**Selection of best entrepreneurship practices in relation to the emerging 3D internet**

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## Work Package 3

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**Introduction**

This report focuses on *entrepreneurship in relation to the 3D internet in general (aka virtual worlds, virtual environments, etc.) and the selection of best practices specifically*. In preparing this report, we focused primarily on the Nordic countries and the USA and on empirically-based research articles. A stated focus of the Nordic Virtual Worlds Network project is on the "serious" use of the 3D web, ie for serious businesses, but this serious/fun division is debatable since much of the use today of 3D web is for entertainment and relates to the creative industries. We return to this later.

We faced three major challenges when going through the scientific research literature: 1) the lack of and fragmentation of knowledge due to the relative infancy of the 3D internet field and its interdisciplinary nature across many research fields, 2) the fluid definitions of terms regarding the 3D internet and fun/serious business, and 3) the difficulty of getting an overview and from this base, determining relevant activities (we prefer the term "next" rather than "best practices"). We deal with these three challenges in turn.

Firstly, in the case of building knowledge in this emerging field, we suggest that it is the *interdisciplinarity* (social sciences, humanities film studies, computer science) that may strengthen the current fragmentation, such as others suggest (Hunsinger, 2010), and which is a conclusion in a recent literature review of "Virtual Environment Studies" in relation to social and group phenomena (Sivunen & Hakonen, 2010).

Secondly, *defining our key terms "entrepreneurship" and "3D internet" is a real challenge*, but we simply put down a humble stake here for dialogue and debate with academia and practitioners. Input from the different disciplines with their traditions is valuable. In this report, we propose using 3D internet rather than virtual worlds (or other common terms, such as virtual world games or MMORPG - massively multi-player online role-playing games). In regards to the relationship between entrepreneurship and innovation, we briefly discuss definitions and overlaps for further discussion. We include both the more "fun" uses with "serious" uses since many businesses in 3D internet currently offer fun content, including entertainment and socializing with games, etc. We suggest that the social aspects of the "fun" uses offer valuable examples of the potential for growth of current digital technologies with aspects of 3D. The situation of the 3D internet is viewed as part of media convergence (Jenkins, 2006; Lowood, 2006; de Freitas & Griffiths, 2008) or a "blurring" of the lines between media types and platforms, where online games technologies and practices are becoming more pervasive and commonplace as social practice.

Thirdly, by presenting an *overview of practice*, our aim is to consider themes for our later work on entrepreneurial activities/practices. We offer an initial overview within different sectors and discuss trends especially relevant for entrepreneurship in the creative industries.

We apply a **structural framework** in order to gain a sense of an overview and proceed to offer a narrower focus for the upcoming, particular entrepreneurial activities (the selection of activities / practices continues during 2010). Herein, we lay the groundwork for the later work packages and deliverables in NVWN and our own selection of activities.

In this report, we start this selection process by delineating the contours of our WP3 potential areas for entrepreneurial activities, *namely NGOs and creative industries*, but this may shift - the selection of practices is due in a report (delivery 01.11.2010). Note that Teigland (with Frølunde) will prepare **Analysis and synthesis of key trends and entrepreneurial activities in VW innovation and VW entrepreneurship (01.12.2010)** as well as **Policy report on activities or "next practices" in VW innovation and entrepreneurship (01.02.2011).** Frølunde (with Flåten) are preparing for the upcoming **Policy report on activities or "next practices" in VW entrepreneurship (01.10.2011)**.

*Purpose and structure*

The **purpose** of this first milestone/delivery for WP 3 is primarily to identify and select best entrepreneurship practices with a focus on best practices. In order to obtain this goal, we seek to get an overview of the literature and field, leading to a discussion and plans for further action. The examination of the literature is intended for use within our network as grounds for discussing the development of practices within innovation and entrepreneurship. By going through the literature, we hope to kick off some *collaborative thinking* among the NVWN network during 2010 and prepare the subsequent in-depth work with a few cases related to NGOs and creative industries.

In addition, this version of the document will be amended with input from the partners and hopefully from NICe, and we will add an appendix with a review of the literature during the fall 2010. We plan on submitting it as an article to a journal in early 2011.

*The report is structured in four parts* as follows: 1) our own perspectives, 2) the approach to the topic of entrepreneurship in relation to the emergence of virtual worlds / 3D internet, 3) the definitions and review of literature on entrepreneurship, 4) selection of best entrepreneurial practices, and 5) discussion and preliminary conclusions.

## 1. Our perspective

First, we (Lisbeth Frølunde with Bjørn-Tore Flåten) describe and unfold our points of view and present our academic orientation as it affects how we have prepared this report. We are colored by our backgrounds, how we understand writing a report, and how to maintain a critical distance. We want to make our approach explicit in particular because we are unclear as to what extent researchers from other fields "wrap" critical remarks around the literature review. We realize that within the NVWN network (and in NICe) there may be divergent expectations and approaches. Perhaps a more business-oriented approach would involve wanting to find and promote solutions and venture a normative (meaning here good vs. bad, effective vs. ineffective use of 3D internet for commercial ventures) as this appears in much of the literature on entrepreneurship. The myth of the individual entrepreneur is dominant, but we follow the *more social approach* (Drakopoulou Dodd & Anderson, 2007), which points out that *entrepreneurship is not a purely individualistic practice* but involves a dynamic of social interactions. Thereby, any entrepreneurial agent encounters may be viewed as shaped by social structures and systems but also employs his or her agency to change the structure.

So, we take a **social approach** and a view toward the future. We find it is important to describe the potential of the 3D internet in terms of business and individuals who are entrepreneurial. But we would like to address current activities and highlight them as possible "next" practices[i], rather than "best" practices.

In this manner, we can discuss the affordances and hindrances appearing from the literature and point out some potential opportunities. Our understanding of potential is based on our backgrounds in organizational learning, communication, design and the arts. We are interested in work in relation to the innovative use of emerging technologies for communication and just as interested in failure as success. For instance, a major hindrance to the growth of 3D internet seems to be that the technologies are instable and break down - and it is unfortunate that this is not dealt with in a more sombre way in the literature.

We aim to maintain some distance to the optimistic "hype" and also the pessimistic views (virtual worlds deroute) and *look at horizons regarding an integrated 2D and 3D internet*. Our interest (e.g., the motivation of our choice) is to gain insights into the complex of cultural or contextual aspects of entrepreneurship and especially look at the creative practices using the 3D internet so as to understand the potential better for expansion of services and products into areas such as health care, organizational development, learning, simulation and training.

*1.1 Defining terms*

We *prefer to use the term 3D internet* rather than virtual worlds although definitions overlap (see blog entries "dialogues on virtual worlds" by people from academia and industry[ii]). There are various limitations for 3D internet such as the rather primitive 3D of commercial internet-based real-time "virtual worlds" today (such as Second Life).

We attempt herein to look toward the integration of 2D internet (meaning the current flat-looking graphic representational space). The Web 2.0 or social web of today, where Facebook exemplifies user-driven content has connections with more experimental, emergent applications that allow for 3D to some degree or another. This 3D web terminology is inspired by discussions with Henrik Bennetsen at Stanford Humanities Lab[iii] and Eilif Trondsen at SRI in Silicon Valley. Other experts also view "virtual worlds" as more or less on a spectrum of internet-based "spaces" where users interact, generate a visual representations of themselves (whether a 2D photo or a 3D avatar, which they can combine and integrate), engage in learning activities (Pfeil, Ang, & Zaphiris, 2009), and wherein users can "move", and co-create contents to some extent (Smith, 2007) – but there is a call for standards for 3D web (Sivan, 2010).

In line with Bennetsen, Sivan and Trondsen, we propose to define and discuss a 3D internet which co-exists with the 2D, rather than using the notion of virtual worlds. *This 3D internet can be simply defined as interactive communication systems where users (the human participants) are interactive agents (often represented as avatars), who share a three-dimensional digital space*. In this space, users can interact, such as through avatars' gestures, and can use voice, navigate, and often build or manipulate objects. Avatars have been written about extensively (Elchoness, 2009; Feldon & Kafai, 2008; Foster, 2007; Jensen, 2009; Vasalou, Joinson, Banziger, Goldie, & Pitt, 2008). However, as the state of the art of today's

3D internet is rather primitive, many usability and development issues remain (Dev & Walker, 1999; de Freitas & Griffiths, 2008) – which is a point that we briefly return to in the conclusions.

For now, we propose seeing a situation where the 2D & 3D internet increasingly refer to each other. They co-exist as networks that are part of the "real world" of everyday, physical, cultural and social life and offer a multitude of ways to communicate.

We define entrepreneurship below, after we explain our approach.

**2. Our approach to entrepreneurship in the 3D internet: sectors and themes**

For the sake of handling the complexity of entrepreneurship in relation to the emerging 3D internet, we divided up relevant enterprises into five sectors for this report in line with our stated perspective. Our reason for relying on this particular literature is again the social and cultural view we take. We are inspired by, among others, Gerard J. Tellis' understanding of technological innovation as having an aim to produce better products for consumer welfare and research questions that refer to technological innovation from a marketing perspective (Tellis, 2009), Ted Castronova's work on virtual money and micro-macro economy (Castronova, 2010; Castronova et al., 2009; Castronova et al., 2009), cultural approaches (Crogan, 2009; Day, 2002), and views on the historical implications of entrepreneurship for societal development (Landes, Mokyr, & Baumol, 2010). We aim for "useful" knowledge, but again, looking at the cultural aspects rather than the technological.

Note that the divisions of sectors are not meant to split along how they receive financial support, for example, the economic resources for public services and education may come from the government (taxes) or from private sources or from a mix. The list of sectors below includes a few examples of businesses that could use the 3D internet within each sector.

*2.1 The five sectors*

1. Military – including training, simulation, communication systems
2. Industry - divided further into three areas:

   o   Large companies – incl. multinational corporations, banks, transport, natural resources.

   o   Medium companies – incl. many creative and service industries, manufacturers, retailers.

   o   Small companies – incl. "entrepreneurs" who are upstarts, freelancers, independent media producers and emerging niches.

3. NGOs – including private foundations, labor unions, media/press corps, charities

4. Public knowledge and service – incl. museums, libraries, police, tax, legal and political system, health care

5. Educational – including university research, schools

Our point is that the use of the 3D internet is relevant across sectors. We return to discuss these sectors in relation to the selection of next or best entrepreneurial practices.

*2.2 Entrepreneurship and the 3D internet: questioning what is "serious"*

As mentioned, while a stated focus of NVWN is on the "serious" use of 3D internet, we are *looking here at the overlaps of supporting "fun" experiences and serious content*. It is evident that 3D imaging and 3D technologies are a "trend" that is now underway (although many have predicted this before), but it is now becoming affordable to buy 3D television sets for home use and 3D movies are gaining popularity. Creative industries capitalize on 3D imaging for entertainment, but many other applications may be under development and in relative isolation. This is somewhat speculative (based on what is known from commercial products), but 3D has been under development by the military, for example, for simulation and training reminiscent of computer games, for surveillance and espionage, and is part of a long lineage of media technologies from the US military (Crogan, 2009; Noor, 2009). Possible upcoming commercial uses may still be protected or in early stages, such as the medical uses with haptic devices. It is known that companies are using 3D internet for training and meetings spaces, such as IBM (2009; Bell, 2007; Fuchs & Shaum, 2008; Kohler, Matzler, & Füller, 2009; Morenoger, Burgos, & Torrente, 2009; Pfeil, Ang, & Zaphiris, 2009; Smith, 2007). The approach of Web 2.0 methods for open, social community building are currently being applied to creating many open and flexible learning (or e-training) platforms (Bagnasco, Chirico, Parodi, & Scapolla, 2003). Organizational learning is seen as relevant from a company's standpoint because of the challenge to management of human resources when there is a fast obsolescence of technical skills and a need for workers to acquire expertise in new technologies and topics "in time". From the customers' point of view, the adoption of innovations such as the 3D internet is strategic in order to exploit any advantages of new technologies and tap into markets.

However, an issue that is present on the social web (Web 2.0) and 3D internet is anonymity and privacy of individuals and security. The currently available 3D internet offers many ways of hiding identities of people and of content (for instance, anonymous avatars on Second Life or other online worlds). The 3D internet offers a great deal of communication between people that is private and difficult to measure. The more private sphere of communication may be along the lines of dating or sexual activities and pornography, which arguably is not "serious". (This type of traffic on the social web of today is probably much the same as the 3D although data are not so clear. It is difficult to ascertain the extent of pornography via the internet.)

The question of seriousness is relevant in that a variety of playful, interactive experiences that entrepreneurs offer are in the emerging creative industries (e.g., fashion, animation, photo, film, music, architecture, design, games, social events including dating). But they can be questionable as both serious (e.g., have educational purposes, commercial interests) and fun (i.e., entertaining). We suggest that the creative "industries" and entertainment purposes relate

to various other sectors. For now, we set the question of what is "serious" business in regards to entrepreneurship and 3D internet aside, and return briefly to it in the implications.

*2.3 The dynamics of virtual money*

As pointed out by Castronova, among others, a micro scale (sociological viewpoint) of economy is connected or in dialogue with the macro and dynamic. The term moneys is used because the economies of virtual worlds have their own monetary systems but cross into real world money, for example via eBay's category for Internet Games. Castronova discusses this mix of in-world and irl (in real life); or what he calls in-game commerce and out-of-game commerce (2005: 163). Currently, commercial "virtual worlds" that have a virtual economy with a currency that can be converted to "real life" currencies are SL and Entropia Universe, but Blue Mars may have some ways (they have a currency, but we are unsure at the moment of how it works to trade with it).

We want to encompass virtual moneys as another aspect in the flow of international currencies or moneys. In order to capture the interconnected patterns of these currencies, we attempt to include here a micro perspective more than look at the macro levels of moneys. In summary, sectors cannot be divided strictly along the lines of commercial or non-commercial moneys. Especially in the Nordic region, there is a tradition of governmental support for the private enterprise system (such as funding for film and game production, etc.). [iv]

## 3. A quick overview of entrepreneurship in relation to the 3D internet

As "entrepreneurship" is our topic, we made a preliminary attempt to define terms and to draw up limitations for our case studies. The business-oriented literature on entrepreneurship often seems to use the word as synonymous with start-ups (see Castronova, 2005: 164).

Our first step was to conduct a search of the extant literature on entrepreneurship in relation to the 3D internet by entering keywords and searching Ebsco Host (Academic Search Premiere database) and ISI Web of Knowledge. In addition, we found some articles that were in press through our network and new books on entrepreneurship through recommendations by a librarian at the Roskilde University library. The authors of this report attended two conferences/seminars on 3D internet / virtual worlds, which supplemented our literature search. The primary keywords were paired with secondary keywords:

Primary:
Entrepreneur*, Innovat*, 3D environment, Virtual world, Virtual environment*, Virtual space*, Second Life

Secondary:
Filmmaking, Animat*, films, machinima*, Fashion, NGO, Simulation, Staff training, Personnel, Role-Playing, emergency, creative industr*

It is important to note that entrepreneurial projects and SME companies may be funded by larger companies, supported by grants, involve research collaborations with inventors and so are not "just" small startups. Innovation and entrepreneurship thus overlap and may involve collaboration and development across sectors. Both the large and small companies and upstarts are trying to be innovative, and the terms overlap. For instance, the Cutter Innovation team (Austin, 2008) pointed out examples from larger companies – ranging from Boeing's transformed view of "failure" to the role of "emergent features" in pharmaceutical industry innovation.

Given that caveat, some of the literature on innovation, especially on user-driven innovation and 3D internet, outline interesting ways of including 3D internet users in the development of design and marketing strategies (Kieger, 2010; Kohler, Matzler, & Füller, 2009), crowd-sourcing (Ebner, Leimeister, & Krcmar, 2009), and pro-am culture (Leadbetter & Miller, 2004). Users are being termed prosumers (producer-consumer) now to show that the notion of a passive user or consumer is passé. However, we will not review innovation further here, as it is part of WP 2 but go on to our topic of entrepreneurship.

*3.1 Defining entrepreneurship*

In order to get closer to a definition of entrepreneurship, the next section will focus on entrepreneurship by investigating how the concept has been defined by others.

Entrepreneurship has been studied by a variety of research traditions, such as business, computer science and public science (Landes, Mokyr, & Baumol, 2010; Tellis, 2009) and has been recognized as a major force in the global economy. In this section we are aiming at disclosing how entrepreneurship has been defined in an international business setting as well as at other social definitions. We will also investigate how entrepreneurship can be applied to the recent phenomenon of new, digital media and especially the 3D internet.

Schumpeter (1934) characterized business entrepreneurship as *breaking new ground*, in such areas as:

- Entering new markets
- Introducing new products
- Applying new methods of production
- Developing new sources of supply
- Accepting the increased risks that this entailed

Gartner (1988) distinguishes entrepreneurship in terms of establishing a new organization, while Mosted (1991) focuses on innovation and establishing a new business.

Bygrave and Hofer (1991) defined entrepreneurship as

- Exploiting opportunities that were not seen by others

Amit, Glosten, & Muller (1993) defined entrepreneurship as:

- The process of extracting profits from new, unique, and valuable combinations of resources in an uncertain and ambiguous environment; more generally, the creation of new enterprises

Gunning (1997) defined entrepreneurship as:

- The willingness to bet one's time and/or money that one's appraisals of factors are superior to the appraisals of others.

McDougall and Oviatt (2000) have defined international entrepreneurship as:

- A combination of innovative, proactive, and risk-seeking behavior that crosses national borders and is intended to create value in organisations.

While Teigland (2010) introduces the term *avapreneurship* to capture the act of entrepreneurship in virtual worlds conducted by avatars, Kieger (2010) reviews entrepreneurship in virtual worlds and discusses the following characteristics:

- A new technology providing new sources of revenues
- An entrepreneur willing to invest money in order to increase his/her wealth
- A market which is growing and well understood by the entrepreneurs

*3.2 Our working definition of entrepreneurship in 3D internet*

The *3D internet* can be interpreted as having the challenge of being a new and pioneering area. In summary based on the above definitions, it can be said to have the following unique opportunities and defining characteristics for entrepreneurship:

- Developing new markets where virtual products/services are offered in a virtual small business by entrepreneurs.

  - o As the public emergence of the Internet created a demand for web developers and web designers, *virtual worlds are creating a demand for scripting developers and product designers*. This opens up for amateurs and pros, who may become entrepreneurs. For instance, making films within the world, as documented at Stanford Machinima Archives led by Lowood and Crogan's work on the phenomenon of virtualization and networked simulation in the context of the audiovisual media culture (Crogan, 2009; Lowood, 2006).
  - o *Creative industries* focus on the creation and exploitation of intellectual property such as art, film, music, dance, theatre, advertising, broadcast media, software development, and computer and related services. For instance, attracting filmmakers, architects, fashion designers, automotive manufacturers, real estate agents and nightclub owners. The hindrances to the creative industries are of course many and this will be taken up in relation to the upcoming case studies.

- o Another example is gamers selling virtual goods made in MMORGs (Cannon, 2006; Kieger, 2010; de Freitas & Griffiths, 2008).

- Experiencing a dual economy, as a dynamic of various moneys, including:

  - o Virtual economy (e.g., Linden currency of Linden dollars)
  - o A real economy with currency in use in the real world (e.g., when a product is chosen in a virtual shop, the customer is taken to the "real" e-commerce site for the actual purchase).

- Offering opportunities for education and training.
  The adoption of continuous and ubiquitous learning models for both company staff and customers (Bagnasco, Chirico, Parodi, & Scapolla, 2003).

In our review we found that characteristics of entrepreneurship for virtual worlds as they appear today are the following:

- (Low) entry barriers
- Jurisdiction an issue (see the comments below)
- Influence of personal networks for success or failure
- Co-creation by the company and the customer

Hence, we look at entrepreneurship in relation to **upstarts**, such as small-scale development projects and companies existing **in 3D Internet environments** where there is a **circulation of real world money** and other monetary systems. However, entrepreneurial projects and SME companies may be funded by larger companies, supported by grants, involve research collaborations with inventors and so are not "just" small start-ups.

*3.3 List of entrepreneurial activities*

Based on a synthesis of the literature on entrepreneurship, we come to a description of the kinds of activities that are conducted by entrepreneurs in regards to the 3D internet:

- Idea generation
- Developing unique products/services
- Raising money or funding[v]
- Planning (knowledge re positioning of new products, services etc)
- Deciding on type of company and juridical arrangements
- Utilizing co-creation as business model in some cases
- Recruiting and employing in some cases
- Searching for markets and developing marketing strategy
- Developing and leveraging networks in order to overcome liability of newness
  - o E.g., constructing and tapping into relationships, connections, and communities
  - o Spreading enthusiasm for idea
- Building online community
  - o Scaling for growth (including technological development)

**4.0 A broad selection of case studies within entrepreneurship**

Below is a broad selection of entrepreneurial activities that provide a picture of the organizations emerging currently in the 3D internet space. These cases were known to us or found by asking our fellow researchers and others in our networks. We highlight them in order to point out the interesting entrepreneurial areas where there appears to be growth. We have also chosen them because they provide examples of the range of activities across learning, healthcare, and the creative industries. After presenting this broad selection, we explain our suggestions of the three to five cases to pursue as exemplary next practices.

*4.1 Organizational learning*

*Clever Zebra http://cleverzebra.com/*
Clever Zebra in SL (Nick Wilson, UK) produces virtual events in a variety of environments for corporations and associations in the UK and partners on providing services in 3D virtual worlds internationally.

*Innovation in Learning, http://www.innovationinlearning.com*
Innovation in Learning is led by Dr. Parvati Dev and Dr. LeRoy Heinrichs. It develops and deploys 3D virtual medical environments with virtual patients (using programmable avatars) that enables training of medical students (but also healthcare workers) by using "virtual standard patients". Their goal is translation of concept learning into actionable knowledge so as to develop well-trained healthcare professionals, effective teams, and safe hospitals, clinics, nursing homes and home. Parvati Dev has been a resident scholar at Media X, Stanford and is also a VW entrepreneur, preparing the marketing of new products that can replace the use of mannequins that are expensive and inflexible with avatars. Her business partner, LeRoy Heinrichs, is Professor Emeritus at Stanford and Executive Medical Director.

*VenueGen, http://www.venuegen.com*
VenueGen is a company that aims to transform online or "virtual conferencing" into a more productive experience and the company is launching its own 3D virtual meeting technology. The CEO is Gardner. Similar platforms are InXpo, and Unisfair.

*Virtualis http://www.virtualiscenter.com/*
Virtualis in SL, run by Don Parks, has launched a meeting and event facility in SL where he enables clients to have fully immersive and very innovative experiences rather than traditional, boring meetings.

*4.2 Wellness, healthcare*

*Club One, http://island.cluboneinc.com*
Club One has a company island in Second Life with a virtual weight loss program—and says "Interact through your Avatar. Lose weight in real life". Their website has the following phases: (1) Understand the program; (2) Begin losing weight; (3) Island Community; (4) Research Candidates; and (5) Referral Program.

*Empower Interactive, http://www.empower-interactive.com*

Empower Interactive has an online platform for teaching core skills to manage stress, anxiety and depression, enabling people and companies to cost-effectively manage well-being. Empower educates users about the fundamentals of cognitive-behavior therapy (CBT) through an experiential, personalized web-based user interface, which is Web-based. They are considering using more immersive virtual environments although the move in this direction is not imminent.

*Inworld Solutions* http://www.inworldsolutions.com
Inworld Solutions, headed by Dan Gillette, is designed to help clinicians improve the therapeutic process by (1) Rapidly engaging clients and holding their active participation, (2) Efficiently overcoming emotional barriers to therapy, (3) Making therapeutic progress more rapidly, and (4) Working with clients remotely and in groups. The primary benefit of InWorld is that it gives clinicians an additional way to engage clients both cognitively and emotionally. It offers the potential for faster progress by allowing therapy to be more focused.

*4.3 Creative: Film, music, and art*

*C.A.R.P  (Cybernatic Art Research Program),* http://cyberdesign.ning.com
C.A.R.P. is a network founded by Velazques Bonetto and Josina Burgess. This group of international professional artists, engineers, programmers, scriptwriters, architects, musicians etc, collaborate, experiment, share ideas and work together to develop New Art and Technology.

*TheDOgroup* http://the-do-group.com
theDOgroup is an animation film studio that creates films using content from virtual worlds for commercial clients. It is based in Berlin and was started by 3D graphic artist, who is known by the avatar name Cisko Vandeverre. A selling point is that the real-time nature of machinima involves established techniques from traditional film-making that can be "reapplied in a virtual environment" and it is more competitively priced and with quicker turnaround time than classic CGI animation.

*Metanomics* http://archive.treet.tv/programs/metanomics
Metanomics is a program on the net-based "TV channel" Treet. Metanomics is framed as a talk show, broadcasting interviews with practioners and academics in SL, online and live, and offers a unique mixed reality webcast with a serious and investigative slant. For instance, see the show about architecture with Terry Beauboisand (who teaches course "Digital Collaboration for Architects" at University of Montana, using Google Earth and SL etc.) and Jon Brouchaud (from Wikitecture):
http://www.metanomics.net/show/july_7_-_3d_architecture_physical_and_virtual_practice/

*Pop Art Lab:*  www.popartlab.com
Pop Art Lab is a SL sim started by Danish music librarian Claus F Poulsen. It has an aim to connect music lovers with independent artists and the recording industry through streaming music, live/virtual performances in a dance club, many concerts and machinima events. PAL the only Danish company the SL official recommendation of destinations. PAL cooperates with the virtual broadcasting station treet.tv, who record and show arrangements and concerts under the title "Popvox".

*SubmarineChannel* [www.submarinechannel.com](www.submarinechannel.com), [www.anotherperfectworld.submarine.nl](www.anotherperfectworld.submarine.nl)
SubmarineChannel is an initiative of the Amsterdam based production company Submarine founded by Bruno Felix and Femke Wolting, pioneers in the Dutch crossmedia. It gathers the most stylish, offbeat, original artworks with a global perspective on digital culture and showcases it on the net. It assembles this content from exclusive licensing to being agent for distribution with other web sites and media and also syndicates work to other web portals, TV companies, mobile services operators, etc. (The sponsors are the city of Amsterdam and the Dutch Ministry of Culture, Education and Science.) The Submarine production company has cross-media production capabilities that take existing work and re-format and re-edit it, for example making made-for-net films ready for TV broadcast.

Wolting co-directed (with Jorrien van Nes) "A Brave New Virtual World Founders", an excellent documentary film surveying the current variety of virtual worlds with a focus on entrepreneurship and future cyber economy. See synopsis on SubmarineChannel, or their 30 minute preview on YouTube: [http://www.youtube.com/watch?v=NxZP_ur_Tvo&fmt=22](http://www.youtube.com/watch?v=NxZP_ur_Tvo&fmt=22)

*4.4 Creative: Fashion and fashion games*

*Avaloop – Papermint Papermint* [www.papermint.com](www.papermint.com), [www.avaloop.com](www.avaloop.com)
Avaloop is a newly illustrated social networking virtual world founded in 2006 by four Germans. Papermint targets women between 15 and 35 to have virtual careers, such as a fashion designer. Its players create custom fashion designs for virtual clothing with great levels of personalization. The virtual currency is called Papercoins and also has a sub currency called Mints that grows in the world and is usable for 24 hours.  This world is perfect as a hobby for teenage girls but is limited for encouraging fashion entrepreneurship within Papermint.

*Fashion Research Institute,* [http://www.fashionresearchinstitute.com](http://www.fashionresearchinstitute.com)
Fashion Research Institute offers a variety of fashion services for the fashion industry, which sometimes includes using SL, to help their clients improve their fashion design skills and model up things for buyers of fashion.

*Media Molecule* [www.mediamolecule.com](www.mediamolecule.com)
Mm are creators of the Little Big Planet game. Mm was founded by a few games industry veterans, who worked on cult indie game Rag Doll Kung Fu at Lionhead Games. They started their own company with the aim to create innovative and creative games for a new generation of consoles. Absolutely inspired art direction is in their game, a virtual world and animation art theatre with high quality 3D graphics. The Little Big Planet game has received AIAS Interactive Achievement Awards for Outstanding Achievement in Art Direction, Visual Engineering, Game Design, Innovation in Gaming as well as awards for Artistic Achievement at the British Academy Video Games Awards and for Best Game Design at the Game Developers Choice Awards.

*Retail therapy* [www.playretailtherapy.com](www.playretailtherapy.com), [www.sugarinc.com](www.sugarinc.com)
Popsugar Retail Therapy is a Facebook game tailored to women.  It was started in 2006 by three web entrepreneurs, and it borrows elements from hugely successful Farmville to entice users to purchase virtual goods for advantages in the game.  It features reality-based goods

from known brands, which is somewhat new in the industry. The player's objective is to stock a virtual store with real world brands. Participation by brands includes Banana Republic, Barney New York, Topshop, Diane Von Furstenberg, and more. A similar social game is Mallworld, which is largely more popular although it does not feature real-world brands.

*Sulake - Habbo Hotel* [www.habbo.com](www.habbo.com), [www.sulake.com](www.sulake.com)
Habbo Hotel is the world's largest teen virtual community and social game with15 million monthly unique visitors. It began in 1999 when the Finnish founders Sampo Karjalainen and Aapo Kyrölä, both in their 20s, created an online application " Mobiles Disco", a kind of graphical chatsite for friends' band. They developed the idea further in an advertising campaign for a Finnish mobile operator in 2000 with a snowball fight game, which later turned into Habbo Hotel. As a player in Habbo, you can find fashion designers, beauty salons, and modeling agencies. Most of its revenues are from in-world gifting and virtual vanity items, but also from ads and promotions of creatives, such as musicians. Sulake caters to teenagers and surveys fashion trends among teen users (fashion sources, brands, icons, etc.), which they publish under the Habbo Global Fashion Survey, which can be useful for marketing. Sulake has also recently teamed up with Fremantle Media, the company that produces American Idol, and entertainment wrestling giant WWE.

*In-World War*, [www.inworldwar.com](www.inworldwar.com)
*In-World War* is low-budget, DIY (do-it-yourself) science fiction film in progress. The filmmaker is Brant Smith, based in San Francisco. The film includes an 8 minute long segment of machinima, recorded in 2009 in Olive Platform with the cooperation of developers at Forterra Systems and a troupe of avatar performers led by Steve Hansted from Forterra. The setting for the machinima is a virtual Baghdad, which was originally developed for the US military as a type of role-playing simulation setting for training staff. *In-World War* film production continues (until 2011) as a sort of co-creation with a network of collaborators.

*4.5 Creative: Architecture*

*Damon Hernandez* [http://damonhernandez.blogspot.com](http://damonhernandez.blogspot.com), [http://www.web3d.org](http://www.web3d.org)
Damon Hernandez is a Mixed Reality specialist based in the USA. He has been active in 3D web open standards for the past decade as a developer and consultant for mixed reality companies and helps the Web3D Consortium on their global outreach and web3D education initiatives. Hernandez is one of the founding members of the now international AR Developer Camp, and he is currently working with developing augmented reality applications for real world uses. As a supporter of open standards for the geo-web, he is involved with 3D web convergence with other technologies including GIS, CAD/CAM, AR, and mobile platforms. Hernandez also develops tools for architectural visualization and building specifications, such as IDEA Builder, currently under development for high-end architectural projects.

*Wikitecture* [http://studiowikitecture.wordpress.com/about](http://studiowikitecture.wordpress.com/about)
Studio Wikitecture is an open group for individuals using 3-D servers for the application of an open-source paradigm to the design and production of both real and virtual architecture and urban planning. The founders are architects Ryan Schultz  and Jon Brouchoud. Since 2007, they have been conducting an international group who share ideas, edit the contributions of

others, and vote on the success or failure of proposed design iterations. For example, they won a '3rd Place' for a competition hosted by the Open Architecture Network on design for a Tele-Medicine Facility for a community in Western Nepal.

*4.6 Discussion*

Reviewing this broad selection of entrepreneurial practices listed above, we want to point out a few interesting themes. One is how entrepreneurs are harnessing the social ideas behind Web 2.0 (such as open source development, co-production, co-creation[vi] in social networks) with the technological developments of the 3D internet. Secondly, the practices that can offer interesting cases of "next practices" involve the *affordances* of simulation (augmented reality, such as training using simulation). Many of the entrepreneurs work actively on developing interaction design of their services and products. Thirdly, the *entrepreneurial practices or activities* cross different sectors, such as healthcare and the arts, and exemplify trans-disciplinarity.

We suggest that especially <u>*the creative industries*</u> offer excellent exemplary "next" practices for entrepreneurs who are developing services and products via the 3D internet because the creative industries often spearhead changes in work practices. The creative industries at large consist of many entrepreneurial and auto-didactic people, and there is a culture of innovation and risk-taking since it is important to be open to experimentation and to constantly renew yourself and your skills. It is a highly international, competitive field. We also find it relevant that the creative industries are in focus in the Nordic countries as being innovative and successful due to our export of games, toys, films, music, product design, fashion, and architectural expertise. We also find it interesting to pursue the creative industries because many of the practices involve simulation (directly or indirectly) and co-creation (user-driven contents) to some extent. Some of the creative practices involve experienced professionals (such as Wikitecture), who start open communities and invite amateurs in order to experiment with the 3D internet, but are not technologists. We have chosen to focus on two types of entrepreneurial next practices within the creative industry that seem to be expanding: 1) film production practices (especially machinima, a kind of real-time animation which also relates to the game industry), and 2) architectural practices (which also relates to simulation and augmented reality).

We have also chosen <u>*organizational learning*</u> as another area of entrepreneurial practices because this area not only attracts entrepreneurs developing the 3D internet but has already previously received a lot of attention (as educational technologies, e-learning, mobile learning, computer supported collaborative work, i.e., using various ICT platforms). There are obvious savings possible if organizations are able to communicate and collaborate better (via 3D internet, augmented reality, and embodied interaction of avatars. Etc.) and save travel expenses. Organizational learning as a next practice refers to cases of developing conference, meetings and course systems by entrepreneurs who offer services to international companies or to the educational sector. Specific types of learning include staff training, simulation (such as for health care, emergencies) and communication. These learning practices with 3D internet cross all of the five different sectors.

*4.7 Selection of activities for further exploration of "next" or "best practices"*

In our case studies, we have *tentatively* selected three to five case studies in WP3 to investigate further in terms of these characteristics and potential for entrepreneurial practices. We present them as a type of emerging activities, practices or "next" practices: machinima, architecture, and organizational learning. These practices share a focus on communicative practices.

- Machinima – based on case studies by Frølunde. Machinima serves as an example of a variety of users along a spectrum of amateurs to pros (Berkeley, 2006; Coleman & Dyer-Witheford, 2007; Tsai & Czarnecki, 2008) who develop films out of game and fictional "spaces", a development that was reportedly not expected or heralded by most game companies.
- Architecture - based on a review of case studies by Ursula Plesner (2010) at Copenhagen Business School. The case serves as a discussion about how architects communicate design visions using the 3D internet, among many other forms of visualization, and the enrolment of users in new innovative technologies.
- Organizational learning - relating to cross-cultural management and knowledge transfer in companies by Bjørn-Tore Flåten and Robin Teigland, with focus on the potentials of the 3D internet as one (of many) types of available communication platforms.

*4.8 Comments*

Our comments here include the problematic issues, such as jurisdiction in regards to the current state of commercial virtual worlds, that we uncovered as we performed our review. The issue of copyright is mentioned in the literature (Jenkins, 2006; Lowood, 2006; de Freitas & Griffiths, 2008) but applies to the availability of reusing or remixing of internet content in general. Some big questions are 1) how to deal with ownership of content and protection of work (from practices of hacking, fan sampling, mashup and creative remix as Jenkins and Lowood discuss), 2) how companies and private persons regard the 3D internet, and 3) what sort of investment entrepreneurs are willing to make with technologies that are still in their infancy.

An example of problematic jurisdiction is Second Life, for even though it is the largest 3D internet "world", it has restraints in terms of remixing by users, it is owned by Linden Lab, is unstable and thus raises question regarding the limits of SL entrepreneurship – although this growth is often heralded as its appeal. SL's reputation appears mixed, also due to 1) instability technically, 2) the rather sexualized contents and hype, and 3) graphic style. For instance, our contacts in the fashion industry, architecture and the computer graphics industry have serious concerns regarding copyrights, style, and quality, especially with regard to SL. For an example of this, please read the post on the NVWN blog by project member, Linda Björg Árnadóttir (http://nordicworlds.net/?p=494). Style is a "serious" problem, in particular relevant for the industries that value their visual communication. Thus, the graphic style of SL and its poor interface design, stability, and functionality mentioned are a serious hindrance to adaptation and may even be part of a backlash *against* the 3D internet. The variety of user-driven contents in SL is part of its success but also its drawback. Albeit we know that 3D

technologies are in their infancy, the critical perspectives of frustrated visitors to SL are important.

On a positive note, *interaction design* is an area that offers many opportunities for research and development. As NVWN project member Eilif Trondsen has suggested, a key skill and necessary expertise for the development of the 3D internet is interaction design. Therefore, in order to have for instance successful learning in 3D internet, we need to consider issues of design and how to influence the development of *interaction designers* who can take advantage of the unique affordances of 3D internet. We agree that this is something we should explore further, especially as the Nordic region has so many competencies in the area of participatory design and human-computer interaction.

In concluding, entrepreneurship in virtual worlds may be characterized by involving a high risk of failure. This failure is very interesting, for example for many Silicon Valley startups, and understanding the failed experiments is valuable. SMEs and large companies may even have parallel sets of issues.

## 5. Discussion and conclusions

As several researchers at a recent seminar on virtual worlds and innovation in Denmark (http://worlds.ruc.dk/events/workshop) pointed out, researchers may be neglecting the variety of popular "virtual worlds" (Consalvo, 2010), the potential of the mix of the real physical world with internet-based spaces in augmented reality (Bolter, 2010), for collaboration (Kohler, Matzler, & Füller, 2009), and artistic experiments (Brown, 2010). As a general remark, there is a need to beware of having too much attention paid to Second Life and to spread out into other 3D internet initiatives. Henrik Bennetsen's work on Sirikata and other platforms holds promise, but this appears to be shifting now toward developing prototypes and case studies of interactive museum exhibitions and social collaboration among hospitalized youth (as yet undisclosed).

We suggest that more work needs to be done in the following areas:

- Doing a comparison of different virtual worlds is needed.
- Investigating co-creation as a business model
- Developing interaction design so as to optimize the affordances of the 3D internet and clarify the need for training of designers
- Supporting creative industries and their unique potential
- Investigating the flow of moneys between 2D and 3D internet and the relationship to the international economy. The distinction between the real and what can be termed "virtual economies" has blurred in the course of the last decade (see Castronova, 2010) and is changing continually, but there is a lack of research on this.

In concluding, our goal in this deliverable has been to present some basic trends in the existing research. But we have not evaluated the examples listed. We are preparing a presentation of in-depth case studies on the 3D internet in order to understand creative and

social practices in regards to overarching issues of design, communication, collaboration and learning.

We agree with Sivunen and Hakonen (2010) that the framing of research questions in the 3D internet / virtual worlds field are often too narrow and that a focus on macro-level phenomena such as leadership and intergroup relations could leverage attention and broaden the field even further. They propose the utilization of (meta)theories of social sciences as this would avoid marginalization and contribute to the development of research on the 3D internet and integrate it better within social research. Literature on the 3D internet is growing rapidly as academics pay attention to the *social* and collaborative phenomenon, and we hope to contribute to this further. By suggesting best/next practices of entrepreneurship, we hope to shed further light on the emergent field.

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[i] The article *The New Frontier of Experience Innovation* (Prahalad & Ramaswamy, 2003) has an interesting discussion on the value of exploring *next practices* in research, and ways to pick up the early, weak signals of a fundamentally changing paradigms and attempting to amplify them into a clearer picture.

[ii] See the dialogues about "what is a virtual world" posted by Carrie Lynn Reinhardt, http://worlds.ruc.dk/.

iii *Presentation of Sirikata, open source platform for games and virtual worlds* was by Henrik Bennetsen from the Stanford Humanities Lab. Held Friday, January 15th, 2010 at Aarhus University. Online program: http://darc.imv.au.dk/?p=667

iv For instance, in a case study by Frølunde, a gamer starts his own machinima filmmaking company with fellow gamers in different countries and tries to coordinate performances with avatars. In another case study (by Frølunde, under analysis) shows how Brant Smith, an indie filmmaker from San Francisco, records a segment of machinima in a virtual Baghdad, which originally was created for the US military for the purpose of training staff. Forterra Systems, the company that produced virtual Baghdad, is an offshoot of there.com, a 3D commercial virtual world created for entertainment purposes. These sorts of complex transformations flow back and forth in various ways; across the multinational and local levels, across professional and amateur communities, across funding sources.

v Rather than the concept of "best practice", we instead focus on the *activities* accomplished by the entrepreneurs, such as idea generation, finding new products, co-creation etc. Again, we prefer to focus on *activities* for now, as we don't like the term "best practices" (but are considering calling it "***next*** practices"). We want to avoid categorizing something as best (or good or bad). We also suggest keeping a narrow view on entrepreneurial *activities* on the 3D internet rather than broadening out to activities in general, or in the "real" world.

vi Co-creation is an important aspect of how activities and interactions work on the internet. The term refers to open source development and to work by C. Prahalad, who introduced the concept in a wider context (Prahalad & Ramaswamy, 2003). It also refers to the value to a firm when goods and services are increasingly co-created by the firm and the customer. Hence, the focus is not only on what is going on inside the firm, but rather what is taking place when the members of the firm interact with customers.