U-Drive:IT

User-Driven Innovation Transfer: From ICT to Other Sectors

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U-Drive:IT – User-Driven Innovation Transfer From ICT to Other Sectors

- The Nordic tradition of user involvement in ICT development; ideas and experiences from this tradition.
- Experiences with user involvement in connection with presenting new media
- Recommendations for political focus areas to strengthen user-driven innovation in the Nordic region

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Fact Sheet

Title: U-Drive:IT – User-Driven Innovation Transfer: From ICT to Other Sectors

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Abstract:
The project has worked with the relation between ICT and user-driven innovation. Traditionally, the Nordic region has had a position of strength regarding the part of the ICT area that deals with ICT and users. This is very much reflected in the Participatory Design Tradition and the Nordic position of strength within HCI. Furthermore, ICT has today moved from playing a role within work and business life to being the driving factor within all sorts of activities. This is reflected in phenomena such as Web 2.0, open source and social media etc. The project is therefore based on the assumption that the ICT field has been one of the leading fields within development via user-driven innovation during the last decades. The project has focused on methods, tools and experiences from these various areas which can be used in general regarding initiating user-driven innovation within a long line of different business areas.

The report describes and accounts in short for the Nordic tradition of user involvement in the ICT development and through a number of research interviews it extracts pivotal ideas and experiences from this tradition. At the same time experiences with user involvement in connection with new media is presented - both in a sales perspective and in a production perspective. Besides, a long row of cases and examples from other projects are presented, and courses and results from a number of workshops and knowledge activities initiated via the project will be mentioned. Finally, a range of recommendations for political focus areas are stated which based on the project experiences may be part of strengthening the basis for user-driven innovation in the Nordic region.

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Executive Summary

The U-Drive:IT project has been carried through with financial support from the Nordic Innovation Centre under the Nordic Innovation Policies 2007 in connection with the theme: User-Driven Innovation. The project leader has been ApEx – Center for Applied Experience Economy (DK) and the other project partners have been SINTEF IKT, Cooperative and Trusted Systems (NO), Innovation Center Iceland (IS) and the NFBi Network – Network for Research-Based User-Driven Innovation (DK). The project period is 1 January till 1 September 2009.

The project title, *U-Drive:IT* is an acronym for *User-Driven Innovation Transfer*. Or the long wording: *User-Driven Innovation Transfer from the IT Sector to Other Sectors*. As the title implies, the project has dealt with transfer and transformation of methods to user-driven innovation from the IT sector to other businesses as well as from knowledge institutions to the surrounding society. In this way, the aim has been to drive forward the large potential in user-driven innovation methods. However, the title also refers to the fact that users to a widespread degree drive the development of IT, software and digital products. *Users Drive IT. You Drive IT. U-Drive:IT*. The user is the centre of both the application and the IT development.

The project has been a gathering, network and dissemination project that has worked with gathering, matchmaking and case development based on existing literature, data and experiences generated in other connections, projects, environments and companies. The project results are disseminated through several channels and its combined products are:

1. This report examines the project process and summarises the most pivotal results and recommendations for the further work with user-driven innovation in the Nordic region.

2. An independent research anthology with elaborating articles about a number of various thematic angles on ICT, user-driven innovation, user-generated content and knowledge transfer.

3. A method catalogue that presents a number of pivotal methods for user-driven innovation from the ICT field and gives concrete specifications of how to get started with the methods and on what to focus.

4. The project webpage that works as a comprehensive resource site with downloads, presentations, streaming videos, podcasts, a wide range of literature and not least the present report and the method catalogue.

Main Objectives

The project is based on the assumption that the ICT field has been one of the leading fields within development via user-driven innovation during the last decades. E.g. the participatory design tradition, the open-source movement and the Web 2.0 development with its social media and user-generated content.

Therefore, the basic idea behind the U-Drive:IT project has therefore been to transfer experiences, methods and practices within user-driven innovation from the IT area to other businesses and fields

such as industrial design, production, social services, entertainment, experience economy etc. – in order to realise the unutilised potential in IT based user-driven innovation methods.

In order to achieve this, a number of goals and deliveries have been made. Overall, the project goals are as follows:

- To gather and present existing research and implementable knowledge about user-driven innovation within the ICT field
- to gather and transfer knowledge about user-driven innovation from the ICT field to other businesses as well as to present possible experiences with this and follow-up on the actions that have been started by the project
- to hold a number of attention-creating dissemination events including a large conference in which knowledge and experience about the application of user-driven innovation are communicated
- to develop a method catalogue – a do-it-yourself-toolkit – for user-driven innovation
- and to develop a homepage that presents the project results and works as a resource site for players who want to know more and maybe want to work actively with user-driven innovation.

These goals have been fulfilled in the project and are described in the report, in the additional research anthology, in the method catalogue and on the project website. In the products of the project a long line of various experiences, methods, good advice and survey of the tradition with user involvement within the ICT field are described. Furthermore there is access to the various presentations from seminars and from the final conference of the project on the project website.

Method/Implementation

The project has been organised in the following way: ApEx as project manager has taken care of the coordinating assignments and the accumulation of knowledge, the organisation and implementation of large events and activities as well as the project dissemination. The other three project partners have specifically gathered knowledge about user-driven innovation and ICT in their areas and carried through one or more courses where it has been tried to transfer knowledge about ICT and user-driven innovation to other, more traditional areas and businesses. The actions and the courses have been carried out in dialogue, and the results can be found in this report. ApEx as project manager and the coordinating part is responsible for the editing, partly the drawing up of and not least the structure of the present report, the anthology, the method handbook and the website development; however the entire project is a results of all partners' contributions, and in the report it is specifically stated which partner is responsible for a specific chapter.

The knowledge gathering in the project has been done through workshops, interviews and desk-research. Knowledge of method transfer etc. has been gathered via workshops, interviews and screening of other similar projects. Likewise the researchers and other players have contributed with knowledge at project seminars, the final conference and through the articles in the anthology, which then reflect experiences and knowledge gathered through a long line of various projects and comprehensive research within the area.

Concrete Results and Conclusions:
There is no doubt that ICT today and in the future will play a dominating part when working with user-driven innovation. The various cases and projects described in the project show this tendency. At the same time there is no doubt that the ICT research and the development in the Nordic context have a special position of strength and have been especially oriented towards the user part and the user involvement in the development process. There is a tradition, an experience and a vast amount of documented results within the area which are no doubt worth a further development as well as dissemination. The report examines and describes this tradition briefly and the lines are drawn to the present problems. Furthermore the report points out the special circumstances that generally make ICT a quite pivotal tool in connection with user-driven innovation and user involvement both for private and public companies.

In the workshop and development interviews described in this report it is clear that ICT will be able to play a central part for user-driven innovation outside of the ICT area. This is as a result of the common methods and theories from the ICT research and by means of the general ICT tools such as social media, e-mails, interactive homepages, and various fora with user-generated content. The report presents an evaluation of a workshop with a number of cultural institutions and the further course as well as a number of development interviews with museums, the energy and building area, the water supply area, the machine area etc.

In the research anthology several, clarifying examples of how methods and tools from the ICT areas support and enables user-driven innovation are shown. Here experiences and results from the application of user-driven innovation in small independent food and logistic companies, cantina development in a large Danish company, ward and electronic patient journal, development of user-generated content, urban development and users etc. are described and evaluated.

Recommendations:
In the conclusive chapter of the report a number of suggestions for concrete political focus areas based on project conclusions, gathered knowledge and experience are given. A summary of these proposals is given below:

- To strengthen the regional and national promotion of trade system in the Nordic countries by advice and implementation of knowledge about user-driven innovation to small and medium-sized companies via projects, networks and actual counselling.
- To strengthen technology transfer and integration for small and medium-sized companies.
- To strengthen research in ICT and user-driven innovation and make programmes that allow this knowledge to be applied.
- To strengthen the ICT educations which are specifically directed towards method and application development for user-driven innovation and the understanding of this.
- To strengthen the educational programmes which traditionally delivers the basic tools and methods applied in user-driven innovation; i.e. primarily the humanistic and social science educations.
- To establish at least one research and educational unit in each of the Nordic countries that focuses specifically on user-driven innovation across professional boundaries, production boundaries, sector boundaries and sales boundaries etc.

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1.0 Introduction

The U-Drive:IT project has been dealing with user-driven innovation and ICT. The questions have been concentrated on how work has been done with users within the various parts of the overall field of ICT. What methods have been used and what are the benefits. What processes must be executed when working with user-driven innovation. What successful examples, innovative projects and fruitful traditions can be found within this field? What part will ICT generally play in the future when working with user-driven innovation? And perhaps the most important question: What importance does this have regarding the trades, institutions, projects and businesses etc. that are outside of what is normally connected with the ICT sector.

Precisely in the schism between the actual knowledge and the concrete experiences within the ICT field and the need of transferring knowledge and experiences in the sectors outside the project the central project procedure lies. This is about knowledge gathering and knowledge transfer.

The title of the project is therefore U-drive:IT. U-drive-IT is an acronym for User-Driven Innovation Transfer. However, it also refers to the fact that to a considerable extent users drive the development of IT. Users drive IT. You drive IT. U-Drive:IT. And it refers to the fact that with great effect methods within user-driven innovation can be transferred from the ICT area to more traditional businesses such as design, production, experience economy and social services – and in this way this drives forward a huge hidden potential in the Nordic ICT sector.

In many ways, the Scandinavian countries have been front-runners regarding values and mindsets that constitute the basis of user-driven innovation which, among others, can be seen through a strong sense of democracy, open dialogue-based communities, a negotiable-based labour market with a high degree of employee participatory democracy and organisation and not least a large social equity. In few places, this has been manifested more significantly and systematically than within certain branches of the IT research and development. From the beginning of the 1960s, a very conscious and partly ideological minded tradition has existed within the development of IT systems and software in order to involve the user, to get to know the user and to develop for the user. The underlying basis has been that systems are to be made for the ordinary user, however understood in a work context, and not understood in such a way that the users must adapt to more and more complex and all-encompassing IT systems. This tradition has several names such as "The Scandinavian Tradition of System Development" or "The Scandinavian Tradition of Participatory Design", (Scandinavia includes both Finland and Iceland), in practice the Nordic countries. The tradition which is worldwide famous has been based on an ideological and political purpose of ensuring that ordinary people or the employee have a say on the development and separation of powers caused by the increasing technologisation of society and work life during the last couple of decades. Additionally, in the research carried out within this tradition however, many tools and methods for working with users and design as well as handling the processes have been developed that must be examined in this connection. During the years, many of these methods have become so canonical that in many ways it can be said that "The Scandinavian Tradition of System Development" forms the basis of the focus on user-driven innovation, which today has emerged in the Northern region.

Thus, it is also this tradition and its methods, results, processes and historic perspective that are partly the reason for the assumptions of this project.

Apart from this, the project basis is of course to be found in an objective view of the contemporary cultural fields where it can be confirmed that ICT carried media today are in the driver's seat and that an essential part of the explanation of the success of these media must be found in their abilities to involve the user, to create interaction and contributory influence, to invite the user to participate actively and create content; in brief: communicate and express themselves. Today the media picture is very much characterised by being a platform for user-created content and a place where the users "create" themselves – for themselves and for each other. This development is made possible by ICT. Therefore an essential part of the project will also focus on new media – also called social media or web 2.0 media – and user-generated content.

Thus, the project will examine what methods and processes for user-driven innovation that are developed in the so-called Scandinavian tradition; look at how they can be applied and not least how they can be actualised within other fields. Additionally, the project will, however, also reflect on the actual ICT generated media status and present actual and relevant examples from a Nordic context on how new media and their user-involving potential can be put into play in exiting and surprising ways.

1.1 The Project Products

The project has resulted in three central products which are individual but also continually refer to each other in the following:

1. This report examines the project process and sums up the most central results and recommendations for the further work on user-driven innovation in the Northern region. At the same time, the report shows a picture of a frame understanding of debating ICT and user-driven innovation in a Scandinavian context.

2. An independent anthology with examining articles about a number of different thematic angles on ICT, user-driven innovation, user-generated content and knowledge transfer. This anthology has been published at Aalborg University Press and can be bought as an e-book from the same website at Aalborg University Press. Information about the e-book will be on the same website where the report will be published (Nordic Innovation Centre).

3. A method handbook that examines a number of central methods for user-driven innovation from the ICT field, and provides concrete references to how to get started with using them and what especially to be aware of. This will be integrated in the anthology, but samples will be placed in this report. The method handbook is part of a section in the anthology, and a short version will be available on the websites of Nordic Innovation Centre and ApEx.

Even though each part can be read individually the most satisfactory understanding of the project and its results is achieved by reading all parts. Here, it is recommended to start with the present report.

1.2 Presentation of the Project Participants and their Relations:

The project has consisted of a joint-Nordic partnership with participants from Denmark, Norway and Iceland.

From Denmark the following partners have participated:

ApEx – Center for Applied Experience Economy (project manager). The overall purpose of ApEx (Center for Applied Experience Economy) is to initiate and to promote cooperation, knowledge transfer, coordination, and competence development, etc. within the experience businesses starting with the Northern Jutland region. The professional field of focus of the technology centre is experience economy, experience business, and experience design, and especially innovation and development needs within the experience companies. ApEx also has access to the research of ExCITe – a centre that is extensively involved with research in new media, technologies, experience economy and user-driven innovation. For more information, please see www.apex-center.dk

Alexandra Institute A/S represented by the national knowledge network: NFBi – Network for Research-based User-driven Innovation. Danish industry must be better at exploiting the potentials of user-driven innovation. Systematic use of user-driven innovation methods can make new products more concise and competitive in the global market. The NFBi network was established with the aim of conveying knowledge of user-driven innovation. NFBi plays an active role in facilitating knowledge sharing and matchmaking between enterprises and knowledge environments with expertise in the field. NFBi is member-based and works in cross-disciplinary teams with scientists and enterprises in the context of user involvement – at all levels of the innovation process. For more information, please see www.nfbi.dk

From Norway SINTEF ICT, Department of Cooperative and Trusted Systems has participated. SINTEF ICT provides research-based expertise, services and products ranging from micro technology, communication and software technology, computational software, information systems and security and safety. Work ranges from simple technical analysis to complete systems. Cooperative and Trusted Systems provide research-based expertise in model-driven development, quality and security technology, and human-computer interaction. For more information, please see http://www.sintef.no

And finally, Innovation Center Iceland has participated in the project. The mission of the Innovation Center Iceland is to strengthen the competitive position of Icelandic business and increase the quality of life, to diffuse knowledge and give support to entrepreneurs, growth companies and innovative enterprises and to excel in technology research, product development, analysis and testing. The Center strives to maintain strong ties with local and international businesses and institutions in order to succeed in fostering innovation and applied research in Iceland and ensure technology transfer and development cooperation. For more information, please see http://www.nmi.is
Please see page 2 for a listing of the persons participating from the partners.

The project has been organised in such a way that ApEx as the project manager has dealt with the co-ordinating tasks and knowledge building, organisation and coordination of larger events and activities as well as the dissemination of the project. Thus, ApEx also handles the editing, partly the printing and structure of the present report, the anthology and the method handbook. The other partners have had specific assignments gathering knowledge of user-driven innovation and ICT in their areas and carrying through one or several minor courses where it has been attempted to transfer knowledge of ICT and user-driven innovation to other, more traditional field and trades.

1.3 The Content and Structure of the Report

The report is characterised by being a compilation of the full project. Thus, the report includes both the actual results in a short version, reports from the different courses, deliberations on procedures and methods etc. and not least conclusions and recommendations on behalf of the project. In the report, there will be cross-references to both the anthology and the method handbook, but the report can also be read independently.

Already at this point, it must be stated that to a certain extent the original assumption or idea of the project has been overtaken; namely to examine whether user-driven innovation within the ICT field has contributed to other trades. Today ICT is part of almost all user-driven innovation processes and some of the most outstanding global innovation thinkers, CK Prahalad and MS Krishnan therefore place ICT tools as the number one central element in transferring companies and concepts in a global innovation process.[1]

Besides this, project experiences have proved that the original assumption; namely that the methods that either originate directly from the ICT field, or which have been further developed and polished, to some extent are similar to many of the methods which today are being regarded as canonical when working with user-driven innovation. Thus, the project is not concerned in any specific way with the question whether the work with user involvement within the ICT field may have something to offer other areas, which is obviously has. However, the project work provides a number of examples of how user-driven innovation within the field of ICT have been dealt with, how this tradition has developed and what status it has today as well as a line of examples of how methods, experiences and results from this have been applied in other fields. I.e. that the project will present a number of different projects that can be carried out in a various contexts and therefore it may seem as if the report talks with multiple voices; however this is only in order to stress out the multiplicity in the area, and in order to give as facetted and constructive insight as possible into the possibilities for the positive interaction between ICT and user-driven innovation within the limited framework of the project. Additionally, a long line of interviews with researchers and other experts have been carried out. The essence of these interviews is also presented in the report. This procedure is caused by the fact that because of the project framework no actual research courses have been started in direct connection with the project why knowledge and experience have been gathered from other places.

1 See Prahalad, C. K. and M. S. Krishnan (2008): *The New Age of Innovation – User-Driven value Through Networks*, Børsens Forlag / L&R Business

However, minor project courses have been completed. Here, it has been attempted to bring the gathered knowledge and experience of ICT and user-driven innovation into use in other fields than the ICT field. These courses have been characterised by being accomplished via workshops, interviews, development drafts etc. The limited resources and time frames of the project have not made it possible to work with specific implementation. Thus, the courses and the workshops started in this project must primarily be seen as explorative and idea developing. The different courses will also be examined in the report and the essential experiences and learning will be emphasised. Also in this phase work in close collaboration with other project activities have been made in order to create as large a synergy effect as possible.

Finally, the most important experiences, conclusions and recommendations from the entire work will be highlighted, and it will be suggested how future initiatives within this field can be done in the most constructive and cost effective way.

If nothing else is written directly in the report, the editors Jens F. Jensen and Søren Smed are the authors.

2.0 Introduction to the Field

The present project is based on methods for user-driven innovation from ICT to other businesses and it is essential to present an introduction to how the ideas of working with users within the ICT field emerge and how they have developed in a Nordic context during the past 30 to 40 years.

First and foremost, let it be clear that user involvement methods and processes within ICT development in Scandinavia are an area rapidly developing and where new methods are still being developed while old perceptions and approaches are left. Neither is it a firmly defined consensus field that only follows one lead. Still, it is useful to give a very short introduction to the field in a Nordic context and for several reasons, among others:

1. ICT research and development in Scandinavia, especially the system development tradition, has from a very early stage been specifically oriented towards the user which is not seen elsewhere in the same degree, e.g. in the USA.
2. The assumptions and ideas behind the user involvement thoughts within the ICT research are partly equal to those that today are behind many of the founding ideas in the different variants of user-driven innovation, even though this, as earlier mentioned, is a particularly interdisciplinary field.
3. Today, the ICT field is still one of the most productive and experimenting fields when it comes to development of new methods, design processes and ideas for working dialogically and actively with users.

The purpose of this section is not to give a complete survey of the various genres of ICT research and its history in Scandinavia. It is neither the purpose to produce a complete list of the different methods and approaches to user involvement and user-oriented design. The purpose is, however, to give a short introduction to the basic assumptions and traditions behind the Scandinavian research and development, what special strengths exist in these, what problems the field faces today, and to give a short summary of what methodical approaches are developed and used within the field.

To a great extent, ICT research is connected to the research and development field named information system development. Some superior common features seems to exist which in one way or the other limit the Scandinavian system development traditions from e.g. the North American approaches to system development. In a survey article from 1998 the Scandinavian system development traditions are characterised superiorly as follows:

"The analysis shows that though there are significant differences between Scandinavian ISD approaches, they also share common features. Generally, the Scandinavian approaches can be characterized as"grass root" approaches when compared with the North American MIS tradition and they emphasize IS [information systems, *eds.*] *evolution, user participation, alternative process models, seek varying and innovative theoretical foundations for IS*

and ISD [information systems development, *eds.*], *and apply dominantly anti-positivistic and action oriented research approaches."*

(Iivari og Lyytinen, 1998: 135)[2]

Thus, the point is that it seems as if the Scandinavian approaches and traditions are more dynamic, innovative, more pluralistic and not least more user-oriented than what can be seen in other places. It is interesting that a regional familiarity between these system development methods can be seen in such a way that the phenomenon "the Scandinavian Tradition" has become an internationally recognised item. In the article, Iivary and Lyytinen proceed with examining and characterising ten rather different schools or approaches to system development and describe deviations and common features among these traditions. Thus, it is complicated to give a complete and coherent survey of the various traditions in the Nordic contexts, which will not be pursued any further here. However, as the subject of this report is user-driven innovation and user involvement techniques, it is essential to notice that the various approaches according to Iivari and Lyytinen involve user participation in some kind. This happens, however, most often in an evaluating perspective (Iivari and Lyytinen 1998:164-165). As an approach to user involvement, the tradition characterised by Iivari and Lyytinen as *The Trade Unionist Approach* is, however the most significant when the aim is a more clear-cut form of user-driven innovation. The reason why this approach has been the most consequent and innovative when working with users as designers and co-creators and through this it has developed a number of tools and experiences relevant in user-driven innovation and which quite clearly can be applied within other fields other than the ICT field. Additionally, this tradition has an ideological and political side, which also makes sense outside of the ICT field. The below section will provide a short introduction to this tradition which will function as context for many of the various projects, methods and experiences which will be mentioned in the remaining parts of this report.

2.1 Short Introduction and Background – Participatory Design

Initially, it is essential to mention that the basic tradition in Iivari and Lyytinen named *The Trade Unionist Approach* (Bansler 1987)[3] is almost the same as others name the *Scandinavian Tradition of Participatory Design* (Beck 2002)[4]. Several attempts have been made to describe the overall features in this tradition and isolate the most central elements on the basis of various approaches, which can be one explanation of the context confusion. Apparently the mostly used term seems, however to be the *Scandinavian Tradition of Participatory Design* or the *Scandinavian PD* which will be used in the remaining part of this paragraph. Then the abbreviation PD tradition is used.

Looking at the origin of the tradition it is not difficult to understand why the term trade unionist approach has arisen. The PD tradition's origin can be traced namely to a number of projects financed by unions and carried out in collaboration with researchers and various union members with the overall purpose of making the computer systems applicable for the common worker, view the common worker as a resourceful part regarding technology and not least weigh the employee's involvement in the de-

2 Iivari Juhani and Lyytinen Kalle: Research on Information Systems Development in Scandinavia – Unity in Plurality, in: *Scandinavian Journal of Information Systems*, 1998, 10.

3 Bansler, Jørgen: *Systemudvikling - teori og historie i skandinavisk perspektiv (Systems Development - Theory and History in a Scandinavian Perspective)*, Studentlitteratur, 1988 (Student Literature, 1988)

4 Beck, Eevi E.: P for Political - Participation is Not Enough, in: *Scandinavian Journal of Information Systems*, S. 77-92, 2002.

sign process. In a Ph.D. dissemination from 2005, the PD tradition's approach to and perception of the end users is described in the following way:

"*In chapter two, I described this research tradition as characterized by its view on design and use of information systems from an end-user perspective and by this an understanding of users as competent and capable of participating in (and Nardi* [Bonnie, Red] *would argue, carry out) systems design activities (cf. section 2.4). Also technology is seen from an end-user perspective focusing on how technology can be formed by and for a practice (Ehn, 1988), or how technology is designed in use (cf. section 2.3 and 2.4).*"

(Kanstrup, 2005: 30)[5]

Compared to an expert development-oriented approach an engineerial product-oriented approach or a top-down management implementation approach the PD tradition has thus, from the start, contained and weighed a clear democratic and real user involvement perspective. The reason why such a tradition has arisen in the Scandinavian countries is probably found in the very distinct union and work markets organisation in these countries where large companies and organisations have not had the opportunity uncontestedly to set the agenda and introduce systems over the head of their employees. Besides, the link between the unions and the dominating social democratic parties in the Nordic countries must be added, which, because of the power in hand, had close ties to the research grant authorities who could finance the means to the projects (Iivari and Lyytinen, 1998: 146).

The production of the PD tradition happens in the research literature often by examining the most essential projects in the tradition and looking at the development between them and what results have been produced. The different productions vary a little in the denomination of the individual stages and which results and experiences are the most essential; however today it seems as if there is consensus that the PD tradition has undergone three superior phases and that the tradition has moved gradually from being orientated primarily towards an ideological, emancipatory goal to dealing with more limited method development and design processes at local levels in specific contexts today. However, the ideological and emancipatory ideas are not given up upon and a lively debate continues whether the field has become too apolitical and diluted and has lost its power of conviction or whether it is a strength primarily to be tool-oriented and pluralistic in the approaches (see e.g.: Beck 2001 and Iversen, Kanstrup and Petersen, 2004)[6]. Another point of view in this connection is that the user involvement in the design process automatically becomes democratic and gets an emancipatory perspective when the design and development processes are made in direct collaboration with users. The ideals behind the original work within the tradition are, according to some researchers within this field, named cooperative design, and are still fundamental to the basic idea, the utopian ideals – referring to the UTOPIA project behind this working method. They write:

"*We consider these ideals as fundamental for our work with co-operative design and term them in short:*

5 Kanstrup, Anne Marie: *Local Design. Volume I: An inquiry into work practices of local It-supporters*, Ph.d thesis, Faculty of the Humanities, Aalborg University, 2005.

6 Eevi E. Beck: *On participatory design in Scandinavian computing research*, University of Oslo, Department of Informatics, Research Report 294, 2001. Iversen, Ole Sejer; Kanstrup, Anne Marie; Petersen, Marianne Graves: *A Visit to the 'New Utopia'. Revitalizing Democracy, Emancipation and Quality in Cooperative Design*, Nordichi 04, October 23-27, 2004, Tampere, Finland. For further debate, please see: The Scandinavian Journal of Information Systems no. 15, 2003 – where there is an expanded debate section dedicated the area.

- *Emancipation (referring to "education for local development and Ehn's reflections on "emancipator practice")*
- *Quality (referring to "quality of work and products" connected to Ehn's reflections on "designing for skill")*
- *Democracy (referring to democracy at work" and Ehn's reflections on "designing for democracy at work")*"

(Iversen, Kanstrup and Petersen, 2004: 172)

According to this there is a clear thread from previous projects and their ideas to the research and the projects carried out today. In the meantime, however something has happened with the way that the ideas are managed and implemented, which will be discussed later.

Now, a short introduction to some of the pivotal projects in the development of the PD tradition will be given and at the same time a short characterisation of the generations is provided, in which the PD tradition is believed to be divided. This will lead the discussion to the present status with the relevant perspectives.

According to both Kanstrup (2005) and Iivari and Lyytinen (1998) as well as several others the development of the PD tradition can be divided into three generations. The first generation is dominated by the actual union projects and includes the project NJMF in Norway, DEMOS in Sweden and DUE in Denmark. The second generation is closely connected to the large Danish-Swedish UTOPIA project. Finally, the third generation is not connected as much with large individual projects; it rather emphasises the development of actual tools for user involvement and dialogue between user and designer in the development of information systems. The third generation of the PD tradition is often named co-operative design. Here, the collaborating aspect between user and designer is emphasised directly in the name. This is nor the place or the time to give a thorough presentation of the individual projects and the generations of the PD tradition. However, a short presentation of some of the projects and their development will be made. At last, suggestions for further reading are made.

In the following section, Kanstrup (2005) summarises the NJMF project. The first large project that worked actively with the users in connection with the introduction of new technology took place in collaboration between researchers and the Norwegian Iron and Metal Union.

" *The basis for the project was an acknowledgement of information technology as a political issue. It was pointed out that employers and employees did not have common interests regarding the use of technology. An aim was to use IT to improve democracy at work and thus an opposite to what was seen as the employers' aim of using IT to increase efficiency and profit. Trade unions should try to influence the development and workers should be a part of the process. "Empowerment" became a keyword for strengthening the weak through experience-based learning processes.*"

(Kanstrup, 2005: 33)

Both the Norwegian, Swedish and Danish project took part in adding technology integration into new contracts, making policies and rules for further training within the area as well as influencing the laws that were enacted during this period, and therefore they formed the basis of focussing on the fact that

users became an integrated part of the system development tradition in Scandinavia (Kanstrup, 2005: 33-35).

Where the first generation projects focussed mostly on policies, the organisation, work life and the new technology and tried to secure the common worker's role in the new technological everyday life the purpose with the best known second generation project, UTOPIA was to develop techniques and tools in order to make satisfying working procedures between employee and technology and designs of a satisfactory and user-friendly IT systems in the graphical industry:

"*It has contributed to the development of alternative participative and skill-based design techniques in general, as well as to more skill-based democratic work organization in the newspaper industry, to computer-based tools which support such work organization, and to professional education for printers*"

(Ehn & Kyng, 1987: 32-33)[7]

Some of the UTOPIA project's innovative method contributions were, among others, the use of low technological mock-ups and roll play scenarios for visualising and providing the understanding of the concrete work situation in which the employees would be in connection with the introduction of the new technology. The project has thus contributed with knowledge of new interaction forms between user and designer and has in this way been very important to the following projects and the PD tradition.

The third generation of the PD tradition which began in the late 1980ties and which in many ways still happens today can be seen as a transfer of the method and tool developing parts of the second generation projects. Focus was more and more pointed at the single case and the individual organisation and not so much towards the national level and influence on laws and agreements. The objective was to develop and improve tools and techniques for co-operative design through individual projects (among others, see Kyng, 1998)[8]. Because of the more local and individual focus in the design optic, at the same time it can be said that the original ideas with emancipation, quality and democracy become softened and that the tradition pave the way for a more commercial use of the tools and techniques developed to cooperative design and user involvement. According to new research within the area this is a somewhat one-sided way of seeing it as the original values are still very much relevant today, though in a new interpreted shape:

"*We find that these ideals can play a significant role in today's development practice as they put attention to issues such as equality of rights, power, learning and skill, all heterogeneous elements bringing complexity, difficulties, and more importantly, also value and meaning to the use of technologies in everyday life. In the following we argue that these ideals are indeed still valid, needed and possible, however, not without a new interpretation with respect to the changes and challenges of today's conditions for design*"

(Iversen, Kanstrup and Petersen, 2004: 173).

7 Here quoted after Kanstrup (2005). Original source: Ehn, Pelle & Kyng, Morten: The Collective Resource Approach to Systems Design, in: Bjerknes, Gro, Ehn, Pelle, & Kyng, Morten (Eds.), *Computers and Democracy - A Scandinavian Challenge*, Aldershot, UK: Avebury, 1987.

8 Kyng, Morten: Users and Computers: A contextual approach to design of computer artifacts, in: *Scandinavian Journal of Information Systems*, 1998, P. 7 -44.

"Later three challenges are identified that forms the frames of the new interpretation of the original values and which then according to the authors points towards a new version of the PD tradition which is relevant in a present context. The challenges originate from changes in context, users and technologies "

(Iversen, Kanstrup and Petersen, 2004: 173).

The new contexts: It makes sense to talk about a shifting of the original project within the PD tradition, as focus originally was on the workplace and to strengthen the employees' qualifications according to integrating and working with new technology and computers. Present PD, cooperative design, deals not only with work issues. Focus is not only on functionality and the practical role of IT in the workplace, but equally in the home and spare time. It is also designed to and with people in their everyday lives and in their spare time – life styles, private life, aesthetics, feelings etc. are thus important in the way IT-systems are used and designed.

The new users: The new contexts also cause that the user no longer is seen only as employees, but also as families, children, disabled people, athletes and citizens and citizens groups in general. Principally there is no end to the user groups that can be imagined. Users in various contexts may have far different qualifications to offer and quite different demands to their IT products.

The new technologies: Today, individual systems for controlled surroundings are seldom designed. Today technologies and software products typically are leaner and may occur in many different user contexts. The same production may very well occur in both work and leisure time connection. Today, interactive, digital technologies can be integrated in spaces and products in ways that have not been seen earlier. This causes new methods to be developed in order to examine user ways and to take into account many unexpected none-prototypical user connections (Iversen, Kanstrup and Petersen, 2004: 174).

Thus, the Scandinavian PD Tradition has undergone a development from a narrow focus on improving work processes, product quality and integration of a new technology and new systems in the workplaces to and together with employees to work with user-oriented and user-involving design in many different contexts, by which it can also be mentioned that the perspective of using and testing methods from the ICT field within other areas are strengthened significantly.

At last, it must be emphasised that the development in the various generations of PD is also reflected in the user-understanding and how the user is regarded and participates in the design process. This development can be summarised as follows:

" The 'user discourse' has, since the first steps to include users in the design process of information systems in the 1970s, gradually changed: from "victims" needing support in the 1970's [2] to "competent practitioners" in the 1980s [14], to "serious professionals" in the 1990s [34], to today's valuable "source of inspiration" [15]. These various discourses – all traceable within the Scandinavian tradition of Information Systems design, Participatory

Design, and Interaction Design – can be regarded as an increase in user significance in design: from users as victims to users being an irreplaceable resource"

(Christiansen and Kanstrup, 2006: 321).[9]

The above presentation and production of the PD tradition and its development is of course not complete. The compilation and approach analyses, work methods and results in the first two generations can, among others, be found in Bjerknes, Ehn and Kyng (1987)[10] and Ehn (1988). The third generation design, the cooperative design which, in many ways, is still dominating can, among others, be found in Greenbaum and Kyng (1991)[11]. Furthermore, it must be mentioned that articles and debates in relation to system development, user involvement, user-oriented design, Human-Computer Interaction, participatory design etc. can be found in proceedings from the yearly IRIS Seminar[12], NorCHI conferences[13], and in several numbers of *The Scandinavian Journal of Information Systems*[14], e.g. number 10 and 15; however, many of the numbers encompass articles concerning the PD tradition and user involvement in design of information systems.

At last but not least, it must be mentioned that the Scandinavian PD Tradition has also had international punch – especially in the USA and in Great Britain. Among other things, here *Participatory Design: Principles and Practices* by Douglas Schuler and Aki Namioka[15] can be mentioned, who presented a number of the most essential projects and theorists from Scandinavia in an American context when it was published in 1993. Furthermore, *Communications of the ACM,* June 1993, Vol. 36, No. 4 can be mentioned which was an issue dedicated to participatory design.

2.2 Methods and Approaches in the Scandinavian Participatory Design Tradition

How has work then in a more concrete manner been done with user involvement and user-centred methods within the ICT research and the participatory design tradition? As the above states it is not possible to produce a complete list of methods and application areas as it is context dependent on how to design an approach within the frames of the individual project or in relation to the individual problem. A relation which will be elaborated in the next chapter in connection with a number of research interviews and general desk research executed in connection with the project.

Furthermore, it is an ongoing debate whether the methods developed within "the Scandinavian Participatory Design Tradition" have been developed as a detached tool box applicable within all areas without regard for the entire valuable frame which, as presented, consists of emancipation, product quality and democratic processes. It is suggested that this is possible – at least with some of the methods, but it

9 Christiansen, Ellen; Kanstrup, Anne Marie: *Selecting and evoking innovators: combining democracy and creativity*, NordiCHI 2006: Changing Roles, 14 – 18 October 2006, Oslo, Norway.

10 Bjerknes, Gro; Pelle Ehn; Morten Kyng (eds.): *Computers and Democracy*, Avebury, Aldershot, 1987.

11 Greenbaum, Joan; Kyng, Morten: *Design at work: Cooperative design of computer systems*, Lawrence Erlbaum Associates, Hillsdale, New Jersey, 1991.

12 *IRIS: Information Systems Research in Scandinavia.* http://iris.cs.aau.dk/index.php/welcome.48.html

13 NordiCHI is a biennial conference functioning as the main Nordic forum for human-computer interaction research. http://www.nordichi.org/

14 http://iris.cs.aau.dk/index.php/welcome.html

15 Namioka, Aki; Schuler, Douglas: *Participatory Design: Principles and Practices*, Lawrence Erlbaum Associates, 1993

must still be up to the designers and the project managers to evaluate in every individual case which methods might be relevant, how they can be put together and how they must interact in the concrete projects and development processes.

Without going further into the individual methods and processes it is however possible to identify a number of superior principles for participatory design processes which are present regardless of which methods that are used and which context and application areas are in question. In general, it can be mentioned:

1. **Collaboration**: System development projects within the participatory design tradition require collaboration. This is based on two basic views, namely 1) all participants are put on the same footing at the same time as they each offer their existing expert areas and 2) that the development process is also a learning process where all participants in the development and design work gradually becomes wiser.

2. **Experiments:** The design process always happens between new opportunities and the present use conditions. Therefore an experimenting procedure is often used within participatory design that scans the invention of "the new" and at the same time the present is developed, improved and refined for the users. In order to support these objects, the design process and thus the user involvement in PD are often characterised by explorative methods such as thematic workshops, future workshops and any design games. As PD design furthermore aims at developing in "real" work contexts and involving the users continuously in the design work the development process is characterised by always being supported by clarifications of partial aims and final objectives by e.g. mock-ups, prototypes, design sketches, and simulations. Additionally, various artefacts are applied in order to create an illusion of the concrete work/user situation.

3. **Contextualisation:** PD design takes its starting point in a specific work situation or in a certain user situation in the more modern version of the tradition and thus seeks to develop a product that is adapted to and may improve the specific situation. The development process is usually done in an iterative manner with current involvement of various interested parties, including the users at the different levels. The interested parties and participants in the development processes are e.g. designers, leaders, users, supporters etc. These groups all have different interests in the system/application and act daily in various contexts, which the PD design project must relate to explicitly during the process.

4. **Iterations:** As mentioned the PD design process is characterised by the fact that currently prototypes and mock-ups are developed and a large number of other artefacts are used. When these "clarifications" are presented to the users, valuable inputs are given that indicate in which way the further design work must go. This process is repeated several times in the process until a "satisfactory" level has been reached. Thus the final product for the design process it not necessarily clear from the start but happens during the iterative design

work in the collaboration between the participating interested parties' inputs and thus reflects ideally the real needs and problems that is required by the use context.[16]

In the various projects and in the research that has worked with ICT and participatory design a long line of specific user-oriented development methods and tools have been developed that are used within the overall principles described above. It is impossible to list all in this section, even to make a detailed description. Therefore only selected lists and models and statements are here presented which have been published in the trendsetting literature within the field. In the project method handbook and in the rest of this report a further description of some of these methods is to be found which have been considered the most relevant for user-driven innovation why references to this description is made.

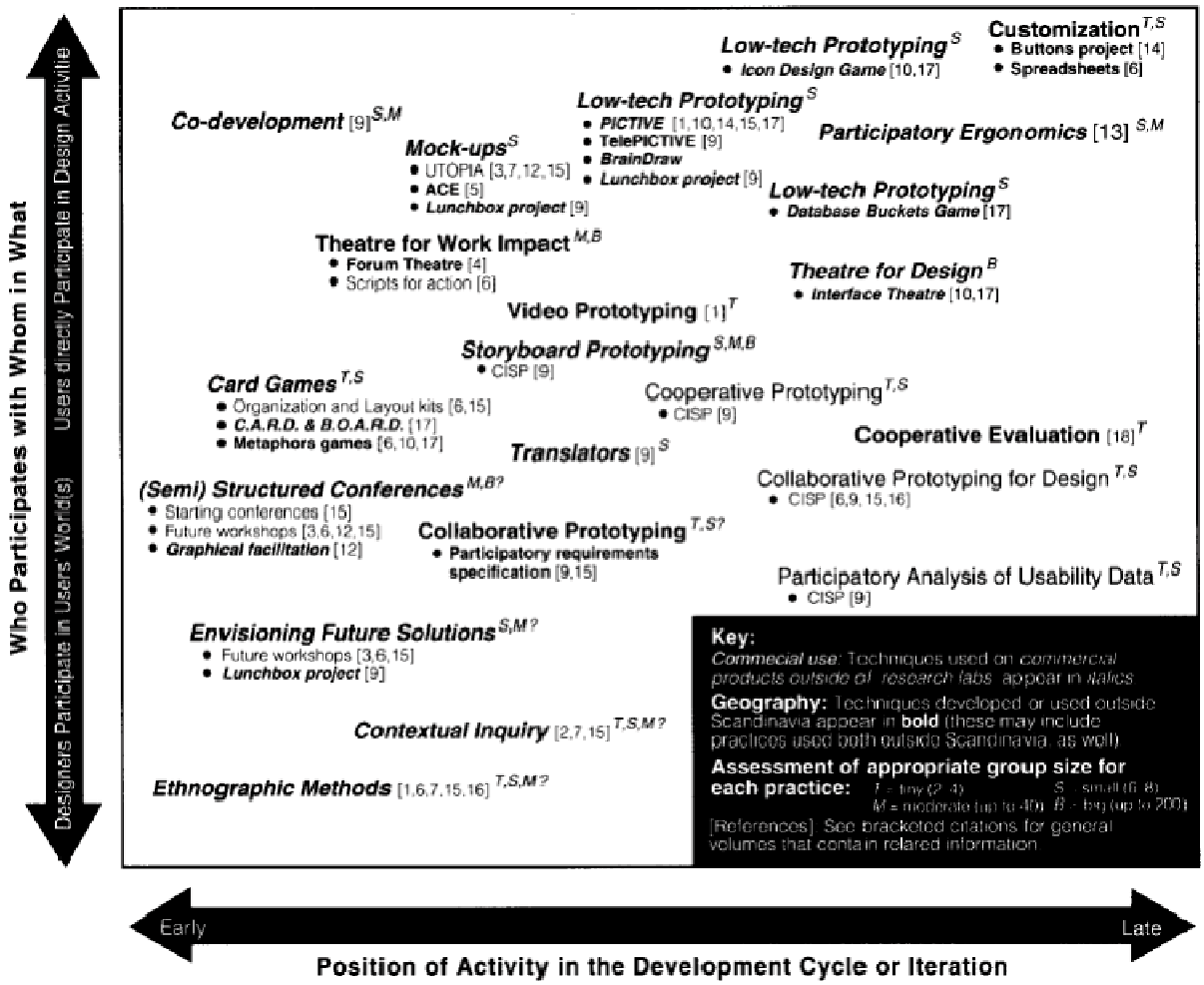

Figure 1: *The above model is found in: Muller, Michael J; Wildman Daniel M & White Ellen A: Taxonomy of PD Practices: A Brief Practitioner's Guide, in: Communications of the ACM, June 1993, Vol.36, No.4.*

16 The description of the four superiour principles for PD design, has been made and based on the description, which can be found on the website of Institute for Computer Science, Århus University: http://www.daimi.au.dk/research/areas/human-computer-interaction/participatory-design/ . Institute for Computer Science, Århus University, holds one of the largest and most productive environments within research and development of the PD tradition in a Danish context.

Table 2. Tools and techniques for knowledge development

Tools and techniques	Areas of knowledge 1	2	3	4	5	6
Observations [24, 30]	1					
Interviewing users	1	2				
Self-registration [17]	1					
Developers doing users' work	1					
Videorecording [23, 30]	1					
Mock-ups [13, 14]	1					6
Think-aloud experiments [23]	1					6
Drawing rich pictures [7]	1	2				
Conceptual modelling [7]		2				
Culture analysis [5]	1	2				
Object-oriented analysis [9]		2			5	
Object-oriented design [10]					5	
Event lists [28]		2			5	
Entity-relationship diagrams [28]		2			5	
Wall graphs		2			5	
Mapping [25]		2			5	
Future workshop [21–23]		2			5	
Metaphorical design [23, 26]		2			5	
Dataflow diagrams [12]		2			5	
Language analysis [24, 30, 31]		2			5	
Card games [15]	1					6
Prototyping [1, 6, 16, 20]			3		5	6
Visits to other installations			3	4		
Literature study				4		
Study standard software			3	4		
Forum theater						6

Figure 2: *The above model is found in: Kensing, Finn; Munk-Madsen, Andreas: PD: Structure in the Toolbox, in: Communications of the ACM, June 1993, Vol.36, No. 4.*

New techniques and methods are added all the time so the above model and list are only starting points.

In a Danish context the book *"Professional IT-forundersøgelse". Grundlag for brugerdrevet innovation*en (*Professional IT Feasability Study. Basis for User-Driven Innovation*) gives a good and practical usable introduc-

tion to a number of user involvement methods applied or developed in connection with the so-called MUST Method.[17]

2.3 Other Essential ICT Perspectives

Even though the starting point for the thinking and the problem-orientation in this project has started with the Scandinavian Participatory Design Tradition other subjects must also be taken into consideration which are very essential in the discussion of ICT and user-driven innovation. This area does not deal that much with actual development methods and processes in using user-driven innovation. The area rather deals with the fact that there has been a development in the media and ICT technology; a development which causes that user involvement, user-produced content, employee-driven innovation and global information networks etc. become an opportunity for all: individuals, small and large companies, public authorities, service producers and institutions. It is not phenomena that can be viewed as especially Nordic as they, as earlier mentioned are results of the technology and media development, including especially the dissemination and development of the Internet, globalisation and global trade. Even though the phenomena are not especially Nordic and even though many theorists have pointed out the technology and media development as a necessary element in making the world "smaller" and creating the possibility that areas and countries that were suppressed in the "old" economy now suddenly have the opportunity of taking distinctive steps forward, then the Nordic countries also have a privileged position compared to this development. This is caused by the fact that the Nordic countries via the ideological and democratic approach to system development and computer use have some of the world's most computer competent populations and additionally the Nordic countries have one of the largest penetrations of broadband connections that are the central life nerve in the network society or in the Web 2.0 world.

The Web 2.0 phenomena and the technological development on the Internet have caused at least two situations of large relevance to the project discussion about ICT and user-driven innovation. On one side it has become possible for users and individuals themselves to produce content and publish it publicly and thus circumvent the usual media gatekeepers. In doing so, the essential value chains and business models have been broken down and new are emerging. Through intelligent use of the new media it is then possible quickly to stage oneself, new initiatives and companies, among others by using social media (e.g. Facebook), certain communities (expert fora, sales fora etc.), viral marketing (e.g. small movies on You Tube) etc.

If one issue is the users', the customers' or the companies' opportunities to get their messages and content across, then of course the other issue is the companies' opportunity to get in contact with their customers or users. Via the same channels as described above, today companies have the opportunity to get feedback from their customers on products, to get into dialogue with their customers regarding future products, to gain insight into their customers' behaviour, needs and demands and literally to ask them to suggest new products and involve them in the design and development process which already can be seen in a long line of examples. In this connection it is worth noticing that at the same time this development marks a change in the balance of power between producer and customer. Where

17 Bødker, Keld; Kensing, Finn; Jesper Simonsen: *Professionel IT-forundersøgelse. Grundlag for brugerdrevet innovationn* (*Professional IT Feasability Study. Basis for User-Driven Innovation*), 2. udgave, Samfundslitteratur 2008.

traditionally the costumer had to settle for the products that the company and their development teams put at his/her disposal and where the companies' successes consisted of their abilities to market, rationalise, innovate technologies etc, the dialogical development which are happening today will result in the fact that the successful company is the one who understands to listen to its customer or user and who understands to give the customer a unique and satisfactory experience.[18]

In principle it may be stated that the present technology and media development hold the potential to meet the Scandinavian tradition's search for participatory democracy and higher quality and satisfaction – not only within ICT products and use, but in all products – but of course through the channels made possible by the ICT development. Additionally, it may also be noted that the development holds the opportunity to develop new commercial concepts, business models and products which can be used by the skilled and visionary entrepreneur.

However, the battle is not yet won and the game board is not necessarily as simple as presented above. E.g. it can be questioned whether the traditional gatekeepers (large multinational media and commercial players) can let go of the content and the distribution channels just like this? Do the users actually know for whom they produce content and why? Is the amateurish quality really worth spending time on? Which interests serve the network owners – often the old telephone monopolies, can the companies count on the user inputs that they receive and do they actually use them? How does one make money on placing platforms at the users' disposition and their content? These and a long line of other questions are still not answered and demand further examination, time and research. One can only establish that a development has been started which probably will change the relation between company and customer, producer and receiver or supplier and user forever. The below chapter examines the phenomena user-produced content and ICT as a lifeblood in the companies' dialogues with users and employees from top to bottom.

2.4 User-Produced Content[19]

The phenomena user-produced content has drawn much attention in connection with the Web 2.0 as a special communication form which is public in the sense that one communicates with many and multivocal in that sense that many communicate with many and that one can edit and share the content at the same time. It is about online collaboration and sharing in close social networks whose activities can be observed simultaneously and received by a more distant public of viewers, readers and 'lurkers'.

The media's user-generated content has a specific relevance in connection with user-driven innovation, *firstly* because the character of the communication is dialogic, interactive and horizontal and has been supported by the special ability of the information technologies to facilitate and create networks in the shape of online communities, and *secondly*, powerful and easy accessible design tools for the user production itself have been launched.

18 Further information can be found in: Prahalad, C. K. og M. S. Krishnan: *The New Time Age of Innovation – User-Driven Value Through Global Networks*, Børsens Forlag 2008 (now: L&R Business)

19 This chapter, Pp. 26 – 29, is written by Tove Arendt Rasmussen, associate professor, Department of Communication and Psychology, Aalborg University and Søren Smed, ApEx.

There are two important prerequisites for the user-generated audio visual content production. *Firstly,* the price for the technical equipment for both recordings and editing has decreased so much that almost everybody can afford it: Many, especially young people have mobile phones with video functions, and one can get editing programmes on the Internet for very little money. This means that audio visual production is right by the hand in everyday life, and the professional standards and demands play a very small role in connection with the small funny 'clips' that can be sent to friends on mobile phones or put on the social websites. *Secondly,* the Internet in itself is a prerequisite that one's own production can be available for the public or an audience that is larger than one's own network.

Through the social websites new possibilities have been created. In principle everybody can have a profile or a blog on the site, and at the same time a forum for presenting oneself, cultural expression and not least social contact, cooperation and sharing has been created.

In the citizen perspective user-driven innovation is about the fact that the individual acts or conquers an increased space for expression – culturally, politically or socially as e.g. in user-generated digital stories. Here, the individual autonomous resources are used which are rooted in the life world, and the value consists apparently of the visibility of the individual as he or she presents himself/herself to others. Potentially, it is about "empowerment" and increased life quality – especially for groups of individuals who traditionally have not had a voice in public or in different networks.

More about user-produced content, background, status and perspectives as well as more profound analyses of actual examples can be read in the article of Tove Arendt Rasmussen *User-Generated Video & Transfer of Social Meaning* in the project anthology.[20] .

New social sites turn up constantly, but some of the most well-known are MySpace, Facebook, Twitter, more professionally related dialogical fora such as Wikipedia and LinkedIn and fora for exchanging video and images etc. such as Flickr, You Tube and Current Tv. In a Danish context e.g. social network sites for children and youngsters can be found. Arto and not least bandbase.dk which is a community and network site for bands, musicians, record companies and music venues etc. where there is an opportunity to display music and try to be discovered outside the traditional publication channels. As a final Nordic feature, one fact must be mentioned that Denmark is that place in the world where the largest percentage of the population is represented on Facebook. It implies that the populations in the Scandinavian countries are very ready to apply the new media and social fora and at the same time they have few reservations regarding security and exposure etc. In general, examinations also show that the Nordic populations meet the IT carried platforms with trust and openness, why these media maybe still have an extra high level of penetration in exactly the Scandinavian countries.

In another of the project cases, Peter Kofoed reports from a project titled Plan B. This is also described in more detail in the project anthology but a few pivotal points will be mentioned here as they support the overall connection. Basically, this study described in the article of Peter Kofoed is that a group of researchers from Aalborg University in collaboration with a large regional TV station wanted to exam-

20 Rasmussen, Tove Arendt: User-Generated Video & Transfer of Social Meaning, in: Jensen, Jens F & Smed, Søren G (Eds.): *U-drive:IT – User-Driven Innovation Transfer from the IT Sector to other Sectors*, Aalborg University Press, 2010.

ine the basis for user-involving activities in a Danish context. The article is shaped as a survey of the process caused by this question and collaboration and in many ways it can also be read as a white-paper of how to establish and begin initiatives that support and produce user-produced content.

In the project, the group of media researchers and the TV-station representatives began to recruit two different groups of citizens to enter into an educational course, production course and furthermore work as ambassadors for the phenomenon user-produced content. After a lot of anguish, it was decided that the final groups were to be a school class and a group of senior citizens from a small Mid Jutland provincial town – Aalestrup. After an instructional course, both groups produced a number of personal videos which in one way or the other provide the viewer with an insight into the individual every day lives – very much as the guidelines for "digital storytelling" prescribe. However, the following course for both involved citizen groups became very different. Following the direct participation in the project, the group of senior citizens has founded a dedicated video club where numerous videos have been produced and which are available directly on the website of the club: www.aalestrup.dk. Under the auspices of the club they have also received a sponsorship for equipment and materials etc. and today they perform professional orders. So the group has transformed from being part of an experimenting project to becoming part of branding their local community and at the same time voice that meaningful social connections exist in Aalestrup where one always has a change of challenging and expressing oneself.

Thus, in many ways the Plan B project resulted in initiating a successful and meaningful course of user-produced content. Not in an aspect which has any commercial possibilities but in an aspect that shows that new media also carry the opportunity for user-inputs, local votes and social cohesion as well as not least that it is possible for all groups to perform in the media.

Seen from a slightly more overall research oriented perspective, the Plan B project has shown a number of conclusions also presented in the article by Peter Kofoed. In brief, it must be mentioned that some of the superior points are that as a phenomenon with democratic and involving potential resulting in increased life quality then the work with user-produced content certainly has potential. It is more dubious which role the professional media producers will be playing in the future as the user-produced content is very different from the traditional professional aesthetics. Vice versa, the content producers with the new digital channels suddenly obtain much more primetime that needs to be filled so they probably have to think in new platforms and range of programmes. But from point of view of the involved TV station the idea seems to be that if they cannot add new things or originality to the area they might as well let it be.

Finally in the article Peter Kofoed reflects upon the problems that the entire development of user-produced content leads to, and in what way one can understand the user in this game. The understanding of the concept user is namely quite conclusive for the understanding of the possibilities created by this development. According to a report from the Danish Agency for Science, Technology and Innovation, the user can basically be seen in three ways.[21]

21 B*rugerdreven innovation – baggrundsrapport til et strategisk forskningsprogram*, Forsknings- og innovationsstyrelsen 2006:7

1. as consumer where the user is involved in order to optimise the products and to make a better hit at their target groups
2. as innovator where the user is seen as the idea generator in the development process. Here, it is still about a market perspective
3. as an individual and citizen, where the perspective is not market oriented but deals with: *'that the user acts in or conquers an increased space for expression, e.g. culturally, politically or socially. It is the life world of the single individual that forms the explicit value object and it can be seen e.g. in the display of 'user-generated' content.*[22]

Thus, the user plays a very central part regarding the aspect that is placed on the user involvement in the development process. In the Plan B project focus has primarily been on item no. 3. Within that area, Kofoed names five problems where the Plan B project has had experience. They can be seen as general challenges and problems if one wishes to work systematically and developing with user-produced content:

1. Who has the ambition – the professionals or the users
2. What is the success criteria for user-generated content
3. Do the professionals have the skills to involve the users
4. Do the users have the necessary skills
5. In which forum may the users perform

Thus, there are still many possibilities but also unsolved issues in the work with user-generated content, which must be closely examined before it can be determined more precisely what the future user-generated landscape may lead to in the social, the commercial and media area.

2.5 User-Generated Innovation and ICT: R=G and N=1[23]

In this chapter focus is changed to a more general view on the ICT technology's potential as a platform in order to create user-driven innovation and development. ICT technology is still in a rapid development and its affect on the ways to manage a company, production and innovation will become even more remarkable in all levels.

In the project anthology Thessa Jensen describes in her article *User-Generated innovation: R = G and N = 1*[24] based on a number of North Jutland cases the ideas behind Prahalad and Krishnan's book "New Time Age of Innovation – User-Driven Value through Global Networks". The two basic formulas in the book are R = G which stands for resources are global and N = 1: that users ask for individual and unique experiences. The basic coherent element in these two rather simple but essential and comprehensive formulas is ICT.

22 Kofoed, Peter: User-Generated Content – A Professional Ambition, in: Jensen, Jens F & Smed, Søren G (Eds.): *U-drive:IT – User-Driven Innovation Transfer from the IT Sector to other Sectors*, Aalborg University Press, 2010.

23 This chapter, Pp. 29 – 31, is written by Thessa Jensen, associate professor, Department of Communication and Psychology, Aalborg University and by Søren Smed, ApEx.

24 Jensen, Thessa: *U*ser-Generated Innovation: R=G and N=1, in: Jensen, Jens F & Smed, Søren G (Eds.): *U-drive:IT – User-Driven Innovation Transfer from the IT Sector to other Sectors*, Aalborg University Press, 2010.

The use and development of ICT can no longer be seen as a random part of a given company. For Prahalad and Krishnan the ICT department makes the focal point itself in any company regardless of size. In both legs of the Prahalad and Krishnan innovation theory ICT plays quite a central role and in the future growth company one therefore has to be set on that the ICT department plays a privileged and important role which is not only part of the whole but almost the prerequisite for the other parts of the company.

In relation to the leg that is R = G, i.e. resources are global, it is not about that one is no longer connected to the resources which are found in the geographic limited area in which one's companies exist. Time, employees, materials etc. are found on a global scale and the future innovative company understands to utilise this and systemise the global production, sales and communication. However, global contacts, production in other continents and sales in more markets need coordination, communication and management. And to this purpose the ICT development provides a number of unprecedented tools that the innovative company must utilise. The positive profit will then according to Prahalad and Krishnan be increased access to resources, increased production speed, increased scalability – reaction speed and increased collaboration possibilities and thus further access to resources and ideas etc.

In relation to the other leg named N = 1, that is that all customers are unique, it is about the fact that every product must be unique and ensure that the customer obtains a unique experience. Jensen writes:

"The formula N=1 is a compilation that the consumer must experience the purchase and the consumption of a certain item as a unique experience, whether this item is a physical entity or a service delivered to the consumer. So, the N must be seen as an experience while "=1" must be seen as exceptional".

(Jensen, 2010)

In order to achieve this status in the purchase relation between company and customer there is no way around that a mutual and relevant communication relation between customer and company must be established. The company needs to know the customer's need, wants and behaviour in order to be able to establish unique experiences and the customer also needs to know about relevant products, learn more about the company and perhaps even experience that he/she has a voice and has influence regarding the future shape of a certain product. Ideally, this deals with the process that Prahalad and Krishnan name co-creation. In order to create this dialogue and to log information about customer needs, wants and behaviours etc. ICT is a remarkable tool. With the Internet, e-mails, web pages, social sites, discussion fora etc. today there are plenty of opportunities to get in contact and dialogue with users which did not exist just a few years ago. It is worth noticing that this development is so new that the full stroke of its meaning is yet to be seen. Besides, ICT platforms are also good at letting users be co-creators in the development of new products.

In both legs of the innovation theory, various editions of ICT thus play an important roll. Jensen sums up the relation between ICT and user-driven innovation in the three overall areas:

1. *IT as information:* ICT provides access to information and possibilities for information treatment .

2. *IT as access:* The access to the customers and other companies is important in the globalisation time age. ICT is a tool that gives direct access to the customers.
3. *IT as network:* IT creates network between different players from various and similar businesses. Network between customer and company, in between customers and so on.

In many ways it may thus be said in this connection that ICT is the platform itself that makes innovation possible in such a character and in such a scale as accounted for by Prahalad and Krishnan.
At the same time it is important to emphasise that Prahalad and Krishnan's theory does not only concern large global companies but also small and medium-sized companies with more local anchoring. By elaborating the connection between the global resources, the unique experience and the information and communication technology (ICT) it may be proven that the formulas also may be used in a North Jutland connection. Even though small North Jutland companies e.g. farm shops can with advantage use ICT to create and maintain a customer circle. As the article states one of the widest collaborations in North Jutland are deeply dependent on ICT: logsite.dk. This website and the company behind provide small and minor companies in the North Jutland region with the opportunity for sending goods all over Denmark. This is made possible through ICT which coordinates the collaboration between the company that needs to send out the goods and the haulier who has to deliver the goods directly to the front door of the customer. So, Logsite is a unique collaboration between a number of small companies who in this way create the flexibility and scalability that Prahalad and Krishnan regard as fundamental for a given company's development possibilities.

The possibility of creating new products in collaboration with the users is likewise deeply dependent of ICT. Here, the small company maintains the direct contact. Newsletters and not least opportunities to answer and comment on these provide the opportunity for a direct co-creation of new products. Again, one of the companies behind Logsite is seen as the innovative driving force in the transportation of food: skagenfood.dk took their starting point that the customers ask for fresh ingredients, especially fresh fish. Therefore, transporting opportunities should be developed that made it possible for the transportation of fresh fish to all parts of Denmark within 48 hours. The fish should be cooled in this time – and the packing should be light, easy to handle and not dependent on cooling from the outside. Skagenfood started collaborating with torvet.dk and logsite.dk and developed a packing that keeps fish cooled for 72 hours. At the same time Logsite's transportation system was developed so that the goods could be delivered within the given time limit.

Even though this is not really about a global exploitation of resources, the North Jutland examples show that collaboration between the companies, co-creation between company and customers and not least ICT is the way forward for user-driven innovation and thus development in the North Jutland region.

2.6 Conclusion – Introduction to the Area

An overall introduction to user involvement and user-centred design within the ICT area in Scandinavia and in general has been presented above. It has been pointed out that the historic source of the thought of user-driven innovation and ICT in Scandinavia primarily must be sought in the tradition which is also named "The *Scandinavian Tradition for Participatory Design*", which is briefly presented in

the chapter. It is proven that the thinking in the PD tradition is closely connected to the ordinarily determined democratic and user-involving ideals in the Northern countries and that it makes sense that the region possesses a position of strength within this area – also in ICT. Afterwards, the Scandinavian PD tradition has also had a certain international effect and today it is a trademark for the Nordic ICT research. Furthermore, there are a number of various methods posted which are used within the PD tradition.

Besides the introduction of the PD tradition and the user focus that can be concluded from this, the chapter also introduces the essential development which the digital media has been going through in the last couple of years and how this development has made a communication and dialogue between producer and user possible, between sender and receiver, which has not been seen earlier. Thus, the ICT carried platforms have produced user involvement in such a way and with such a flexibility not seen before, and it is without doubt crucial for companies and authorities etc. to utilise the possibilities which are present in this wave. As predicted, this has already happened with the social media and user-generated content on Facebook, You Tube etc. This is also in line with the last aspect which was mentioned in the chapter, namely that the ICT departments from now on will be the lifeblood in the strategic development of the companies and opposite competitors. According to Prahalad and Krishnan it applies that the companies must see to it that any customer feels unique and create a unique experience for the customers via the products and sales situations. Therefore companies must communicate with their customers and users and this is done most effectively through ICT tools. Furthermore, ICT tools are quite central in the control and coordination of the development and innovation processes.

It is thus seen that user involvement, communication with users, design with users etc. take up more and more space and have become more important to companies and partly also to public authorities. On one hand, ICT in has been part of this development in various editions, primarily through the development of World Wide Web and the opportunities which have arisen. On the other hand, ICT is also the solution to companies in their attempts to reach their customers, communicating with them and designing for them. Additionally, there is an especially long tradition in Scandinavia in thinking user involvement in development of ICT, in the Scandinavian Participatory Design Tradition. A tradition which is at the same time marked by thinking how to make products, processes and relations better for the users – originally workers, but today users in almost all situations and contexts. It is therefore obvious to conclude that the Nordic countries have a privileged position compared to the future innovation scene – at any rate user-driven innovation. In the next chapter, a number of actual research projects will be examined and researchers with a long experience in working with user-driven innovation and user-centring will be heard.

3.0 Knowledge Gathering

– From the cross field between ICT and user-driven innovation

This chapter presents and summarises the various inputs found in search of what methods, processes and experiences which have been brought into play regarding the work with ICT and user-driven innovation in a present concept. Knowledge and experiences which are communicated here are gathered through a number of interviews with researchers and other expert persons of how work is done with user involvement and innovation. The chapter also builds on the previously introduced chapters and clarifies a long line of methods and processes only mentioned in this section. Furthermore a number of concrete project examples are referred to along the way and not least knowledge and experience from earlier and present projects in which the project partners has been involved.

The chapter is organised in three different contributions. The first is the NFBi network, the second is from Sintef ICT and the third is ApEx – Center for Applied Experience Economy. The three chapters supply and build upon each other.

Finally, there are also extracts and references to each of the longer research contributions which can be seen in full in the project research anthology. As the purpose of the report is general experiences and knowledge there is not given any direction to the individual researcher. By quotes and larger methodical and theoretical considerations these are however assigned to the author.

3.1 Knowledge gathering -NFBi Network[25]

3.1.1 Introduction

The Alexandra Institute's part of the U-Drive:IT project has been carried out via the knowledge network NFBi (Network for Research based user-driven innovation). Through this a high degree of synergy has been achieved– professionally, communicational and resource wise.

The professional basis point of the NFBi part of the project has been the participatory design tradition within IT development in the research world. Through interviews with researchers at Aarhus University and ITU in Copenhagen knowledge has been gathered regarding how the researchers relate to and actual work with user-oriented development processes specifically based on their experiences with participatory design. Through this knowledge it has then been examined how the various companies in different trades may work with participatory design methods and approaches in their development processes. The companies involved in the project are at different stages in their knowledge of, experience with and interest for user-driven innovation. Some of the companies have practical experiences with methods and processes while other companies express their interests and will to use the methods in a more superior level.

In this project it has been examined which challenges and barriers companies meet when applying user-oriented processes based on participatory design methods primarily.

25 This chapter, Pp. 33 – 39, is written by Astrid Søndergaard and Jacob Rolf Jensen, The Alexandra Institute A/S and Søren Smed, ApEx.

3.1.2 Experience Gathering – Research-Based User involvement in IT Development Processes

A number of interviews with various Danish IT researchers with specialities in user involvement have been carried out in order to gain more knowledge of why and how the researchers work with user involvement in their research projects. The interest has been pointed at projects that have been carried through in collaboration with companies. The following chapter is a superior collection of the experiences and thoughts of the researchers. The statements of the interviewed researchers are supplemented with a number of models and descriptions that elaborates the connection between the various themes, methods, processes and problems which are mentioned in the following section.

The general view of user involvement in development processes all originate more or less from the Scandinavian Participatory Design Approach where user involvement is regarded as a mutual learning process between the developers and the involved users[26]. The motivation to work in a research based manner with user involvement can be summarised by the following statements from the interviewed researchers:

- To qualify people/users to make up their minds about the IT tools they use in their everyday lives
- To create a mutual qualification process between the developer and the user
- To influence the future technology so that it makes sense to the users
- To create relevance and to anchor the product and design in relation to the way people actually live
- To make users as active as possible in the co-creation of the future technology
- To take people and their needs seriously
- To initiate learning processes in the users and not just gather user data
- To help people make demands to the technologies they constantly meet in their everyday lives
- To respect the users so they are not used to legitimise something that would have been done anyway

3.1.3 Applied Methods

In the interviews, the researchers have described a number of different methods which can be applied when involving users in a development process. The most used ones are:

- Observation / field studies
- Interviews
- Focus groups
- Games
- Cultural probes

26 See further information about the Scandinavian Participatory Design Tradition in chapter 2.0 and in the method catalogue, in which several of the pivotal methods from the tradition have been described.

- Quantitative methods
- Personas
- Scenarios
- Workshops
- Mock ups
- Prototyping

The list is not complete but shows methods which are used as a starting point. The most important essentiality in the methods is that they all have different strengths and weaknesses and that attention on these in the planning of the user involvement process has been taken into consideration just recently. Another essential aspect is that they are scalable and may thus vary from being very thorough to being very limited. This especially applies to the use of observations and field studies which can last for days or weeks; however where they - vice versa - also just may be limited to shorter courses over e.g. a couple of hours. Therefore, the use of methods in the development processes must be very conscious and planned by the developers.

The methods are placed on an axis that starts with methods where one only observes the users, to methods where they are actively involved in the development of products and services. One can also distinguish between methods that only inspire and methods that are more evaluating – e.g. test of prototypes at the users etc. This connection can be illustrated more systematically, among others, by the following model which originates from the Nordic Innovation Center report *User-Driven Innovation Context and Cases in the Nordic Region:*[27]

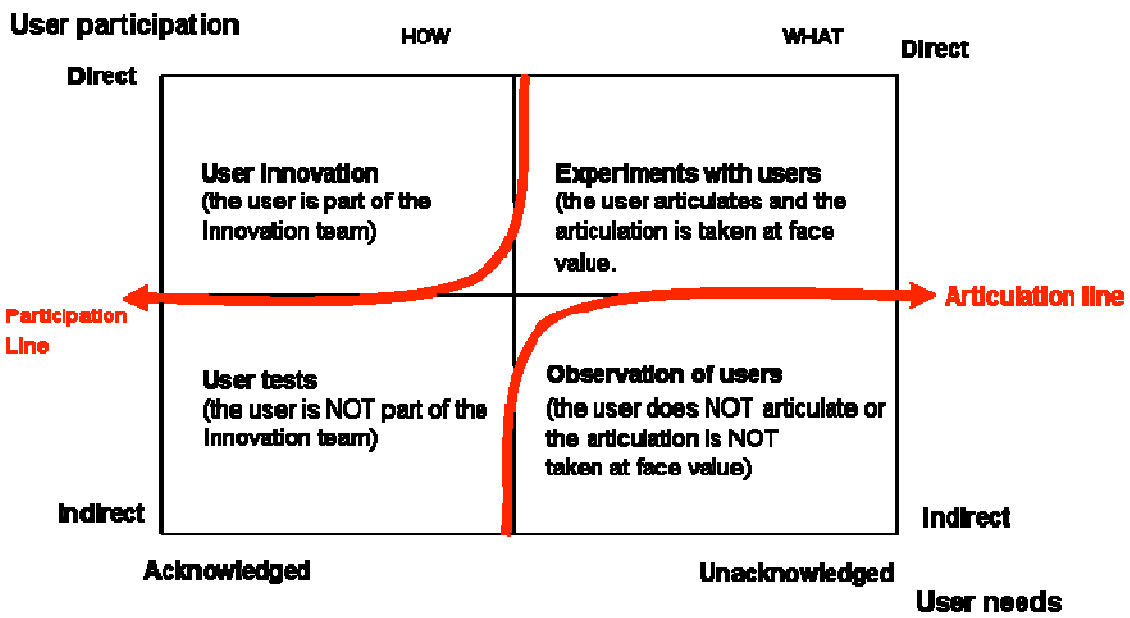

Figure 3: *Framework for mapping user-driven innovation processes*

27 Emily Wise & Casper Høgenhaven: *User-Driven Innovation: Context and Cases in the Nordic Region*, Nordic Innovation Center 2008.

The upper left corner marks the development process where the user is directly involved in the development process, e.g. the lead user method, various design games.

The lower left corner marks the more evaluating process where the user is actively involved, but only at an evaluating level and thus not actively in the design process itself. Here, there are e.g. methods as usability tests, certain types of focus groups, think aloud tests. Prototyping and mock-ups will both be placed here, even though the methods in certain varieties also could be placed in the upper right corner. Various quantitative methods such as questionnaires are placed here too.

The upper right corner marks the process where involving experiments with the user are implemented and where the user's statement is taken for granted in the further development process. This e.g. also applies for methods such as qualitative interviews, focus groups and various role plays. The cultural probes' approach is also placed here apparently, but the question is then if the users' articulation is always taken at face value. Therefore this method is in a more gray area.

In the lower right corner the pure observation methods and more speculative methods are found where the user is not saying anything directly and where the gathered observation material is interpreted in some kind of beforehand installed frame. E.g., there are methods here which ethnographic in-clude observation and field studies, scenarios, personas etc. Various quantitative methods are also placed here.

The two red arrows mark that below the articulation line the user is not making a statement but is only being observed. Above the participation line the user is directly participating in the development process. Various different methods are inserted and mentioned above as well as a number of central methods. The above distinction is not uncomplicated and there will also be grey zones where a method is modified and reaches into several areas but as an interpretative basic point the model works very well.

Another way of illustrating the approach to the work with the users and at which level they are involved in the development is illustrated by the following model: [28]

28 This model is from a presentation by Søren Bolvig Poulsen on 10 December 2008 in connection with the first seminar in the U-drive:IT project; however it originates from Sanders, 2002. See the following link for further information: http://www.apex-center.dk/images/stories/udriveit/u-drive,%20bolvig.pdf

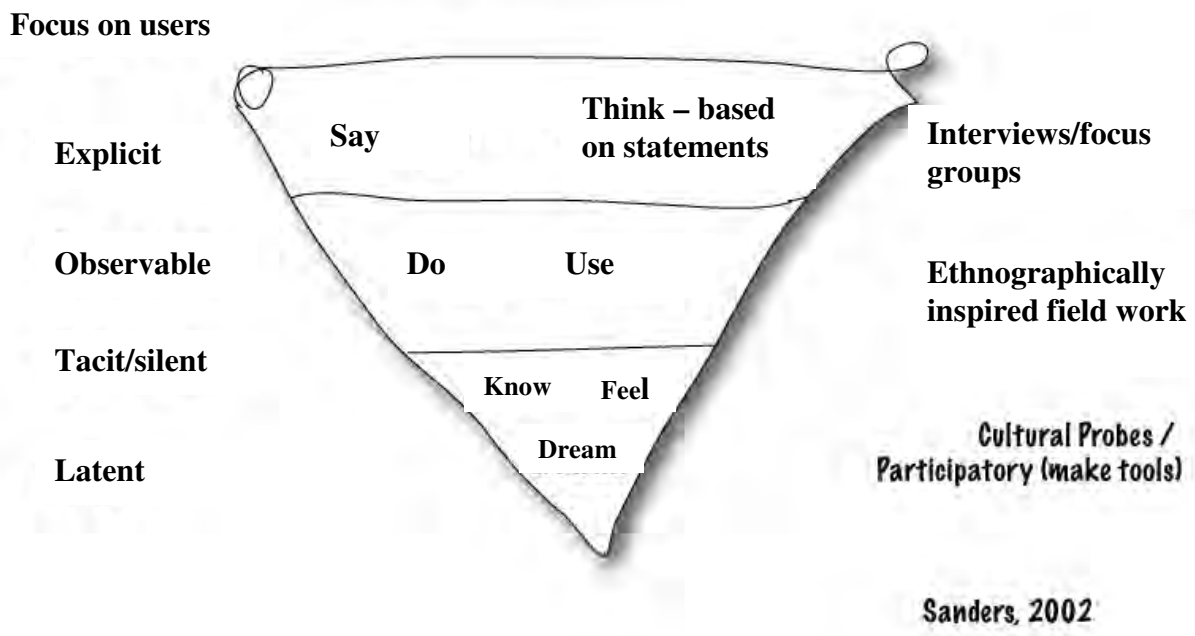

Figure 4: *Where is the user oriented focus.*

Thus it appears that there are many different levels where you can work with users and that designers and product developers have the opportunity of changing in between how directly they will use the users' voices and statements in the development process. The deeper one gets into the reversed pyramid the more it applies to the designer or the developer to interpret what the user wants, needs or really feels. Thus, one has to make up one's mind about the individual design process.

One does not necessarily have to apply all methods in a user involvement process. A team of researchers worked with experience-based interaction for private homes where they developed an interactive dinner table from which the family could see their digital images, browse web pages etc. In this development process it was chosen to carry out the field studies and observations in the homes of the users, to make studies of how people apply physical material in their homes, e.g. recipes, how they were used and where they were placed etc. The researchers saw the user interfaces. Additionally, they made observations and interviews with focus on user values in homes. The users were not involved in the design process itself but knowledge from users was gathered from the ethnographic studies in the homes and through interviews. They also placed mock-ups in the homes and let the users use them for a week in order to gather knowledge of product ideas and what the users' attitudes and experiences of the future product. I.e., they used three different methods in this user involvement process. A participatory design process is as a rule iterative and dynamic. I.e., it is a change between user involvement and design work. The process changes between opening the possibility space by involving the users and narrowing it by analysing it and interpreting the user inputs and reversing it to concrete mock-ups and

prototypes which at last will become the final IT product. The participatory design process can also be illustrated by the following model[29]:

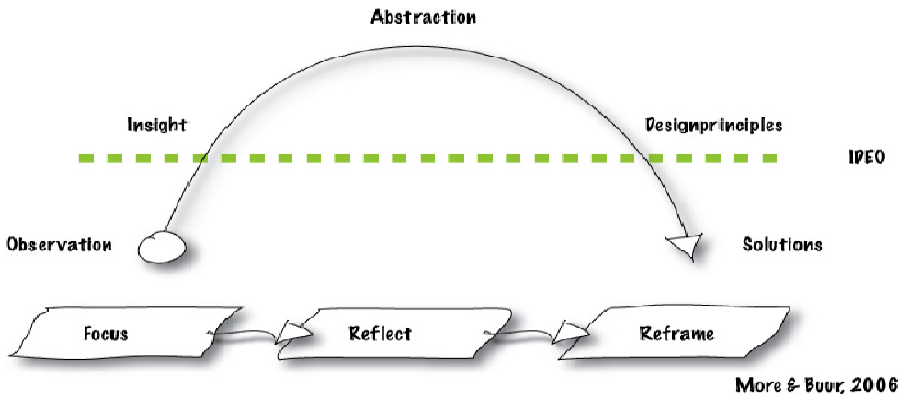

Figure 5: *What characterises the user-oriented working method?*

3.1.4 The Importance of the User Involvement for the Development Processes

The following is a summary of what the interviewed researches see as strengths and challenges by involving users in the development process.

Strengths

- To be able to make relevant technology so designers do not design for themselves and from their own world view
- To be able to relate to the people one designs for and to take their life styles, needs, wants and demands seriously so the designers can put themselves beyond themselves in the development of the solution
- To be able to design solutions that change the users' work practice to the better through
- future-proof technology
- That the user becomes alive for the designers who get a nuanced relation to the users and the real world. It makes sense to the designer and all involved parties in the development process to know the user and thus the development work in itself becomes more meaningful

Challenges

- There is not one method that can do it all. One has to put together a process consisting of a number of various methods that are selected in relation to the individual case or problem faced
- The involvement process places great demands on those people who are involved – both the people that execute the methods and must transform the user inputs and the users themselves in the process
- The challenge in user-driven innovation is the innovation itself. To go out and understand the world as it is - is one thing, but to change it and create something new based on user involve-

29 The present model is from the presentation of Søren Bolvig Poulsen on 10 December 2008 in connection with the first seminar in the U-Drive:IT project, but originally it is from More & Buur, 2006. For more information: http://www.apex-center.dk/images/stories/udriveit/u-drive,%20bolvig.pdf

ment is another. The possibility of innovation lies in the interpretation of user inputs and not in what the users say or do. Adequate tools lack in this part of the innovation process

- The user involvement processes can be very large and time consuming. The art is to keep the users closely connected to the design process so one does not put the users' input aside and let one's own world image become dominating. In a commercial context the challenge is, of course also to evaluate when there is cost-benefit in the process. However, this may be very difficult in the user innovation process as one, in the cause of nature, has difficulty in controlling the process and thus does not know what the result will be
- The challenge is to maintain and transform knowledge of the user in the following development process

3.1.5 When Shall Users Be Involved?

Ideally, users must be involved in the entire development process from idea to final result. In research and development projects it is aimed at involving the users in the entire process from the exposure of the users' needs, attitudes, wants and demands and then to involve them in the iterations along the way and test their ideas and prototypes. It would also be interesting to follow the products after its launch and to follow how the users adapt the product over time. The ideal scenario would be to follow the users before, under and after the development process and perhaps the application of the final product.

3.1.6 Skills and Resources

It is essential that those who are working with the users have an understanding in order to see the context where the users are. It requires certain anthropological skills without, however, being anthropologists that carry out the user involvement work. Additionally, it is an advantage that in the group anthropological competences are represented, technical (depending on which product that has to be developed) and not least design wise and visual competences that can develop and communicate ideas etc.

3.2 Knowledge Gathering - SINTEF ICT[30]

SINTEFs part of the U-Drive:IT project is coordinated with coherent activities in the EU project CITIZEN MEDIA (www.ist-citizenmedia.org). Earlier experiences which have been done in other projects have been used where focus has been on user-centred activities by the development of ICT systems – e.g. the EFFIN project (www.effin.org) that deals with user-centred methods in public sectors.

3.2.1 Knowledge Gathering

Today there are two main trends in the devopment of ICT applications and services. One trend is to focus on needs and wants for the end users and customers and the other is to carry out the development in still shorter cycles.

30 This chapter is Pp. 39 – 44, written by Jan Håvard Skjetne, research scientist, SINTEF ICT.

Today it is different methodologies for how users must be involved in development processes. The three most common are: User-Informed Design, Co-Design and Technology-Centred Design.

User-informed methods were developed in the USA. Experts that use these methods observe and interview users and based on the knowledge they develop solutions in an iterative process. The solutions are developed from simple sketches through driving prototypes to the final product. In any iteration the users evaluate the solutions (Seaman, 1999).

Another tradition is co-design, a methodical approach that draws the users into the creative activities in the development together with the developers. That tradition has been driven mainly from European environments. The use and the development of these methods started in Scandinavia when the workers become involved in the development of new tools for use in the administration or in a production (Sanders & Stappers, 2008).

The latest trend is a continuation of co-design with focus on use of state-of-the-art technical components which can easily be put together as working prototypes. The argument for focussing on current technology is that artefacts influence the cognition to the users and the developers and therefore it is necessary to introduce technology at an early stage (Woods, 1998). These various methods have much in common and it is the actual implementation of the methods that separates them. See figure 6 with regards to a grouping of some important methods.

A theory which has been much in focus lately before co-design and technology-centred design is ”Lead User”. It seems as if there is a better understanding of what factors are important in order for these users to achieve good results (Franke, Hippel & Schreier, 2006). The ”lead user” or the user should have great need of what is produced; he/she must know the market and have a more advanced use than the ordinary users. He/she can also benefit from drawing on resources which are relevant for his/her innovation (see figure 7).

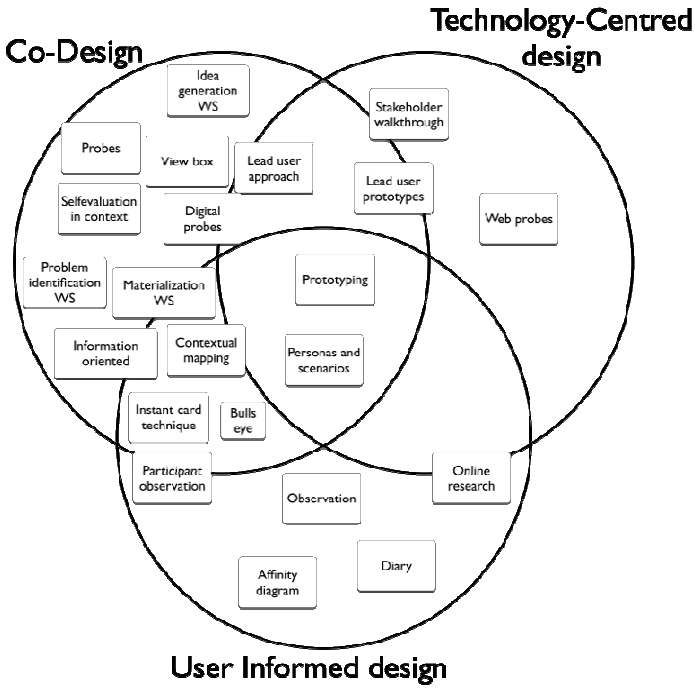

Figure 6: *Different methods used in different methodologies*

Short development cycles are very clearly implemented in the Agile development processes. The purpose is here to develop working but limited parts of programme goods in short cycles and build up the system based on these working parts. These parts are being tested and evaluated (Cockburn & Highsmith, 2001). The Agile development processes match with user-centred methods as they are both focussing on iterative development and testing in each iteration. The challenges are, however that the agile development has a large focus on the development of technical functionality, something under which the more holistic user-centred development may suffer.

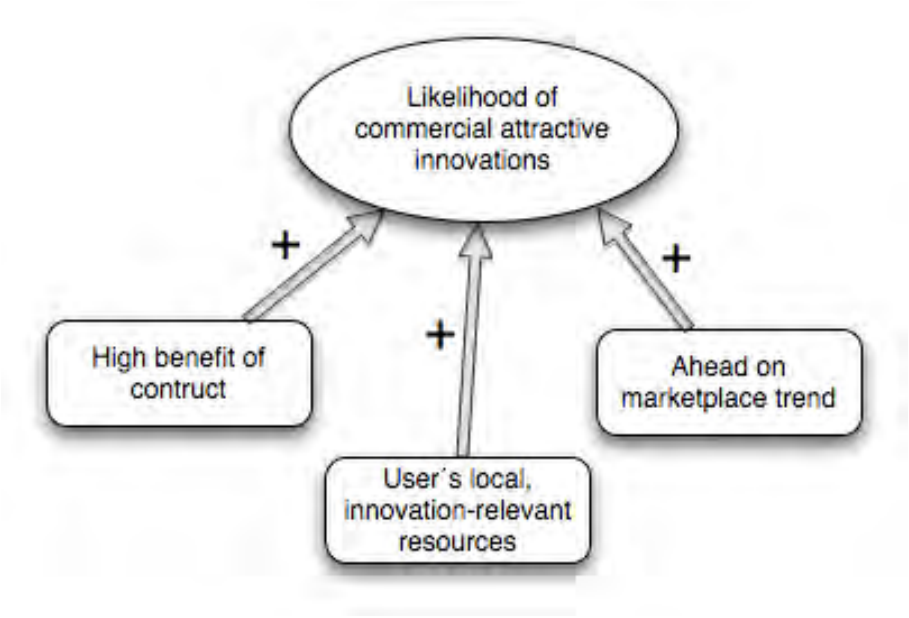

Figure 7: *Factors that influence "Lead users" (Franke et al., 2006)*

3.2.2 When the Different Methods Are Used?

The different methods which are used have their strengths in various phases of a development course. General to all methodologies is focus on users; it is iterations where developers and users develop and store ideas, concepts and prototypes based on wishes, needs and demands. These become then evaluated which again influences what is being developed. Then this takes place in cycles through the whole course of the product or the service. Figure 8 states where the individual methods may be used best in a development course.

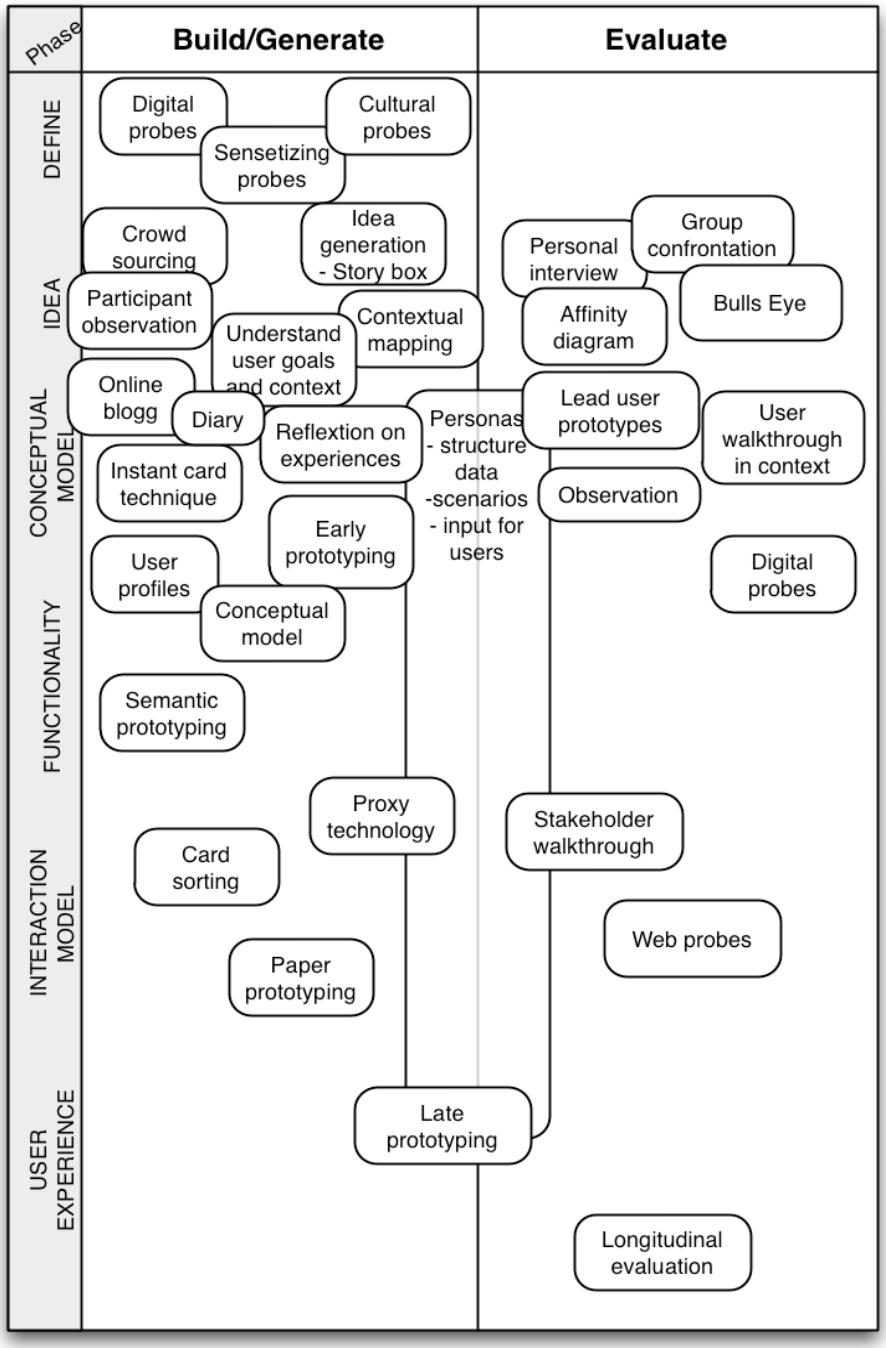

Figure 8: *Where the different methods fit best in the development courses.*

3.2.3 Advice for Real Implementation of User-Centred Methods

Below we present a list of the most important advices in order to get the best effect of user-centred methods. In general, all methodologies are as follows:

- The users are most useful when they themselves are in need of the service or the product
- The users need support in order to be innovative
- Those who analyse the results from the methods have great influence on the interpretation of the result
- The interaction designers need a wide set of skills in order to make a good job. They must be able to develop different prototypes for communication with technical skilled workers, e.g. programmers

3.2.4 Planning of User-Centred Methods

In order to ensure that full effect of the user-centred methods is achieved it is important to plan them in the development process. Planning of user-centred activities is therefore carried out simultaneously with the project planning. In the planning it should be pursued that user-centred activities are integrated in the entire project work so that the user-centred work does not turn into an individual proces isolated from the rest of the project.

The planning is done in the earliest stage of the project but through the entire course of the project it may be relevant to revise the plans, e.g. when it proves that there is not enough knowledge of important user group needs; when it is discovered that important user groups have been left out, or when it is proved that the project has other needs for user feedback than presupposed in the planning phase.

The most important activities are:

- Point out the person in charge
- Idenfify interested partners
- Identify user groups
- Prioritise user groups
- Choose activities
- Establishment of plan
- Identification of objectives

3.2.5 Advantages by Using the Methods

Some of the most important advantages by using user-centred methods are:

- User-informed design may find ideas and knowledge which is otherwise difficult to identify
- Evaluation through the entire development finds faults at an early stage
- Co-design may be short and effective
- Co-design ensures that the designers are challenged and reality-oriented
- ”Lead users” can build bridges to usual users

- ”Lead users” give valuable input when they participate in platform testing
- Available technology components such as e.g. Googles APIs are easy to implement and provide high use value.

3.2.6 Disadvantages by Using the Methods

There are also challenges by using these methods which one should realise when they are being used:

- Data from user-informed design may be difficult to translate to design because the users are not involved in the analysis
- User-informed design may think of designs which are difficult to implement
- User-informed design may gather much data which demand much time and many resources to analyse
- Data gathering with user-informed design may delay the technical development
- By using user-informed design the designers’ own ideas may overshadow new ideas from the users
- By using co-design it may be difficult for the users to understand the possibilities and the limits of the technology
- The end users cannot form the final solution by gathering all different kinds of needs from everybody in the development group
- By using the technology-centred methods, use of available technology components have its limits as they are not easy to adapt to specific demands

3.3 Knowledge Gathering – ApEx – Center for Applied Experience Economy

Through a number of interviews and some additional models it has now been established that there is a large use of user involvement methods within various fields of the ICT research field, and that these also potentially may be used outside a narrow ICT field. This chapter will look further into these problems and present a number of angles on the use of user involvement methods and also look at challenges, traps and success stories. In the chapter concrete projects will be mentioned.

In the process interviews with Ellen Christiansen, professor, Mads Clausen Institute – University of Southern Denmark; Anne Marie Kanstrup, Associate professor – Department of Communication and Psychology, Aalborg University; Søren Bolvig Poulsen, Assistant professor, Department of Architecture and Design – Aalborg University; Jan Stage, Associate Professor, Computer Science – Aalborg University; Ivan Aaen, Associate Professor, Computer Science – Aalborg University; Michael Skov, Associate Professor, Computer Science – Aalborg University; and Thessa Jensen, Associate Professor, Department of Communication and Psychology – Aalborg University.

Additionally, Tove Arendt Rasmussen and Peter Kofoed, both Department of Communication and Psychology – Aalborg University have also contributed to the below chapter through conversations and discussions.

Furthermore, reflections and punch lines with reference to articles, books and other publications are added that support and enhance the individual statements.

3.2 General Reflections

In general, user-driven innovation and user-driven design is about reaching for and working with the user, talking with the user and take feedback and statements seriously. It is a procedure which can be widely applied and which in the last couple of years have gained a footing. In the understanding of innovation there is talk about a development process where the result has a social economic impact in order to talk about innovation[31]. Then, regarding user-driven innovation there must also be talk about an active co-play between designer/developer and user. The advantage when working with user-driven innovation in a commercial perspective is in theory that the development costs are minimised, it is easier to find the target group, and not least: it is faster to develop a good product. In one of Claus Rosenstand's contribution to the project anthology the special user-driven innovation form is stated in relation to other forms of innovation, such a price-driven, development-driven and market-driven innovation like this:

"An example of user-driven innovation is that an organisation via a focus group interview based on various examples of information material discovers how one of the organisation services by a simple info-folder can be made faster and better for the customers. The situation is multidisciplinary because the professionalism of the customer has chosen, prioritised and combined in relation to the knowledge of the service – thus creating an innovative situation".

Finally, the four innovation types can be related to a market matrix where existing and new markets are cross tabulated with existing types and new services [Sarasvathy 01: 7]:

	New Market	***Existing Market***
Existing Product		
New Product	*Suicide Quadrant*	

Products are here seen in a wider sense – namely as services, experiences and personal development. Sarasvathy's point and empirically documented point is that the spot where the entrepreneurs have had the largest commercial successes he names the suicide quadrant, the spot with not competitors. When entrepreneurs have been established with a new product in a new market they can move around in the matrix. If the innovation types are put into the matrix, the following happens:

31 Chayutsahakij, P., Poggenpohl, S. (2002): *User-centred innovation: the interplay between user-research and design innovation*. Proceedings of The European Academy of Management 2nd Annual Conference on Innovative Research in Management EURAM, Stockholm, Sweden.

	New Market	Existing Market
Existing Product	Market-driven Innovation	Cost-driven Innovation
New Product	User-driven Innovation	Development-driven Innovation

The point in this connection is that user-driven innovation is a way of navigating safely in the suicide quadrant – as it is named by Sarasvathy. Also for established companies.[32]

Thus user-driven innovation is not only part of making a product more desirable to the users, but it can logically also be part of making the companies, that understands and uses the user-driven development form more successful. And as we already have seen in the previous chapters it seems as if the ICT development contributes with more privileged and necessary tools for the companies that work with user-driven innovation.

There are a lot of methods which have already been seen within the ICT area when working with user-driven innovation. These methods have been developed through a number of years within participatory design tradition and later in a more limited way within the Human Computer Interaction field[33]. New and more limited and specific types of methods and tools are still being developed. Any project and any research situation have the need of a quite specific approach angle why there are also many elements which cannot be reused from time to time, and existing methods and approaches must be developed, transformed and re-actualised continuously. Depending on which traditions are in question there is also a difference in how much the user sees himself/herself as a competent designer. Without a thorough examination of these problems, it must be stated that there is a difference in how one actively involves the user in the actual design process whether the point of departure is the classical participatory design tradition or a more evaluating usability tradition within the HCI tradition. And a fundamental problem in this question is, as already mentioned above, whether the user can also design or if one can only observe the user and work with the user and how to get from there to design and development. Christiansen and Kanstrup have also described the area and the interaction that takes place between the designer and the user as "the user-driven innovation space"[34].

Basic questions which must be asked by the researcher and the designer in this connection are: How can one start the dialogue process, which frames and artefacts create creativity, what do we want with the process (but not what is the goal) etc. Thus, one must ask a number of clarifying questions to the initiated process and develop specific targeted methods. Another basic attitude by most interviewed persons is that there has to be something at stake in the user involvement before one can talk about user-driven innovation. It is about finding out how the user can be part of the process of making a difference. In the process it is important that one's eyes and ears are open; and as far as possible try not to seek an advance confirmation of fitted expectations as one risk overlooking the important things. As far as possible, observations and interpretations must be done objectively and without prejudice. At the

32 Rosenstand, Claus: The Innovation Compass, in: Jensen, Jens F & Smed, Søren G (Eds.): *U-drive:IT – User-Driven Innovation Transfer from the IT Sector to other Sectors,* Aalborg University Press, 2010.

33 And in the last years also within new developments such as interaction design and experience design etc., which are design trends that involve the user in different ways.

34 Christiansen, Ellen og Kanstrup, Anne-Marie (2007). *A mobile design lab for user-driven innovation – history and concept*, paper given at the Danish HCI Research Symposium 2007.

same time it is mentioned several times that the processes must be have a management, a planning and a possibility for any expert intervention in order to succeed. However, it is not the same as controlling the process against a presupposed goal. Another problem is how one gets from observations and data gathering to design and development and whether the user can design. Thus, user-driven innovation deals with wanting to make a difference, take qualitative empirical knowledge seriously, understand the context for work that one is doing and have an understanding of the various target groups that are involved in the work.

User-driven innovation in ICT development, primarily system and software development, is in many ways traditionally known by taking place in the early stage of a design course. I.e. that user involvement must happen early in the development stage and not just as evaluating fallout in a development process. The earlier and more directly that the user participates in the development and design process, a more clearer user-driven process is achieved; cf. the model about involving stages above. The more traditional usability approaches within the HCI area recognises also that there might be a problem in the fact that the testing of products etc. are made late in the process as this causes many wrong and expensive choices; the time frame is not for mending errors and pressure is on the product launch etc. Therefore work on developing and improving the usability methods has been done so that test and users are integrated earlier and currently in the process – among others by means of progressed development of the so-called use-case approach angle. However, there is no determined distinction between the very involving and the purely evaluating methods and approach angles as the above model also shows. Again, it depends on how the process is planned, how many iterations can be done along the way, how competent the users seem to be etc.

It is essential to notice that the goal of the development process is that user involvement is part of ensuring that the product and the design serve the users' needs and wants appropriately, but at the same time the product automatically also makes more sense to the users who have been part of the development products, because they have had co-decision in the development process. Several of the researchers are aware that the participatory design tradition has a political orientated offspring and they still find that many of the original goals are valuable and essential to keep in mind. It provides the understanding that ICT is formable and political, that users are competent and have something to offer with regards to the development process, and that ICT must be made and formed after those people that will use is and not vice versa.

3.3 Problems and Prejudices

User-oriented designers and developers often have in a more technical coherence been evaluated as shallow and a bit commonsense minded. In several connections the researchers have stated that the technical designers and the engineers may not have the same evaluation of the user-oriented design work of the technical development process where the technicians and the engineers manage the development process. Within the ICT development it has also continuously been considered a problem that it is difficult to get representative data through the user involvement, as the aim and the set-up for user-driven processes and methods very often are qualitative. In this debate, the user-oriented work method has functioned as evaluating in relation to the fully developed product. In lucky coincidences one can talk about that a couple of iterations must be done where the users' or often test persons' input

are taken into consideration in the further development. However, it is often because of the time pressures of the launching very limited how many of the following user inputs are used. This very traditional development model and the power structure existing between the various development stand points seem to be broken down when there is more and more focus on the users in order to hit the nail on the design and in order to minimise development costs.

Almost all interviewed persons agree that the Scandinavian tradition and the values that it represents with its pedagogical sight, democratic and humanistic basic view as well as the consequent user-orientation has been very valuable to the research and the development of IT systems and IT penetration in the Scandinavian countries. It is an advantage to the development and the companies that in the Scandinavian countries people are used to and almost expect a flat structure in the organisations and in the communication between administration and employee. However, there are certain basic ideas which are no longer adequate and which must be reconsidered. Among others, as stated in the previous chapter with the introduction to the participatory design tradition. And according to several of the interviewed researchers the tendency within system development today is also that it is not just new systems but also the users that are considered. And in many new ways new innovative approaches regarding software development are considered which, also to a higher extent, make the system and software development more innovative and dynamic than has been the case earlier, and furthermore also more user-involving without directly talking about user-driven innovation. See among others www.sirl.dk . Other code words in this connection are agile methods and extreme programming which will not be discussed here.

3.3.4 Methods, Approaches and Development Examples

Based on the above, several researchers state that one must adapt and plan one's development process after each individual unique project and the situation. I.e. that the design and development principles are often very concrete and practically oriented: e.g. mock-ups, prototyping, various modelling, interviews, development workshops, various observations etc. Two of the interviewed researchers have e.g. worked with developing a mobile design lab for user-driven innovation which is used in several of the various research and development projects that they are also involved in.
The purpose of such a mobile lab is according to the two authors:

'The Mobile Design lab is based on Vygotskys theory of tool- and language-mediation, and was created in 2004 to support research and teaching of user-driven innovation. Being itself an example of user-driven innovation it has taken shape of HCI design projects, in which we have been involved since 2004. The first challenge was to get 'out of the lab', the next to get 'out of the head', and finally we are currently working to get 'into the street'.[35]

The purpose is thus to get out to people in their actual surroundings in order to form real views of wants, needs and behaviour. Concretely the mobile design lab consists of simple tools that are used in various projects to involve and develop with the user. These tools address in various ways the three phases which according the Christiansen and Kanstrup sum up the user-driven design process: 1)

35 Christiansen, Ellen and Kanstrup, Anne-Marie (2007): *A mobile design lab for user-driven innovation – history and concept*, paper given at the Danish HCI Research Symposium 2007.

evaluation of known solutions – categorisation; 2) express the users' needs – articulation; 3) formulate the design problem – concretisation. The tools in the different levels are e.g.: 1) categorisation through Polaroid cameras, a laminating machine, a mobile wall, a shopping cart and a video camera. 2) Articulation through games and prototypes and various supporting materials for this. The sessions are recorded and analysed afterwards. 3) Concretisation through on-location role plays, mediation of the user experiences and preferred practice.

The tools and the way are thus about creating a mutual space between the designer and the user as this space is the user-driven innovation arena. The mobile design lab and its tools have among others been used in the following projects:

The purpose of the *Feedback Project* is to develop and test new concepts for the electricity companies' communication to the households regarding household electricity use at the end user level (feedback). The overall aim is to reduce some of the information barriers for the household energy saving efforts and thus reduce the strengths that is demanded in order to save energy in the households and increase household efficiency in these efforts. Of the user-driven methods and processes that have been applied here methodical user-selection can be mentioned – expanded with informative communities, home interviews, design mock-ups, design workshops etc. The result has become a proposal for an actual 8" screen which can be installed in selected homes for further examination and research.

The *MINI Project* is especially focussed on how one can design mobile interaction that supports younger doctors learning in the specific clinical practice which here is an acute medical ward. As technical platform for the project tests PDAs were used. As user-driven methods and processes applied here observations, workshops, electronic communication, running evaluations can be mentioned where the gathered knowledge and observations were discussed, analysed and carried on to the next iteration in the project. The purpose of the *maXi Project* is to test and carry through user-driven innovation as method for concept development of individualised, interdisciplinary, digital, societal and network oriented health support for the chronicitors, in general with diabetes sufferers as a focus group and diabetes as model. The purpose is to support the chronicitors in their own self care in their lives in society through an interdisciplinary and user-oriented use of IT which is tested via user-driven experiments in a model society. The user-driven innovation is organised as a dynamic interaction between end users and lead users: end-users consisting of 12 persons with diabetes and their families that experiment in a designed living lab/society as well as lead users consisting of patient associations and front-runners from regions, research institutions and the healthcare industry. Additionally, a Living Lab has been built in Skagen for project use. Design workshops regarding the project are held at a regular basis. [36]

Thus, there is a very wide spectrum of applicable solutions to the various concrete methods and design tools and the variation underlines the point of designing methods and approaches for the individual situation and the single project; however, general artefacts and approaches may form the basis.

36 Please contact associate professor Anne Marie Kanstrup, Department of Communication and Psychology, Aalborg University, for further information about the three projects.

In another project example, the design of bridges (ship) including especially the roll and functions of the captain was in question. The captain on a large containership must be in charge of many things and the assignment was therefore how to design a system for his work supported by mobile devices. How should instruments and communication be designed by means of mobile devices? More specifically, entering and leaving ports was examined. Video was the primary tool for registering the crew behaviour and movement patterns. Hereafter it was transcribed and the system designer gained insight into the actual usage situation in which the system was to be implemented. Interviews were also done with officers and captains who are used to carrying through the process. Based on this, the research group developed and evaluated a system for handling this process. Thus, the users were not directly involved in the design process, however the design made was based on user inputs and user observations and the users were also involved in the actual evaluation phase. The system is tested and after the implementation further developed as it is not possible to take into account every detail before actual use. Ships are involved in situations that cannot be predicted and recreated in artificial test situations. Therefore, they are evaluated and are ongoing further development in real life. This can, among others, be executed by further user involvement such as video observation and interviews etc. And furthermore, the technical stability and performance of the system through log-file analysis is continuously being tested.

There are several examples on the practical use of user-driven innovation in development projects in the next chapter where focus is on method transfer to other areas.

3.3.5 What to Gain from It?

User involvement in the design and development process provides more knowledge of the problems, application contexts etc. in which the products are. One gets close to the real problems and situations which people get into.

One achieves knowledge about what motivates people in a user-situation besides needs and one discovers issues which cannot be reasoned or anticipated – if one carries through a thorough process and takes the user seriously. The process can also be seen as a shortcut to nice results and the designer gets a certain security that he/she is on the right track. In this way, the user-driven design process is part of creating better products.

In general, the companies that the researchers work with or have been in contact with can also see that they benefit from working with user-driven or at least user-oriented design – whether it is in a process where the user is part of the design process or whether there it is about an evaluating perspective. Many companies within the ICT area, however, have difficulties in creating a dedicated user-oriented or user-driven development process. In many cases it deals with a change process regarding the way matters are handled in the development and in the production in the company or organisation in question. Therefore it is essential to get help from outside the company in the preliminary phase in order to get ideas to how to get started, in which areas user-driven innovation will be of benefit, how to do it etc. It might be a hurdle to let go of the traditional ways of thinking and traditional approaches. If a company wishes to import new user-involving development processes in its organisation or to develop its own organisation by means of user inputs it is wise to make a solid preparatory work and at the same time to make a thorough examination of the organisation. The work with user-driven innovation may lead to

many surprises and employees in an organisation may get entirely different reports on their efforts and products than the self-understanding which exists in the organisation.

An example comes from a project where a researcher has worked with the children department at a large library. In the last couple of years the library has developed their children's department by changing it from a traditional book borrowing system to a multimedia drop-in centre. The exercise was to get the librarians to construct a loaner model based on their point of view and at the same time make observations of the real loaner behaviour, followed by interviews with several of the loaners. The course showed relatively large differences between the librarians' understanding of the department and of the user behaviour and their understanding of the department, and then the users' actual understanding and behaviour. The challenge then becomes how to get both understandings to meet each other and interact instead of working against each other. Thus, in this coincidence the various user involvement methods are part of disclosing a gap between the employees' self-understanding and the users' needs and behaviour. The methods used in the project are qualitative interviews, future workshop, personas etc. However, this is of course a process that may cause resistance and maybe even denial as this is about a significant change in the work process. Therefore the organisations must ask themselves what they want and if they are ready to meet the consequences before user-driven innovation is applied in an organisation and service development. In a more traditional product development the problem is perhaps quite as controversial.

3.5.6 Conclusion – Knowledge Gathering

As it is stated by the above, the user-centred part of the ICT research field is wide and diversified where there are no easy conclusions and rigid recommendations. Still, there seems to be a certain consensus in the presented knowledge in a number of superior fields.

Methods are multiple and it must be evaluated from case to case from project to project which methods are to be applied. A number of different examples are shown above. The user-oriented traditions preferably the Participatory Design Tradition and usability traditions have through the years developed a long line of various methods and approaches which have been examined closer in the previous chapters. And many of these have shown to be applicable with a long row of various areas.

In some environments user-oriented methods have been evaluated as being too qualitative and not especially suited in the development of more general data. This development is probably turning as user-centring is one of the "hotter" subjects in the development of IT systems and applications today.

Thus, there are both advantages and disadvantages in the user-oriented work processes but there seems to be agreement that the advantages exceed the disadvantages. It is cost heavy and it is not always easy to transfer knowledge about use and behaviour to concrete designs, but when it pays off products are developed which are more usable and which give a high level of meaning to the people that need them. At the same time it seems clear that many of the methods and processes which are used within the ICT field are characteristic and general and this makes it possible to use them within areas that have nothing to do with ICT.

User-driven innovation may be a reasonable way when companies move into new uncertain business areas as it may give insight to new areas in a fast way where faults from the company are minimised. Also in this area ICT plays an important role as earlier seen.

As user-driven innovation deals with getting into dialogue with users and that there is established a floating field between user and designer and as it deals with learning about behaviour, needs and wants and transfer these into design there is no reason to anticipate that methods and processes for the design problem is universal. There will always be a lacuna between observations and knowledge and the design products but user-driven innovation is part of reducing this fact.

4.0 Dissemination, Knowledge Transfer and Idea Development

An essential part of the U-Drive:IT project has focused on dissemination and transfer of knowledge of user-driven innovation within ICT. Which methods, processes and results etc. from the ICT field are potential in using and transferring within other areas? This has been done in workshops, seminars and conferences which has been transferred and made under the auspices of the project.

It is not an easy task to identify the right methods and application areas when one must find out which businesses and companies are most obvious to work with when dealing with user-driven innovation methods from the ICT sector. Mapping still remains to be done of where the needs and rewards are most obvious. But still the attempt has been done in the project.

The basic idea and purpose was that the project should examine transfer of knowledge from ICT to more traditional businesses – i.e. primarily none high technologic businesses. In the project consortium the following division of application areas has been made:

- ApEx has focused primarily on the culture area and with individual trip to retailing
- SINTEF IKT has worked with machine companies where more course machine parts are being produced than is normally connected with high technological areas such a slope machines, tools etc.
- NFBi Network has primarily summarised the possibilities and experiences within a number of various areas, including the museum area, food area, electricity, water supply and a single internet company
- Innovation Center Iceland has through a workshop covered general experiences and needs for user-driven innovation with participation of companies within various areas such as ICT design, knowledge production, logistics, production and food

As mentioned earlier it has not been possible within the frame of the project to start dedicated research courses why the presented cases must be seen as suggestions to how one can carry through larger and more exceeding courses. The cases are by large connected to workshop activities or courses integrated in other projects which are of relevance for the U-Drive:IT project.

The above-described areas for knowledge transfer are described in sections written by the individual partners. First section deals with the ApEx activities as this section also includes talk about the more general dissemination activities.

4.1.1 ApEx

ApEx – Center for Applied Experience Economy has as project coordinator both had the responsibility for the general dissemination activities, knowledge built up and gathering, project coordination and besides more specific knowledge transfer courses.

Specifically, a website has been established and revised in the project period where one can find materials which have been presented and examined in the project. It is presentations and streaming video from those activities that have been held and it deals with link compilation, literature references and relevant suggestions to how one may become wiser on user-driven innovation. The web page thus plays an essential role in the project dissemination activities and has a resource for all others who want to get acquainted with and work with user-driven innovation.

Three large activities have been held during the project period. Two seminars and a large closing conference.

The first seminar on 10 December 2008 focussed on general conditions regarding innovation and its purpose to cover specific characteristics by user-driven innovation in relation to other innovation forms and furthermore to introduce basic methods for working with user-driven innovation. Furthermore not at least focus on specific themes involving ICT or methods that originate from the ICT area.

The second seminar on 2 March 2009 had specific focus on culture and user-driven innovation where various cases were presented, where cultural institutions and cultural events had worked with user involvement and user-driven innovation. Here focus was on which methods have been applied and which results have been made. And not least which part ICT and the new media play for the user involvement within the cultural area.

Finally, a conference was held on 28 and 29 May 2009 where several of the relevant project subjects were thematised through a long series of presentations from researchers, companies and public servants. Focus was on user-driven innovation and ICT within the following areas: cultural life, digital entertainment and new media, service design and the library sector, community politics and urban development, method development, innovation and product development.

As mentioned all presentations and streaming video of some of the presentations can be found on the project website www.u-driveit.org why there will not be a presentation of the content of the individual presentations here.

In the two seminars, however, a workshop was also held whose purpose was to test the presented methods' potentials, develop new ideas and think methods and processes into new and different connections. In the following these workshops and their themes and results will be presented and described.

4.1.2 U-Drive:IT Seminar on 10 December 2008 – Start and Basic Concepts

As mentioned the first seminar was held in order to define a definition of user-driven innovation in relation to other innovation forms, to be able to map methods from the ICT areas and to look more thoroughly at how some of these methods may be used in practice. Three speakers were present: Claus Rosenstand, assistant professor in digital interactive media at Aalborg University, Søren Bolvig Poulsen, associate professor in user-driven design at Aalborg University and Jan Håvard Skjetne, research scientist at SINTEF ICT in Oslo.

30 seminar participants represented the wide group of players including knowledge institutions, tourism organisations, consultant companies, cultural institutions and ICT companies. They all formed the basis for many inspiring and interdisciplinary discussions.

The presentations were followed by a workshop formed as an idea generating round table discussion based on two predefined scenarios. There were also defined questions for the participants to establish certain frames for the work. The idea of running the workshop after three compact presentations was that it was likely that the presented knowledge and ideas were brought into play in the workshop itself.

The general workshop introduction was as follows:

Purpose

The purpose of the cases is to work with how the various methods presented on the day (and on other days) within user-driven innovation may be applied practically, productively and creatively. Via the imaginary examples, the objective is to find innovative solutions to specific problems within a number of different businesses and subject fields. That is, a creative exercise with the application of user-driven innovation.

In each case, the following three questions may be used as your basis:

1. *1. Which pivotal elements of the case problem(s) can be developed through user-driven innovation?*
2. *2. Which specific user-driven innovation methods can/should be applied in the individual case and how? How is it possible to evaluate which methods are most perspective to use?*
3. *3. When using the user-driven innovation methods, which results can then be expected in the individual case examples?*

Two scenarios in the workshop were based upon a retail shop and a cultural institution respectively. The scenarios were formulated in the following way:

Case: The Retail

A small clothing boutique with their primary products: everyday design clothes for younger women. The boutique has decreasing sales compared to the neighbouring boutique which is a multiple store in the same genre. The multiple store has a turnover of a three-figure million range. Our boutique has a yearly turnover of approx. 10 million Danish kroner.

The locally rooted boutique designs, develops and sells unique concepts and products. For a while sales went well, but lately it seems as if the concept has run out of steam and sales have stagnated compared to the rivalling company who operates with a firm and safely rooted franchise concept. Our boutique is well-located in a small facility in the outskirts of the city's main shopping street close to several mobile phone shops.

How can the boutique increase sales and renew its concept by applying user-driven innovation? Which discussed methods discussed today will be of benefit to the boutique regarding its product development, decor/setting, sales and marketing?

Case: The Cultural Institution

A large music venue with three different halls strives at developing its brand and product supply by systematically user-driven innovation. The venue has a large hall with room for 2000 people. This hall is used for large well-known bands; a hall for approx. 500 guests is used for less-known names; and an even smaller club scene used by unknown experimental artists within various genres.

Other than concerts the venue is also involved in a number of other events and cultural offers such as lectures, children's culture and workshops, art exhibitions, theatre etc.

The music venue would like to gain insight into the wishes, needs and preferences of their guests. It would also like to achieve more knowledge about and input for the decors of the halls, sound and lighting issues etc. In short, the venue is looking for inspiration and help in order to present an even better product and a more all-inclusive experience for its guests.

Which elements of user-driven innovation may be used by the music venue in order to fulfil its goals? What means and media must the venue apply to gain optimal success?

The two cases both pointed at players who operate within the fields of sales, service and the experiences. Eight participants with different interdisciplinary skills were placed in each group. The workshop had the following results:

4.1.3 The Cultural Institution Case

User-driven innovation can be a tool for the music venue as regards to the development in the following areas:

- Brand/concept
- Product supply (genres, event types)
- Location

First the steering group of the venue can apply user-driven innovation in proportion to the clarification of the values and purposes of the organisation. In this connection, LEGO Serious Play was suggested as the concrete tool. I.e. the steering group will meet at a workshop and build the qualities of the music

venue with Lego bricks. Thus, the steering group may achieve a mutual understanding of the purpose and goals of the music venue.

The users are confronted with this model. That happens at the next workshop where the users get the opportunity to comment on the implemented values of the venue.

There are several outside groups who must all be involved. The common users, the so-called lead users as well as the none users. Thus, it is necessary to ask those, who do not use the music venue, about their wishes.

The market must be identified and analyses of sister organisations / competition analysis must be made in order for the music venue to position itself. It is necessary to allow for the fact that there are different user groups for the three different halls.

Regarding the input for the physical frames, one method might be to place the users in a creating roll where the professional skills of the users form the basis and e.g. let the sound and light etc. experts participate in the decor planning. This could be done during the actual events.

4.1.5 The Retail Case

Strategic possibilities:

- to ask the users of the boutique about their experiences and needs – and about trends – both the present, former and future/potential users
- to examine the competing boutique, via observations. To study content, customers, decor, prices, the surrounding environment (changes in that)
- to establish an online shop (in order to get a new target group)
- to use alternative cultural probes among the customers: create competition to see how people think the use of close
- to create a locally rooted boutique: to create experiences, to let the buyers experience designers, to invite customers, to make fashion shows with local youngsters and see how they use the clothes, to let local schools work with design, to study the functionality/the use of e.g. children's clothes (if sold in the boutique)
- the boutique must have a close dialogue with the designers or alternatively find new designers/suppliers who can/will meet with the users' needs

Interior Decor

- photo: observation from other shops + which behavioural patterns do customers have + user preferences
- 3d images of boutique available on the Internet
- if possible to create a competition where the user makes a virtual design of a boutique and place suggestions for voting via the Internet

Engagement/Involving Users

- the employees of the boutique must be ready to answer the users before asked (membership/customer club loyalty –this may be dangerous and lead to an erratic course if the users gain too much power. Therefore, firm lines must be made. E.g. a sneak preview, special price by introduction etc.

Customer Meeting

- focus on human behaviour in the salesperson
- connection between cellular phone and clothes exhibition – if possible design of clothes that match the phone
- use of cellular phone as a commercial channel – e.g. text messaging, voting on this week's exhibition via text messaging. The phone may also help designing clothes which then may be bought in the boutique

Possible Results

- hopefully they may save the boutique from stagnation. Move focus from the competition and towards the boutique
- provide one with unique knowledge which cannot be obtained by looking at the competition and only work with oneself

As shown in both workshop results, there are a lot of suggestions to how user involvement could be applied in each case and what the results would be. In many places actual methods and procedures are not mentioned by name – however this may be too much to ask for considering the relatively short session. Without doubt the construction of the day beginning with inspiring professional presentations has resulted in turning the participants' attention and thoughts towards user involvement and rather quickly it has resulted in a number of exciting suggestions to how each case could commence working with user-driven innovation. It is very often obvious that the presented methods primarily from the ICT area have inspired the ideas described. Additionally many of the suggestions involve ICT directly in proportion to the way they are implemented. After the workshop one might imagine that the next step would be that the real experts within user-driven innovation examine the ideas and propose how to proceed more systematically and methodically and at the same time estimate the cost-benefit. However, this has not been done yet.

4.2.1 Seminar on 2 March 2009 – Focus on Cultural Life

Based on the first workshop, it was determined that ApEX, as a profound knowledge transfer course in the project, would focus on the cultural life or on cultural institutions. There were several reasons for that. First, the cultural area is a natural focus area for ApEx as it is one of the crux areas within the experience economy. Second, the Danish Ministry of Culture published an inspiration catalogue titled *Reach Out* for user involvement and innovation in the cultural circles in the autumn 2008. And third, in

the autumn 2008 ApEx was granted a project called i-MagiNation which deals with innovation and experience optimisation within the experience economy – including especially the area of culture. Thus, there were several good reasons for focussing on exactly that area and ApEx found that the synergy possibilities lying in setting the course against the ministry's initiative and the i-MagiNation project were of great importance.

Therefore it was obvious to organise a seminar where focus was put on the potentials of actualising user-driven innovation methods from the ICT field within the cultural area. Julie Haagen from the Danish Ministry of Culture was invited to account for the Ministry's work with the area and to present some of the many fine examples which had been gathered by the work group. Ole Sejer Iversen, assistant professor at Aarhus University - Digital Urban Living and Center for Interactive Spaces was invited to present some of the many projects in which he has been involved and which have focussed on the development of museums, cultural institutions, exhibitions and displays through various forms of user involvement. Ole Sejer Iversen focuses on new digital media and the potential for experience design, dissemination and not least interaction.

The event was basically divided into three modules. As in the first seminar, the professional presentations from Julie Haagen and Ole Sejer Iversen came first in which relevant models, theories, methods and examples were presented. Then a master class was followed where three Northern Jutland cultural institutions presented a number of problems which might be relevant cases regarding user-driven innovation and where an expert panel gave feedback on the individual cases in order to intensify them for the final workshop. Besides Julie Haagen and Ole Sejer Iversen, Jens F. Jensen, professor in interactive digital media at Aalborg University and head of ApEx as well as Thessa Jensen, assistant professor in interactive digital media at Aalborg University were in the expert panel. The last part of the day was a comprehensive workshop where the participants continued their work with the presented cases. The framework of the workshop was a so-called 'future workshop' where the work was to draw up a future result of the institutional work with user-driven innovation.

Approx. 40 participants represented museums, cultural institutions, libraries, research and teaching institutions, public authorities as well as a few tourism players and students. Again, it was a constructive interdisciplinary combination which formed a nice basis for the tasks and workshops of the day.

Before continuing with the description of the workshop and the presentations of the results, the lead players of the day must be mentioned; i.e. the cultural players whose cases formed the basis of the *master class* and the workshop.

Therefore, focus is put on the before-mentioned i-MagiNation project where the processed cases have been found. Below a description of the project, its point of departure, its visions and its participants is found in order to account for why the synergy between these projects is relevant.

4.2.2 i-MagiNation Project[37]

The overall framework of the i-MagiNation project is development and test of actual models for innovation within the experience economy and design via a number of example projects and business cases within the experience economy. The demo projects form the basis for the development of general models of how to work with (user-driven) innovation, experience counselling and implementation of experience economic theories and methods in the company procedures as well as making actual offers on prototypes on experience enriched products and services. In the U-Drive:IT project context, focus has been particularly pointed at cultural institutions and especially at music venues, theatres and cultural centres. Five demo cases within the cultural field have been initiated.

In more detail, the purpose of the i-MagiNation project is to work with theoretically and methodologically informed innovation, experience design and experience development in connection with actual products, services and business models in order to increase the experience value for customers and users and at the same time increase the value of the products and services and eventually to be able to develop, implement and test common products in order to transfer theory, method and tools from the experience economy into practice.

The i-MagiNation project has a bilateral purpose. On one side the project works with actual experience development and implementation within certain companies and businesses. Here focus is to heighten the experience value in dissemination, product, services, visits, designs etc. as well as developing completely concrete tools to strengthen the utilisation of small and medium sized companies' products/services and experience potentials. The selected cases in the project must be seen as demo projects and aim at the development of actual and exemplary experience economic products, services and business models. So in this connection, focus is primarily on the cultural area. On the other side the project works at a more general and methodical level with the development of models, tools and best practice for how an innovation, development and counselling business can be practised.

Thus, the project may be viewed as a practice creating pilot project that generates both actual tools and methods for experience design and more common models for transfer of theory and methods for applied experience economy. The project crux is then to translate the experience economic and relatively general terms for the actual tools and practices within the experience design and business development. Through this the project seeks to inspire, guide and provide the companies with direct instructions to how they can apply experiences and experience economy in product, service and business development.

The connection between the purpose of the project and the wanted results in the five cases of the cultural institutions is:

Phase 1: Knowledge building, sharing and competence boost as well as a strengthened innovation capacity in the cultural institutions
Phase 2: The preparation of an action plan and its implementation in practice with a view to the creation of a service/product as a benefit for cultural institutions/citizens

37 This chapter deals with the i-MagiNation-project, P.p. 60 – 62 and is written by Birgit Jeppesen, ApEx.

The individual cases are composed in a close collaboration between the individual cultural institution, the group of cultural institutions and ApEx. The cases have been defined via a number of creative workshops. There are five partners in the projects but only three had the possibility of participating in the U-Drive:IT master class and the workshop why only they are presented in detail.

Case 1: The music venue Skråen, Aalborg: How do we develop events (perhaps in collaboration with others) of continuous character that attract tourists and regional citizens? Focus: sustainability and an event where Skråen is merely one in a number of players. Wanted: Tools for developing a business model and knowledge about implementation. Phase 2, task: to gather knowledge/experience from other events (primarily abroad) and transfer these experiences to a new plan for Skråen. Phase 2, product/service: a tool in order for Skråen to initiate an actual event and put that on the programme. Phase 2 is carried out at and by Skråen in close collaboration with ApEx.

Case 2: Det Musiske Hus, Frederikshavn: How do we develop the house, how do we get the audience to choose widely, and how do we develop the collaboration with relevant partners in the area? Focus: to get a full house, often with popular initiatives. Wanted: User surveys of existing events and perhaps on potential initiatives. Phase 1, task: user surveys among the audience, test of concept suggestions and package deals. Phase 2, product/service: new concepts and package deals are prepared and schedules offered. Phase 2 is carried out at and by Skråen in close collaboration with ApEx.

Case 3: Thisted Musikteater, Thisted: How do we become more attractive as a cultural place with a high level of activities? How do we open up the house? – And become more of a cultural centre than a music venue. Focus: to be able to generate economy in order to employ one or more persons so that skills and resources in the present employee may be used better/more optimal. Wanted: mapping of activities/work tasks that can be made visible to the municipality how much they gain for the money/how little they pay and an exposure of the potential for collaborating with subcontractors/local collaborators in order to be able to restructure and prepare a new business plan for the house. Phase 1, task: the development of a new business plan and strategy in order to optimise resources and to achieve the possibility of getting new cultural initiatives. Phase 2, product/service: the development of a catalogue with new offers using the resources of the house (among others the local theatre). Phase 2 is carried out at and by Skråen in close collaboration with ApEx.

Besides these three cultural institutions, Aars Kultur- og Messecenter as well as Himmerlands Teater in Hobro participate in the i-MagiNation project.

Thus the description of the individual cases gives a sense of the problems which the individual institutions are facing and how those might be solved. Potentially there might, however, be a user-driven innovation perspective in suggesting alternative solution models to the problems in question.

The focuses of the individual case courses vary as described. However, the themes that are worked with include among others: user-driven experience innovation, utilisation of creativity and innovation techniques, experience-oriented use of new technologies, experience development, marketing, storytelling and branding, social media and user-generated content, use of creative competences in product, service

and business innovation and development. The link between user-driven innovation and the experience field is also generally relevant as it is not possible to imagine experiences without users. Experiences are by definition something that go on in the mind of a receiver or a user as a reaction to some sort of influence or stimuli.

Thus, it was obvious to involve these cases in the U-Drive:IT context in order to search which part user-driven innovation, based on the experiences from the ICT area, could play in the development of the single cases and the solutions to the problems described.

4.2.3 The Workshop

As mentioned, the workshop itself was formed as a future workshop where the participants, by making an imaginary flashback from the year 2020, should reflect on how the individual institutions, in the intervening years, had worked with user-driven innovation and what positive results this might have produced. The stage was the annual general meeting in the imaginary society INK:IT – the amalgamation of innovative cultural institutions and IT companies whose purpose is to work for innovation and development of the cultural centres, among others through consistent user involvement. Consequently the work in INK:IT has focussed on user involvement and user-driven innovation, creation of experiences and innovation and growth via creativity.

The actual task of the participants was as follows:

Today the annual meeting is held in INK:IT. The board has formed a number of working groups and asked them to reflect upon the tasks and experiences of the past 11 years in order to form the next long-term strategy plan for the next ten years.

I.e. that the society would like to have accomplished an awakening work of

- *which initiatives have been positive in the past eleven years*
- *what have the essential challenges been*
- *and not least, what must be transferred to the future strategy wording seen in the light of the challenges that we now face*

In order to focus on the work the society has decided that the work must focus on the three cultural institutions who have had the most success during the eleven years, Thisted Musikteater, Skråen and Det Musiske Hus, respectively. Therefore three work groups have been formed, and you are in one of them.

The work must be done via a fixed model as described below and the product must be a reflective compilation of the past eleven years work formed as a speech with a duration of maximum ten minutes and which are presented to the INK:IT board. To do this, the employees and volunteers of the institutions have been invited.

It would be no use describing the entire process in detail; however, it must be mentioned that three groups of each seven or eight participants were formed and that each group made a speech based on the written guidelines. One of the groups even made two speeches. In order to get an idea of what ideas

and which kind of thinking was generated at the workshop, a small summary is made. The summary reflects both master class and final speech.

4.2.4 Skråen, Aalborg

Skråen is the music venue in North Jutland with the largest number of annual events and is located in the centre of North Jutland. In the summer of 2009, Skråen moved into the new culture focus area in Aalborg - *Nordkraft* and its capacity has become even larger. As described above the objective of Skråen is to make an event or a platform for event collaboration with other players. It must work as a recurring event that functions as a unifying initiative in the region. The proposal must also be viewed as part of the relocation of Skråen into the new and large cultural centre in the region: Nordkraft.[38]

Some of the good advice from the audience and the expert panel was that it is all about getting people to claim ownership and engage in the project. This can be done by involving them in the process and in the various initiatives along the course towards the goal. Among others, it might be an idea to develop virtual events in the region and make virtual communities. It is important to be open during the process if the users are to be sincerely involved and engaged in the project – therefore it is essential to consider from the start what the target groups are, so they can be contacted directly. One can also think specifically in starting with small events and arrangements that gather people and draw their attention towards the project one wants to initiate – e.g. games and competitions that are always engaging. It might be a good idea to employ an event maker who is familiar with user-driven innovation. Skråen should, to a greater extent, use the new media and experience design when disseminating their content and create exciting frames for the concerts. E.g. by live-streaming some of the concerts, or bring before and after interviews with the artists.

The speech itself focussed on how essential the large corps of volunteers is to an institution like Skråen. The volunteers that Skråen uses in connection with events are more than 200 people. They make it possible to lift the great event. And such a large number of players have priceless resources regarding the future development and new ideas concerning content, marketing, design etc. Therefore the next decade might focus on activating that resource and utilise it more systematically than today. Here ICT could very well play a central part. The volunteers would also sense an increased engagement and responsibility towards Skråen when they feel that their ideas are taken seriously and that some of their ideas are actually carried out. The ongoing contact with the volunteers and the users also contributes to the fact that the programme never becomes of no present or current interest and that Skråen has its finger on the pulse.

Another opportunity is of course also to make it seem as attractive as possible to be part of organising the many cultural events with great national and international celebrities that companies would sponsor volunteers to help at these events. In this connection statements and signals from the present volunteers would of course be of importance.

More information about Skråen at www.skraaen.dk

38 See www.nordkraft.dk

4.2.5 Thisted Musikteater (TMT)

Thisted Musikteater is a small music venue with only one employee and with a number of various, partly inhomogeneous events such as concerts, theatres and stand-up shows, but also office parties, Christmas lunches, confirmations etc. In short, more than meets the eye and demands a hall.

The case is about finding out how to give greater priority to the cultural aspect and tone down the other non-cultural and thus peripheral aspects. The following questions are pivotal:

- How to make TMT a more attractive cultural centre with a higher activity level?
- How to pave the way for new events and impacts at TMT?
- How to create better economy for more employees?
- How to give greater priority to the volunteers?

The significant ideas and advices from the audience and the expert panel were that it was essential that TMT clarifies what they want, gets a clear profile and to a greater extent gets into dialogue and collaboration with the surrounding society, institutions, associations etc. Among others, it must be clarified whether it will be a cultural centre or an activity centre/part time music venue and which target groups TMT wants. Seen from TMT's point of view there is no doubt that the cultural focus comes first, but that TMT lacks inspiration, knowledge and resources in order to obtain this status. It is also important to understand that cultural life does not begin with the centre, but with culture, so the cultural shall not come to the centre, the centre must to a greater extent keep its eyes and ears open regarding the culture and seek to establish constructive partnerships in the cultural environments. It has also something to do with placing agents in the local areas and in that way make people take ownership for the centre and thus sense the engagement.

Additionally, it is stated that it is very important that a volunteer group is formed who can be drawn upon in connection with events and who may work as ambassadors for the centre's events and profile. This will also increase the resources and access to relevant knowledge about what goes on and what to aim at.

Finally suggestions to a long line of alternative activities were given which the centre may use without risking its status as a cultural centre. They were among others:

Parties, boxing meetings, author workshops, painting courses, drama courses – scriptwriters, semi/all-day events for companies with the centre as the focal point, art workshop, storytelling about the centre itself, lecture company á lá folk school, eco-friendly theatre, stand-up shows, and daily cosy music.

Local niche festivals, including:

- Olsenbanden
- Star Trek
- National Parks

- Klima Co2 Neutral
- Clairvoyant Fair

A suggestion for a new profile could be:

"The local rendezvous – culture for everybody"

Means for fulfilment of the goal has been: User involvement and user production

The user-oriented aspect, on which TMK according the future workshop successfully has focussed towards year 2020, consists among others on:

The establishment of a volunteer group – TIC (THISTED-INNOVATIVE-CREW) who has made it possible to organise more and larger events. The volunteer crew has also functioned as ambassadors for TMT and has brought many new ideas to the centre and through this quite a few recurring events and festivals have turned up – some are mentioned above.

One of the new arrangements and events which has been initiated and accomplished by the volunteer crew should also be mentioned as a special initiative where stories and myths link to the local region and thus via their authentic roots, they have been part of involving entirely new user groups from the local community. Among others, project days about the famous modernistic/naturalistic poet J.P. Jacobsen, where literature interested people from the whole of Denmark participated. J.P. Jacobsen walks were held to his favourite places in the town and visits at the newly made national park were organised as well as a poet workshop. All initiatives have led to an increase in the daily traffic and activity of the centre. It is no longer just a place that one visits in connection with the 300 annual events, but also a place where one meets, has a nice time, chats and participates.

The Facebook profile is another initiative where volunteers are recruited, information about the exiting event and future possibilities in the centre is placed and where there is an ongoing joint story and profile of the centre that works as a result of a democratic process. On Facebook, there are also fora dedicated to small local areas for new members or people who are just interested in learning more about TMT and its activities as well as information about being a TMT volunteer.

Another initiative which involved users and citizens was the competition regarding a new name for the centre. It provided the centre with a new identity and the citizens felt, to a higher degree, that they have relations to the place and had been part of creating the new profile and identity of the centre. Regarding the user involvement the term Musikteater gave the wrong apprehension as theatre primarily indicates a passive part of the audience. Instead the name became the more involving term: *Vores Mødested (Our Meetingplace)*.

Other than the volunteer group, a business club was established who was to frame the business development and networks in the Thisted area. At present the club has approx. 100 members who meet twice a month to dinner, the cosy atmosphere and networking on the programme. This has increased

the financial possibilities, easier access to the right artists, another platform for inspiration and inputs about the cultural content as well as of course not least another priceless ambassador corps.

The great success in and around the centre with the various new player groups resulted lately in the fact that a cafe has opened in order to increase the possibilities in making "Vores Mødested" a local gathering point for teenagers and culturally interested people. Thus a physical supplement for the virtual meeting places has been created and many new ideas and concepts grow out of spontaneous and improvised meetings held in the cafe that is open approx. 25 hours per week.

Last but not least the TMT has formed new partnerships and has increasingly collaborated with educational institutions and with trainees who have been part of the development of the centre through ideas from the newest knowledge. This has been of great benefit as in this way it has been possible to make a faster completion of the development plans, integration of new technology and new media and not least new inspiration of how to continue work with user-driven innovation.

Even though TMT has utilised several tools for user involvement, among others a social media such as Facebook, there is to a much greater extent talk about creating a culture that opens up for the user-inputs and a platform that makes it possible to give input and the sense that the users are takes seriously. In that way the inspiration from the ICT field does not originate from the actual methods which however may be used in many was as in the described set-up, but rather in the thinking and the ideology about how it is possible to open a TMT for serious user-inputs and be prepared to go into those changes which this will create. The fact that the described user innovation comes through groups established in the house, volunteer groups and a business club etc. then in many ways there are parallels to the phenomenon named employee-driven innovation that described that the employees of the organisation must be given votes and utilise the resources that hide here in order to create development, innovation and a better work environment. An aspect, which was discussed earlier in the chapter of knowledge gathering.

More information about Thisted Musikteater at www.thistedmusikteater.dk

4.2.6 Det Musiske Hus

Det Musiske Hus in Frederikshavn is a new music venue in a newly built house with a fantastic concert hall. The setting is thus okay but the DMH wants to develop and strengthen the content, reach new user groups and develop new types of products e.g. cultural packages, and it is clear that this development may be done via an increased involvement and knowledge of the users.

Thus the case is how it is possible through an increased knowledge of existing user groups to target these in a better way and additionally attract new user groups who are interested in other types of concerts. Furthermore ideas for new types of products and experiences that all together may enhance the experience by concerts and thus secure DMH larger audience numbers are wanted. A necessary development which, among others, is demanded because of contract clauses (result demands) as DMH has been pointed out as a regional music venue by the Danish Ministry of Culture.

The most essential ideas and inputs from the audience at the master class were that as the frames were in order the issue was to get in contact with people. Both physically but also by speeding up the development of new communication media, including regular newsletters to former guests, a Facebook profile etc. Again it is thus about getting people to feel an ownership in the development of the house and thus engage in the further development. This aspect has been stressed more than once by the *master class* expert panel. However it also deals with creating life in the house besides the concerts. The house must have more – not just concerts.

It is important to physically visit the environments that are attractive, e.g. by demo concerts in educational institutions, in sub-environments, in the open space of the town etc. To aim at getting into an active dialogue with people there – e.g. through Facebook, sms-services etc.

Furthermore it is obvious to make lead-user panels as applied in the development of new content and new products. The germ for these lead users is already seen in the persons who often on their own initiative contact the house. Regarding the theories about lead users it is presupposed that these may be part of appointing the right names, products and events, before the common user reaches that point which will bring DMH ahead of the development.

Quite concrete user involvement ideas were presented like letting the users manage some of the events, including light, decorations, and logistics under the surveillance of the professionals. It might be an experience for everybody to gain insight in how a professional concert event is handled and at the same time it would provide an increased engagement in the house activities. Another concrete idea was to utilise to so-called crowd funding. E.g. the users buy shares in bands because they believe in them. Thus the power of the development and the financial success is put in the hands of the audience; reversely it is also certain that there are purchasers for the music. In connection with DMH a competition set-up could be made and create a Facebook group in order to achieve input for the programme, e.g. autumn 2009. A number of opportunities could be presented and the audience could decide in what events they were willing to invest. This acquires a built-up of groups and not just individual users, but it might pay off at the end. Frankly it is mentioned that the competition elements are a good way of engaging users in the activities. Another idea presented at the future workshop was that if it would be possible to attract film producers to the town it might be possible to invite local talents to make the soundtrack to the film.

Finally, DMH must exploit the unique geographic and infra structural location of Frederikshavn. Because of its status as a ferry port with sea routes to both Norway and Sweden Frederikshavn has a very high flow of travellers and in particular a large number of one-day-tourists. It might be a potential goldmine for DMH to attract those tourists in some way or other -perhaps by organising lunch or afternoon events. However, that demands a large analysing work to establish what this target group is looking for.

The future workshop underlines that the first step that DMH has taken towards 2020 was to map the existing users. It was necessary to determine who the existing users were in order to initiate the many new development projects with the new users.

Then the work aimed at developing experiences before, under and after the concerts based on the fact that if the experience during the concert itself is the only thing in focus then the development possibilities and the ways of involving the users are quite limited. However, if before, under and after the event are thought into the idea then there is time wise a much longer stretch to interact with the users and in this way gain knowledge from them and in principle also to make money on them.

One of the things which were done according to the future workshop was to establish the web-television channel Frederikshavn which DMH was part of initiating in 2009. This channel has developed a lot regarding web-television-stations, where all content is user-generated. This can be seen among others by a preface of the concerts, cuts from the actual concert and interviews of artists etc. This provides a lot of information to potential guests but it also produces lot of engaged ambassadors who produce the content for the channel.

The last thing mentioned from the future workshop is that it could be possible to engage the local music growth layer by live-transmissions on a screen walls in the concert hall from the local rehearsal rooms before or in the break at larger concerts. Thus people could be introduced to local bands that they would not normally see. One could imagine that it would become prestige filled to be transmitted in this way and that could be a goal in itself for local bands and in this way a new essential user group would be activated. The screen wall could also be used for special warm-up bands. This can also provide a new experience to see a band that gives an authentic experience of a rehearsal session.

In this case it is thus determined that the importance of getting in contact with people where they are, activating them and getting them to engage and at the same time listening to them in order to understand what they want.

In this connection it is suggested that the focus is put on both new social media and more physical present activities. Totally the ICT would be playing a substantial part in the future user innovation strategy of DMH.

4.2.7 Total Summary

As in the first workshop the individual cases are not so much about a direct transfer of actual methods and theories from the professional presentations or from other sources. However an energetic creative idea-development can be seen where the professional presentations have put the clear mark in the shape of consequent and creative thinking in user involvement. In several places, however, it can be seen that the ideas and the examples from the presentations become apparent in the developed ideas. Both workshops have had an explorative purpose primarily in uncovering whether there is potential in crossing ICT, culture and user-driven innovation with each other, and the cases show that there definitely is potential. Many of the examples mentioned and the suggestions put forward would do best in being rea-lised through the IT-supported platforms and there is no doubt that e.g. social media get to play an important part in strengthening the dialogue between the institutions and their users.

Again a follow-up processing of the final material could form the basis for a more precise and implementable plan for how real user-driven innovation courses in the individual cultural institutions might

be initiated. This is also what will be done in the before-mentioned i-MagiNation project, however it will not be executed within the time frame of the U-Drive:IT projects why concrete results cannot be listed in this report. However, three months after the workshop a follow-up interview with the three cultural institutions was made in order to hear what they had achieved from the workshop and what perspectives lay at present for user-driven innovation in the operations of the three institutions. The interviews gave the following information:

4.2.8 Thisted Musikteater

Allan Christiansen from Thisted Musikteater found the workshop inspiring, serious and challenging. Overall both the seminar and the following workshop provided him with inputs and ideas which he would not have achieved elsewhere. The thoughts and the angles on user-driven innovation have without doubt initiated something for Thisted Musikteater. Additionally the participation in the event has been part of confirming the essentiality of the part of ICT – even for small cultural centres. The future is without any doubt in some way or the other connected with ICT, the question is how?

Steps have been taken regarding the innovation and the user involvement in TMT. Actually, a preliminary meeting has been planned in connection with the above-mentioned i-MagiNation project where interested parties and potential volunteers will meet and be introduced to the possibilities of being a volunteer in different ways for TMT. The first meeting is supposed to form a survey of the possibilities and to get an idea of the interest in contributing to the daily operation – without pay. In the longer run the purpose is to gather adequate interested people to form different interest groups who should contribute to fill out the everyday of the house with activities and life, including also the artistic programme. E.g. one could imagine that groups were formed who deal with concerts, exhibitions, theatres, conferences, bar operations etc. depending on which areas are defined as those that the house should present and accommodate. Thus preparations are made for creating a substantial network of volunteers who, if all goes well, are able to create much more activity and life in the house. A network that simultaneously works as a marketing channel for the cultural offers existing in TMT. The groups and the communication with them can very well be organised and be more or less autonomous via a Facebook group as suggested in the future workshop. According to Allan Christiansen an additional dialogue with other players in the municipality of Thisted has been established and they are interested in both building up a network of user groups and drawing on these by special occasions. The tourist agency lacks e.g. often skilled voluntary help and sparring when events etc. are held. In this way the potential of creating a more citizen involving culture for the important local institutions is created. A development that may be of significant importance to the future support and implementation of events, cultural arrangements and the way these initiatives are planned and organised.

Another idea from the workshop which Christiansen may carry further is to get out into the local area with small events or happenings that create visibility and associations to TMT and its content and that make people from a larger area interested in examining the offers. Based on the same, he is also working on the idea of creating a regular Friday café which may provide potential users with the opportunity to see what is happening. Additionally Christiansen tries, to a greater extent, to get into dialogue with educational institutions and try to get them to place some of their activities and education at TMT

and by this making a larger part of the target group aware of TMT's exiting activities and experience offers.

Finally, TMT has begun a large development initiative of their website that will divide the site into target groups and more user involving by making it possible for the users to give inputs on the website.

In total, it can thus be stated that TMT are launching several initiatives which all, in some way or another, deal with user-driven innovation. A number of those ideas and especially the way in which they are being initiated is a result of the participation in the U-Drive:IT project. However, it is too early to say how the various initiatives will be implemented and what methods and procedures will be used.

4.2.9 Det Musiske Hus

Kasper Bonde, coordinator at Det Musiske Hus, underlines that it has been inspiring to participate; however development initiatives are still scarce. Ideas and suggestions in the idea bank wait for time and resources for the actual development and implementation. The question about resources is a problem that turns up again and again when the project has talked with players regarding user-driven innovation within the cultural area. According to Kasper Bonde, the optimal solutions would be to hire an innovation consultant who has a background in innovation and who at the same time understands the actual context and problems of the music venues. It is simply the raw development time that is the problem and it is also this lack of development time which makes it so hard for the music venues to innovate themselves. Therefore, the first step working towards a continuous user-driven innovation would be to find a solution to this problem – perhaps through reprioritisations, increased investments, reorganisations, cultural alterations etc.

A couple of initiatives have come up. First, Bonde figures that work with the relevant problems will continue when the i-MagiNation project work speeds up during the autumn of 2009. Second, DMH is already looking at a number of development fields. Among others, investigations how the Internet, Facebook and other new media may be used in the best possible way to communicate with the users and involve them in the further development and operation of the venue. Furthermore, in the autumn 2009 Bonde expects that an SMS service will be initiated for those users who have registered with the mobile telephone number in the customer database. At first, these efforts are primarily directed towards information about events and other activities at DMH and not towards interaction and gathering of user inputs. However, it is the thought that the latter will be developed in the future, but this requires resources – both in order to set up the platform but also in order to receive and process the gathered inputs.

The two dominating thoughts for the future development are that the users must be involved in and kept through the various new forms of media, e.g. Facebook. Additionally, work on how the concert experience can be prolonged in a meaningful way including before and after the concert. This might happen in various fora or it can be done through new ways of taking memories with you from the concerts and new ways of gaining information beforehand etc. on the concerts. Regardless of which form the various initiatives may take it deals with involving the users or developing together with the users.

4.2.10 Skråen

According to John Pedersen, Skråen the output from the participation in the project activities has primarily been to initiate ideas of how Skråen in the future can work with user-driven innovation. The time after the seminar and the workshop has been busy, among others with moving to new locations, *Nordkraft*, and time for development initiatives has been scarce. Therefore no actual new initiatives have been launched, but the workshop inspired to how already planned events may benefit from user-driven innovation.

Additionally, Pedersen repeats the objection that he also stated at the seminar – that the case regarding Skråen, as a starting point, might not be the most obvious regarding user-driven innovation. He would have liked to see that Skråen was given some directly implementable tools for its events and projects. The seminar was to a great extent case-based and built upon inspiration through examples from other projects and cases and much of that was maybe not so relevant for Skråen.

Therefore, the advices and the ideas for the Skråen case rather consisted of *common sense* advices of a general character and not so much as to how user-driven innovation might play a part.

However, the inspiration and the ideas from the seminar have been noted and several of those may be implemented in future initiatives. In the new frames of Nordkraft, there are many possibilities of collaboration with other players and involvement of visitors of all kinds to contribute to the development of Nordkraft. One could also think user involving events in this frame. Furthermore, Pedersen has also noted that other music venues has worked systematically with user-driven innovation, of which two cases have been described in the publication of the Danish Ministry of Culture Reach Out.[39] This material has also provided more fine ideas for future projects.
Finally, it must be mentioned that the actual case which Skråen presented and achieved sparring at the seminar has been planned and will be carried through in Aalborg in the early autumn 2009 with the title No Limits. The festival also has elements of user-driven innovation, among others an open scene. However, all elements were thought of beforehand and cannot be regarded as a result of the U-Drive:IT project.

4.2.11 Summary on Dissemination, Knowledge Transfer and Knowledge Development – ApEx

The workshops and the attempts of knowledge transfers which ApEx has carried through in connection with the project have now been presented. Focus has primarily been on culture companies where there, via explorative workshops, future scenarios, and master classes and not least through relevant research-based, professional presentations, has been idea development, creative thinking and development of a lot of fine ideas for how user-driven innovation may be part of developing the participating parties, cultural institutions as well as other participants in the activities. The general impression is clear: the cultural institutions and other trades may benefit of thinking more user-involving and look at how they can

39 See the report *Reach Out - inspiration til brugerinddragelse og innovation i kulturens verden* (*Rearch Out – Inspiration for User involvement and Innovation in the World of Culture)* at: http://www.kum.dk/sw80146.asp

become more aware of their ways of involving their users and what opportunities they have to do exactly that.

ICT in various shapes seems to play an important part. All cases basically agree that social media, mobile platforms and the like will play a pivotal part in the efforts of the cultural companies to develop themselves through user-driven innovation. ICT platforms are, however, not the only elements which have been emphasised. It is clear that there is also a potential in getting hold of the users in a more physical and low technological way, e.g. through events and in the urban space and in that way bottle the knowledge and ideas of the users and at the same time ensure a strong back-up and involvement from the user groups. But again, the contact is initially created by means of digital media and other ICT platforms.

Direct documentation or attempts with actual methods from the ICT area described in the method catalogue are scarce. At both seminars, however, the participants have been filled with examples of the application of user-driven innovation based on an ICT context and have gained an insight in the experiences based on that. Without doubt, it has inspired and formed the minds of the participants and their choices in the following exercises and workshops presented above. It might be interesting to carry on the individual cases and ideas and become more concrete in how the individual cases might apply the user resources and what methods might be used.

The seminars and the closing conference have, however, also been part of fulfilling that part of the project which has been involved with awareness-raising about user-driven innovation and the multi-levelled possibilities that user-driven innovation presents. More than 100 persons have participated in the various events and a network around the project has been established. All presentations from both seminars and from the conference can be found at the project website as well as many of the presentations can be downloaded as *streaming video*.

The next chapter looks into the experiences and the potentials with user-driven innovation within other fields.

4.3 Dissemination, Knowledge Transfer and Knowledge Development – NFBi Network:[40]

Overall, the possibilities of transferring principles and methods from participatory design within the IT development into other businesses have been examined. It is our clear view and experiences that methods and approaches from participatory design are highly applicable in other lines of trades when understanding the work with user-driven innovation.

The advantage of the process and the methods within participatory design is that there are a number of different ways in which to work with the users. Therefore, there is always a method that fits or may be adapted to the development process of a specific company. Additionally, both process and methods are flexible and scalable which is of great advantage in proportion to being able to adapt the user involvement process to the individual companies depending of size, capacity, ambition level and resources.

40 This chapter, P. 72 – 84, is written by Astrid Søndergaaard and Jacob Rolf Jensen, The Alexandra Institute A/S.

4.3.1 Empirical Data and Process Description

NFBI works with informing and training companies to apply user-oriented approaches in the development processes. The project study is based on both knowledge from the NFBi's direct collaboration with user-driven innovation in three case projects (mini projects) initiated by the network and in four development interviews regarding an examination of small and medium-sized companies' opportunities to get started with user-driven innovation.

The methodical approach in the project is thus based upon the companies' tests and practical experience with actual user-oriented methods as well as dialogue with companies about their possibilities and needs for introducing user-oriented methods in the development processes.

4.3.2 Case Projects

The three case projects are, as mentioned above, selected from the NFBi network's so-called mini projects. In a mini project researchers and companies meet around a joint case where both parties develop new knowledge based on user-driven innovation.

A mini project is run by one or more researchers who want to focus on development of different themes within user-driven innovation; e.g. within organisational aspects, method development, development of user involvement within new lines of businesses etc. The participating companies often wish to develop their knowledge about and approach to user-driven innovation and must, as part of a mini project, function as a case for the research-based knowledge development. A more detailed description of the mini projects can be found on the NFBi network's website www.nfbi.dk

4.3.3.1 Case 1 – Development of a New Digital Dissemination Platform for Museums

The project purpose was to make user-driven examinations of how a concept for a new digital dissemination platform for museums can be designed. It was an early examination which was to generate knowledge about the user experiences of today's museums and the user wishes for the future museums – especially regarding the dissemination found in the museums.

The project was carried out in collaboration with Dansk BiblioteksCenter DBC (in English: The Danish Library Center) (supplies knowledge products and solutions for libraries and other knowledge based companies), Centre for Interactive Spaces (research centre at Aarhus University with great UDI knowledge) and The National Museum of Denmark

The project basis was that DBC was interested in the museum field as a potentially new market. At the same time the project was going to supply DBC with larger knowledge about and actual experiences with working with user involving processes and methods, among others, the development of a new experience design. In several research and development projects, the Centre for Interactive Spaces has had experience with IT and new dissemination forms in museums and therefore found it interesting to continue the work with the domain of the project. The centre has been in charge of planning, execution and processing of user involvement courses. For The National Museum of Denmark, it was attractive

to be involved in the project as they work very much with digital dissemination, among others, in connection with the establishment of a new museum.

The Innovation Courses and the Method
The user involvement consisted of two different explorative and idea-generating sessions. The first session ”Image Probes” focused on how the users experience the museum today while the focus in the other user session “Workshop in Movement” was on the user wishes for the museum of the future.

Image Probes: To Get Hold Of the Experience
People visit a museum in order to get an experience and perhaps they seldom relate explicitly to what creates the experience and what they feel about the experience. The challenge therefore was to get the museum visitors to put their own experiences into words without loosing the experience. Inspired by the method “Cultural Probes”, the users were asked to take pictures of the museum experiences. In that way the users got to reflect upon their own experiences during the visit and without any project employee as an observer or interviewer. Following this, the project employee went through the photos together with the users and followed up with elaborating questions.

Workshop in Movement
The other purpose of the project was to find out what users need in the future museum. Here, it was also important that the experience was embedded in the method in order to get the users to engage in the task and to keep the task within the framework of the entire experience. The work form became a “Workshop in Movement” where the users were to experience the museum while they evaluated, criticised, became inspired and idea generated.

In the first part of the workshop the users were sent to the museum to warm-up by doing some image probes. They were to get to know their museum and find out what they liked in order to think in new ideas and suggestions for later alterations.

Then they were sent on with idea generation in mind. They were given an assignment and a folder with props which they should use on their way. The task was to find a place in the assigned showroom where they experienced lack of information or boring dissemination. Here, they could come up with ideas to how the information could be made, what media to use etc. In the folder they could find inspiration if they came to a standstill. Furthermore, they were asked to document their ideas and were provided with various suggestions and tools for how to do it.

The Method – a Part of the Experience
The methods ”Image Probes” and ”Workshop in Movement” work well and are recommended to mapping user needs within experience design. Photos work well in order to maintain the users’ experiences and they form a nice basis for the following interviews and discussions with the users. Additionally, it was the experience of the users that it was fun and inspiring to have the folder with props when visiting the museum. It provides a rich and tangible material for the designers to continue their work after the user sessions and it is positive to apply methods that in themselves are entertaining.

The experiences primarily begin in Cultural Probes which is a method that is particularly applicable in the early design process. A Cultural Probe is a set of materials that is handed to a user who afterwards may use them to document and tell e.g. about his/hers everyday life or his/hers experience. The method works well when informing about people's experiences, behaviours and attitudes and is used by the designers as inspiration and to make out their users and the domain for which they are designing.

The Results
The project has provided the partners with new knowledge about user needs in future museums and museum dissemination. The examinations have also indicated pitfalls which are important to know about in a further design course.

The applied methods have shown to be very useful when identifying user needs in a non-existing product. It has been easy to apply the methods for the actual development task and a broad target group. DBC and the The National Museum of Denmark would not have been able to plan and carry through the user involvement without expert support. Thus, the project has provided both parties with important new knowledge about and practical experience with user-driven processes which have prepared them to apply user involving methods in other development projects.

4.3.3.2 Case 2 - Minimum Configuration - Home Automation
The project began as a mini project that afterwards has become the starting point for a two-year research and development project financed by the Programme for User-Driven Innovation, Danish Enterprise and Construction Authority (DEACA) and therefore has specific focus on development and adaption of methods for user involvement.

In both projects, the overall aim is to develop a prototype for an energy control unit through user-driven innovation which bridges the divide between different electronic products in the home and provide the users with a total and easy access to information and control of their energy consumption.

The project partners are: Aarhus School of Engineering, VELFAC (part of Denmark's largest concern within production of windows), Develco (develops and sells home automation solutions), Seluxit (develops and sell home automation solutions) and the Alexandra Institute A/S.

The Innovation Process
The preliminary mini project has worked as a pilot project where the problems have been identified and have formed the basis for selecting the user involvement methods which were to be used in the research and development project that started in October 2008 and ends in September 2010. At present (May 2009), only the project's first user involving phase has been concluded but at this point the project has presented relevant partial results and experiences.

The first phase has been an examination and mapping of what motivates private users to change their energy consumption as well as their demands and needs for energy control in their homes. Furthermore the phase has consisted of data processing and starting the prototype development. The methods that

have been used in the first phase are interviews, cultural probes, workshop with users – including data processing workshops and mock-up developments.

Data Gathering
First of all, the project anthropologist has conducted semi-structured interviews with 30 potential users of an energy control unit. The purpose of these interviews has been to map the broad social and cultural context that has to be part of such a unit. Focus has been on the user needs and motivation for controlling the energy consumption in their homes as well as their present practice. All interviews have been recorded on video or on a soundtrack. Simultaneously with this course, four user families have been involved in a cultural probe course where they have been handed out a task package in order to document their everyday lives and use of their homes. Those results have been photos, diaries and floor plans of their homes. Based on the above observation, sessions have been carried through at six families concerning themes such as laundry, cooking, indoor climate etc.

Data Dissemination for Project Partners
User data can be found in videos, photos, text and floor plan drawings. In order to hold these various types of data, as 'assembly workshop' was designed where data from many different users were prepared thoroughly by the technical project partners and put together in complex "assembly users" with many different needs which were to be supported by the solutions. The assembly workshop supported a process where the technical partners create and achieve knowledge about the users and at the same time they obtain ownership of this knowledge. The purpose is to ensure that knowledge about the users is involved in the entire product development process.

Next step in the dissemination of information about the users was to hold a mock-up workshop. The purpose was to let the technical partners and users together develop actual solutions for e.g. visualisation of the energy consumption. Cardboard, modelling wax, steel wire etc. were used. These mock-up solutions were tested in the new user families for one to two weeks subsequently where they were included in the families' everyday lives as actual solutions.

The technical partners of the project then had the opportunity to contribute to the families' experience feedbacks with mock-up solutions in the family homes. Ideas, experiences, needs and demands from the mock-up course were finally gathered and used in a following technical user case course.

Results
The involved companies are very technology driven in their innovation approaches. Therefore, it is new to them to work with user-oriented processes. The companies have gained a lot by working close to the users and have expressed their wishes for incorporating some of the tested methods as part of the internal development processes or in some cases as services to their customers. Especially, there is a wish for using a workshop as method that can be incorporated in the development processes of the companies.

The companies call for methods for strengthening the knowledge transfer/sharing in the company. I.e., they lack tools for disseminating knowledge about the users from one employee who has been part of the user-oriented development process to other colleagues. The project is going to work with this problem in the next phase.

In general, it is one of the large challenges of the project to further develop the tested methods so that they will fit in scale and in resource consumption with other companies of the same characteristics as the company partner of the project, namely small and medium sized technology driven businesses.

4.3.3.3 Case 3 – Life Style Predictors in User-Driven Innovation

The project developed a design process with focus on customers (water supply customers) and end users (families). Kamstrup A/S (producers of system solutions for energy and water measurements) and the Mads Clausen Institute, MCI (research centre at University of Southern Denmark with great BDI expertise) prepared the project in collaboration with the NFBi network. On the user side, three water supply plants and four end user families have participated in the project.

The project is based on user studies and developed a tool that mapped electricians' and end users' views on the signalling effect of electricity, water or radiator meters. In that way, Kamstrup A/S gained actual knowledge so that the developers in the future may integrate technology and life style in products that match the entire needs of the users. Thus, the project also provides a suggestion to how high technological energy meters may enter into an agreement with the life style business and gain market shares, nationally and internationally.

The Innovation Process

The design process proceeded over two iterations and included both customers (water supply plants) and end users (families). The process was designed and lead by an anthropologist from MCI.

The first iteration started with interviews and observations with customers and end users and was documented on video. Then the developers' video analyses followed in the shape of mappings and games that formed the basis for their modelling and video presentations of design ideas.

The other iteration continued with the user evaluations of the developers' design ideas as well as the user modelling and video presentations of improvement and development suggestions. Finally, the developers analysed the suggestions of the users.

First Iteration

The first user visit was based on interviews and observations. At the water supply plants semi-structured interviews with the managers of the water supply plants were carried out where after two or three employees from the administration and from operations mapped their work assignments and drew a picture of the relations with the end users via thinkering[41]. At the end users semi-structured interviews were carried out which were based on the family's conception of water consumption and contrasted the standpoint with the family's relation to electricity and heat consumption.

The semi-structured interviews gave relatively unspoiled insight in the organisation values and the values of the families, while the following methods provided insight in the practical expression of the val-

41 Thinkering marks the activity of thinking while tinkering with data and processes etc., which results in innovative and complex new connections and solutions.

ues which both gave new insight and validated the words of the users. Both processes were taped in order for the following analyses to be based on living pictures.

The water supply plants got an extra assignment: Managers and employees took pictures of water installations and filled out provocative postcards in the time between the first and the second user visit. The methods were to compensate for part of the anthropologist's lacking observations during the daily work. Both pictures and postcard reflections gave new and actual knowledge (32 out of 35 postcards were returned). At Kamstrup A/S the developers analysed the videos and modelled their first design ideas. The customer values were analysed with a video based mapping which was developed by the anthropologist with inspiration from the discourse analysis of Foucault. The developers focused on the external relations of the supply plants and analysed their evaluations of the individual partners. Based on this, the developers stated the possibilities and limitations that the customers experience regarding the product.

The values of the end users were analysed with a life style game based on the edited video material. This time, the anthropologist achieved the inspiration from Bourdieu and his analysis of capital and field. The life style game was to identify the users' values concerning their financial priorities, social relations and taste and gave insight in the variations of life styles as well as the individual end user's priorities and dilemmas. The analysis of the customer and end user needs both lead to actual formulations and modelling of three design ideas respectively, as well as video presentations of the developers' ideas.

Second Iteration

The anthropologist returned to the water supply plants and the end users with models and video presentations. First, the supply plants elaborated on their answers to the provocative postcards and the photos of the installations which provided a detailed insight in the daily work. After that the managers and employees evaluated the video presentations and models of the developers during structured interviews and then formed their own improvement and development suggestions to the new models which were presented on video. The end users' evaluations and modellings followed the same pattern.

The video presentations clearly created a dialogue between user and developer and the models formed the actual item for their communication which created a deep mutual understanding together with the richness in details that qualifies product development. During this, the structured interviews signified that focus on the details were maintained, which was important to the following analysis of the developers. The parallel processes were concluded with analyses and gathering workshops. The video presentations and modellings of the water supply plants were analysed with a mixture of the methods: interaction analysis lab and video card game, where after the various problems were discussed and the entire development potential was mapped.

All together the analysis gave 67 new development ideas within, among others, installation, construction, data transmission, data reading and motivation. The video presentations and models of the end users were analysed by four design students in a workshop. They initiated the work by an interaction analysis lab+ where after they modelled four design proposals that fulfilled four different life style needs as regards the water meters. The choice fell on interaction analysis lab+ because the affinitive categori-

sation methods create a survey of large quantities of data as well as appeals to the fact that the participants involve their – often different – professional skills. This was also the case here where the participants immediately claimed ownership of the analysis.

Results
The project has created both product development and research results. On the product side, the project has developed four life style based design proposals for water meters at the end users as well as 67 actual development proposals based on customer needs which have inspired to patent applications. On the research side, the project has developed a life style game that shows the end users' values based similarities and differences as well as enlightens the priorities and dilemmas of the individual end users. At the same time the project has developed a mapping of the identities of the customers, which provides insight into the possibilities and limitations that the customers put on the project.

The methods have been crucial to the increased knowledge about user needs at Kamstrup A/S. The company would not itself have used the chosen methods and could not have taken the same role regarding the customers. At the same time the developers work on the videos and their modelling work have indicated large idea interchange with both end users and customers. It has been essential for the commitment and yield of the participants that the individual analysis and modelling provided direct input to the daily work area of the employees. The different competences of the anthropologist were important to the project results. The synergy effect of the different professional skills has been great and the methods have formed a fine supplement to the existing development processes within water metering.

4.4.1 NFBi – Development Interviews

The knowledge gathering phase and the experiences from the case projects have shown that especially small companies – in spite of the interest in the area – see it as a challenge to absorb more user-driven methods in the product development. It is the general perception that there is a lack of tested methods which can be adapted to small companies who typically do not have competences/resources for them to implement and carry through user-driven innovation courses.

Based on this, the project has carried through four so-called development interviews in small companies. The purpose of the interviews was to examine the innovation processes of the companies and based on that evaluate where it would be relevant to involve the users. In the four companies, actual product development processes have been prepared thoroughly in order to discover how they can be made more user-driven, including which methods are relevant, what skills are required, how many resources will it need and what results can be expected. Following the interviews the companies have received written reports with suggestions to actual methods and processes adapted to the innovation tasks of the company.

The four participating/visited companies represent different company types and trades. They have in common that they are highly specialised companies working in B2B markets. The companies face very different development tasks that are described shortly in the following chapter together with actual suggestions to how these tasks can be handled via a user-oriented approach. Every company is anony-

mous as it has not yet been decided whether they will continue working with the recommendations of innovation.

4.4.2 Company A

The company has a large special knowledge and technological expertise and has for a long time worked within an area where they have a thorough understanding of their customers' needs and demands. The company's core competences must now be transferred and developed to a new domain and thus to new customers, collaborators and networks. In the long run, the new business area may have great market potentials.

In order to support the company's approach to the new domain they are interested in applying a user-driven innovation approach where they involve potential B2B customers, collaborators and other interested parties with knowledge within the field – e.g. researchers, public authorities, trade associations etc. Actually, it was suggested to arrange an identification of needs workshop succeeded by a follow-up process.

- An identification of needs workshop focussing on the problems and challenges which A thinks are relevant to know in order to develop their company in the right direction. In an identification of needs workshop, the various participants will present their needs and challenges within this domain. The essence is to create a space where the participants may have clarification of new aspects and possibilities in order to create a basis for innovation.
- The workshop will lead to new knowledge with which A may continue to develop in the work. E.g. it might be through establishment meetings of concrete collaborations, concrete product development and idea generating approaches, project ideas etc.

Thus the workshop may become part of a larger process where A focuses on the area. It depends on how many resources the company wishes to allocate. The knowledge gathering within this new area should be part of the company's superior product development strategy and vision.

4.4.3 Company B

The company produces advanced agricultural machinery. They want to develop and improve an existing project especially regarding increased IT applications for operation and efficiency improvement of the use as well as modularisation and flexibility of the product functions.

B is interested in experimenting with a development course that involves the end users – i.e. farmers and agricultural contractors. The sketch for the course/process looks as follows:

- Preliminary examination where the users' use of and experiences with the product/machine is mapped
- A workshop where ideas and demands for improvement and innovation are examined and discussed. B has gathered a number of suggestions for possible product improvements and is very interested in using the workshop as launch pad in order to be able to prioritise the im-

provements in the next generation of the product. The workshop participants are company developers, service people, farmers and agricultural contractors
- Implementation. B puts great importance in getting help to ensure that ideas and results can be implemented in the company processes

The perspectives for B are that they acquire new development tools which can supplement their present processes. They put great importance to the fact that they get new tools that provide new knowledge about the users as well as new inspiration from the users, and at the same time these tools can be applied to systematically test and qualify the many ideas and demands from the company's employees who already have suggestions for improvements and innovation.

4.4.3 Company C

Company C is an IT company that adapts, develops and sells Internet-based and mobile systems. C wants to develop their mobile products through larger knowledge to the users' demands and needs. Their goal is to heighten the success rate of the product when applied and to ensure that the customer's expectations are consistent with the product qualities. These following methods were considered relevant:

- The mock-up test. At an early stage in the development course before the actual prototype is finished the functions are tested for the mobile unit by the user. The test model may be in shape of prints of screen designs and their functions, the interaction and the function are examined with the relevant users in "the field", at the location where the future user is supposed to use the final product. Then it will be fast and less expensive to find errors/lacks and afterwards correct them in the system
- The focus group test. Relevant users are gathered in the focus group and an early version of the prototype is presented. At the test, test prints of screen designs etc. are examined and the participants evaluate and discuss. Many design and function errors/lacks can be found and furthermore the company may get a clear view of the customer's needs

C has specific focus on working with methods which at an early stage in the development process will catch many corrections and provide C with a deep understanding of customer needs and through this make expectation control of the customer regarding product abilities and possibilities.

4.4.4 Company D

Company D is a wholesale company that sells fresh food for the catering industry and for small shops. Their primary business field is purchase of end products which they resell. However, they also own a number of dairy products which they themselves have developed together with Danish dairies. They would like to expand their own product development and want to obtain a better understanding of their customers and create a more structured development process which today is very ad hoc and based on ideas from a few employees. Additionally, they want to move all ordering of products via telephone to an online web shop which already exists on their website. They are very aware of the necessity of in

some way or other to maintain the customer contact from the phone conversations which they will lose when their customers order products online instead in the future.

One user-oriented approach is to hold minor theme meetings for selected customers and interested parties which will fit into the resources, capacity and interest of D. The theme meetings will provide D with more knowledge about the customers' needs and demands and also provide them with ideas for new product possibilities. The theme meeting must focus on the areas which D find relevant to know in order to develop their company in the right direction. D has already held one open house meeting with a large attendance number and good experiences. The theme meetings build on these results, however in a smaller scale.

Regarding the company's online web shop they are interested in experimenting with online user involvement which e.g. could be to attach an online forum for the web shop where D's customers can write recommendations, feedback on products, needs and demands to D who then may achieve a better sense of the customers' needs for new products and response on these.

4.5 Final Recapitulation, Dissemination, Knowledge Transfer and Knowledge Development – NFBi Network

Experiences from case projects and development interviews show that a company may benefit from transferring process and methods from *participatory design* within IT development to other businesses. Likewise it has been concluded that there is a huge interest from companies to work user-oriented and that they see new opportunities for their development processes. At the same time it is important that the methods in size and complexity must be adapted to the financial and the competence and resource conditions under which the company acts.

Primary expectations of the companies and their demands to user-driven innovation are that:

- Improvement of existing products
- Test, qualification and prioritisation of own ideas
- More knowledge about users – not necessarily their direct customers but also other interested parties in the value chain
- Few arguments regarding sales
- Inspiration for entirely new products and services

In order to get started with a more user-oriented development process it is essential that the company invests in the user-oriented process. The company must be willing to set aside time and resources to experiment and test user-oriented methods in order to develop the innovation processes.

In the cases where the company develops and adapts products directly for customers, the largest challenge may be to get the user involvement process financed. The user involvement may be negotiated based on the final offer to the customer as the results of the user involvement process are easily seen as being more diffuse than an actual solution. User involvement cannot just be part of the final improve-

ment of the product, but to a very high extent, it may also be applied as a tool for matching and elaborating the expectations between company and customer during the process.

4.5.1 Strengthening of the Interest in User-Driven Innovation

The companies described above are all innovative and very interested in developing their business and improving their products and services. The interest in getting to know about user-driven innovation has been quite clear.

Several surveys show that many Danish companies, especially the small and medium sized companies lack knowledge of the possibilities to work with user-driven innovation and they do not possess the knowledge about the necessary methods. In order to reach this large group it is necessary to strengthen the general attention towards user-driven innovation to all trades. From the industrial political side in Denmark there is focus on user-driven innovation; both the Ministry of Economy and Business Affairs and the Ministry of Science Technology and Innovation have commenced initiatives and funding directly for user-driven innovation. These initiatives have increased the interest for user-driven innovation significantly and have provided the companies with the opportunity to experiment with user involvement. There is still need for and great benefit of following up the positive effect from those initiatives. Especially, there is a need for goal-oriented initiatives towards specific businesses and the specific terms that apply there. E.g. trade associations may be part of putting focus on user-driven innovation so that they can be part of preparing the ground in order for companies to invest and experiment with user-oriented processes.

4.5.2 Knowledge for User-Driven Innovation

The biggest challenge for especially smaller companies is to achieve relevant and usable knowledge about user-driven innovation. Many companies are interested in involving the users in their development processes; however it is not clear how to get started and how to carry through the processes. Therefore more focus must be put on how the companies may create a survey of usable methods as well as how they can make tools that help to decide which methods fit into their actual organisation and development processes.

Today a number of different players exist who can be involved as consultants in the companies' development processes. It may be necessary, at first at least, to contact external consultants to illustrate which methods are best for the company and which the external consultant may be able to teach the company to use. Alternatively in the long run the consultant may become the steady external partner who is attached to the company's development processes. Therefore, it is essential that first and foremost a company realises from where it can get help and inspiration in order to get started. Here, external consultants are very good to use because their professional skills (e.g. an anthropologist) often lacks in the company. First, it may be difficult for the company to find an employee in the company who has the right professional competences, qualifications and interests or on the other hand if this person does not exist, to hire a new employee. This is often a large and resourceful step – especially for small and medium sized companies. Therefore, it may be a good clear and educational opportunity to attach a counsellor within user-driven innovation to put focus on and do the user-oriented tasks in a specific

development process in a company. E.g. this might be minor field studies and observations with the users or workshops with users and relevant employees from the company.

4.5.3 Organisational Aspects

It is important that the company's work with a user-oriented development process is imbedded in the management. If a company has not worked with user involvement before it is essential that there is support and goodwill from the management. It is necessary that the company allocates time to the employees to obtain a user-oriented development process. Additionally it is considered which employees deal with the user-oriented work in the project or the actual development course. The management must support that those persons use some resources to achieve user-oriented competences. Thus, it is a conscious investment from the company to initiate a user-oriented innovation process. The experiences from the first project may then be adapted and developed in the following.

4.5.4 Methods

There is a long line of methods within *participatory design* which in a scaled edition may be applied within the private sector in other businesses than IT. In general, most methods are applicable since they are not specifically targeted towards the IT development and they can be widely used within a number of different user-oriented development processes.

The challenge regarding the use of methods is often lack of knowledge about existing methods and how these can be used in the company's development process. As a starting point it is difficult for the companies to acquire these methods. Additionally it may be necessary to adapt the methods to the individual company; i.e. the methods must be adapted to the company's actual development process, employees, goals etc. Today there are different initiatives in order to create a survey of which methods exist within user-driven innovation, but it is still not gathered and easy-accessible to the ordinary company. User-driven innovation is best learned through practical experience and therefore a kind of framework has to be created where the companies can meet and learn different methods and processes.

Another important challenge which the companies face when they have to work with user-oriented development processes is how their development process and innovation strategy must incorporate the user-oriented methods and goals. This means that the company must figure out which methods to use and not least where and when in the development process. How must the process be planned? What are the various strengths and weaknesses of the methods and how can they be combined? Again, it may be of benefit to involve external support for counselling in the planning and the development of new, more user-oriented development processes that fit the individual company.

4.6 - Dissemination, Knowledge Transfer and Knowledge Development - SINTEF ICT:[42]

4.6.1 – Knowledge Transfer

An important activity in the U-Drive:IT project was to test the methods used in the ICT business sector in other businesses. Here, SINTEF chose to collaborate with the Norwegian Design Council in order to get in contact with other businesses. The Norwegian Design Council has a large network and collaborates closely with Innovation Norway. It also has an activity focusing on how to get businesses to attract more customers when developing new products.

The purpose of the test was to try to apply user-centred methods in three companies. The plan was to carry through a meeting with the company and experts in user-centred methods. Together they were to find one activity which should be carried out by one expert based on the needs and demands of the company. The results from the methods were then presented to the company and the company was to evaluate the result value and the methods.

Through the Norwegian Design Council contact was established with three small companies within mechanical and forest industry in the communities of Hedmark and Oppland. A company that produces tools for the industry, a company who works with products based on special steel and a company who offers products and services based on specific qualities of manufacturing wood.

The first meeting was planned to identify needs and demands with the companies. In the first company the meeting was postponed because of illness. Because of this, the company had to withdraw from the collaboration because of lack of resources. In the second company, a first meeting was carried through in order to identify needs. Through this meeting it was clear that the company had entirely different needs at the moment which had to be solved before it could handle new ideas and methods. The result was sent to Innovation Norway and the collaboration was ended. Both cases clearly show that small companies are quite vulnerable and unforeseen matters are the reason why the company cannot handle new knowledge, but must focus its resources on the apparent needs and is not able to look into the future. Both companies were, however, positive when using the methods that focussed on their users and customers.

Regarding the third company, a successful meeting was carried through and based on the needs of the company an activity based on the AT-ONE method http://www.service-innovation.org/ will be carried through. This method is user-centred but it has to be carried through with three or four customers from the company. This was planned to be carried through in August. Unfortunately there was no time to carry through this activity before the deadline of the U-Drive:IT projects. However, the activity will be carried through and the results reported later. Among others, this will be done via the project AT-ONE.

42 This chapter, P.p. 85 – 86, has been written by Jan Håvard Skjetne, SINTEF ICT.

4.6.2 - Summary

Small companies have been contacted which traditionally do not employ used user-centred methods. The experiences with the companies are that they are interested in new methods in order to develop their products. Our experiences are also that small companies do not possess large margins and are therefore vulnerable. Therefore the methods which must be applied must be simple and must not require too many resources. Experiences must also be found on how the methods are used in the entire development process from idea to product in order for the companies to evaluate the risk that it is to allocate their limited resources to new methods. This exercise does not exist today and there is need of a project which can develop this knowledge.

4.7 - Dissemination, Knowledge Transfer and Knowledge Development - Innovation Center Iceland:[43]

4.7.1 Reviewing the Past

As with other economies, Iceland's has gone through significant changes over the past decades. The development of the quality management movement has had a considerable impact on the country's managerial structure. Coinciding with these changes there was an ever-growing emphasis on marketing and product development, as well as the role of the consumer in this process.

The predecessor of the Innovation Center of Iceland, IceTec, had an important role in positioning product development and innovation on the front lines of business thought. As part of this movement, IceTec established a programme in 1988 to inspire Icelandic companies to implement professional procedures in the field of product development and innovation. The major players in Iceland's economy were important supporters of this programme. This programme is still active today, although its structure has naturally developed and evolved over time.

Offshoots of the programme are educational meetings and conferences, various publications and research programmes, and two books on product development. The first book, published in 2005, is titled *Managing Product Development – Tools and Techniques for Success.*

The second publication led to a study conducted among Icelandic companies involving their product development and innovation practices, titled *Working Practices of Icelandic Companies*.

4.7.2 The Main Results of the Study

The study took place in 2007 among 31 companies from various sectors. It was partly a Net survey followed by in-depth interviews with company managers. It was patterned after similar surveys conducted by the Product Development and Management Association in the USA. The main participants were involved in the IT sector, biotechnology sector and the health-care sector.

43 This chapter, P.p. 86 - 90, is written by Karl Fridriksson, general manager, Innovation Center Iceland.

Half of the companies used formal processes and techniques in their development of new products, and the average time from idea to product marketing was 10.1 months, which is considerably shorter than comparable studies have shown. The companies were asked about their relationship with end users during the innovation process. It seems that end users in this study participated considerably. This is not surprising since generally speaking the closeness of Iceland's economy invites such interaction. However, the depth of their involvement varies according to the development stage, although about 30% of customers were involved in the entire process.

Over 73% of the companies had formal procedures for gathering product ideas. A large number of these ideas are end user initiated.

Seventy-one percent of companies in the survey had product development and innovation objectives as part of their strategy.

4.7.3 Conclusions of a Workshop Held at the Innovation Centre of Iceland on 17 April 2009

The workshop is part of the U-drive:IT project. The main objectives of the workshop were to share the experience of IT sectors in using user-driven innovation, both in Iceland and Scandinavia, and to transfer that experience and knowledge to traditional sectors. Moreover, representatives from traditional sectors shared their experiences and discussed good practices in approaching user-driven innovation.

The workshop was formed in cooperation with Søren Graakjær Smed at ApEx, Center for Applied Experience Economy in Denmark.

4.7.4 The Structure of the Workshop

Participants in the workshop were representatives from IT companies, traditional sector companies and start-ups. Representatives from research institutions also took part in the workshop, e.g. from the retail sector, University of Iceland and the Innovation Center of Iceland. Workshop discussions took place in a coffee house-like environment. There were 20 participants organised in three groups (see attachment for a complete list).

All parties in the workshop were equally represented in each group, thereby ensuring a healthy exchange of information and experiences.

At the start of the workshop, the primary objectives were described by Karl Friðriksson, managing director of the Innovation Center of Iceland, followed by a brief overview of theories and approaches regarding user-driven innovation by Søren Graakjær Smed at ApEx, Center for Applied Experience Economy in Denmark.

The key issues addressed by each group were formed and prioritised in relation to former work conducted in the programme, as well as other important issues covered in user-driven innovation literature. Each group had a limited amount of time to discuss each issue before presenting their conclusions to the other groups. The groups were given about 25 minutes to discuss each question and put keywords

to paper. Finally, each group presented their discussion points and the important issues they had touched upon. The posters that each group made up for each subject were then put up on the wall. All of this resulted in a dynamic and inspirational workshop.

4.7.5 Workshop Conclusions - The Fuzzy Front Stage of Development

This is the controversial step in the innovation process, and hotly debated among scholars. By its very nature, it is one of the most important facets in user-driven innovation.

The general consensus among participants was that there was a lack of formal, user-driven thinking in Icelandic companies, to a degree in the IT sector though mainly in traditional sectors. They viewed Icelandic companies as lacking in formal education and training, as well as knowledge of how to involve the customer in their development work. Most agreed that the performance of Icelandic companies would improve if this would be turned around. However, participants believed that Icelandic companies benefit from operating in a society that is so closely knit.

The Icelandic market demands a high level of quality and services, and companies quickly suffer if these demands are not fulfilled. This high standard of goods and services helps companies to enter other markets and compete on a global basis. The companies use traditional methods of approaching customers, e.g. conducting interviews, using focus groups, tapping knowledge from sales people, and transferring knowledge gained from user experiences of similar products and services.

Cases involving user-driven innovation in development work were discussed in the Fuzzy Front stage, for example the companies 66° North and Össur. An example of a bad case in this category is the Reykjavík City Bus System.

Tools and Techniques

This subject covers the innovation processes as well as working with a user in each stage. There was a general attitude among participants that Icelandic companies "just go for it," i.e. implement an idea without sufficient preparation. This type of thinking originates from centuries of living in a harsh environment where survival often depended on being able to quickly take advantage of whatever opportunities nature presented.

There is, however, increasing use by Icelandic companies of development processes, some originating from theories of quality management, others from product development and project management, and still others from processes used in many IT companies. In these processes there is also a growing implementation of tools to involve end users in development work, thereby improving the final product or service.

These tools can be formal marketing research, surveys, focus groups and social networking. As before, participants saw the closeness of Icelandic society as benefitting Icelandic companies when interacting with end users of products and services. Participants also stressed the importance of education to improve the implementation of best practices in research and development work by companies. This is a role of universities and other educational institutions. It was felt that new approaches were important to

keep up with changes in the society. In this respect, the Net community provides a multitude of opportunities.

Cases of Success and Failure
Two or three case studies will be presented in this programme as part of discussion among workshop participants on successful and unsuccessful examples of user-driven innovation. One of the best-known cases in this respect is the development of off-road vehicles that have the capability to traverse extreme environments, for example Antarctica and the Sahara Desert. This work has grown significantly in recent years, and its success is close cooperation and knowledge sharing between drivers and developers.

The introduction of Agenda 21 to the City of Reykjavík is another successful example of user-driven innovation, where the main criterion was to involve residents in the programme. CCP, an interactive virtual reality game developer, is another good example of a company employing user-driven innovation. The company continuously involves users in development work.

Other successful examples of companies incorporating user-driven innovation are Vaki, developer of hi-tech equipment for fish farming and the environmental market, Nox Medical, developer of products for researching the sleeping habits of children, Össur and Marel.

A recent case of user-driven innovation arising from the "ashes" of Iceland's economic crash is a programme conducted by the Ministry of Ideas, operated by private individuals and run as a non-profit organisation, is the program Iceland's Future. It involves kids and their families on a massive scale, all working together to make a better future for Iceland.
Many examples of failure were mentioned in the workshop, both in the public and private sectors, which will not be dwelled on here. However, there was agreement among the participants that in general companies did not pay enough attention to consumer needs in their research and development work. There was also discussion among participants concerning loss of quality from the product concept to the end product. To remedy this situation, involvement by the end user is critical.

Who is the End User?
When considering user-driven innovation, it is important to include the buying process of the product and service to be able to identify the needs in question. There are of course the needs of the end user, but the needs of the various parties in the distribution chain, as well as the needs of those who influence purchasing patterns, must also be considered. These include those who create awareness, who make purchasing decisions and who make the actual purchases, as well as those who pay the bills. Among participants in the workshop, this was seen as an important aspect of each innovation project, and one that is undervalued by developers.

The Designer and the Customer
Participants in the workshop agreed that the designer and the customer are intrinsically linked and have to be part of the product from the very beginning. Society is moving from mass production to customised products, and the customer therefore needs to be more involved in the development process. It was stated in the workshop that in reality everybody is his own designer, driven by individual preferences,

from morning to night. Although there has been a significant shift in attitude towards design in the Icelandic business community, some sectors still lack an understanding of the important role that designers play in development work. Unfortunately, some designers look upon themselves as artists rather than as participants in an industrial process that aims to fulfil the needs of end users.

Participants at the workshop
Þórður Höskuldsson, Outcome
Sævar Kristinsson, Netspor
Kristín Björnsdóttir, Focal/Hópvinnukerfi
Baldur Sigurðsson, Hugur Ax
Anna María Pétursdóttir, Vífilfell
Þórhallur Örn Guðlaugsson, Háskóli Íslands
Kristín Halldórsdóttir, Nýsköpunarmiðstöð Íslands
Rósa Signý Gísladóttir, Nýsköpunarmiðstöð Íslands
Emil Karlsson, Rannsóknasetur verslunarinnar
Hilmar Tómas Guðmundsson, V6 sprotahús
Þorvaldur Finnbjörnsson, Rannís
Björgvin Filipppuson, Kompás
Jónas Björgvin Antonsson, Gogogic
Guðný Káradóttir, Gagarín
Fanney Frisbæk, Nýsköpunarmiðstöð Íslands
Kristján M. Ólafsson, Netspor
Grétar Árnasson, GÁ húsgögn
Kristín Gunnarsdóttir, Hönnunarmiðstöð Íslands
Lena Heimisdóttir, Háskóli Íslands
Karl Friðriksson, Nýsköpunarmiðstöð Íslands

4.8 Other Transfer Courses Related to the Project

As already earlier mentioned, there has been other examples and projects currently initiated in the U-Drive:IT and other projects that deal with user-driven innovation with origin in or with inspiration from the ICT area and which now attempt to apply these methods within areas and subjects which are not entirely ICT related. Some of these are represented by thorough individual contributions in the project anthology:

Some of the articles in the anthology are:

Søren Bolvig and Lars Botin: Examination of the possibility to work with video in user-centred design. After long theoretical deliberation on innovation and video observation as method, the article reports experiences and results from two cases. A research course where the introduction of an electronic patient journal in a hospital ward has been observed, analysed and evaluated. A workshop - LUDINNO - where students and researchers together have tried to use video and specifically the video-sketching method to develop new methods for user-driven innovation and design.

Thomas Fabian Delman and Rune Nielsen describe in their contribution the relation between ICT and urban development processes at both a practical and a theoretical level. Within this framework the AELIA model is presented which stands for attention, experiences, learning, influence and action in connection with citizens in various urban development processes. Thus, a tool for how to involve the citizen and create a constructive active dialogue in urban development processes. Furthermore an actual example is given on the use of the model in connection with a project initiated by Aarhus Municipality, which deals with limiting the CO2 exhaustions by informing and involving the citizens of Aarhus.

Lene Nielsen estimates in her contribution how the personas method originally developed within the ICT development area can be applied positively in other connections. Lene Nielsen describes how personas can be used as part of a user-driven development process and exemplifies specifically from a project she has participated in together with the Danish dairy company Arla Food amba where the purpose was to improve the canteens in the company.

Furthermore Karl Fridriksson contributes to the project anthology with an article that accounts for the many connection lines between scenarios which are known from futurology and user-driven innovation. Both approaches involve understanding of trends and developments and aim at being able to act better in a future perspective even though the superior purpose traditionally has not been quite the same. The article also points towards areas where both approaches may supplement each other in a fruitful way.

Finally this chapter about knowledge transfer about methods, processes and tools from the ICT area to other fields and businesses is concluded with a more thorough example on how one can think of a learning exploratorium for developing methods for user-driven innovation through the video medium and other visually-oriented techniques. The example originates from the already mentioned LUDINNO workshop which was successfully held in the autumn of 2008 why the research group behind the workshop now attempts to develop the concept for another event which has the preliminary work title U-CrAc – User-Driven Creation Academy. In many ways, U-CrAc is an example of how to think limited concepts to develop user-driven innovation processes – supported by ICT tools but applied to a long line of different areas and concepts.

4.8.1.1 U-CrAc: User-Driven Creative academy[44]

In September 2008, a reflecting innovative workshop with students from Aalborg University as well as the University College of Northern Denmark, was held as an experiment. The focal point of the workshop was to create innovative product and service solutions in user-driven collaboration primarily with regional clients.

44 This chapter, Pp. 91 - 96, has been written Claus A. Foss Rosenstand, Institute for Communication and Psychology, Aalborg University. An extended version of this chapter can be found in the project anthology.

The user-driven process was scheduled for a-3½-week-period in an iterative course where prototyping was done through digital media solutions which, to a very high degree, supported various communicative situations.

As the clients found the results interesting and innovative there is basis for creating a more solid relationship between the multidisciplinary, inter-institutional collaboration. The development of such boundaries and planning of the next reflecting innovative workshop U-CrAC One has been made within the project U-Drive:IT.

Partly inspired by the Danish Academy for Digital Interactive Entertainment – DADIU[45] – the collaboration is towards an academy structure: U-CrAc as this structure meets a number of organisational challenges that are normally characterised by multidisciplinary and inter-institutional collaboration.

The ambitions behind U-CrAc are wider than a yearly reflecting innovative workshop named U-CrAc One, U-CrAc Two etc. The principal organisers behind U-CrAc also see the opportunity for other fruitful IT supported user-driven activities together with the companies and other partners in the region. The aim is towards a continuous development of IT supported user-driven innovation through education based research and development of case based workshops in collaboration with companies and different educational competences.

Firstly, this section accounts for form and content, planned for U-CrAc One, and the underlying innovative and user-driven pedagogy.[46] Then, the ambitions with U-CrAc are described.

4.8.1.2 U-CrAc One

Through conventional theoretical lectures, knowledge of innovation are elaborated, *innovation knowledge*; however, when the perspective is improvements of practice adequate innovative skills must be added.

Innovative skills are the ability to transform innovation knowledge into goal-oriented innovative actions.

The pedagogical concept behind U-CrAc One and the following workshop is called a reflecting innovative workshop which is a pedagogical method that ensures connection between innovation knowledge and innovation skills.

Video based user-driven methods will be used, as these methods are especially conducive for transforming knowledge into action.

The reflecting innovative workshop was held in the autumn of 2008 during a period of 3½ weeks. The experience of the workshop was that the courses must be directly oriented towards user-driven innova-

45 DADIU –www.dadiu.dk

46 This is based on Poulsen and Rosenstand (2009) which is being published at the moment. Parts of the text are a rendering of this article's analysis of an accomplished teaching activity where focus, in this article, is on the planning of U-CrAc One. Special thanks for Søren Bolvig Poulsen, PhD, assistant professor in Industrial Design, Department of Architecture and Design, Aalborg University.

tion and towards the digital tools used by the students during the workshop. At the same time, the realisation activities took too long in getting started. Therefore, U-CrAc One has been planned as a three-week-course as seen in figure 9 below. [47]

Observation & User Analysis	Week 37				
Location: University College Nordjylland, UCN Selma Lagerløfs Vej 2 9220 Aalborg Ø Location leader: Ole Mygind	08.30 Introduction: Ole Mygind Claus Rosenstand Mikael Skov Søren Bolvig Poulsen 10.00 Get together with companies.	08.30 Lecture: Ethnographic field-work + use of video Søren Bolvig Poulsen	08.30 Lecture: How to prepare video workshop Søren Bolvig Poulsen Analyzing user needs Ole Mygind	08.30 Groupwork: Video workshop reparation	08.30 Groupwork: Video workshop reperation
	Project information & discussion Lecture: User Driven Inno. Mikael Skov Claus Rosenstand	Fieldwork in user con-text	Fieldwork in user con-text	Groupwork: Video workshop reparation	13.00 Workshop with com-panies and institutions Method: Video Card Game [Problemframing]
Ideation	**Week 38**				
Location: School of Humanistic Informatics, AAU Kroghstræde 1 9220 Aalborg Øst Location leader: Claus Rosenstand	09.00 Lecture Bodystorming Søren Bolvig Poulsen Mikael Skov	09.00 Lecture & workshop Videosketching Andreas Lykke Olsen	09.00 Lecture & workshop Videosketching Andreas Lykke Olsen	09.00 Lecture & workshop Videosketching Andreas Lykke Olsen	09.00 Groupwork: Videosketching
	Groupwork: Ideation through bodystorming	Workshop Videosketching Andreas Lykke Olsen	Workshop Videosketching Andreas Lykke Olsen	Workshop Videosketching Andreas Lykke Olsen	13.00 Workshop with com-panies and institutions Presentation of video-sketches [illustration of differet ideas]
Concept development	**Week 39**				
Location: School of Architecture and Design, AAU Gammel Torv 6, Tegnesalen + værksted 9000 Aalborg Location leader: Søren Bolvig Poulsen	09.00 Concept communica-tion as narration Claus Rosenstand	Groupwork: Concept development	Groupwork: Concept development	Groupwork: Concept development	Presentation of final concept to the com-panies and instutu-tions
	Groupwork: Concept development	Groupwork: Concept development	Groupwork: Concept development	Groupwork: Concept development	

Figure 9: *U-CrAc One has been planned as a three-week-course*

The purpose of U-CrAC One is to provide the students with innovative skills of creating innovative solutions based on IT supported user-driven methods in interdisciplinary connections.

As written, the concept has been implemented and tested once during a full-time reflecting workshop of duration of 3½ weeks for 66 students from four different educations.

At the beginning of the workshop, e.g., knowledge of user-driven innovation is provided as well as instruction in specific digital video tools like *Adobe After Effects* when the students are working with video

47 Søren Bolvig Poulsen has designed the schedule.

in specific ways. Thus, the presented knowledge is combined with the activities of the students which ensure a reflection in practice – please see the chapter: "Pedagogy".

The predicate 'innovative' is about the focal point of the reflecting innovative workshop – namely transforming innovative knowledge into innovative activities.

4.8.1.2 The Multi-Disciplinary Frame

U-CrAc One is offered to students from different educations that all strive towards an innovative design-oriented practice as an active part of the education. Despite this common prerequisite, the educations are versatile. At Aalborg University the education is offered to students at two faculties: The Faculty of Humanities including educations like MA in IT in Interactive Digital Media and MA in IT and Experience Design; The Faculty of Engineering, Science and Medicine including educations in Industrial Design and Computer Science; and the University College Nordjylland including the health-oriented educations in nursing, radiography, midwifery and occupational therapy.

The choice of the interdisciplinary educational model has been made based on the knowledge that, to a significant degree, interdisciplinary situations in an open culture increase the probability for an increased innovation height. Thus, students with different disciplines are provided to the same case, where the idea is to choose, combine and prioritise with regards to the innovative work (Rosenstand, 2008: 23).

The students will be working in interdisciplinary groups of typically five to seven members with specific cases presented by the clients. Experiments will be made when giving the individual students specific responsibilities that reflect their professional profiles which can be seen from the figure below.

Experience Design	**Health Care**	**Strategic Design**	**Digital Media**	Computer Science
Events	Body	Design driven innovation	Communication	System Development
Storytelling	Activity	Co-creation	Interactivity	It design
Aesthetics	Participation	A/V Prototyping	Games	Implementation

Figure 10: *The interdisciplinary elements at U-CrAc*

U-CrAc is an open structure for educations that deals with user-driven innovation as an essential element in the professional work. Therefore, the above figure is short term for how the students on the individual educations in a unique way may contribute with their professional profile in user-driven processes. The survey is essential regarding defining which roles the different students have in the interdisciplinary work where skills must be chosen, prioritised and combined as regards the case they are facing.

4.8.1.3 The Case-Oriented Frame

In preparing for U-CrAc One contact is made to the various regional clients (companies and organisations) where different cases are discussed and evaluated concerning the workshop boundaries and the professional competencies and skills of the students. Furthermore, the expected degree of contribution is made clear to the clients – both in terms of time and user access.

The job of finding suitable cases is relatively comprehensive because some matching of expectation with the clients is needed. Therefore, this work is divided in the teacher network behind U-CrAc.

It is standard in all cases that the clients have a need for innovative solutions regarding user needs – and that the user needs are implicit knowledge. Implicit knowledge which the students transform into explicit knowledge through visual IT supported user-driven methods.

An example from the workshop in the autumn of 2008 shows collaboration with the involved clients and an establishment of contacts to relevant users in private homes, in places of work and in the public space. During the workshop, innovative solutions were created based on the clients' needs. Three examples can be seen in the below figure[48].

Client	Sphere	Users	Client needs	Solution
B&O	Private	Viewers	New Interaction forms	Virtual remote control + device
Focus Folkeoplysning	Workplace	Misusers	Motivate work	Transform urban space into workspace
Nordsøen Oceanarium	Public space	Visitors	Activate area	New interior + game play

Figure 11: *Overview of three innovative solutions*

The solutions described in the above figure must of course be demonstrated in the entire visual form in order for the innovation height to become obvious. The final video sketches can be seen in the following links:

- B&O: http://ludinno.wikispaces.com/BeO
- Fokus Folkeoplysning: http://ludinno.wikispaces.com/fokus+folkeoplysning
- Nordsøen Oceanarium: http://ludinno.wikispaces.com/Oceanarium+2

4.8.1.4 Perspectives of U-CrAc

The U-CrAc vision is to create new methods for IT supported user-driven innovation through education based research and development of case based workshops in collaboration with companies and different educational professional competences.

48 Thank you to the students who participated in the innovative reflecting workshop in the autumn 2008. Without them and their innovative contributions the making of this section of the report would not have been possible.

The mission is to involve companies with the customer-oriented innovation needs in the teaching based research courses that result in innovative interdisciplinary processes and design solutions.

The U-CrAc strategy is to create a network that explores the digital media's interactive potentials in order to facilitate and disseminate innovation design processes. U-CrAc aims at inviting relevant companies to participate in interdisciplinary design-oriented educational relations – across studies, faculties and institutions.

Educational activities: Workshops as U-CrAc One held in the autumn 2009. This workshop is regular, however titled U-CrAc Two in the autumn 2010 etc. Furthermore, various seminars customised for companies (clients) are a part of the plan.

U-CrAc attaches great importance to the communication of digital media's potentials of facilitating and disseminating innovative design processes. Both through publication and education.

Organisationally, plans are made to create fixed boundaries around U-CrAc through an academic organisation where user-driven education based research courses are prepared in an open form so that the various educations can include U-CrAc activities into their careers guidance's and/or study programmes.

In the long run the ambition is that U-CrAc is founded with a board, a steering committee and an advisory board; where all interested parties are represented.

The academy structure has been inspired from the Danish Academy for Digital Interactive Entertainment – DADIU which is an amalgamation of nine university educations and three art schools. The loosely connected organisation in DADIU makes it possible that students from the individual institutions may participate together in different educational courses and through this relieve local examinations at the individual institutions.

Thus, U-CrAc addresses, just like DADIU, a challenge which most educations have; namely that the student is attending an education where he is taught skills and trained within one special discipline – together with students with the same skills within the same special discipline. However, when the student graduates and finds a job, normally he/she will enter into a working culture where collaboration between a long line of different disciplines and skills is necessary.

5.0 Conclusion and Recommendations

The U-drive:IT project has been based on the assumption that the field of IT has been the leading area for user-driven innovation through the last couple of decades. The basic idea behind the U-drive:IT project has therefore been to identify, examine and transfer experiences, methods and practices within user-driven innovation from the IT area to other businesses and fields such as industrial design, product development, social services, entertainment industry, experience economy etc. – in order to realise the unutilised potential in IT based user-driven innovation methods.

Based on the project course it can be concluded that the gathered knowledge, cases and accomplished activities of the project only confirm the above starting point. ICT offers a lot of methods for working with user-driven innovation which can be used in many other fields also and ICT is the central tool for companies and public authorities when they want to work with user-driven innovation today and in the future. Below the most pivotal conclusions and discoveries of the project will be described.

Overall the project shows that the Nordic tradition for ICT research and development named the Scandinavian Participatory Design Tradition has a special position of strength regarding user involvement and user-oriented design. A tradition originating back to the end of the 1960ties and which during the 1970ties and 1980ties was developed via collaboration between research environments, unions and companies. From the end of the 1980ties the field has become more diversified in relation to object areas and methodical and theoretical approaches. However, there is no doubt that the heritance from a tradition that has attached importance to user-oriented and user involving design and development still plays a central part in many Nordic ICT development environments and that to a great extent we are still in the phase of the Scandinavian Participatory Design Tradition which is often called co-operative design. The report also shows that to a great extent the development has moved from orientating itself towards a narrow work context towards a more general product, concept and service development-oriented approach. Thus, the tradition has gradually moved into a broader application field where methods and processes are also developed and applied within a purely commercial field. It is thus obvious that Nordic companies and institutions to an even greater extent than we see today seek inspiration for user-driven innovation in the Scandinavian ICT research and development environment. More examples and cases described in the report and in the anthology prove how methods and processes originating from the ICT field successfully have become or are thought applied within other areas such as culture, energy control, water supply plants, farming industries, wholesales, and a long row of other sub-businesses. E.g., this can be seen in detail in connection with Lene Nielsen's article that describes the development of canteens in the ARLA concern.

Besides the methods, processes and experiences with user-driven innovation, which originate directly from the ICT field the project and the report also point out that ICT as a tool or as a platform for user-driven innovation has come to play an even more pivotal role and that this probably will increase in the future years. In several cases and examples described in both the report and in the anthology the ICT platforms play directly or indirectly a pivotal role in the user-driven innovation process. E.g.: In connection with user-generated content the new social and interactive platforms are irreplaceable in the production and distribution of material, in connection with participatory urban development the IT

product plays an important part, and in connection with logistics and communication in the distribution of exclusive food a user-friendly IT system also plays a very important role. At the final conference of the project the presentations also showed that ICT tools and platforms in their efforts to communicate with and to learn of their user are pivotal methods and a strategy from which basically all companies and institutions may benefit[49].

In the interviews and case studies made in the project and which are described in the report one can get a more thorough view of what are the most obvious potentials, problems, successes and experiences in user-focussing and inclusion of ICT and system development. The summary below holds some of the most manifested reflections that user involvement and user-orientation in connection with development and design cause:

- it qualifies the users to take action to the IT tools that they use in their everyday lives
- it creates a mutual qualification process between the developer and the user
- it influences the future technology so it makes sense to the users
- it creates relevance and embeds the product and the design regarding the way in which people actually live
- it activates the users in the co-creation of the future technology
- people and their needs are taken seriously
- learning processes are initiated at the users and does not only fish for user data
- it helps people make demands for the technologies they constantly meet in their everyday lives
- it shows users respect so that they will not be used to legitimise something that would have been done anyhow
- one becomes capable of designing solutions that improve the work practises of the users via future-proof technology
- the user becomes alive to the designers that achieve a nuanced relation to the users and the real world. It makes sense to the designer and all involved parties in the development process to know the user and thus the development work becomes in itself more meaningful.
- it can find ideas and knowledge which are else difficult to identify
- it continuously troubleshoots and thus continuously revises and improves the development process
- it ensures that the designers are challenged and reality-oriented
- ”lead users” can build bridges to ordinary users and provide valuable inputs when they participate in platform tests
- etc.

Thus, this is dealing with qualities which are part of creating better and more directly applicable products and ensure a big openness and dialogue between user and producers and thus probably also a larger goodwill from the users regarding the producers. Therefore it is necessary for companies and

49 See e.g. the presentations from Martin Buck, Bandbase and Marika Lüders, SINTEF ICT from the U-drive:IT final conference at: http://www.apex-center.dk/index.php?option=com_content&task=view&id=207&Itemid=164

public authorities to think user-driven innovation processes into their future product and service development.

A user-driven innovation process may be planned and accomplished in many different ways. However, there are a number of superior rules of thumb, which must be taken into consideration:

- It is essential in advance to plan the user-driven processes in a complete development and innovation course in order for this work to be completed on an equal footing with the other processes in the development work
- The approach to user innovation may change along the way when one is aware of the lack of knowledge regarding some of the user relations
- A user innovation process is often characterised by iterations in the way that new acknowledgements are continuously reached by the various user involvement courses, adjustment of the product and then the making of new user innovation courses etc. until a satisfying level has been reached
- The most essential steps in the planning process are:
    - *Naming of a responsible person*
    - *Identification of interested parties*
    - *Identification of user groups*
    - *Prioritisation of user groups*
    - *Selection of activities, methods and course*
    - *Embedding of plan in the total development project*
    - *Identification of goals – where to begin and where to end?*

It is essential to understand that there is not one method that can do it all. A process must be put together consisting of a number of different methods which are selected in proportion to the individual case or problem.

Additionally one has to be aware that a user innovation process may be resource demanding why it must be evaluated beforehand how much it pays to invest in the process regarding the total development course. Another challenge may be to build up methods and processes that carry one from knowledge about the users and user inputs to actual development and design. Here, it is necessary to build up an infrastructure which makes this possible and to involve experienced designers and developers who have the ability to include knowledge about and input from the users in the actual products and designs.

Commercial user-driven innovation may be an appropriate strategy to apply in new markets where navigation is done with some uncertainty. In these years, new markets pave the way for the globalisation in big style why Nordic companies and institutions are under pressure to import an ICT infrastructure that ensures dialogue and development with their potential users. In that connection many small and medium sized companies express their need for more knowledge, resources and counselling concerning the identification of ICT applications and systems that may be applied in order to get into dialogue with and knowledge about the users.

Knowledge Transfer
In the auspices of the project several explorative tests with knowledge transfer in connection with workshops, interviews and inspiration cases have been made. These different inputs show a large need for new ways to involve users as well as and not least a large potential for applying more ICT or user involvement methods from the field of ICT.

A number of workshops including theoretic and actual cases with specific focus on the cultural area show that within the cultural area there is great potential in, to a great extent, to involve new ICT technologies in order to reach the users in new ways, creating new products together with the users and learn what the users would like and how. The development through social media, large continuous interaction between user and cultural places, the creation of dynamic volunteer groups etc. is suggestions and possibilities that are left as possibilities for the cultural institutions involved. For the cultural institutions it means to further understand what the users would like to have, how they may attract more users and about being able to develop new ideas, offers and products together with the users or based on elaborated knowledge about their wishes and behaviour. Thus there seems to be a big potential in adding both knowledge about user-driven innovation and knowledge about new ICT technologies for the cultural area and through this seek to develop the area in a new way.

Adequately a number of case descriptions show that there is great need for working more with user-driven innovation based on the ICT area and there is a large potential in this development form. Among others, work has been done with so-called image probes in connection with developing a new digital dissemination platform for museums, work has been done with interviews, cultural probes, workshops and mock-up development in connection with developing an automated energy control unit for private users. Interviews, video observations and modelling etc. have been used in order to illuminate water supplies and private customer values and conceptions of each other. A number of development interviews have additionally shown that within a long line of different businesses outside the ICT area there is a large wish for working more user-driven and, to a greater extent, involving this perspective in the development and innovation processes.

Common to these various courses and cases are that the companies lack resources to handle the user-driven innovation. Especially the one that originates from or involves technology based solutions lack clear guidelines for how to get started and not least knowledge about when and in which connection it would be sensible to work actively with user-driven innovation.

Finally, a research group at Aalborg University has gradually worked with making interdisciplinary workshops where students work with actual company cases based on different user-driven innovation methods. Fine results have been produced so that the group now tries to formalise and embed the concept and the work form into an actual academy called U-CrAc.

Recommendations and Suggestions for Political Initiatives
The report and the different descriptions and cases in the anthology are quite unambiguous in their evaluation of the importance of ICT regarding working with user involvement and user-driven innovation. Today ICT plays an important part and this will increase in the future. Therefore, it is essential to develop business political models and aid schemes which promote company use of ICT tools in their

dialogue with users. It might be programmes that favour projects that use new technological platforms in their user-oriented innovation target or it might be counselling programmes that put specific weight on working with integration of user-driven innovation and new ICT platforms. Both models will be direct and relatively flexible channels for companies and institutions.

The companies and institutions involved in the report also express rather concurrently that a critical barrier for them regarding working with user-driven innovation is the lack of resources, the lack of technological insight and the lack of knowledge about methods and possibilities. Additionally, small companies must, at the organisational level, become ready to work with user-driven innovation. Thus, there is a need for developing the management and organisational level in the companies, provide them with more knowledge about ICT and user-driven innovation and not least teach them to see the possibilities of this field. It is therefore natural that any further business political initiatives are directed especially towards small and medium sized companies and towards public authorities and institutions. The latter, as the potential to develop better citizen services and offers through user-driven innovation, must be evaluated as being very large. A possible model could be, to an even greater extent, to give greater priority to knowledge about new ICT and user-driven innovation in the regional business support programmes and the regional business counselling systems. One way of quickly intensifying the initiative could be to establish a number of investigative networks that gather and map competences and players within the area. Such networks will demand a substantial initial capital in order to have impact.

It is estimated that large companies, to a greater extent, possess the resources themselves to initiate and accomplish large user-driven innovation projects and create the necessary infrastructure and platform. Even large companies have, however, the need for current supply of knowledge from research programmes and other projects.

At the same time it also indicates that there is still need for providing more targeted knowledge about user-driven innovation processes and produce actual application oriented guidelines created on solid well documented research works. Thus there is a need for more research and programmes for this that work disseminating and applicable with this research. A programme that establishes the bridge between the various research projects and environments within the field and the business support systems that must facilitate the application of user-driven innovation and mature the companies to apply this would be an evident opportunity.

As stated above, an essential part of the companies' competition parameters regarding user-driven innovation globally – as well as in a Nordic context – might consist of competence development, knowledge gathering, organisational development, ICT development and implementation etc. In the long run there is a need for strengthening the competences within these fields in the Nordic area if in the future Scandinavia is to be able to still achieve the right benefit from user-driven innovation.

Even though all development and innovation processes of course demands a certain expertise regarding the product or the concept then user-driven innovation is an interdisciplinary field where many different skills and professions must meet necessarily. At the same time, it is also an area that cuts across the value and production chains in companies and organisations. Thus there is a need for employees that besides the basic conceptual and methodical competencies in user-driven innovation also are capable of

working in transverse teams and across company departments as is seen today. Likewise the user-driven innovation employees must have insight in ICT which enables them to make qualified choices regarding ICT applications in the user-driven processes and spare with ICT development units about the development of the right tools.

It can be stated that the competence needs are:

- to strengthen the ICT fields regarding research, education and development in the Nordic countries as the ICT qualifications and applications become an entirely central performance parameter for the companies as well as the public authorities and institutions in the future. Specific focus should be placed on which ICT competences and applications that stand centrally concerning user-driven innovation and to dedicate research and educations directly to these

- to strengthen the educational areas that deliver the basic tools and methods that are applied in user-driven innovation. I.e., a long line of educational fields from the humanistic and social science areas (anthropology, ethnology, sociology, innovation management, HCI, interaction design, experience design, design, architecture, and computer science etc). Within all main areas there should be – if not a newly established interdisciplinary cohesion – established educations or courses that work specifically with user-driven innovation based on the field in question

- to establish at least on research and education unit in each Scandinavian country that works specifically with user-driven innovation across professional boundaries, production boundaries, sector boundaries and sales boundaries etc. I.e., units in which research and education is provided regarding methods/tools, development processes, implementation, tests and innovation control, communication as well as sales and evaluation with regards to user-driven innovation

In due time, these initiatives will become part of ensuring that the Scandinavian countries maintain the position of strength that they have had in proportion to both user involvement in many of the societal routines and processes and regarding ICT and user involvement.

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Nordic Innovation Centre

Nordic Innovation Centre

Nordic Innovation Centre (NICe) is an institution under the Nordic Council of Ministers facilitating sustainable growth in the Nordic economies.

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