Project description

1) Summary

In this research project the concepts of user driven innovation and innovation processes in the practice of virtual worlds (VW) e.g. *Second Life* and *World of Warcraft* are studied with reference to three empirical fields: 1) new market dynamics and management, 2) social and cultural innovation and 3) knowledge construction. User driven innovation will be understood as the meaning-generating processes and sense-making strategies of innovative *practices*. The aim in terms of theory is to explore and evaluate the applicability of sense-making theories and methodologies (Dervin et al., 2003) in interplay with the actor network theory concepts intermediaries (non-human actants) and mediators (human actants) (Latour, 2005), when used as a basis for understanding the concepts, and phenomena of innovation and innovation processes in a practice. Also, the pivotal interest is in developing concepts and methods for analysing and facilitating the communication of research understood in dialogic as communication designed to contribute to socially innovative interactions between different actors in society and their knowledge forms (Gibbons et al.1994; Nowotny et al.2001). Therefore, the research groups are particularly interested in how communication forms and knowledge forms interact. In the study of virtual worlds the methodological reflection is embryonic, yet a distinct field is in the making, one that focuses on the study of avatar based interaction and communication (Guimararães, 2003; Schroeder, 2002, 2006; Williams 2007). The project is meant to contribute to qualitative research that explores how conceptions of space, body and person influence design, use and change of/in virtual worlds when interaction and communication is avatar-based. On the Danish scene, virtual worlds and their potential are still a relatively new domain, in contrast to the many international experiences. For this reason the project prioritizes collaboration with actors with experience in the field, so that effect and relevance may be assessed on the basis of knowledge about Danish initiatives - in interaction with international findings. Partners of the project are: Roskilde University: the interdisciplinary research group *Communication Forms and Knowledge Production*, Copenhagen Business School: the interdisciplinary research group *LIKE – Leadership, Innovation, Knowledge and Entrepreneurship,* UNI-C - *Centre for Education and Research* in collaboration with the DK*CERT *Computer Emergency Response Team,* and the private firm consultancy *Innovation Lab*.

2) Objectives of the project

The objectives are *(1)* through theoretical and methodological reflection to discuss the concepts of user driven innovation and innovation processes in the practice of virtual worlds (VW); *(2)* critically to analyse such innovation processes and potentials in collaboration with actors in virtual worlds; *(3)* to develop process- and dialogue-oriented methods for collaboration and the communication of research with actors outside of the scholarly community; *(4)* by means of qualitative case studies to provide empirically based research knowledge about innovation in virtual worlds through the application of active observation, qualitative methods and methods of intervention in the areas of: *new market dynamics and management, social and cultural innovation, construction of knowledge and knowledge sharing*; and *(5)* to enhance the position of Danish research in international research communities. User driven innovation will be understood as meaning-generating processes and sense-making strategies. The aim in terms of theory is to explore and evaluate the applicability of sense-making theories and methodologies (Dervin et al., 2003) in

interplay with the actor network theory concepts intermediaries (non-human actants) and mediators (human actants) (Latour, 2005), when used as a basis for understanding the concepts and phenomena of innovation and innovation processes in a practice. Moreover, it is a key aim to develop a process oriented publication strategy as part of the methodological studies in the communication of research. Project partners are: Roskilde University: the interdisciplinary research group *Communication Forms and Knowledge Production*, Copenhagen Business School: the interdisciplinary research group *LIKE – Leadership, Innovation, Knowledge and Entrepreneurship*, UNI-C - *Centre for Education and Research* in collaboration with the DK*CERT *Computer Emergency Response Team,* and the private firm *Innovation Lab*.

3) Assumed significance of the project's main results

Assertions about the significance of virtual worlds (*Second Life* and *World of Warcraft* in particular) for innovation, business and society dominate the media and public debate. Examples range from huge profits made from the sale of virtual products to claims that virtual enterprise will never be profitable. Is it worthwhile to invest time and money on virtual world business and presence, or is it just a waste of resources? A need exists to establish a basis for evaluating the new field both in a private and a public framework. The numerous experiences of foreign actors have a major impact on Danish ideas and initiatives. However, it is important also to assess the potential relative to Danish conditions. Even among the existing Danish initiatives there are different assessments of potential and relevance. Some companies see grand perspectives, others hesitate while seeking a better basis for assessing. On the Danish scene, virtual worlds and their potentials still represent a relatively new domain, in contrast to the many international experiences. For this reason the project prioritizes collaboration with actors with experience in the empirical fields of new market dynamics and management, social and cultural innovation, and knowledge construction, so that effect and relevance may be assessed on the basis of knowledge in and about Danish initiatives – in interaction with international findings.

In other words, the *project will constitute and establish a new field of knowledge and research*, the ambition being to establish an internationally significant research environment. The project's social significance will manifest itself in research-based knowledge about *innovation management*, *production* and *experiences* in virtual world companies, services and/or events; the formation of *user networks* in innovation in virtual worlds; new forms of communicating for, among others, public institutions (this currently being knowledge actively sought after – cf. the initiative *'Tværoffentligt vidensfoum om virtuelle verdener'* (Cross-public Knowledge Forum on Virtual Worlds) and the extensive library project 'Info Island: Biblioteker i Second Life' (Libraries in Second Life)); as well as the many educational potentials in virtual worlds and perspectives for knowledge sharing in organizations, exemplified by simulation and prototyping, cf. the initiative Masters of Virtual Worlds (*Virtual Centre for Digital Media – University Project*).

4) Premise for the project

Today, virtual worlds such as *Second Life*, *EverQuest*, *Eve* and *World of Warcraft* are inhabited by millions of citizens and/or role players, all of whom are actors in a global universe. It is a break-through of mass character (Woodcock, 2006). Virtual worlds are complex and cannot be compared to the more simple action games. They involve intricate systems and several races, classes and characters that can be upgraded as they gain experience and rise in 'level' (intelligence). They are constantly challenged in extensive 'zones' with numerous quests that are often personified by

computer-mediated non-person characters (npc). In a world such as *Second Life* the virtual world residents and their co-design are pivotal. Proficiency in L-script conventions facilitates the creation of self-produced objects; and systems exist for trading objects and virtual property in the L$ currency. Here too there are vast regions in which to create. The complex virtual worlds have brought about new forms of communication, organisation, management, and knowledge sharing and market dynamics. They facilitate user driven innovation. Dedicated 'communities' exist such as entrepreneurial initiatives, innovation in knowledge sharing; production of, trade in or exchange of popular virtual objects, production; rental or trade in virtual real estate, and more. But also services and products of enterprises with an existence outside of virtual worlds are involved. The project entails collaboration with actual virtual world users in order to examine cases and examples of user driven innovations and their potential. Examples may include trade, production and finance (e.g. *Saxo Bank, Danish Design*), consultancy and management (e.g. *House of Horizons: Innovation Lab, IBM and Computerworld*), services (e.g. *Wonderful Denmark*, *Tourist board, PowerMatch*), cultural events (e.g. *Roskilde Library Hangouts, Libraries in Second Life*), educational purposes (e.g. *UNI-C, Saxo Bank*) new forms of organisation, collaboration and management (e.g. the *Daedalus project*); as well as the construction of knowledge and knowledge sharing evolving in virtual worlds.

In Denmark, virtual reality has been a field of research for quite a long time. Findings have been summarized by Lars Qvortrup and Peter Bøgh Andersen (2004). There are also well-established computer games research environments. One such research environment exists at the *Center for Design,* ITU. The web site *Spilforskning.dk* provides a network for computer games researchers. Thus there are obvious affinities and potentials for collaboration in a Danish setting. The present project, however, intends to understand innovation as part of new forms of social life, as it unfolds in virtual worlds, rather than approaching aspects of design or general computer gaming from a computer scientist point of view. Indeed, virtual worlds like *Second Life* certainly do not have a game character. There is a need to develop and expand existing research environments so that Danish research will be able to match corresponding international environments researching social life in virtual worlds. Such environments include e.g. *Second Life* research at Stanford University, and Nick Yee's (2004, 2006, 2007) extensive research in large role playing games and their social life (*Ultima Online*, *Star Wars Galaxies*, *EverQuest*, *World of Warcraft*). At Oxford University Ralph Schroeder (2002, 2006) has produced seminal research in the life and work of avatars, where avatar research is seen as a sub field of Computer Supported Collaborative Work (CSCW). The use of virtual worlds in education is an important part of John Hollin's (2007) research at Bolton University. Also, future associates at Malmö and Umeå universities (Jacobsson, 2006) have researched the subject. On a global scale, the research network *Second Life Research List* (SLRL) attracts researchers with an interest in the new market dynamics of virtual worlds. This is an important theme in the annual *Second Life Research Conventions*. The applicant is a member of the *International Simulation and Gaming Association* (ISAGA) that for 38 years has been organizing international conferences on the subject. Collaboration has been established with prof. Ulrike Spierling, *Media Design*, FH Erfurt, University of Applied Sciences. In a European setting the applicant is a member of *Digital Culture and Communication* chaired by Prof. Maren Hartmann, a section under the *European Communication Research Association* (ECREA). The section provides the organizational framework for a European research environment in the field. Additionally, collaboration has been established with Vivien Hodgson, Head of Department *at Management Studies*, Lancaster University, and through her with the research community around the *Networked Learning* international conferences. Here, a future theme is virtual worlds and organisational

learning, management and knowledge sharing. The project will contribute to the rapid development of a research environment that can take part in international research collaboration.

5) Impact of the project

The project will be influential by virtue of the knowledge it places at the disposal for companies wishing to establish themselves in virtual worlds as well as for educational, cultural and public activities. The empirical orientation and the many concrete cases collaborating in the project mean that effects will be concrete and recognizable for actors in the field, and that they will be widely disseminated. All participating cases and actors have been selected both because they are leading companies and institutions with actual experiences in establishing a presence in virtual worlds, and because they are widely connected. The empirical orientation of the project also puts emphasis on developing methods for communicating about research in close partnerships between practitioners and researchers. Thus it is ensured that the project will have an impact also outside the academic community.

In the project there will be actors with different kinds of experience with virtual worlds. Thus, some actors will focus on managing a business only in the virtual world, while others will also be established in real life. *Wonderful Denmark* is an example of a company making a virtual pitch, while companies and organizations such as *B.O. Bøger*, *Jysk*, *Turistforeningen*, and *Saxo Bank* all are well-established outside of virtual worlds. Project partner *Innovation Lab* is a first-mover consultancy of the virtual world of Second Life with a widespread international knowledge network in the field, and they have given advice and support to other actors in the process of establishing a virtual world practice. *Roskilde Library Hangouts* is a public authority project with close relations to the *Info Island - Libraries in Second Life* project, where nine Danish libraries explore the virtual world potentials. Project collaborators such as *Erhvervs- og Videncenter Vestsjælland* (EVV) and *Connect Danmark* are organisations that will facilitate the continuous dissemination of project findings to innovation environments in Denmark. Project partners from *UNI-C* advice and disseminate knowledge to Danish universities, and they are pivotal in communicating findings that can be used in education and public enterprise. The key question in these initiatives is whether there is a transfer value between innovative virtual products and services within and outside of virtual worlds, and between Danish and global initiatives. Answers to questions like this are important for assessing the potential for growth and development. With the composition outlined above, the project aims at critically evaluating the potentials in both the commercial and public spheres, and it addresses actors both within and outside the research community. Furthermore, it is the intention to create an effect of synergy through coordinated applications for innovation funding to the *InnovationDanmark 2007-2010* initiative. Such funding can be applied for by project partners outside of the research community.

Two 3 Ph.D. grants are part of the project. Researchers from both research groups have great experience in tutoring and training Ph.D. students and in organizing Ph.D. seminars. The theoretical discussion in the project on the concept of user driven innovation and innovation processes and the research on dialogical methods in the communication of research are immediately applicable as general knowledge that can be made available in Ph.D. training and in Ph.D. courses. Particularly new methods in research communication are relevant for junior researchers in all areas of research. The project also involves two post.doc positions. The writer of this proposal is convinced that there will be applicants for these positions. The research group LIKE has extensive experience with both post.doc. positions and business Ph.D. grants. The organisation of the project around these two

research groups means that it will be possible to create a constructive environment for the Ph.D. students and the post. docs. It is the shared experience of both groups that a lively research environment is a decisive precondition for the ability of the students to complete their training as researchers, and also to benefit from the temporary position as a post.doc.

6) Project's concept (hypothesis) and methodology

Below, the project's understanding of user-driven innovation is outlined first *(I)*. Then follows generically phrased examples of the questions that the study of user driven innovation will explore; questions that will later be stated more precisely in relation to the three selected empirical fields *(II.)* Next is outlined the methodological foundation and the new methodological challenges we are facing in the study of virtual worlds *(III)*. Finally, the understanding of communication on which the methods employed is based is outlined *(IV)*.

(I) In the project, innovation is understood as a process, which means that movement and change are central concepts in the theoretical analysis. This again entails that the study of innovation is the study of *innovative practice*. Viewed in this way, innovation is not just a result, a service, an offer or a product. It is rather many different kinds of creative practice that combined creates a new field, a new understanding, a new practice, a new experience, a new product and with that a new sense-making strategy. It is a basic assumption in the project, that the study of innovative practice when viewed in this way will contribute to identify potentials that have not yet been realized. Thus not just manifest examples of innovative practice are analysed, but also potentials for innovation that have not yet manifested themselves. The process-oriented understanding of innovative practice takes the virtual worlds as the specific context for actions, communication and social interaction. Here, the 'user' is an actor who is an active co-creator in the specific context. Virtual worlds are characterized by setting the scene and designing a virtual framing (Goffman 1986) for the collaborative co-design of the actors. This is exactly what makes them fascinating (Jacobsen 2006, Jensen 2007, Fetscherin & Lattermann 2007). They are actor-driven on multiple levels. On the first level, the scene is set by professional designers collaborating with experienced user communities. On the second level, users mastering the particular world become active co-creators of places, figures, objects, virtual scenarios, communities, experiences, and business. On the third level, novices and mid-level actors are co-creators of the above-mentioned – often under the guidance of experienced actors. It is also a characteristic of virtual worlds that it is relatively simple to design places, characters, objects, scenes and localities. Thus, launching a company, planning global cultural events, starting an educational institution, just to mention a few, are considerably easier in the virtual world than it is in the physical. Virtual worlds set the scene for new forms of practice that would otherwise be beyond the reach of many of the co-designing actors.

As already mentioned, in the study of innovative practice key concepts are movement and change together with sense-making strategies – understood as meaning-generating processes in human construction and practice. The understanding of movement and change takes a point of departure in sense-making theory as developed for studying communication processes (Dervin et al., 2003). These are phenomena that are seen as basic conditions relative to the historicity and discontinuity of existence. Especially the perception of discontinuity is significant for the study of innovative practice. What appears to be order at one particular moment may thus appear as chaotic at the next moment when seen through the lens of discontinuity. The many transformations of discontinuity create lasting chasms in understanding – gaps – and loss of meaning in the interpretations and actions that constitute a given human practice. It is the many attempts to recreate or create meaning,

_____

given the premise of discontinuity, that provide the breeding ground for an innovate practice, if seen from the point of view of sense-making theory. Consequently, in order to understand innovative practice it is important to observe and to analyse the so-called chasms in understanding, or gaps and the sense-making strategies by which human practice tries to bridge them. This understanding is supplemented by the two analytical concepts of intermediaries and mediators that together with the concept of transformation are key analytical concepts in actor-network theory. According to this theory, actor-network is taken to be the many transformations of human forms of practice in chains of such intermediaries and mediators. In an introduction to the actor-network theory, the French philosopher, anthropologist and sociologist of knowledge, Bruno Latour (2005), makes clear the difference between intermediaries and mediators. In his earlier writings Latour refers to this distinction as the difference between 'human and non-human actors' or actants. When researching human practices, this distinction between human and non-human actors is, as seen by Latour, meaningless as they are both best understood as stages of transformations that occur within the networks of actors, actions and practices. Here it is sufficient to point out in which way these two concepts may best refer to the analysis of innovative practices.

"An intermediary, in my vocabulary, is what transports meaning or force without transformation: defining its inputs is enough to define its outputs. […] The input is never a good predictor of the mediators' output; their specificity has to be taken into account every time. Mediators transform, translate, distort, and modify the meaning or the elements they are supposed to carry." (Latour, 2005:39)

From this point of view the concepts of intermediaries and mediators contribute an additional dimension to the concept of discontinuity in sense-making theory. Observation of how mediators transform and not just recreate meaningful experiences, objects, signs and practice is an important analytical focus for the empirical studies.

(II) In continuation of the theoretical reflections on the study of innovative practice, the question arises as to their implications for the research project. Sense-making theory and actor-network theory have an orientation towards empirical research in common. Both theories rest on the assumption that the study of innovative practice must be carried out in *practice*. As both furthermore are oriented towards the study of sense-making and signifying processes of transformation, special challenges to the methodological and methodical design present themselves. Methods are needed to study processes in practice. Qualitative methods thus loom large in the empirical demands of the project. Iterations are also an empirical demand when the study of practice is oriented towards transformations. Hence, the empirical approach is case-analytic and iterative, i.e. cases have been selected that can exemplify innovative practice in virtual worlds and they are observed through recurrent studies over time. In order to facilitate the iterative approach to the empirical studies, the questions of the case studies are simple so that they can be expanded and nuanced in and through the iterative process. Below, the analytical questions are exemplified in generic form, because in practice they will be formulated on the basis of the project's three empirical fields of observation: 1) new market dynamics and management, 2) social and cultural innovation and 3) knowledge construction.

Generic examples of the project's analytical fields and questions:

1. In what *situations* and due to what *causes* do actors of [field 1, 2 and 3] experience *a)* that it is meaningful to design and use virtual worlds – taken as a mediator who can transform signifying experiences, objects, signs and practice and thereby facilitate innovate practice, *b)*

that it creates gaps to design and use virtual worlds – taken as a mediator and thereby impede innovative practice?

2. Through the use of what *forms of communication*, *design* and *forms of practice* do actors of [field 1, 2 and 3] experience: *a)* that they can bridge experienced gaps in existing practice and create mediators in and by means of the selected virtual world, that can transform signifying experiences, objects, signs and practice and thereby facilitate innovate practice, *b)* that they create gaps in existing practice in and by means of the selected virtual world and mediators and thereby impede innovative practice?

(III) The methodological foundation for the project is to qualify methods for collecting and analysing qualitative data on the basis of post-positivist and post-structuralist concepts of knowledge and knowledge production. The project will contribute to reflections on general epistemological problems such as the representation of complexities, generalization of contingent knowledge, validation of dialogically produced knowledge. Specifically, the project aims at implementing, developing and reflecting on virtual methods (Hine, 2005) in the study of virtual worlds. The study of virtual environments, their social organisation and culture based on computer-mediated interaction (e.g. communities, meeting points, web-sites, blogs, mobile units, virtual words, etc.) with adjacent methods has developed into a relatively independent area of research. Examples are virtual focus groups and interviews, web based or blog based open surveys, virtual discourse analysis and virtual or cyber ethnographic method (Hine, 2005). Findings facilitating methodological reflection are now available. Roughly, there are two generations. An early one considers virtual methods to be a 'weak' version of existing methods in qualitative research. In this point of view, computer-mediated interaction is a weak in comparison to face-to-face studies (Sproull & Kiesler 1986). The second generation sets out to reinterpret and critically reflect on existing methods when used in the exploration of virtual environments. These methods view computer-mediated interaction as a cultural context where ethnographically inspired methods in particular can contribute to the analysis (Baym, 2000; Hine, 2005; Howard, 2002). The project subscribes to the latter tradition. In the study of virtual worlds the methodological reflection is embryonic, yet a distinct field is in the making, one that focuses on the study of avatar based interaction and communication (Guimararães, 2003; Schroeder, 2002, 2006; Williams 2007). It takes the form of qualitative research that for example explores how conceptions of space, body and person influence design, use and change of/in virtual worlds when interaction and communication is avatar-based. Researchers in second generation virtual methods are particularly interested in studying interaction as it is manifested *in* the virtual environments. However, it is a fundamental methodological tenet in the project that the interplay between virtual interaction and various activities on the outside, such as business, education or cultural events, is an important ingredient of virtual methods. Hence, video interviews carried out in the daily practice of the actors inside and outside of virtual worlds is one of the ethnography-inspired methods to be used in the project. They will provide the backbone of the qualitative case studies. Active observation with, for examle Instant Message interviews and logs in virtual worlds may supplement the video-based interviews. In both instances it is possible to log all screen activities. Virtual focus groups can bring together the virtual world parties for discussion and evaluation of selected themes. The project will also experiment with innovation methods such as simulation, and virtual spaces and environments that challenge and provoke reflection on possible options and strategies in innovation - preferably in interplay with experiments in physical space. In the final analysis, however, choice of methods depends on the actual cases and of the collaboration among the various parties involved.

(IV) Finally, it is an aim to develop and implement new forms of research communication, i.e. methods for collaborating with actors outside of the research community (Catapano 2001; Phillips 2007; Weigold 2001).The project is tied to two interdisciplinary research groups with a common interest in the development of methods. The pivotal interest is in developing concepts and methods for analysing and facilitating scholarly communication, dialogically interpreted as reflected communication meant to contribute to socially innovative interactions between different actors in society and their knowledge forms. Actors in society increasingly need to reflect on their own practice by using various kinds of communication and knowledge sharing (Gibbons et al.1994; Nowotny et al.2001). Therefore, the research groups are particularly interested in how communication forms and knowledge forms interact. In relation to the theme of the development of dialogic qualitative methods in innovation studies, a central topic is how to facilitate, validate and generalise knowledge produced in investigating the sense-making of social actors, such as the actors in virtual worlds, for example via focus groups and participant observation. This part of the research is supported by membership of the planned Centre for Qualitative Research Innovation (application for funding in process) which will be run from the research groups but embrace members from all Danish universities. The purpose of this centre is to create possibilities for qualitative researchers to exchange methodological experiences, reflexively develop methods and systematically qualify methodological procedures.

7) Project plan (2 pages)

In research where practitioners collaborate with researchers differences in forms of knowledge are often striking. The long time horizon characteristic for research may give rise to barriers for collaboration. Nonetheless, the longitudinal approach and the many review processes are measures of quality for this particular form of knowledge. Therefore a dilemma requiring precise balancing exists between the long-term perspective of research and considerations of legitimate needs for knowledge that can be applied in practice in a relatively brief time-horizon. This dilemma is increased given the project's field of research. Virtual worlds develop rapidly and dynamically. Hence, the project plan has been developed so as to balance the different perspectives. The project prioritizes a relatively early start and it begins with intensive empirical studies in the first period. Emperical studies often are of more interest than are theoretical reflections to parties outside the research community.

Central organizing activities are: 6 research workshops (researchers, cases and practitioners), 4 field study periods, 2 design and prototyping periods, 5 teaching workshops, 2 Ph.D. courses, and 1 international workshop. They will deal with the case studies of innovation in virtual worlds, methods of collaboration, and research methodologies and methods. They are to structure the research. The organising activities are outlined below and summarised in *table I*. The workshops will be held alternately by the various project partners.

2008 – Establishing and planning, experiences and innovative practices in virtual worlds
- Project management, administrative procedures
- Positions advertised, project organisation and management established, electronic newsletter, publishing strategy: blog, publication series 1 and 2 as medium for scholarly communication. *(2008-2011))*
- Kick-off seminar (K). *(Quarter 1)*
- Field-studies (Fs 1/08). Innovative practices and virtual framings *(Quarter 2)*
- Research Workshop (Ws 1/08). Cases and collaboration – experiences *(Quarter 2)*

- Field-studies (Fs 2/08). Innovative practices and virtual framings *(Quarter 3 and 4)*
- Research Workshop (Ws 2/08). Cases, collaboration – knowledge sharing. *(Quarter 3)*
- Guest Researcher. *(Quarter 3)*
- Research network conference (Dk1) *(Quarter 4)*
- International Conferences (Ic 1) *(Quarter 4)*
- Teaching workshops (Tw1). Senior researchers and practitioners *(Quarter 3)*
- Publications (Series 1). Case accounts, empirical narratives and analysis - discussing the potentials and -processes of the innovations enacted in virtual worlds. *(Quarter 3 and 4)*
- Publications (Series 2). Conference papers *(Quarter 4)*

2009 – Methods for research in virtual worlds and in scholarly communication
- Field-studies (Fs 3/09). Innovative practices and virtual framings *(Quarter 1 and 2)*
- Research Workshop (Ws 3/09). Cases and collaboration – methodologies *(Quarter 1)*
- Teaching workshops (Tw2, Pt1)). Senior researchers, Ph.D. students and practitioners
- International conferences (Ic1). *(Quarter 1, 2 and 3)*
- Ph. D. Course (Pc1). Roskilde University *(Quarter 2)*
- Designing and prototyping (Dp1/09). Simulations and interventions *(Quarter 3 and 4)*
- Research Workshop (Ws 4/09). Cases and collaboration - designing and prototyping methodologies *(Quarter 3)*
- Guest researcher (Gu2). *(Quarter 3)*
- Teaching workshops (Tw3, Pt2)). Senior researchers, Ph.D. students and practitioners *(Quarter 3)*
- Publications (Series 1). Case accounts, empirical narratives and teaching materials *(Quarter 1 and 2),* monographs *(Quarter 3 and 4)*
- Publications (Series 2). Conference papers *(Quarter 1 and 2),* journal articles *(Quarter 3 and 4)*
- Virtual world prototypes and simulations (Vw1) *(Quarter 3 and 4)*

2010 – Conceptual understanding of communication forms and innovations in virtual worlds
- Designing and prototyping (Dp2/10). Simulations and interventions *(Quarter 1 and 2)*
- Guest Researcher (Gu3). *(Quarter 1)*
- Ph.D.-course (Pc2) (Copenhagen Business School). *(Quarter 1)*
- International Workshop (Iw). To be held at Roskilde University *(Quarter 2)*
- Research Workshop (Ws 5/10). Cases and collaboration – communication forms and conceptual understanding *(Quarter 3)*
- International conferences (Ic2) *(Quarter 2, 3 and 4)*
- Teaching workshops (Tw4, Pt3)). Senior researchers, Ph.D. students and practitioners *(Quarter 1)*
- Publications (Series 1). Case-based anthology *(Quarter 3 and 4)*
- Publications (Series 2). Conference papers *(Quarter 1, 2, 3 and 4),* journal articles *(Quarter 1, 2, 3 and 4),* research monographs *(Quarter 1 and 2),* research anthology *(Quarter 3 and 4)* virtual world prototypes and simulations (Vw2) *(Quarter1, 2, 3 and 4)*

2011 – Synthesis and critical discussion of potentials and problems
- Field-studies (Fs 4/11) Innovative practices and virtual framings *(Quarter 1 and 2)*
- Research Workshop (Ws 6/11). Cases and collaboration – critical discussions *(Quarter 1)*
- Ph.D. studies completed (Pd). Ph.D. defences (Quarter 1, 2, and 4)
- Publications (Series 1). Case-based anthology *(Quarter 1 and 2)*
- Publications (Series 2). Research monographs *(Quarter 1 and 2)*

- Publication (Series 2). Research anthology *(Quarter 1, 2, 3 and 4)*
- Virtual world prototypes and simulations (Vw3) *(Quarter1, 2)*
- Ph.D. theses *(Quarter 1, 2 and 4)*

Activities:	S'08	S'08	F'08	F'08	S'09	S'09	F'09	F'09	S'10	S'10	F'10	F'10	S'11	F'11
Management	Pr													
Adm.	Ad													
Kick-off	K													
FieldStudies		Fs1	Fs2	Fs3							Fs4			
Workshops		Ws1	Ws2		Ws3		Ws4				Ws5		Ws6	
Design							Dp1		Dp2					
Guests			Gu1				Gu2		Gu3					
Conf. DK				Dk1				Dk2						
Conf. Intnl				Ic1						Ic2				
Ph.dCcours					Pc1				Pc2					
Int.Worksh.										Iw				
EduWorksh		Tw1			Tw2		Tw3		Tw4		Tw5			
EduPh.D.		Pt!			Pt2				Pt3		Pt4			
Ph.D.Defence													Pd	
Publ.Series1		Ps1												
Publ.Series2			Ps2											

			Case accounts											
			Emperical narratives											
					Teaching materials									
							Monographs							
											Anthology			
					Conference papers									
							Journal articles							
										Research monographs				
											Research Anthology			
													Theses	
					Virtual world prototypes and simulations									
WorkPack.		WP1	WP2		WP3		WP4				WP5		WP6	

Table 1. Organising activities of the project.

Expected results from the project can be grouped *(1)* publications prepared in collaboration with actors outside the research community; *(2)* research publications; *(3)* scenarios resulting from shared innovation methods in virtual worlds, preferably in interplay with physical space; and *(4)* net based knowledge bases (Work packages 1-6, see below: project management)

8) Legal and ethical aspects

Many ethical and legal problems are involved with respect to innovative practice in virtual worlds. Surveillance is one of the urgent questions that must be clarified. It is possible to log on and monitor the activities of actors in minute detail. What rules regulate the surveillance of virtual actors going about virtual worlds in the shape of avatars? Also ownership, copyright and intellectual rights poses several problems: What is the legal status of deals involving purchases of virtual property, be it land, avatars or objects? If virtual objects, avatars or land are not delivered upon payment, how then can rights of ownership be enforced? Also, there is the unanswered question about guarantee for rights of ownership or copyright to one's own virtual objects. When an actor has spent time and effort – often many hours or even days – in developing a virtual design or object, does he or she then have the right of ownership, i.e. the right to own it also outside the virtual world in which it has been produced? Who is responsible when system breakdowns, theft or breaches in the security systems surrounding a given virtual world causes loss of design and objects? Is there liability to pay compensation for virtual products destroyed in updates causing system crashes?

There are many ethical and legal questions that need an early answer given the rapid development of the economic aspects of virtual worlds and the new market dynamics. Such answers are important to the assessment of the innovative potential of virtual worlds.

9) Publication and promotional strategy

The project aims at publishing its results continuously throughout the project period, so as to meet the urgent need for knowledge about this emerging field not only of the scholarly community, but also, and importantly, of partners, students and the interested public. For this reason the project operates with two categories of publications.

Category 1 publications document the dynamic progress of the project and they rely mainly on net media to ensure fast and cost-efficient production. They include:
- *Project working papers*. The series of papers in English and in Danish include narratives and documentation resulting from field work, prototyping and work on cases. The working paper series is to be published electronically using the pdf-format supplemented by various multimedia productions. The series is edited and published by the project. All contributions are subject to review by two external reviewers.
- *Teaching materials*. Teaching materials will be made available electronically in English and in Danish using wiki, podcasting, vidcasting and similar technologies that facilitating the dynamic production of multimedia textbooks and course materials. The materials are targeted at tertiary level teaching as well as human resource departments in organizations and companies.
- *Newsletter*. A project newsletter in weblog-format will provide information on current and planned activities.
- *Popularization*. Contributions to newspapers and magazines.

Category 2 publications document research results using electronic as well as conventional media. They include:
- *Conference papers*. Primarily papers in proceedings from recognized, international conferences. Participation in Danish conferences is also planned, e.g. a track at the annual conference of the Danish Research Network.
- *Journal articles*. Primarily papers in peer reviewed international journals. A special issue in Danish in the UNEV-journal of the Danish Research Network is also being planned.
- *Book chapters*. Contributions to international anthologies. The project also has the intention of producing an English language anthology to be published in UK or the US.
- *Monographs*. In English and in Danish. These books will provide an overview of the field summing up the various research results arrived at during the project.

10) Innovation

Innovation is understood as a *process*. This means that movement and change are central concepts in the theoretical analysis. This again entails that the study of innovation is the study of *innovative practice.* Viewed in this way, innovation is not just a result, a service, an offer or a product. It is rather many different kinds of creative practices that combined create a new field, a new understanding, a new practice, a new experience, a new product and with that a new sense-making strategy. Thus not just manifest examples of innovative practices are analysed, but also potentials

_____

for innovation that have not yet manifested themselves. The process-oriented understanding of innovative practices takes the virtual worlds as the specific context for actions, communication and social interaction. Here, the 'user' is an actor who is an active co-creator in the specific context. Thus, in the study of innovative practices key concepts are movement and change together with sense-making strategies – understood as meaning-generating processes in human construction and practice. The understanding of movement and change takes a point of departure in sense-making theory as developed for studying communication processes (Dervin et al., 2003). This understanding is supplemented by the two analytical concepts of intermediaries and mediators that together with the concept of transformation are key analytical concepts in actor-network theory. From this point of view the concepts of intermediaries and mediators contribute an additional dimension to the concept of discontinuity in sense-making theory. Observation of how mediators transform and do not just recreate meaningful experiences, objects, signs and practice is an important analytical focus for the empirical studies of the project. Sense-making theory and actor-network theory have an empirical orientation in common. Both theories rest on the assumption that the study of innovative practice must be carried out in *practice*. Methods are needed to study processes in practice. Hence, the empirical approach is case-analytic and iterative, i.e. cases have been selected that can exemplify innovative practice in virtual worlds and they are observed through qualitative and recurrent studies over time

11) The participating parties

The project is located in the research group *Communication forms and knowledge production* (*Kommunikationsformer og Vidensproduktion)* at the Institute for Communication, Business and Information Technologies, Roskilde University. Project participants include five associate professors, one professor, two post.doc's on a two-year contract and two Ph.D. -students, one of whom may be financed as a business Ph.D. -grant. One Ph.D. and one post.doc position will be in the field of market dynamics, innovation potentials and methods for collaboration. One Ph.D. and one post.doc position will be in the field of the social organisation and culture of virtual worlds and virtual methods. The aim is also to invite guest researchers such as Christine Hine, Mikael Jacobsson, Nick Yee, Ralph Schroeder, Ulrike Spierling, Maren Hartmann and Vivien Hodgeson (all from the international research environments mentioned previously) to join the project for a period of nine month total.

The research group *Communication Forms and Knowledge Production* is interdisciplinary. It integrates researchers from the humanities, social sciences and informatics (focusing on Human-Computer Interaction and interactive net media). The groups consists of nine senior researchers, five 5 Ph.D. students, and various associates. The research group has three sections: *Dialogical knowledge production*, *the communication of research*, and *net mediated knowledge design.* The project is based in the last of these sections, and researchers from each of the three sections contribute to the project, including the head of the research group, ms. Bente Halkier. The group has experience with Ph.D. training and Ph.D. seminars, so there should be no problems in handling new ph.d-students and post.doc positions .

Members of the research group *LIKE – Leadership, Innovation, Knowledge and Entrepreneurship* are primary collaborators. For many years researchers from this group has compiled massive knowledge about small and medium sizes companies and they have an extensive network. Their knowledge is important for the analysis of business potentials in virtual world innovation. Scholarly communication by means of dialogue and construction is also part of the group's activities. This is important for developing new methods for collaborating with parties outside

the research community. The group has extensive experience with training of Ph.D. students and organizing Ph.D. -seminars, so it is a good environment for accepting a Ph.D. student and a post.doc position.

UNI-C - *Centre for Education and Research* has great experience in consulting and a profound knowledge of the Danish universities. In collaboration with the DK*CERT *Computer Emergency Response Team* it-safety concerns are addressed. They will also act as a case in the construction of knowledge environments in virtual worlds. *Forskningsnettet,* is a research network for Danish institutions of higher learning run by UNI-C. One of its activities is an annual conference. UNEV, a well-established electronic periodical on e-learning and new media in research and communication, is now also run by the organization.

Innovation Lab is a consultancy that together with *IBM* and the magazine *Computerworld* has established itself in the virtual place *House of Horizons*. In Denmark, Innovation Lab is a leading consultancy in the field of virtual worlds. It advises key actors in the field and has an extensive international network that will of great importance to the research project.

Saxo Bank is a Danish internationally leading net based company that early on set up in fully net based banking focused on global financial actors. The company has just won a prize for best international example of a successful net based company. Saxo Bank is a global enterprise with branches in London, The Arab Emirates, Australia and Singapore. It has globally localized innovation departments working on strategy and design for the companies branches in virtual worlds.

Wonderful Denmark is a virtual company that lets virtual real estate in Second Life. *B. O. Bøger* (book store), *Marco Polo* travel agency, *Networking.dk*, *TV2 East* among others have established themselves as tenants at Wonderful Denmark and use the company as a consultant on the virtual world. This is also the case for Jysk (textile retailer), that has just established itself, and for *Turistforeningen* (Tourist board), and *Hypnotisøren*.

PowerMatch is a project exploring the potentials of virtual worlds for establishing contact between job-seekers and companies by means of HR-consultancy and net matching activities, supplemented with real life events.

The virtual group *Roskilde Library Hangouts* from Roskilde Library participates with a case. The group experiments with the future role of the library in virtual worlds. There is close contact with the project *Libraries in Second Life- Info Island* that has nine Danish libraries as participants

Erhvervs- og Videncenter Vestsjælland (EVV) contributes as an organisation geared to creating and disseminating knowledge to small and medium sized companies in the Zealand region. Through collaboration with *Connect Danmark* there is also a contact to pioneer companies in technological innovation. Companies in the networks of the two organisations are potential participants either as cases or as audience for the knowledge being created.

Øresund Entrepreneurship Academy, Øresundsuniversitetet, teaches innovation and entrepreneurship. It is significant for disseminating knowledge and contacts in the environment of innovators.

12) Project management

The applicant is head of the research project. The project head has a project manager as permanent collaborator. Together, they ensure continuity in administration, management and research strategy. They are responsible for regularly publishing newsletters, organizing workshops for all parties in the project, for defining a process-oriented publishing strategy from the start of the project, and for constantly monitoring project finances. The project is based in two existing research environments

that are already collaborating. This ensures a constructive and effective working environment right from the outset.

In *table 2*, project activities are distributed over the planning parameters: partners involved, actors and time. The budget, the table 2 management tool as well as the six work packages all are important management tools. In addition, Ralph Stacy's (2001) matrix is used as a project management tool for clarifying aims and collaboration. By means of this tool individual components of the project, and the work packages that they include, can be examined in relation to the two axes existing in any multi-actor collaboration: Certainty- ambiguity and agreement-disagreement in the objectives of each of the project elements. However, the most important management tools are the six research workshops and the matching work packages.

At the beginning of the project (*period I and early period II*), emphasis is on empirically grounded narratives, together with category 1 publications. The empirical foundation for such narratives and case analyses is provided by periods of field studies involving collaboration between researchers and practitioners in the field. There will be three analytical cycles of field studies followed by a case-based workshop and resulting in a work package (table 2: Fs1-Ws1-Wp1/2008; Fs2-Ws2-Wp2/2008; Fs3-Ws3-Wp3/2009).
Work package 1, 2 & 3:
- Publications (Series 1). Case accounts, empirical narratives and analysis discussing the potentials and processes of the innovations enacted in virtual worlds. Teaching materials. Monographs. Virtual world scenarios.
- Publications (Series 2). Conference papers, journal articles.

The empirically oriented period is followed up by activities emphasising the development of methods and methodology in the study of innovative practice in virtual worlds (*period II*). Experiences from the empirical field studies and collaboration with the project cases are summarized, discussed and published. Emphasis is shifted so that clarification of concepts and considerations of methods and methodology become more central, also in terms of project publications and various productions and design. There will be two analytical cycles of designing and prototyping studies followed by a design-based workshop and resulting in a work package (table 2: Dp1-Ws4-Wp4/2009; Dp2-Ws5-Wp5/2010).
Work package 4 & 5:
- Publications (Series 1). Method and methodologies for research in virtual worlds and for collaboration between researchers and practitioners. Teaching materials. Case-based anthology. Virtual world simulations and prototypes.
- Publications (Series 2). Method and methodologies for research in virtual worlds and for collaboration between researchers and practitioners. Conceptual understanding of communication forms and the innovations of virtual worlds. Conference papers, journal articles, research monographs. Reflections on virtual world simulations and prototypes.

In the final part of the project (*end of period II and period III*) emphasis will be on the research based syntheses and critical discussions of project results and methods of collaboration, communicated by means of category 2 publications as well as teaching materials and course materials (table 2: Fs4-Ws6-Wp6/2010-2011).
Work package 6:
- Publications (Series 1) Case-based anthology. Teaching materials. Design.
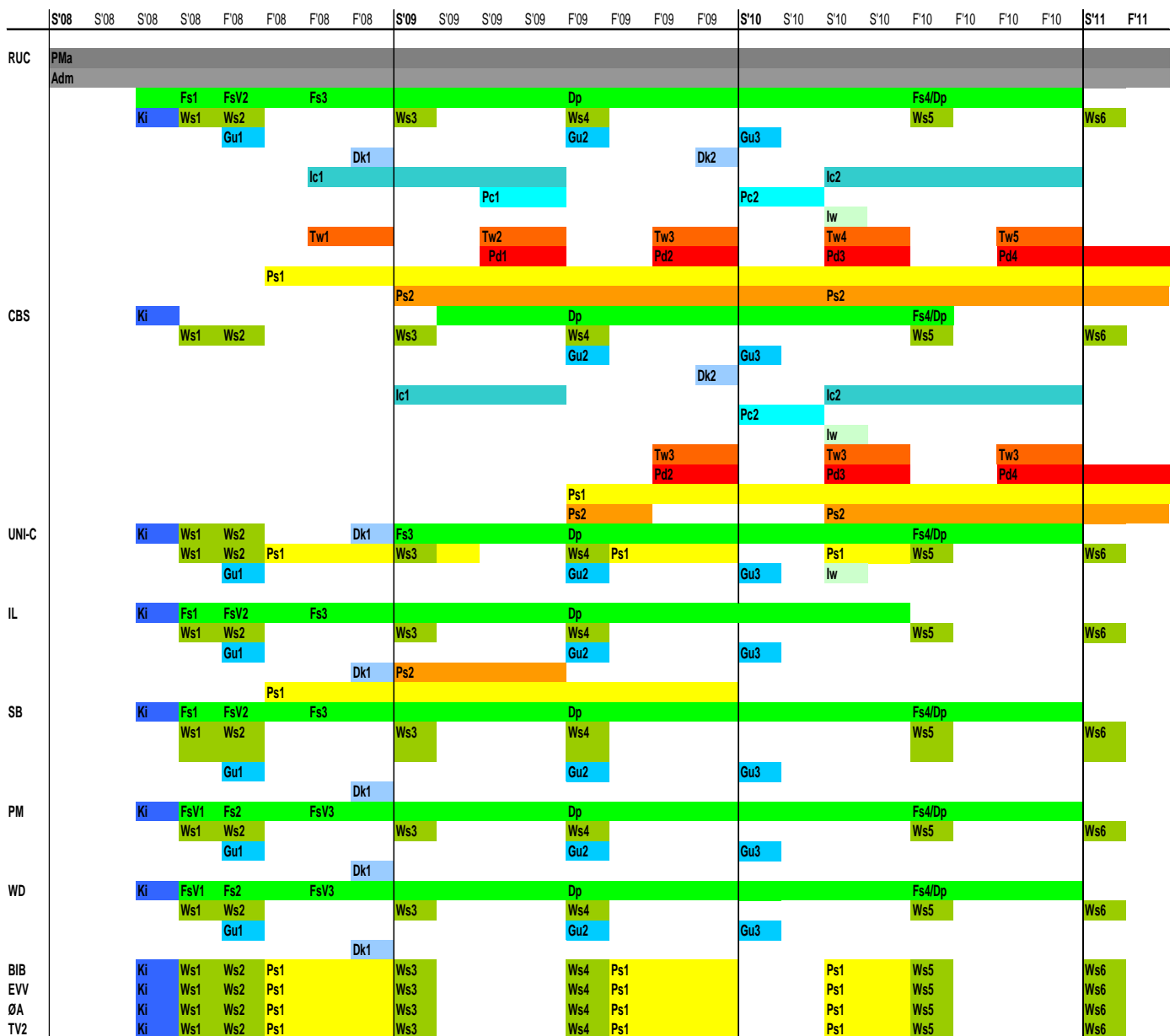- Publications (Series 2) Research anthology and monographs, Ph.D. theses.

	S'08	S'08	S'08	S'08	F'08	F'08	F'08	F'08	S'09	S'09	S'09	S'09	F'09	F'09	F'09	F'09	S'10	S'10	S'10	S'10	F'10	F'10	F'10	F'10	S'11	F'11
RUC	PMa / Adm																									
			Fs1	FsV2		Fs3							Dp										Fs4/Dp			Ws6
		Ki	Ws1	Ws2					Ws3				Ws4				Gu3						Ws5			
				Gu1									Gu2			Dk2										
						Dk1													Ic2							
					Ic1												Pc2									
											Pc1							Iw								
					Tw1					Tw2				Tw3				Tw4				Tw5				
										Pd1				Pd2				Pd3				Pd4				
				Ps1					Ps2								Ps2									
CBS		Ki							Ws3				Dp						Fs4/Dp				Ws5			Ws6
			Ws1	Ws2									Ws4				Gu3									
									Ic1				Gu2			Dk2			Ic2							
																	Pc2									
													Tw3				Tw3				Tw3				
													Pd2				Pd3				Pd4				
									Ps1 / Ps2								Ps2									
UNI-C		Ki	Ws1	Ws2		Dk1	Fs3					Dp							Fs4/Dp							
			Ws1	Ws2	Ps1		Ws3					Ws4	Ps1					Ps1	Ws5							Ws6
				Gu1								Gu2				Gu3	Iw									
IL		Ki	Fs1	FsV2		Fs3						Dp														
			Ws1	Ws2					Ws3				Ws4				Gu3						Ws5			Ws6
				Gu1									Gu2													
						Dk1	Ps2																			
SB				Ps1																						
		Ki	Fs1	FsV2		Fs3						Dp							Fs4/Dp							
			Ws1	Ws2					Ws3				Ws4										Ws5			Ws6
				Gu1									Gu2			Gu3										
PM						Dk1																				
		Ki	FsV1	Fs2		FsV3						Dp							Fs4/Dp							
			Ws1	Ws2					Ws3				Ws4										Ws5			Ws6
				Gu1									Gu2			Gu3										
WD						Dk1																				
		Ki	FsV1	Fs2		FsV3						Dp							Fs4/Dp							
			Ws1	Ws2					Ws3				Ws4										Ws5			Ws6
				Gu1									Gu2			Gu3										
						Dk1																				
BIB		Ki	Ws1	Ws2	Ps1				Ws3				Ws4	Ps1				Ps1	Ws5							Ws6
EVV		Ki	Ws1	Ws2	Ps1				Ws3				Ws4	Ps1				Ps1	Ws5							Ws6
ØA		Ki	Ws1	Ws2	Ps1				Ws3				Ws4	Ps1				Ps1	Ws5							Ws6
TV2		Ki	Ws1	Ws2	Ps1				Ws3				Ws4	Ps1				Ps1	Ws5							Ws6

Table 2. Activities distributed over the planning parameters: partners involved, actors and time.

13) Network function

The researchers and business partners involved with this application are widely connected in the research as well as the business world. Below, some of the Danish, Nordic, European and global networks and associations are briefly introduced.

SKM (Samarbejde, Kommunikation og Medier – Collaboration, Communication and Media) is a network under the auspices of the *Danish Research Network*. The network has a nucleus of some 20 representatives from the Danish universities and a looser network comprising the ca. 300 participants in the annual Danish Research Network conference, coming from universities, state and municipal government and private companies. The network is launching a refereed journal, Medier

og Læring (Media and Learning) in early 2008. *HCI-Forum* is a network of some 30 Danish university faculty and reflective practitioners in private companies sharing an interest in man machine interaction.

With respect to the communication of research-based knowledge, the project is part of a new *Nordic network*. This network on dialogical scholarly communication consists of 35 researchers (professors, associate professors, post-doc. and Ph.D. -students) from Luleå University of Technology, University of Linköping, University of Tampere, University of Oslo, University of Aalborg, Learning Lab Denmark, Copenhagen Business School and University of Roskilde. The network organises workshops on theories, methods and empirical studies on the dialogic communication of research in different fields of practice. It involves research in dialogic projects where researchers and practitioners collaborate in stimulating change and in organisational practise (MacNamee & Shotter 2004; Pearce & Pearce, 2004). Central to the activities of the network are the discussion and development of key concepts such as 'dialogue', 'negotiation of knowledge' and ' *translation* between various knowledge forms' and criteria for validation and evaluation of scholarly communication.

The applicant is a member of the *International Simulation and Gaming Association* (ISAGA) that for 38 years has been organizing international conferences on the subject. In a European setting the applicant is a member of *Digital Culture and Communication* a section under the *European Communication Research Association* (ECREA). The section provides the organizational framework for a European research environment in the field. Additionally, long-term collaboration has been established with the research network around the *Networked Learning* international conferences. On a global scale, the research network *Second Life Research List* (SLRL) attracts researchers with an interest in the new market dynamics of virtual worlds. This is an important theme in the annual *Second Life Research Conventions*.

Innovation Lab is a consultancy with many business contacts and the firm is well-established as far as collaboration with partners from research is concerned. The firm has profound experience in advising Danish business actors in exploring the opportunities of the virtual world Second Life, e.g. Dansk Landbrugsrådgivning, Grundfos, Lego, 3D Net, ITEK Dansk Industri, Handelsskolen Sydsjælland, Nykredit, Danfoss Universe, Cisco Systems and Carl Bro Grontmij. Also, Innovation Lab is a close partner together with IBM in the research project and network on *3D Internet & Virtual Business Opportunities*. In this way, the firm can utilize the many years of experience gathered from advising business actors about how best to develop new methods in the field of user-driven innovation. Innovation Lab is also a partner in the *Network for Research-based User-driven Innovation* and a network similar to that at the Copenhagen Business School. They have worked closely together with the Aimee Weber Studios in the construction of the Second Life island House of Horizons. Aimee Weber is one of the widely known Second Life designers. Innovation Lab is a partner in the mutual project *House of Horizons* together with IBM and the Danish specialist journal Computerworld. The House of Horizons island is aimed at explorative and experimental activities. Together with Beta Technologies the firm supported the net-based firm Saxo Bank in the construction of their virtual place and island in Second Life. Being a consultancy with profound experience and knowledge about virtual worlds and being a widely known and well-connected business actor in the field, Innovation Lab is a pivotal partner with the ability to support the building of networks and to facilitate and sustain the collaboration between research and business actors of this research project.

14) Key references (1 page)

Andersen, P. B., & Qvortrup, L. (2004). *Virtual applications : applications with virtual inhabited 3D worlds*. New York ; London: Springer.

Baym, N. (2000). *Tune in, Log On: Soaps, Fandom, and Online Community*. Thousand Oaks, CA: Sage.

Catapano, P. (2001). "Report: Trends in Science Communication Today- Bridging the Gap between Theory and Practice", *Science Communication,* 22(4): 438-441.

Dervin, B. & Foreman-Wernet, L. (2003). *Sense-Making Methodology Reader*. Cresskill, New Jersey: Hampton Press, Inc.

Fetcherin, M. & Lattermann, C. (2007). User Acceptance of Virtual Worlds – an Exploratory Study about Second Life", www.secondliferesearch.blogspot.com – Retrieved 15-06-07.

Goffman, E. (1984). Frame analysis: An essay on the organization of experience. Boston: Northeastern University Press.

Guimararães, M., J., L. (2003). Technologies that are Bodies: Some Remarks about the Development and Use of Avatar-Related Technologies. Paper presented at the panel 'Why are bodies machines', ASA Deccenial Conference 'Anthropology and Science', Manchester.

Hine, C. (2005). *Virtual methods : issues in social research on the Internet*. Oxford, UK ; New York: Berg.

Hollins, J. (2007). Is there "No Life" in second life? Exploring the educational affordance in synthetic worlds. *Proceedings. Computer-Assisted Learning Conference – CAL07: Development, Disruption & Debate, Trinity College, Dublin, March 26-28.*

Howard, E. (2002). Network Ethnography and Hypermedia Organization: New Organizations, New Media, New Muths. *New Media & Society*, 4 (4): 550-574.

Jacobsson, M. (2006). Questing for Knowledge - Virtual Worlds as Dynamic Processes of Social Interaction. In R. Schroeder (Ed.), *Avatars at Work and Play: Collaboration and Interaction in Shared Virtual Environments* (Vol. 34). Dortrecht: Springer.

Jensen, S. S. (2007). *Oplevelser i en virtuel verden. Kommunikation og organisering (Experiencing a virtual world. Communicating and organising)*. Copenhagen: BoD.

Latour, B. (2005). Reassembling the Social. An Introduction to Actor-Network-Theory. Oxford: Oxford University Press.

MacNamee, S. og Shotter, J. (2004). "Dialogue, Creativity and Change". In R. Anderson, L. Baxter and K. Cissna (Ed.), *Dialogue: Theorizing Difference in Communication Studies.* London: Sage.

Nowotny, H. et al. (2001) *Rethinking Science: Knowledge and the Public in an Age of Uncertainty*. London: Polity Press.

Pearce, B. W. and Pearce, K. (2004). Taking a Communication Perspective on Dialogue. In R. Anderson, L. Baxter and K. Cissna (Ed.), *Dialogue: Theorizing Difference in Communication Studies.* London: Sage.

Phillips, L. (2006). Communicating Social Scientific Knowledge dialogically: participatory approaches to communication analysis and practice. In N. Carpentier et al.(Ed.), *Researching Media, Democracy and Participation. The Intellectual Work of the 2006 European Media and Communication Doctoral School.* Tartu: University of Tartu Press, pages 233-249

Schroeder, R. (2002). *The social life of avatars : presence and interaction in shared virtual environments*. London: Springer.

Schroeder, R., & Axelsson, A.-S. (2006). *Avatars at work and play : collaboration and interaction in shared virtual environments*. Dordrecht, the Netherlands: Springer.

Sproull, L. & Kiesler, S., (1986). Reducing Social Context Cues: Electronic Mail in Organizational Communication. *Management Science*, 32 (11) pp. 492-512.

Stacey, R. (2001). Complex Responsive Processes in Organizations. Learning and knowledge creation. Complexity and emergence in Organizations. London & New York: Routledge.

Williams, M. (2007). Avatar watching: participant observation in graphical online environments. *Qualitative Research, 7*(1), 5-24.

Yee, N. (2004). *Dragon Slaying 101: Understanding the Complexity of Raids http://www.nickyee.com/daedalus/archives/000859.php. The Daedalus Project.* Retrieved 07-03, 2007

Yee, N. (2004). *Dragon Slaying 102: Unsung Heroes http://www.nickyee.com/daedalus/archives/000858.php The Daedalus Project.* Retrieved 07-03, 2007

Yee, N. (2006). The Psychology of Massively Multi-user Online Role-playing Games. In R. Schroeder (Ed.), *Avatars at Work and Play: Collaboration and Interaction in Shared Virtual Environments* (Vol. 34). Dortrecht: Springer.

Yee, N. (2007). *Life as a Guild Leader http://www.nickyee.com/daedalus/archives/001516.php.* Retrieved 07-03, 2007.