers and everyone who is working in the field of commercial design from managerial and strategic viewpoints.

The suggested framework is depicted as a linear step-by-step process, but as all creative processes are iterative, so is the concept design process. Therefore the depicted chart is merely giving an idea how the process can be executed. Also the different parts and phases in the framework can and will overlap with each other.

The main idea behind the framework is that consumer trends and their interpretations should be taken into account in every stage of the concept development and execution process. It is also important to communicate

those interpretations back to the customer - to meet the needs and, most importantly the, essence of the sets of trends followed.

I have used Keinonen & Takala's (2006) overall framework of product concepting process as an archetype and a basis for my recommendations and categorized them to loosely follow the framework.

The suggested framework (Chart 1.) for integrating trends with concept development processes is categorized in three main themes: Trend and Consumer research from a socio-cultural perspective, Adaptation of concept to overall strategy, and Product concept execution. Those themes include sub-categories as follows:

- Identifying driving forces
- Building future scenarios
- Identifying product needs
- Creating (product) concepts
- Timing R&D actions
- Project management

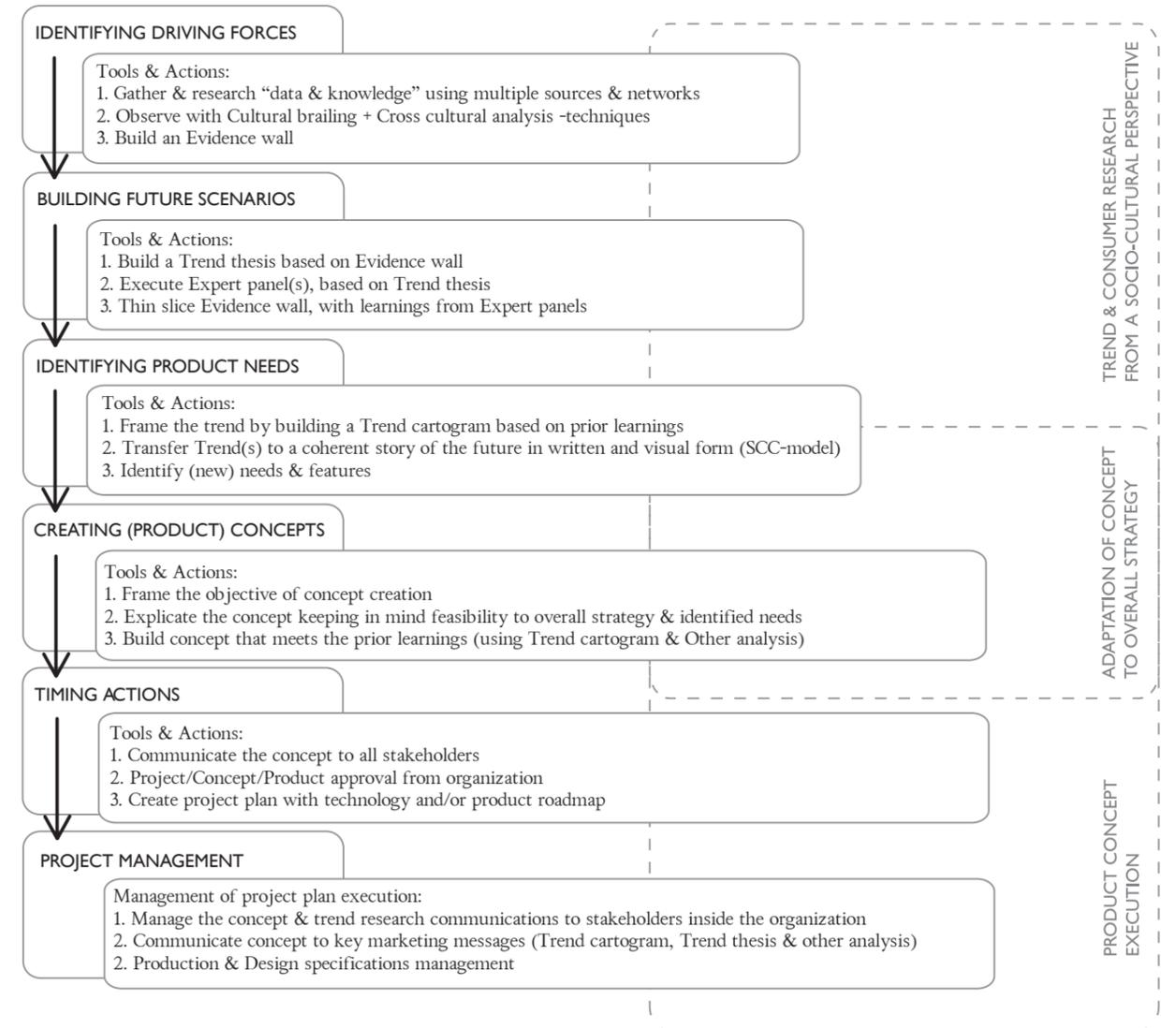
In conclusion, the explained framework is giving additional information on consumers, emerging consumer trends and the future environment.

The recommendations for further observation and actions are meant to be taken into consideration in different parts of the development process, as they are depicted and explained in the suggested framework. The explained tools and actions are meant to be used as additional tools in the whole development process, and they are not meant to override the existing tools and frameworks in use at the different concept development stages. The sub-category "project management" is an aspect that is not concentrated on in this thesis.

The project managerial aspect is added because many of the documents and analyses that are made prior to the Product concept execution phase can be used also as guidelines for project management.

# TRENDS & PRODUCT DEVELOPMENT

INTEGRATING TRENDS TO PRODUCT DEVELOPMENT PROCESSES



## SUGGESTED FRAMEWORK TO INTEGRATE TRENDS TO PRODUCT DEVELOPMENT PROCESSES

CHART 1 (REVISITED)

The suggested framework is categorized into three main themes: trend research from a socio-cultural viewpoint, adaptation of designed concept into overall strategy, and product concept execution.

# TRENDS & PRODUCT DEVELOPMENT

INTEGRATING TRENDS TO PRODUCT DEVELOPMENT PROCESSES

## TREND AND CONSUMER RESEARCH FROM A SOCIO-CULTURAL PERSPECTIVE

### IDENTIFYING DRIVING FORCES

As the framework suggests, new product concepts and ideas that gain success in consumer markets do not emerge out of the blue. They are often results of extensive research that uses not only traditional methods of consumer research, but also creative methods to explore and analyse the socio-cultural environment that we live in.

Identifying the driving forces that affect people's lives and their lifestyles is considered as a basis for the whole concept development process. The tools that I am suggesting to be used in this exercise are based on trend research methods and are designed especially for observing the masses' movements and their attitudes towards new ideas and concepts. Theory background for these exercises is based on Brannons's (2000), Raymond's (2010) and Vejlgard's (2008) research, among others. The theories behind emerging trends are something that I see as important to understand as systems and processes in order to give perspective and vision to identifying the process of driving forces in the sociocultural environment.

The process of gathering and researching relevant information is a highly data-oriented task, and requires a basic knowledge on how data is transformed into knowledge, and which kinds of network systems are to be used in the knowledge gathering.

Once the data is gathered, the vast collection of bits and pieces is analysed and tied together in order to

get a whole picture of the emerging trend. This task requires techniques such as "Cultural brailing" and "Cross cultural analysis" that were introduced by Raymond (2010) and earlier by Faith Popcorn. One key exercise in this theme is to build an "Evidence wall" that introduces the emerging trend in a consistent and analysed manner with all the key attributes and characteristics. Later the evidence wall is further analysed and explicated.

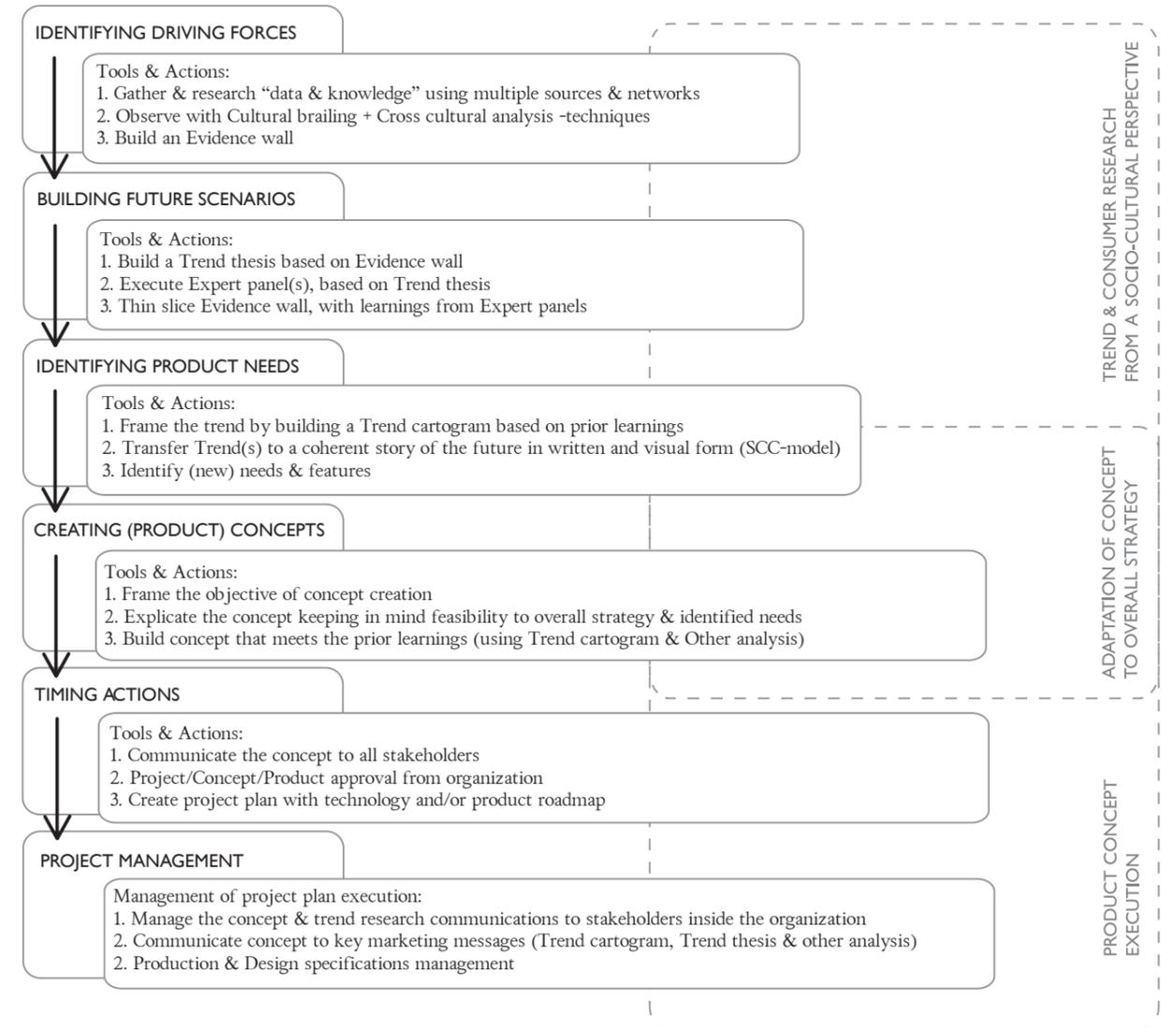
### BUILDING FUTURE SCENARIOS

"Building future scenarios" is based on learnings from the "Identifying driving forces" proportion of the suggested framework. "Building future scenarios" is a part of the framework in which the conducted research and data gathering is further developed into a consistent short story or scenario that explicates and brings the research findings alive. The future scenario is suggested to be built with a combination of familiar scenario planning tools (timelines/roadmaps), but also in addition to Raymond's Trend Thesis analysis tools and techniques in order to give the scenario a better characteristic of a trend analysis. I see that the trend thesis tool, introduced by Raymond (2010), with scenario planning tools are adding more trend and vision-oriented results to the research phase of the new concept development.

The trend thesis should also be highly compressed and revised through expert panels. Expert panels are used to further validate the trend, and to give more precise information and future direction to the spotted and analysed trend concept. The whole trend thesis is then refined according to the expert panels. Next, the conducted research and analysis is adapted to the overall strategy and the product concept is created and finalized in order to commercialize the identified and constructed future scenarios.

# TRENDS & PRODUCT DEVELOPMENT

INTEGRATING TRENDS TO PRODUCT DEVELOPMENT PROCESSES



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# TRENDS & PRODUCT DEVELOPMENT

INTEGRATING TRENDS TO PRODUCT DEVELOPMENT PROCESSES

## ADAPTATION OF CONCEPTS TO THE OVERALL STRATEGY

### IDENTIFYING PRODUCT NEEDS

The “Identifying product needs” phase of the framework seeks to transform the prior research and analysis activities into consumer needs and product applications that meet identified needs. This activity is suggested to be done with building Raymond’s “Trend cartogram” to summarize all the prior learnings in a built future scenario.

The trend cartogram compiles different themes together into a visual and written storyboard depicting the future trend and its applications. The trend thesis, other research and analysis that have been done earlier are used as guideline documents in this exercise.

The Trend cartogram answers the following questions: Who are the innovators of the trend, What is the trend about, Where is the trend effecting the society now, Why is the trend growing in popularity, When is the trend emerging and why, and What do these changes mean to society and culture.

Another socio-cultural analysis tool is presented by Aula et al. (2005) The trend cartogram can be built with an additional view from Aula et al’s SCC-model, which seeks to further analyse the targeted users and consumers, and further tap into the socio-cultural environment in a highly analysed and precise manner.

The SCC-model’s core is the product’s context of use, and it is categorized into the following elements that are: product, usage, person, physical surroundings, context of social interaction, and cultural context. This additional analysis of context will give concrete material to the scenario and storyboard building exercises when identifying product needs.

In conclusion: The trend cartogram explicates the Trend innovators, Trend drivers, Trend impact, Trend consequences, and Trend futures into a clear representation in a highly visual and clear manner. The SCC-model’s context analysis provides additional analysis of concept applications and their consumer applications. From these analyses (Trend cartogram + SCC-model analysis) it is possible to ideate and create future product concepts that fulfil the noticed current and future needs of consumers.

### CREATING (PRODUCT) CONCEPTS

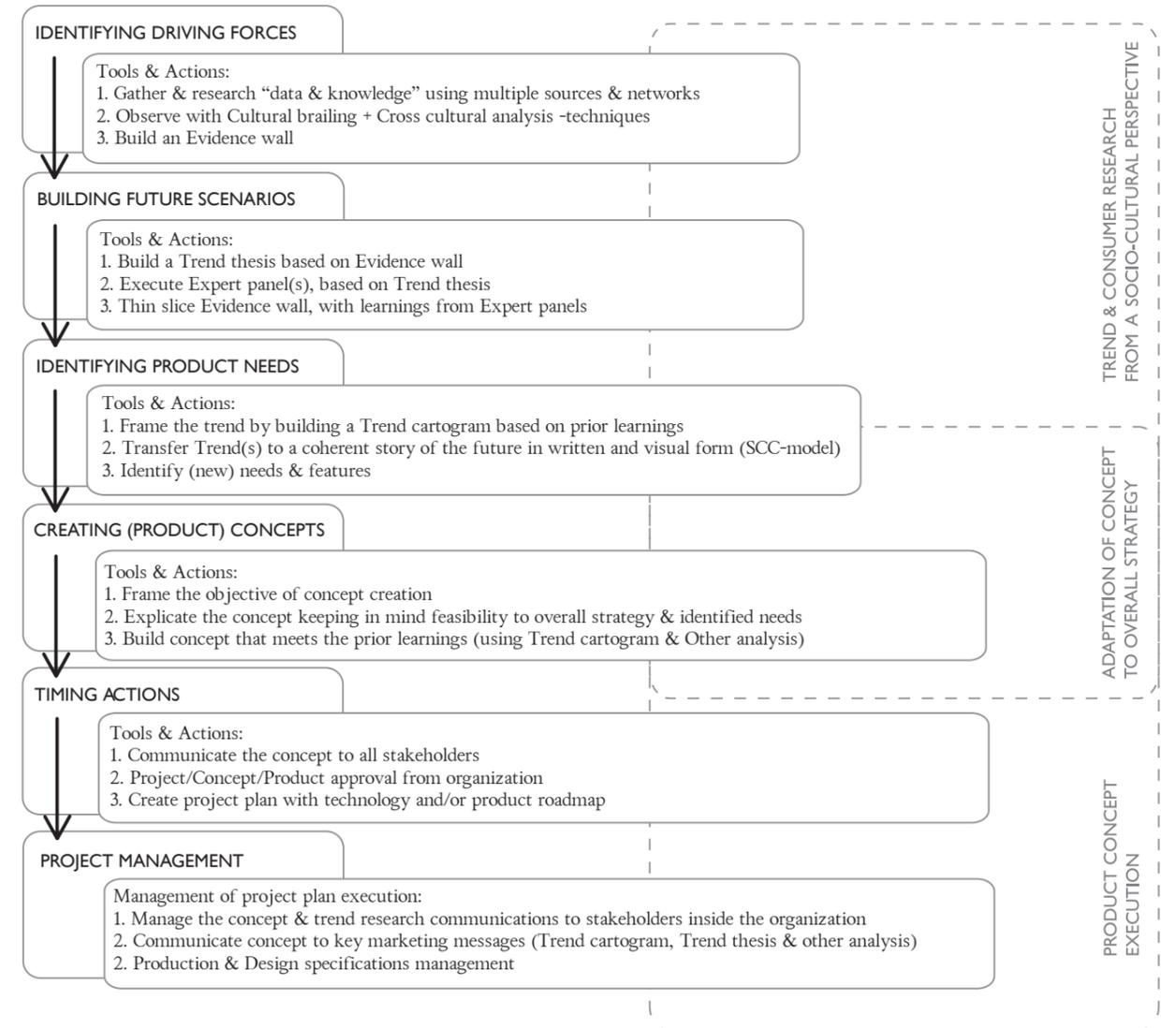
“Creating product concepts” is a phase in the framework where a decision on the future of the concept is made. The selected concept is fine-tuned and adapted to the overall corporate and organisational strategy and its goals.

First, the objective of the concept is determined and the prior learnings are framed so that the concept is desirable by the target audience and the producer of the concept. The feasibility of a concept is measured by several stakeholders, and therefore all the research and analysis should be communicated from multiple viewpoints, also keeping in mind the financial and corporate audience.

This phase of the product concept development is important because of its communicational aspects. The concept must be able to be communicated in a way that the whole organization can commit to the project. This is why the research methods and analyses should be done from a multidisciplinary viewpoint and be as business-oriented as possible, without losing the core essence of the concept. After the go/no-go decision, the organization transforms the concept into a business case and a project plan is created. These aspects should be taken into account when presenting and seeking further approval for the concept. Also, after the concept is transformed into a project or a business case, many times the team who has been executing the

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# TRENDS & PRODUCT DEVELOPMENT

INTEGRATING TRENDS TO PRODUCT DEVELOPMENT PROCESSES

research project is not leading the project execution. This brings pressure on the internal communications concerning the project and on the documentation of all the relevant knowledge gathered in the research and concept creation phase.

During the project it is important to communicate and get commitment from stakeholders and other groups that are connected to the development and execution of the concept on the conducted research and analysis.

The research and analysis work is tightly connected to the execution and specification design work that is done during the execution phase. The team that was involved in the research and analysis work can be seen as experts or consultants in the execution and the outside communication phases of the project.

## PRODUCT CONCEPT EXECUTION

### TIMING ACTIONS

Timing the proceedings of the designed concept is a task that requires taking into account the timelines and roadmaps of the designed product/concept, the overall direction of the organization that executes the concept, and its resources. All of this is included in the project plan, which is the main task at this stage.

The conducted trend and consumer research is a valuable tool for the stakeholders that are involved with the project implementation. The essence of the product is in the conducted research and analysis, and therefore it should be nourished and transferred to the product properly. Many times changes to the product are inevitable during the execution phase. However, these design specifications can be managed successfully if the earlier work is communicated properly to all that are involved in the project.

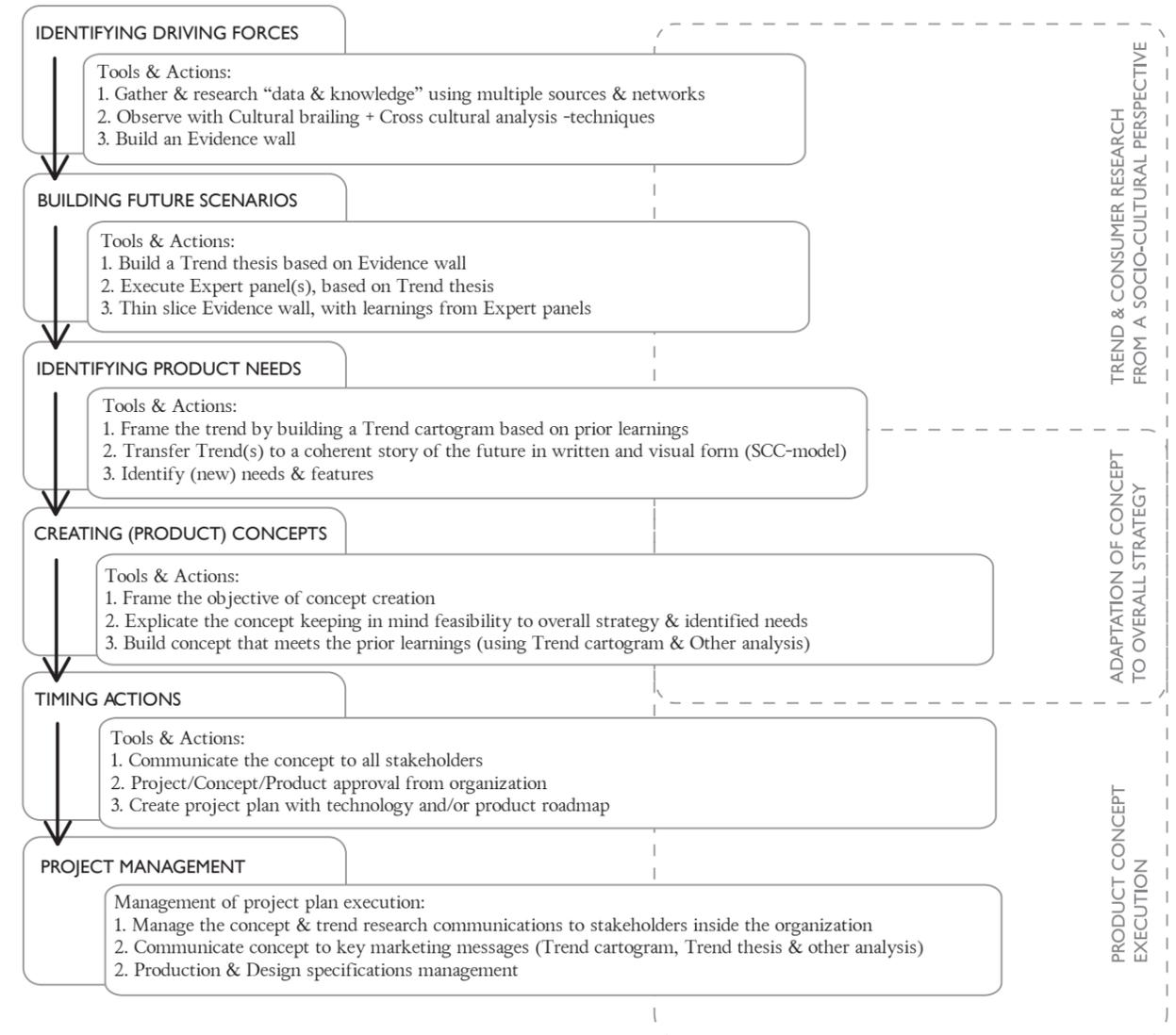
This “project manager’s viewpoint” is also something to take into account when explicating the conducted research in the earlier stages of concept creation and development, but these aspects are not focused on in this thesis.

### PROJECT MANAGEMENT

Once all the decisions and planning work concerning the chosen concept are made, the project plan can be implemented.

# TRENDS & PRODUCT DEVELOPMENT

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# FUTURE AND TRENDS

## WHAT IS TREND AND FUTURE RESEARCH

### FUTURE AND TRENDS

This chapter presents processes of future research, trend theories and innovation adoption. They are stated as a foundation and inspiration for trend researchers' and concept designers' study and background work when designing new concepts targeted to consumers.

This part of the theoretical background for the suggested framework explains the basic theories and tools for identifying the driving forces in the socio-cultural environment we live in. In addition, these theories function in the background when designing and identifying future scenarios and product needs.

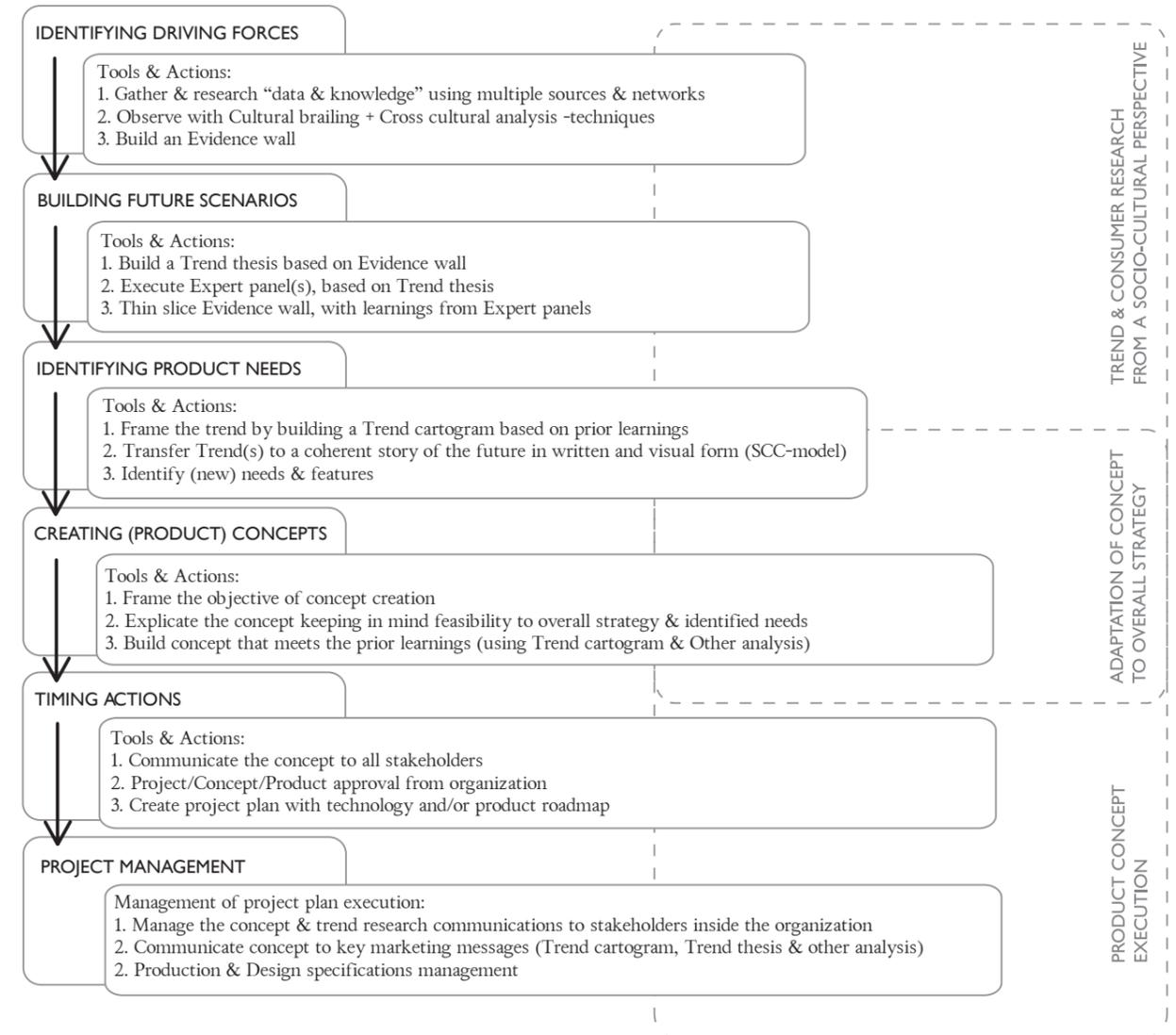
First, the basics of future research are presented as a basis for the whole concept of trend research. It is followed by explaining the concepts of Wild card, Weak signal and Megatrend.

After explaining the basic concepts, the basic strategic planning and analysing tools are presented as a foundation for understanding the complex area of trends and the widely used tools in companies that design for the future. These tools include PESTE, Delphi-method and the technology roadmap.

As a continuation to further deepen knowledge on the spreading and diffusion of trends, the basic theories and concepts of trends are presented. They are accompanied by the theory on diffusion of innovations as a theoretical background for understanding socio-cultural movements and trends.

# FUTURE AND TRENDS

## WHAT IS TREND AND FUTURE RESEARCH



### SUGGESTED FRAMEWORK TO INTEGRATE TRENDS TO PRODUCT DEVELOPMENT PROCESSES

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# FUTURE AND TRENDS

## WHAT IS TREND AND FUTURE RESEARCH

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### WHAT IS FUTURE RESEARCH

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The basic idea behind Future research according to Keinonen & Jääskö (2003) and prior by Amara (1980) and Bell (1997) is that, it is noted on the future and the knowledge about it:

1. Future cannot be predicted
2. Future cannot be determined beforehand
3. Future can be affected by one's choices or actions

However, the aim of Future research is:

1. Imagining: What is possible?
2. Analysis: What is likely?
3. Involvement: What is desired and feasible?

Keinonen & Jääskö state that in order to look into the future, the process needs an interdisciplinary approach and integral analysis of interactions and relationships. Therefore, the aim of future research is not to give one objective truth, but to promote the desired future or to avoid undesired threats. (Keinonen & Jääskö 2003, 138-139)

The results of future research are not measured by the realization of scenarios, but by how widely and thoroughly the possible futures have been mapped out. The nature of future information can be categorized by its level of uncertainty; Sure knowledge, Probable knowledge, and Uncertain knowledge. (Keinonen & Jääskö 2003, 139)

In addition to the levels of information or knowledge, there are some special types of trends: Wild cards, Weak signals, and Megatrends.

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# FUTURE AND TRENDS

## WHAT IS TREND AND FUTURE RESEARCH

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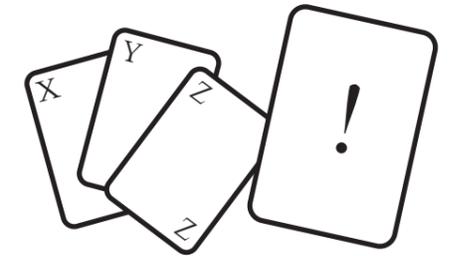
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### WILD CARD

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Wild cards cannot be predicted, and often surprises by their emergence. Wild cards are also characterized as things whose values or variables are not known before, and are often breaking taboos. (Keinonen & Jääskö 2003, 139)

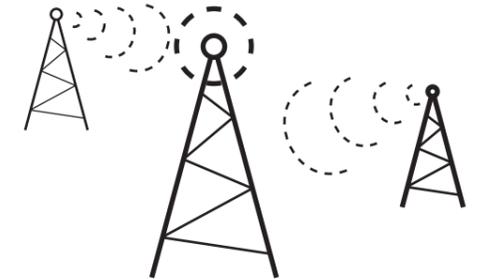


### WEAK SIGNAL

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Weak signals are described as small single events that are by themselves low in significance, but act as small signs of change. The signs of change strengthen as the weak signals raise their density of emergence on a certain topic. (Keinonen & Jääskö 2003, 139-140)

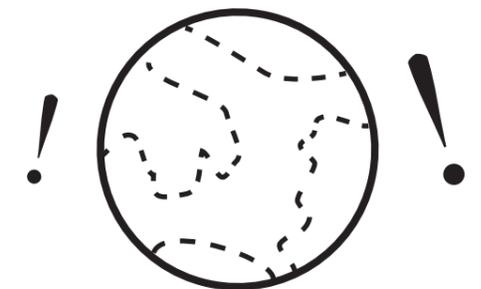


### MEGATREND

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Megatrends are global changes that affect the world in a way that raises big and effective trends. Megatrends shape the world, but their development process can be affected in a very limited way. (Keinonen & Jääskö 2003, 140)



# FUTURE AND TRENDS

## WHAT IS TREND AND FUTURE RESEARCH

### BASIC TOOLS FOR FUTURE RESEARCH

Keinonen & Jääskö (2003) present a set of background research tools for future research from the product development and strategic planning point of view. The tools presented in their book “Tuotekonseptointi” (product concept design) are commonly used in companies as strategic scenario tools. For example PESTE-analysis (Figure 1.) is widely used among Delphi method and technology roadmapping when designing business product portfolios and introducing products.

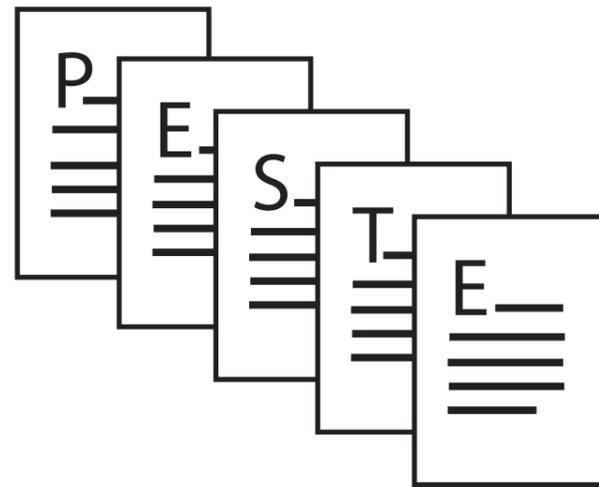
Keinonen & Jääskö (2003) are giving an overall view of the process when mapping the future. They give examples of forecasting methods and remark that it is important to map out future information in as wide scale as possible. At the same time, tacit knowledge inside the company has a big importance in the process of mapping out the future. A few of the basic analysis tools that Keinonen & Jääskö present are summarised below, with some additional notes.

### PESTE

PESTE analysis is widely used as a strategic management tool to collect relevant information of the company’s macro-environmental factors on a general level - often as bullet points or in short texts. The factors that are analysed are: Political factors, Economic factors, Social factors, Technological factors, and Environmental factors. The overall focus of the analysis is to highlight the company’s underlying driving factors and its set goals and how the company’s operating environment can be analysed by these PESTE factors.

### DELPHI METHOD

The Delphi method is based on a panel of experts. The method is described by Wikipedia as follows: “In the standard version, the experts answer questionnaires in two or more rounds. After each round, a facilitator provides an anonymous summary of the experts’ forecasts from the previous round as well as the reasons they provided for their judgments. Thus, experts are encouraged to revise their earlier answers in light of the replies of other members of their panel. It is believed that during this process the range of the answers will decrease and the group will converge towards the “correct” answer. Finally, the process is stopped after



### PESTE

FIGURE 1

PESTE analysis is a strategic management tool to collect relevant information of the company’s macro-environmental factors. The focus of the analysis is to highlight the driving factors behind the company and its set goals.

# FUTURE AND TRENDS

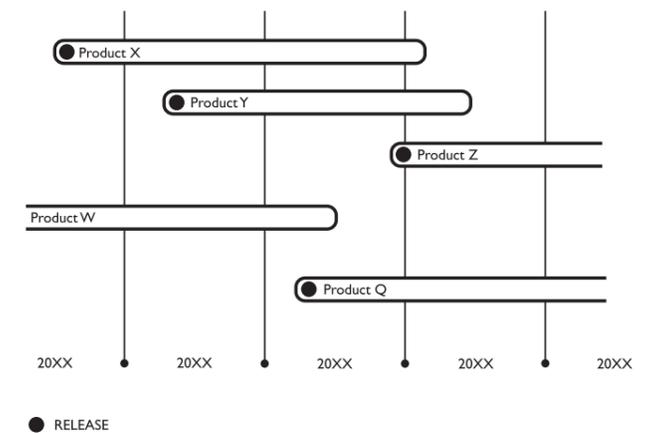
## WHAT IS TREND AND FUTURE RESEARCH

a predefined stop criterion (e.g. number of rounds, achievement of consensus, stability of results) and the mean or median scores of the final rounds determine the results.” ([http://en.wikipedia.org/wiki/Delphi\\_method](http://en.wikipedia.org/wiki/Delphi_method), 30.11.2011)

According to Keinonen & Jääskö (2003), the Delphi method is one way of having experts communicate with each other in a controlled manner with the result representing the consensus of the whole expert group.

### TECHNOLOGY ROADMAP

A Technology roadmap is a way to structure and map out different technologies’ availability, development, and applications in the future, looking from present time. A technology roadmap as a strategic tool suggests which areas of technology the company should maintain and develop. The roadmap is a visual representation of the future (exemplified in Figure 2.). When designing new products or concepts, the technology roadmap helps the decision-making process and provides guidance on when to switch to newer technologies and features. (Keinonen & Jääskö 2003, 145)



### TECHNOLOGY ROADMAP

FIGURE 2

A Technology roadmap helps with the decision-making process, and guides when to switch to newer technologies and features.

# FUTURE AND TRENDS

## WHAT IS TREND AND FUTURE RESEARCH

### WHAT IS A TREND

Trends are characterized by Keinonen & Jääskö (2003) as paths of development which have a continuation from the past to the future. Trends can also be a set of different chains of happenings or even changes in behaviour. (Keinonen & Jääskö 2003, 140)

Keinonen & Jääskö's view on the trend is very close to how I see the idea of a trend. In common language, the word "trend" means often something that is surpassing the consumers' mindset fast, and disappears after a period of time. Trends have different paths that they are likely to follow: they can become flops, fads, fashions, or Fords (Nuutinen 2004). Each of them affect our culture under different duration of time.

Originally, word "trend" was an Old English word meaning "to turn". In statistics the word means a direction of a curve. However in the meaning of art, design, culture, trend doesn't mean something that can be easily measured as in statistics.

Henrik Vejlggaard, the author of "Anatomy of a Trend", states, "To a trend sociologist, a trend is not something that has happened, but rather a prediction of something that is going to happen in a certain way – specifically, something that will be accepted by the average person". (Vejlggaard 2008, 6-8)

Martin Raymond, the author of "The Trend Forecasters Handbook" describes a trend in the following way: "A trend can be defined as the direction in which something (and that something can be anything) tends to move and which has a consequential impact on the culture, society, or business sector through which it moves." (Raymond 2010, 14.)

Raymond continues that, "Trends are a fundamental part of our emotional, physical, and psychological landscape, and by detecting, mapping, and using them to anticipate what is new and next in the world we

live in we are contributing in no small way to better understanding the underlying ideas and principles that drive and motivate us as people." (Raymond 2010, 15.)

Vejlggaard also reminds that someone who is working with or interested in design and style will also use the word "trend" to focus on the very first signs of change. (Vejlggaard 2008, 8) This notion is important, because for designers and people who are working in creative fields, the observation and analysing of changes is often a natural part of everyday life. Therefore the mechanism and forces of change can be obvious and the process somewhat subconscious and hidden.

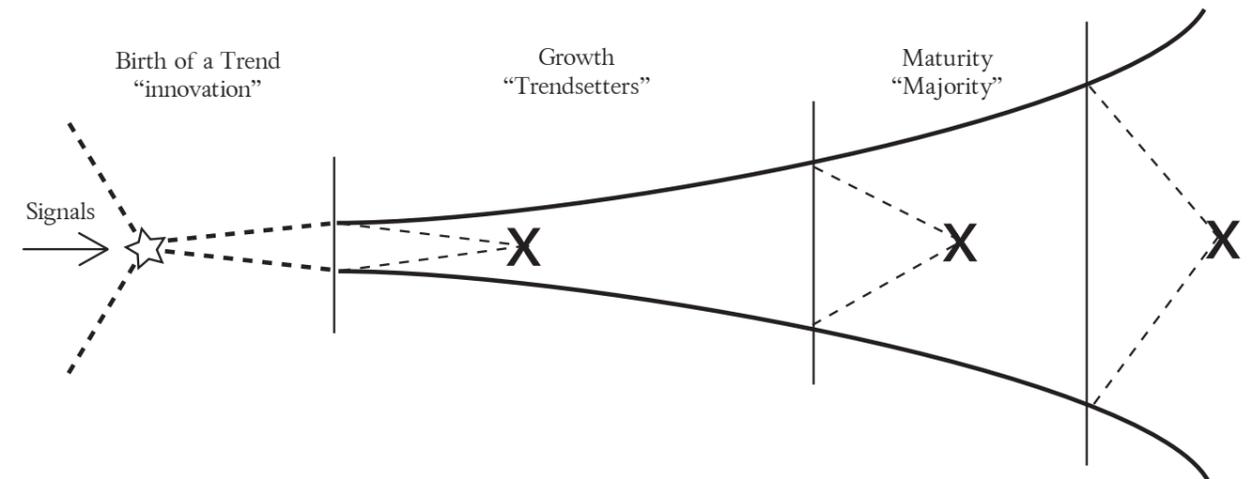
This chapter seeks to make this mechanism and the forces visible and understandable. I believe that through that understanding, designers and people who are associated with consumer products' design issues can gain better understanding of the decisions that designers, design managers and other decision-makers should take into account in the design process in order to meet the markets' future needs.

Trends explain change, and trendspotting is about observation and analysis of the change before it becomes a trend.

The "trend process" begins with a weak signal, which is often noticed by trend spotting. A weak signal is an indication of something new – the signal can be even noticed only in one or two circumstances. If the weak signal doesn't grow popularity, then it's called a fad or a flop. Fads and flops can be noticed for a short amount of time. But if the signal is strong and grows in popularity, then it becomes a trend. (See Chart 2) Vejlggaard also remarks that, "If a new innovative style is visible in two (or more) industries at the same time, it is likely to be a trend." (Vejlggaard 2008, 27.)

# FUTURE AND TRENDS

## WHAT IS TREND AND FUTURE RESEARCH



### BIRTH AND DEATH OF A TREND

#### CHART 2

The depicted trend process has some distinct similarities to innovation processes that have been widely researched and analyzed throughout the past decades. Analyzing trends is about observation and analyzing the change.

### TREND TYPES AND THEIR LIFE CYCLES

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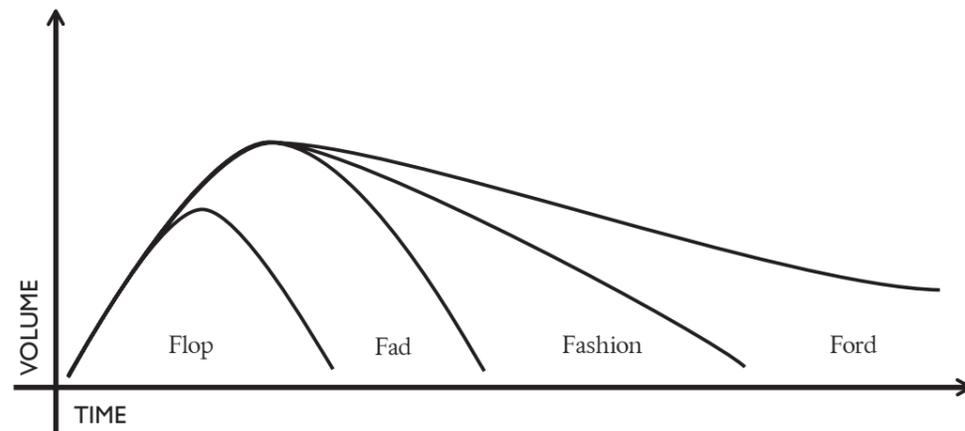
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There are different kinds of paths and life cycles that trends, innovations, or styles go through as they are introduced to an audience, as Nuutinen (2004, 66.) has explained in her research (see chart 3). Nuutinen has explained Spores & Burns's (1994) diffusion of styles, their speed and duration, as different types of styles. The duration of style can be understood also as the duration of using and consuming an idea, innovation or a trend affecting culture.

Nuutinen (2004) has described the different paths of styles and how they are categorized into different types of trend phenomena in the culture by their spreading. Chart 3 is presenting how the different styles, as Nuutinen and Spores & Burns calls them, spread by time and their volume. Flops are described by Nuutinen to

be very short styles that do not survive even a whole season. Fads spread with a bigger volume but fade often within one season. Fashions are described to be medium-speed styles that last longer than one season. Fords are long-lasting styles and can be described as "classics".

The adoption process of a new emerging trend is similar in nature to the adoption processes of innovations. The next chapter builds a bridge between innovation diffusion processes and trend adoption processes. The process involves acceptance of a trend/innovation in different social groups. This happens through impersonal and personal influence. The next chapter focuses on the diffusion and adoption processes inside different social groups, and how the process takes place in theory. In practise, the process is more complex due to the heterogenous nature of different groups of people and their socio-cultural environment.



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### TRENDS LIFE CYCLE

#### CHART 3

Nuutinen (2004) depicts trend types and their life cycles in relation with time and their volume and strength among people.

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### TRENDS ARE TIGHTLY LINKED TO THE ADOPTION OF INNOVATION

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The diffusion of innovation curve shows how an idea, innovation or product gains popularity from being part of peoples' lives, from innovators to mainstreamers to laggards, the most non-innovative group of people. (Chart 4.)

The S-shaped curve describes the popularity and diffusion of innovation to society. The Gaussian curve is divided into six sections that describe a group of people that accept the innovation. The curve's dimensions are time versus popularity. (Raymond 2010, 19)

As Wikipedia puts it: "The rate of adoption is defined as the relative speed with which members of a social system adopt an innovation. It is usually measured by the length of time required for a certain percentage of the members of a social system to adopt an innovation (Rogers 1962, p. 134). The rates of adoption for innovations are determined by an individual's adopter category. In general, individuals who first adopt an innovation require a shorter adoption period (adoption process) than late adopters." ([http://en.wikipedia.org/wiki/Diffusion\\_of\\_Innovations](http://en.wikipedia.org/wiki/Diffusion_of_Innovations), 1.2.2012)

Bearing in mind Nuutinen's (2004) different paths of styles from flop to ford, the process is moving along somewhat similar curve as the Rogers Diffusion of innovations, being the basis of innovations' spreading theories.

There are also other attributes that affect the speed in which the innovation is adopted. For example the differences between the adopter groups can hinder the adoption process between them. Another hindering matter is the level of risk, often financial, that the adopter must face when adopting the innovation.

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# FUTURE AND TRENDS

## DIFFUSION OF INNOVATIONS

### ROGERS - THE FIVE SOCIAL GROUPS

Rogers (1962) categorizes social groups in five different categories, whereas Veijlgaard divides them into eight categories (as presented later in his Diamond-shaped trend model). The Veijlgaards' categorization splits up the "Innovators" group into Trend creators and Trend setters, and also the "laggards" are split into Conservatives and Anti-innovators.

**Innovators (2,5%):** Those individuals who are responsible for the development of an innovation or the introduction of a new idea to bigger audiences. They are among the first people who trend forecasters need to track down in order to identify the trend in its early stage.

**Early adopters (13,5%):** Usually friends or colleagues of an Innovator. They are keen on discovering and adapting to new ideas and ways of doing things from a group of people they trust and respect. They are the people who trend forecasters look after when measuring the spread and impact of a trend.

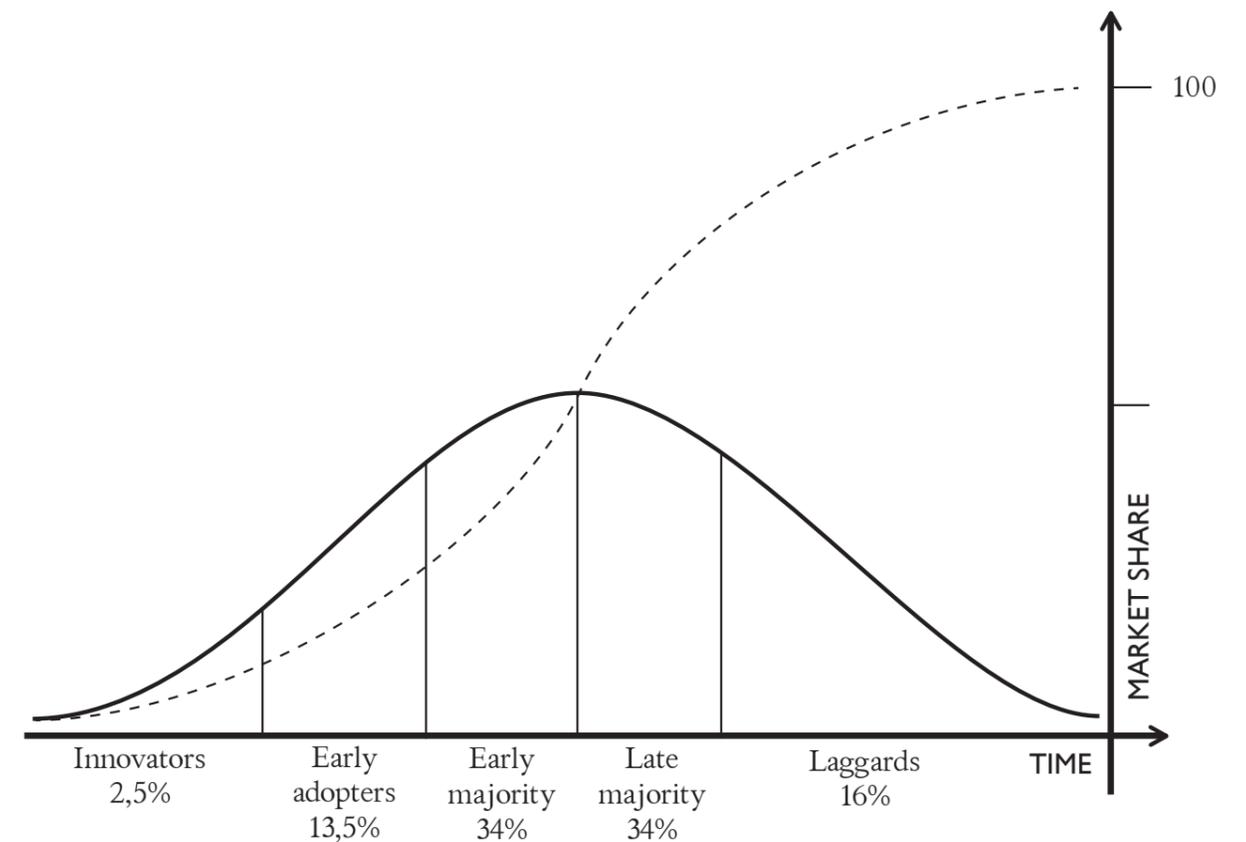
**Early majority (34%):** Those who need to relate to the early adopters and the "opinion leaders" inside that group. The Early majority follows of a trend and functions as a bridge between them and late majority. The Late majority is a group of people that need reassurance to follow a trend, and therefore these two groups are highly linked together.

**Late majority (34%):** The Late majority is a group of people who are conservative by nature. They take in things from the Early majority in "watered down forms and formats". This group of people needs to see enough applications of a trend before adapting to it. This can mean, for example, mimicking celebrities or their early majority friends. Trend forecasters monitor this group of people when they want to know whether a trend is beginning to fade or lose its monetary value in the market.

**Laggards (16%):** Laggards are the slowest to adopt new ideas and the last social group to accept new products.

# FUTURE AND TRENDS

## DIFFUSION OF INNOVATIONS



### DIFFUSION OF INNOVATIONS

#### CHART 4

Everett M. Rogers (1962) depicted adoption of innovations as correlation between time and market share. The graph shows how the different social group sizes correlate with the overall popularity of a product in the market.

## TREND CREATORS

Vejlgaard (2008) has sub-categorized the Innovators group, or the Trend creators as he calls them. He states that the Trend creators group is a very heterogeneous mix of people. At the same time it is very small even though its members belong to a variety of social groups.

Vejlgaard also points out that all the people who belong to these social groups that are presented next are not Trend creators; inside these groups the same rules apply as in the five social groups presented earlier, but there is an overrepresentation of Trend creators and Trend setters in the following groups of people.

The overrepresented groups of people among trendsetters who tend to be trend creators are listed below, with some key characteristics in contrast to the majority of people:

### THE YOUNG

Exploring their identity. Generally more open-minded.

### DESIGNERS

Interested in creating something new as a profession. More imaginative.

### ARTISTS

More imaginative. A diverse group. More risk-seeking (no permanent income).

### WEALTHY PEOPLE

A diverse group of people (some born rich, some make their own fortune). Trendsetters are the ones who can afford the most expensive new styles - an important role in the trend process.

### CELEBRITIES

Performing artists need to be comfortable with change and variety. Tend to be more creative.

### GAY MEN

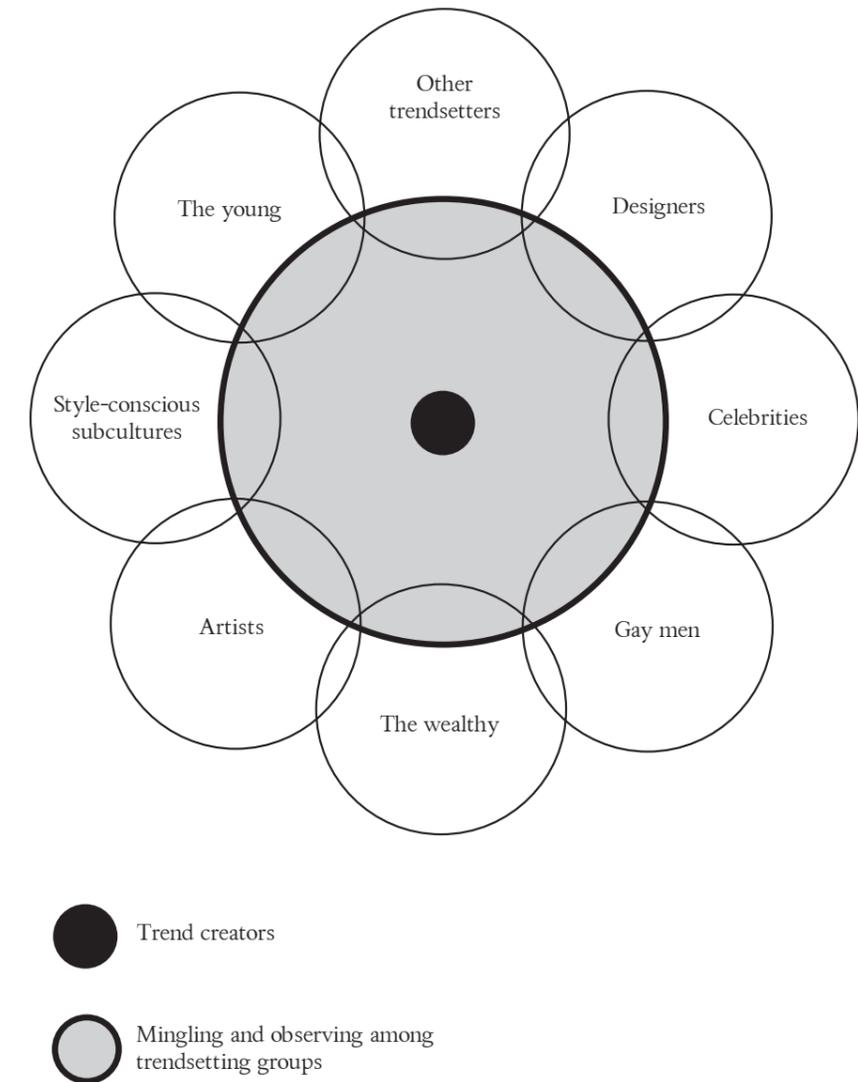
Preference for variety. Overrepresentation of people who are interested in style and design.

### STYLE-CONSCIOUS SUBCULTURES

Small group of people who are in one way or another preoccupied with style and taste. Some people open to change, some not.

Vejlgaard points out that these groups of people tend to overlap and be more connected to each other, as depicted in Chart 5. The trend spreads from the circle's centre (Trend creators) and escalates to the groups of Trendsetters who act as filters between the majority of people and Trend creators or Innovators. Vejlgaard describes the communication between these groups of people as "mingling". The spreading process is described to happen in the groups of people who mingle and observe between Trend creators and the mainstream. (Vejlgaard 2008, 55-56)

Vejlgaard's figure shows clearly how the innovations flow towards the mainstream through "the filtering social groups". These groups of people are considered both Innovators and opinion leaders. A trendspotter or a trend researcher would be very interested in these groups of people as trendsetters and as the first to be affected by emerging trends.



TREND CREATORS & TRENDSETTERS  
CHART 5

Trend creators are in the center of the figure. The trend spreads through the sub-categorized groups of trendsetters (or Innovators) towards the outer edges of the chart through social interaction.

# FUTURE AND TRENDS

## DIFFUSION OF INNOVATIONS

### THE DIAMOND-SHAPED TREND MODEL

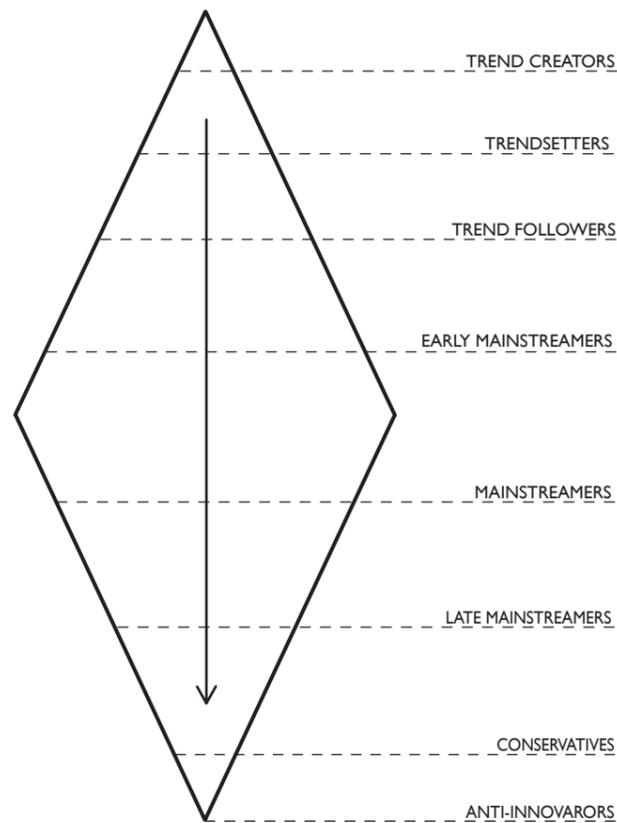
Another view to the Rogers' (1962) diffusion of innovation curves' five social groups is introduced by Vejlgaard with his Diamond-Shaped Trend Model framework.

Vejlgaard's model describes six different personality profiles, plus two extreme groups of people: Trend creators and Anti-innovators. The Trend creators (as explained earlier) play an important role in the trend creation process as they are the ones spreading and creating the trends. Anti-innovators are people that refuse to accept any trends or changes e.g. the Amish in the United States. (Vejlgaard 2008, 63-65)

The Diamond-Shaped Trend Model (Chart 6) begins with Trendsetters and ends at the Conservatives. The model depicts the size of each group and at the same time the popularity of the specific trend. From the model we can also see how the trend is moving and diffusing from one group of people to another.

The trends seem to behave in the same way as The Diffusion of Innovation curve, as Vejlgaard describes in his Diamond Shaped Trend Model. Vejlgaard has added more specific divisions between different groups and added new groups. The Vejlgaard's social groups are:

- Trend creators
- Trendsetters
- Trend followers
- Early mainstreamers
- Mainstreamers
- Late mainstreamers
- Conservatives
- Anti-innovators



THE DIAMOND-SHAPED TREND MODEL

CHART 6

Vejlgaard has developed The Diamond-Shaped Trend Model describing six different personality profiles, plus two extreme groups of people.

# FUTURE AND TRENDS

## DIFFUSION OF INNOVATIONS

The Diamond-Shaped Trend Model is more specifically created for observing social groups that follow trends. Therefore terms differ from The diffusion of innovation curves' five social groups with more sociological and style-related approach categorizations.

In Chart 7, the differences between The Diamond-Shaped Trend Model and The diffusion of innovation curve can be visually compared.

VEJLGAARD	ROGERS
TREND CREATORS LESS THAN 1%	INNOVATORS 2,5%
TRENDSETTERS 5%	EARLY ADOPTERS 13,5%
TREND FOLLOWERS 10%	EARLY MAJORITY 34%
EARLY MAINSTREAMERS 20%	LATE MAJORITY 34%
MAINSTREAMERS 40%	LAGGARDS 8%
LATE MAINSTREAMERS 15%	
CONSERVATIVES 10%	
ANTI-INNOVATORS LESS THAN 1%	

SOCIAL GROUPS - COMPARISON CHART

CHART 7

Visual representation of differences between Rogers' (1962) social groups and Vejlgaard's (2008) social groups.

# FUTURE AND TRENDS

## SOCIAL SYSTEMS AND DIFFUSION OF TRENDS

So far it's been seen that Innovations and Trends act quite the same way when spreading and gaining popularity in masses and different groups of people. And also the same laws that apply to trend diffusion mechanisms apply largely to innovations and their spreading. This chapter further considers the mechanisms of trend diffusion in social systems, and how the diffusion happens between separate social systems.

Understanding the systems behind the diffusion of trends helps the designer to predict how the masses might act and adopt when introduced to new innovative ideas and trends, and to react and study these phenomena.

## SOCIAL SYSTEMS AND DIFFUSION OF TRENDS

Trends are spotted through a variety of sources. They are often spotted from observing people or media. As Vejlgaard states; "Trends are always created by people, so trend spotting is about watching people who create or are preoccupied with new and innovative styles" (Vejlgaard 2008, 27.) Trend spotting is one of the key elements in creating trend knowledge. Creating a good picture of an emerging trend is mainly done by observing what is happening in the consumer's and product user's behavior.

The observing of different social groups will raise questions to the trendspotter, but also weak signals may (and will) appear. Weak signals are the key when discovering new trends. Weak signals can be as simple as one new color, new behavior model, a slang word or a question that has no direct answer. By analyzing and researching these weak signals, trendspotters and trend researchers can measure, for example, the spreading of a certain slang word in different social groups.

Brannon (2000), Rogers (1992) and Modis (1992) present different views on diffusion models that include viewpoints of personal and impersonal influence in adoption processes, as well as Modis's sets of S-curves in adopting processes between different social groups. The S-curves are introduced later in this thesis.

## TREND ADOPTION PROCESSES WITHIN MASSES

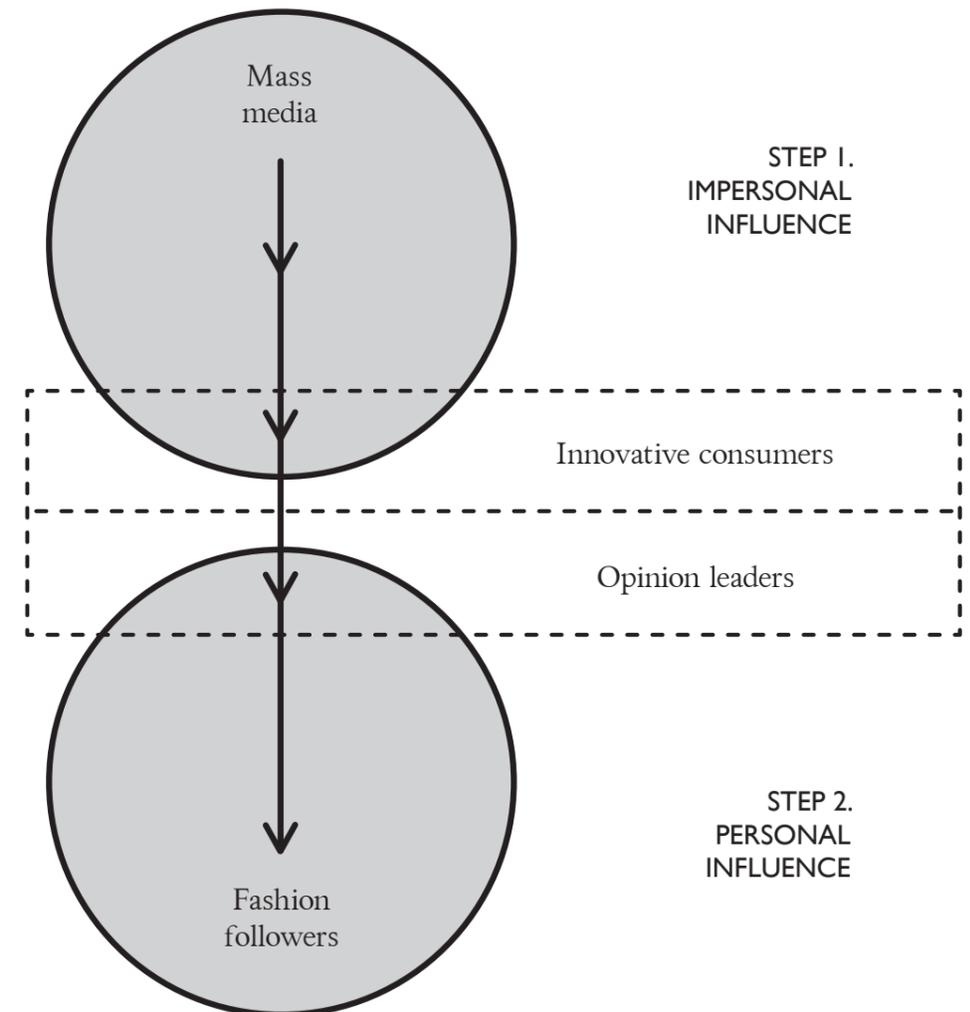
Brannon (2000) studies different trend diffusion models, and those will be explained in the following chapter. The diffusion models that Brannon has depicted in her book "Fashion Forecasting" are "The Rogers model" from year 1962, "The Bass model" from year 1969, and the S-curve further developed by Brown and later Modis in 1992.

The Rogers model (Chart 8.) is a two-step flow in which impersonal influence and personal influence are combined. The diffusion flow starts from impersonal influence, which is mass media. The mass media influence flows into innovative consumers and opinion leaders. These groups of people are the "Innovators group" and "Early adopters group" that were presented earlier.

The Opinion leaders then influence the next group, Fashion followers mainly by personal influence, as the Rogers model suggests. The model is suggesting that the Innovative consumers and Opinion leaders work as a filter between Mass media and Fashion followers. The Rogers "influence" model has similarities between the processes in the earlier presented Vejlgaard's "Trend creators and Trendsetters" model, which is based on "mingling" between groups of trendsetting people and the trend creators. Both of the models include a combination of observation and communication between social groups.

# FUTURE AND TRENDS

## SOCIAL SYSTEMS AND DIFFUSION OF TRENDS



THE ROGERS MODEL

CHART 8

The Rogers model is a two-step flow in which impersonal influence and personal influence are combined. The graph is showing that the Innovative consumers and Opinion leaders work as a filter between Mass media and Fashion followers

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# FUTURE AND TRENDS

## SOCIAL SYSTEMS AND DIFFUSION OF TRENDS

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As continuation and an additional view to the Rogers model, the Bass model (1969) depicts the difference between the number of adopters influenced by personal and impersonal influence. (Chart 9.)

The Bass model depicts not only how the influence or trend is diffused into a consumer's every day life, but gives information on how much impersonal and personal influence impact on consumers' trend adoption process.

The curve shows that impersonal influence is most ineffective on trend diffusion in the beginning or birth of a trend. But still it continues to affect the consumers' adoption process even later on in the process. However, personal influence given by Innovators and opinion leaders has the most effect on the trend adoption and diffusion.

This Bass model suggests that impersonal influence, being mass media by Rogers (1969), does not influence nearly as much as personal influence (namely communication and "mingling" between people by Vejlgaard). This notion raises the question of effectiveness of marketing messaging, and the means of marketing new products or concepts.

The more consumers communicate on the matter at hand, the more personal influence they communicate and also receive, and are more likely to adopt the concept or idea. Peer support and recommendations are important when innovations, trends and ideas spread.

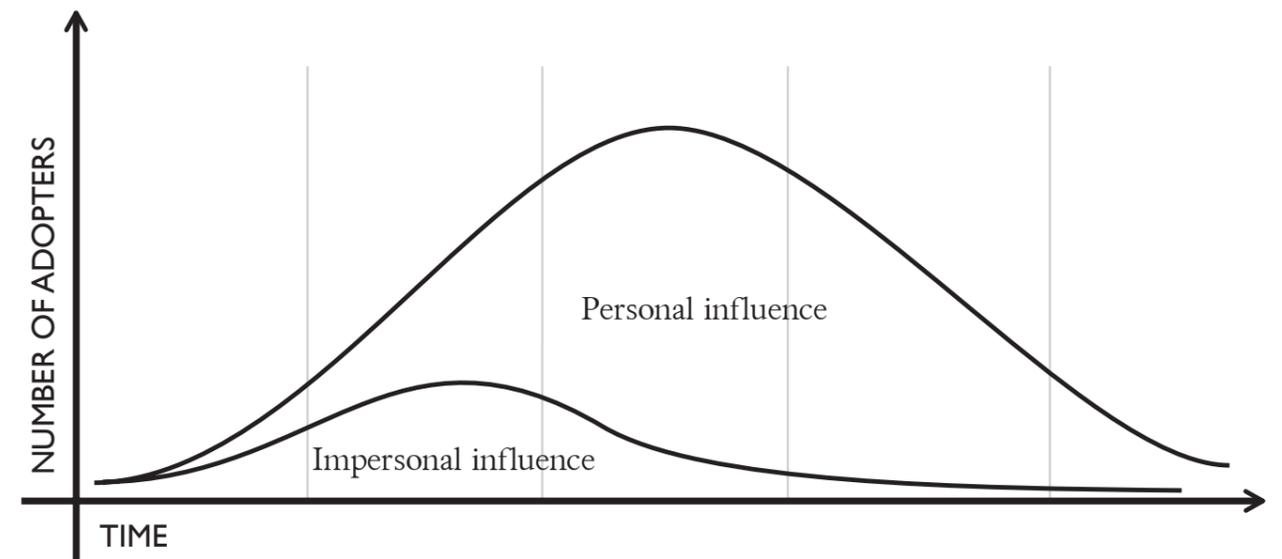
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# FUTURE AND TRENDS

## SOCIAL SYSTEMS AND DIFFUSION OF TRENDS

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THE BASS MODEL

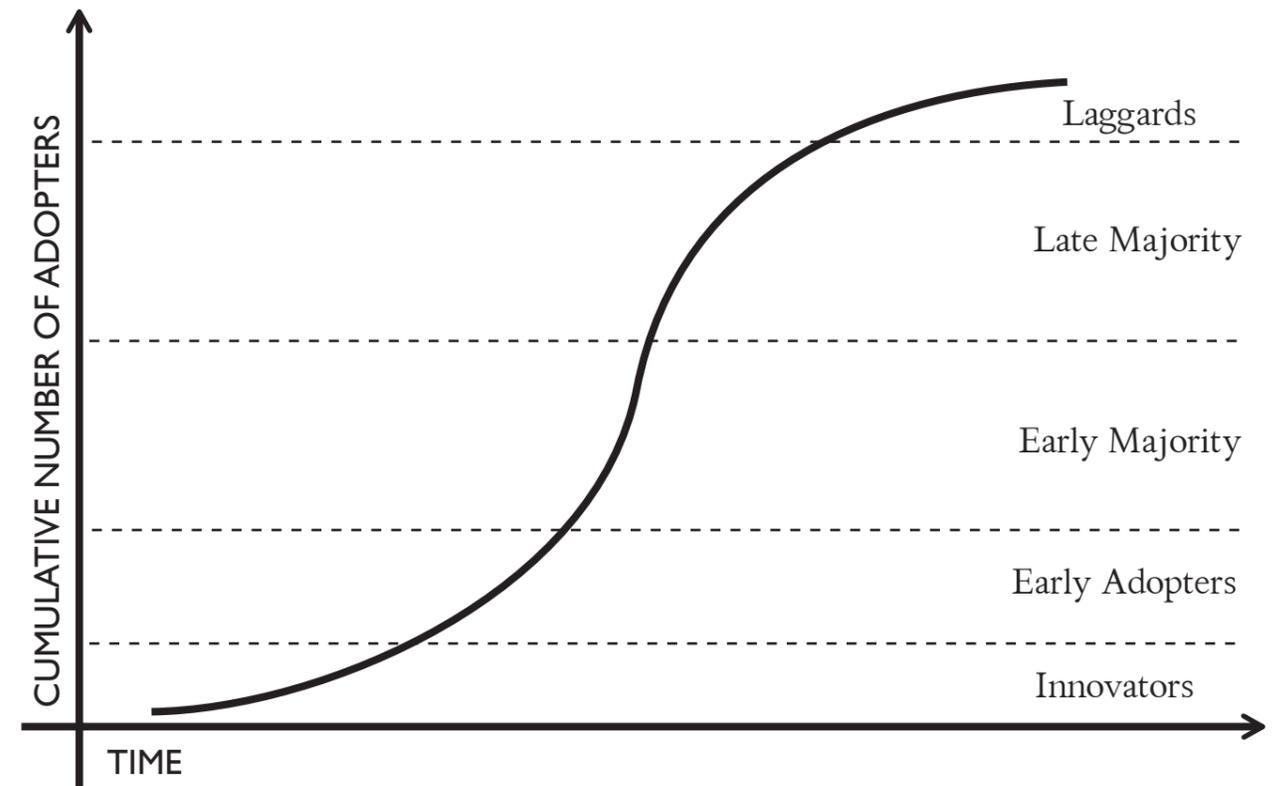
CHART 9

The Bass model is depicting how impersonal and personal influence affect the number of adopters of a specific innovation or a trend over time.

In cumulative form (Chart 10.), the bell-curve becomes an S-curve (Brown 1992). From that the different market niches and social groups can be visualized on the curve.

The S-curve shows that the trend applications should be targeted in the same way as the trend is diffusing to different consumer and trend diffusion groups. (Brannon 2000, 57) The Innovators, Early adopters and the Majorities have different speeds of growth and numbers of adopters. Usually, the Innovators are the first ones to catch the trend, but as it is diffused to other groups of people, the process catches speed and the number of adopters grows quickly until it reaches the Late majority.

It is a matter of strategic decisions as to which of the groups are targeted with a new idea first, and what are the tools to do that with. In new product development, this will mean a different focus of the research. This applies to trend research as well - is the product focused to the masses or is it targeted to a certain group of people? Is the trend going to spread and gain acceptance from bigger masses?



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THE BASS MODEL IN CUMULATIVE FORM  
CHART 10  
The visualization shows how an innovation or trend spreads between social groups and segments. (Brown 1992)

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# FUTURE AND TRENDS

## SOCIAL SYSTEMS AND DIFFUSION OF TRENDS

Brown (1992) develops the S-curve into a series of S-curves describing each of the segments separately (Chart 13).

The series of S-curves describe the overlapping of the consumer and trend adoption groups. From the overlapping of the curves can be seen the diffusion process into the next market and consumer segment. The overlapping period occurs in the same way as the Rogers model with interpersonal and personal influence. The trend is therefore diffusing in cycles and pulses, with a period where the trend is diffusing and flowing into the next group of consumers.

Another researcher, Modis (1992), takes the Browns curve and compares it with a series of data from different industries. The conclusion is that the series of S-curves can depict any form of market growth. He suggests that there are chaos points in the point where the S-curves overlap each other (Chart 11).

The overlapping of the S-curves and the diffusion between the social and market groups is caused as of the “Innovators” of the next social system experiment with the trend or innovation (Brannon 2000, 59). This chaotic period is crucial for the trend’s survival. If the innovation or trend is not accepted by the next social group the phenomena may turn into a dying trend.

Brown’s & Modis’s series of S-curves suggest that there is the same kind of social grouping system inside the overall hierarchy of social groups. The chaotic period between different segments means that the trend could disappear in the first social group, and appear as new in a second segment (Brannon 2000, 56-59).

This “re-birth” system brings additional uncertainty and complexity to the overall adoption processes. The trend researcher’s and forecaster’s work may become even more complex and highly data-oriented especially if working on a global scale. This would mean that the focus of research and concepting should be firmly determined in order to secure that consumers’ desires are met.

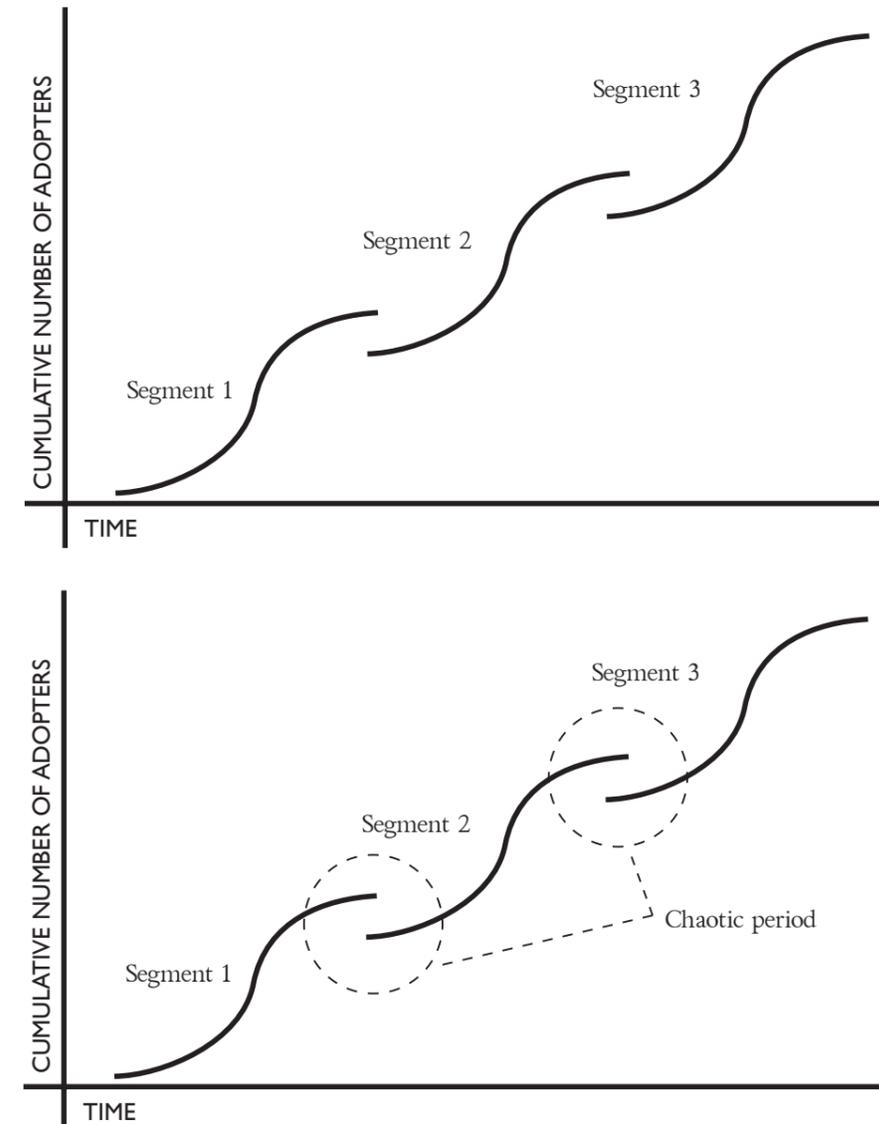
This overlapping and life cycle viewpoint in trend adoption requires highly focused and segmented consumer research and a knowledge base where to look for answers to questions at hand.

Basic knowledge of how data is turned into knowledge (and wisdom) is needed in order to fulfil the data-oriented characteristics of trend research. Additionally, in order to give an overall picture of the professional trend forecasters research process, I present networks as a theoretical background on how the forecasters harvest the data jungle when searching for the most relevant data for their research agenda.

The next chapter introduces the concepts of knowledge and networks and how they can be harnessed to facilitate trend research and concept development.

# FUTURE AND TRENDS

## SOCIAL SYSTEMS AND DIFFUSION OF TRENDS



BROWN'S S-CURVE (ABOVE) AND MODIS'S S-CURVE (BELOW)

CHART 11

Brown's series of S-curves (above) show the overlapping of the consumer and trend adoption groups. Modis suggests that there are chaos points in the point where the S-curves overlap each other (below).

# KNOWLEDGE AND NETWORKS

KNOWLEDGE ARISES FROM DATA

## KNOWLEDGE AND NETWORKS

As Keinonen & Jääskö (2006) describe, in order to look into the future, the process needs an interdisciplinary approach and an integral analysis of interactions and relationships. These kinds of processes are often considered to be highly data-oriented tasks, and require knowledge from multiple sources and viewpoints.

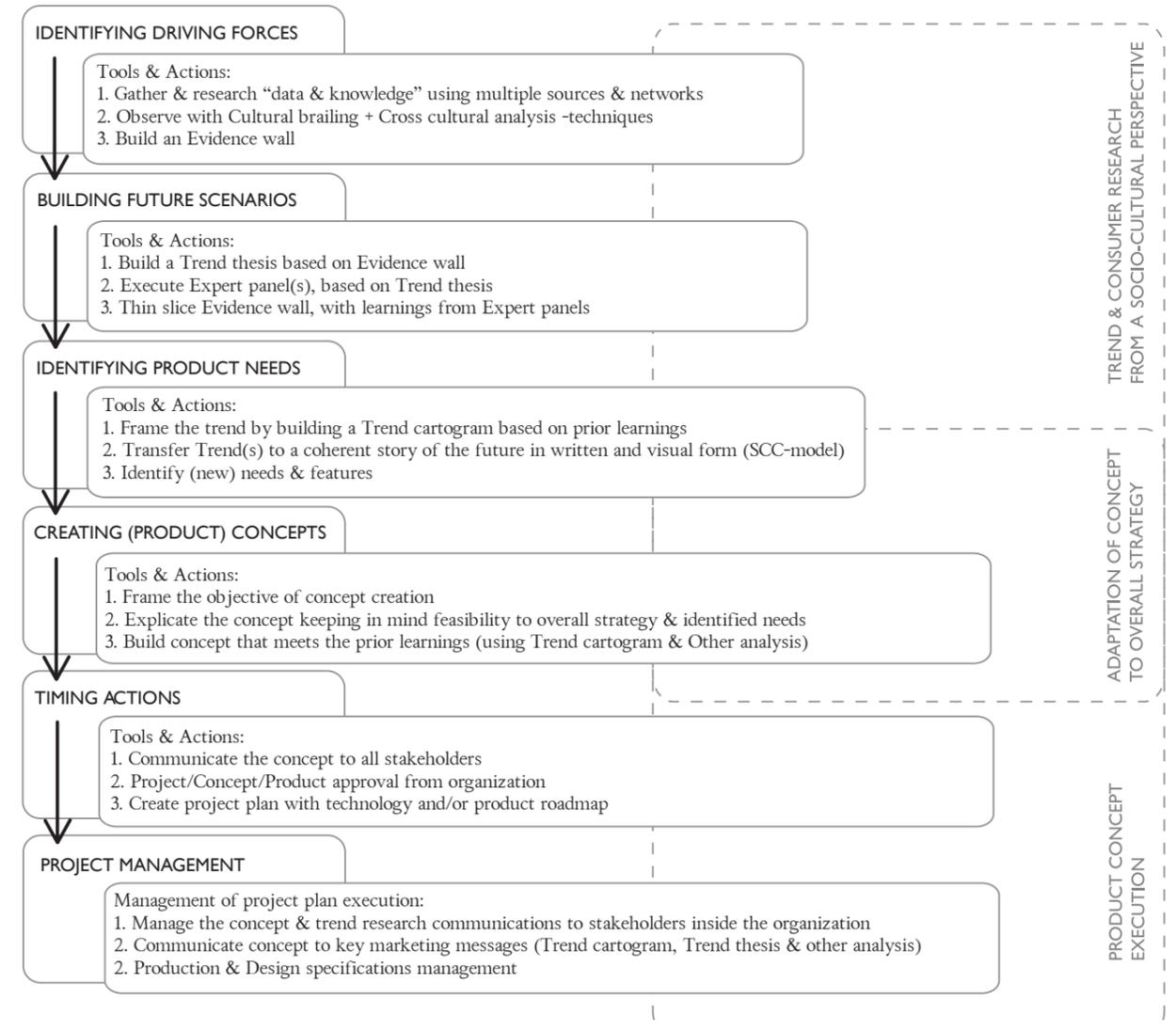
Therefore, the introduction to basic theories and concepts in knowledge and how it is generated from data gives a valuable viewpoint to the process of trend research and product development processes, especially the early stages thereof.

Nuutinen (2004) describes in a highly descriptive and condensed manner how knowledge arises from data, and presents research from the fashion industry's viewpoint. The fashion industry is directly connected with trends, and uses trend research widely when new collections are designed.

Another view on knowledge generation is addressed by Raymond (2010), who describes different ways to execute intuitive forecasting, which is a combination of data collection, analysis, and reformulation of both.

# KNOWLEDGE AND NETWORKS

KNOWLEDGE ARISES FROM DATA



## SUGGESTED FRAMEWORK TO INTEGRATE TRENDS TO PRODUCT DEVELOPMENT PROCESSES

CHART 1 (REVISITED)

The suggested framework is categorized into three main themes: trend research from a socio-cultural viewpoint, adaptation of designed concept into overall strategy, and product concept execution.

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# KNOWLEDGE AND NETWORKS

KNOWLEDGE ARISES FROM DATA

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## KNOWLEDGE ARISES FROM DATA

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Traditionally, information is seen to be gathered in two ways: by inductive reasoning or deductive reasoning. Beside the traditional ways of gathering information has risen an abductive way of reasoning, which plays a key role in the scope of this thesis.

Inductive reasoning is based on existing observations of known truths, that are used as a basis for future predictions and generalizations. This inductive method of reasoning is widely used in academic research.

Deductive reasoning is based on already known truths or theories and leads to placing observations to already made frameworks. Mathematical reasoning is a classic example of deductive reasoning.

Abductive reasoning is based on intuition and subjective experience. The abductive way of information gathering highlights a personal and experience based subjective approach, in which practical thinking and actions are linked to reasoning processes. In an abductive way of information gathering the researcher has a clue or a lead of some sort, which gives the researcher clues on how to proceed. An abductive way of gathering information is also called metaphorical or noetic, according to Nuutinen (2004, 115).

Nuutinen notes also that all these ways of information gathering can be used together in order to get a deep understanding of the researched theme (2004, 115).

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# KNOWLEDGE AND NETWORKS

KNOWLEDGE ARISES FROM DATA

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## INTUITIVE THINKING

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Raymond adds categories to Nuutinen's Abductive reasoning in the form of intuitive thinking in the context of sub-categorizations of Intuitive forecasting. He adds: Gut intuition, Expert intuition and Strategic intuition inside the ideas of Whole brain thinking and Left- and Right-brain thinking (Raymond 2010, 67-91). These categorizations add some concrete concepts around the intuitive thinking and its applications.

Left- and Right-brain thinking is something that is happening all the time. Raymond states that until recent medical discoveries it has been widely kept as fact that there are left- and right-brained people. As he remarks:

“Until recently, many people believed that the left- and right-hand side of the brain utilized different skill sets. The left side, for instance was associated with rational, logical, and linear activities, while the right side was associated with skills linked to tasks and processes that defined us as creative, imaginative, lateral-thinking, and intuitive in our approach to tackling things.” (Raymond 2010, 70.)

This discovery was noticed by Roger Sperry in his vast study of the two-sided brain in the 1980's, and others continued his work after that. The scientists have come to a conclusion that both sides of the brain are working together, and communicating with each other, giving answers to problems from both points of view. (Raymond 2010, 70)

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## WHOLE BRAIN THINKING

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Whole brain thinking is something that is at the moment under discussion according to Raymond (2010). The intuitive (trend) forecaster is using this kind of approach as a daily tool, and so are scientists. However, the results and the focus of the knowledge can be different. As Raymond (2010) states:

“The intuitive forecaster is tapping into the same reservoir of knowledge as the scientist, although both are outputting it differently: the scientist in a way that requires more facts to underpin it (which makes it more rational), the intuitive forecaster in a way that utilizes more adjectives and descriptive process (which makes it appear more vague).” (Raymond 2010, 70.)

Raymond describes the whole brain thinking process as an interlocking pattern of different bits and pieces of information that together makes a bigger picture of a new idea or a concept.

The new idea can be a single depiction or a sets of different pieces, just as the trend cartogram described later. The forecaster starts with a lot of “stuff” and later connects the “stuff” into fragments of an idea, finally putting them together into a “whole picture of an new idea or a concept, through series of iterations, cross-cultural analysis and deep dives.

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# KNOWLEDGE AND NETWORKS

KNOWLEDGE ARISES FROM DATA

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## GUT INTUITION

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Gut intuition refers to “gut instinct”. The people who have this kind of capacity have a brain that acts as a vast filing system that prompts them when they encounter a situation in the present that may have similar properties to one encountered in the past. (Raymond 2010, 71)

## EXPERT AND STRATEGIC INTUITION

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Expert intuition is a type of intuition that develops when someone is working in the same field of profession for a long time. Expert intuition is something that relates to gut intuition, but also experience, existing knowledge, and insights the person has gained during the time period spent in the field of profession.

Strategic intuition has, according to Raymond (2010), a high relevance with battlefield strategies and personalities executing strategic decisions in split-seconds.

Raymond summarizes strategic intuition as being a combination of past experiences and present learnings that together create a vision of future. This kind of activity requires concepts like “historic awareness”, “presence of mind” and an ability to “suspend logic”.

## DISTINCTIONS BETWEEN KNOWLEDGE TYPES

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Nuutinen (2004) remarks that the concepts of different types of knowledge are used often as synonyms, which can be misleading. See Chart 12 for distinctions between the knowledge types.

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Data is the lowest level of abstraction, information is the next level, and finally, knowledge is the highest level among all three. Data on its own carries no meaning. For data to become information, it must be interpreted and take on a meaning.

“For example, the height of Mt. Everest is generally considered as “data”, a book on Mt. Everest geological characteristics may be considered as “information”, and a report containing practical information on the best way to reach Mt. Everest’s peak may be considered as “knowledge”.”(www.wikipedia.org/data, 19.12.2011)

Wisdom is the highest level of knowledge, and is characterized as “a deep understanding and realization of people, things, events or situations, resulting in the ability to apply perceptions, judgements and actions in keeping with this understanding.” (www.wikipedia.org/wisdom, 19.12.2011)

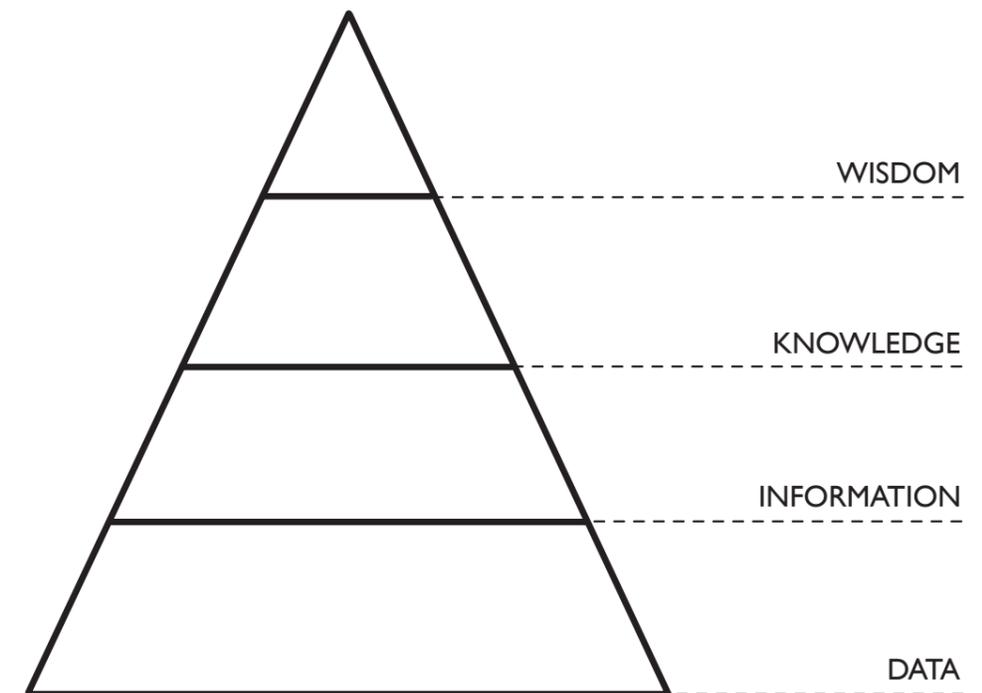
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# KNOWLEDGE AND NETWORKS

KNOWLEDGE ARISES FROM DATA

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## DISTINCTIONS BETWEEN KNOWLEDGE TYPES

CHART 12

The graph is presenting differences between knowledge types, data being the broadest and lowest level, and wisdom being on top of the graph being the highest and the most processed level of knowledge.

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# KNOWLEDGE AND NETWORKS

KNOWLEDGE ARISES FROM DATA

## EXPLICIT KNOWLEDGE

Explicit knowledge is knowledge that can be expressed and measured in numbers and written in words and sentences. It can be categorized, combined and shared with others.

In the concept of explicit knowledge, rational, objective and neutral thinking are emphasized, but it contains also some emotion-based thinking. (Nuutinen 2004, 116.)

## IMPLICIT KNOWLEDGE

The concept of implicit knowledge lies between tacit and explicit knowledge. The word implicit means indirect, something hidden but still understood, even though it is not directly communicated.

As an example, implicit assumptions transform into explicit ones when a designer makes drawings of something to be produced, or when something is described with pictures, drawings and examples. (Nuutinen 2004, 117.)

## INTUITIVE KNOWLEDGE

Intuitive knowledge is something that exists without any rational thinking. It means instant realization of something without any rational steps along the process. Intuition in other words means that someone jumps to a conclusion without sufficient knowledge or experience of the matter in hands.

Creative people are said to have this kind of sense, which gives them answers and solutions to problems before others. (Nuutinen 2004, 118.)

## TACIT KNOWLEDGE

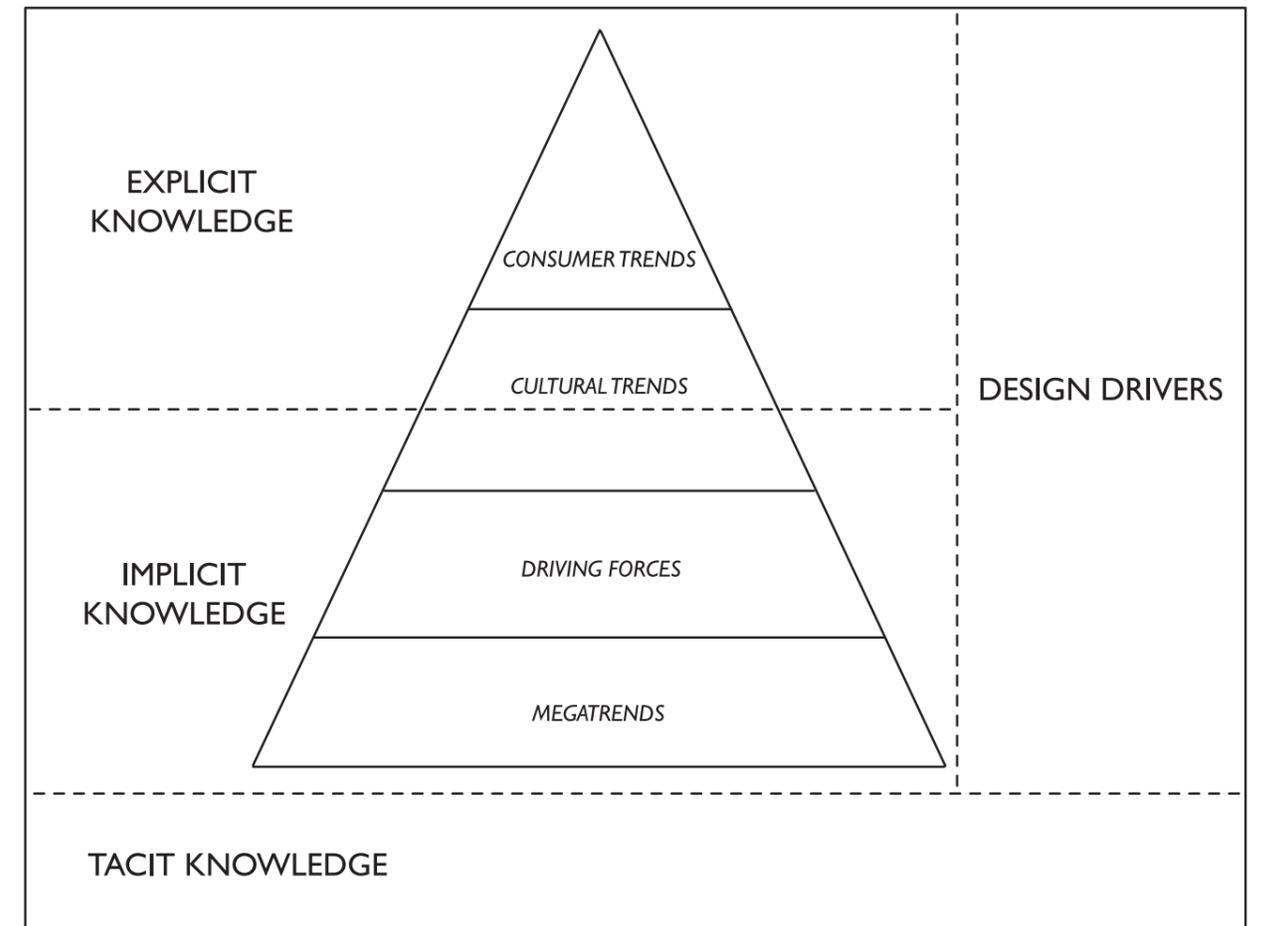
Tacit knowledge is something that an individual possesses more than he or she can communicate to others. Tacit knowledge is often described to lay conceptually opposite of explicit knowledge. Tacit knowledge is part of everyday life and its routines. Nuutinen (2004) notes that tacit knowledge can be transformed into explicit knowledge through conversations, and sharing experiences with other individuals. This requires often descriptive and symbolic language and conversations through analogies.

Tacit knowledge is based on experiences and accumulates constantly. This accumulation is affected by many things: personal beliefs, views and values. This affects also the explicating process, and can generate uncertainty and conflicts, but at its best the explicating process may question accustomed ways of working and thinking, and work as an alternative process and guide to the future. (Nuutinen 2004, 119)

Chart 13 combines different knowledge types and trend types together, in order to study and learn from both. Nuutinen (2004, 120-1) derives the graph application from Philips's Design department's earlier work. Nuutinen explains the graph in the following manner: Consumer trends are explications of consumer behaviour; identifying consumer needs and defining the target segment. Fashion trends (Cultural trends) express the cultural ideals on how the design-products' elements can be in interaction with each other, and how the designer can utilize them. There is also a set of implicit norms that determine the lines between what is proper and what is not. Driving forces are phenomena that partly determine what is considered good and proper. Megatrends are global phenomena that are believed to continue in the future. Design drivers are ideas of products that can be used to evaluate or steer consumers' preferences. A Design driver is often a partly explicit and partly implicit representation of predominant time and its phenomena. (Nuutinen 2004, 120-121)

# KNOWLEDGE AND NETWORKS

KNOWLEDGE ARISES FROM DATA



## EXPLICIT, IMPLICIT AND TACIT KNOWLEDGE IN RELATION TO TRENDS, DRIVING FORCES AND MEGATRENDS

### CHART 13

Nuutinen (2004) depicts trends in relation to different types of knowledge. The graph is showing that the driving forces and megatrends are something that affects us "under the surface" and are therefore implicit knowledge.

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# KNOWLEDGE AND NETWORKS

## NETWORKS

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### NETWORKS

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Trend networks harness the power of collective intuition and use the collaborative potential of a bigger crowd in order to collect and analyze emerging trends. (Raymond 2010, 94)

Trend networks can be seen as a series of knots and nodes tied together, receiving and sending information to each other in multiple ways. Depending on the contexts, these networks can also be referred to as “ecosystems”.

This chapter seeks to give a view to basic types of networks and to explain their basic characteristics and functions. This is done in order to explicate how trend forecasters gather information from multiple sources. The next chapter shows how this information is tied together through trend forecasters’ and designers’ personal and professional, intuitive and creative analyzing techniques.

The Internet is full of trend data and trend information. The trend forecaster uses a plethora of sources globally for finding and analyzing the phenomena that surround us.

The Internet sites and portals where to start gathering trend data and information include (but are most likely not limited to):

- [trendbuero.de](http://trendbuero.de)
- [japanconsuming.com](http://japanconsuming.com)
- [coolhunting.com](http://coolhunting.com)
- [iconoculture.com](http://iconoculture.com)
- [faithpopcorn.com](http://faithpopcorn.com)
- [psfk.com](http://psfk.com)
- [trendwatching.com](http://trendwatching.com)
- [wsgn.com](http://wsgn.com)
- [lsnglobal.com](http://lsnglobal.com)
- [thedieline.com](http://thedieline.com)
- [thecoolhunter.co.uk](http://thecoolhunter.co.uk)
- [next-big-thing.net](http://next-big-thing.net)
- [joshspear.com](http://joshspear.com)
- [trendhunter.com](http://trendhunter.com)
- [notcot.com](http://notcot.com)
- [dezeen.com](http://dezeen.com)
- [treehugger.com](http://treehugger.com)
- [engadget.com](http://engadget.com)
- [gizmodo.com](http://gizmodo.com)
- [davidreport.com](http://davidreport.com)

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# KNOWLEDGE AND NETWORKS

## NETWORKS

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### HIERARCHICAL NETWORK

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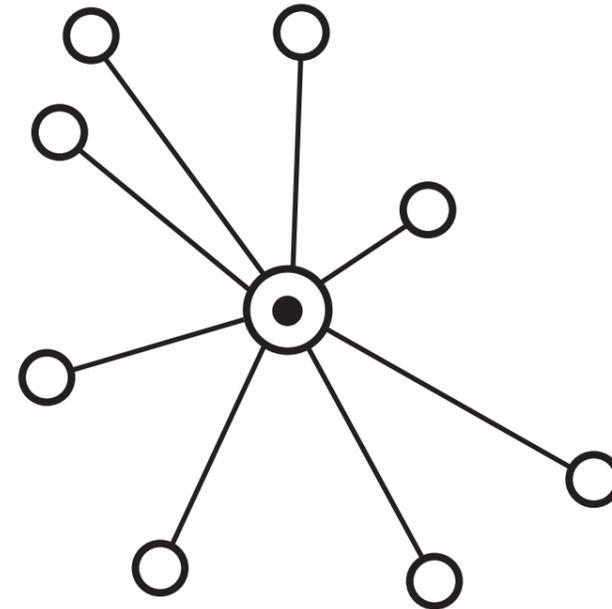
Hierarchical or centralized networks (Figure 3) are the most common forms of networks. The central figure or hub sits in the middle of the network with the lines of power and influence reaching out from it and back towards it.

Businesses and even design agencies operate in this kind of network. The effectiveness of the network is evaluated by its central hub and its ability to nurture and stimulate the whole network. (Raymond 2010, 100)

Hierarchical networks are the most common type of networks, according to Raymond (2010). The name “hierarchical” refers to its main characteristic: all the members of the network report back to a single “central hub”, a fixed point or node in the middle of the network.

Also because of this construct, none of the minor hubs are connected to each other and all information and ideas flow through the central hub. As the central hub filters all interaction between minor hubs, the sharing and exchange of ideas is controlled.

As a system, a hierarchical network is the quickest to adopt, run, and also to establish. This kind of network is also the easiest to control due to its centralized nature. The hierarchical network described by Raymond to be a very effective and powerful system if nurtured and constantly stimulated by the central hub. (Raymond 2010, 100-101.)



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### HIERARCHICAL NETWORK

FIGURE 3

A hierarchical network is easy to control due to its centralized nature.

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# KNOWLEDGE AND NETWORKS

## NETWORKS

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### COLLABORATIVE NETWORK

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Collaborative networks (Figure 4) work more like federations in their construction and behaviour. There is a number of persons or stakeholders through which the flow of information flows, but they are never powerful enough to control the overall flow of activity.

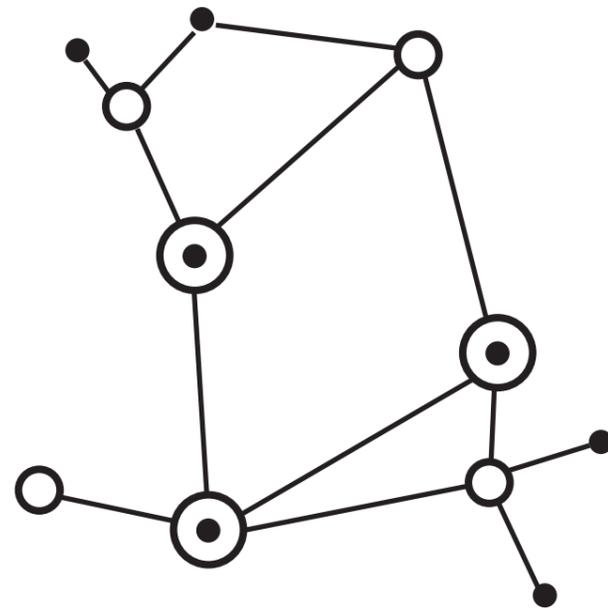
In this network model it is said that flashes of insight are more likely to happen, and solutions to problems are more ready. Forecasting consultancies, online magazines, advertising agencies, and collaborative design studios use these kinds of networks. (Raymond 2010, 104)

A Collaborative network allows also the “nodes” to interact with each other as well as to the “main hubs”. The collaborative network is nowadays the type of network that forecasters use and manage, according to Raymond (2010). The collaborative network contains a higher number of managers that are connected to each other – this allows more fluent and free exchange of information between the nodes. (Raymond 2010, 101-105)

This kind of network has also less regulated and controlled processes, because it is not controlled or managed by one node, as the hierarchical networks work.

The fact that collaborative networks are less controlled leads to a situation in which the hubs can belong to multiple networks at the same time. This overlapping of networks leads to containing and flowing of more influential and powerful ideas. (Raymond 2010, 101-105)

Collaborative networks allow information, knowledge, and insight to flow across the network, as well as up, down and along it. Online magazines, as well as creative agencies favour these kinds of networks. (Raymond 2010, 104-105)



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COLLABORATIVE NETWORK

FIGURE 4

A collaborative network has less regulated and controlled process, because it is not controlled or managed by one node.

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# KNOWLEDGE AND NETWORKS

## NETWORKS

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### DISTRIBUTIVE NETWORKS

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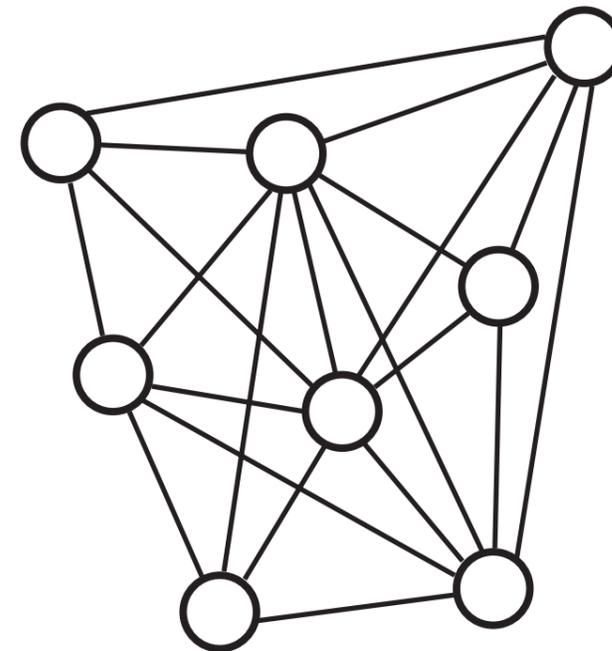
All parts of the distributive network (Figure 5) are connected together in some way. Sooner or later all the hubs or parts of the network receive the same information, and in addition the accrued insights derived from other members of the network.

Raymond (2010) explains the usage of these kinds of networks: “Distributive networks can be used for identifying new and emerging trends, and seeding these into more mainstream groups – as with collaborative networks. They can also be used for more complex activities such as scenario planning.” (Raymond 2010, 114.)

A distributive network is taking the idea of collaborative network further. The distributive network contains only hubs, and all the hubs are connected to each other.

“Distributive networks are referred as such because their construction allows information, ideas, or insights to be scattered or “distributed” across the network at high speed (...)” (Raymond 2010, 113.) Also by their nature, distributive networks are open, and information flows in “flashes”.

The most descriptive characteristic of distributive networks is openness: anyone can join and use them. This characteristic of a distributive network raises a problem of monitoring. The network functions 24/7 and some flashes may pass the hubs attention.



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DISTRIBUTIVE NETWORK

FIGURE 5

All parts of the distributive network are connected. The most descriptive characteristic of distributive networks is openness: anyone can join and use them.

# TRENDS TO PRODUCT CONCEPTS

## TREND ANALYSIS

### TRENDS TO PRODUCT CONCEPTS

In the following chapter I present one way of processing the “trend evidence” and data gathering by Martin Raymond, in *The Trend Forecasters Handbook* (2010). The process descriptions of Cross-cultural analysis, building a Trend Thesis, and the Trend cartogram are somewhat linear in nature, and presented in short and descriptive chapters with supporting imagery on the process.

The concept of “cultural brailing” (Brannon 2000) is introduced to give a picture of a trend forecaster’s mindset in order for him or her to successfully execute gathering and analysing data. Cross-cultural analysis is also presented as a comparison to cultural brailing as a more task oriented approach.

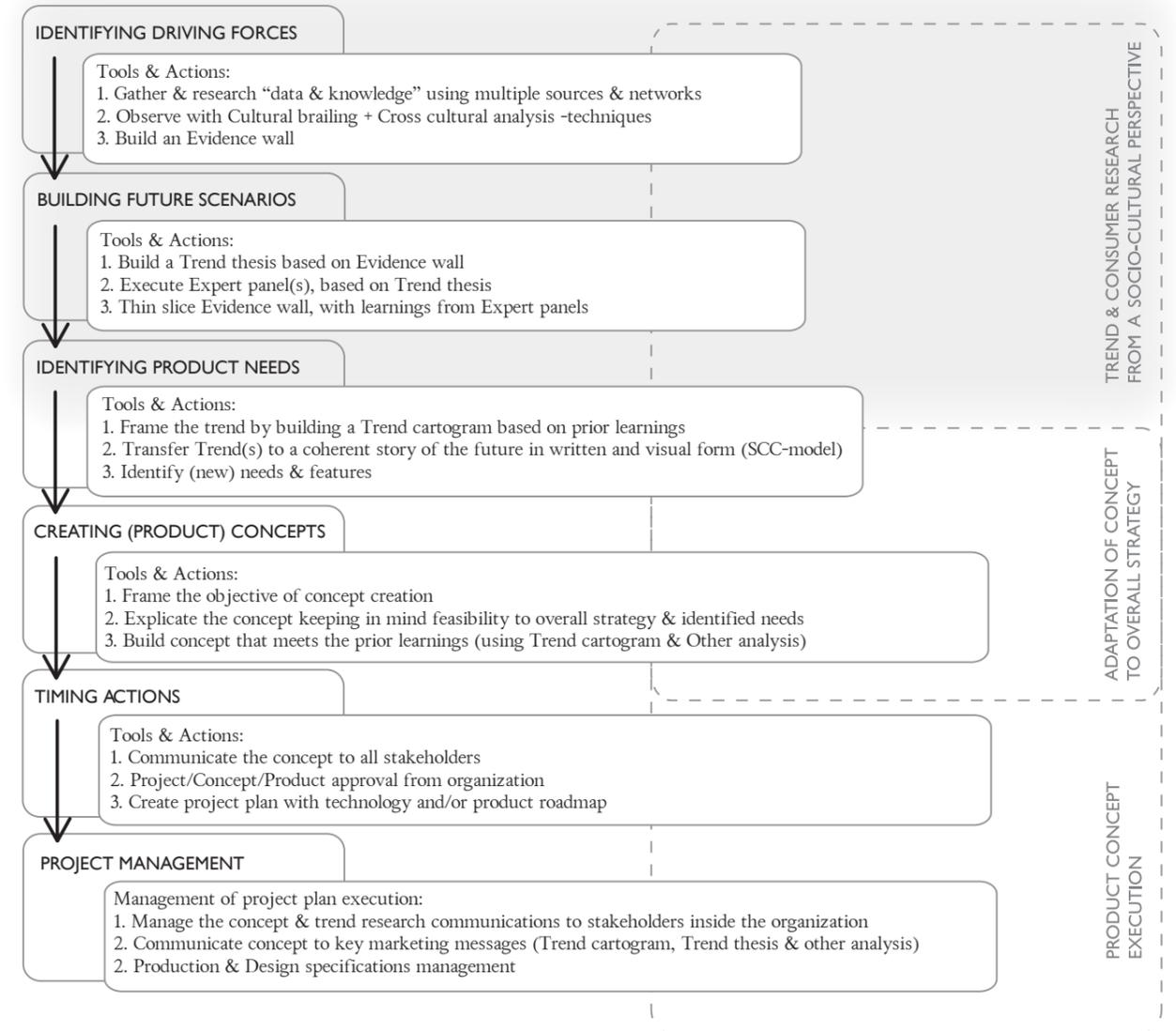
As Brannon (2000) and Raymond (2010) remark, merely the data gathering from different sources, networks or by observing is not enough. A trend forecaster needs to analyse, re-arrange, further investigate and summarize the content into a coherent visual and written document in order to get the idea communicated, explicated and understood by its audience.

Therefore, the process needs cycles of iteration and re-evaluation to become a valid and understood representation of a trend.

The trend analysis process starts with gathering an Evidence wall, continues by formulating a Trend thesis. The Trend thesis is further investigated with help from an Expert panel. The Expert panel further validates the trend by reviewing and correcting it, which is called “thin slicing” by Raymond (2010). Narrowing down the “evidences” by thin slicing and re-arranging the information into a Trend cartogram seeks to depict the trend in multiple points-of-view, both in visual and written format.

# TRENDS TO PRODUCT CONCEPTS

## TREND ANALYSIS



### SUGGESTED FRAMEWORK TO INTEGRATE TRENDS TO PRODUCT DEVELOPMENT PROCESSES

#### CHART I (REVISITED)

The suggested framework is categorized into three main themes: trend research from a socio-cultural viewpoint, adaptation of designed concept into overall strategy, and product concept execution.

### CULTURAL BRAILLING

Cultural braille is a term that was introduced by Faith Popcorn, an American trend forecaster. The term braille refers to the writing that blind people can read. Cultural braille means a way of reading the culture in a way that the reader seeks to find so called cultural bumps. The bumps are everywhere, and they can be anything.

Braille (Figure 6) is about being hyper-observant to everything new and especially to change. Thus braille means also that the forecaster takes all his or hers senses to work. Therefore cultural braille is about consuming and taking in everything, and being open about it.

In order to somehow put the things together Raymond (2010, 41) suggests that the forecaster gathering the bumps in culture would keep in mind “who started it”, “what should it be called”, “where did it come from”, “why is it emerging now”, and “when it was first noted”. Trend forecasters work in this way, investigate the change, and ground their findings on these basic questions.

#### CULTURAL BRAILLING IN A NUTSHELL:

##### **THE WHO:**

Can be a single innovator or trend creator, but also a group of people.

##### **THE WHAT:**

Who leads to what. Trend, innovation or cultural shift is being identified.

##### **THE WHERE:**

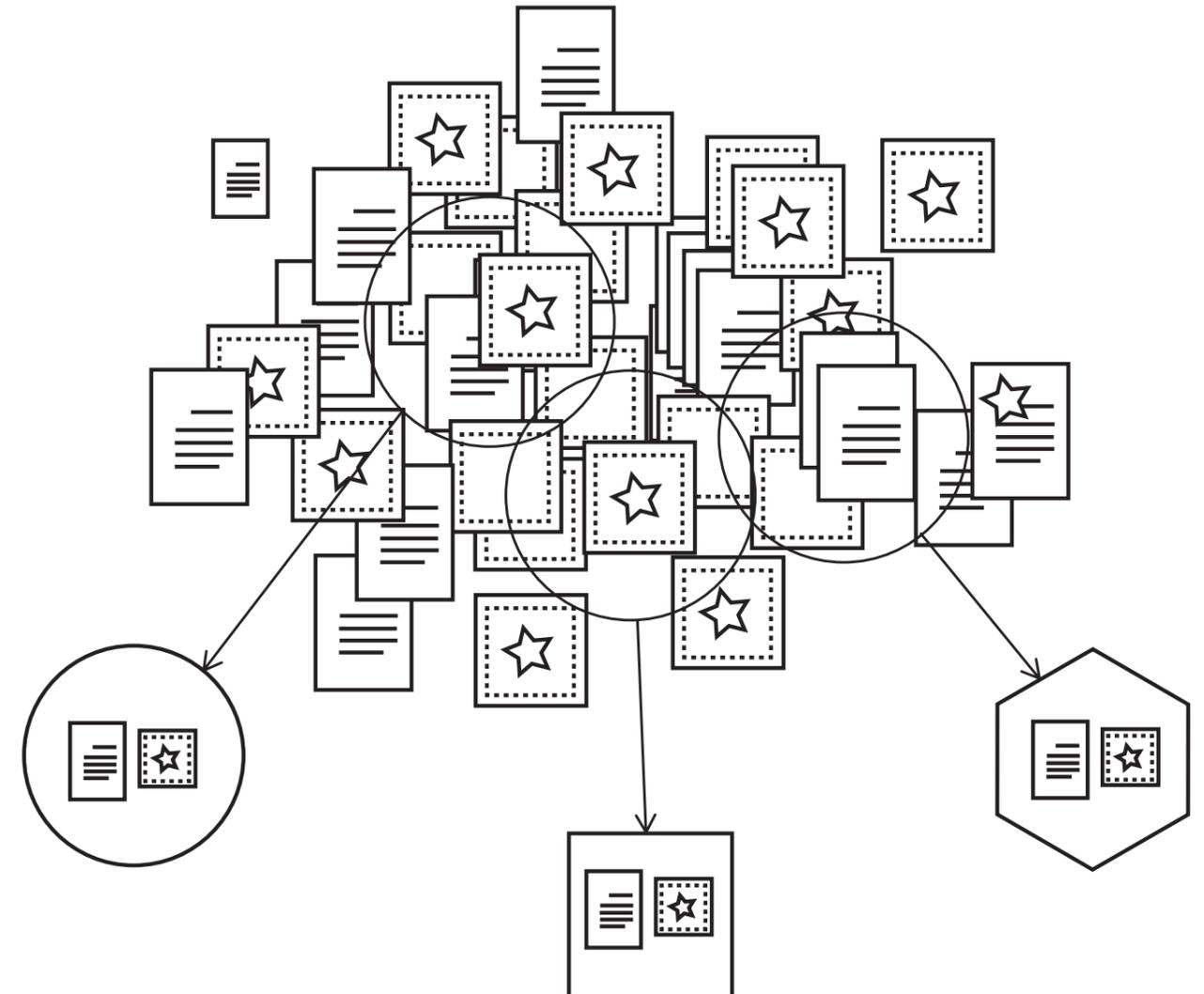
The place where the trend begins

##### **THE WHY:**

The “drivers” to consider

##### **THE WHEN:**

Right time to look for a trend



### CULTURAL BRAILLING

#### FIGURE 6

Cultural braille is discovering so-called bumps from the surrounding environment. It means reading and collecting interesting clues from anything that surrounds the trend forecaster.

# TRENDS TO PRODUCT CONCEPTS

## TREND ANALYSIS

### CROSS CULTURAL ANALYSIS

“Cross cultural analysis is a term used by forecasters to describe how they “graze” across cultures and different industry sectors to determine if a trend spotted in one industry is beginning to emerge in another.” (Raymond 2010, 44.)

If this “grazing” or sweeping of industries or cultures will indicate whether the spotted trend might become wider spread and affect more than one industry or context, then the trend is more likely to spread and strengthen. (Raymond 2010, 44)

Cross-cultural analysis (Figure 7) is a very data concentrated task, and the forecaster should go through a vast amount of data sources – books, newspapers, magazines, blogs, web sites, television programs etc. The data gathering is described to be “collecting of interesting stuff”.

Raymond describes the data collection process and its wideness as follows: “To identify these products and their significance in the first place, a forecaster has to go through books, newspapers, periodicals, magazines, web sites, television programs, and radio shows on a daily basis. He or she will also have to visit exhibitions and specialist trade fairs that preview everything from fashion, furniture, technology, and cars, to military hardware and medical equipment.” (Raymond 2010, 44.)

The trend forecaster is in this way building a vast knowledge of everything that is happening in the world. And with all that data the forecaster builds up knowledge on what might happen next.

Raymond has listed some key reasons for the importance of being interested in everything that happens: (Raymond 2010, 47.)

To build up a visual and written library that tells you where the culture is at and where it is going.

To understand and recognize new “stuff” when, where, and how it comes about.

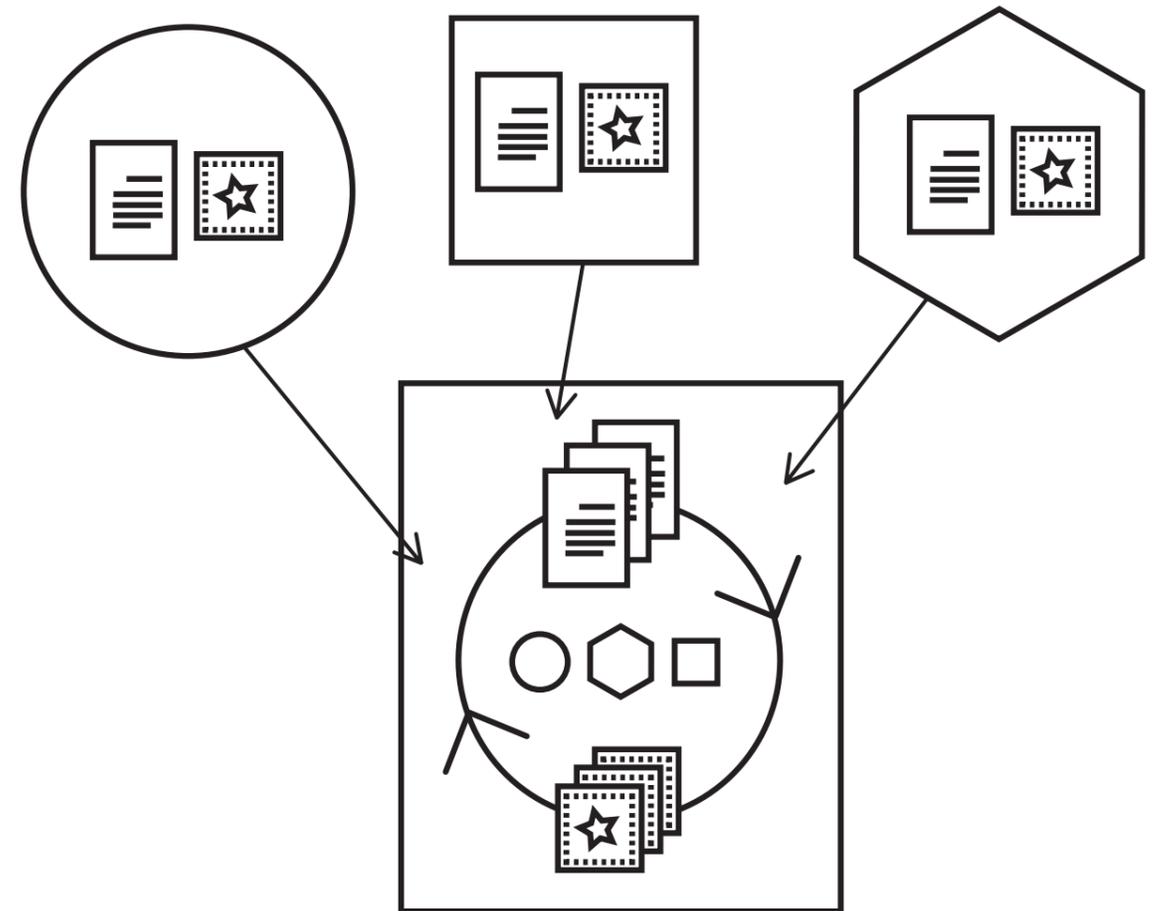
To allow you to place this new “stuff” in a context that makes it more than the sum of its parts.

To begin to detect patterns and shifts that suggest a bigger change or movement is in the cards.

Gathering visual and written data gives the forecaster a sense of what is happening in the world, and this data gathering of “stuff” starts to evolve and fuse together with different signs or “bumps” in culture. The signs of change come from different data sources and in different forms.

# TRENDS TO PRODUCT CONCEPTS

## TREND ANALYSIS



### CROSS CULTURAL ANALYSIS

FIGURE 7

The graph is visualizing cross cultural analysis as an iterative way to collect and analyze “trend-clues”

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# TRENDS TO PRODUCT CONCEPTS

## TREND ANALYSIS

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### EVIDENCE WALL

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An evidence wall or mapping wall (Figure 8.) is widely used by trend forecasters to map ideas and put data together in different ways. The data gathering work starts often with a lot of “evidence” data and later narrows down to a clear, coherent depiction of the trend.

Working with the evidence wall is a combination of creative work, spotting patterns, and analysing the found evidence from different sources. The evidence wall’s purpose is to help depict the story of the emerging trend. This happens through using the so-called “forecaster’s nose” that develops over time through working with trends and analysing them. This is strongly linked to the concepts of intuitive and tacit knowledge that were discussed before.

### FORECASTERS NOSE

Forecaster’s nose is something that trend forecasters use when searching a pattern or something new. The forecaster’s nose works unconsciously, and puts together the bits and pieces that have been gathered and put together on the evidence wall.

The forecaster is described to have a “hunch” that something new is happening, and by putting together

the pieces of information, new knowledge of the trend starts to unveil itself. (Raymond 2010, 50-55) This holistic way of working with intuition requires strategic thinking, and the ability to spot patterns and combine them together intuitively to something new.

### THREE-TIMES RULE

The “three-times rule” refers to a phenomenon where a forecaster sees a certain issue occurring at least three times in the discourse within one discipline. Should this happen, a forecaster can conclude that the emerging issue might have the potential of becoming a trend of some level.

“The ‘three-times rule’ is used to test the validity of an idea or a trend across a number of industries or cultural disciplines” (Raymond 2010, 55). The method is used to validate the trend. The method is subjective, but it gives the forecaster an understanding that the trend might have some future.

As Raymond puts it: “This is not a ‘quantitative’ process, as in a process that uses statistics or numerically-based ‘proofs’ to justify its relevance, but rather one that offers you a ‘qualitative’ or more subjective and personal way to determine if a trend has ‘legs’ and if you can validate your hunch about a particular trend across a number of separate areas.” (Raymond 2010, 55.)

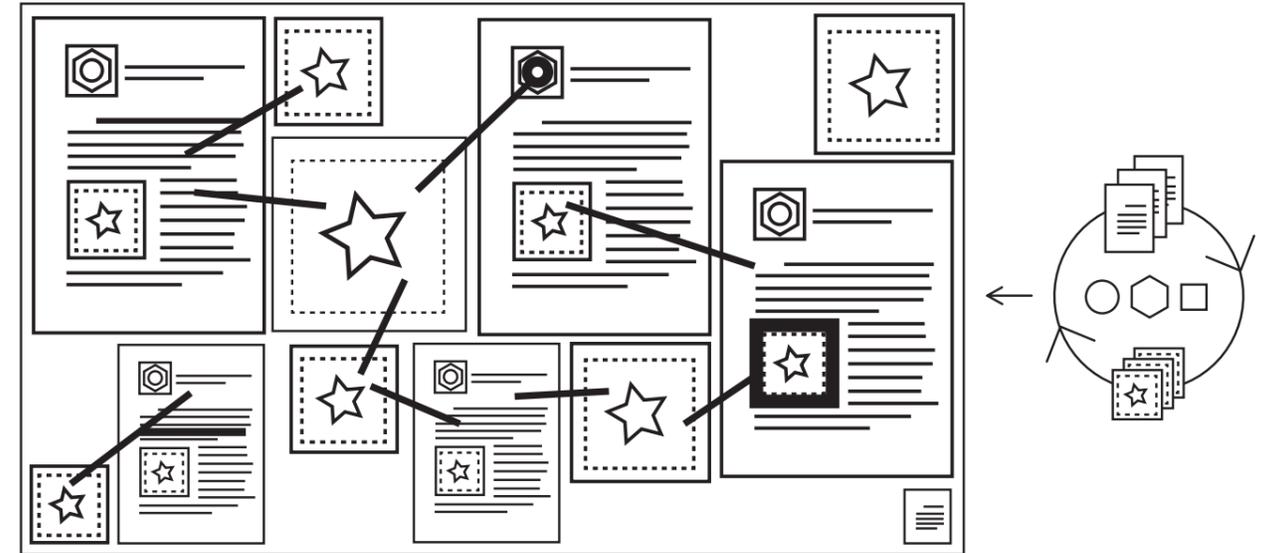
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# TRENDS TO PRODUCT CONCEPTS

## TREND ANALYSIS

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### EVIDENCE WALL

#### FIGURE 8

An evidence wall is a collection of visual and written data that interest the trend forecaster in some way. The forecaster may cluster or make connections to the Evidence wall as visual notes.

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# TRENDS TO PRODUCT CONCEPTS

## TREND ANALYSIS

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### THE TREND THESIS

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The trend thesis (Figure 9.) is an outline of a trend, and answers the questions Who, What, Where, Why, and When. The trend thesis can be used to support the expert panel discussions, and also gives a clear image of what the forecaster has captured so far.

With the Trend thesis and the Evidence wall the forecaster can easily discuss with the expert panel's specialists, and make a clearer picture of the trend by outlining the following:

#### WHO

(the trend innovators)

#### WHAT

(its name)

#### WHY

(the factors that have contributed to its emergence)

#### WHERE

(its origins)

#### WHEN

(the time when the trend began)

The process of further investigating the factors listed above is called "deep diving" by Raymond (2010).

### EXPERT PANEL & DEEP DIVING

Deep diving is a term used by forecasters to describe the interview and the working process with the expert panel. Raymond states: "(...) you are literally diving deep down into areas of concern you wish to know more about." The technique can also be characterized as an in-depth interview with a set of open-ended but strategic questions (Raymond 2010,

57). Deep diving seeks to further evaluate and validate the trend and its core ideas.

The expert panel is what the title suggests – a selective group of specialists that is assembled from the areas of "hunches" and the ideas that the forecaster noticed in the three-times rule, Forecaster's nose and Data gathering phase.

Raymond suggests that the expert panel has a wide range of representatives, some directly related to the topic, and some more loosely. Raymond also suggests that the trend thesis could be used as a tool to discuss and interview the experts and specialists (2010, 55-56).

Expert interviewees should include (Raymond 2010, 57):

**INNOVATORS** (those who are instigating the change)

**TRENDSETTERS** (those Early adopters who are making these a part of their lives – in different industries, if this is the case)

**TREND SPOTTERS** (other futurists, edge observers, and cross-cultural analysts who are making these changes at their nascent stages)

**EARLY MAJORITY, LATE MAJORITY, LAGGARDS** (to test how far the trend has penetrated into mainstream thinking and within which areas or social income brackets)

### THIN SLICING

"Thin slicing isn't anything mystical. It is merely an ability our brain possesses to cut through large swathes of data in a way that helps us evaluate all this information more effectively and strategically" (Raymond 2010, 58).

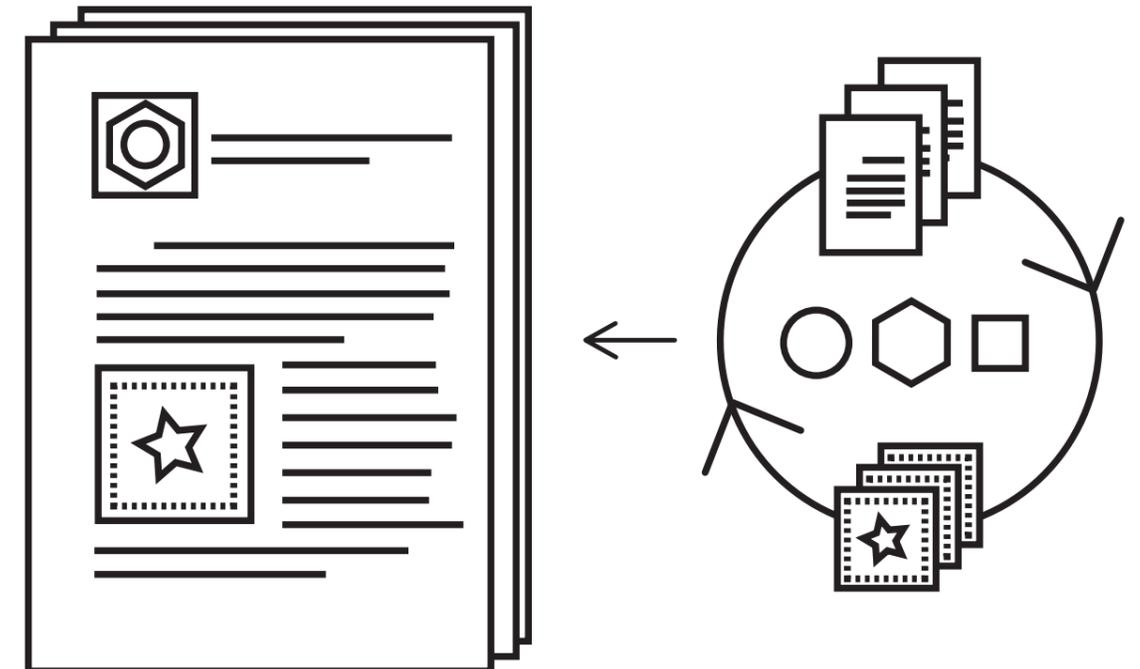
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# TRENDS TO PRODUCT CONCEPTS

## TREND ANALYSIS

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### THE TREND THESIS

#### FIGURE 9

The trend thesis is a condensed set of visual and written information to depict the trend. The trend thesis is used also to further investigate the subject by Expert interviews.

# TRENDS TO PRODUCT CONCEPTS

## TREND ANALYSIS

Thin slicing is used to make the Evidence wall less cluttered and more concentrated on the spotted trend. Thin slicing has in a way already happened subconsciously during the trend thesis, deep diving, and expert interview processes.

Thin slicing happens by removing everything from the Evidence wall that does not fit into the picture anymore – picture evidences, articles, notes and connections between them. The process is in a way revising the content after the expert views on the subject and the essence of the trend.

## TREND CARTOGRAM

A trend cartogram (Figure 10) is an abstract representation of the trend in a less formal but descriptive way. “Cartogram is a diagrammatic technique used by a cartographer or map maker to capture complex geographic data in a simplified, illustrative but strategically revealing way” (Raymond 2010, 58). This rearranging, editing and selecting of the right pieces to the trend cartogram is called “trend framing” by Raymond (2010).

Trend framing should enable the forecaster to define key characteristics of the trend, and in the end the Trend cartogram represents the trend in a visual and textural form in a way that it:

- Identifies the Innovators of the trend (the “who”)
- Names the trend (the “what”)
- Assesses the current impact of the trend within society (the “where”)
- Reveals the drivers or influences underpinning it (the “why”)

- Examines the consequences of this impact in the short- and long- term based on the experts’ comments and findings (the “when”), and also
- Identifies and articulates what these changes will mean to the society and culture we live in over the long-term

These points can be narrowed down into five different categories that represent the trend:

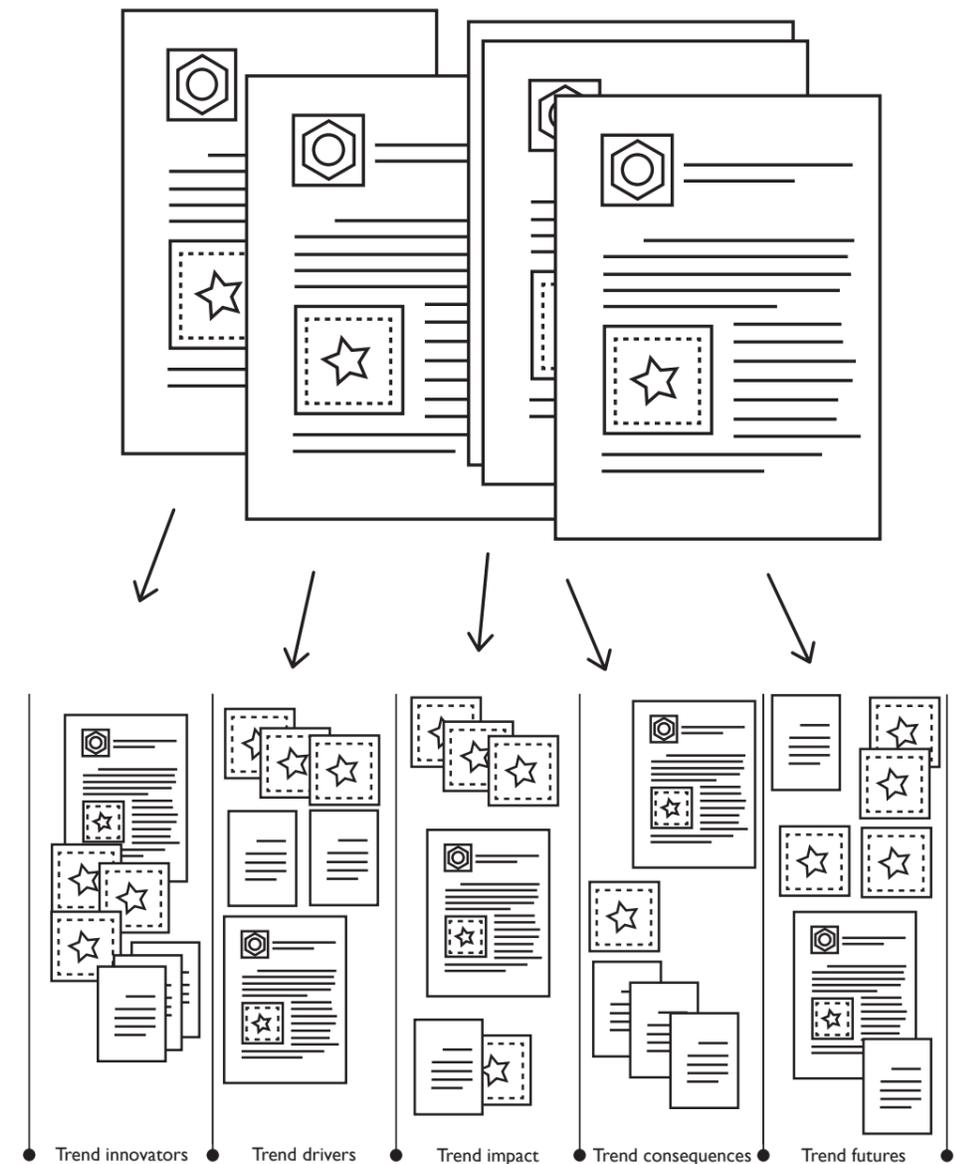
- Trend innovators
- Trend drivers
- Trend impact
- Trend consequences
- Trend futures

Together with the Trend cartogram and the Trend thesis, the trend forecaster is able to communicate and collaborate with others on the trend that is spotted and analyzed. The forecaster is able to talk about the birth of the trend, what keeps the trend alive, and also how the trend is going to affect the culture and society surrounding it. Furthermore, it is important to realize that the trends continue to evolve and live - and that the trend forecaster has gained knowledge and hints throughout the process on how it is likely to happen in order to predict future applications where the trend can be utilized, e.g. in future products and in their concepts.

Aula et al. (2005) present a framework, “End-User Knowledge as A Tool for Strategic Design” to further investigate end user knowledge into product functionalities, characteristics and features.

# TRENDS TO PRODUCT CONCEPTS

## TREND ANALYSIS



## TREND CARTOGRAM

FIGURE 10.

A trend cartogram is depicting the trend from multiple viewpoints in written and visual form of representation in a categorized and coherent manner.

# TRENDS TO PRODUCT CONCEPTS

## TREND ANALYSIS

### END-USER KNOWLEDGE AS A TOOL FOR STRATEGIC DESIGN

Aula et al. (2005) suggest that cultural awareness is one key area of expertise in industrial design, and through that it is possible to get a sense of the cultural significance of products and also apply these characteristics to products. They state that the visible product is only “a tip of an iceberg”, a large quantity of culturally significant structures lay “beneath the water”. This offers an interesting point of comparison with Nuutinen’s (2004) classification of the hierarchy of knowledge (Chart 13).

The structures beneath the surface are the focus points of end-user research at the different phases of product development. In Aula et al.’s (2005) opinion the aim of design is to utilize the significances of cultural characteristics in products that are readily understood by end users.

Product development can be categorized, according to Aula et al. (2005) into three different areas: strategic, tactical, and operative. Design at the strategic level seeks to find new product prospects, the tactical level seeks to find new product concepts, and the operational level seeks to produce the final product.

Aula et al. seek to develop activity and expertise on the strategic level of design, and the focus of their research is on ways of doing things, phenomena, and social interaction. Focusing on those areas enabled Aula et al. to achieve the quality of information that they found suitable for a starting point of product development.

Aula et al. present the SCC model (Chart 14), which is one way to approach end-user knowledge. “The basic idea of the design model has been adapted from the elements of the scenario method in the future studies.” (2005.)

### THE SCC IS BUILT UPON THREE ELEMENTS IN THE SCENARIOS IN FUTURE STUDIES:

- A description of the present status of the target
- A description of the future
- A description of the process that connects an original state to that of a latter one

### THERE ARE TWO PARTS IN THE SCC-MODEL:

- A description of the present situation of a product
- A description of the future situation of that product

According to the SCC model by Aula et al (2005): “The determination of the present situation is based on studies (a user study and/or market research) carried out during product development. The future situation of the product takes shape as the result of design work.

The future situation of the product is based on conclusions concerning the present situation and on the strategies of the company. The central part of our model covers the elements of these situations.”

These elements have been named: product, usage, person, physical surroundings, context of social interaction, and cultural context.

This whole framework is called the elements of context. The starting point is that this structure is used to describe both situations together in a single framework of analysis. (the present and the future). This way design brings about transparency.

The six elements presented can also include other more specific factors that the researchers identified in their research:

1. Product: technology, the price of the product, the appearance of the product, properties, traditions, acquisition, purpose, services

# TRENDS TO PRODUCT CONCEPTS

## TREND ANALYSIS

2. Usage: duration, character, purpose of use, motivation, target, density, usability, peripheral activity

3. Person: consumer type, age, sex, values social station, experience, achievements, rules, competition, equipment, life situation, skills, other leisure pursuits

4. Physical surroundings: season, time of the day, size of the area of operation, context of the activity (home, job, hobby), weather, nature, services, recording experiences, the built-up environment

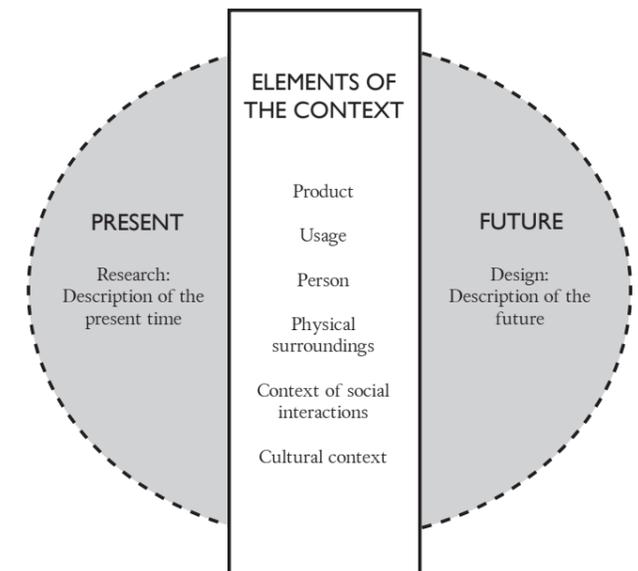
5. Context of social interactions: present, privacy of the product, social character of use, cultural background, social motivation of the activity, purpose of the activity, other events related to the activity, clubs, stimulus, network

6. Cultural context: safety, legislation, social trends, consumer trends, technology trends, cultural and historical background, change in activity, genre, participation, general attitude, technological development, social situation

Aula et al. (2005) remind that the information required to describe the present situation is obtained mainly through research, and that the best results are obtained by using several methods. The SCC model can link both qualitative and quantitative research methods together.

The SCC model and the trend research frameworks and tools seek to find similar answers. The Trend research techniques and tools in comparison are less structured and detailed, and in addition give more free hands to the researchers to use their own way of presenting the vision.

Nevertheless, the SCC model gives distinct features and needs that the designed concept should fulfil or take a stand against in the current socio-cultural environment.



THE SCC MODEL

CHART 14

The SCC-model is combining present and future in a designed product concept through “elements of context” (Aula et al 2005)

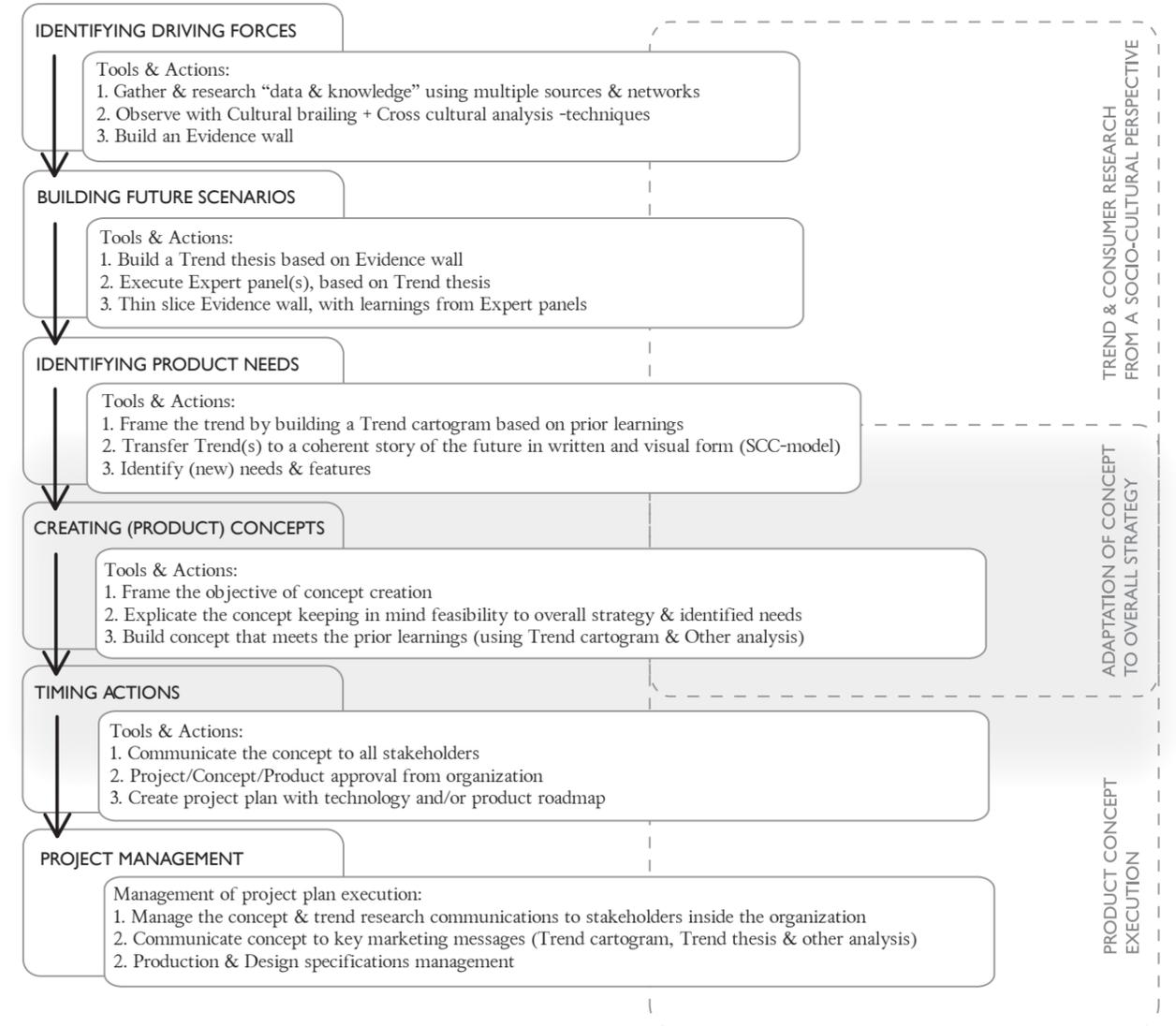
### KNOWLEDGE TO PRODUCTS

In previous chapters trends were introduced with a viewpoints of theories and social groups involved in the trend diffusion process. Finally techniques and tools for predicting and categorizing them into a coherent entities were introduced.

In this chapter I seek to give an overall picture of product development processes and theories through introducing frameworks from a design managerial viewpoint.

First presented is the evolution of product development processes over decades, presented by Keinonen & Takala (2006), followed by overall objectives of product development. Also New Product Development and so-called Fuzzy Front End development are compared. Then the Fuzzy Front End process is introduced by Koen et al. (2006) and further specified with suggested exercises concerned. Furthermore Keinonen & Takala's Process of Product Concepting (PPC) model is presented as one solution to maintain a managerial and creative viewpoint to concept development process with an emphasis and possibility to evaluation and iteration rounds during the process.

Concept design, or in other words Concept development has evolved during decades from first generation innovation process to fourth generation innovation process (Keinonen & Takala 2006). The evolution of processes is illustrated on the next page. (Chart 15) The evolution of an innovation process has been illustrated by Rothwell, R (2004, 7-31).



### SUGGESTED FRAMEWORK TO INTEGRATE TRENDS TO PRODUCT DEVELOPMENT PROCESSES

CHART 1 (REVISITED)

The suggested framework is categorized into three main themes: trend research from a socio-cultural viewpoint, adaptation of designed concept into overall strategy, and product concept execution.

# KNOWLEDGE TO PRODUCTS

## CONCEPTS AND PRODUCT DEVELOPMENT

Concept design for innovation includes a lot of uncertainty, and often the traditional solution is selected for further development because of the often radical nature of the solutions born in Concept design for innovation. (Keinonen & Takala 2006, 20-21) But in contrast they state:

“Research and technical development create the foundations for product opportunities, but do not identify them. In order to find and implement these opportunities, both insight and design are needed. Design can provide the link between the pushing mechanism of technical development and the pulling mechanism of the market, and is essential for transforming inventions into innovations and for linking the often implicit demand with the emerging possibilities.” (2006, 21).

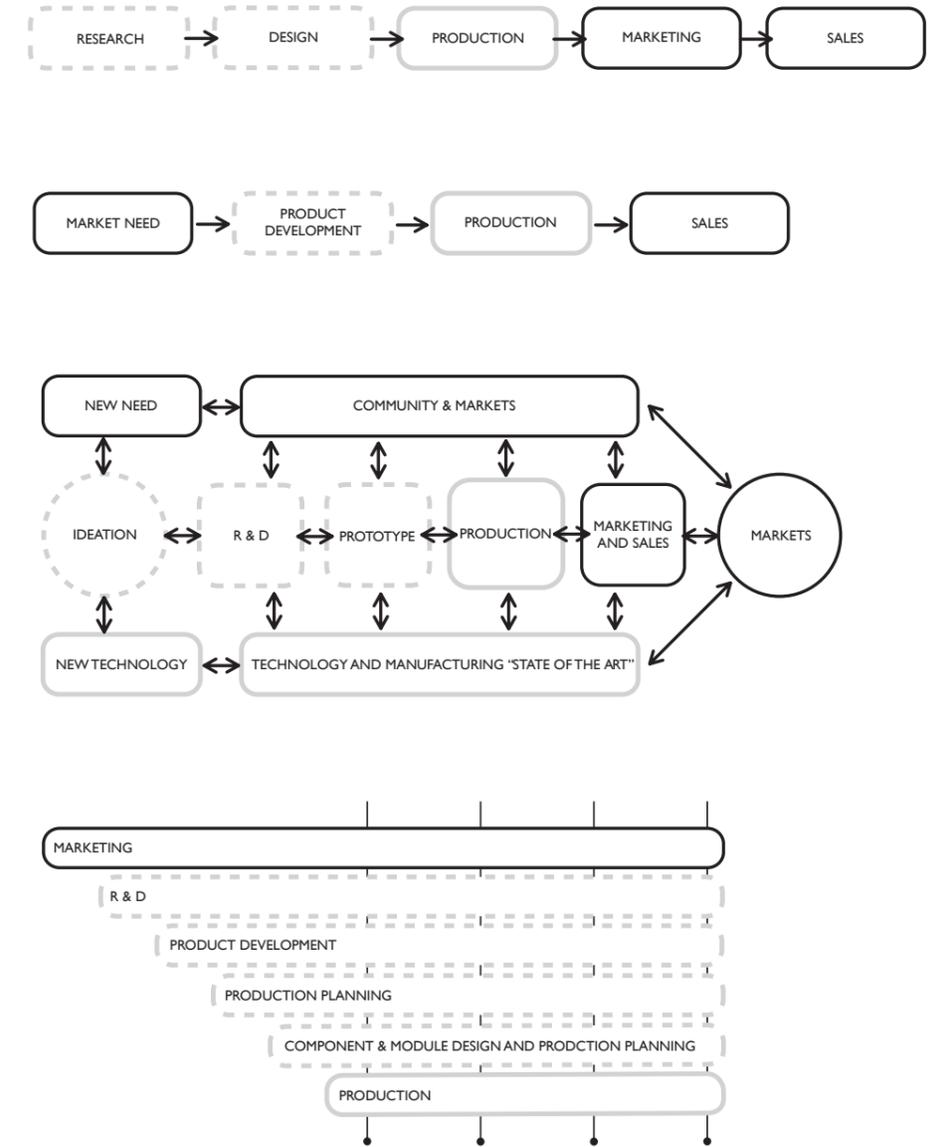
This previous remark of the restriction of product development processes shows the demand of insight and implicit knowledge in the early stages of product development processes. In my opinion, and according to my research the uncertainty that occurs in the early stages could be managed through sufficient trend and consumer research. This thesis work introduces one way to apply insight to product development processes.

In design for product development the focus is not in solving the design problem, but to define a design challenge and map the alternatives. In a simplified “waterfall model” the first phases are often used to deal with those issues. Later in the product development phase, the overall design is outlined and details added. (Keinonen & Takala, 2006, 20)

The focus of this chapter is in the Fuzzy Front End (FFE), and the research phase of Concept development. The publications and papers studied for this thesis focus their research in the “front end” -phases of product concept development.

# KNOWLEDGE TO PRODUCTS

## CONCEPTS AND PRODUCT DEVELOPMENT



EVOLUTION OF CONCEPT DEVELOPMENT  
 CHART 15  
 Rothwell (1994) has illustrated the four generations of innovation process. (Keinonen & Takala 2006.)

In general, Concept development can be used for several objectives. Keinonen & Takala (2006) list five objectives for product & concept development processes.

- Design for product development
- Concept design for innovation
- Concept design for shared vision
- Concept for competence
- Concept design for expectation management (see Chart 16.)

DESIGN FOR PRODUCT DEVELOPMENT	Specification for the following design phases Decision to go ahead with implementation
CONCEPT DESIGN FOR INNOVATION	Spin-offs for immediate improvements Idea bank for future use Concept decisions for technology development investments Alliances with key partners Patenting
CONCEPT DESIGN FOR SHARED VISION	Specific shared meanings Vocabulary for communication
CONCEPT DESIGN FOR COMPETENCE	Improving creative problem solving Improving cross-disciplinary cooperation Learning about technology and market opportunities Improving team spirit
CONCEPT DESIGN FOR EXPECTATION MANAGEMENT	Improving brand image Influencing consumers' acceptance level Influencing stakeholders' interest

### OBJECTIVES OF CONCEPT DEVELOPMENT

#### CHART 16

Different objectives of concept development by Keinonen & Takala (2006)

### FROM IDEA TO PRODUCT

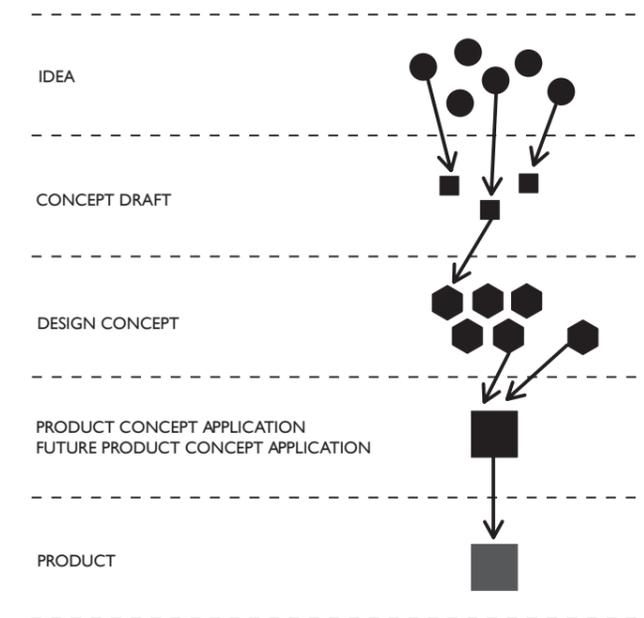
Keinonen & Takala (2006) present a simplified process model, a “Waterfall” which shows the process characteristics of product development from initial idea to product (Chart 17). They present that from many ideas the most relevant ones are chosen or filtered to become concept drafts, and from those the design concepts are made. The design concepts are then filtered and combined into product concept applications and future product concept applications. Finally the concept is developed into a product.

The Fuzzy Front End (FFE), illustrated in Chart 18, shows its experimental nature as a collector of ideas and concepts. The whole Fuzzy Front End innovation process can be divided into three parts according to Koen et. al. (2002) and the Fuzzy Front End is the platform where the initial ideas are generated.

The Fuzzy front end generates ideas or concepts and afterwards they are moved to New Product Development (NPD) processes. The Keinonen & Takalas simplified waterfall model is representing the overall product development process, as it moves towards a product. The waterfall -model, and also later to be presented New Concept Development model (NCD) by Koen et al. are presenting Fuzzy Front End activities as one task in their frameworks.

The nature of work in Fuzzy Front End is experimental and sometimes chaotic, with an unpredictable and uncertain release date. In contrast, in New Product Development, processes are goal-oriented and well planned from start to release. (Koen et al. 2002.)

Also the funding of FFE-processes can be uncertain, and especially in the beginning of the processes is described to be funded from “under the table”, due to its uncertain revenue expectations. On the other hand the NPD processes are almost always budgeted, and also the revenues can be somewhat predicted with different methods.



### WATERFALL MODEL

#### CHART 17

Waterfall model filters ideas into products, Keinonen & Takala (2006).

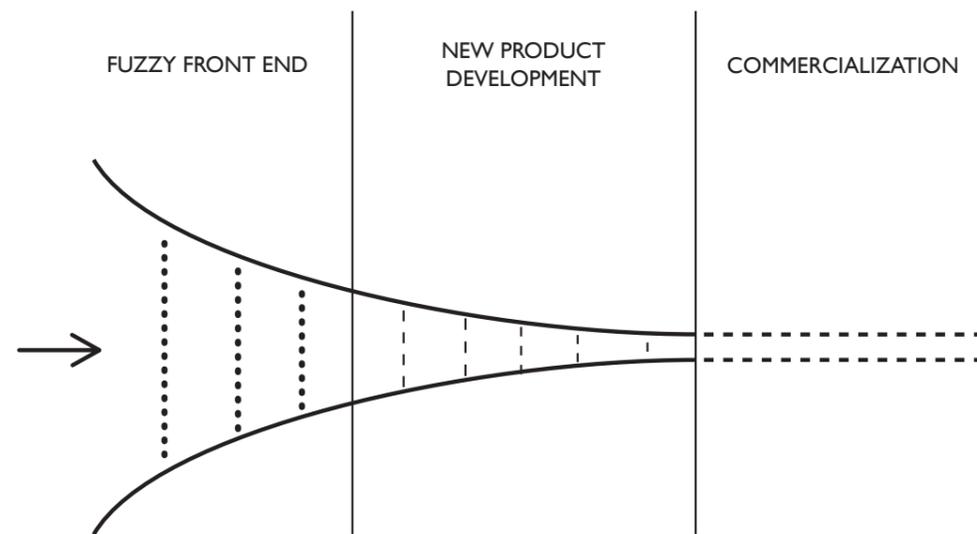
# KNOWLEDGE TO PRODUCTS

## CONCEPTS AND PRODUCT DEVELOPMENT

When comparing the activities in FFE and NPD processes (Charts 18 & 19), their focus areas are also different. FFE process seeks to minimize risk and optimize potential within individuals or groups research, whereas in the NPD the focus is in multifunctional teams that work towards a predetermined goal.

In conclusion the FFE process seeks to strengthen concepts, and NPD process includes milestone achievements until the end of the whole project.

The uncertainty of FFE processes is clear, and has been academically proven numerous times. Fuzzy Front End activities are often described to generate more radical results, and often these kinds of innovations are shaping the world around us.



FUZZY FRONT END AND NPD PROCESS

CHART 18

The Fuzzy Front End process functions as an umbrella for ideas that are further developed into concepts. The concepts are then developed into products and executed. (Koen et al. 2002)

# KNOWLEDGE TO PRODUCTS

## CONCEPTS AND PRODUCT DEVELOPMENT

Fuzzy Front End innovations need further investigation and research in order to get go-ahead approvals. One way to further investigate and analyze the opportunities of radical innovations is to conduct thorough studies and research.

Next, the New Concept Development (NCD) model is presented. It is interactive in nature and taking into consideration trend research as one analyzing tool, among others, in order to explicate & analyze the whole idea of a concept at hand.

DIFFERENCE BETWEEN FUZZY FRONT END (FFE) AND THE NEW PRODUCT DEVELOPMENT (NPD) PROCESS

	FUZZY FRONT END (FFE)	NEW PRODUCT DEVELOPMENT (NPD)
Nature of work	Experimental, often chaotic. "Eureka" moments. Can schedule work - but not invention	Disciplined and goal oriented with a project plan
Commercialization date	Unpredictable or uncertain	High degree of certainty
Funding	Variable - in the beginning phases may be "bootlegged", while others will need funding to proceed	Budgeted
Revenue expectations	Often uncertain, with a great deal of speculation	Predictable, with increasing certainty, analysis, and documentation as the product release date gets closer.
Activity	Individuals and team concluding research to minimize risk and optimize potential	Multifunction product and/or process development team
Measures of progress	Strengthened concepts	Milestone achievement

COMPARISON BETWEEN FFE & NPD

CHART 19

Fuzzy Front End and New product development processes compared, by Koen et al (2002).

# KNOWLEDGE TO PRODUCTS

## CONCEPTS AND PRODUCT DEVELOPMENT

Koen et al (2002) have generated a New Concept Development Model (NCD) that is made from the managerial viewpoint. The main parts of the NCD focus on uncontrollable influencing factors, a controllable engine that drives the activities in FFE (Fuzzy Front End), and the five elements of NCD. It focuses on leadership, managerial culture and business strategy and could be used by management and executives in organizations. Chart 20 illustrates the NCD model which is a relationship model, not a linear process.

The New Concept Development model is depicting the Fuzzy Front End activities from a managerial point of view. The process is non-linear in a sense that it includes multiple possibilities for iteration and idea enrichments, as Koen et al. (2002) describes it.

The NCD process suggests that the outside influence (influencing factors) that arises outside of the organization or team is one of the key characteristics of the framework. The ideas may come from outside the organization of any point during the process and affect the whole idea or concept enrichment.

Koen et al. (2002) suggest that the NCD process starts with opportunity identification or idea generation & enrichment.

The whole process is driven by the engine that is depicted as black circle in the centre of the graph. The engine is the controlling and supervising part of the whole NCD process, and includes leadership, culture, and business strategy guiding the whole concept generation.

These two different starting points are both arising from outside organization influencing factors that consist of: organizational capabilities, the outside world (law, government policy, customers, competitors, political climate, economical climate), and enabling sciences (internal & external). (Koen et al. 2002.)

These two entering points to the NCD process are the points where outside organization knowledge and influences are gathered and analyzed. These points are considered closer, and also the “Opportunity analysis”-stage of the framework.

### OPPORTUNITY IDENTIFICATION

Opportunity identification is the stage of the process where the organization identifies the business and technological opportunities, and what kind of resources are needed in order to pursue the identified opportunity.

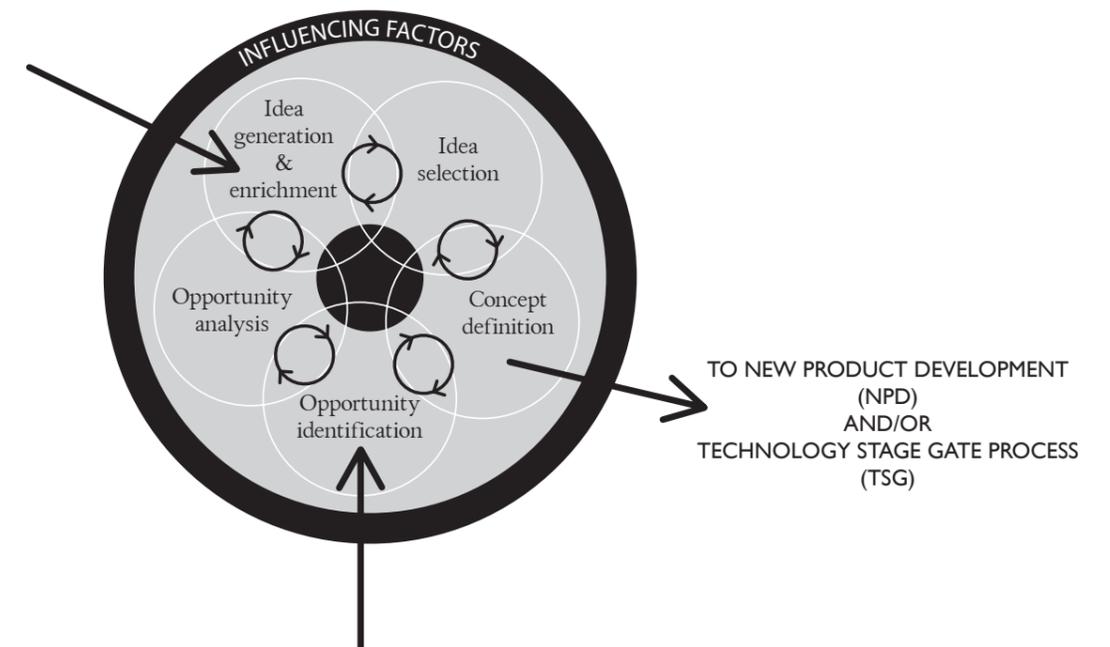
The essence in this phase is to identify the sources and methods to use. They state also that the organization might have a process to identify opportunities from the outside influencing factors, or the organization might use informal solutions. The solutions could include, as suggested by Koen et al. (2002):

- Roadmapping
- Technology trend analysis
- Customer trend analysis
- Competitive intelligence analysis
- Market research
- Scenario planning

These research tools are suggested to be used from the viewpoint of future envisioning. As Koen et al. state: “Effective enablers for this element involve methods envisioning the future so that opportunities may be chosen for further analysis. Principal methods utilized

# KNOWLEDGE TO PRODUCTS

## CONCEPTS AND PRODUCT DEVELOPMENT



### NCD MODEL

#### CHART 20

The New Concept Development model is depicting Fuzzy Front End activities from a managerial point of view. The process is non-linear in the sense that it includes multiple possibilities for iteration and idea enrichments, as Koen et al. (2002)

# KNOWLEDGE TO PRODUCTS

## CONCEPTS AND PRODUCT DEVELOPMENT

for assessing the uncertain future are roadmapping, technology trend analysis and forecasting, competitive intelligence analysis, customer trend analysis, market research, and scenario planning.”

These opportunity mapping tools generate different ideas for future development, and the ones that are pursued are confirmed in “opportunity analysis” stage of the NCD framework.

### OPPORTUNITY ANALYSIS

In the opportunity analysis stage the knowledge gathered in opportunity identification is further developed and researched in a more detailed manner. The opportunity analysis phase is gathering more knowledge and specifies the opportunity and identifies the potential in different fields with analysis tools as:

- Strategic framing
- Market segment assesment
- Competitor analysis
- Customer assesment

These listed tools set the characteristics for the whole idea of a product or concept. The idea generation & enrichment element concerns the birth, development and maturation of a concrete idea. (Koen et al. 2002.)

### IDEA GENERATION

“Idea generation is evolutionary. Ideas are built up, torn down, combined, reshaped, modified, and upgraded” (Koen et al. 2002). Idea generation and enrichment is involving brainstorming sessions, idea banks, and other creative tools in order to provoke the organization to generate new or modified ideas that meet the opportunity identified. Also it is possible that the generated idea might need further analysis or can be transferred further to Idea selection and later to concept definition.

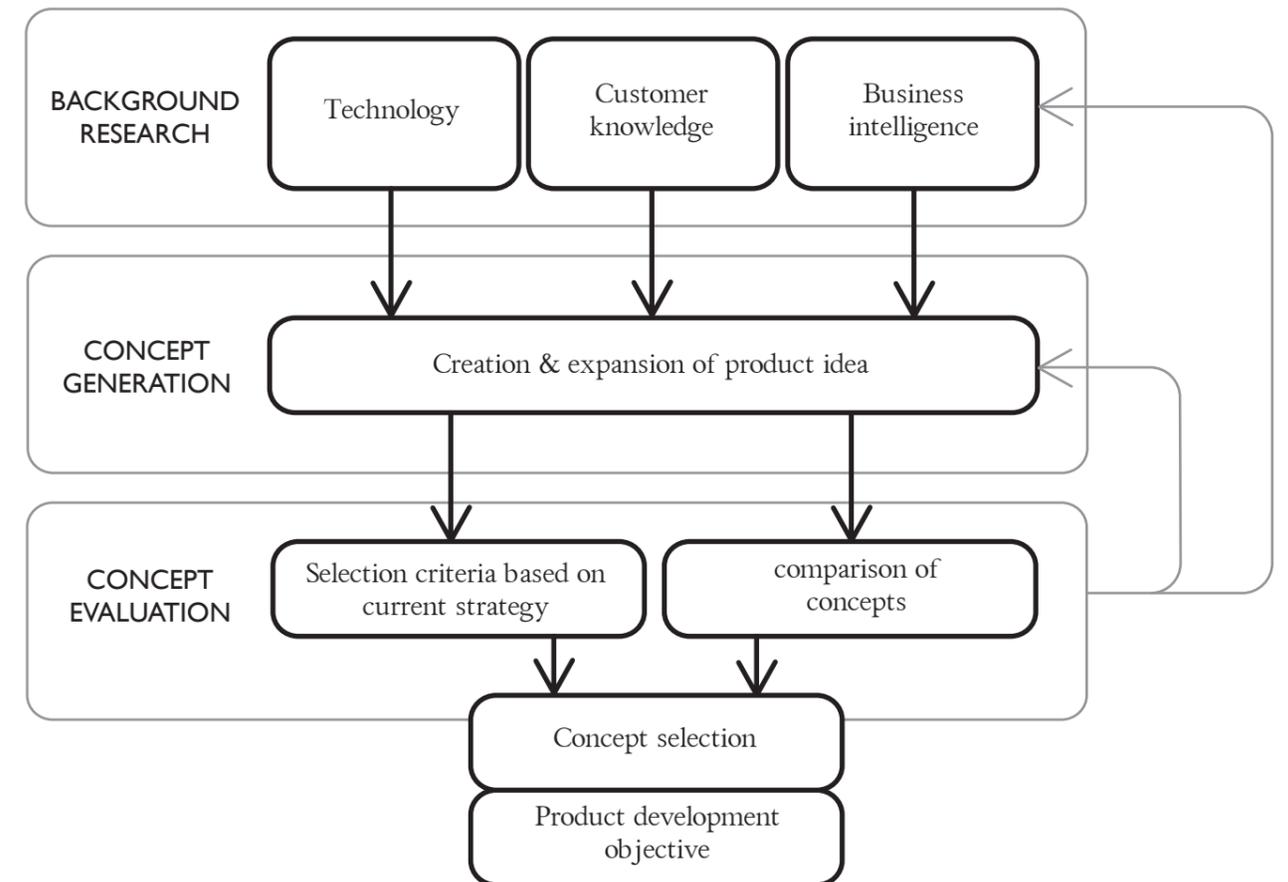
The New Concept development model (NCD) by Koen et al. (2002) is similar in nature with Keinonen & Takala’s (2006) Process of Product Concepting model (PPC), with iteration loops and similar modules with background research, development, and evaluation (Chart 21). Even though the processes are similar, they have some differences. The NCD model is focusing in the Fuzzy Front End and the PPC model is giving an overall picture of the whole concepting process.

Keinonen et Takala (2006, 60) call the initial phase of PPC Background research, or information acquisition: “The design of a product concept requires sufficient knowledge of consumer needs, technology forecasts and the business environment.”

According to Keinonen & Takala, background research explores a wide range of possibilities to identify opportunities and finally design drivers.

# KNOWLEDGE TO PRODUCTS

## CONCEPTS AND PRODUCT DEVELOPMENT



### PROCESS OF PRODUCT CONCEPTING

#### CHART 21

The PPC model by Keinonen & Takala (2006) is divided into three main segments: Background research, Concept generation and Concept evaluation. The PPC process is iterative in nature, with an emphasis on the concept evaluation.

“In essence, research provides a driving vision, a back-drop or sanity check for product proposals. Research also provides a supply of knowledge that enables fast execution of the next stages of the product development process.” (Keinonen & Takala 2006, 64.)

The Concept Development model issued by Keinonen & Takala is designed to be layered and includes similar factors with the NCD model by Koen et al. (2002). In comparison, the model by Koen et al is more iterative and on an organizational and managerial level, even though Keinonen & Takala state that their model is iterative.

According to Keinonen, Takala & al. (2006) the research phase in concept development is very much an information-intensive process, where the design focuses on clarifying the input data for the initial design phase. They state that the data gathered in the research phase can be from the fields of technology, customer knowledge or business intelligence. And also: “Background research explores a wide range of possibilities to identify opportunities.” (Takala, Keinonen & et al. 2006, 61). They also suggest user studies, or a new and different proposal concerning the way the user can work or behave for a starting point in new product concepting.

Keinonen & Takala’s three fields of background research or so-called drivers give some starting points for concepting phase. “A product concept project can be driven by technology whose objective is to find applications for certain new technical capabilities, by business needs in which case-finding concepts for a certain market area is a typical goal or by customer needs when the project tries to find a solution for an identified user problem.” (Keinonen & Takala 2006, 62.)

Taking into account Koen et al.’s NCD model’s influencing factors, the image broadens a bit. For them the FFE is in the middle of influencing factors and the factors are corporations’ organizational capabilities, customer and competitor influences, the outside world’s

influences, and the depth and strength of enabling sciences and technology.

Organizational capabilities determine future opportunities in the first place - whether the ideas are generated further and the concepts and technologies developed.

Customer and competitor influences are considered in Porter’s five force model, which takes into account and evaluates the power of customers, competitors, new entrants, suppliers, and industry rivals. Also, governmental influencing factors and socio-economic trends are considered as outside world’s influences.

Concept generation and presentation provide solutions to meet the design drivers identified in the Research phase, or “information acquisition layer”. Keinonen & Takala state that it’s difficult or impossible to specify the concept generation phase step-by-step. In this phase creativity and free exploration play the biggest role and they argue that the best methodological tools are those that support creativity and innovation together with those that help to visualize the solutions to the product development team.

Keinonen & Takala present some example processes to concept generation, such as Imaginew and DeepDive that use background data to generate the initial concepts. Nevertheless, they state that designers should be free to use whatever methods they feel that support their innovation. (2006, 64.)

In the PPC model, concept generation goes on after concept development by presenting ideas - first roughly the outlines, and later as specifically as possible by iterative further development processes.

Finally, the final concepts are presented and evaluated as ready and specific as possible to a decision-making team. The concept evaluation process is suggested to be multidisciplinary, yet it is as seen challenging due to idioms and different ways of describing specific things and details in special fields of knowledge. Keinonen &

Takala emphasize the importance of concept evaluation, and reveal different ways of implementing it.

Keinonen & Takala (2006) state: “(...)it’s important to pay attention to strategic product decision-making and concept evaluation in order to ensure that the company’s best competence capital is used in products and that the time to market is short.”

In general the writers of Product Concept Design have noticed that often new product concepts just appear out of the blue to product development personnel from decision-makers of the company. In this situation it is evident that the personnel and designer etc. are bound to go forward with that idea.

Keinonen & Takala have listed some requirements that decision-makers are likely to focus on when the concepts are explicated and communicated to the organization to execute the concept. Below a few of them listed:

- Fit of the concept with the corporate and/or divisional strategies
- Size of opportunity, such as financial impact
- Market or customer needs and benefits
- A business plan that specifies a specific win/win value proposition for value chain participants
- Commercial and technical risk factors
- Environmental, health, and safety “showstoppers”
- A project plan including resources and timing
- On top of those listed requirements, the process might be iterative at this point too, so the evaluation phase might include re tuning to NCD phase, and then coming back to evaluation phase with a more compelling and strengthened concept.

In comparison, in the PPC model evaluation is more integrated into the model itself, and it seems that more early concepts can be dealt in with that particular

process. Furthermore the NCD model focuses the evaluation in checklists, which were Keinonen & Takala’s main concern. Keinonen & Takala present team evaluation as an answer to matrix and checklist evaluation methods. The Team evaluation technique takes qualitative information into account, better in their opinion.

Team evaluation is based on expert or heuristic evaluation, but they can be (and often are) supported by checklists. The method and technique of team evaluation is often prescribed in order to improve the documentation of the decision process as well as to prioritize the concepts. “(...) The aim of the team evaluation processes is to collect the views of each individual expert and the opinion shared by the entire team.” (Keinonen & Takala 2006, 68.)

The writers point out that the team evaluation is more informal than quantitative comparison methods, but there are some points to take into consideration:

The evaluation should involve experts from a variety of areas.

The criteria needed to evaluate the concepts should be available and understandable to everyone.

The criteria and the process should be inspiring and stimulating, and they must not dismiss promising but unfinished ideas.

Concepts should be presented in a way that allows a multifaceted evaluation that focuses on fundamentals.

In discussion, team evaluation is only as good as the evaluators, and the evaluators should have the support from the people financing the further development. Also if the checklists are not used, the experts of each field should be present, as well as members of the financing and decision-making bodies. As a critique, if every aspect is to be taken into consideration and discussion, it doesn’t ensure that all of the aspects are tangible in the final product. (Keinonen & Takala 2006, 70.)

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# CONCLUSIONS

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This thesis has presented theories and frameworks that have shown how trend information and product development can be tied together as one coherent framework in order to integrate trend and socio-cultural information. The suggested master framework is presenting the sets of tools and frameworks that will incorporate trends more efficiently with the whole concept development process.

The exploration of trends and product development started with a presentation of the entire suggested framework that summarized the whole Master's of Arts thesis into a coherent master framework. The framework suggested that trend information could be better taken into account in the whole of corporate behaviour.

The master framework suggested and recommended tools and frameworks for design managerial use to incorporate trend and socio-cultural knowledge into product concepts that are focused on the consumer market.

Afterwards the theoretical background of trends and knowledge were introduced and explained.

Basic theories and concepts of future research were introduced to give an understanding of basic theories concerning the future research area. The trend theory explained that trend theories and systems are crucial to understand in order to give insight and basic professional knowledge in the field of trend research theories.

An explanation of social systems and their diffusion theories depicted the basic systems and functions that drive the groups of people and their behaviour. Also the diffusion of innovations and the diffusion of trends were explained to give a coherent picture of a system that affects people in the socio-cultural environment we live in.

Understanding how masses' socio-cultural lives change gives concept designers and trend researchers information on consumers' needs and desires which can be an initial spark for new product concepts and features.

Knowledge and systems were explained in order to give a comprehensive picture of how data can be gathered, and how data can be categorized into different knowledge types. Also different types of knowledge were introduced in order to explicate the manifold levels of explicit, implicit and intuitive knowledge that trend forecaster should possess in order to succeed in the industry. Later the different types of networks were introduced in order to give a picture of the vast and global network of trends and ecosystems that he or she should be aware of.

Understanding how data is turned into knowledge and what kinds of knowledge systems surround us, is important for perceiving and analysing the surrounding environment.

After the Future and Trends, and Knowledge and Networks chapters compiled the theoretical background section of the suggested framework, practical Trends to product concepts were introduced to apply the prior learnings.

Trends to product concepts introduced "Cross-cultural analysis", "Evidence wall", Trend Thesis " and "Trend cartogram" as suggested tools of analysis in order to analyze and incorporate trends into the product development processess. Additionally, the "SCC model" was introduced to give extra knowledge on consumers and their desires when designing products.

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# CONCLUSIONS

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The "Knowledge to products" chapter introduced how designed future product concepts can be executed into products, and also introduced a theoretical background to product development processes - especially to the Fuzzy Front End phase of the development. Also uncertain development projects (FFE) were compared with more certain ones (NPD).

The Fuzzy Front End is an umbrella of ideas that pass cycles of iteration in order to transform into a business case or a new product - it is also uncertain and iterative by its nature.

Finally Keinonen & Takala's PPC model was explained in order to introduce and summarize product concept development in a coherent framework on a high level to give an overall picture how the whole process can be executed and understood.

Evaluation of the concept is considered as one key phase in the PPC model when designing product concepts. Recommendations on focus areas in evaluation are explained. The evaluation process is evaluating the concept from multiple viewpoints and focus areas - for example concept evaluation seeks to cover the key areas and give designers and trend researchers information on the attributes to focus on.

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### CHARTS AND FIGURES:

Chart 1: Suggested framework to integrate trends to product development

Chart 2: Birth and death of a trend

Chart 3: Trends life cycles (Nuutinen 2004)

Chart 4: Diffusion of innovations (Rogers 1962)

Chart 5: Trend creators and trendsetters (Vejlgaard 2008)

Chart 6: The Diamond-Shaped trend model (Vejlgaard 2008)

Chart 7: Social groups - Comparison chart (Vejlgaard 2008 & Rogers 1962)

Chart 8: The Rogers model (Rogers 1962)

Chart 9: The Bass model (Bass 1969)

Chart 10: The Bass model in cumulative form (Brown 1992)

Chart 11: Brown's s-curve And modis's s-curve (Brown & Modis 1992)

Chart 12: Distinctions between knowledge types (Nuutinen 2004)

Chart 13: Explicit, implicit and tacit knowledge in relation to trends, driving forces and megatrends (Nuutinen 2004)

Chart 14: The SCC Model (Aula et al. 2005)

Chart 15: evolution of concept development (Rothwell 2004)

Chart 16: Objectives of concept development (Keinonen & Takala 2006)

Chart 17: Waterfall model (Keinonen & Takala 2006)

Chart 18: Fuzzy front end and NPD process (Koen et al. 2002)

Chart 19: Comparison between FFE & NPD (Koen et al. 2002)

Chart 20: NCD model (Koen et al. 2002)

Chart 21: Process of product concepting (Keinonen & Takala 2006)

Figure 1: PESTE

Figure 2: Roadmap

Figure 3: Hierarchical network

Figure 4: Collaborative network

Figure 5: Distributive network

Figure 6: Cultural brailing

Figure 7: Cross cultural analysis

Figure 8: Evidence wall

Figure 9: The trend thesis

Figure 10: Trend cartogram

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