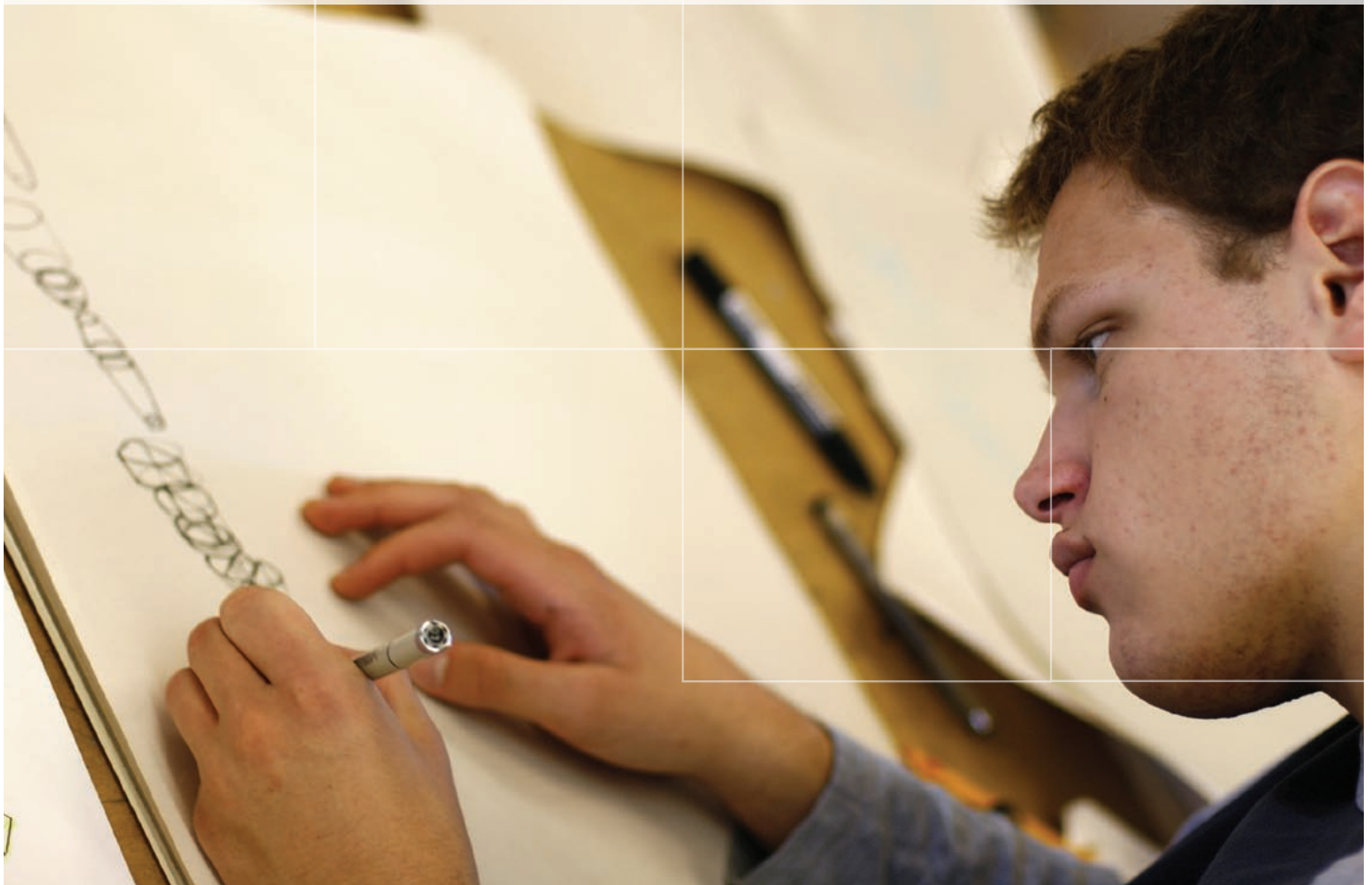


Creating new concepts, products and services with user driven innovation

- User driven innovation methods take on four main shapes
- Radical innovations can be obtained in the form of new concepts, products or services
- More and more companies in the Nordic countries are embracing user driven innovation methods in their new projects



Participants

Denmark

Tanja Bisgaard, Manager of Policy Analysis, **FORA**

Casper Høgenhaven, **Høgenhaven Consulting**

Lise Andersen, Analyst, **FORA**

Josefine Campbell, **Campbell & Co.**

Louise Marianne Lempel, Research Assistant, **FORA**

Tobias Ritzau-Kjærulff, Research Assistant, **FORA**

Finland

Turkka Keinonen, Doctor of Arts, **University of Art and Design Helsinki**

Marjo Mansen-laalo, **research assistant**

Norway

Jan Capjon, Professor, Oslo School of Architecture and Design, **Institute of Industrial Design**

Håkan Edeholt, Oslo School of Architecture and Design, **Institute of Industrial Design**

Jørn Knutsen, Oslo School of Architecture and Design, **Institute of Industrial Design**

Marie Sneve Martinussen, **research assistant**

Sweden

Lars Sandberg, Innovation coordinator, **DOTANK/THE PACKAGING ARENA**

Thomas Edman, **DOTANK/THE PACKAGING ARENA**

Baltic countries

Peeter Raudsepp, **Geoconsult**

Bjørn Hjulman, **Geoconsult**

Title Creating new concepts, products and services with user driven innovation		
Nordic Innovation Centre (NICE) project number: H08214		
Authors Tanja Bisgaard, Casper Høgenhaven		
Institution(s) FORA		
Abstract User driven innovation is emerging as one of the successful ways of creating breakthrough innovations for companies and organisations. Based on our research we have been able to identify four generic methods of working with user driven innovation: user test, user exploration, user innovation and user participation. Even though these methods might vary slightly from one company to the other, they have some basic features which are common. When working with users, companies might chose to include the users either directly or indirectly in the innovation process, depending on what type of knowledge the company wants to obtain from the user. Users' ability to communicate and express their problems and needs varies greatly and will also influence the user driven innovation method chosen by a company. Sometimes users are fully aware of what problems they face and which needs they experience, while in other cases they will not be able to communicate or articulate what they are experiencing. Based on this framework we interviewed companies in the Nordic and Baltic countries about how they work with user driven innovation, what innovation outcomes their achieved and how satisfied they were with the processes during the project. Furthermore we wanted to get an understanding of whether there were any differences among the Nordic and Baltic countries regarding the methods they used by mapping the user driven innovation activity among companies and organisations.		
Topic/NICE focus area User driven innovation		
ISSN	Language English	Pages 97
Key words user driven innovation methods, innovation process, innovation outcome, mapping Nordic and Baltic countries		
Distributed by Nordic Innovation Centre Stensberggata 25 NO-0170 Oslo Norway		Contact person Tanja Bisgaard Manager of Policy Analysis FORA Langelinie Alle 17 DK- 2100 Copenhagen Denmark Tel: + 45 35 46 63 84 Email: tb@ebst.dk www.foranet.dk

Executive Summary

User driven innovation creates successful new concepts, products and services for companies and organisations. By working together with users and including them in the innovation process in order to tap knowledge about their problems and needs, successful and profitable innovations can be developed. And this goes for almost all types of companies – small as well as large ones, and within all kinds of industries.

Innovation is not only about developing the latest technology or having the highest R&D budgets in industry. The complicated nature of innovation today renders it almost impossible for a single firm to achieve the next breakthrough innovation on its own. Nowadays firms need to open their innovation process and include their users, their partners or their suppliers in order to ensure that they snap up the next bright idea relevant to the company.

One way of ensuring that ideas and knowledge from outside will find its way in to the firm, is by including users in the innovation process. By tapping tacit knowledge from users and understanding users' needs and the challenges they face, valuable insights can be gathered by the company at the front end of the innovation process. By carefully planning the user driven innovation process, projects can be run and managed to yield higher success rates. But while user driven innovation can be used for companies to achieve successful innovations, it is a paradigm that cannot stand on its own, isolated from other forms of innovation that take place in companies. For company managers to successfully run innovative companies, other aspects must also be considered in their quest for great innovations.

Companies and organisations can work with user driven innovation in many ways. We have grouped the methods into four generic categories looking at it from a company perspective with the goal of commercialising the innovation; user exploration, user participation, user innovation and user tests. This framework was used for analysing the empirical data collected in the Nordic and Baltic countries.

User driven innovation is gaining ground in the Nordic countries. An innovation paradigm which until recently has been used only in small pockets of the business world – both geographically and in relation to industry type – is now finding its way into more and more companies and organisations. Our research enabled us to interview almost 60 companies and organisations in the Nordic and Baltic countries which had completed user driven innovation projects that had been launched on the market. We were invited in with great enthusiasm by companies, and their willingness to share information with us about their innovation projects enabled us to learn a lot about user driven innovation processes.

We were able to determine that companies and organisations engaging in user driven innovation projects achieve successful outcomes in the form of new concepts, new products or new services. The innovation “hit rate” seems to be rather high for user driven innovation projects, indicating that involving users in the innovation process yields good results. Furthermore, the majority of the companies and organisations

that had completed user driven innovation projects were very satisfied with the outcomes of the projects.

We saw the early contours taking shape of company characteristics concerning the use of the different methods of user driven innovation. Half of the companies interviewed chose to work with external consultants when initiating and completing a user driven innovation project. These types of projects also receive a fair amount of attention from the companies' top management – in 25% of the projects, it was top management that initiated the project.

Regarding the type of user driven innovation methods which were used among companies and organisations, the user exploration method was the most popular one. More than 60% of the innovation projects had employed this method at some stage during the innovation process. The methods varied among industry types. In the life science industry in particular, there is a high occurrence of the user innovation method. Users that were involved in the innovation process were included due to their specialised knowledge about using advanced equipment – knowledge only held by users of such equipment. The user exploration method was popular across most industries, and no particular company characteristics seemed to prevail. The user participation method was used by a limited amount of companies, but was particularly popular within the ICT industry. The user test method was employed by companies across all industry types.

While user driven innovation is becoming popular amongst the Nordic and Baltic countries, there is a variation in the popularity of methods used across countries. Denmark and Finland are the Nordic countries where the user driven innovation activity is the highest, and where the user exploration method is the one used more frequently than the other methods. The user participation method is also used more frequently in Denmark and Finland than in the other countries. In Norway and Sweden the user driven innovation projects used the four user driven innovation methods less compared to Denmark and Finland. Even though their frequency is lower, the user exploration method and the user test methods are both popular among companies. The Baltic countries have a lower activity of user driven innovation, but the most popular way of working with users is through the user innovation method and the user test method.

In addition to data from our interviews, we have been able to take a look at the newest statistics from the Danish part of the European CIS survey where some questions related to user driven innovation were included in 2008. The early results show that Danish companies working with user driven innovation have a higher growth in turnover compared to companies that do not work with user driven innovation. In addition, companies working with methods of user driven innovation are more innovative, achieving a higher amount of sales coming from innovation that are new to the market or new to the world.

Index

8	Preface
10	Introduction
12	Part 1
13	User driven innovation from a company perspective
17	Forms of user driven innovation
17	1_User test
20	2_User exploration
23	3_User innovation
27	4_User participation
32	Part 2
33	How we did it
35	What the companies said
35	Interview results
35	Type of companies
38	The user driven innovation process
41	Innovation outcomes
43	Characteristics of companies
44	Summary
46	User driven innovation in Denmark
54	User driven innovation in Finland
63	User driven innovation in Norway
70	User driven innovation in Sweden
77	User driven innovation in the Baltic countries
84	Summing up: mapping user driven innovation
86	Further work
89	Appendix
96	References

Preface

This study has been conducted by FORA and a consortium of Nordic and Baltic partners for Nordic Innovation Centre. The Danish Enterprise and Construction Authorities have also contributed to the project.

FORA is responsible for writing the report, while our partners have contributed with country specific data in the form of company interviews.

The making of this report would not have been possible without the help of a series of key individuals, all with the greatest insight into the subject, and from the companies who have been willing to participate in our interviews. We thank the people in the various companies we have interviewed:

From Denmark

Lau Kofoed Kierstein . **PlayAlive**
Janus Rau Møller . **IO interactive**
Linda Yvonne Friis . **Danisco**
Michael Qvortrup . **Danfoss**
Anders Vognsen . **Nordea**
Robert Schønrock Nielsen . **Codan**
Michael Laris . **Kompan**
Michael Hansen-Nord . **Odense Universitets Hospital**
David Gram . **SAS**
Flemming Møller . **R82**
Lise Walborn . **Food Lab DI**
Serban Cornea . **Mutopia**
Cephas Howard . **LEGO Group**
Paal Smith Meyer . **LEGO Group**
William Thorgood . **LEGO Group**
Karsten Juel Bunch . **LEGO Group**
Steen Kyster . **AM Danmark**
Michael Sørensen and Nina Wetcke . **Danfoss**
Lene Hartig Danielsen . **Århus Kommune, Borger Service**
Merethe Stjerne Thomsen . **Grundfos**
Bente Hornbæk . **Skanderborg Kommune**
Brit Schøt - Nielsen . **Vestforbrændingen**
Per Ole Melien . **Coloplast**
Karsten Nielsen . **Fyrværkeriforening**
Eva Nautrup . **Tulip**
Hasse Jørgensen . **Copenhagen Airport**

From Estonia

Andres Hunt . **Tallink**
Heikki Haldre . **Fits me**
Hillar Tork . **Modesat**
Ragnar Sass . **Uniteddogs**
Sven Heiberg . **Cybernetica**

From Finland

Juka Kanerva . Planmeca
Mikko-Pekka Hanski . Bonnier Group
Hannu Kuoppala . KONE
Virpi Roto . Nokia
Jari Ijäs . Nokia
Maija Itkonen . Powerkiss
Pekka Kumpula . S.E.O.S.
Tiina Taskinen . Suunto
Tero Pihlajamäki . Planmeca 2
Mika P. Nieminen . TTK
Raino Vastanmäki . Adage Usability
Anu Kankainen . HIIT

From Latvia

Maja Abolina . Stenders
Lotte Tiesenkopfa . Madara Cosmetics

From Norway

Andren Göran . SAS
Lars Thøgersen . CPH Design/ Crisplant
John Rugelbak . Telenor
Mona Jakobsen . Telenor
Marius Andresen . LESS
Marianne Støren Berg . KODEdesign
Michelle Wentworth . Jordan
Niels Bendik Munthe-Kaas . Gjensidige Forsikring BA
Øystein Johnsen . Falck Igel AS

From Sweden

Mats Fridh . ALMI företagsparnter
Jan Säll . Logica
Bengt Järehult . SCA
Thomas Johansson . Elektrolux
Björn Wennberg . Delaval

We would also like to thank the experts who have shared their knowledge with us:
Jørgen Rosted, Director and founder of FORA
Axel Rosenø, Research Fellow at Copenhagen Business School
Steffen Jöhncke, Senior Advisor at University of Copenhagen, Institute of Anthropology

Lars Bo Jeppesen, Associate Professor at Copenhagen Business School
Professor, Jacob Buur and Jesper Pedersen from SPIRE at the University of Southern Denmark
Heather Martin, co-founder of Copenhagen Institute of Interactive Design (CIID)

We also thank Klavs Birkholm for his assistance and patience in guiding us through the pitfalls of report writing.

FORA,
Copenhagen January 2010

Introduction

The purpose of the work presented in this report is twofold. The first part of the report is used to create a framework for the different methods that exist for companies and organisations to work with user driven innovation. In the second part of the report we present an overview of how companies in the Nordic and Baltic countries work with user driven innovation.

Regarding the first part of our work, our goal has been to create a framework which can be used to depict and describe the generic methods companies and organisations use when they work with user driven innovation. Even though these methods might vary slightly from one company to the other, they have some basic features which are common. When working with users, companies might chose to include the users either directly or indirectly in the innovation process, depending on what type of knowledge the company wants to obtain from the user. Users' ability to communicate and express their problems and needs varies greatly and will also influence the user driven innovation method chosen by a company. Sometimes users are fully aware of what problems they face and which needs they experience, while in other cases they will not be able to communicate or articulate what they are experiencing. We have grouped these different ways of working with users into four main methods which we describe in more detail in the following chapter. When should companies chose one method over another? Do companies use more than one method during an innovation project? And are some methods more popular than others?

The purpose of the second part of the report is to make a first attempt at quantifying some aspects of user driven innovation. There has been a lot of talk about the benefits of working with users, but not many hard facts exist yet. How many companies are actually working with user driven innovation? What results do these companies achieve regarding the development of new innovations – are they able to achieve a higher rate of “radical” innovations such as new concepts, products and services? How successful are companies working with user driven innovation? Is user driven innovation popular in some industries only, or is it an innovation form that can be employed by any company or organisation? Furthermore we wanted to get an understanding of whether there were any differences among the Nordic and Baltic countries regarding the methods they used by mapping the user driven innovation activity among companies and organisations. During the last five years the interest for user driven innovation has increased radically in the Nordic countries. Especially Denmark and Finland have experienced comprehensive user driven innovation activity, but also Norway and Sweden and to some degree Estonia and Latvia are moving towards a larger focus on user driven innovation.

The two parts of the report might seem very different, but there is a close link between them. The second part of the report uses the user driven innovation framework described in the first part as a template for grouping and analysing the data collected by our project partners and ourselves. In other words, the “theory” described in part one is used to create a framework for the empirical data collected.

This study is a further development of the work summed up in “User-Driven Innovation – Context and Cases in the Nordic Region” which is a project conducted for Nordic Innovation Centre (NICe) from June 2008.

There is however some very important differences between the scope of the 2008 report and this one. The report from 2008 describes the user driven innovation activity in Denmark, Finland Norway, Iceland and Sweden through qualitative descriptions and case studies. This study seeks to describe all completed user driven innovation projects in the Nordic and Baltic countries by collecting quantitative data.

User driven innovation from a company perspective

User driven innovation is a popular term at the moment, almost a buzz phrase – many different ways of working with users are being called user driven innovation, some of them more justified than others. In our research focus is placed on how companies systematically can work with users in the innovation process with the aim of developing successful innovations for commercialisation.

The challenge for all firms is thereby to create the successful innovations that will lead to profitability and growth. Statistics from the USA shows that within the last decade the number of new consumer products introduced has grown at a compound annual rate of about seven percent¹, while sales have only grown about three percent. In other words, firms are not always able to obtain the successful innovations that lead to increased sales of their products or services.

¹ Kandybi, A & M. Kihn, Strategy + Business, 2004

² New Nature of Innovation, FORA, 2009

The successful innovations that companies seek are often the “radical” innovations which can lead to new concepts, products or services that will increase market shares and ensure sales in the long term. A new concept for a company or organisation can be considered as a new platform that enables the development of a string of new products and services. The new concept in itself is not necessarily a product or a service.

Innovative firms today can no longer rely on getting all the good ideas on their own. In other words, companies have to be smart about understanding innovation if their efforts are to result in profitability and growth for the company. They have to look beyond the traditional confines of their innovation sources. Ideas might come from their users, their business partners or from somewhere else outside the company. This requires a new way of thinking for company managers, based on the fact that innovation increasingly will be taking place in an open and shared environment². User driven innovation is a new and important source of innovation among companies and organisations that enables them to obtain “radical” innovations by understanding their users.

The better a company understands its users’ needs and the problems they face, the better a solution will the company be able to offer their users. In that sense their innovation “hit rate” will increase and rely less on the “trial and error” method. This should also mean that companies will be able to plan the innovation process and include the vital studies, analysis and so on to increase the amount of successful outcomes. However, this is not equivalent to being able to plan what results actually come out of the innovation process.

The user insights gives companies vital information about what problems users are experiencing – users acknowledged and unacknowledged needs – and gives the company the possibility to understand what users really want, but not always are

able to communicate or articulate themselves. By acting on these insights, companies will increase their probability of a successful innovation outcome. User knowledge is therefore vital for a company in the search for new concepts, products and services and thereby for its future growth and profitability.

Some companies have already realised that one way of launching successful products or services is by understanding their customers. Not in the sense of understanding how to tempt the customers to buy more of something – but understanding how to provide the customers with solutions that solve their problems and fulfil their needs. To be able to understand their customers and users in this sense, companies must involve them earlier on in the innovation process – a lot earlier on than previously. By including users in the innovation process, companies will be able to tap knowledge from the users – tacit and hidden knowledge which is hard to codify, as well as explicit knowledge which is easy for the user to communicate and articulate. If companies can get this right their chances of coming up with successful innovations will increase. Companies will have to make a strategic decision about how to involve users in a planned innovation process.

While our focus is on how companies can include users and tap their knowledge in the innovation process, user driven innovation can not stand on its own, isolated from other forms of innovation that occur within firms and organisations. For companies to remain competitive and innovative there will be several other aspects that also must be considered by companies in their quest for great innovations.

The user driven innovation process

Most companies that work with users when developing new products, services and so on, use an innovation process with the same generic steps. In our work we have described this process as an innovation wheel consisting of eight steps where companies can move between the steps, not necessarily following a chronological order, and in some cases iterating between steps (for more in-depth information on the steps in the innovation wheel, please see User driven innovation: Context and cases in the Nordic region, NICe 2008).

The innovation process can be divided into two phases – the WHAT phase and the HOW phase.

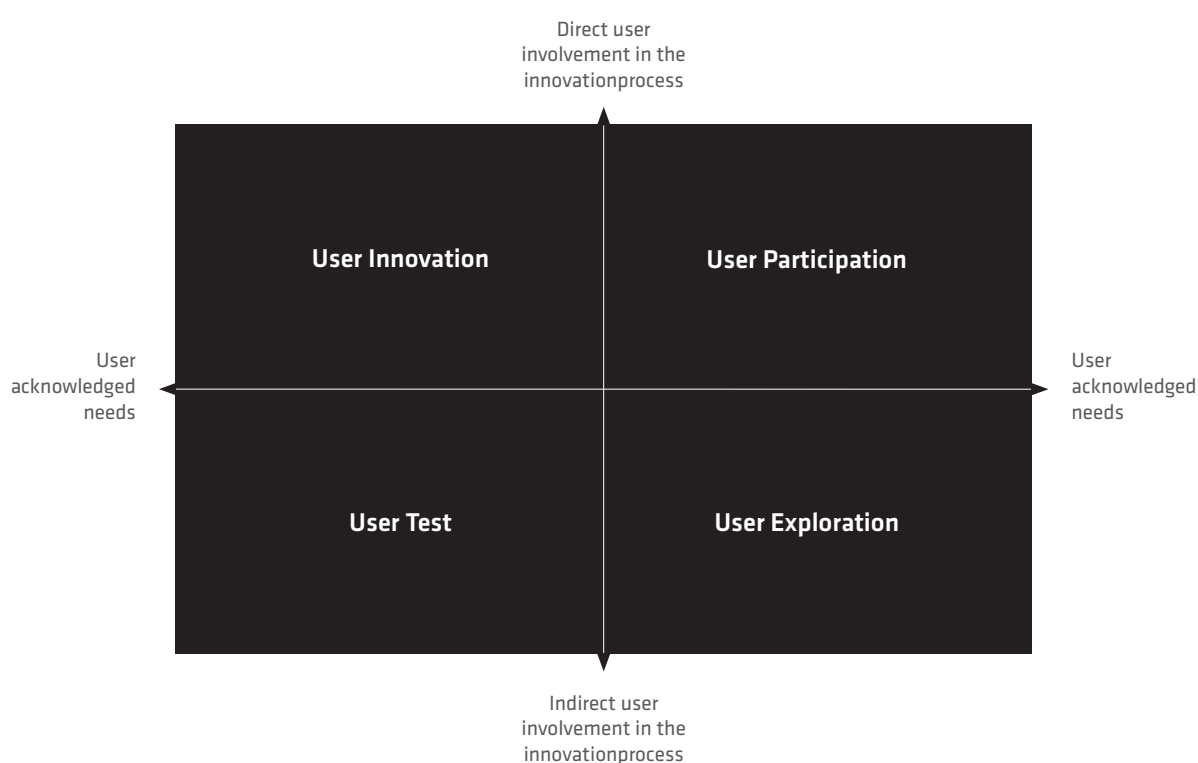
In the WHAT phase companies are looking to answer the question of WHAT to offer their customers and users. In order to answer that question, companies will have to understand what problems and needs their users are experiencing. At this early stage of the innovation process (often termed the front end) companies will have to tap tacit knowledge from their users – knowledge which is hidden and hard to express, let alone to communicate for the users. It is hard for the users to find possible solutions to the problems they face, because they do not know what possibilities are available to solve the problem. At this point in the innovation process it is therefore not very useful to ask users directly what solutions they need.

In the HOW phase companies are trying to answer the question of HOW to offer the solution to their users. In this phase specifications of the product or service are to be developed. At this stage of the innovation process companies often have most of the

knowledge in-house. However, some companies involve users also in this phase since users in some cases might be experts with more advanced knowledge than what can be found within the company. At this point in the innovation process users' knowledge and articulation of their problems and needs are clear, they can be communicated and they can be taken at face value by the company.

In our research we found that companies work with user driven innovation using methods which can be grouped into four generic categories. There are two dimensions that categorise the four methods. Users can either be directly or indirectly involved in the innovation process, depending on what questions the company seeks to answer. The knowledge that is being tapped from users, can either be related to acknowledged needs and a clear understanding of what are the problems that the users experiences, or to unacknowledged needs where the user is not aware of what the problem is or cannot communicate it and articulate it. Based on these two dimensions we have defined four generic methods of working with user driven innovation which is depicted in the model below: user exploration, user participation, user innovation and user tests (see figure 1). An innovation project taking place within a company might use more than one of the four user driven innovation methods throughout the entire innovation process.

Figure 1 User driven innovation from a company perspective



Source FORA, 2009

The grouping of the four methods should be thought of as a basic framework of the different ways of working with user driven innovation from a commercial perspective. Within each category there will be variations of the methods, but never the less, each method has its specific characteristics. In the empirical part of the study we use this framework in the interviews with the companies. We are thereby able to identify which methods have been used for the user driven innovation projects and thereby which methods seem to be the most popular ones. This is described in more detail in Part 2.

Forms of user driven innovation

In order to understand the model for working with user driven innovation, we describe each of the four quadrants in depth, and illustrate with a case study.

While our model shows how companies can work with users in the innovation process to develop innovations with the aim of commercialising, there are also examples of users that innovate on their own for their own gains and purposes. We imagine that if our model continued upwards on the “direct user involvement” axis, the company perspective would eventually end, and the individual perspective would take over. Here we find users innovating for themselves, such as lead users, user communities and users taking part in open source collaborations.

1_User Test

Getting users to test a product or service is something companies have been doing for decades. This form of testing takes place towards the end of the innovation process. The company has already come up with an idea which has been shaped into a product or a service, and the user or potential customer is brought in once the prototypes have been made to verify whether they would be interested in purchasing it. Based on the feedback from user, the company will make minor adjustments before launching the product or service on the market. Any larger adjustments at such a late stage in the innovation process would be too costly. Therefore, these insights from users will in most cases result in small and incremental innovations.

³ Pioneered by Arthur Nielsen, founder of AC Nielsen Company in 1923.

User tests can also take place after a product or service is launched on the market, where the purpose of the tests is to determine how to get customers to buy more of what the company is offering. Companies will have to understand user behaviour in relation to the products or services offered, and find out what it will take for the user to consume more. However, this takes place after the innovation process has been completed, and is therefore not a part of our model.

History

Since the middle of the 20th century companies have been keeping track of how popular their products were compared to the products of their competitors³. It was all about being able to measure which company had the largest market share – this would indicate that customers preferred their product to their competitors’.

Companies that were able to understand whether their products were popular, would know when a product would have to be improved or taken off the market as market shares fell. Then the product would have to be improved in some way or another, or a new product would be produced and brought to market. However, this type of user behaviour was only used by the company to understand what should be done in respect to selling a product – after it already was produced.

All companies today will have to keep track of their market shares in order to monitor the performance of their products or services. It is a basic skill needed in order to survive on the competitive battle field. Successful companies are all experts at mastering the basic marketing methods that exist today.

In order to prevent failed product launches, companies will also take in users to test a product before it is available to the general public on the market. However, in these types of user tests, users are never involved early on in the innovation process. Users are merely presented with the final concept, where only the finishing touches remain. In that sense, users' knowledge and needs do not have a large influence on determining what should be made by the company.

In the last few decades companies have also become more clever at understanding how they can sell more of the same product or service to customers. They do a lot of research on understanding consumer behaviour – how do consumers shop and how do they behave at home when using certain products or services.

As companies today are mastering the skills of marketing methods, some companies are exploring new ways of understanding user needs and tapping knowledge from them which can be used earlier on in the innovation process.

Main tools

There are many different tools available when testing products or services on users in the final stages of the innovation process. Some of the most common ones are focus groups, conjoint analysis and multi-attribute analysis. What these tools have in common is that they are used to evaluate and refine rather than to create new innovations.

The role of the user

When companies involve users in testing of their products or services, they are asking users questions which are related to users acknowledged needs. The users are aware of their preferences and dislikes, and are able to communicate them to the company's team.

The users are involved very late in the innovation process, and are not able to influence the outcome of the innovation. The user involvement might in some cases lead to incremental innovations – small improvement to the product or service.

Case_Incorporating prevention in insurance



Codan Forsikring is a Danish insurance company located in Copenhagen. The company has roots all the way back to 1781 and is today 100 % owned by the British RSA group. Today is Codan the third largest insurance company in Scandinavia with the two flagship companies Codan in Denmark and Trygg- Hansa in Sweden. Codan has between 3 - 4.000 employees.

In 2006 the Department of Strategy, Marketing and Communication (SMC) decided that an effort should be done in order to improve the relation between the insurance company and its customers. It was decided that an innovation project should be initiated with the purpose of finding ways to improve the understanding of the customers and incorporation this into Codan's products on the Danish market. Codan collaborated with private external consultancies and Dansk Kundeindex at the Aarhus School of Business about the project.

The project started out by collecting data from different Scandinavian customer databases. Furthermore, a survey concerning insurance company's image amongst customers was conducted. The data collected from the databases and the survey was analysed and arranged in different theme groups.

The preliminary study was based on more than 40 interviews with customers. The interviews were conducted either in customer's homes, offices or over the phone. The interviews were centred on the different themes in order to test their relevance with customers.

The main result from the project was that customers were just as focused on the aspect of prevention as they were on the actual healing. Furthermore, the data showed that customers would be willing to pay more for their insurances if prevention played a larger role in the insurance. The results from the project pointed at prevention as an area where insurance companies and customers have converging interests since neither the insurance company nor the customers are interested in damage. In other words, it could be commercially interesting for Codan to focus on prevention in the product portfolio in the future.

After the results were a clear business case was made in order to convince Codan's top management about the perspectives of incorporating prevention in the company's product portfolio. Codan Forsikring evaluates that the economic outcome of the project has been high and the company using prevention to build good relationship with customers.

2_User exploration

Amongst the approaches that companies and organizations use for identifying the users acknowledged and unacknowledged needs no methods have been more used as an expression for user-driven innovation than user exploration.

History

User exploration has roots in psychology as well as ethnology, but the approach is first and foremost rooted in anthropology. User exploration's main method is based on ethnography, which can be described as qualitative description of human and social activity.

Ethnography is not a new field. Social scientists have been using the methods to some degree for a long time but even though ethnography has been used by social scientists since the last decades of the 19th century the use of ethnography seems to have expanded very much since then. While ethnography in its early days was a demanding academic discipline primarily focussed on the study of foreign cultures, many anthropologists today have moved from the universities into the corporate world. Today more and more companies have started exploiting their methods for commercial purposes.

Leading Scandinavian companies like Electrolux, LEGO and Telenor are starting to use ethnography systematically in their innovation process as a way of obtaining insights about users acknowledged and especially unacknowledged needs. The companies use the insights to develop new business concepts, products, processes and services. However, ethnography can also be used at a later stage in the innovation process for testing users understanding of and reaction to different tasks and problems.

Today the trend of using ethnographic tools commercially as an inspiration and guide to innovations amongst companies is seen all over the western world and to some degree in Asia. However the use of ethnography as a tool to conduct advantageous innovations seems mostly used in the Nordic and Anglo-Saxon countries.

The use of ethnography as an enabler for innovation in the Public sector and in NGO organizations is seen only in the Nordic countries and in the UK.

Some main user exploration methods

There are many different ethnographic tools used in ethnographic research. In our research we have come across more than 20 different ethnographic tools that have all been used in the innovation process by Nordic and Baltic companies and organizations.

The overall purpose of ethnography in a business context is to observe and understand users and their actions and their habits in a cultural context. One of the most important aspects of exploration of users is to obtain knowledge about users needs by observing them and thereby tapping tacit knowledge from the users which they are not able to articulate or communicate.

In general companies and organizations use ethnography in two phases of the innovation process. Sometimes the companies use **observations of users very early**

on in the innovation process shortly after the company has identified an innovation opportunity to get inspiration for new innovation directions for the company to follow in the future. Other times user exploration is used in an innovation process as an efficient and relevant tool is the **test phase**. Companies and organizations often use user explorations as an important tool to verify whether users are responding to the product or services as intended or if adjustments and sometimes new concepts should be needed.

A range of different ethnographic tools can be found that are used for identifying user's needs. Some of the most commonly used ethnographic tools are video ethnography, different kinds of user diaries and shadowing of users. Many of the observations is done by these tools are often followed by personal interviews.

When conducting the interviews, it is important to beware of the fact that people often say one thing, but mean something else. The answers from the interviews should therefore not be taken at face value.



The role of the users when observed

When working with user exploration users are observed and studied in their everyday setting. The purpose is to understand the user's behaviour when he or she acts as he or she always does. Observations of users can take place in user's home, at their workplace or during their daily routine such as a shopping situation.

Case_The Spider

PlayAlive – using user insights to create playground equipment

PlayAlive A/S is a Danish manufacturer of playground equipment located in Vejle. The company was established in 2008 as a result of a project based on a user driven innovation process. Today the company has a handful of employees and a network of twenty sales- and technical experts all around Europe. The core idea behind PlayAlive is to create relevant playground equipment for children by mixing traditional playground equipment with modern technology.



The company was started by a group of people that were affiliated to the playground equipment manufacturer Noles A/S in Bording. All members of the group were connected to the same school. In 2005 this school experienced problems with motivating the children to play in the schoolyard and it contacted Noles A/S for help. The school wanted to develop a new playground containing equipment that would make the children appreciate playing outdoors again. Noles A/S started working on the project, but after a short time the project group decided to break out of Noles A/S and start their own company – PlayAlive.

To get insights on how to build the ideal playground equipment able to motivate children, a research team from the newly formed PlayAlive visited the school once again. PlayAlive observed the children playing at the school's playground for a whole day using video, photos and taking notes to document the observations. Beside the

observations of the children the research team conducted interviews with teachers and held a workshop where they invited two dozen children to get inspiration and insights for the project group. At the workshop the children were asked to draw their ideal playground and the children discussed together with the research team members present what would encourage them to use the playground more.

After visiting the school the results from the observations, workshop and interviews with the pedagogues were interpreted internally by PlayAlive. After interpreting the collected data the research team got two very important findings:

The first finding was that the children would like the playground equipment to be the platform for role-playing. The collected data showed, that children like to play the same games on the playground as they do on new media platforms like computers, game consoles etc. The children could be motivated to visit the playground if they could play games reminding them of the games they are playing on new media. An important part of the similarity to computer games etc. would be to make elements on the playground come alive in the shapes of animals and creatures, in addition to creating a futuristic environment.

The second finding was centered on interactivity. The children of today are not physically active enough and this shows on their weight. New playground equipment should stimulate physical movement and exercise, thereby helping children to maintain a normal weight. To this end interactivity was found to be very important. Children of today are used to technology and often consider technology as a necessary element of play.

Based on these findings PlayAlive developed three concepts that were transformed into five interactive playground equipment prototypes, one of these being a spider lookalike “jungle gym” which contained technology and was named Spider. The new prototypes were placed on a school in Vejle. The testing showed the research team what functioned and what did not. The product development process has included several new prototypes and tests and after a couple of years the final product concept was ready.

After several test and prototyping phases the Spider was ready for sale. It contains both the role-play elements of a futuristic look and the form of an animal, and it stimulates interactivity through technology. The Spider becomes interactive when the children play in it through 18 electronic sensors that are placed in different locations on the jungle gym. The Spider contains several computer games that are activated when the children touch one of four satellites on the Spider’s body.



Picture The Spider jungle gym

The Spider received the prestigious Engineers product price in 2006, and is today sold in all of Europe through one of the largest European retailers. PlayAlive expects the Spider to be the company's leading product in the years to come.

3_User Innovation

User innovation takes place when companies work closely together with users and involve them as part of the innovation team in certain steps of the innovation processes. The users are actively involved, partly because they are often more knowledgeable than the company regarding a specific product or service.

The types of users that work closely together with companies can either be experts or advanced users.

Experts included in the innovation process, are highly qualified persons who possess specific knowledge within a certain area of expertise. The type of users that are invited as experts often work in complex business areas such as the pharmaceutical industry, or they can be doctors, nurses or engineers.

Advanced users included in the innovation process, are specialists when it comes to using certain products or services. This is very often the case in respect to software products and services, where there are ample opportunities for the everyday users to gain expertise in online tools and thereby become an advanced user within a specific field.

In this context the term advanced user is not equivalent to Eric von Hippel's term "lead user". Advanced users innovate for and together with the company in order to commercialise a product or service. Lead users innovate for their own purposes, in order to solve problems they experience with a certain product or service. They do not innovate for a company and they do not aim to commercialise on the innovation⁴.

History

User innovation outside company walls is nothing new. User innovation has always taken place. We have all tried to make minor adjustments to products in our homes or at our workplace, or tried to use products for purposes different from what they were intended for.

⁴ Von Hippel, Democratizing Innovation, 2005

What is new is the fact that companies have started inviting users into the company and including them in the innovation processes. The users innovate together with the company, often in a long-term, continuous innovation process. In the Nordic countries this is a relatively new way of cooperating with users. Some companies have gone as far as to invite users into the company as part of the innovation team and let them participate hands-on in developing a new product or service.

By applying methods for user innovation when creating new products or services, companies seek to tap specific knowledge from experts or advanced users. This knowledge can often not be found within the company itself. By including experts and advanced users in the innovation process companies are able to better understand what solutions need to be developed to solve the challenges faced by their everyday users.

Main tool

User innovation methods vary depending on the length of time users are involved in the innovation process together with the company. The methods most often used are workshops with experts or longer term advanced user involvement.

The purpose of an **expert workshop** is to gather highly advanced and specialised users either in the company's field of products or in another field which might be relevant for the company. The experts participate in conceptualising the ideas and make early prototypes of the often highly specialised products.

The purpose of involving **advanced users** is to obtain knowledge from users of often very specific products or services. The advanced users have first hand knowledge in using the company's products or services, and this enables them to contribute with new ideas about what could be needed. The advanced users will be able to participate in the innovation process together with the company, and contribute with their specific skills and in depth knowledge in using the company's products or services.

Advanced users often participate in the innovation process over a longer period of time, bringing new ideas on board that result in new innovations for the company.



The role of users

Experts are highly qualified within their area of expertise, and they possess specific knowledge that might be rare to find. They tend to be educated persons in technical fields, medical fields or pharmaceutical fields. Including experts in the innovation process is therefore effective for highly specialised domains⁵. They are often invited into the innovation process once the company has a concept idea that is to be developed.

Advanced users are often enthusiasts when it comes to a specific product or service, and they are more knowledgeable than the average user. This is especially the case when it comes to IT products and services. Companies that offer web-based products or services, often experience that its most advanced users come up with ideas for how to improve what is being offered by the company. In some cases the advanced users will be invited in by a company to participate hands-on in the innovation process.

Experts and advanced users can either be end users or employees in companies.

⁵ Saunders, Design Research in 2006

Case_LEGO Mindstorms



The Danish construction toy company LEGO, was founded in 1932 in Billund, where it still has its head office. LEGO has more than 5,000 employees and sells its toys in more than 130 countries.

In the first half of 2009 LEGO increased its sales by 23%, compared to the first half of 2008, achieving net sales of DKK 4,374 million for the first half of 2009. Sales for 2008 amounted to DKK 9,523 million.

LEGO Mindstorms is a LEGO brick which can be programmed and turned into a robot. The first version of Mindstorms was RIS, which was launched in 1998 and went through three iterations until 2001 when further development of the 'intelligent brick' stagnated for a while. In 2006 LEGO Mindstorms NXT – the new generation of Mindstorms – was launched. When designing the new version of Mindstorms, the LEGO team tried a whole new approach.

The first version of LEGO Mindstorms was released in 1998 and was marketed as the Robotics Invention System (RIS). The hardware and software roots of the Mindstorms Robotics Invention System kit go back to the programmable brick created at the MIT Media Lab.

Since the launch of LEGO Mindstorms in 1998, online fan communities have been formed globally. These communities consist mainly of grown-ups who share their experiences and LEGO Mindstorms models with each other. The communities evolved without the intervention of LEGO, but LEGO has since 2000 had a community team who are in contact with the fans. Today LEGO has a dedicated Community team and several programs that support the relationship between the communities and the LEGO Group. One example is the ambassador program with more than 40 members



Source www.LEGO.com

from around 20 countries, who are voted in by the community to represent their voice towards the LEGO Group.

In 2005 a LEGO team approached four advanced users from the fan community in the USA and Canada giving them the opportunity to work together with LEGO in developing the next generation of LEGO Mindstorms. The advanced users had knowledge and insights which LEGO themselves did not have in-house at the time, since several members of the original team that developed Mindstorms were no longer with LEGO. The four users were experts in each of their fields; hardware, software, sensors and children's education.

The users became part of the LEGO innovation team, through a virtual project room. They gave up their rights to any part of the development of LEGO Mindstorms, and did not receive a salary. The four advanced users worked from their home locations in the USA and Canada, while the project manager in LEGO worked from Billund. Via the virtual project room they would upload information that was shared with the team, and sometimes engage in online discussions with each other. The team as a whole only met once face to face in Billund in connection with a fan event which took place in Denmark. The advanced users worked together with the LEGO team for six months.



During the development of NXT the online user panel (MUP, Mindstorms User Panel) expanded to more than 110 members. Members of the user panel had to apply to LEGO to join the panel, and were selected to create a broad representation of users – spanning from some, wanting to use Mindstorms for educational purposes to others with sight on recreational purposes. The collaboration with the advanced users resulted in a new way of working with the fan community which today is common practise across LEGO and had 50 projects in 2008. []

The LEGO Mindstorm NXT has a range of new features which were developed together with the advanced users. The robot can now be brought to life in a very realistic manner, and looking more “human” than earlier. This is partly due to the ultrasonic sensor that is shaped as a pair of eyes, in addition to the other sensors that were developed. The LEGO Mindstorm NXT has a microprocessor that can be programmed using a PC or a Mac. Users can create a program and download it to their LEGO Mindstorms NXT robots, giving the robot a life of its own, autonomous from the computer.

Lego Mindstorm received two awards within the first few months after launch.



Source www.LEGO.com

The NXT brick is the brain of the LEGO Mindstorms robot. The NXT has four ports for attaching sensors. The four types of sensors are a touch sensor, a light sensor, a sound sensor and an ultrasonic sensor. There are also three ports where a servo motor can be attached enabling the robot to move with precision. The USB port enables the robot to download programmes from a computer to the NXT brick, or upload data from the robot to a computer. The NXT also has a loudspeaker.

4_User Participation

User participation covers the areas of participatory design and participatory innovation. In user participation companies work together with users and include them in the innovation team to create new ideas. Focus is placed on tapping tacit knowledge from the users which can be used to understand their unacknowledged needs.

History

Participatory innovation has its roots in the field of participatory design that arose in the Scandinavian countries during the 1970s. The focus of participatory design was to involve users of IT-programs in the design process in order to improve the usability.

The field of participatory innovation is relatively new and is primarily being developed at the SPIRE institute at the University of Southern Denmark⁶. Companies together with researchers are experimenting with new methods that include users in the innovation process. In the Nordic countries Participatory innovation is most widespread in Denmark and Finland.

⁶ Jacob Buur, SPIRE, University of Southern Denmark

By applying methods related to user participation when creating new products or services, companies seek to tap tacit knowledge from their users. By provoking experiences in the users in mind, the users' reactions can result in behaviour reflecting unacknowledged needs which the users were not aware they had. Once the needs have been uncovered, they can be described and interpreted, giving the company the possibility to start creating solutions that will solve the users' problems.

Main tools

User participation operates with several interesting tools with the purpose of helping people to think and create opinions that they did not know that they had. Amongst the most interesting and well recognised tools within this area are provotypes, cultural probes, experience prototyping and props.

The purpose of a **provotype** is to provoke a reaction and get users to think about things they have not thought about before. Often it is not clear to the users what the value of a certain product or service was to them – the “provotypes” are designed to create an awareness of what the users likes or dislikes. It is thus unacknowledged information that is being tapped from the users.

The provotypes must not be confused with prototypes. A provotype will not be turned into a specific product or service but it is designed to provoke reaction from the users and thereby gaining insights about the users.

The purpose of using **cultural probes** is to gain deeper insights about the users' everyday life. In cultural probes users are given a kit consisting of different tools such as a camera and other artefacts, and are expected to photograph, film or draw their daily routines and write diaries about their experiences, likes and dislikes, and other tasks that describe the various aspects of their everyday life. After a certain amount of time, the users and the research team gather in a workshop where they meet to discuss the information gathered from the user kits. The insights obtained from these cultural probe kits give the company an opportunity to gain a better understanding of users unacknowledged needs.

The cultural probes tool is used in both the method of user participation and the method of user exploration.

The purpose of **experience prototyping** is to test the experience of using a product or service on the user even though the product or service is not completed. The experience of prototype contains only very basic features that are necessary for the user to relate to. In some cases the expression “just enough prototyping⁷” is used to describe these early and basic mock-ups.

In experience prototyping an important aspect is to boost the innovative process by making not too detailed prototypes that do not make the users focus too much on what the completed and ready version of the prototype would look like. Experience prototyping is most often conducted as part of user workshops.

Experience prototyping is also a method used in order to obtain hidden knowledge from users and uncover unacknowledged needs. It is used at a later stage in the innovation process.

The purpose of using **props** is to help users participating in workshops to express ideas that are not directly linked to the products or services which are being developed. Props are various artefacts that are used to stimulate new ideas. By using props in the workshops in for example role-plays the research team helps the users to open their mind and hopefully open up for needs that the users did not know that they had.

⁷ Copenhagen Institute of Interactive Design, Denmark

The role of users

When a company uses the participatory- and innovation approach the targeted users can either be end users (customers) or employees – either their own employees or business to business customers. The end users are “every day people” whom in some cases are still potential users.

The users participate in the innovation process together with a team from the company. This often happens through on-site visits to users’ homes or workplaces, and through workshops where the users are invited by the company to participate. The company and the users develop new ideas together.

Case_Deutsche Telekom Laboratories⁸

Deutsche Telekom Laboratories



Deutsche Telekom is Europe's largest telecommunications company. The company is headquartered in Bonn and had in 2008 revenues of 61.7 billion euro and 235.000 employees. Deutsche Telekom provides network access, communication services and value-added services with ever increasing bandwidth via fixed and mobile networks. The company promotes the personal and social networking between people through different innovative products and services. There are three customer brands under the global umbrella brand “T”: T-Home for all products and services at home; T-Mobile for products and services while on the go; and the brand T-Systems offers medium to large-sized customers ICT solutions around the world. As an internationally oriented company, Deutsche Telekom AG is represented in about 50 countries around the globe.

Deutsche Telekom's department for innovation and R&D strategy is called Deutsche Telekom Laboratories (T-Labs) and is headquartered in Berlin. At the same time Telekom Laboratories is an institute of Technische Universität (TU) Berlin. This Public Private Partnership has more than 300 employees in Berlin and other offices in Bonn, Darmstadt, Silicon Valley (USA) and the Ben-Gurion University in Beer-Sheva, Israel. Roughly half of the unit's employees are researchers from TU Berlin. The other half consists of engineers, marketing and administrative staff. Their work is based on concepts like Open Innovation and User Driven Innovation.

In 2008 T-Home Product management approached T-Labs to come up with concepts for a new wireless phone in the fixed-line phone market for people aged 50 and over. It was decided that T-Labs should help T-Home with the user-research and Interface Design in relation to a new fixed-line phone for seniors.

T-Labs put together a project group consisting of three researchers from T-Labs and the Technical University. The project group was given four months to develop new product concepts.

“User driven innovation and participatory design are helping Deutsche Telekom to gain insights from the users thereby making sure that the company comes up with relevant and commercially successful innovations”

- Prof. Dr. Gesche Joost, Technische Universität Berlin/ T-Labs.

⁸ We have not been able to identify a completed case on participatory innovation in the Nordic or Baltic countries, and we have therefore included a German example in stead.

The innovation process was kicked off with a workshop for a group of people between the ages of 60 and 86. T-Labs opted to invite people that were significantly older than the predefined minimum age (50 years). The project group assessed that phone characteristics for people aged below 60 would not be visible enough in connection with the workshops. The respondents were located in collaboration with BAGSO Group Deutschland, which have specialised in finding product test respondents. A total of 60 people participated in the workshop, equally distributed by gender and age.

The kick-off workshop itself was organised for a full day. At the workshop the group was introduced to the project's purpose and background. Following this the elderly people were grouped with T-Labs researchers and were given a "Cultural Probes" kit: a research set consisting of a camera, a questionnaire, a diary and grading cards. The latter was used to rank the group's assessment of the various functionalities in terms of the importance for phones. The respondents were asked to carry the Cultural probes kit with them and to use the tools to describe their experiences with telecommunication in everyday life situations. After instructing the respondents in how to use the diary kit they were divided into smaller groups. Here they consulted with members of the project group to discuss their experiences with telecommunication.

By discussing telecommunication with respondents the project group found two initial insights that are important to a new, wireless product targeting elderly people. First of all the project group discovered that elderly people leave the wireless fixed-line phone in the battery stand, when they are not using the phone, whereas they place it on the table when talking. This implies that the elderly people should be able to watch the display when placed on the table and in the battery stand so that they can oversee battery status, who is calling etc. Secondly, the first workshop made it clear that elderly people do not like to buy products that are marketed to their own age group.

Two weeks after the initial workshop the respondents were invited for a second workshop, where they were to hand over the diary kit to the project group. The number of respondents was limited to 30, which was believed to be the ideal size for the project's next stages. The diary kits were collected at the second workshop. Whereas cameras and questionnaire were simply collected the workshop began working on the grading cards and it was discussed why respondents had ranked the grading cards the way they had.

Following the second workshop a pattern recognition phase was initiated, where the diary material was evaluated and put together to build a range of insights. The pattern recognition was carried out within the project group. During this phase the project group used quickly arranged paper prototypes, mock ups, to illustrate the identified insights. The project group used 10 days going through the pattern recognition phase.

The pattern recognition phase revealed another interesting insight: elderly people will often make phone calls to the same group of family members, which makes it essential that these numbers are easily available.

“After the second workshop the project group collected the cultural probes tools from the users and started to look for patterns in the material. Furthermore, the research team’s notes from the workshops were also used to find patterns in the users needs. This pattern recognition part of the project was conducted internally in the research team”.

- Prof. Dr. Gesche Joost, Technische Universität Berlin/ T-Labs

Once the project group had collated the extensive data material from diaries, interviews and workshop discussion in various pattern tracks – and the patterns had been transformed into tangible prototypes – a third workshop was organised. The 30 remaining respondents were introduced to the identified insights and provided immediate feedback for insights and paper prototypes.

The third workshop was followed by a 2-week development phase where the project group in collaboration with engineers from T-Labs worked with flow diagrams which, based on the grading cards, step by step illustrated how the respondents experienced the various features in the most logical way. After mapping the most logical user phone interface the T-Labs engineers began to develop various flash prototypes; partly functional prototypes, where certain elements actually work, which provides the respondents with an idea of how the product will work and appear.

After developing the partly functioning prototypes a fourth workshop was organised in order to to evaluate the partly functioning prototypes before commencing with the final adjustment of the product. At the workshop each respondents was grouped with a T-Labs researcher and tested the partly functioning prototype. Afterwards the respondent was asked to carry out a number of actions; for example the respondent was asked to make a call while the action patterns were observed by the researcher.

The fourth workshop produced another insight; while it is convenient to have speed dial buttons elderly people wanted to limit the number of speed dial buttons to 3 or 4.

Following the last workshop Deutsche Telekom’s engineers began working on a wireless fixed-line phone, which incorporated the insights identified in the project.

The result was Sinus A 201.

Sinus A 201 has incorporated insights from the project. For example, the phone head is lifted so that the user can see the display even though the phone is placed on a table. At the same time the phone offers a very simple speed dial function, which has been limited so that it doesn’t conflict with the phone’s simple user interface. Finally, the Sinus A 201 is not targeting elderly people but rather families that are interested in simple and good design and functionality.

Sinus A 201 hit the market in October 2008 and the phone has become a commercial success.



How we did it

The purpose of this study is to get an impression of, how many innovation projects in the Nordic and Baltic countries had used methods of user driven innovation and what types of innovations they obtained.

The innovation projects had to fulfil three criteria in order to be included in the study: (a) there has to be user involvement in the innovation process, (b) the innovation project has to be completed and the product or service launched on the market, and (c) it should be possible to evaluate the outcome of the innovation project.

To find the projects that met the above mentioned criteria in the Nordic and Baltic countries, four steps were taken:

1. Experts in all the participating countries were asked about which innovation projects they knew of that fulfilled the three criteria.
2. A list of all the suggested innovation projects was compiled. The projects were all screened and validated, and the projects that did not meet the three criteria were excluded from the study.
3. Structured interviews were made with the remaining companies. It became clear during interviews that some of the chosen innovation projects did not meet the three criteria. They were later on excluded from the study.
4. The information from the interviews were translated into data and keyed into a database where the compiled data could be compared across all innovation projects.

The four steps are explained in detail in the following.

Finding the innovation projects: The snowball method

Since the practice of user driven innovation is just emerging, no complete list of companies that work with these methods exist. Hence the companies were identified by using the snowball method.

The snowball method is used to identify data on a population which is not accessible through existing quantitative information databases such as sector statistics.

The snowball was initiated by asking experts on user driven innovation within academia, companies and the public sector about their knowledge on innovation projects in companies and organisations, which are working with user driven innovation.

The snowball was continued by sending the same initial question to the new contacts that were obtained in the first round. The snowball is repeated until it is most likely that the entire population has been covered.

Validating the innovation projects

The snowball method is excellent in giving an overview. But to get a deeper understanding of the innovation projects it was necessary to talk directly to the project owners. The objective was to understand the innovation process of the projects and to evaluate whether they meet the three criteria or not. Through initial telephone calls the information about the innovation projects were screened, updated and validated. A large amount of innovation projects were identified using the snowball method. However, several projects were excluded from the study since they did not meet the three criteria.

Interviewing about the innovation projects

The innovation projects that were validated were examined by researchers in each of the Nordic and Baltic countries. An interview guide was made which was to be used for each interview in order to obtain comparable data across innovation projects and countries.

The interview guide is based on the FORA model of innovation processes and the methods of user involvement in the innovation process (see chapter 2). The interview guide was divided into three parts. Questions were asked about (1) general company information, (2) how users were involved in the innovation process and (3) what innovations the project resulted in, and an evaluation of how successful the project had been.

Compiling data on the innovation projects

The information from interviews has been inserted into a database. The information concerns the types of user involvement, the methods and tools used in each phase of the innovation process, the performance of the innovation projects as well as general company information.

The data from the interviews has been analysed for each individual country participating in the study, as well as for all innovation projects as a whole. General characteristics of companies working with user driven innovation can be found in the large set of data. Country characteristics are looked at for the small data sets, but since the number of innovation projects for each country is small, a more descriptive analysis is made.

The results and findings have been discussed with a group of experts consisting of university professors within the field of user driven innovation, and with innovation experts from the business community.

What the companies said

In this study we have focused on understanding how companies work with user driven innovation in order to get a deeper understanding of what is needed for companies to be able to create successful innovations, such as new concepts, products or services. We identified that the outcomes of user driven innovation projects also can entail other types of innovations such as process innovations or organisational improvements that are just as vital as new concepts. However, it is important for companies to direct their efforts towards the successful innovations that can secure growth and profitability in the long run, and maybe less on the incremental innovations which are subject to diminishing returns in the long run⁹.

⁹ Kandybin, A & Kihn, M, Raising your return on innovation investment, 2004

¹⁰ We have excluded 4 of the Baltic companies which are described in the chapter User driven innovation in the Baltic countries since the projects did not employ user driven innovation methods.

We have interviewed almost 60 companies and organisations working with user driven innovation in the Nordic and Baltic countries. Our aim has been to obtain empirical data on what is taking place within companies right now. Our questions concerns what methods of user driven innovation are used by the companies, which of the methods are more successful in creating new concepts, products and services, and whether there are any characteristics among companies working with the different methods of user driven innovation.

Interview results

Companies were interviewed in Denmark, Finland, Norway, Sweden, Estonia and Latvia across business sectors and company size. Data is shown for the almost 40 companies that fulfilled the criteria of conducting user driven innovation projects, and the almost 50¹⁰ innovation projects that we identified. In each of the countries a local project partner has identified relevant innovation projects and completed the interviews with the companies and organisations. FORA has been responsible for collecting all the information from the interviews in an aggregate database and conducting the statistical and descriptive analysis.

The interview results are described according to:

- Type of companies
- The user driven innovation process
- Innovation outcomes
- Characteristics of companies

Each point is described in more detail in the following four paragraphs.

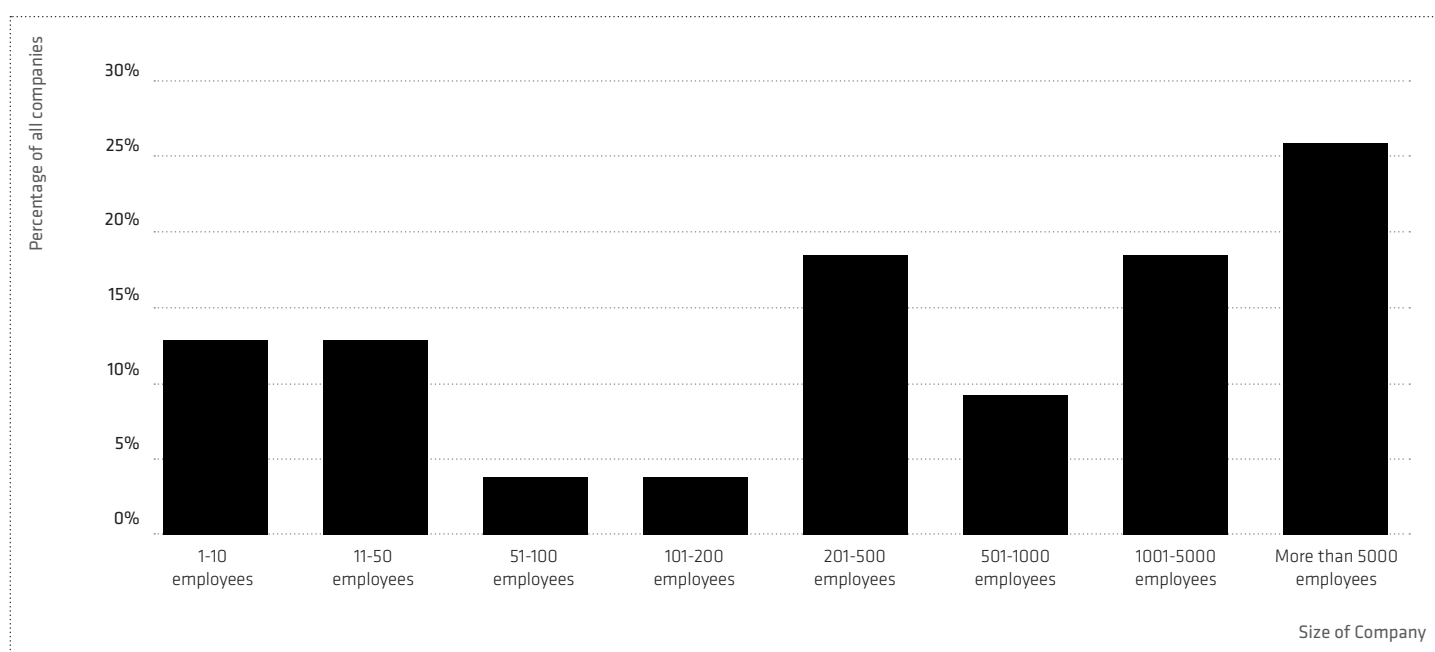
Type of companies

The companies that were interviewed varied greatly regarding their size, whether they were local or global companies, and concerning the type of customers they had. The participating companies represented many different types of organisational structures in relation to how they were organised internally. Some of the companies had large innovation and research departments that conducted various types of projects and where specific departments participated in specific parts of the innovation process,

while some companies would have a flat organisational structure where innovation processes would not necessarily be linked to a particular department in the company. Companies that did not have internal research or innovation units focusing on user research often chose to bring in external consultants to assist and run parts of the innovation processes, as those particular skills could not be found in-house.

26% of companies interviewed are small companies with up to 50 employees while the medium sized companies with employees between 51 and 200, represent 6% of the companies in the study. The group of larger companies with number of employees between 201 and 1,000 employees represent 26% of the interviewed companies. Large companies with between 1,001 and 5,000 employees account for 18% of the companies, while 26% of the companies are very large companies with more than 5,000 employees. In general, there seems to be a rather even spread of companies that work with user driven innovation, where only medium sized companies are not as well represented. One explanation might be that small companies might have based their business model on user driven innovation already from the beginning when they started up, and large companies have “deep pockets” and therefore the opportunity to experiment with new sources of innovation (see figure 2).

Figure 2 Size of companies, based on employees



Source: Project interviews, 2009

The type of customers which most of the interviewed companies had, were business customers (B2B) represented by 63% of the companies we spoke to. This seems to be linked to the fact that we interviewed many companies that sell products, and not as many that sell services. The products sold were often targeted other companies, however in some cases the products were targeted both the retail market and the consumer market represented by 11% of companies that have both types of users – companies and individuals. Companies that have only individuals as customers are represented by 26% of the companies interviewed (see table 1).

Table 1 Type of customer

Type of customer	Percentage of companies
B2B	63%
B2C	26%
Both	11%

Source Project interviews, 2009

Companies working with user driven innovation projects seem to be split rather evenly between wanting to do the work themselves in-house, or getting consultants in to assist them in running parts or in some cases, the entire innovation projects. Companies that look to consultants for expertise, are often trying out a user driven innovation project for the first time. Some companies start with conducting the first innovation project together with external assistance, and once they have learned how to drive such a process themselves, they might create a specific department or unit which will have the responsibility of conducting future innovation projects. 50% of companies interviewed conducted the user innovation project together with consultants, while 48% of the companies ran the innovation process themselves. 2% of companies outsourced the entire innovation project, and received a completed service once the project was completed (see table 2).

Table 2 Who conducted the innovation project

Who conducted the innovation project	Percentage of companies
Conducted together with external consultants	50%
Conducted in-house	48%
Conducted only by external consultant	2%

Source Project interviews, 2009

When it comes to which department in a company that makes the decision on whether to go ahead with a user driven innovation project, this seems to be split between four main types of departments. In 25% of the interviewed companies top management initiated the innovation projects. The departments that come second when starting up new projects are often research departments with focus on innovation or departments that focus on growing new businesses. These types of departments are responsible for launching 19% of user driven innovation projects in our data sample. The departments which come in third and fourth are marketing departments and product development departments, which each are responsible for starting 15% of user driven innovation projects. In some companies these two departments have been merged.

A few other types of departments have been involved in starting projects with user involvement, such as design or creative departments, which account for 4% or purchasing departments which also account for 4%. In a few cases the user driven innovation project was started as a research project. Some of the user driven innovation projects resulted in a spin off company which took the product to market, while a few companies that worked with user driven innovation were start up

companies where their first product or service had taken shape based on a user driven innovation project (see table 3).

Table 3 Which department initiated the innovation project

Department	Percentage
Top management	25%
Innovation department, New business department, R&D department	19%
Marketing department*	15%
Product development department	15%
Design/creative department	4%
Purchasing department	4%
Research projects	4%
Start up companies or spin offs	6%
Not able to obtain data	8%

Note in 2 cases the marketing department was equivalent to the product development department. The 2 projects have been included under the marketing department grouping.

Source Project interviews, 2009

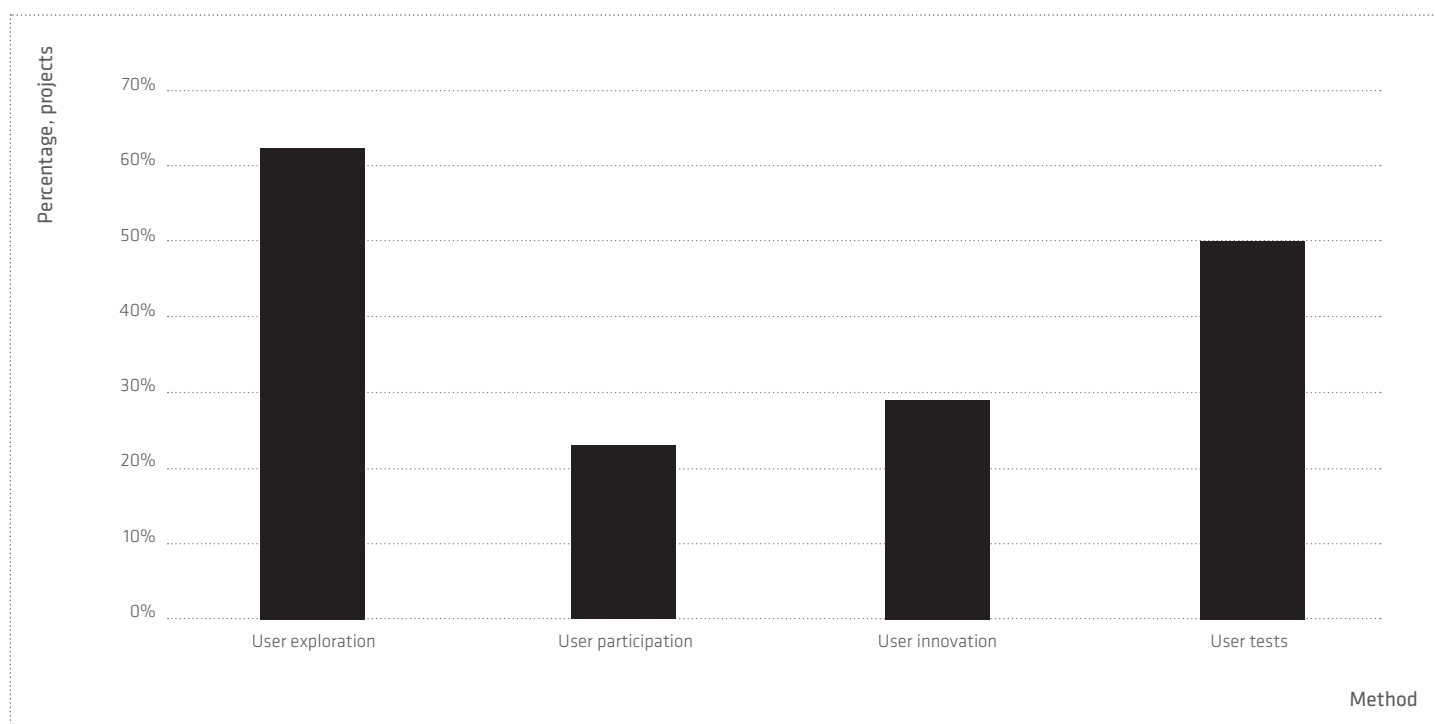
The user driven innovation process

We have asked companies which of the main four user driven innovation methods they have used in their innovation projects. We asked whether they employ more than one of the methods, and at what stage in the innovation process the different methods were used. We also asked questions regarding the length of time of their user driven innovation process.

When it comes to which methods of user driven innovation companies have used throughout the innovation projects, user exploration is the most popular method used by 63% of projects. This indicates that companies working with user driven innovation tend to involve the users at the front end of the innovation process in order to tap tacit knowledge from them and gain insights based on user's unacknowledged needs.

User tests are second most popular used in 50% of projects – which comes as no surprise. It is vital that companies master the basic skills of marketing their products and services. Users should always be involved in testing products or services before they are launched, and companies should be good at understanding how to position their product or service on the market in order to achieve the best sales figures and market shares.

User innovation is used in 29% of projects, while user participation is only used in 23% of projects (see figure 3).

Figure 3 The distribution of the four methods of user driven innovation

Note The projects can choose more than one kind of user involvement in the innovation process; as a result the sum is not 100%

Source Project interviews, 2009

We also asked companies when, during the innovation process they employed the different methods of user driven innovation. User exploration methods were clearly very popular at the front end of the innovation process where users were being explored in order to understand what problems they face and therefore what solutions could be offered to them by the company. What was more surprising to us was that many innovation projects also used user exploration methods later on in the innovation process when testing out early prototypes. User exploration methods were often employed on users where their articulation would not be taken at face value, and where the company did not expect the users to be able to communicate their true needs and experiences. This was often the case when companies were working with children or mentally disabled persons. By using user exploration methods at the front end of the innovation process, the insights obtained from user behaviour will influence what product or service the company will innovate. But when using user exploration methods in testing, the insights obtained will most likely not lead to a significant change in what to innovate, but might result in add-ons to the product or service.

User innovation methods were particularly popular in conceptualising and prototyping the innovations. This makes perfect sense since the user plays an active role in innovating together with the company, and thereby assists hands on in the innovation process.

User participation methods did not seem very popular in the innovation projects we encountered. This could be linked to the fact that it is a relatively new discipline regarding its use in innovation processes and companies still have to learn how to tackle this method to obtain the best results.

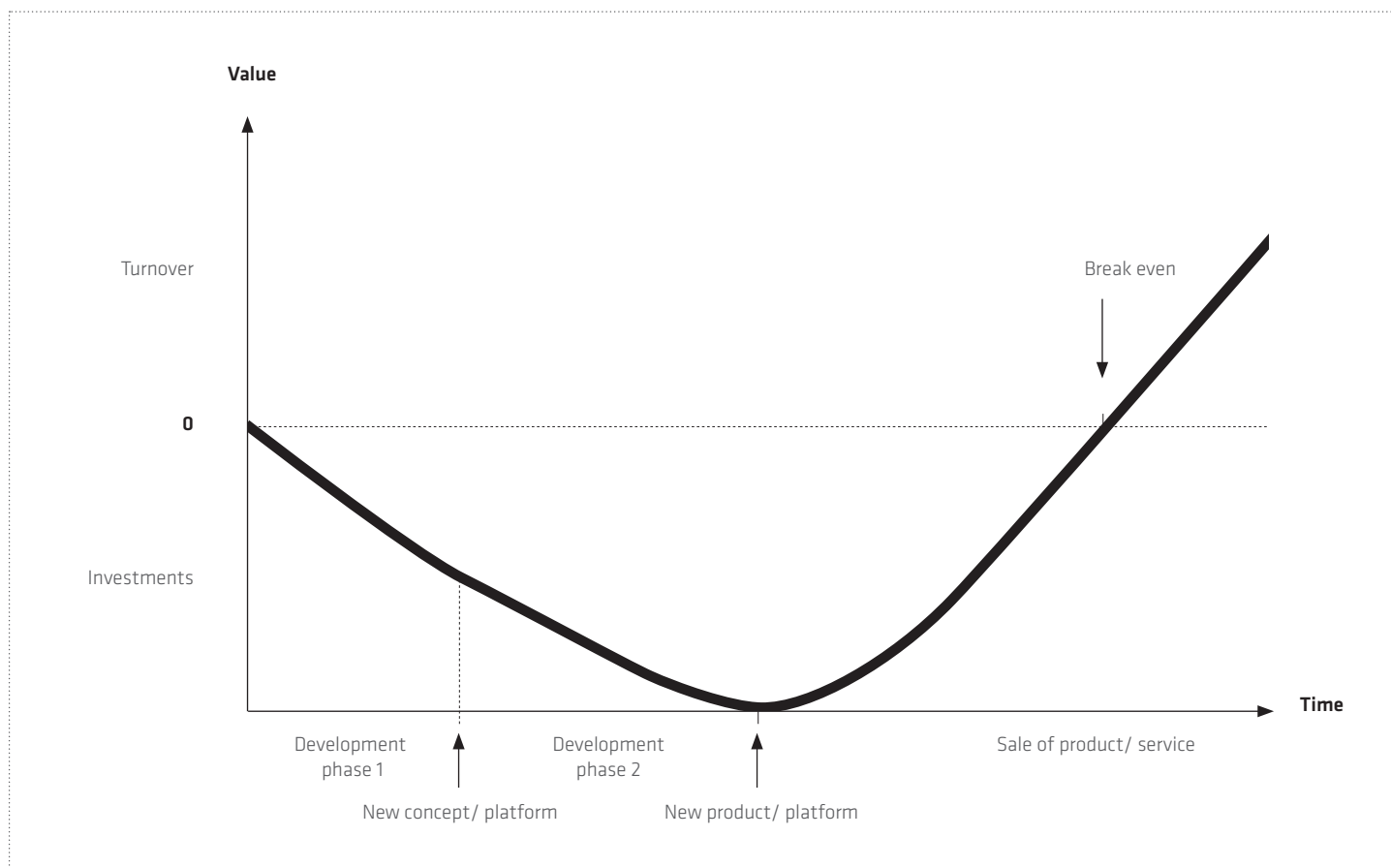
As expected, user tests are popular in the later stages of the innovation process where products or services are tested before being launched on the market.

We asked companies what length of time a typical user driven innovation project would last. Even though the companies participating in the study varied in size and industry, we were able to group the innovation projects into two main groups; projects focusing on developing a new concept, or projects focusing on developing new products, services or processes.

The innovation process when developing new concepts has two main stages. The first stage revolves around developing the concept – what problems is the company looking to solve for its users and what should be the next generation of products or services a company should deliver? A dedicated innovation process focuses on this stage. Based on our interviews data indicates that the concept innovation stage takes from 6 months to 3 years. The questions companies are working with at this stage will often lead to answers that will have a great impact on the company. Their future growth and profitability will depend on their ability to create concept innovations.

The second stage of the innovation process will be based on the outcome of the first stage where the new concept was developed. Sometimes a new process will begin when developing a new product or service which has the new concept or platform as its starting point. In cases where the innovation project does not have a newly developed concept as the starting point, the first stage is not present. Our data shows that this stage takes between 6 months and 2 years.

Only when the new product or service has been launched, will the company be able to evaluate how successful the new concept or platform has been in creating economic value and return on investment. Based on our interviews, the data we have collected on the innovation projects indicates that it takes 2 months to 2 years for a project or service to have reached the break even sales point.

Figure 4 Innovation development phases

Source FORA, 2009

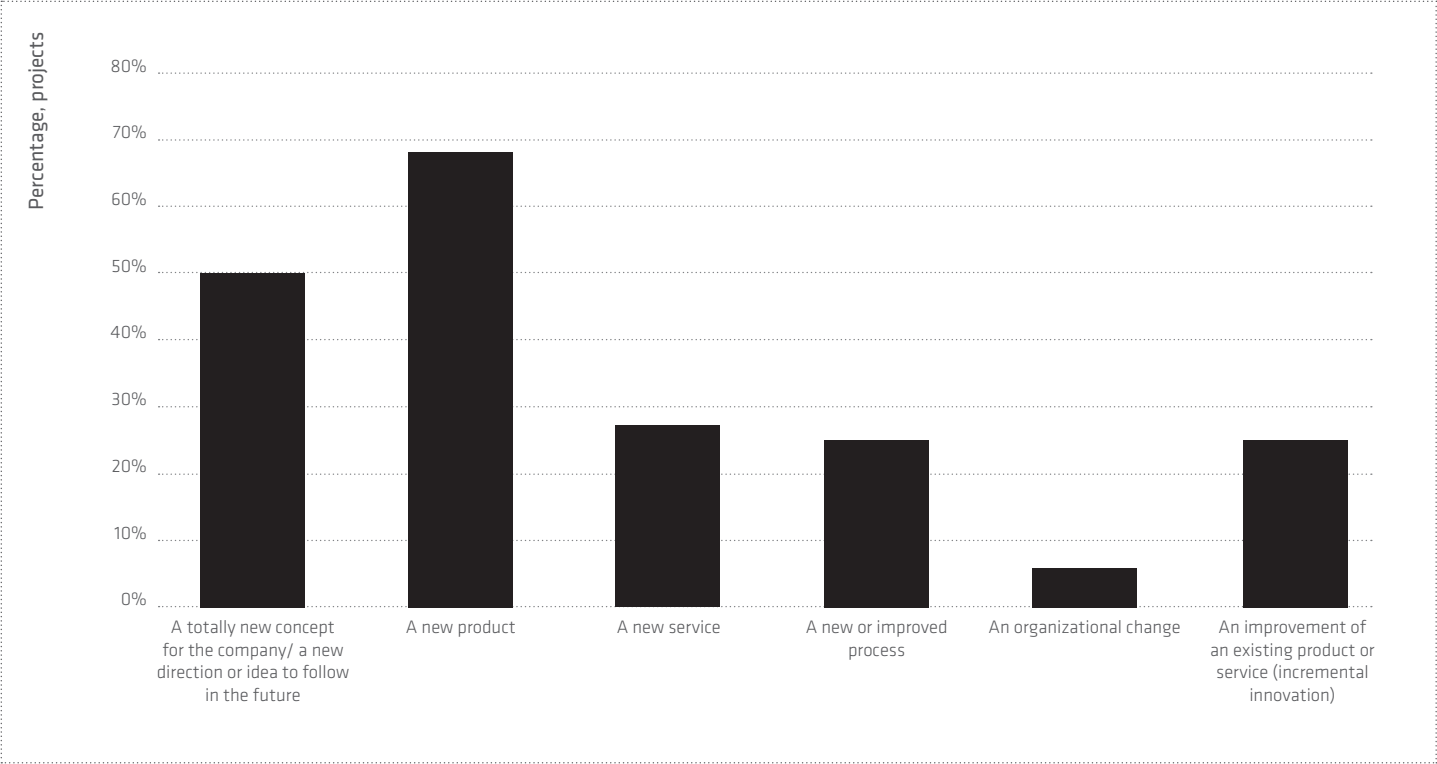
The data sample indicates that companies that have developed a concept innovation or a new innovation platform have created a longer term success by enabling the company to develop a whole new generation of products or services. The innovation project will benefit the company's profitability and growth beyond one single new product or service as well as beyond incremental innovations.

Innovation outcomes

Projects that have used methods of user driven innovation seem to be rather successful in our dataset. 69% of projects resulted in new products while 27% resulted in new services. This seems to be related to the type of companies which were included in the study, where service companies are in the minority (see next paragraph, "Characteristics of companies"). 50% of innovation projects resulted in a new concept for the company, giving a high innovation "hit rate" amongst the user driven innovation projects.

23% of the projects resulted in incremental innovation in either products or services, while 25% of the projects resulted in an improved internal process and 6% of projects resulted in organisational changes (see figure 5).

Figure 5 Innovation outcomes

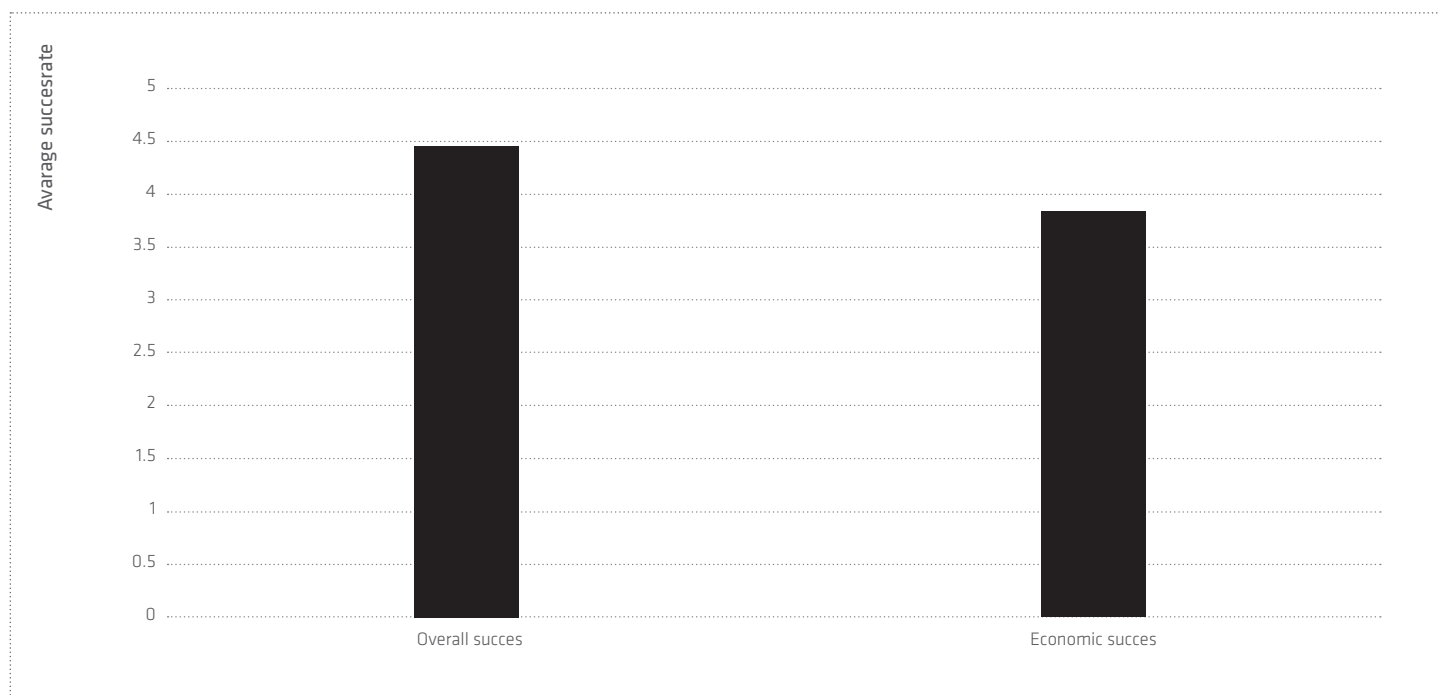


Note There can be more than one outcome per project; as a result the sum isn't a 100%
Source Project interviews, 2009

The innovation projects which we have found were all products or services that had been completed and were brought to the market. Thus, we do not have innovation projects included in our sample where the outcome of the innovation process did not result in anything. In that sense it is not possible with our data to get a real picture of how many innovation projects result in specific outcomes and how many do not.

However, we have asked the companies to evaluate the outcomes of the innovation projects in relation to overall success and economic success. This will give us some possibility to detect innovation “failures”. If a product or service has been launched after a user driven innovation process and it was not successful on the market, it could be considered a “failure” and would be given a low rating.

The overall success rate on a scale from 1 to 5, where 1 is no success and 5 is very high success, averaged 4.5 amongst all companies in the study. In relation to economic success, the average reply on a scale from 1 to 5 was 3.86. We believe that the rating on successfulness shows that companies in general have been happy with the outcomes of the user driven innovation projects (see figure 6).

Figure 6 Project success rates

Source Project interviews, 2009

Characteristics of companies

Looking at the companies working with the different types of user driven innovation methods, a few traits or characteristics seem to be common across companies.

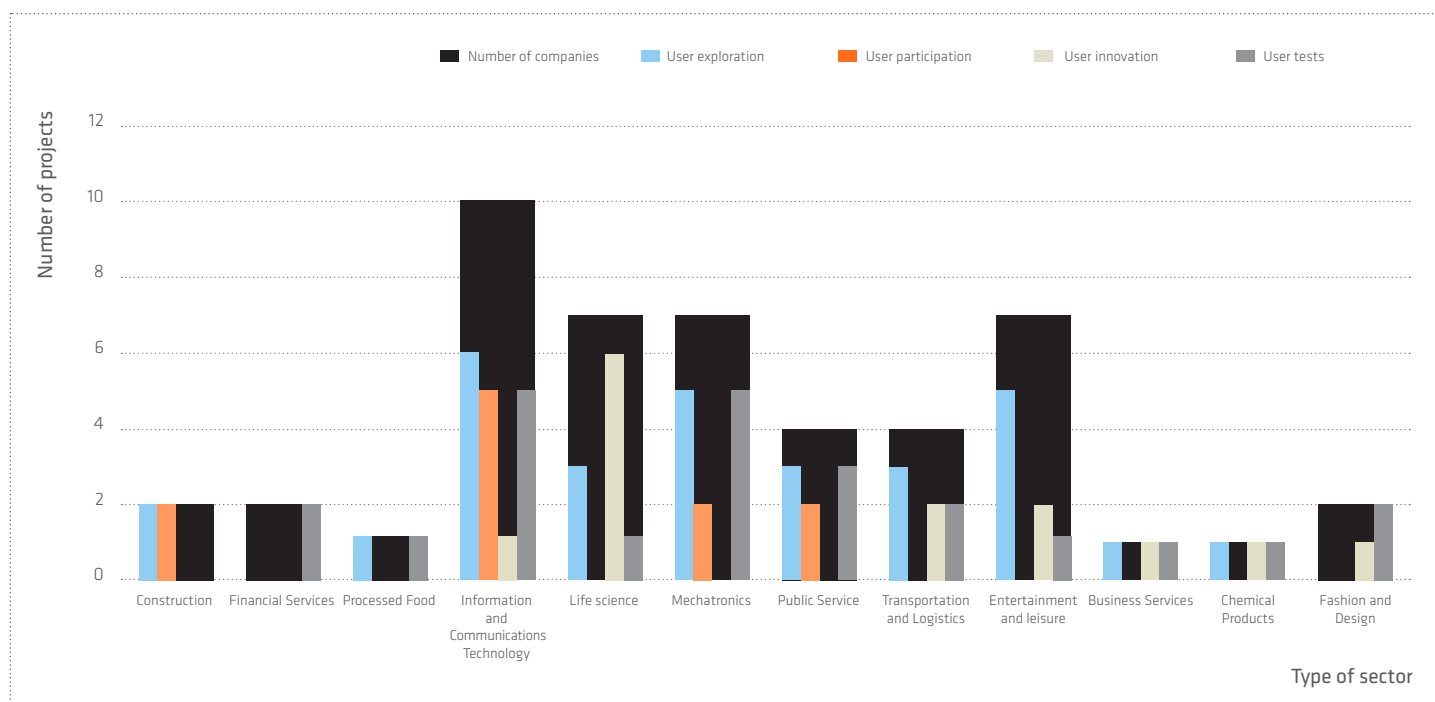
When it comes to companies working with user innovation, there is a high occurrence of companies from the life science industry. This seems to indicate that the users that participate in innovating together with the company are advanced users within their field, and possess a specific knowledge which no one else has. Only by being a user of life science products do the users gather knowledge about a product or service. This knowledge can then be used by companies when innovating for the life science industry, by inviting the advanced users to participate in the innovation process. Advanced users also seem to be relevant within the transportation industry and the entertainment industry. The remaining industries that have employed the user innovation method are only represented by one project and therefore nothing can be concluded about those industries on such limited data.

User exploration methods seem to be utilised across almost all business industries, and are well represented where products are made by companies. The method does not seem to be used amongst the interviewed companies in relation to services, but our company sample is not represented with very many projects from the service industries.

User participation methods are not as popular, and are used in relation to ICT, construction, mechatronics and public services. The high occurrence of the user participation method in the ICT industry could be linked to the tradition of usability studies which have been popular in this industry in the last decades.

User test methods are found across almost all industries indicating that it is a skill companies realise is important to master (see figure 7).

Figure 7 User driven innovation across industries



Source Project interviews, 2009

Summary

Even though we have relatively few innovation projects from each of the Nordic and Baltic countries, we feel that by looking at the aggregated results we are able to extract some broad conclusions based on our interviews.

User driven innovation projects seem to be taken on by companies of all sizes when looking at our sample data. Only in respect to medium sized companies is the sample size rather small. Very small companies as well as very large companies are engaged in user driven innovation projects. The popularity of user driven innovation amongst small companies might be due to them basing their business model on user driven innovation already from the beginning - when they started up the company. Large companies might have “deep pockets” and therefore the opportunity to experiment with new sources of innovation thereby taking on user driven innovation projects.

Companies that work with user driven innovation have business customers as well as individuals. When conducting the user driven innovation projects, companies are split rather evenly between choosing to do all the work themselves in-house or hiring consults to assist them in the innovation process. The user driven innovation projects are in most cases initiated by four types of departments within the companies and organisations we interviewed: top management, innovation departments, marketing departments or product development departments.

When looking at which type of user driven innovation methods are used by companies

and organisations, the user exploration method is the most popular one, followed by the user test method and the user innovation method. The user participation method is the least popular of the four user driven innovation methods.

The user driven innovation projects that we identified in our study achieved a high rate of successful innovation outcomes. Most of the projects resulted in new concepts or new products based on the user driven innovation process. Some of the projects also resulted in new services, new processes and incremental innovations. The companies interviewed gave the user driven innovation projects a high rating when evaluating how successful they felt the projects had been.

User driven innovation methods seem to be used across many different types of industries. The user exploration method is popular in almost all of the companies we interviewed across industry type. The user innovation method is very popular in the life science industry, and the user participation method was mostly used in the ICT industry. The user test method was used by almost all companies across all industries.

User driven innovation in Denmark¹¹

¹¹ Interviews provided by FORA and Høgenhaven Consulting

¹² Small and Medium sized Enterprises

Denmark is probably the Nordic country where the greatest focus has been placed on user driven innovation. Since the 1970s Danish researchers working with IT-related usability studies have worked on improving users' working conditions by giving the users more influence over their work. Since then the user focus has been taking on different forms in Denmark, resulting in what today is labelled user driven innovation.

User driven innovation in Danish companies

Many Danish companies are today working with user driven innovation and a group of frontrunner companies have already completed a range of interesting and often very successful projects. Amongst the frontrunners are some of the thriving Danish companies such as LEGO, Danisco, Novo Nordisk and Danfoss.

Danish SMEs¹² have included user driven innovation as part of their innovation process. Today a range of innovative Danish SMEs are working systematically with user driven innovation in order to develop new or improved concepts, products, services, organizational or process innovations.

While most of the larger Danish companies already have been or are working with user driven innovation, it is expected that many of the Danish SMEs also will increase their focus on user driven innovation in the years to come. One reason is that the Danish Government has initiated different initiatives with the purpose of encouraging Danish companies to work with methods of user driven innovation.

User driven innovation education in Denmark

In the Danish educational institutions different initiatives have been taken in order to include user driven innovation. Some of the most notable initiatives that have been launched in the Danish educational sector in Denmark are as following:

The Mads Clausen Institute of product innovation at the University of Southern Denmark (SDI) was established in collaboration with the Danish company Danfoss, a pioneer within user driven innovation. The Institute is a leader within the area of Participatory innovation and design and attracts a large proportion of its students from abroad.

At the University of Copenhagen and Aarhus University ethnography as well as user driven innovation is an integrated part of the education. At the University of Copenhagen a new business platform called Anthropological Analysis offers business and course activity to the Danish business sector. Aarhus University has a specialised department for Anthropology and Ethnography.

The Technical University of Denmark (DTU) is, at the Department of Mechanical

Engineering, offering a master degree program in Design and Innovation. The program focuses on the intersection between innovation, design and engineering.

180 Academy is an institute based in Kolding that teaches concept making to Danish companies through modules of between four and 15 months. At the institute the students – employees from Danish companies – conduct innovation based on methods from human sciences, business strategy, marketing and design.

Copenhagen Institute of Interaction Design (CIID) is a multidisciplinary environment for user orientated solutions in technology and design. CIID has three legs; teaching, researching and consulting. The first classes at CIID commenced in 2008.

User driven innovation policy initiatives in Denmark

The Danish policy makers have been very focused on improving the framework conditions for user driven innovation. Two of the most important initiatives in this process have been implemented by the *Danish Ministry of Economics and Business Affairs* and the *Danish Ministry of Science*.

As a part of the Danish Ministry of Economics and Business Affairs the Danish Enterprise and Construction Authority has launched the "Program for User-Driven Innovation" with the purpose of strengthening the diffusion of user driven innovation into the Danish business sector and in the public sector. The project runs from 2007-2009 with a yearly budget of 13.5 million euro.

The *Danish Ministry of Science* has through the Danish Council for Strategic Research (DSCR) allocated 12 million euro annually to research program "User-Driven Innovation Research Program". The program supports methodical and theoretical projects and runs from 2007-2010.

Beside the mentioned programs a range of other interesting programs and institutions have been launched with the purpose of strengthen UDI in Denmark.

Interview results

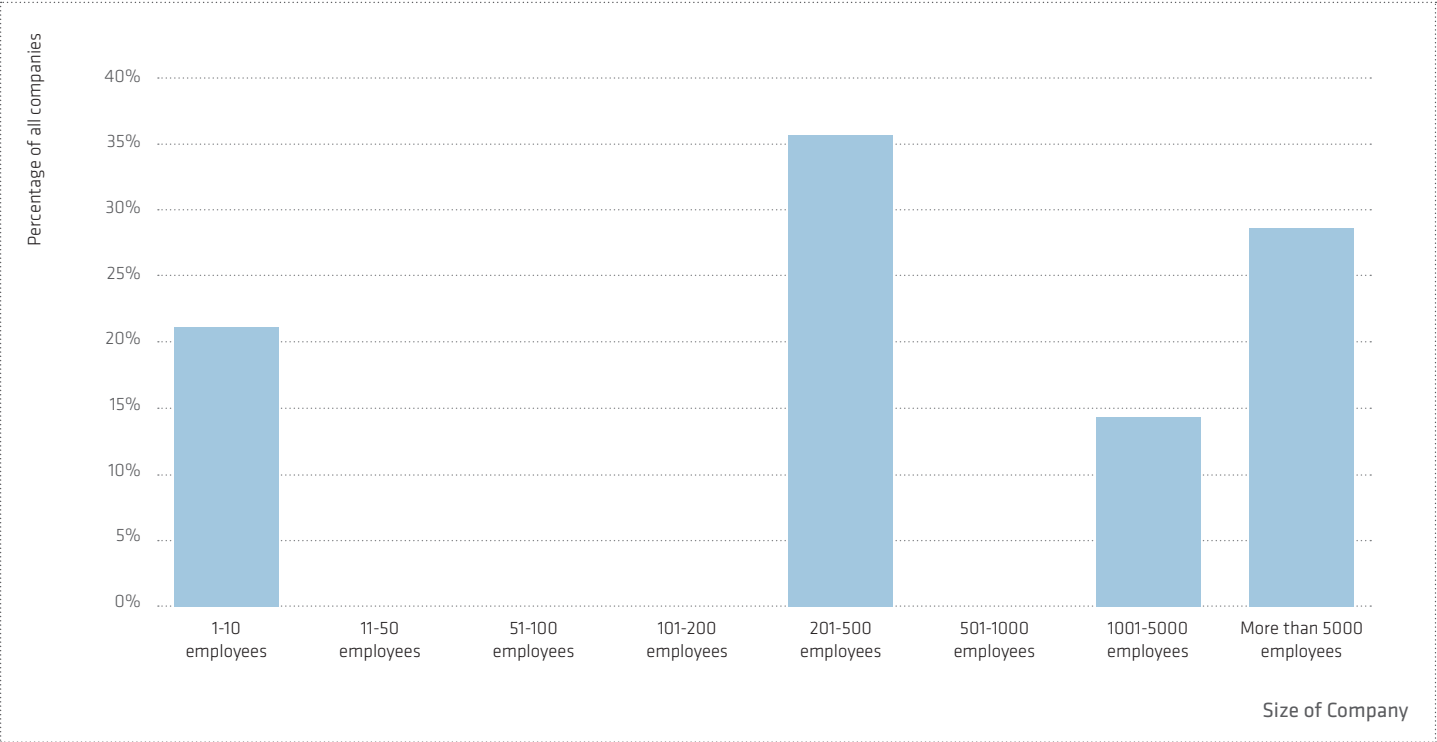
A thorough search for companies working with user driven innovation in Denmark started off with just over 50 innovation projects named by experts within academia and business. 6 of the identified companies with user driven innovation projects, did not want to be interviewed. We encountered 10 companies that currently are engaged in their first innovation project where users are included in the innovation process, but which is not yet completed. In addition, the Danish government's Programme for User driven innovation has funded 78 projects, where only 1 has been completed. This indicates that user driven innovation is an innovation method that is growing in Denmark.

Not all projects fulfilled the three criteria, leaving us with 28 projects in 24 companies that were interviewed. Of the 28 innovation projects, 8 were not considered to be user driven innovation projects, and were therefore taken out of the research sample. The figures that are presented in this chapter are based on 20 innovation projects in Denmark.

We are aware that this is a small sample for statistical purposes, and the results that are presented here are of a more descriptive nature.

The Danish companies that work with user driven innovation vary in size. 57% of companies are small and medium sized companies with less than 500 employees, while 43% companies are large companies with more than 1,000 employees. That would indicate that SMEs do not seem to be at a disadvantage when it comes to working with user driven innovation.

Figure 8 Size of Danish companies, based on employees



Source FORA interviews

There was a slight majority of companies that had business customers, Business to Business (B2B) in relation to companies that had individuals as their customers, Business to Customer (B2C). In the case where companies had other companies as their customers, they would engage in user driven innovation focusing on the end users of their products or services as well as their business customer (see table 4).

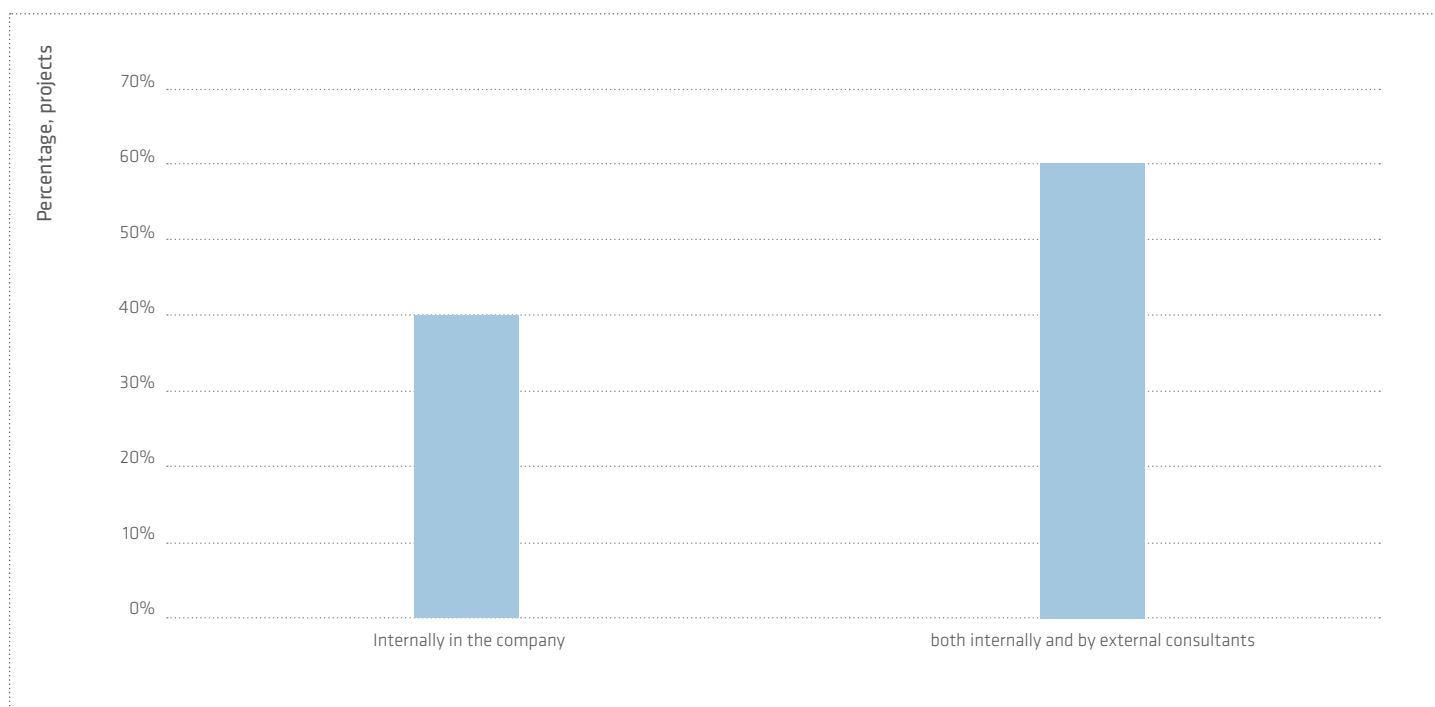
Table 4 Type of customer

Type of customer	Percentage of companies
B2B	50%
B2C	29%
Both	21%

Source FORA interviews

60% of companies working with user driven innovation in Denmark hire external consultants to lead the process during part of the project. The consultants were all from Denmark, with the exception of one innovation project where experts were hired from another European country. This indicates that companies do not have all the necessary skills and competencies in-house in order to complete user driven innovation projects, but that external consultant can be hired from strategic design and innovation consulting companies in Denmark.

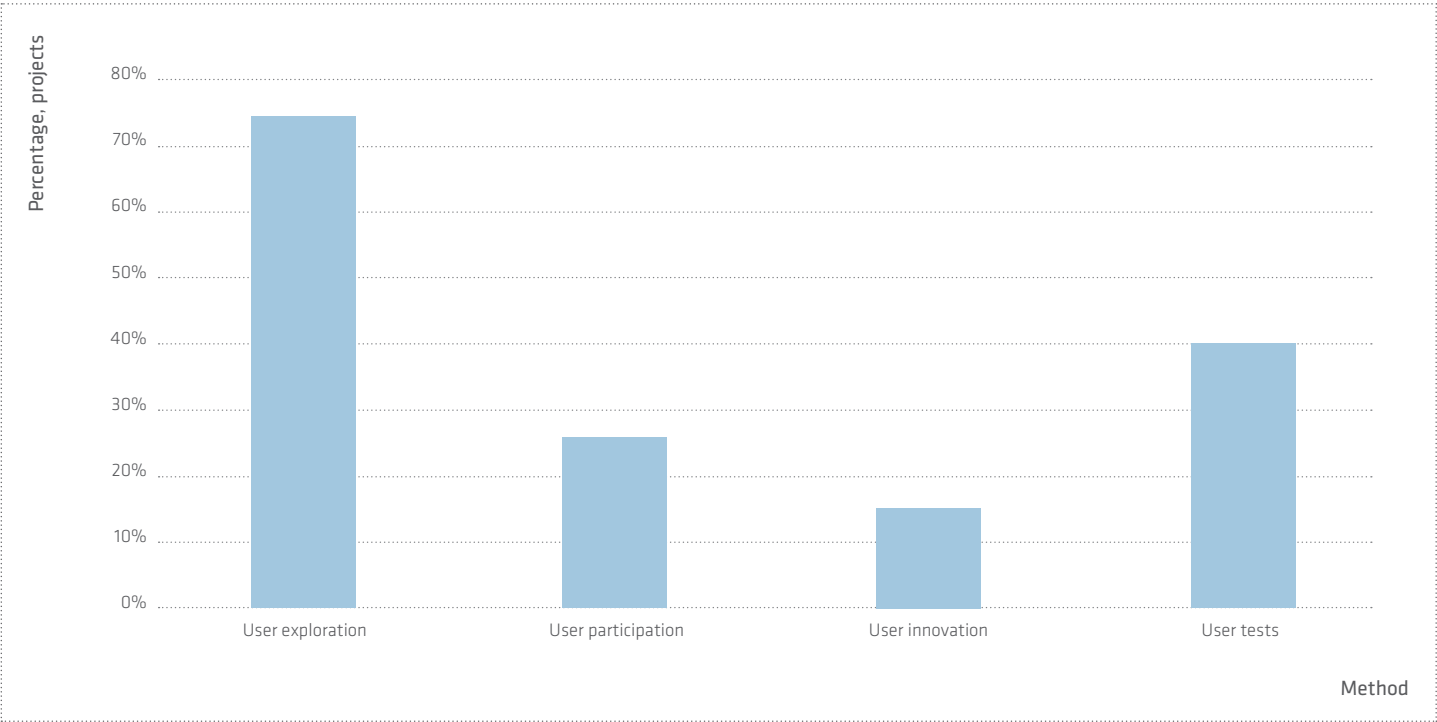
Figure 9 Where the innovation project took place in Denmark based on projects



Source FORA interviews

In Denmark user exploration is the most popular way of working with users and the methods is used in more than 70% of the innovation projects. Innovation projects often contain more than one method of user driven innovation, where the user exploration method often is combined with other methods thereby giving it a high frequency according to usage. User test is the second most popular method used by 40% of the innovation projects, and user participation is the third most popular method used by 25% of the projects. Involving advanced users to innovate together with companies is the least popular method only used in 15% of the projects in Denmark.

Figure 10 The distribution of the four methods of user driven innovation in Denmark



Note The projects can choose more than one kind of user involvement in the innovation process.
Source FORA interviews

When looking at what characteristics companies have that work with the different ways of user driven innovation, it is hard to get a clear picture based on so few projects. One trait that stands out is that companies that work with experts and advanced users in respect to user innovation seem to take place in the life science and industry and the entertainment and leisure industry. While financial services seem to be the business sector that engages in the simplest form of user driven innovation, user exploration takes place across almost all sectors.

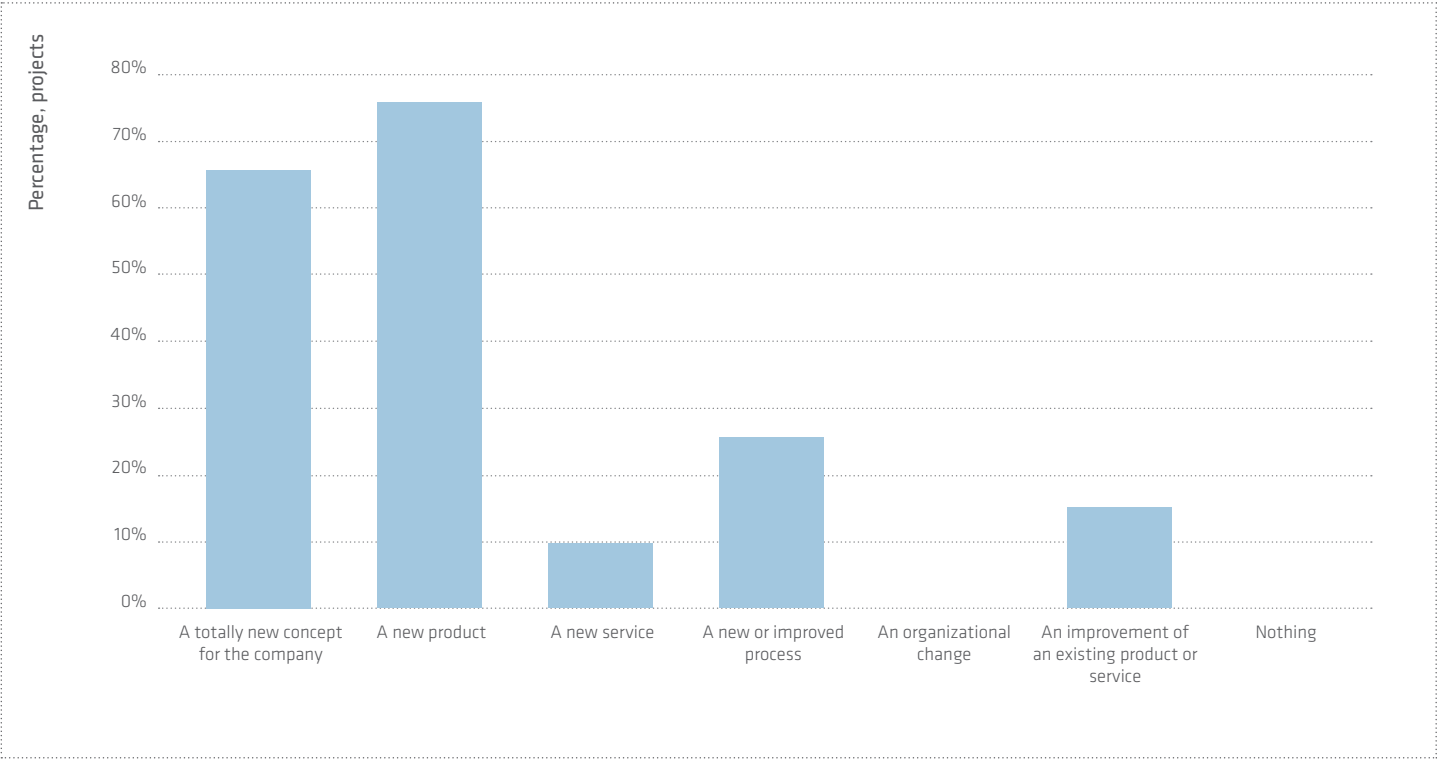
Table 5 User driven innovation across industries (compiled at cluster level)

User driven innovation method	Industry
User exploration	Construction and building / Food processing / ICT / Life science / Mecatronics / Public sector / Transport / Entertainment and leisure
User participation	Construction and building / Mecatronics / Public sector
User innovation	Life science / Entertainment and leisure
User test	Financial services / Food / Mecatronics /Public sector /Transportation / Entertainment and leisure

Source FORA interviews

The outcomes of the innovation projects were significant in Denmark. In 65% of the projects, companies answered that the outcome of the user driven innovation project was a new concept (or platform) for the company, and 75% of the projects resulted in new products being developed and brought to market. Only 15% of projects led to minor innovation outcomes such as incremental innovations. Based on this, it seems that there are some early signs indicating that by working with user driven innovation companies will be able to obtain breakthrough innovations such as new concepts or new platforms.

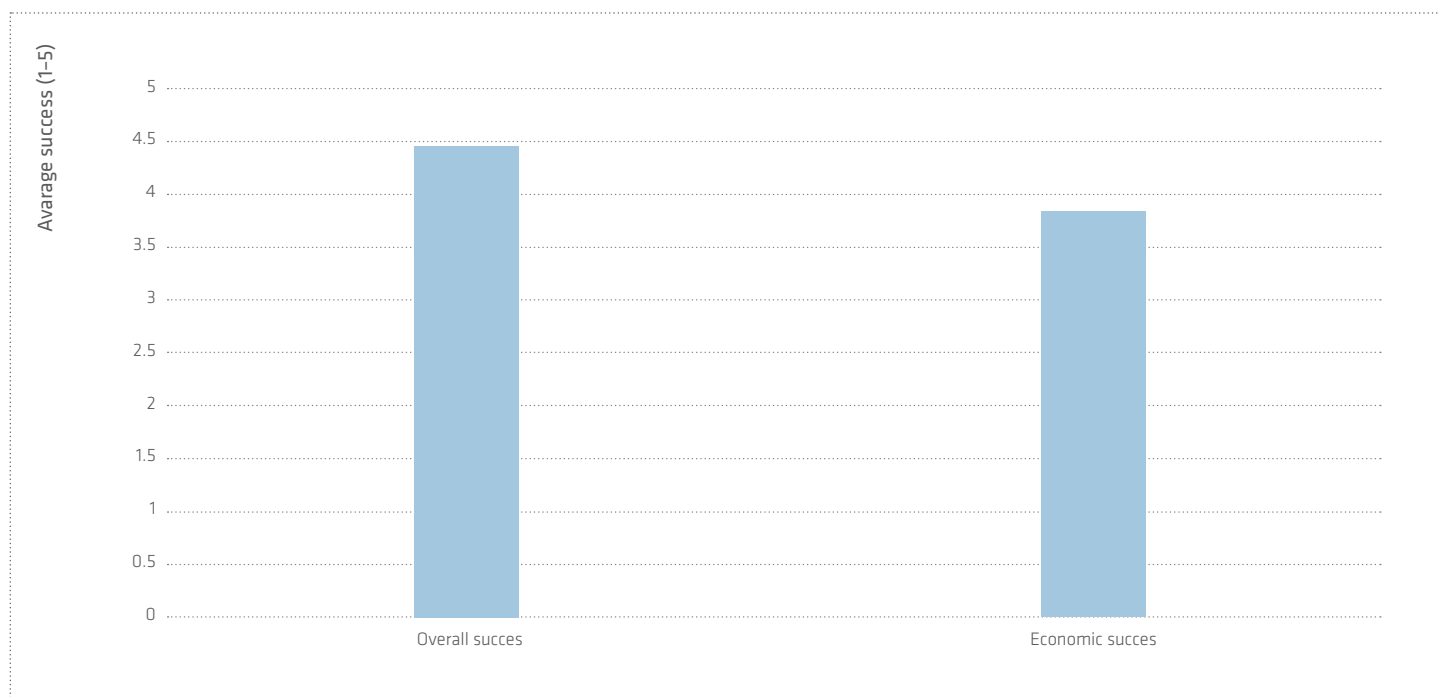
Figure 11 The innovation outcome from the user driven projects in Denmark



Note There can be more than one outcome per project; as a result the sum isn't a 100%
Source FORA interviews

Overall, companies that work with user driven innovation in Denmark, feel that the outcome of the innovation project is successful to a high degree. On a scale from 1-5, Danish companies average answer to how successful the outcome of the project was rated at 4.5, while the economic outcome was rated at 4.1.

Figure 12 The succesrate of the Danish projects divided between “Over all success” and “Economic success” from the rate 1-5



Source FORA interviews

Conclusions for Denmark

User driven innovation is becoming an important source of innovation in Denmark. More and more companies are engaging in user driven innovation projects, while consulting companies are sprouting up to assist companies that do have the competencies themselves in-house. The successful results shown from our interviews indicate that companies should continue their journey down the user driven innovation path.

Case_SAS in-flight glass holders



The Scandinavian airline carrier SAS was founded in 1946, as a result of a merger between three airline carriers in Norway, Sweden and Denmark. The SAS Group had a turnover of SEK 53,195 million in 2008, and transported just over 29 million passengers.

In 2000 SAS got a new corporate identity which meant that a lot of the old equipment was replaced. One of the things being replaced were the glasses used during flights – and thereby also the glass holders. Focus was placed on developing a new glass holder that would help in reducing the amount of glasses that were broken.

CPH Design from Copenhagen was invited in to lead the process of developing a new glass holder. In order to design the optimal glass holder, CPH Design needed to understand where and how the glass holder would be used. In other words they wanted to understand the “journey” of the glasses and the glass holder, and all the “touch points”



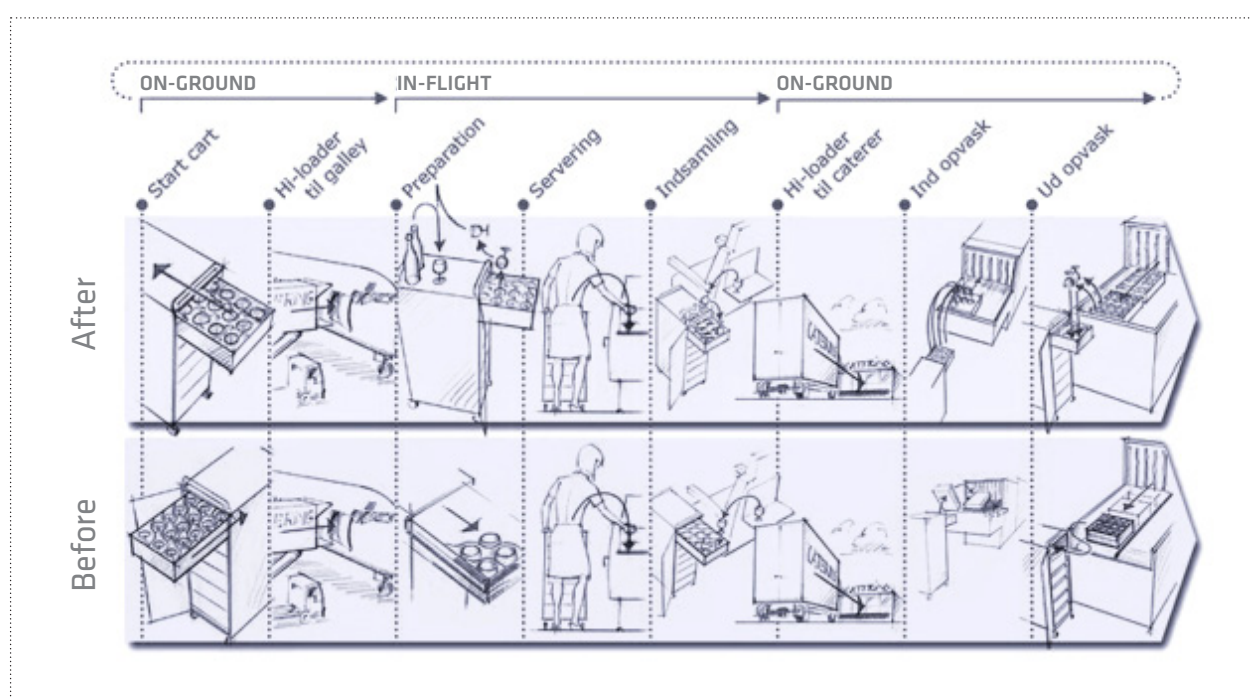
– where SAS employees were in contact with the glass holder in one way or another. In order to understand the “journey” of the glass holder, employees from CPH Design followed the glass holder from start to finish. The journey started on the ground where the glasses were stored in the glass holders, continued to the plane where they were loaded on board, used by the flight personnel during the flight, and back to the ground where the glasses were washed and stored. It became clear that it was not only in-flight personnel that were handling the glasses, but also ground staff that were responsible for washing, storing and transporting the glass holders.



That meant that a new glass holder should be practical and useful for several different types of SAS employees. The old glass holders were designed solely for handling by in-flight personnel, which meant that when the glasses were to be washed they would be placed in another glass holder designed only for washing the glasses. In addition, the plastic material which was used in the old glass holders was not suitable for that usage – the glass holders became brittle and broke after only a short period of time. As a result, SAS incurred large costs due to glass holders breaking in addition to the glasses that got broken.

CPH Design involved the users at the beginning of the innovation process by using several different tools. They observed the different types of users of the glass holder when they were working, they interviewed them in order to understand the users’ work processes and they invited the users to participate in a workshop in order to get input for developing the new glass holder.

The new glass holder can now be used throughout the entire “journey” of the glasses – for storage, washing and in the air. The material used is a different type of plastic which is supple, resulting in less breakage of glass holders. In addition the glasses fit better in the new glass holder, preventing breakage of the glasses. The costs spent on developing the new glass holder for the SAS Group were recuperated within 6 months due to a reduction on broken glasses and glass holders.



User driven innovation in Finland¹³

¹³Interviews provided by Helsinki University of Art and Design

¹⁴ GSM stands for Global System for Mobile communications and was originally a European digital system for mobile communication. With a few exceptions, amongst others USA, GSM is today the standard for most of the world

The interest in user driven innovation has increased in Finland over the last 10 to 15 years. Today a range of important companies are active within the area. In the following the current status in Finland will be described.

User driven innovation in Finnish companies

According to Finnish actors working with user driven innovation the methods had its first real commercial breakthrough together with usability research in the first half of the 1990s when forces within Finnish research and some far-sighted Finnish technology companies began to focus on the link between humans and technology and **usability**.

One of the earliest examples of user driven innovation in Finland was the Finnish mobile phone giant Nokia's work with a usability platform which could meet the needs of the many users that got their first mobile phone in the mid 1990s. Due to new and cheaper mobile devices the price on mobile phones declined in the mid 1990s and opened the market to a much larger group of users than previously. The new and larger group of users created a demand for a new and improved usability in the mobile phones that could still meet the requirements from the GSM specifications¹⁴. In 1995 Nokia began working on a new project with the purpose of creating a new and better user interface for business mobile phones. The project was called "Navi-key". The outcome of the project was the development of the navigation key that allows the user very easily to flick through the menu on the mobile phone. The usability project was an important factor in the creating of Nokia's very successful standard "Series 30" that helped Nokia conquer a larger share of the world market for mobile phones.

The Finnish work with usability in the High-tech companies in the 1990s has helped to spread user driven innovation over the last 10 years. Today more than two handful of user driven innovation projects have been completed and helped the Finnish companies to develop new and interesting concepts, products, services and processes thereby improving the innovative power in the Finnish business sector. Today user driven innovation has been spread from the Finnish high-tech companies to other parts of the Finnish business sector and industries like mecatronics, the paper industry and the Finnish life science industry.

Where many of the Finnish companies work together with external consultancies such as Adage, IDEAN and Etnoteam on their UDI projects a group of large companies in Finland such as Nokia, General Electric's and KONE has besides or instead of collaboration with external companies established internal programs that among other things promote user driven innovations projects internally in the companies.

User driven innovation in Finnish education

The Finnish educational institutes have started to include user driven innovation into their educational programmes. One of the earliest examples was the establishment of the *Usability School* as a collaboration agreement between Helsinki University of Technology (TKK), University of Helsinki (UH) and University of Art and Design Helsinki (Uiah). Usability School continues the Finnish focus on usability that also Nokia's work with the Navi-key project is an example of. Beside the Usability School a lot of interesting user driven innovation activities are going on in Helsinki these years in more or less structured networks in and around the educational institutions.

The *University of Tampere* has integrated user driven innovation in their educational opportunities to the students. Through the *Graduate school in User-Centred Information Technology* (UCIT) that has been running since 2002 the University of Tampere offers graduate and post-graduate courses about the interaction between humans and technology. Also at the *University of Tampere the Department of Computer Science* has started a unit called *TAUCHI* that researches and teaches in Computer-Human interaction an area that originates from the same tradition as UDI.

The interest in user driven innovation has also spread to the *University of Oulu* that now are researching and teaching in user needs through activity theory in within computer science.

User driven innovation policy initiatives in Finland

One of the main drivers in the Finnish user driven innovation activity has been the publicly funded expert organisation for financing research, development and innovation in Finland, **Tekes**. The organization supports user driven innovation on two different levels; either by supporting research in educational- and research institutions or by supporting collaborations between educational- and research institutions and Finnish companies.

So far Tekes has supported different initiatives with some of the leading Finnish educational- and research institutes and some of the most forward-looking Finnish companies. Even though only a limited group of Tekes supported research projects have been able to share their knowledge with the public so far there is no doubt that Tekes support to user driven innovation research has helped its dissemination to the Finnish educational- and research institutions and to a group of leading Finnish companies.

On a ministerial level the *Finnish Ministry of Employment and the Economy* are at the moment drafting an Action program which includes the promotion of user driven innovation. The **action program** seeks to challenge the technological view on innovation that seems to have been the predominant view on innovation in Finland until now. Besides UDI the program looks at public procurement, standardisation and smart regulation. The program will deal with the policy opportunities and barriers connected to these issues and will be launched in spring 2010.

Our findings

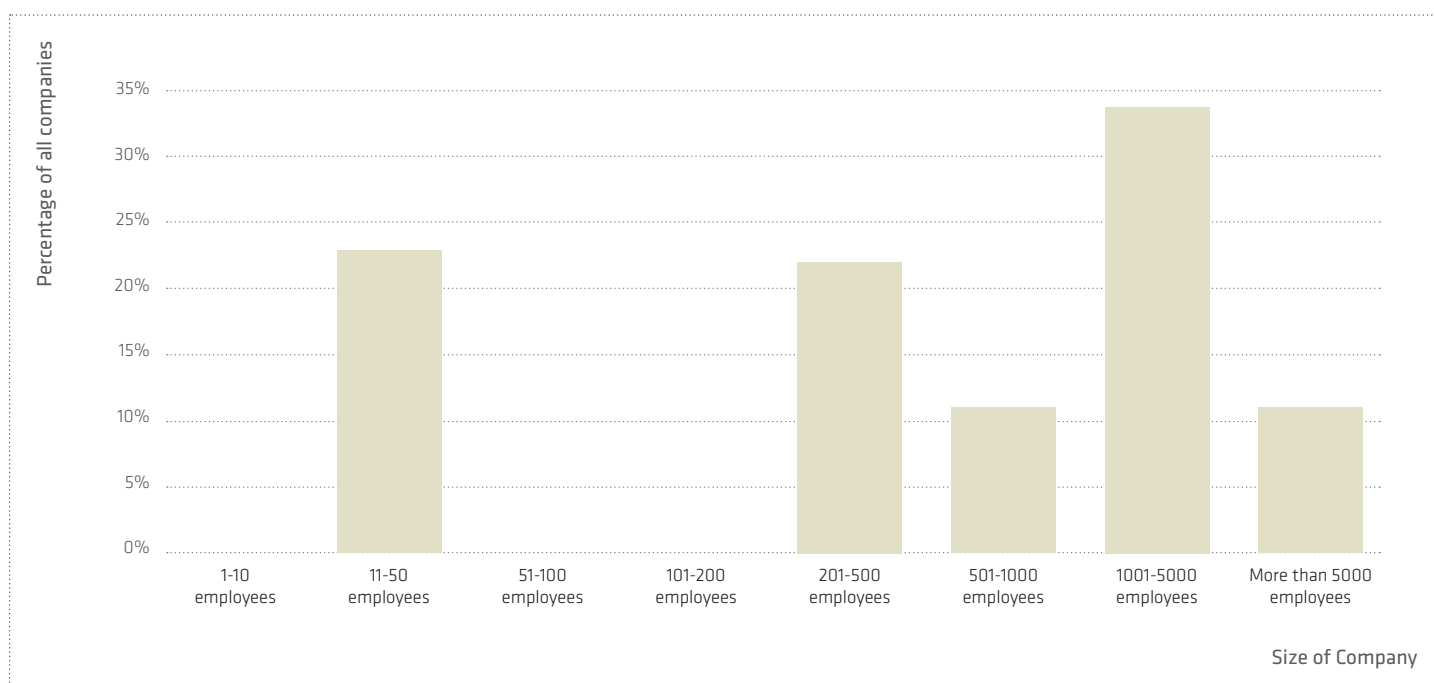
The Finnish part of the user driven innovation mapping project was conducted by Turkka Keinonen, professor, TaT, University of Art and Design Helsinki and his team.

The Finnish part of the project identified 13 Finnish companies and organizations that fulfilled the criteria for this project. The following are based on the answers from the 13 Finnish companies and organizations.

We are aware that this is a small sample for statistical purposes, and the results that are presented here are of a more descriptive nature than from a statistic point of view.

The Finnish companies and organisations that work with user driven innovation most often have a considerable size. More than 75 % of the Finnish companies participating in this study had more than 200 employees. 44 % of the Finnish companies that have completed a user driven innovation project are very large companies with more than a 1.000 employees (cf. figure 13).

Figure 13 Size of Finish companies, based on employees



Source: TAIK interviews

Beside the fact that it is the larger companies that have completed user driven innovation projects in Finland it is interesting to see that 22 % of the completed Finnish user driven innovation projects were conducted by relatively small companies with less than 50 employees (cf. figure X).

More Finnish user driven innovation projects were conducted by Business to Business (B2B) companies than business to consumer (B2C) companies. A little more than 60 % of completed user driven innovation projects are B2B while close to 40 % of the projects conducted in Finland are B2C projects. None of the projects are conducted to both B2B and B2C (cf. tabel 6).

Table 6 Type of customer

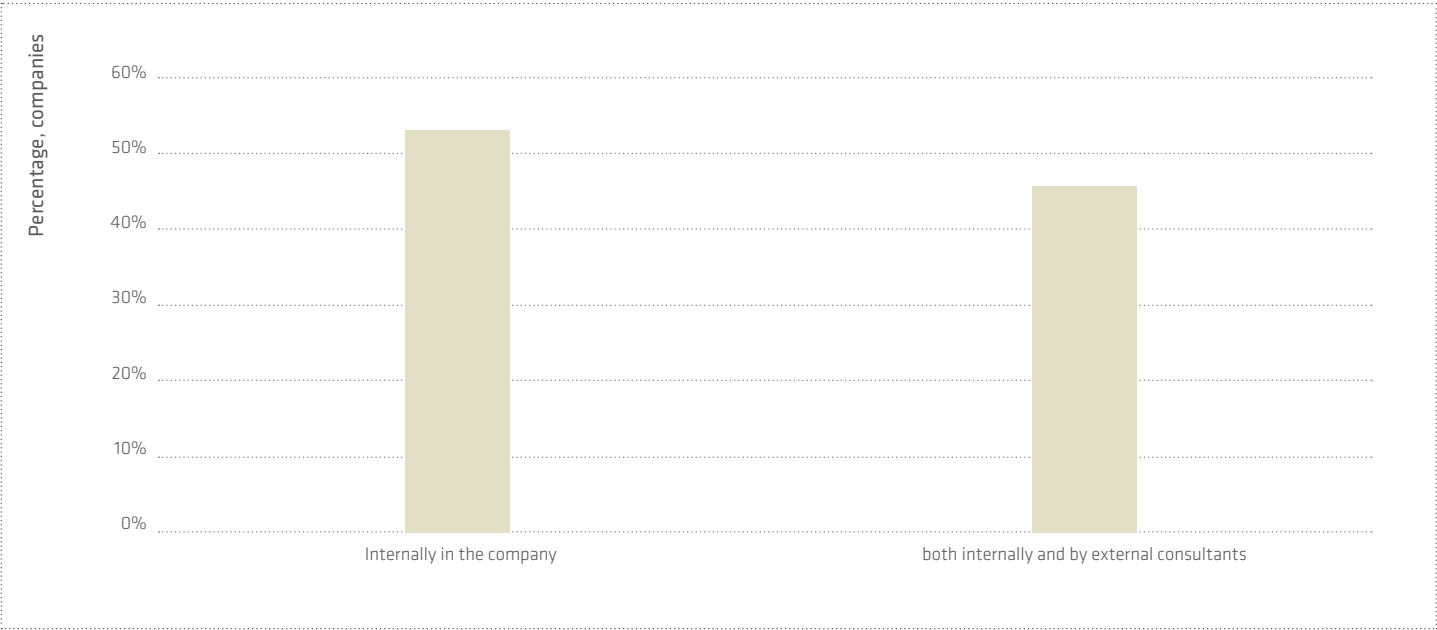
Type of customer	Percentage of companies
B2B	62%
B2C	38%
Both	0%

Source TALK interviews

The large difference between the number of B2B and B2C projects makes Finland the Nordic country where B2B make up the largest percentage of projects. A reason for the many B2B projects amongst the Finnish projects are of course that the Finnish business sector has a strong focus on B2B centred areas such as engineering, investment goods and process lines.

The Finnish user driven innovation projects were conducted for the companies by a mixture of in house departments and external consultants. 54% of the projects were conducted by in house departments in the companies while 46 % of the projects were conducted by in house departments in the companies together with external consultants (cf. figure 14).

Figure 14 Where the innovation project tog place in Finland based on projects

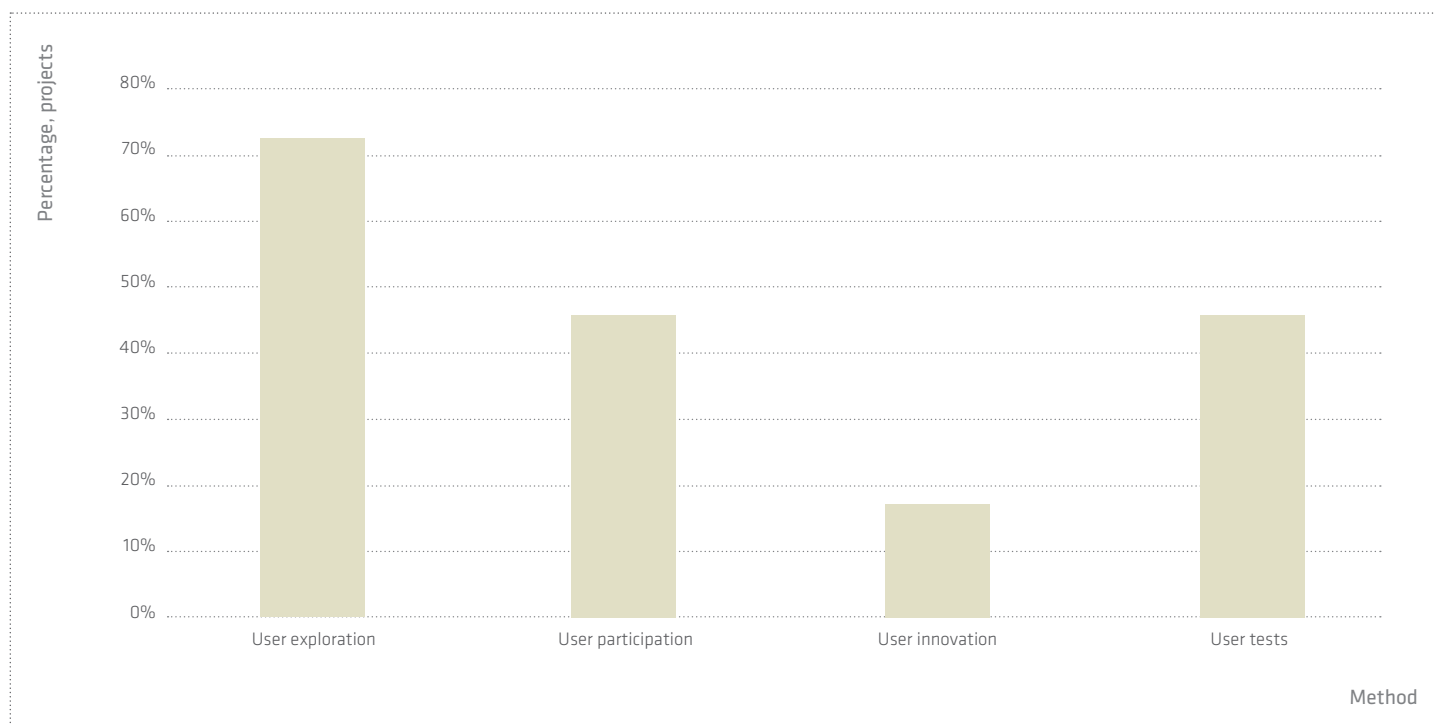


Source TALK interviews

Much more user driven innovation projects are done internally by companies in Finland than in for example Denmark. There can be many reasons for that, but the often considerable size of the Finnish companies is an important factor and likewise the fact that many of the Finnish companies are working with technologically advanced products that demand a high level of technical knowledge from consultancies.

The most commonly used approach to user driven innovation amongst the Finnish projects is user exploration. More than 70 % of the projects included employ user exploration in the innovation process. Also, user participation and user test are often identified in the Finnish projects; more than 40 % include these approaches in their innovation process (cf. figure 15).

Figure 15 The distribution of the four methods of user driven innovation in Finland



Note The projects can choose more than one kind of user involvement in the innovation process; as a result the sum is not 100%

Source TAIK interviews

There can be many reasons for the considerable Finnish activity within user participation. One important factor is the University of Art and Design (UAIH) in Helsinki that since 2002 have been an important driver in the development. UAIH has worked intensively with making design tangible through participatory innovation.

Surprisingly few of the Finnish user driven innovation projects used the user innovation approach in their innovation process with close to 20 % of the identified Finnish UDI projects using the approach. The information- and communication technology business is the sector that has completed the largest number of user driven innovation projects in Finland.

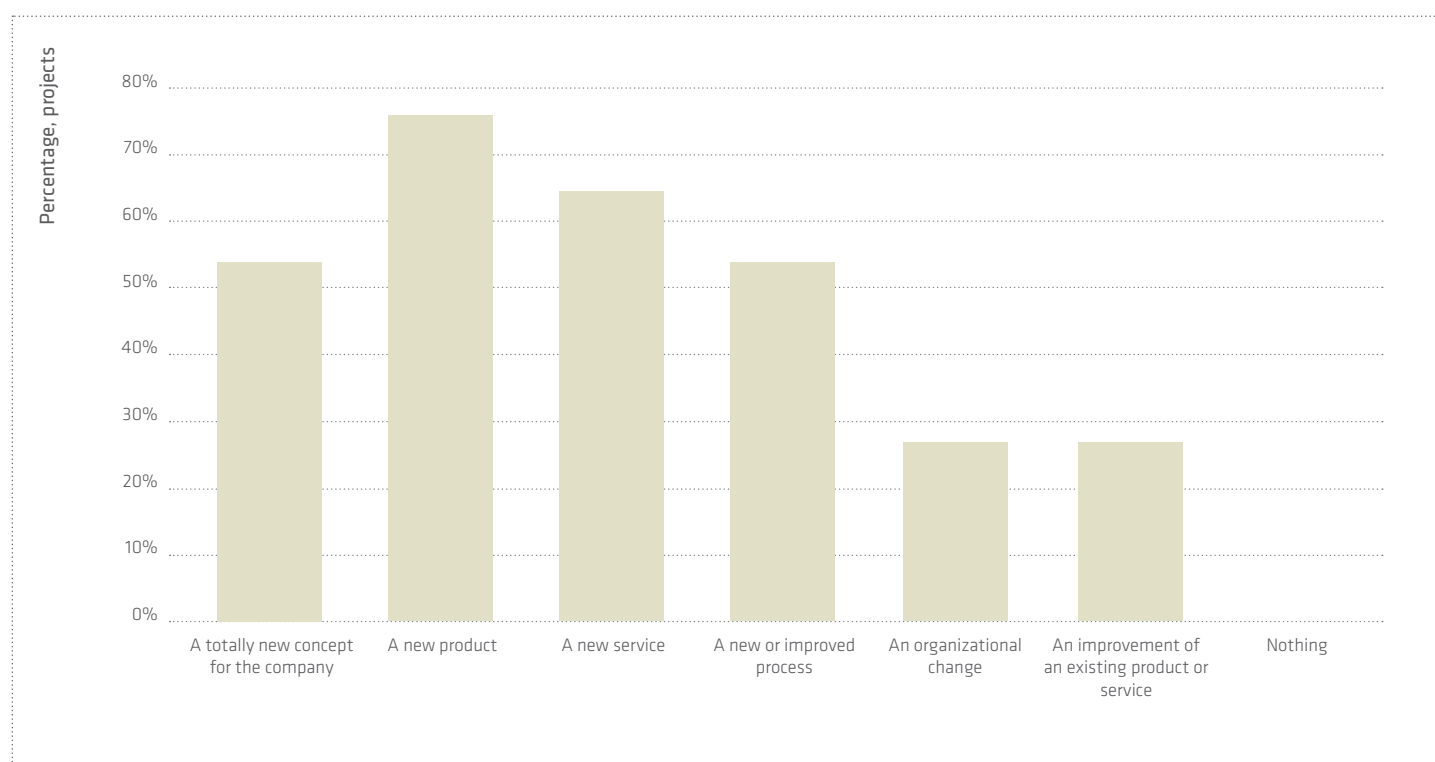
Table 7 User driven innovation across industries (compiled at cluster level)

User driven innovation method	Industry
User exploration	ICT / Life science / Mecatronics / Public sector
User participation	ICT / Mecatronics
User innovation	Life science
User test	ICT / Mecatronics / Public sector

Source TAIK interviews

Furthermore, there are several good examples of user driven innovation activity in the Finnish medical industry, mecatronics and the public sector all of which have completed interesting user driven innovation projects.

The Finnish companies and institutions working with user driven innovation have first and foremost produced many new and interesting concepts. More than 70 % of the projects have lead to a new product and more than 60 % lead to new services. 55% of the innovation projects lead to new concepts.

Figure 16 The innovation outcome from the user driven projects in Finland

Note There can be more than one outcome per project; as a result the sum isn't a 100%

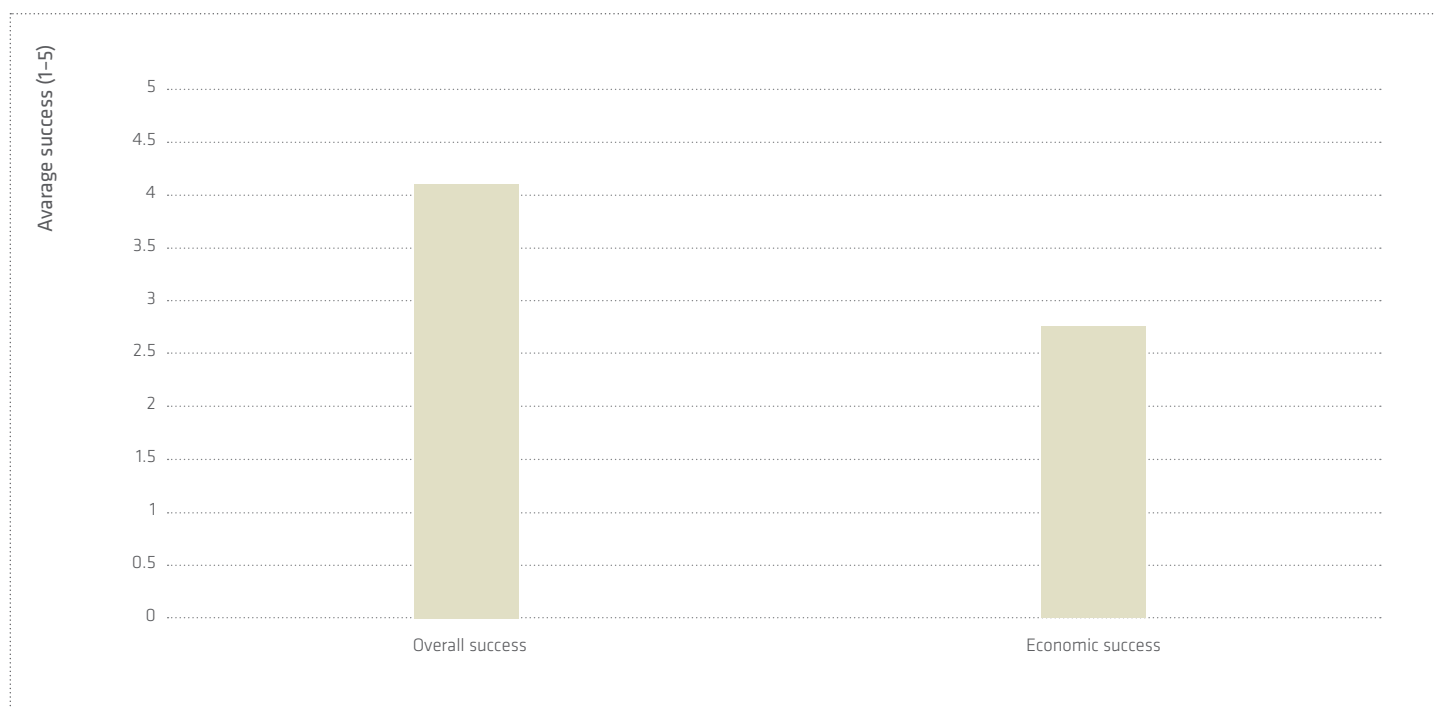
Source TAIK interviews

More than half of the Finnish user driven innovation projects have lead to *new or improved processes*. While less than 30 % replied that the projects lead to *organizational changes* or *Improvements of existing products or services*. When asked about how successful the outcome of the project was the Finnish

companies and institutions granted that they had been satisfied. When asked to evaluate their user driven innovation projects on a scale from one to five, the average rate of success was more than four on the scale which means that the companies and institutions evaluate their projects success to be *High*.

Figure 17

The succesrate of the Finnish projects divided between “Over all success” and “Economic success” from the rate 1-5



Source TAIK interviews

When the Finnish companies where asked to evaluate the *Economic outcome* of their user driven innovation projects the evaluation was lower. On the same scale from one to five the average evaluation was close to three on the scale which means close to *Fair*. There can be many explanations to this difference between the companies' evaluation of the *overall success* of the project and the *economic success*. Several of the interviewed companies and institutions that rated the *economic success* low stated that it was not the goal of the project.

Conclusions for Finland

User driven innovation in Finland is really starting to take off. A range of Finnish companies and organisations are now working with user driven innovation. It seems fair to state that Finland together with Denmark are the front runners within user driven innovation amongst the Nordic and Baltic countries.

And the Finnish focus on user driven innovation seems to develop even further in the years to come. Several interesting educational initiatives are taking place in the Finnish educational sector and it is going to be interesting to follow the effect of these initiatives in the future.

Case_Planmeca ProModel

Finnish Planmeca Oy is the largest privately held company in the dental equipment market and the third largest company in the field. Headquartered in Helsinki, Finland, Planmeca designs, manufactures, and markets high-tech dental equipment suitable for private clinics and teaching environment.

Planmeca's product lines are organised in

- dental care units
- dental X-rays
- digital imaging and software applications.

Planmeca products are labeled as state-of-the-art dental equipment. The company has been a forerunner in digital imaging and advanced, computer integrated dental care concepts for years. Planmeca is strongly committed to R&D and innovative solutions, and behind all procedures stands the all in one-concept: we deliver complete dental solution with highly-integrated device and software options using the latest technology combined with exquisite design.

Planmeca products are designed and manufactured in Helsinki, Finland, and distributed worldwide via a comprehensive network of dealers operating around the world. More than 98% of Planmeca's production is exported to over 100 countries. The Group estimated turnover for the financial year 2010 is MEUR 600 with approximately 2,300 employees.

As a result of increased global competition also prevailing at the dental equipment market, Planmeca Oy decided at the beginning of 2007 that the company needed new services to strengthen its 3D X-ray imaging business. Thus a new innovation project was launched.

Through market research and literature surveys, a possibility to create a service which was unique to X-ray imaging business was identified. It was decided that a project team should be established in order to further develop this new service concept which could create value for the company and its customers.

The research team of Planmeca Oy gathered a group of professionals that could help the company in the developing of the new concept. The group of professionals consisted of users with an advanced knowledge of the area such as dentists, dental technicians, and X-ray and imaging experts.

The professionals were invited to attend a workshop. Together with the Planmeca research team they developed different concepts within the area of digital X-rays using different methods such as brainstorming with rapid prototyped models.

The outcome of the workshop was a new online ordering service concept and product, a real-size 3D production of a 3D image. The online ordering service allows the dentists to send a 3D X-ray image of the patient directly to Planmeca Oy by using Planmeca Romexis imaging software. Based on this 3D X-ray image, Planmeca manufactures a 3D real-size reproduction of the anatomy, and then sends the model to the dentist.

The model assists the dentist in visualising the details of the anatomy. The new service concept was named Planmeca ProModel.

After the development work carried through in cooperation with the professionals, Planmeca Oy defined the technical specifications internally. When a fully functional prototype was ready, Planmeca Oy invited the professionals for another workshop where the prototypes were tested. The tests turned out successful, and the service was implemented in Planmeca Oy's product portfolio in 2008.

Planmeca model:



User driven innovation¹⁵ in Norway

¹⁵Data for this chapter is provided by the School of Architecture in Oslo, Norway

User driven innovation is in its early days in Norway. Companies are slowly recognising that they can obtain valuable information from their users that can be used early on in the innovation process. A few Norwegian companies have started working systematically with methods of user driven innovation.

Research and education is also growing in the area of user driven innovation. A few universities and research centres in Norway are focusing on design and user driven innovation in both teaching and research. (For more detailed information on frameworks that support user driven innovation in Norway, see User driven innovation: Context and cases in the Nordic Region, Nordic Innovation Centre, 2008.)

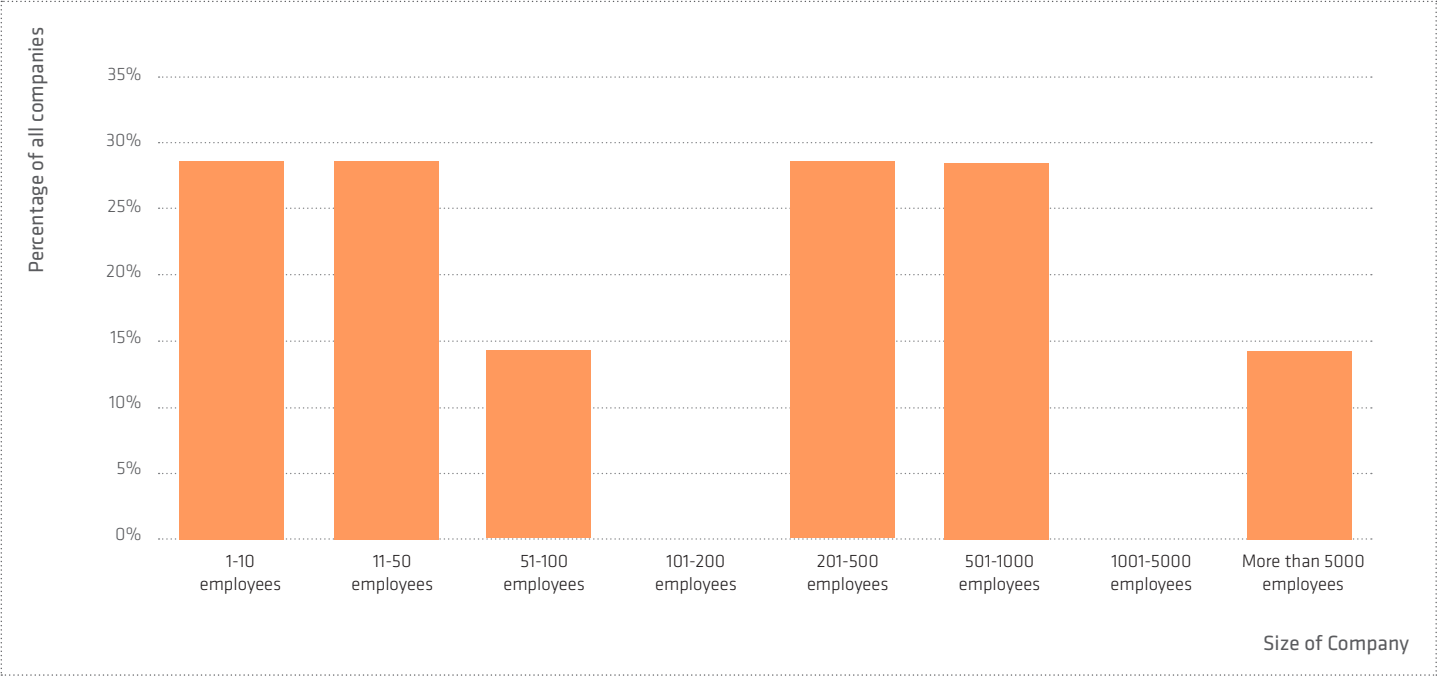
Based on the snowball method, 20 projects within 11 companies working with user driven innovation in Norway were recommended by experts within academia, business and industry associations. Not all projects fulfilled the three criteria, leaving us with 8 projects in 7 companies that were interviewed. A total of 10 companies that were identified are currently engaged in their first innovation project where users are included in the innovation process, but which is not yet completed. Even though there are not many completed projects to be found in Norway where companies involve users in the innovation processes, it seems that it is an area under development. A few consulting companies that focus on design and service design have become active within the last few years, thereby participating in creating new projects where the user understanding is important.

The figures that are presented in this chapter are based on 8 innovation projects in Norway.

We are aware that this is a small sample for statistical purposes, and the results that are presented here are of a more descriptive nature.

The Norwegian companies that work with user driven innovation tend to be the bigger companies that also have international branches. The two smaller companies that have worked with user driven innovation are related to independent projects that were started by a strategic design company. One of the projects resulted in a spin-off company which today is based in Norway.

Figure 18 Size of Norwegian companies, based on employees



Source AHO interviews

There was a slight majority of companies that had business customers (B2B) in relation to companies that had individuals as their customers (B2C). In the case of business to business companies, the focus in these innovation projects were on tapping knowledge from the end users. None of the business to business companies focused on tapping knowledge from their business users in these innovation projects.

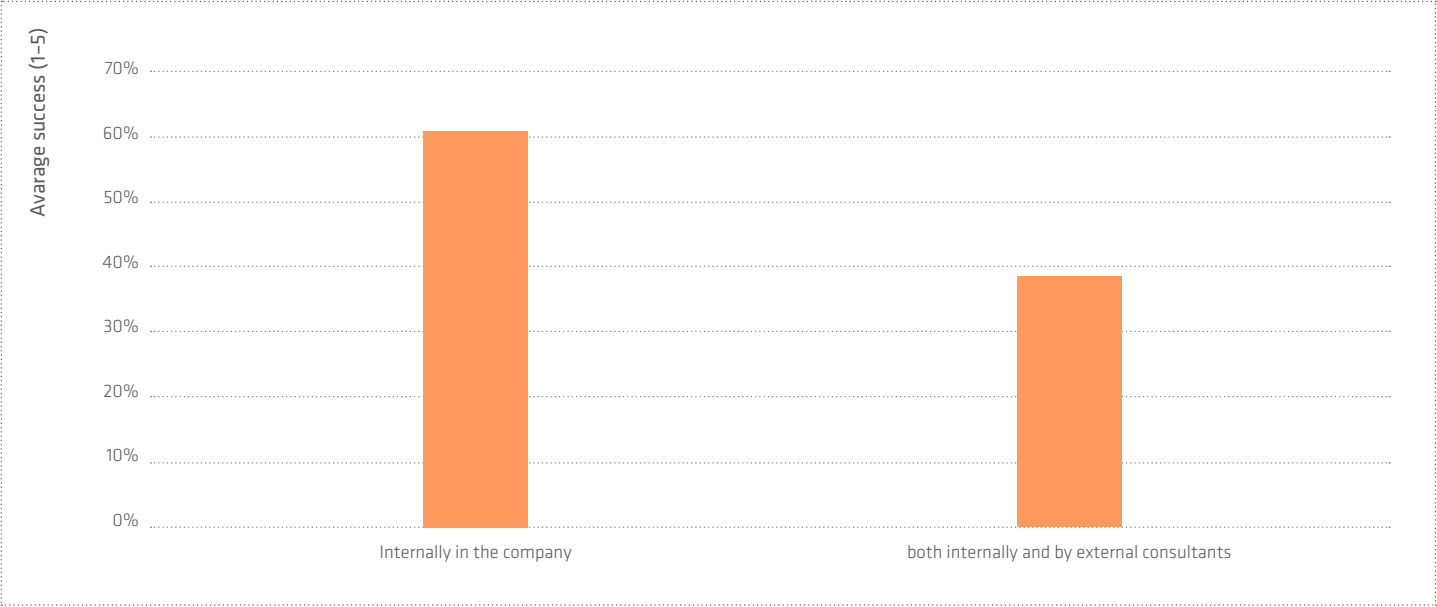
Table 8 Type of customer

Type of customer	Percentage of companies
B2B	50%
B2C	33%
Both	17%

Source FORA interviews

Just over 60% of companies working with user driven innovation in Norway hire external consultants to lead the process during part of the innovation project. The consultants that were hired consisted of consulting companies from either Norway or Denmark. This indicates that companies do not have all the necessary skills and competencies in-house in order to complete user driven innovation projects. At the same time the access to qualified consulting companies within this field is still rather small in Norway.

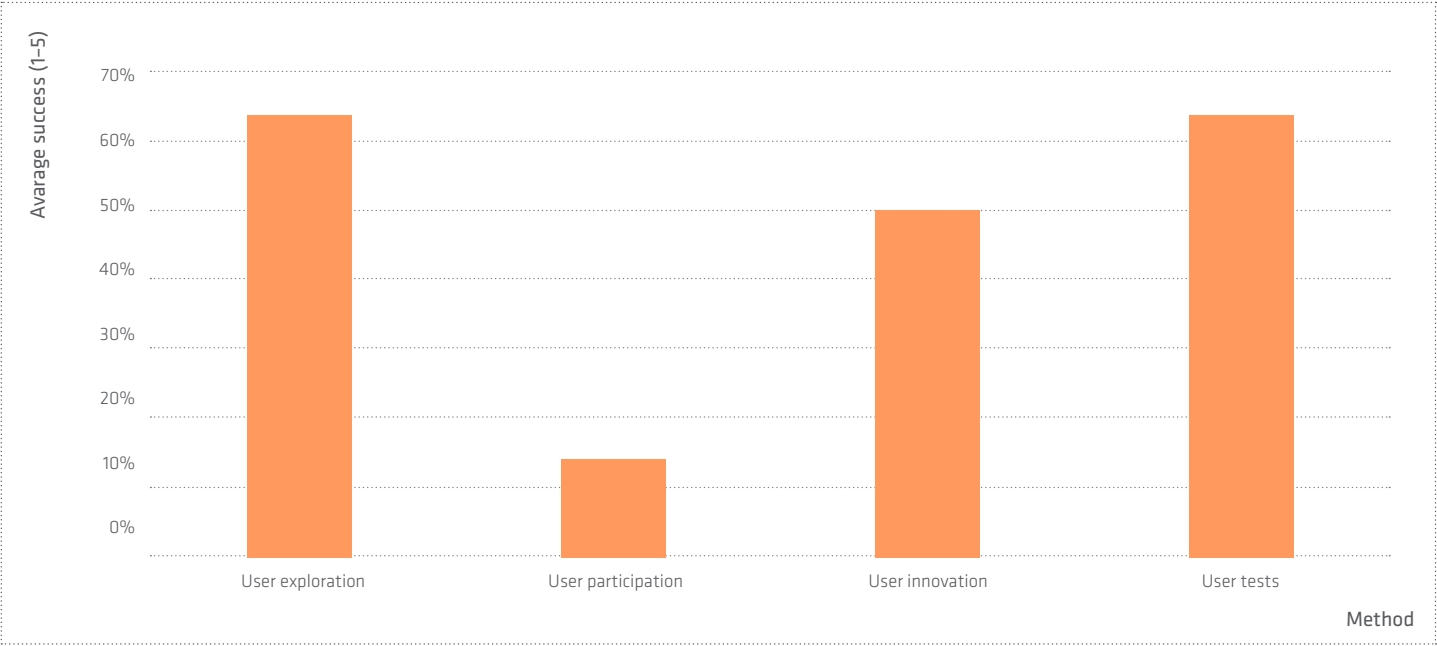
Figure 19 Where the innovation project tog place in Norway based on projects



Source AHO interviews

In Norway more than half of the innovation projects involved users in relation to testing the products or services. This indicates that users were involved at the later stages of the innovation process, once a product or service already had been developed. While some projects also used other methods of working with users earlier on in the innovation process, some projects only involved the users in the testing stage. User exploration is the second most popular way of working with users, used in 50% of the innovation projects, while involving advanced users to innovate together with companies were used in less than 40% of innovation projects. One trait that stands out is that companies working with user driven innovation implement several methods during an innovation project.

Figure 20 The distribution of the four methods of user driven innovation in Norway



Source AHO interviews

Looking at company characteristics, it is hard to get a clear picture based on so few projects. User participation methods are limited to ICT companies, while user tests are used by almost all types of companies. Financial services and the medical sector seem to be the business sectors that engage in the simplest form of user driven innovation.

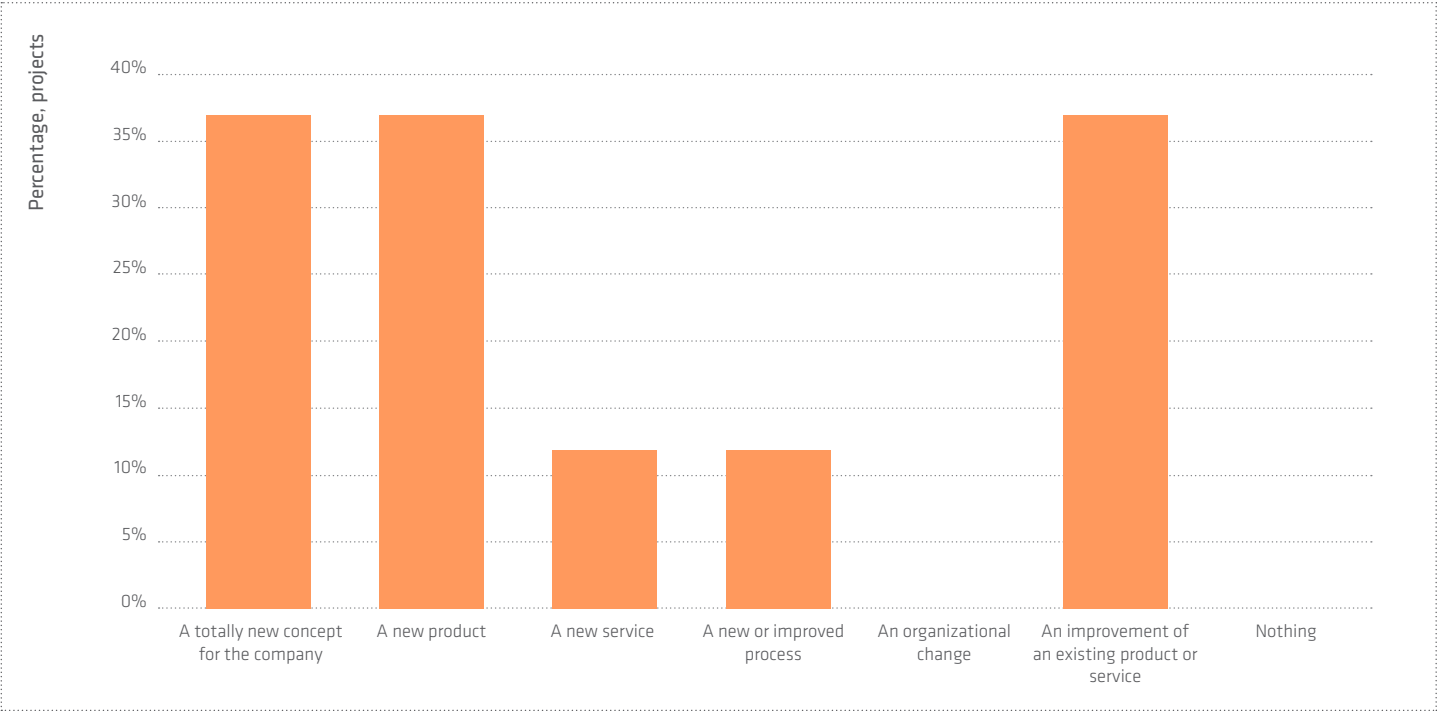
Table 9 User driven innovation across industries (compiled at cluster level)

User driven innovation method	Industry
User exploration	ICT / Transport / Business services / Chemical products /
User participation	ICT /
User innovation	Transport / Business services / Chemical products /
User test	Financial services / ICT / Life science / Business services / Chemical products /

Source: AHO interviews

The outcomes of the innovation projects in Norway have mainly been new concepts or incremental innovations of existing products or services. In just over 40% of the projects, companies answered that the outcome of the user driven innovation process was a new concept for the company, and just over 40% of the projects resulted in incremental innovations. Almost 30% of the innovation projects resulted in new products, while just over 10% led to new services. Just over 10% of the innovation projects resulted in a new or improved internal process for the company. There seems to be a link between the methods for working with user driven innovation, and the outcomes experienced by the companies. In more than half of the projects where the users have been included towards the end of the innovation process, the outcome of the project has been incremental innovations.

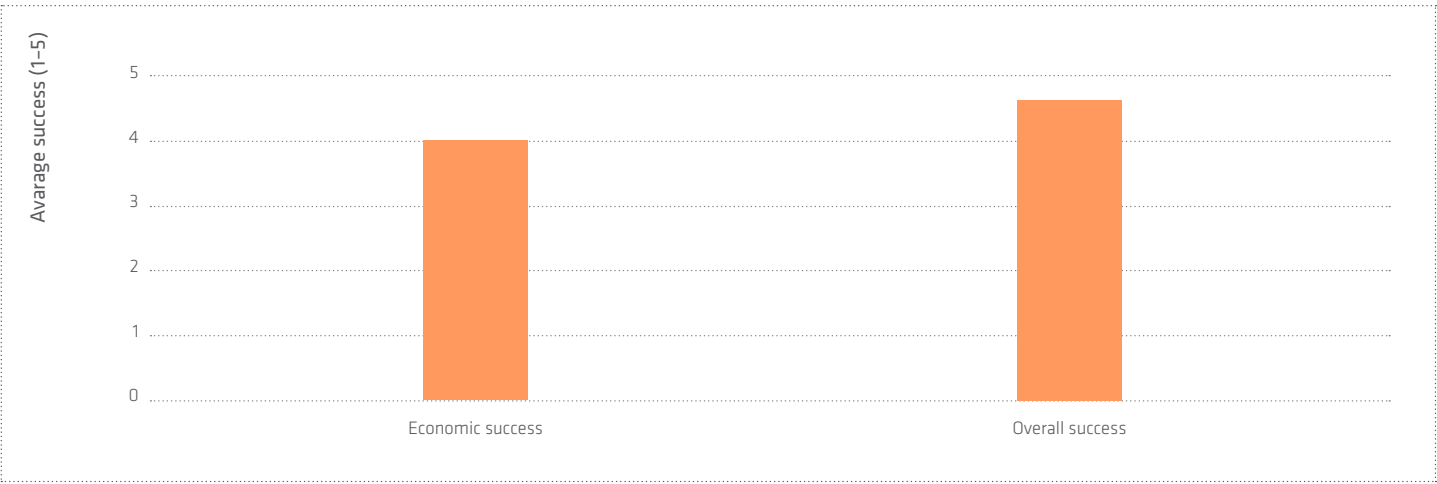
Figure 21 The innovation outcome from the user driven projects in Norway



Source AHO interviews

Overall, companies that work with user driven innovation in Norway, feel that the outcome of the innovation project is fairly successful. On a scale from 1-5, Norwegian companies' average answer to how successful the outcome of the project was, rated at 4.8 while the economic outcome was rated at 4.0.

Figure 22 The succesrate of the Norwegian projects divided between “Over all success” and “Economic success” from the rate 1-5



Source AHO interviews

Conclusions for Norway

User driven innovation in Norway is still in its infancy. Some companies are attempting to take use of the methods related to tapping knowledge from users, but they are still inexperienced and are still experimenting with how to use the correct tools in order to obtain the successful results.

There seems to be a growing focus on the area where some large companies are rethinking their innovation processes in-house, and where new consulting companies are starting up within the area of strategic design and innovation consultancy.

Case_Jordan



The Norwegian company Jordan produces oral hygiene products, painting tools and household cleaning products. The company was founded in 1837 and has headquarter in Oslo, where it has its head office today. The Jordan Group employs 668 people, and had revenues of NOK 1,073 million in 2008. Since 1927 Jordan has been producing toothbrushes and other products for oral hygiene and has become a Scandinavian lead in preventive oral care.

However, Jordan has also experienced hard competition from large conglomerates such as Procter & Gamble (Oral B) and Palmolive-Colgate (Colgate) that invest large sums in R&D, amounting to more than Jordan's total sales. As it was becoming increasingly difficult for Jordan to differentiate their products from their competitors, the company decided in 2004 to take a look at their market and their users, invoking methods that were new to them. Together with a consulting company Jordan went on to create a new innovation platform for Jordan's oral hygiene products.

Jordan decided to involve their users in the development of the new innovation platform. By using ethnographic methods Jordan was able to gain new insights into what their users thought about a toothbrush, how to design their products and how to position their brand.



Source jordan.no

Jordan Individual are toothbrushes that focus on function and design. The concept is based on the fact that everybody has his or her own way of brushing their teeth and personal preferences in design and colours. There are eight different designs and colours in each size, so everybody can find a design that they like.

The interpretations of users unacknowledged needs showed that women in particular divide their personal care into two very different categories: hygiene and care. Hygiene is about looking good in the immediate and short term, while care is about how to look good in the long term by taking preventive measures. While hygiene products often are hidden away in the cupboard so no one can see them, care products are often kept out in the open to demonstrate that women take care of themselves. In relation to toothbrushes, producers were generally focusing on expensive and technical solutions related to oral hygiene. Jordan saw an opportunity in moving away from the hygiene focus and the expensive technology race, towards providing care products for their users.

The new brand positioning concept “love your teeth” was developed and new products were created that targeted women’s need for care products. Some products were designed so they could be on display, and not hidden away, and some products were designed to fit into women’s handbags for them to have on the go.



Source jordan.no

Jordan GO! is a new concept in oral hygiene for everyone on the move. The product consists of a case that holds a toothbrush, tooth gel and toothpicks. It is small, and can easily fit in a handbag.

Furthermore, a long term strategy has been formulated based on the insights that were obtained from involving the users in the front end of the innovation process. Since the implementation of the innovation platform Jordan has already seen an increase in their market share of toothbrushes in the Nordic countries, and their brand repositioning has resulted in new customers from the younger group of users.

User driven innovation in Sweden¹⁶

¹⁶ Data for this chapter is provided by
Dotank in Sweden

In September 2009 Lund University and Region Skaane hosted a large-scale conference with the title “Innovation in Mind/ European Innovation Conference”. The purpose of the conference was to underline that all innovations begins with human consciousness and that user driven innovation needed attention in Sweden. The conference is an example of the growing Swedish focus on user driven innovation that can be observed at the moment. In the following some headlines for the current user driven innovation status in Sweden will be presented.

User driven innovation in Swedish companies

The Swedish business sector is traditionally focused on commodities and based on the abundances of Swedish nature. Swedish Iron, wood and energy has been a powerful enabler for the growth and an important platform for Swedish company giants such as ABB, Volvo, Electrolux, Ericsson and SKF. **The group of large and strongly internationally oriented companies** from Sweden has been a driver for innovation in Swedish for a long time and will continue as such in many years to come due to the fact that the Swedish internationally oriented companies have had defend and expand their market shares on the tuff global market.

The earliest examples of user driven innovation in Sweden come from the large Swedish companies. In fact, some of the very early examples of user driven innovation globally also come from these large Swedish companies.

An early example of one of these large Swedish companies’s very foresighted work with user driven innovation is the collaboration between **Electrolux** and the Chicago based design research company Herbst, LaZar and Bell concerning the developing of a new vacuum cleaner. In this project that started as early as in the mid-1980s Electrolux first started collaborating with Herbst, LaZar and Bell using ethnographic studies in order to test a new vacuum cleaner that made it easy for users to vacuum clean stairs. Together Electrolux and Herbst, LaZar and Bell conducted an ethnographic study in which they observed users cleaning in their homes. The results from the observations showed that Electrolux was trying to solve a problem that the users did not have. The users did not need help to vacuum their stairs since most people just lifted their vacuum cleaner when they wanted to vacuum their stairs and did not mind doing that at all. Instead the study pointed at other user needs that Electrolux could solve – the need for reducing the noise of the vacuum cleaner and the need for a vacuum cleaner that was gentle for the users’ back while they were vacuum cleaning.

Within the Swedish borders the focus on user driven innovation are also starting to take off. Large companies like Volvo, Ericsson and SCR Hygiene are systematically working with user driven innovation at the moment. Also the Swedish SMEs have increased their focus on user driven innovation and although our mapping of the

Swedish market only found a few examples of concluded user driven innovation activity it is the comprehension that many interesting user driven innovation projects will come out of **Swedish SMEs** in the years to come.

User driven innovation education in Sweden

In Sweden some of the foresighted educational institutes have begun to look in the direction of user driven innovation and there are some user driven innovation relevant activity going on at central universities and institutions:

At the Stockholm University at the Department of Sociology the Head of Department, Professor, Christina Garsten, is researching in the anthropology of organizations, with focus on the globalization of corporations and markets and on emerging forms of regulation and accountability in the labour market and in transnational trade. Garsten is internationally acclaimed and was in 2008 a key note speaker at the EPIC conference, a yearly conference on Ethnographic Praxis in Industries and properly the most important commercially oriented conferences on user driven innovation in the world.

Luleå Technical University, Karlstad University, Royal Institute of Technology (KTH), Chalmers, Malmö University and Blekinge Technical University all have courses and/or research that are centered around the interaction between humans and technology (in particular IT). Karlstad University has furthermore engaged in a Lab for user driven innovation called DoTank (previously called Design Studio Värmland).

Both Umeå Institute of Design and Lund University have courses and researches in Interaction Design and touch upon many aspects of user driven innovation in their research and courses in Industrial Design. Also Linköping University researches and teaches in many aspects of user driven innovation in relation to Interaction design but Linköping University goes even further into user driven innovation with courses in User Driven product development and a course in Service Design.

Other user driven innovation policy initiatives in Sweden

Two Swedish organizations have been the main initiators in the Swedish user driven innovation debate.

The Agency for Innovation Systems (VINNOVA) has been an active player in the Swedish user driven innovation debate by funding a range of different projects and programs related to user driven innovation. Amongst others VINNEOVA has funded user driven innovation related programs in topics such as: the use of IT in the service sector; Open and Distributed Innovation Processes; and development of meaningful IT services- and products together with the users.

Also the Swedish Industrial Design Foundation (SVID) has been an active player in the user driven innovation debate. SVID is a public-financed Organization that seeks to support the Swedish industrial development and innovation through design and spread the design methodology into the companies and organizations. So far SVID has supported different initiatives that help spreading UDI in Sweden such as Product Innovation Engineering Program (PIE-p) and Labs for user driven innovation (LUDINNO), a program by run by Design DoTANK at the Karlstad University.

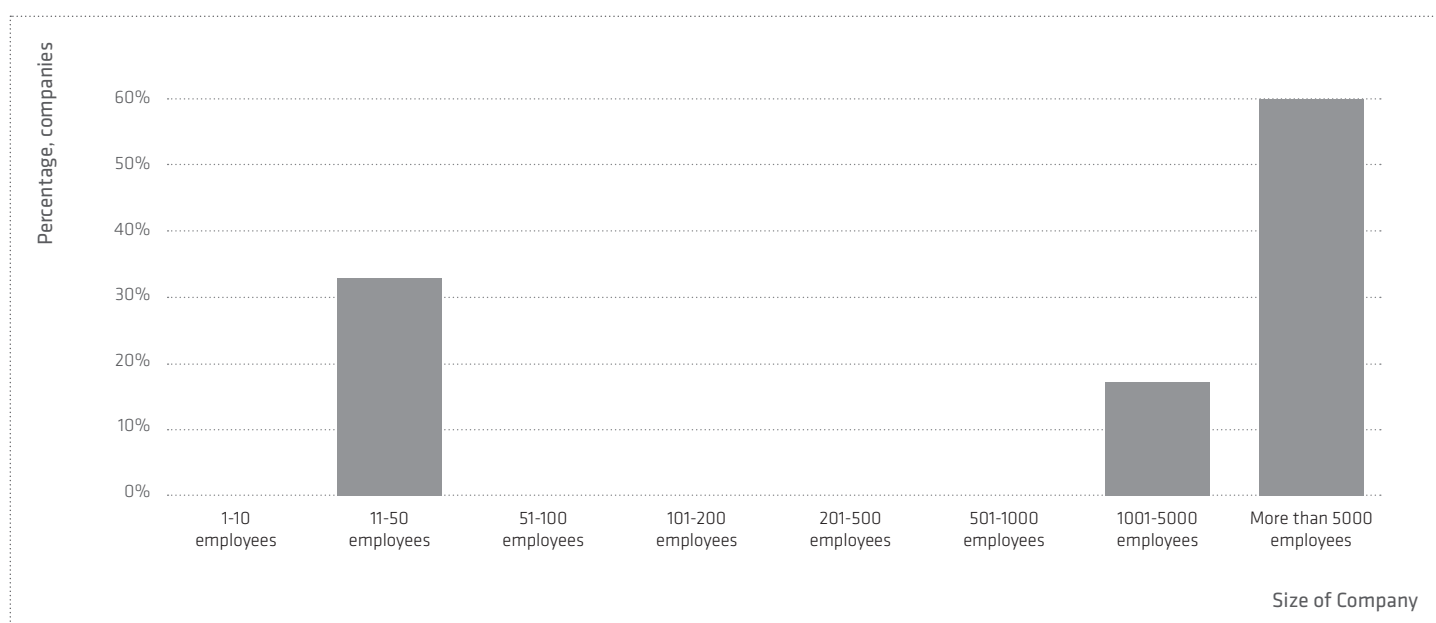
Findings from Sweden

Based on the snowball method, 23 companies working with user driven innovation in Sweden were recommended by experts within academia and business. Not all projects fulfilled the three criteria, leaving us with 6 projects in 6 companies that were interviewed. A total of 10 companies that were identified are currently engaged in an innovation project where users are included in the innovation process, but which is not yet completed. 5 companies declined to participate in the study, while 4 projects were considered to not be user driven innovation.

The figures that are presented in this chapter are based on 6 innovation projects in Sweden. We are aware that this is a small sample for statistical purposes, and the results that are presented here are of a more descriptive nature.

The Swedish companies that work with user driven innovation tend to be bigger companies. The two smaller companies that have worked with user driven innovation in the Swedish interviews are a start-up company and a research unit.

Figure 23 Size of Swedish companies, based on employees



Source Dotank interviews

The majority of companies had business customers (B2B) while only one company interviewed has individuals as their customers (B2C). In the case of business to business companies, the focus in the innovation projects were on gaining knowledge about the end users. None of the business to business companies focused on tapping knowledge from their business users in these innovation projects.

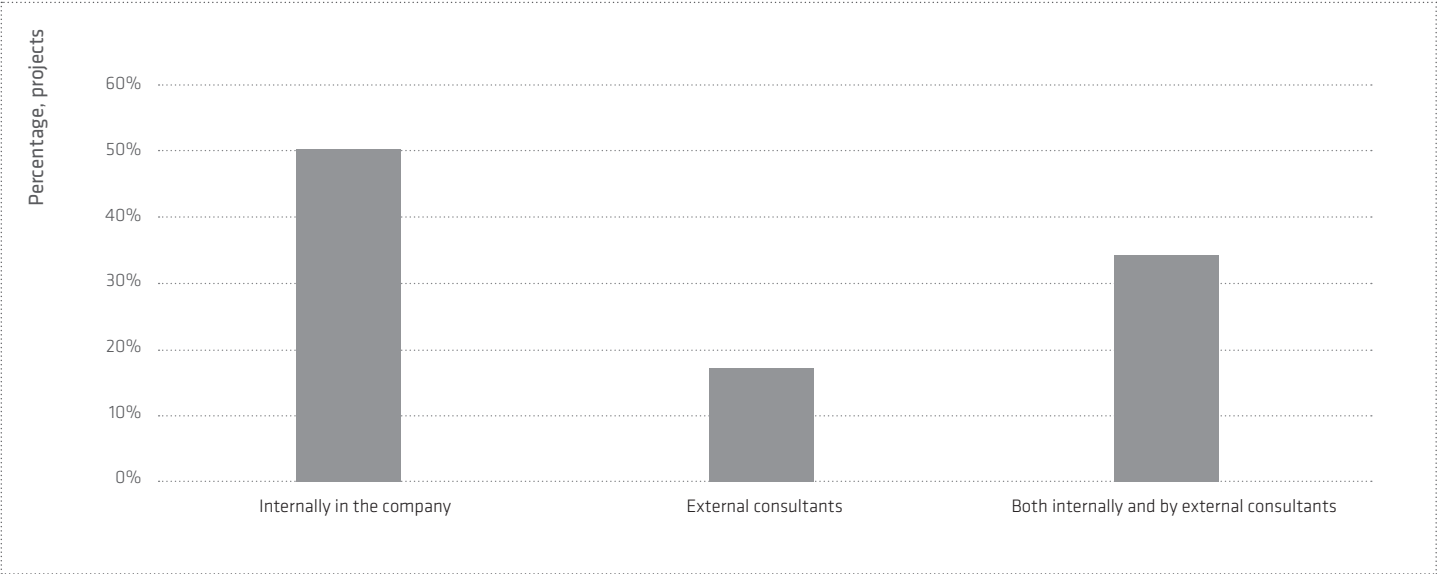
Table 10 Type of customer

Type of customer	Percentage of companies
B2B	83%
B2C	17%
Both	0%

Source Dotank interviews

50% of the companies interviewed in this study do the projects themselves in-house. This fits with the picture that it is very large companies that take on user driven innovation projects that have their own dedicated innovation departments. The other half of the companies involves external consultants to lead the process during part of the innovation project, while one company had a product developed by a research unit and were not included themselves in the innovation process.

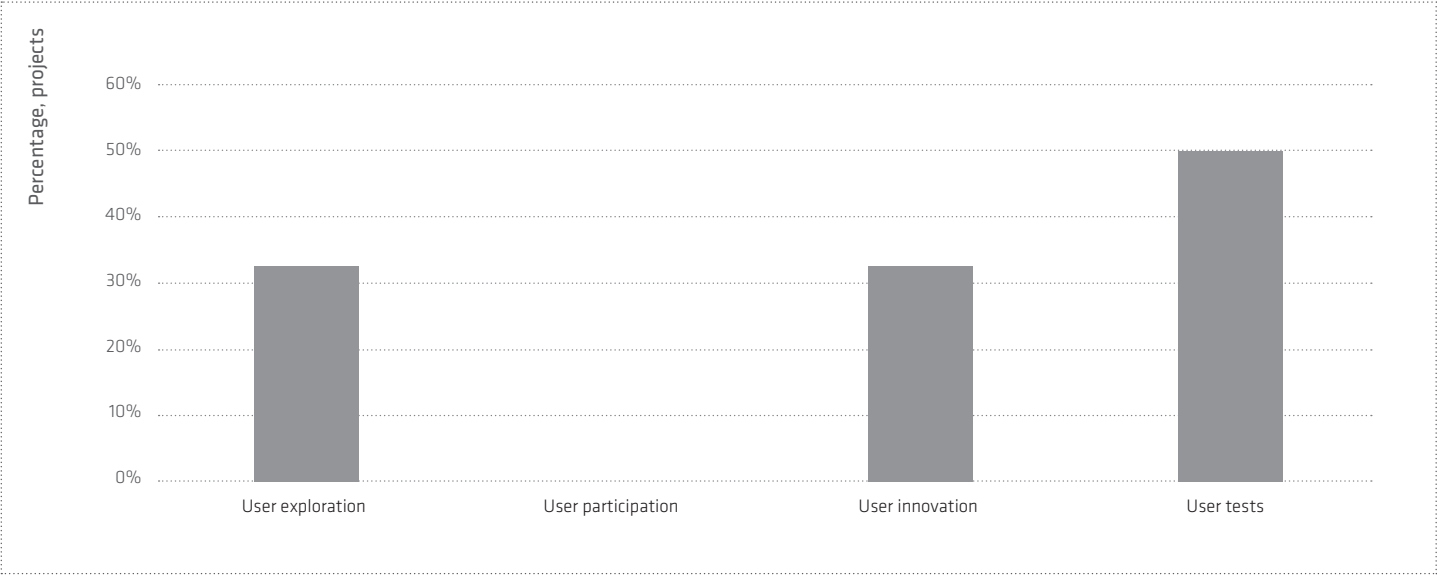
Figure 24 Where the innovation project took place in Sweden based on projects



Source: Dotank interviews

The more advanced methods of user driven innovation have not gained a strong foothold amongst the Swedish companies interviewed. While half of the innovation projects involved users in relation to testing the products or services, 30% of projects used methods related to user exploration, and another 30% of projects used methods related to user innovation. This seems to indicate that only a few Swedish companies have started involving users at the front end of the innovation process. Involving users later on in the innovation process seems to be more of the norm, while some companies have taken the step to include advanced users who can innovate together with the company.

Figure 25 The distribution of the four methods of user driven innovation in Sweden



Note The projects can choose more than one kind of user involvement in the innovation proces; as a result the sum is not 100%
Source Dotank interviews

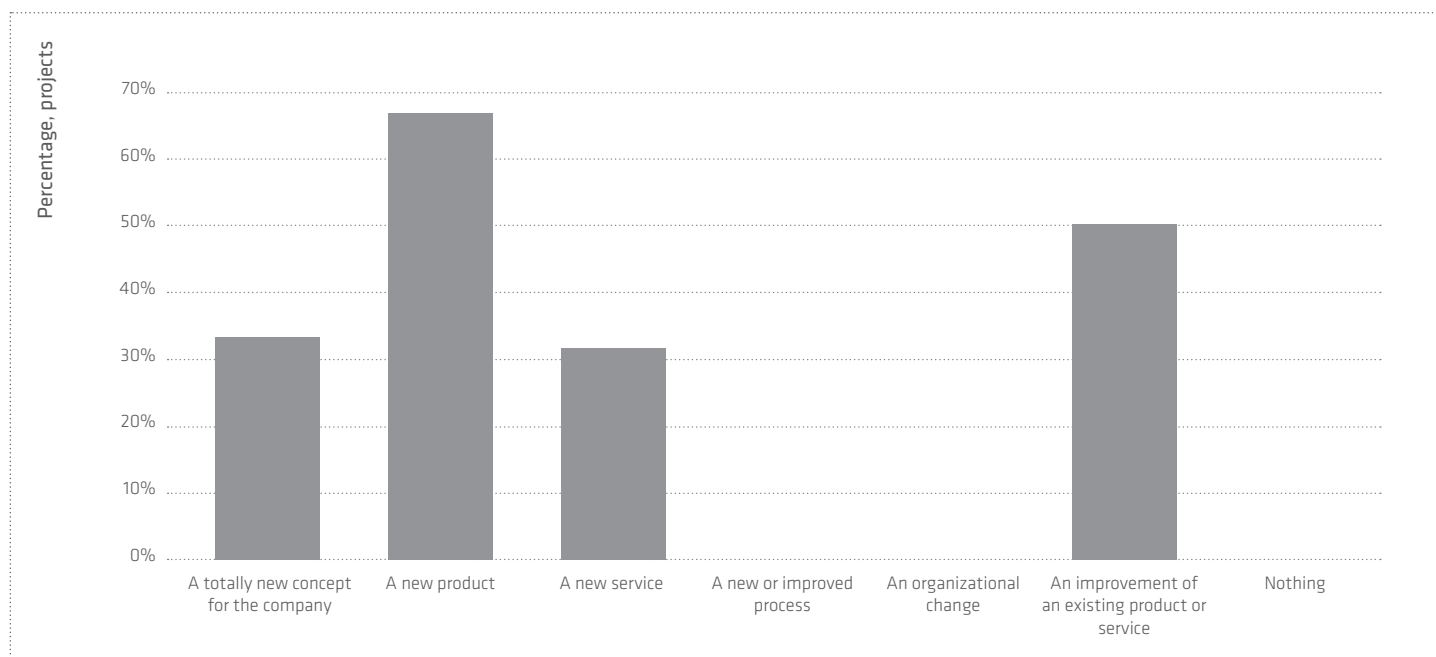
When looking at what characteristics companies have that work with the different ways of user driven innovation, it is hard to get a clear picture based on so few projects. User exploration methods were used by companies within ICT and mecatronics, while user innovation methods were used by companies within the medical industry. User test were used by all types of companies that were included in the study.

Table 11 User driven innovation across industries (compiled at cluster level)

User driven innovation method	Industry
User exploration	ICT / Mecatronics
User participation	None
User innovation	Life science
User test	ICT / Medical / Mecatronics

Source Dotank interviews

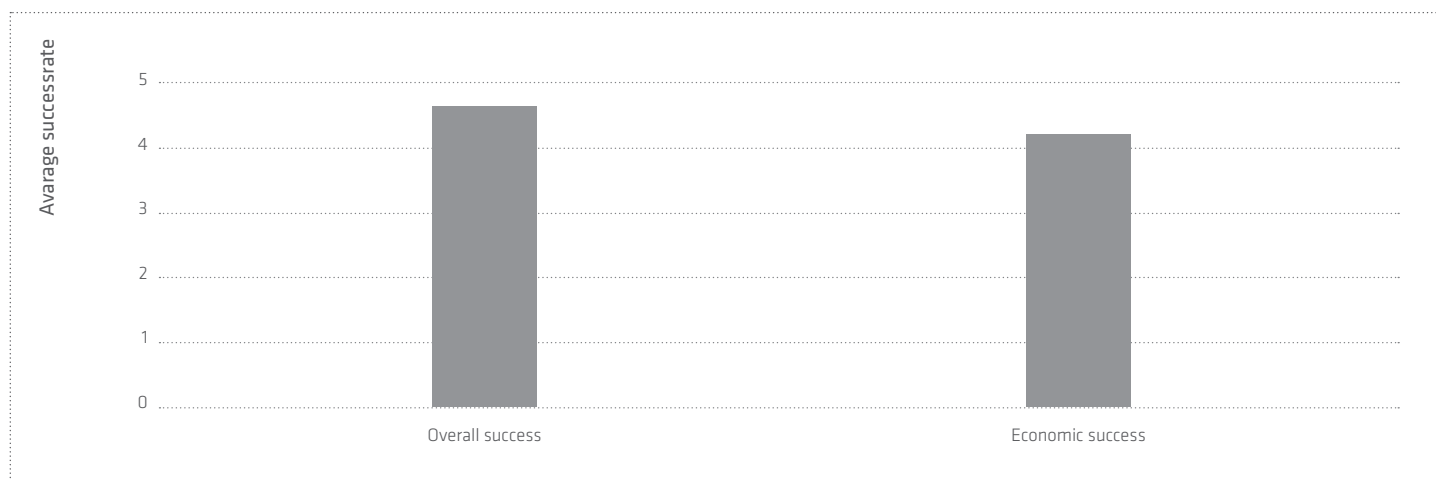
The outcome of the innovation projects in Sweden have mainly been new products – more specifically in almost 70% of innovation projects. 50% of the innovation projects resulted in incremental innovations, while 30% of the projects resulted in new services and 30% of the innovation projects resulted in new concepts for the companies.

Figure 26 The innovation outcome from the user driven projects in Sweden

Note: There can be more than one outcome per project; as a result the sum isn't a 100%

Source Dotank interviews

Overall, companies that work with user driven innovation in Sweden, feel that the outcome of the innovation projects is fairly successful. On a scale from 1-5, the Swedish companies participating in this study, average answer to how successful the outcome of the project was, is rated at 4,8 while the economic outcome was rated at 4,2. It seems that based on the methods used for working with user driven innovation, companies are fairly satisfied with new products or incremental improvements of existing products or services.

Figure 27 The succesrate of the Swedish projects divided between “Over all success” and “Economic success” from the rate 1-5

Source Dotank interviews

Conclusions for Sweden

User driven innovation in Sweden is slowly gaining ground. At the moment it seems as if larger companies are driving the changes, while smaller companies slowly are participating in the new methods of innovating.

Case_ES Equipment



The Swedish company ES Equipment was founded in 2005 and produces specially designed knives for cutting clothes in emergency situations.

The initial need for the product S-CUT came in 2004 from the Swedish Rescue Service (Räddningsverket) who needed a new tool to replace scissors when undressing victims contaminated by toxic chemicals. A team was formed with an design engineer, a trauma nurse and an ambulance paramedic who developed the first prototypes. This work was carried out in close cooperation with end users at hospitals, the Swedish armed forces as well as ambulance services and rescue organisations. Together, the team developed an new knife with outstanding cutting capabilities and a high degree of user friendliness in mind. From start the company had support from ALMI Värmlands project VIVAN. The role was to initiate and assist with general support, and seed funding.

The company ES Equipment AB was then founded by the three original team members. A company formed by users that had the contacts and capabilities to understand how nurses and doctors in ambulances work when they arrive at an accident. Employees from ES Equipment have a unique knowledge that allows them to observe and understand how ambulance personnel work, and the type of equipment they use. It became clear to them that there was a relevant market need for the product.

Once decided to start commercialisation they used input from users when making the specifications. This type of knowledge would not have been possible for ES Equipment to adopt if it had not been formed with users. It was crucial for the innovation process that the nurses worked together with the innovation and design team. ES Equipment developed a new type of knife which turned out to be quicker and safer to use when cutting patients clothes.

The S CUT knife was launched on the market in the autumn of 2006. Two models have been developed – a large and a smaller size knife. Today the S CUT knives have been sold to 90% of the hospitals in Sweden, and they are being sold throughout and even outside Europe. ES Equipment's turnover is now rapidly growing and they are currently 3 employees with an outsourced production.

User driven innovation in the Baltic countries¹⁷

¹⁷ Data for this chapter is provided by GE Consulting in Estonia

The three Baltic states Estonia, Latvia and Lithuania, acquired their independence in the same period (early 1991), which gives them some similarities, but despite the short period that has passed since their independence, their society and business life has developed very differently. In this report, only Latvia and Estonia is included.

The rebuilding and restructuring of Latvia and Estonia after their independence, shows 2 countries that have chosen different paths. Estonia looked very closely towards Finnish and US structures, policies and legislations, while Latvia looked more towards Poland. This has formed some differences between the 2 countries' approach to entrepreneurship, and differences in business culture, policies and institutions. The main differences today surely is the pace of changes, the acceptance of authority and – in this context, the type of innovation achieved.

The main difference between Estonia and Latvia in regard to innovation is that much of Estonia's innovation is founded around the service industry, whereas much of Latvia's innovation is founded around manufacturing. The service industries in Estonia are focused on domestic markets, while manufacturing in Latvia is adapted towards international markets. This difference in type of innovation is most likely a result of the different paths the countries took after their independence, rather than a historical industry tradition (for more detailed information on the Baltic countries see Appendix).

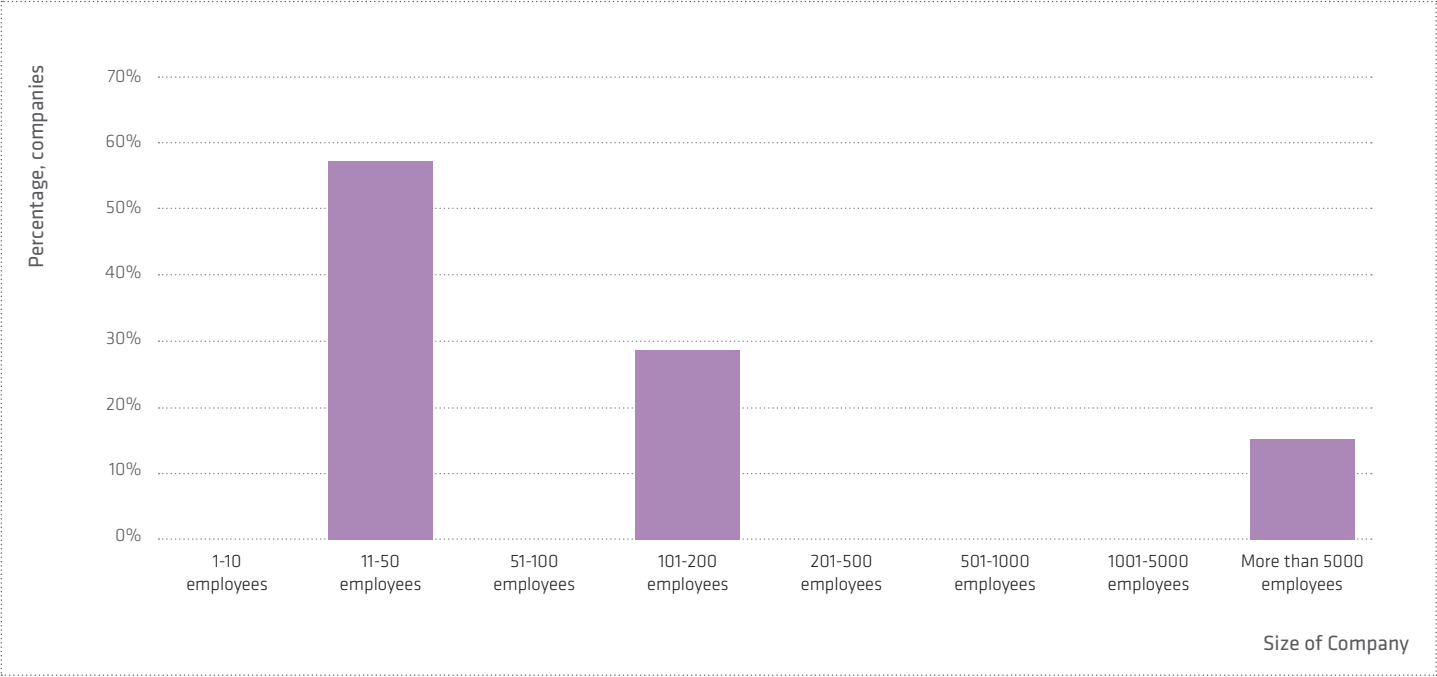
Based on the snowball method, 11 companies working with user driven innovation in Estonia and Latvia were recommended by experts within business and the public sector. Considering Latvia and Estonia's limited size and population, their history and geography, it became clear already after the first probe was sent out that the responses was pointing towards the same few companies and people. There seems to be a small core of companies working with innovation by focusing on users.

A thorough look at the companies that were interviewed shows that most of the companies do not really work with user driven innovation. Users are only involved towards the very late stages of the innovation processes, where insights from the users only result in small improvements and not innovations. 7 projects in 7 companies were interviewed – 5 in Estonia and 2 in Latvia.

So the figures that are presented in this chapter are based on 7 innovation projects in the Baltic countries. We are aware that this is a small sample for statistical purpose, and the results that are presented here are of a more descriptive nature.

The Baltic companies that work with user driven innovation are quite small compared to companies in the other Nordic countries. Several of the interviewed companies are start-ups, which is also reflected in their small size.

Figure 28 Size of companies, based on employees



Source GE Consulting interviews

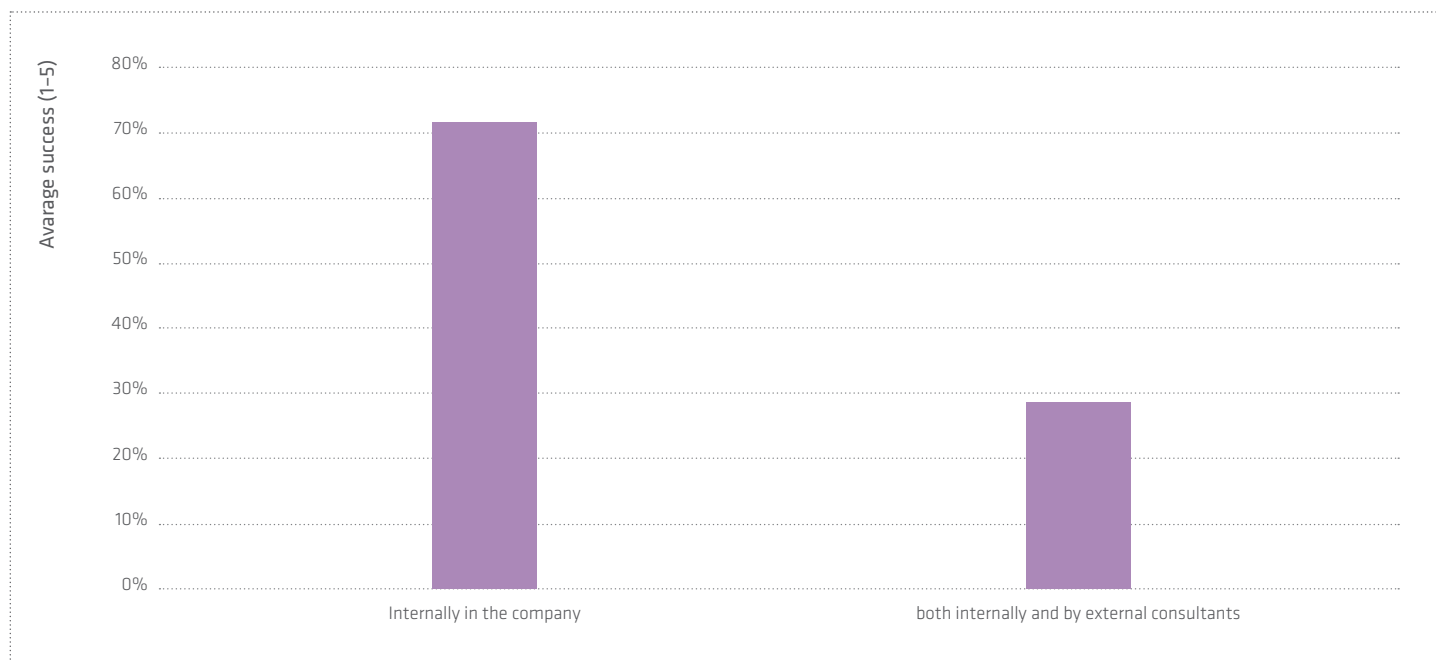
There was a slight majority of companies that had business customers (B2B) in relation to companies that had individuals as their customers (B2C). Just over half of the companies were business to business companies. However, most of the user research was focused on the end user.

Table 12 Type of customer

Type of customer	Percentage of companies
B2B	57%
B2C	43%
Both	0%

Source GE Consulting interviews

More than 70% of companies working with users in Estonia and Latvia do the work themselves in-house. The companies that took external consultants in on the projects were mainly in the form of experts or advanced users.

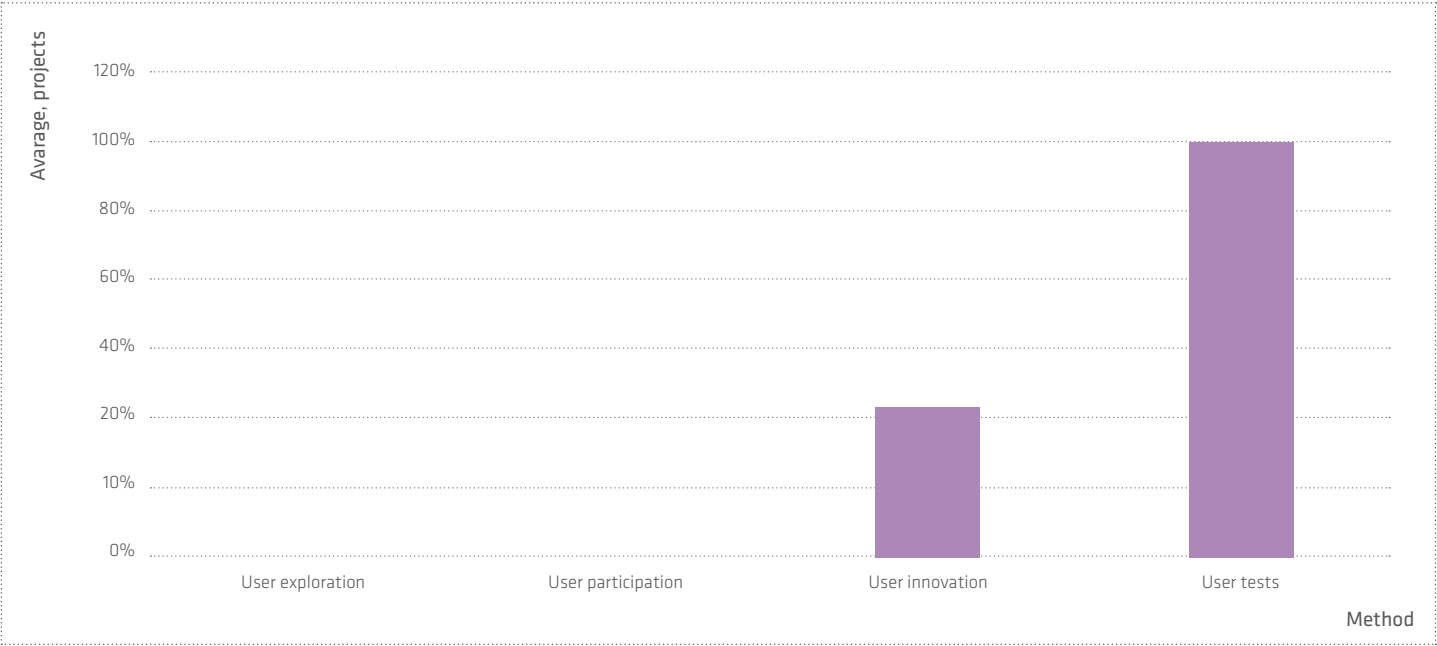
Figure 29 Where the innovation project took place in the Baltic countries based on projects

Source GE Consulting interviews

All of the companies in Estonia and Latvia used methods related to user tests, or in other words all companies used marketing methods in some form to test whether users liked or disliked their products or services.

In addition, a few companies invited experts or advanced users in to participate in the innovation process. Based on these few companies it can be seen that users are invited in later on in the innovation process – after the company has decided on what product or service should be made. Users are not part of the front end of the innovation process, and knowledge from users, or an understanding of users' needs, is not taken into consideration when companies are deciding on what to develop.

Figure 30 The distribution of the four methods of user driven innovation in the Baltic countries



Source GE Consulting interviews

When looking at the characteristics of companies that work with users, it is hard to get a clear picture based on so few projects. The only true user driven innovation methods which were used, were by companies that work within ICT and transport where advanced users or experts participated in the innovation projects. User tests were used by all types of companies that were interviewed – within ICT, transport and chemical products.

Table 13 User driven innovation across industries (compiled at cluster level)

User driven innovation method	Industry
User exploration	None
User participation	None
User innovation	Transport / ICT
User test	Transport / ICT / Chemical products

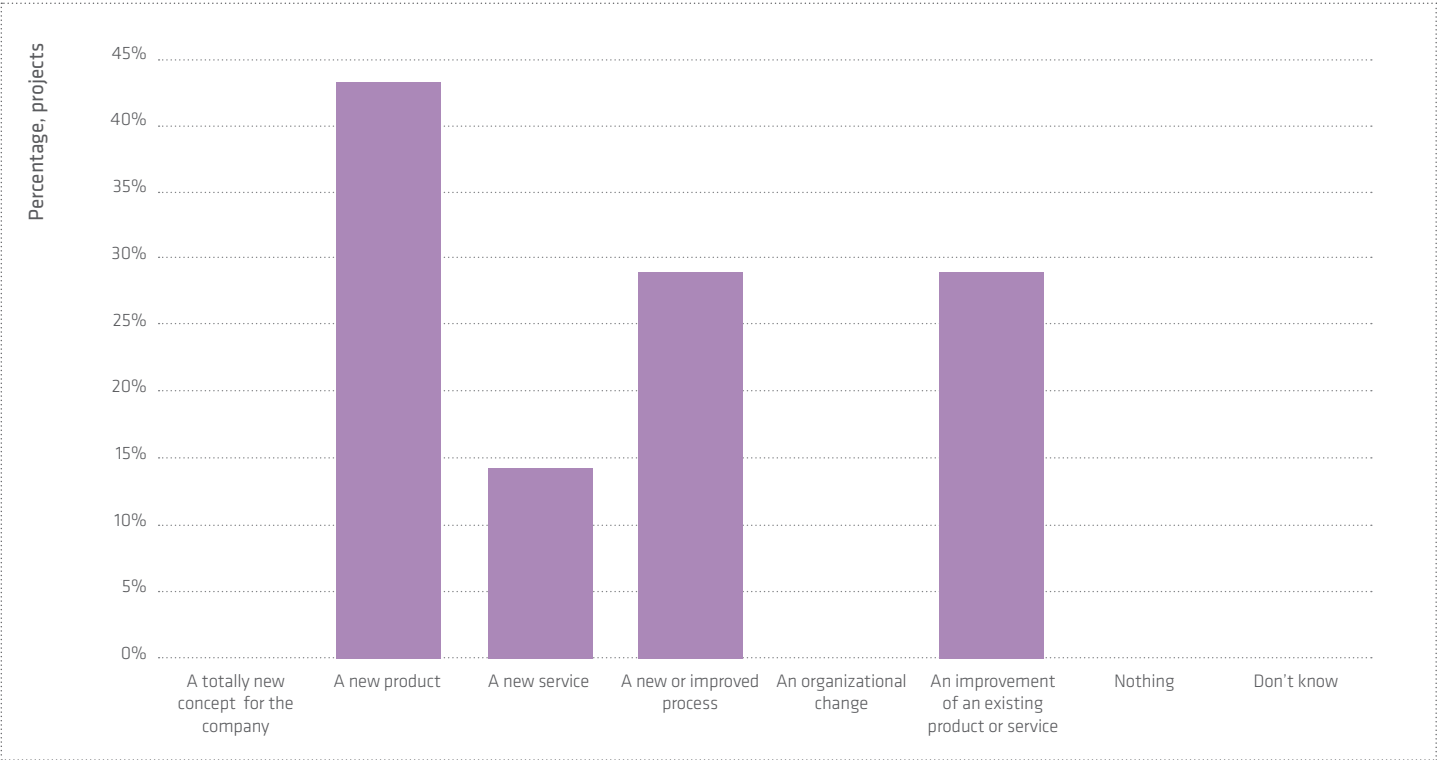
Source GE Consulting interviews

The outcomes of the innovation projects in Estonia and Latvia have mainly resulted in new products or incremental innovations as well as process innovations. For more than 40% of the projects, companies answered that the outcome of the user driven innovation process was a new product and almost 30% of the projects resulted in incremental innovations. 30% of the innovation projects led to improved processes. Less than 15% of innovation projects resulted in new services or improved process, while none of the innovation projects resulted in new concepts for the company.

There seems to be a link between the methods for working with user driven innovation, and the outcomes experienced by the companies. By involving users in tests, companies are able to come up with new products or incremental innovations. However, it is important to remember that some of the companies are start ups, so by default their first outcome will be a new product or service.

Estonian and Latvian companies generally include users at the later stages of the innovation process, and thereby have not yet seized the opportunity to generate breakthrough innovations in the form of new concepts.

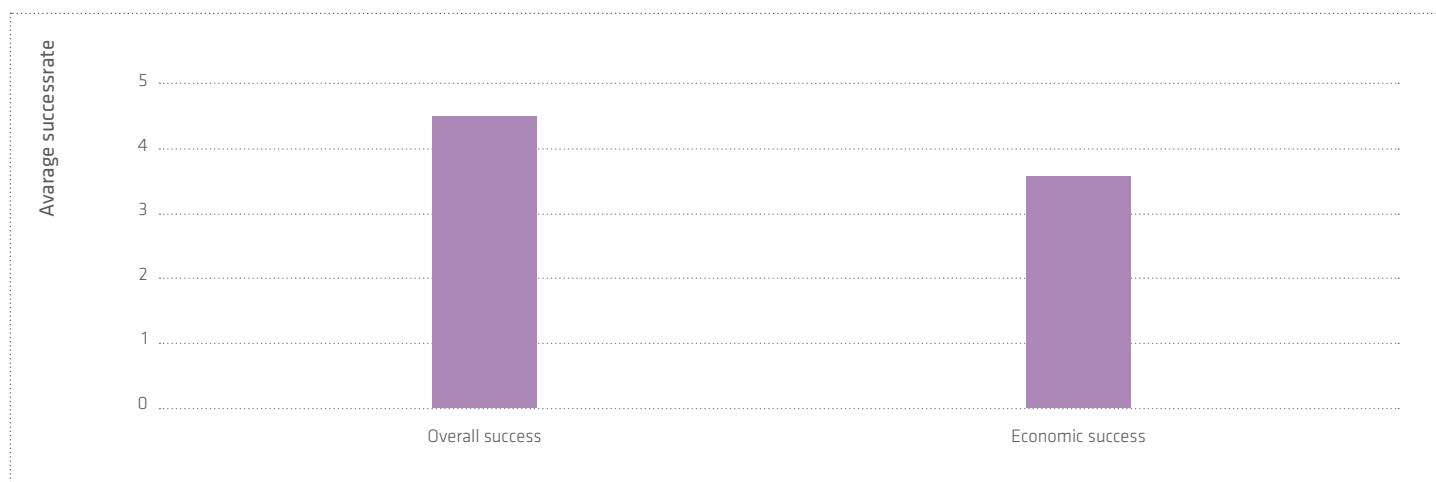
Figure 31 The innovation outcome from the user driven projects in the Baltic countries



Note There can be more than one outcome per project; as a result the sum isn't a 100%
Source GE Consulting interviews

The companies in Estonia and Latvia that were interviewed for this study feel that the outcome of the innovation project is fairly successful. On a scale from 1-5, the companies average answer to how successful the outcome of the project was, is rated at 4,57 while the economic outcome was rated at 3,57.

Figure 32 The succesrate of the projects from the Baltic countries divided between “Over all success” and “Economic success” from the rate 1-5



Source GE Consulting interviews

Conclusions for the Baltic countries

User driven innovation in Estonia and Latvia has not really gained ground yet. Companies have understood that it is important to test their products or services on future users, but very few companies have realised that the user can play an important role if involved early on in the innovation process.

Some companies are attempting to take use of experts or advanced users, but only once the idea already has been developed in-house by the company.

Case_Cybernetica - E-voting project

Cybernetica is a company that develop information security, information systems and navigation systems to the Estonian home market as well as to export markets in the EU, North America and Asia. In 2008, Cybernetica had more than 100 employees and an annual turnover of 4.5 million EURO. Cybernetica is based in Tallinn.

In 2005, Cybernetica got hired to develop a new E-voting project that would make public voting through the Internet possible. Cybernetica got involved through the Estonian Electoral Committee that saw an opportunity in becoming an international leader in E-voting since Estonia is one of the countries in the world with the highest number of Internet users per capita.

It was decided that the customer, Estonian Electoral Committee, should collect the existing requirement in Estonian election law and the existing requirement instructions in relation to IT-security that should make the fundament and that Cybernetica afterwards should incorporate this knowledge into a complete solution for an E-voting system.

After the Estonian Electoral Committee had established the frames for the project Cybernetica started working on creating the right solution for an E-voting system. Cybernetica decided to gather a group of advanced users with special knowledge and needs in this context (IT software experts, lawyers in election lawsetc) that could help the company to develop the right E-voting solution for Estonia. The group of advanced users consisted of six advanced users from the Estonian ministries, universities and E-banking.

The advanced users helped Cybernetica with input and ideas in some workshops and the company used the relevant input in developing a prototype that could be used to test the new E-voting solution. The prototype was a fully workable beta version of an E-voting system.

The test was a success and the E-voting solution was completed and was taken into use at the following elections. In the elections more than 100.000 citizens in Tallin alone decided to vote digitally which was valuated a success by the Estonian Election Committee.

Summing up: Mapping user driven innovation

When researching user driven innovation in the Nordic and Baltic countries it seems that each country has its own approach. While the four user driven innovation methods are used across all countries, their popularity varies.

Denmark is by far the country where we have been able to identify the highest amount of user driven innovation projects. In Denmark we were able to identify 20 projects that we considered as user driven innovation projects that had been completed and launched on the market. All of the four user driven innovation methods were used in these innovation projects. Three of the methods were very popular, the user exploration method were used by 75% of the innovation projects, the user test method was used by 40% of projects, and the user participation method was used by 25% of the projects. The method which was the least popular is the user innovation method was only used by 15% of the innovation projects. The use of the four methods resulted in a large amount of successful innovation outcomes. More than 60% of the projects resulted in new concepts and more than 70% resulted in new products.

The popularity of user driven innovation in Denmark can be found in the history of the Danish business sector consisting of SME's that are used to working closely together with their customers to come up with innovative solutions. The Danish business sector is not always able to compete with large global companies on price or new technology and have therefore become good at interpreting their markets by understanding their users better than other companies. Another important reason for the Danish interest in user driven innovation is the Danish government's focus on the area with the establishment of several user driven innovation programmes.

The second highest identified number of user driven innovation projects was found in Finland where 11 projects were included in the study. Also in Finland all of the four user driven innovation methods were popular among the participating companies. The user exploration method was the most popular one used by 73% of the innovation projects. The user participation and user test methods were the second most popular methods used by 45% of the projects. The user innovation method was the least popular method used by 18% of the innovation projects in the study. Also in Finland did the user driven innovation projects achieve successful outcomes. More than 50% of the projects resulted in new concepts, more than 70% in new products and more than 60% in new services.

A very important reason for the large amount of user driven innovation projects in Finland is due to Tekes that has been present in most of the Finnish user driven innovation projects. A reason for the relatively high use of the user participation method in the Finnish projects is a specific focus from some of the Finnish educational institutions that has resulted in a high popularity of the method. It is particularly technology focused companies that started implementing user driven innovation methods early on in the form of usability studies when testing software and hardware.

In Norway and Sweden the amount of identified user driven innovation projects were notably lower than in Denmark and a little lower than in Finland. In Norway we identified

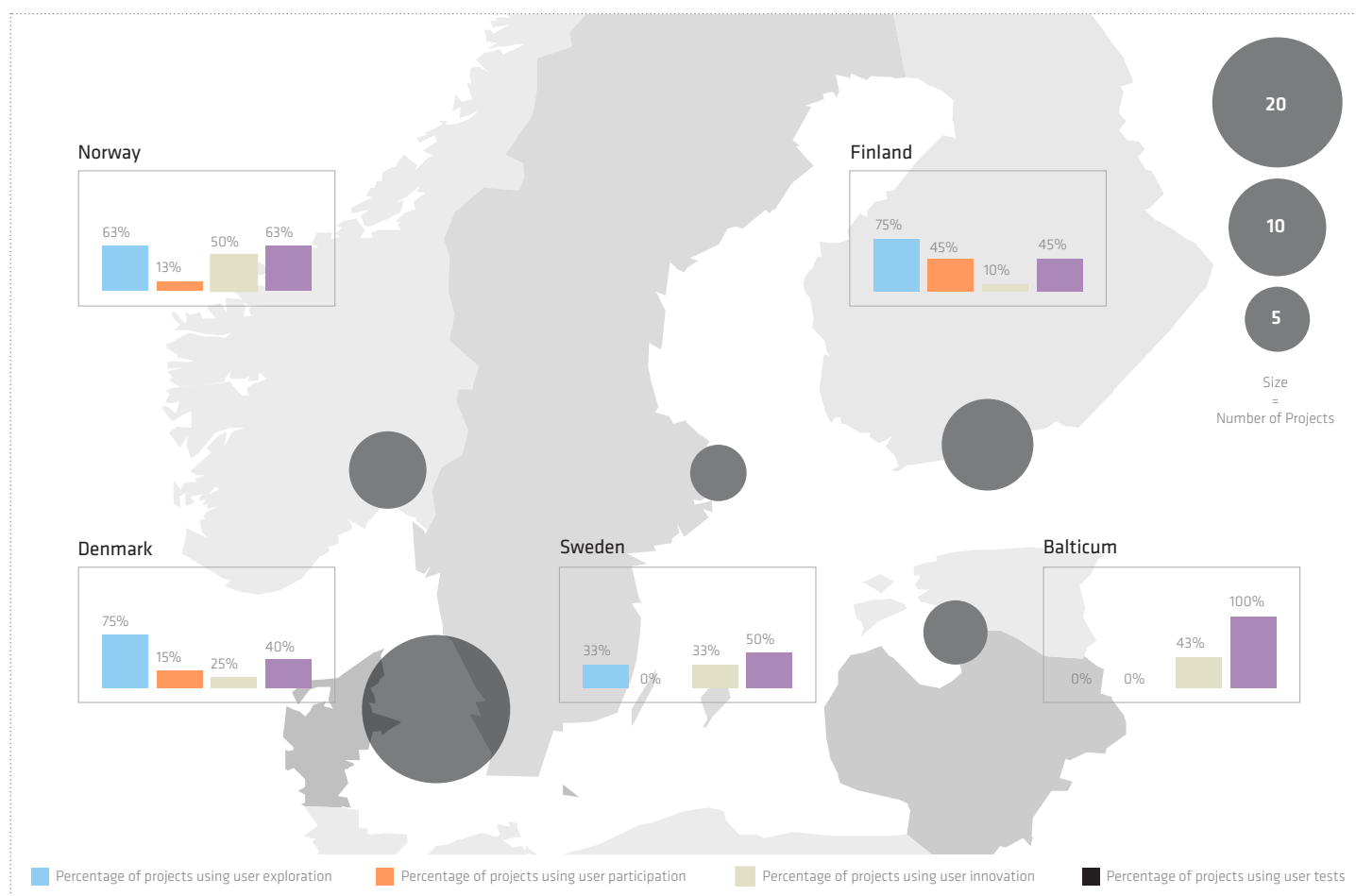
eight user driven innovation projects and in Sweden we identified six projects. In both countries the majority of the projects were conducted in some of the country's largest companies, however there were also a few successful examples in SME's especially in Norway. Both the Swedish and Norwegian user driven innovation projects were very focused on the user exploration method and the user test method. The user innovation method was more used in Norway and Sweden than in Denmark and Finland. The user participation method was the least popular in both Sweden and Norway.

In Norway the agricultural and fishing industries have been the most important industries until oil was discovered in the 1970s. The tradition for user involvement has not been large within these industries, and this might be a reason for the lower user driven innovation activity in Norway today.

In Sweden the large manufacturing industries have dominated the business environment for decades. Neither here has there been a tradition for involving users, which might be a reason for the lower level of user driven innovation activity in Sweden.

Furthermore, it has been exciting to follow the development in the Baltic countries (Estonia and Latvia). User driven innovation has also started to become popular in these young nations. In the Baltic countries we identified three projects that fulfilled the criteria for this project. It will be interesting to follow the development in relation to user driven innovation in the years to come. The used approaches in the Baltic countries so far has been the user innovation method and the user test method.

Figure 33 Mapping of user driven innovation



Source Project interviews, 2009

Further work

Even though many of the case studies that have been done are of very high quality there seems to be a need for more qualitative data on companies that are working with user driven innovation in the search for knowledge about the characteristics of these companies.

Since we have only a limited number of frontrunner case studies, the comprehensive picture is rather vague, both concerning the effects for companies and organisations working with user driven innovation and regarding the internal structures they must adopt to achieve the best results. In addition, there is not enough knowledge about the characteristic traits of companies that achieve successful concept innovations.

We therefore suggest three areas for future research:

1. The Nordic countries should take charge in developing comparable quantitative data that can be used to draw statistical information about companies working with user driven innovation. Developing CIS¹⁸ data for the Nordic countries could be a pilot study.
2. Successful concept innovation projects should be identified in the US and Europe in order to learn from the best and gather in-depth knowledge on how these breakthrough innovations can be achieved. This would provide the Nordic and Baltic countries with valuable insights about best practice within concept innovation in the future.
3. Organisational structures in successful user driven innovation companies should be researched in order to understand what internal conditions drive the good results. Valuable insights could be gained in particular from cases in the US, where most of the successful concept innovations have been developed with users.

Denmark has already had the opportunity to add a few questions to the CIS questionnaire related to user driven innovation. In the following we present some of the early results which might be used as inspiration for future work in the Nordic countries as a whole.

Developing indicators on user driven innovation¹⁹

Denmark has already made the first attempts at gather data about companies working with user driven innovation. In the 2007 CIS survey, ten questions related to user driven innovation amongst companies in Denmark were included at the request of the Enterprise and Construction Authority. In the following we present selected data from the CIS survey, as an example of what could be done in a Nordic perspective.

20.000 Danish companies completed the CIS survey related to questions in the time period 2005-2007. 3.235 companies, or 16%, answered that they had been working

¹⁸ CIS stands for Community Innovation Survey and are a series of surveys conducted by the national statistic offices in the EU countries and Norway and Iceland. The results of the CIS surveys are used in the annual European Innovation scoreboard and for academic research in general.

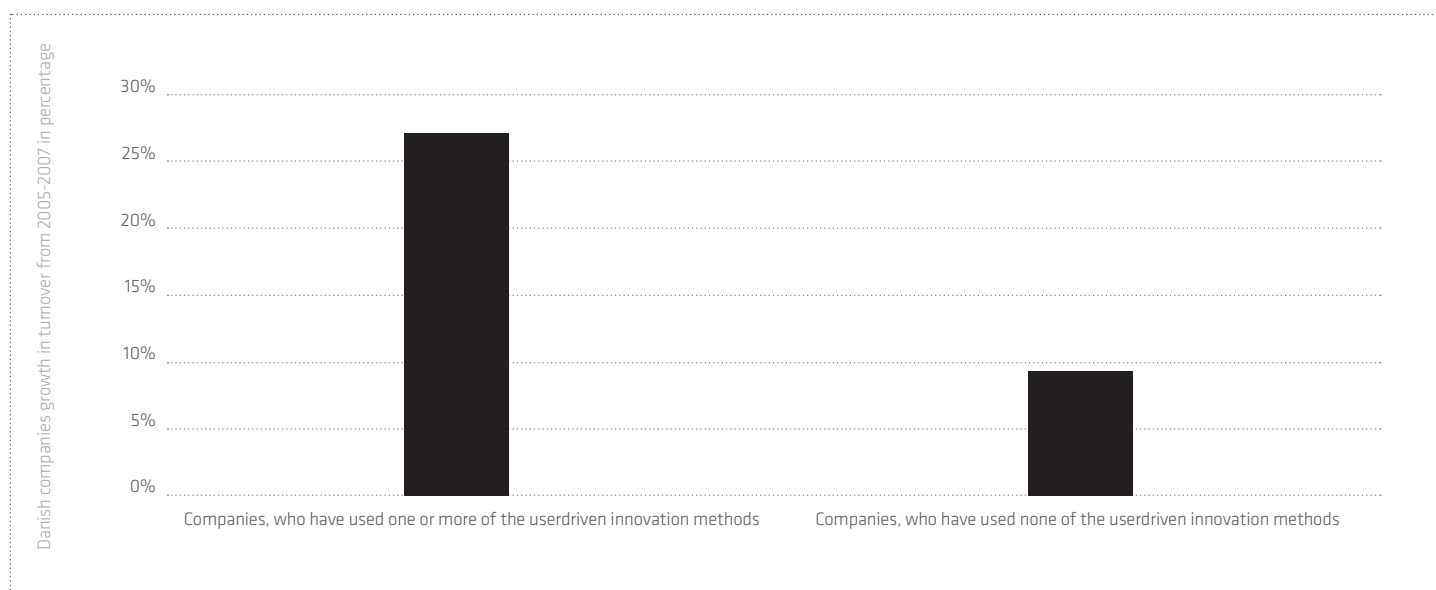
¹⁹ See Working Paper "User driven innovation in Denmark: CIS survey results", January 2010

with user driven innovation using one or more of four methods.

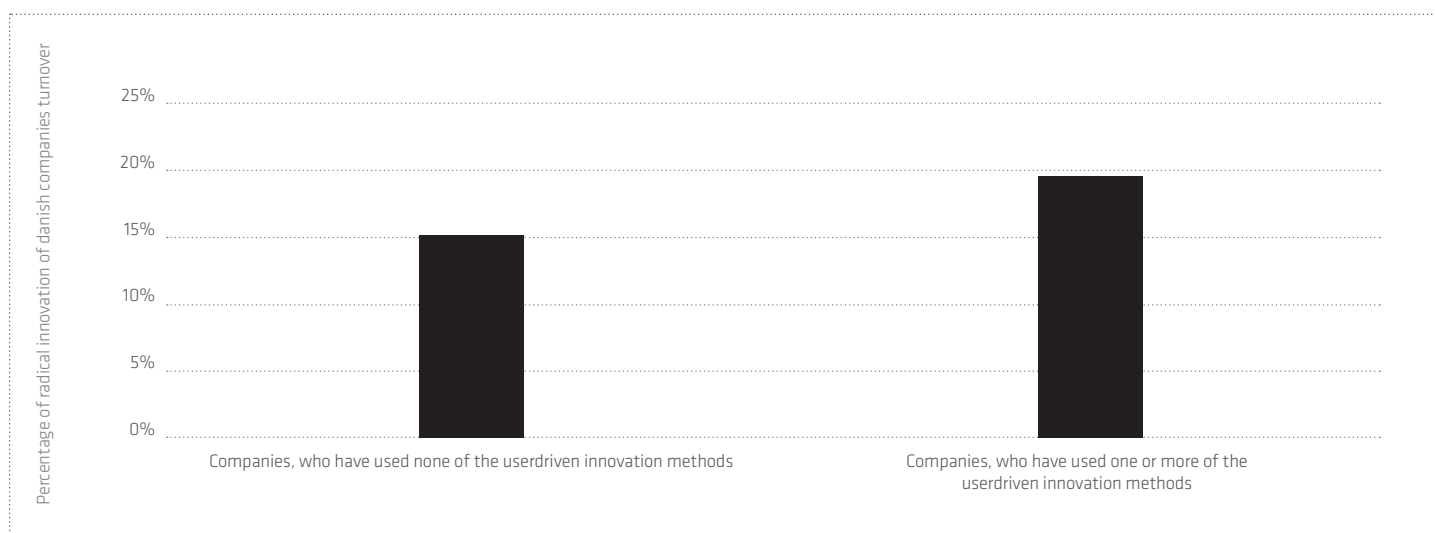
One of the statistical findings of the CIS survey is that companies working with user driven innovation in the period between 2005 and 2007 have experienced a higher growth in their turnover than the rest of the companies participating in the 2007 CIS survey. The average growth in turnover for companies working with user driven innovation in the period from 2005 to 2007 was 27 % while the growth in turnover for companies that have not been working with user driven innovation was 9 % in the same period.

The significant difference between growth in turnover for Danish companies that work with user driven innovation methods compared to companies that do not, would indicate that user driven innovation has an effect for companies. The causality between the companies' growth in turnover and user driven innovation is difficult to prove and it is important to underline that some of the difference could also be explained by a range of other factors. For example, it might be reasonable to believe that companies that experience growth will be more likely to invest in innovation than companies struggling with low or zero growth in turnover. The low growth companies might not be as likely to invest in innovation even though some might say that they would be the ones to benefit the most of the investments (cf. figure 34).

Figure 34 Average growth in turnover in the period 2005-2007 for Danish companies



Another statistical finding from the CIS survey is that companies working with user driven innovation are more innovative than others. Innovation is divided into radical innovation and incremental innovation. There are many different ways of defining radical innovation and incremental innovation, but here we have chosen to define radical innovation as innovations that contribute with something new to the world or to the market where the company is present, while incremental innovation can be characterized as an improvement of an already existing product or service.

Figure 35 Percentage of the turnover which comes from radical innovation

Note Radical innovation is defined as products/services which are new for the world and/or are new for the market of the company. The referred methods is defined as unaknowledge needs, user involvement and lead users.

It is important to underline that not all important innovations are radical. Incremental innovations often create just as much value – if not more – as radical innovations for the companies. Radical innovations often function as new platforms for many incremental innovations later on, and create long term growth for the company. Incremental innovations are often product or service specific, and the turnover horizon is often more short term.

Recommendations for further work on developing new indicators

In order to be able to measure the innovation capacity of the Nordic region in the future, we recommend to put some effort into developing new indicators that will enable the gathering of relevant data on user driven innovation. Most indicator systems today are not capable of measuring the new ways that companies and organisations innovate. However, this information is vital in order to determine what can be done to enhance the competitiveness of Nordic firms.

In addition, government needs relevant and up to date data on what is taking place in the business community, in order to evaluate the current framework conditions. How do we know if the current conditions are optimal for companies' performance, when there is no information on how they work and manage business today? We therefore recommend that statistical data on how companies work with user driven innovation should become a requirement in surveys such as CIS. In this regard the Nordic countries have the capabilities of being the front runner countries and thereby paving the way for larger organisations such as the EU and the OECD.

Appendix

1. Report on user driven innovation in Estonia and Latvia

Report on User-Driven Innovation in Estonia and Latvia

by Bjorn Hjulmand, GE Consulting
Tallinn, 16-11-09

1. **Project Scope**

Scope of the assignment is to conduct an analysis of companies and institutions in the 2 Baltic states Estonia and Latvia, and their approach to involvements of user in their innovation process. This is done by first performing a so-called “Snowball” mapping out the innovations network, and in second step, conducting interviews with the select few companies with completed user-driven innovation projects.

As it proved difficult to identify companies which used UD Innovation in a structured way, and seeing the research in a scientific perspective – no answer is also a result, this report will include notes from the interviews performed, as well as results from the questionnaire, and our conclusion on why Baltic companies are less structured/academic in their approach to innovation.

2. **Human geography**

2.1. **Scenario.**

The exercise of mapping innovation in the Baltics, has been a very interesting assignment. Main reason is the fairly short time (less than 20 years) the countries has been independent and the clear impact of this on the countries approach to innovation in general. The 3 Baltic states Estonia, Latvia and Lithuania, acquired their independence in the same period (Early 1991), which gives them some similarities, but despite the short period passed since independence, their society and business life has developed very differently. In this report, only Latvia and Estonia is included, but giving the fact that Lithuania may prove a 3rd and completely different scenario, it is recommended to commence same analysis and scan of their approach to innovation.

2.2. **History**

Following the rebuild and restructuring of Latvia and Estonia post-independence, the 2 countries chose different paths. Estonia looked very closely towards Finnish and US structures, policies and legislations, where Latvia looked more towards Poland which had achieved independence a few years earlier (1989). This has formed some differences between the 2 countries approach to entrepreneurship, and differences in business culture, policies and institutions. The main difference today must be the pace of which changes happen, acceptance of authority – and in this context, the type of innovation achieved.

2.3. Differences between Estonia and Latvia.

The main difference between Estonia and Latvia within innovation, is that much Estonia's innovation is founded around the service-industry, whereas much of Latvia's innovation is founded around manufacturing. Innovation in the service industry requires a higher level of "think big", trust in authorities and more solid and modern infrastructures in place. Further, service industries are usually more focused on domestic markets (at least in the beginning, and Estonia is still in the beginning) where a trust in infrastructures and authorities again plays a role. Manufacturing is easier adaptable to international markets, is less dependent on infrastructure (logistics exempted), less dependent of authorities and can operate more on stand-alone basis, and can even accept maverick behavior. This difference in type of innovation is most likely a result of the different paths the countries took post-independence, more than a historical industry tradition.

2.4. Estonia

Considering that Estonia having the highest number of internet users per capita than anywhere in the world, it is not a surprise noticing much of the innovation being focused around the digital service industry. However, not only limited to commercial exploitation of digital innovation, but some of Estonia's giant leaps has been in digitalizing the country's public administration. Civil registration, fiscal authorities, health care system etc has to a very high degree been coordinated through digitalization. Estonia was a prime target during the 90's dotcom revolution, for outsourcing and low costs. This led to a strong development of the IT sector in Estonia, and therefore also leading to some of the greatest leaps being performed here.

Many West-European countries has tried to centralize public administration, however, in most cases without success – and in some cases even ended in disaster (Great Britain's attempt to centralize healthcare files). Estonia being given the unique opportunity to rebuild its public administration from scratch, without a history of manual procedures and protocols has been a great success. It has taken great vision and innovative thinking (technically and bureaucratic) to accomplish, and could even be supporting template for other European countries.

With a population of 1.5mill, it has made it easy for Estonia to "think big" in its innovation. It is however also what to some extent holds innovation back in order to expand its industry to a global level. Being a fairly isolated country in one of Europe's corners, innovative services that work in Estonia, may not work elsewhere.

2.5. Latvia

The current financial crisis has set its mark on Latvia's economy. Much of the work within innovation is currently focused around attracting investors. When following leads from the various agencies involved in innovation, most entrepreneurs and innovators had closed down or awaited better times. A recent Baltic innovation congress held in Riga mid-October, proved to be interesting from a science perspective, however, the real purpose was to attract venture capital – and seen from that perspective it was less of a success.

Latvia as a country is less authoritarian than eg. Estonia and that also sets its mark on its business life, and much of the innovation, incubation and entrepreneurship is performed without the involvement of authorities and agencies. This has a high impact on the type of innovation that takes place, as it is not dependent on strong infrastructures – but can operate stand-alone. Much of Latvia's innovation takes place in medical equipment, cosmetics, clothes manufacturing and wood (furniture) manufacturing.

3. **General observations.**

3.1. **Independence and spirit of freedom.**

The first and most significant observation is the impact (newfound) freedom has on entrepreneurship and innovative thinking. West European countries which have enjoyed their freedom for centuries, also experience some level of complacency where innovative spirit is replaced by innovation as an academic discipline. The Baltic's still experience the frenzy of innovative spirit following the sensation of newfound freedom. Without a doubt, this innovative spirit will outperform any academic or scientific approach to innovation, and any West-European country could learn valuable lessons from this "Gyro Gearloose" approach to innovation, and what sparks and motivates it. A positive national spirit provides positive spirit among investors eager to identify new opportunities, in the same way as upturn following a recession also sparks interest in innovation.

3.2. **Approach to innovation.**

Both countries seem to have a fairly non-academic approach to innovation. Not said that it is not a professional approach, but most innovation is approached from an entrepreneurial perspective rather than scientific/academic. Since venture capital dominating the investments made, it is also the nature of venture capital: The speed of which a product is released on the market is more important than how it is launched. Most resources asked confirm that there is user involvement in almost all innovation, however, it is far from driven by users or within an academic frame.

3.3. **Governments/States involvement.**

The governments are also fairly active in innovation, through various funds and agencies, however, the focus has been to close the structural, commercial or industrial gaps that still exist in some areas post-independence, and to create additional employment. There has been established several portals for entrepreneurs, however, when following up their leads, many enterprises are closed down. Further, many agencies function more as incubators and attracting investors, than pushing a more structured approach towards innovation. Both countries have departments dedicated to entrepreneurship. The current on-going recession has somewhat reduced Latvia's governments appetite for investments.

3.4. **Education institutions.**

The 2 countries education systems fairly short history since independence also seem to play a role. A Latvian nanotech company, Neomat, a survivor

from the Sovjet era has failed to position itself on the global market. Despite advanced research and scientific capacity they have not succeeded in turning their research into commercial products. Tartu is Estonia's university city, however, despite its capacity and a growing science park adjacent they are in one of Europe's outmost corners – and is also reflected through statements as “We are not trusted” or “we are looked upon as 2nd division” by other Nordic universities. For a country like Estonia with a population of only 1.5mill, it is essential to maintain strong Pan-European relationships with other institutions. If User Driven Innovation turns out to be the Nordic Council's preferred platform, there will not only be a strong need, but an equally strong interest at the Baltic universities to know more and participate in developing this platform. Riga (Latvia) has a filial of the prestigious Stockholm Business School, where the schools rector is very involved in Latvian business life and is recognized as a valuable resource. The school is producing highly skilled economists which should enable more structured approach towards entrepreneurship – and thereby also innovation.

3.5. Negative impact of entrepreneurship.

The post-independence sensation of freedom has also been followed by some negative consequences. 2 major Swedish banks, encouraged by the untapped financial markets and optimistic spirit, were almost brought to their knees during the current residing financial crisis (“the credit crunch”). Providing easy credits to many Baltic entrepreneurs, they are now facing losses because the same entrepreneurs were unable to establish a solid base before the crisis hit. The positive side of this must be that the same entrepreneurship and innovative thinking will most likely assist in bringing the Baltic states through the crisis.

4. Snowball

4.1. Method

The snowball was performed as described by the scope of works, by sending probes to commonly known resources within the innovations network, who in return would name innovative resources within their networks.

4.2. Snowball results

Considering Latvia and Estonia's limited size and population, their history and geography, it became clear that already after first probe was sent out that the response was pointing towards the same few companies and people. This concluded that there is a smaller core of innovative resources and even smaller core of resources which are using User Driven Innovation in a structured way.

4.3. Below is a list of the resources which were approached, their details, short description of their industry and their respond to the questionnaire:

Enterprise	Name	Title	E-mail	Phone	Activity	General comment	Y/N
Enterprise Estonia	Ülar Alamo	Head of Board	ular.alamo@tea.ee	+372 627 5565	Investment agency	Agency with main focus on Innovation and Entrepreneurship	
Aavaga Foundation	Kitty Kaba	Managing Director	kitty.kaba@avagafund.ee	+372 616 1061	Investment agency	Kitty Kaba is by many considered Miss Innovation of	
Latvian Agency for Economic Development	Māris Elerts	Director of Knowledge and Innovation Systems	maris.elerts@laea.gov.lv	(+371) 67019410	Investment agency	One of the main resource for innovation in Latvia	
VEG	Pēteris Rohmanis	CEO	petr.rohmanis@veg.ee	+372 134 1700	Oil production	Producing oil from oilstone. Has been very innovative in turning waste materials into products.	
Maailm Kõltsud	Heidi Haldre	Director	heidi@kts.ee	+372 16 611 119	Clothes tailoring	has led a highly innovative project on automating tailoring	
Regio AS	Teeet Jämsäniemi	CEO	teeet.jamsaniemi@regio.ee	+372 7 181 108	Geospatial technology	Is considered one of the most innovative resources in Estonia.	
Mobiasat Communications	Sillar Toth	Director	illar.toth@mobiasat.ee	872 124 8982	Satellites	Developing and manufacturing of communication technology	
Webmedia	Pēteris Alamo	CEO	petr.alamo@webmedia.ee	+372 7 309 399	Technology for process optimization	Was a frontrunner in establishing a Estonian highly	
Tallink	Andrus Hunt	CEO	andrus.hunt@tallink.ee	+372 6 406 808	Ferry Company	has been successful in maintaining profitable ferry service in a difficult market.	
Pilva Agri	Kalev Kereggan	Director	kalev.kereggan@pila.ee	+ 372 7998163	Milk and dairy manufacturing	Innovative dairy technology	
Elen	Välder Laid	CEO	velder.laid@elen.ee	+372 651 3522	IT and Telecom provider	Is running some of Estonia's public and private IT and	
Laili	Mr. Jämsäniemi	Director	laili@laili.ee		Tourism	Winner of Innovation award. Tourist heat craters in rural	
Linetelecom	Eiki Uura	Director	eiki@linetelecom.ee	+372 622 1182	Telecom	Company setting up payment of parking by using mobile	
Latvia Ministry of Economy	Eglemons Beldis	Director of Department of Entrepreneurship	eaglemons.beldis@em.gov.lv		Political Institution	Politician	
Latvian Ministry of Economy	Ike Brinart	Secretary of Innovations Dept. Ministry of Economy	ike.brinart@em.gov.lv		Political Institution	Politician	
Estonian Ministry of Economy	Seli Rauli	Secretary of Innovations Dept. Ministry of Economy	seli.rauli@em.ee		Political Institution	Politician	
Estonian Ministry of Economy	Mihkel Randmaa	Secretary of Innovation/Entrepreneurship	mihkel.randmaa@em.ee		Political Institution	Politician	
Stockholm School of Economics	Anders Paulsson	Rector	apaulsson@ssc.econ.su.se	+371 67015800	Education	Stockholm School of Economics has been a	
Nordic Council of Ministers's office	Smart's Gross	Director	smart.s.gross@norden.se	+371 67820050	Political Institution	Self explanatory	
Pilva Agri	Kalev Kereggan	Chairman	kalev.kereggan@pila.ee	+ 372 7998163	Agri culture	Winner of an innovation award for innovative production of milk	
Vitamar	Eero Tammele	Chairman	eero.tammele@vitamar.ee	+372 5 221 274	Consultancy civil works	Scientific company providing complex mathematics for civil	
SEB	Karl Mäler	Vice President, Sales and Marketing, SEB	karl.maler@seb.ee	+372 683 3882	Banking	Recognized as Mr. Innovation in Estonia for his innovation within the Estonian banking sector. Releasing new banking	
Cybernetica	Ülo Jämsäniemi	Chairman	ulo.jamsaniemi@cyber.ee	+372 609 1991	E-services	Providing services in connection with providing web based public	
Bioson	Aleksey Konstantinov	Marketing Director	Marketing@bioson.lv	+371 6 7408157	Biotech	Bioson provides laboratory equipment for biotech industry	
Sensider	Maja Abolins	Head of Marketing Department	maja.abolins@sensider.lv	+ 371 87217212	Cosmetics	Sensider is fast growing	
Unidologs	Ragnar Saar	CEO	ragnar@unidologs.com		E-services	Meeting site for dog and cat lovers world wide. A good example of identifying new ideas	
Elni-Tec	Mr. Mironov	Director	info@elni-tec.com	+371 6715 8143	Steel technology	Elni-tec provides laboratory equipment for biotech industry	
Makara Cosmetics	Lene Tiesemagala	Managing Director	lene@makara-cosmetics.lv	+371 67470243	Cosmetics	Cosmetics company focused on environmental friendly and	
Baltic Laser Center	Arnois Veigulis	Managing Director	info@baltic.lv		Wood manufacturing	Producing laser equipment for	
Braker Baltic	Vladimir Gerasim	President	office@braker-baltic.lv	+ 371 6718 3947	Electronic Mining and nuclear technology	High tech detection equipment for Mining and nuclear industry	
Integris	Juri Laurin	Director	info@integris.lv	+371 67187718	E-services for healthcare	Provide health service gadgets using mobile technologies. Heart rate detector used for live television transmission of	
Noramat	Lemih Stafeckis	CEO	noramat@noramat.lv	+371 6794794	nanotech	Former Soviet institution, now selling their research	
Tartu Science Park	Tomas Norram	MD	tomas.norram@tartu.sci.park	+372 742 8715	Science park	Science Park best	
Tallinn Science Park	Kalle Tinner	Head of Business Services Unit	kalle.tinner@tshscop.ee	+372 6 896 223	Science park	Science Park best	
Federation Of Estonian Engineers	Aleksei Hõbenägi	Director	aleksi@hobnag.ee	+372 611 5889	Industry organization	Industry organization for latvian engineering companies	
Nordic Council of Ministers Office	Carla Petersson	Head of Office	carla.petersson@norden.se	+372 627 31 08	Political Institution	Self explanatory	
Latvia Technology park	Dr. Jānis Stabulnieks	Managing Director	it@latnet.lv	+371 67518771	Industry organization	Heading the governments agency for entrepreneurship	

5. Conclusion

5.1. Academic approach

Due to fairly limited academic approach to innovation, there is very large potential for growth of innovation in the Baltic's. Considering the already strong entrepreneurial approach to business life, a stronger academic platform would be a strong tool to reach the next level (Ref "Jumping the curve).

5.2. A study of the strong entrepreneurial culture in the Baltics could be beneficial for the entire region. There is much to learn from people who build up entire industries in less than 20 years.

5.3. Strengthening the bonds between the Baltic universities and the Scandinavian universities would be beneficial for both parties. Some of the Baltic universities are very modern and not limited by centuries of history, has fresh views – however, knows less about the world around them than. There are also some universities that sit on very complex science knowledge from the Sovjet-era, which is in danger of being lost.

5.4. Most innovation in the Baltic are intended for the domestic market (at least initially). This due lack of knowledge of how business is conducted globally. With strong focus campaigns and support on how to reach the global market from one of Europe's corners would be very valuable.

5.5. Estonia has a strong and modern infrastructure, and with manageable population of 1,5mill inhabitants, it could prove the ideal testing ground for many innovative products.

References

- Chesborough, Vanhaverbeke & West, (2006)
Open Innovation, Researching a new paradigm, Oxford University Press
- Cooper, Robert & Scott, Edgett (2008)
Ideation for Product Innovation: What are the best methods?,
PDMA Visions Magazine
- FORA (2010)
Danish companies working with user driven innovation
- FORA (2009)
New Nature of Innovation
- Kandybin, A & Kihn, Martin (2004)
Raising your return on innovation investment, Strategy + Business, Issue 35
- Sanders, Elisabeth N.B (2006)
Design Research in 2006K, Design Research Quarterly
- Tunstall, Elisabeth (2008)
The QAME of Trans-disciplinary Ethnography: Making Visible Disciplinary Theories of Enthonographic Praxis as Boundary Object from the EPIC Conference Proceedings: Being Seen. Paradoxes and Practices in (In)visibility
- Prahalad, C.K. & Krishnan, M. S. (2008)
The new age of innovation: Driving co-created value through global networks, McGraw Hill
- Ulwick, Anthony W. (2005)
What customers want: using outcome-driven innovation to create breakthrough products and services, McGraw Hill
- Von Braun, Christoph-Friedrich (1997)
The Innovation War, Prentice Hall
- von Hippel, Eric (2005)
Democratizing Innovation, MIT Press

Nordic Innovation Centre

The Nordic Innovation Centre initiates and finances activities that enhance innovation collaboration and develop and maintain a smoothly functioning market in the Nordic region.

The Centre works primarily with small and medium-sized companies (SMEs) in the Nordic countries. Other important partners are those most closely involved with innovation and market surveillance, such as industrial organisations and interest groups, research institutions and public authorities.

The Nordic Innovation Centre is an institution under the Nordic Council of Ministers. Its secretariat is in Oslo.

For more information: www.nordicinnovation.net