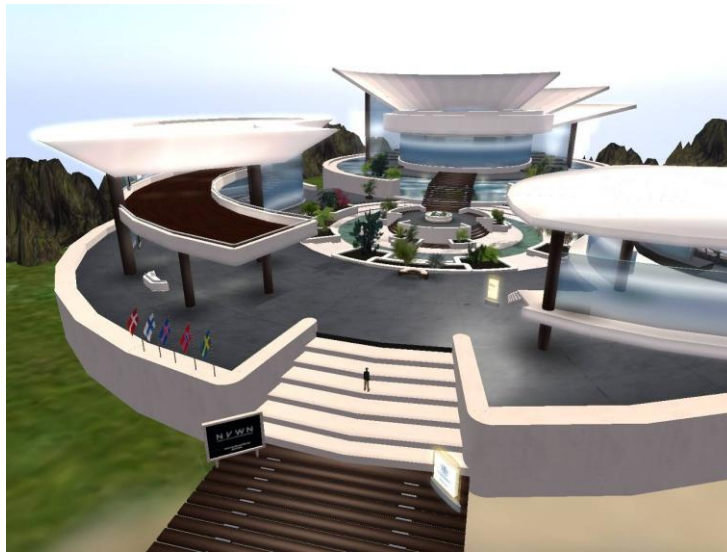


**Final Scientific/Expert Report**  
**on**  
**Virtual Center for Entrepreneurship and Innovation (VCEI)**  
—  
**Creating a Virtual Center for**  
**3D Internet Entrepreneurship and Innovation**



**NVWN Milestones 13 and 14**  
**NVWN Work Package 5: Virtual Center for**  
**Entrepreneurship and Innovation**  
**December 2011**

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## Executive Summary

One objective of the NVWN project was to create a Virtual Center for 3D Internet entrepreneurship and innovation. One of the reasons for this was that we observed that many 3D Internet efforts were conducted in innocent isolation from one another.

The **purpose** of establishing such a center can be summarized in the following:

- To stimulate and facilitate networking and knowledge and resource sharing among Nordic individuals and organizations interested in 3D Internet and entrepreneurship/innovation.
- To connect Nordic actors to leading 3D Internet actors working with entrepreneurship and innovation in other global areas to improve knowledge sharing as well as business opportunity development (e.g., Silicon Valley).
- To increase the level of knowledge concerning how to develop and use 3D internet in the context of entrepreneurship and innovation.

On Wednesday, November 9, 2011, the Virtual Center for Entrepreneurship and Innovation was officially launched. The center consists of a 96-seat auditorium, two workspaces equipped with discussion group layout, office layout, presentation opportunities, etc., all of which can be changed according to the needs of the users. In addition to an outdoor area, there is also a gallery where information and ads can be showcased as well as a control room and planning room under the auditorium.

This report details the development of the virtual center and explains the choice of platform. The plan for the future is that entrepreneurs and researchers interested in the virtual center will be given the opportunity to use it. Several project members of the NVWN project are also planning monthly seminars focusing on entrepreneurship and innovation in virtual worlds. This means that the center will fill a need beyond the project period.

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## **1.0 Objective**

One objective of the NVWN project is to create a Virtual Center for 3D Internet (aka virtual worlds, virtual environments, etc.) entrepreneurship and innovation (VCEI). One of the reasons for this is that we observed that many 3D Internet efforts are often conducted in innocent isolation from one another. Additionally, to our knowledge there does not exist any other equivalent in the Nordic region. Instead of reinventing the wheel, waste of resources, and lost innovation opportunities, we believe the VCEI could stimulate and facilitate knowledge and resource sharing and networking among individuals and organizations interested in 3D Internet entrepreneurship and innovation. Particularly, entrepreneurs and academics from start-ups, academic institutions, government organizations, and other foundations would benefit from such a center.

The **purpose** of establishing such a center can be summarized in the following:

- To stimulate and facilitate networking and knowledge and resource sharing among Nordic individuals and organizations interested in 3D Internet and entrepreneurship/innovation.
- To connect the Nordic actors to leading 3D Internet actors working with entrepreneurship and innovation in other global areas to improve knowledge sharing as well as business opportunity development (e.g., Silicon Valley).
- To increase the level of knowledge concerning how to develop and use 3D internet in the context of entrepreneurship and innovation.

Although the focus is on the Nordic region, we suggest based on the feedback from a survey in November 2010 among the project partners to extend the scope to include a **global orientation**. Besides, we are not only aiming to attract 3D Internet entrepreneurs but also to offer events to “real-life” entrepreneurs who could benefit from using a 3D environment to increase their knowledge on entrepreneurship and innovation and those who would benefit from including a 3D Internet environment as part of their business. Hence, the project suggests to also including

the entrepreneurs who will use a 3D Internet environment for training purposes, connecting with other entrepreneurs/business angels, and gathering feedback / knowledge.

Thus, the **vision for the VCEI** is *to facilitate networking and knowledge sharing among Nordic individuals and organizations interested in 3D Internet and entrepreneurship/innovation.*

## **2.0 Content and Sustainability of the VCEI**

Having identified the need and the vision for such a center, the NVWN partner University of Agder initiated and hosted a full day workshop on November 8, 2010, where partners and external participants were invited to discuss the content and sustainability of the center. Regarding the content of the VCEI, the dialogues suggested to focus on the activities the center potentially could offer. These can be summarized in the following:

- **Educational Activities – Seminars**
  - eLearning
  - Guest lectures
  - Podcasts
  - “Bridging the gap” education
  - Presentation of research projects
  - Academic collaborations
  
- **Consultancy – Mentors**
  - Start-up coaching
  - Accounting & legal consultancy
  - Expertise consultancy (for example, in Virtual Worlds or Social Media or Conversion)
  - Incubation
  - Mentorship program
  
- **Events**
  - Relevant entrepreneurial events
  - Awards
  - Networking events
  - Teambuilding events
  - Brainstorming events
  - Promotional events

- **Competitions and Promotions**
  - Motivational competitions for start-ups and students.
  - Viral competitions to promote the Virtual Center.
  - Various competitions such as a “Charity Events”.
  
- **Bootstrapping – Pitching - Investing**
  - Opportunities for start-ups to seek funding
  - Opportunities for investors and organizations to invest on entrepreneurs and promote Entrepreneurship
  - Creation of a virtual business network  
(Entrepreneurs – Investors – Job seekers - Organizations)

Regarding the *sustainability*, the participants suggested making the center self-sustainable. The VCEI should seek to attract a network of active users (community) that will continue to use the center after the NVWN project is over in February 2012. However, someone needs to take moral and practical responsibility to run the center. This report presents a specific suggestion for how this can be obtained. Part of it is already conducted; other parts will need to take place once the community and a suggested advisory board are operational. Thus, in terms of sustainability the report suggests to:

1. **Attract a community** of interested users (e.g., on the NVWN blog [www.nordicworlds.net](http://www.nordicworlds.net) there is a “Join the community” tab on the right on the top of the page). The community will be the most important source in terms of developing a sustainable community, which will be able and willing to continue developing the VCEI. People who sign up agree on receiving updates on activities in virtual worlds as they indicate a genuine interest in the topic. They can also actively contribute by making posts and collaborate with the other community members through the blog.
2. Establish an authority to operate the VCEI. Specifically, initiatives have been made to establish an **advisory board**, and in January we will publish a post on the NVWN project blog and Facebook group and on other related sites to attract interested individuals. Until then, Robin Teigland, Eilif Trondsen, Göran Lindqvist, Elia Giovacchini, Lisbeth Frølund, and Bjørn-Tore Flåten, have been temporarily selected to the board. During the last NVWN project meeting in February 2012, the temporary advisory board will then evaluate the candidates and decide who will continue to sit on the board. Ideally, the

advisory board should consist first of five partners: two from NVWN, two from the NVWN community, and 1 “external”.

3. Attract **income** through advertising banners, various marketing activities, donations, etc., which could finance the activities. The advisory board will work out how this will be managed in the future, but the initial attempts will include a letter to potential universities and research institutions in the Nordic region offering a banner with the university logo. Here we suggest to start with the universities involved in the NVWN project.
4. Provide incentives as illustrated in the suggestion for the content and activities of the VCEI for the users such as **annual awards** in different categories. The first award will be the “Most active community member”. The prize will be a virtual statuette in recognition of a participant’s active involvement in the community such as the number of posts and comments and activities organized during 2012.
5. Ensure ownership by partners and community members of the center and potentially use it in their **teaching and research activities**. A thorough description of some future plans is presented in section 6.

**Table 1: Sustainability Plan for the VCEI**

Activity	Purpose	Timeframe
<b>Develop Community</b>	Attract interested people who will continue developing the VCEI	Already started by adding a “Join the community” tab
<b>Develop Content of VCEI</b> (Detailed description above)	Stimulate networking and knowledge sharing	Already started with monthly meetings that will continue <a href="http://bit.ly/ryMPqM">http://bit.ly/ryMPqM</a>
<b>Establish Advisory Board</b>	A group of five individuals taking practical and moral responsibility	Temporary board selected; started the recruitment of a new board which will be selected by the community in Feb 2012
<b>Ensure Income</b>	Cover the fixed costs of operating the blog	Letter sent to partner universities offering banners during Jan 2012

<b>Provide Annual Award</b>	Recognition for contributing to increase the motivation	Evaluate blog posts and comments and other activities at the end of 2012
<b>Conduct Teaching and Research</b>	Facilitate networking among Nordic actors and provide an easy accessible space for collaboration and teaching	Discussion of joint activities and of coordination of islands in Second Life <a href="http://bit.ly/u7T3mx">http://bit.ly/u7T3mx</a>

Before going into the details of the efforts and activities already made for the VCEI, an evaluation of potential 3D Internet Platforms is presented. The evaluation of the platforms was needed in order to make a deliberate choice of which 3D Internet platform that can serve the purpose/vision of the VCEI.

### 3.0 Evaluation of 3D Internet Platforms

The goal of this section is to explain how we evaluated the various 3D Internet platforms that potentially could serve the need/purpose of the VCEI presented above. In order to make a deliberate choice regarding on which 3D Internet platform the VCEI should be launched, we needed to develop a set of evaluation criteria. The following criteria were developed through discussions in November 2010 within the group of researchers in the NVWN project and through discussions with selected experts. The following criteria were selected for evaluating virtual world platforms to help choose a suitable platform:

#### 1. Popularity – number of users

- Before developing a VCEI in a virtual world, it is important to know the number of users in the particular world. This will inform about the potential user base in the virtual world.

#### 2. Type

- If one only is aiming at the quantity of users, one risk is to overlook the type of users and platform providers that the virtual world represents.

#### 3. Average age of users

- Actual entrepreneurs have to evaluate the age of the target groups for their products and services on the different platforms. Therefore, it is of great value to know the average age of the users of the particular virtual world. Likewise, for researchers and others interested in immersive environments, it is important to know something about the average age.

**4. Growth trend**

- Before establishing a VCEI in a virtual world, it is important to know whether the virtual world is growing or if it is a falling star. The number of users/members or revenues from the last two years are used to determine the growth trend.

**5. User friendly**

- The reason for establishing a VCEI is to be able to connect individuals and organizations interested in 3D Internet. Some virtual worlds require more from the users to be able to maneuver than others do.

**6. Business and education opportunities**

- For many entrepreneurs it is important to be able to make earnings on the virtual platform. For the VCEI this is not the main purpose, but it is still of utmost importance to be able to be close to an immersive environment that would render possible profit making. Additionally, the purpose of the center is to facilitate knowledge sharing and learning. Hence, features such as virtual meeting rooms, file- and slide sharing capabilities are prerequisite. It is also interesting to know about the ability to use voice, show presentations, film, etc.

**7. Cost**

- Both from an entrepreneurial perspective and from the VCEI perspective the cost of ownership/presence should be determined.

**8. Content creation**

- The 3D nature of immersive environments attracts creative users and industries. Thus, is it possible for the user to create a unique avatar, design, build, etc.?

**9. Platform sustainability**

- In order to secure the sustainability of the VCEI, one needs to know whether the platform provider will continue to develop the virtual world.

**10. Interoperability**

- There is a growing expectation that the future of the virtual world will make it easier to move between virtual world platforms.

There are several hundred Virtual Worlds on the Internet with most of them focusing on a specific market (for instance children) or activity (for instance gaming). KZero presents an overview of launch date, account size, and average user age of most virtual world companies (<http://www.kzero.co.uk/universe-chart/>). Their presentation also provides an overview of

**Table 2: Virtual World Platform Comparison**

	<b>IMVU</b>	<b>InWorldz</b>	<b>Active Worlds</b>	<b>Second Life</b>	<b>Olive</b>	<b>World of Warcraft</b>	<b>Entropia</b>
<b>Popularity – number of users</b>	10+ mill users/month	10.000 users/month	1,000 active worlds	795,000 users/month	Enterprise solution	11,5 mill	200,000
<b>Average user age</b>	18-24	?	?	33	?	32	?
<b>Growth trend</b>	2009: \$ 25 mill 2010: \$ 40 mill	From 7.000 to 10.000 users	Growing (self-reporting)	From 763,000 to 795,000 users	?	Increasing (self-reporting)	Growing (self-reporting)
<b>User friendly</b>	Select standard avatar – then customize	Beta version, still not the easiest	Platform provider	Steep learning curve	Support	Game/advanced	Support
<b>Business and education opportunities</b>	Can make and sell own design	Create and sell goods	Creating, selling and learning	Make/sell/train/teach...	Training	Game	Creating, selling and learning
<b>Type</b>	Mainly chat and dating. 13+	User created. 18+	Platform provider	Community... 16+	Proprietary	Game / 12+	Proprietary
<b>Cost</b>	Free	Free. Private island: \$75/month + setup cost: \$75	Free as a tourist. Citizenship \$6,95/month	Avatar is free. Region \$1,000 Maintenance \$295/month	\$ 200 per user/annually	\$ 20 per game \$ 15 web access/month	Free/partnership with MindArk
<b>Content creation</b>	Create games and design	Create design	Build, own, and engage	Develop own region; design	Develop own worlds	Create own games	Create own worlds/planets
<b>Platform sustainability</b>	Company behind it with 90 employees	Core team of developers / Forum	Company behind it	Linden maintain	Company behind it	Company behind it	MindArk maintain together with partner
<b>Interoperability</b>	Not possible	No, but getting closer to SL	No	No	No	No	No
<b>Score/evaluation</b>	Dating n/a	2	3	1	Enterprise n/a	Game n/a	Game n/a

virtual worlds in general: <http://slidesha.re/1cZlhE>. In order to keep the cost of our evaluation down, we focused on the most relevant platforms. Based on the discussions and a search among potential platforms, this report profiles seven virtual world platforms considered for the VCEI. The presentation of each virtual world is based upon data mainly conducted via the platform's own websites and forums in May 2011. Additionally, other public reports and articles have been utilized and will be listed when relevant. In order to have personal experience with the different alternatives, some of the available platforms have been downloaded and tested by one or more of the researchers. Based on the above, an evaluation matrix was created (Table 2 above). The findings are presented through a narrative from each world.

### **Virtual World Platform 1: IMVU**

Webpage: [www.imvu.com](http://www.imvu.com)

Company: IMVU, Inc. <http://nb.imvu.com/about/>

IMVU was founded in 2004 and reports more than 10 million unique users a month as of May 2011. In total, IMVU has reached 50 million registered users. The revenues have increased from \$25 million in 2009 to a \$40 million run rate in 2010. About 85 per cent of the revenues come directly from the users, who pay for virtual currency. IMVU is positioned within online social entertainment where members can use 3D avatars to meet new people, chat, use voice, create and play games with their friends.

Instead of offering continuous virtual worlds, IMVU offers its users small virtual scenes, such as rooms or gardens where users can customize as they want. They can decorate their 3D avatars (or characters), design and buy their own attire, and chat with friends. Over time, users will be able to create more of their own games.

Positioned within the entertainment and game segment, IMVU has restricted opportunities for learning and presenting business ideas. However, it is possible to make and sell one's own designs. With a company backing the game and professional investors interested in its success, the sustainability of the platform is secured as well. Nevertheless, the impression when visiting IMVU is that it is mostly for dating and chatting. When we first logged in (February 2011),

132,909 users were online. The registration is free, but if one is willing to provide one's real name and e-mail address besides the avatar names, IMVU offered 500 credits (less than \$1.00). After creating the avatar, we received 1500 credits, a room and some more free items. The next step was to install the software.



*Screenshot from IMVU 3D environment*

Since we wanted to change the prefix “Guest” at our avatar, we searched at the support site to find out if we did something wrong when we registered. On the support site we learned that in order to register a name on the avatar, we have to pay \$7.95. Additionally, in order to be a content creator, you have to register your name. Moreover, we wanted to go out and meet new people and see what others had built, but we could not do that. On the website of IMVU we discovered that we have to join public rooms in order to meet other avatars. When we clicked the ‘CHAT ROOM ’ icon, a lady avatar asked us to join a one-minute training session and earn another 1000 credits. We joined the “Paradise Beach Chat Room” and while we were trying to figure out how to walk in this place an avatar named “Guest 1meg34” started to kiss our avatar. We wondered how and why it happened so fast. Probably because we had never had a date like this before and we were late to respond, she left. We started to wonder where she went almost as if we were jealous. After some time we saw her sitting alone. When we wanted to initiate the chat, we needed to use the feature ‘whisper’, which was only available for VIP members. It seems that we need to pay extra for being able to interact and establish personal contact. On the website, we learned that the average age of users is between 18 and 24. It is free, but users need

to earn or buy credits in order to enjoy the game to the fullest. IMVU is as already pointed out focused on social games and entertainment.

## **Virtual World Platform 2: InWorldz**

Webpage: [www.inworldz.com](http://www.inworldz.com)

Company: InWorldz LLC <http://inworldz.com/tos.php>

Inworldz is a user-created virtual world based on OpenSim, which is an open source multi-user 3D application server where users can create their own virtual environments. It is in a beta version but has grown from 7,000 users to more than 10,000 users on a monthly basis as of May 2011. In February 2011 Inworldz passed the 30,000 residents milestone and has nearly reached 800 different virtual areas. There seems to be growing interest and according to several blogs many Second Life residents have moved to Inworldz. On the webpage of Inworldz, it is stressed that there is no cost to create an avatar or any member's fees. All uploads are free and there are no plans to change that in the future. Users can buy private islands with full flexibility to develop it and make changes. The islands are not connected to the "mainland" and allow for more functionality and management capabilities than a mainland region. Buying an island in the beta version costs \$75 a month and the one-time setup cost is \$75. Mainland regions are available at a smaller price and do not give full estate control. The pricing is at \$60 a month with a \$60 one-time setup fee. Inworldz has introduced a virtual currency, called I'z, which is fictional and has no external value. Inworldz will maintain an exchange rate for future cash out points.

Inworldz multi-user virtual world experience is particularly tailored for the over 18 years of age user. It is possible to create and sell goods. A new resident receives a default avatar for which he/she can change its sex, modify its shape, and create hair, eyes, skin, shape and clothes. Users can use voice, chat, and make presentations. It is also possible to build islands for educational purposes. For instance, the Abraxus Academy offers build and script classes for virtual worlds, as they offer writer's and artist's workshops (<http://bit.ly/t9pyBP>).

The three founders, Elenia Llewellyn, Legion Hienrichs, and Tranquillity Dexler play a key role as the core team behind Inworldz. They can be found at Inworldz and they are extremely active

on the forums. The team makes sure to maintain the software, offer customer support and develop the software. Their goal is to become a viable platform that is comparable to Second Life.



*Screenshot from InWorldz environment*

The founders are attracting its users and land owners through personal relationships and community building. There is a formal mentoring and volunteer programs designed to ensure that newcomers always get help when they first arrive.

Bob Sadler, a content creator in InWorldz, arrived in InWorldz in the spring of 2009, and expressed in an interview with Hypergrid Business why he left Second Life (<http://bit.ly/dkrVJD>):

*“I love Second Life, and always have loved Second Life,” he said. “[But] I grew tired of Linden Lab and how they treated their customers, and especially when they decided that they owned everything I created or uploaded. As a content creator from day one in Second Life, I refuse to let someone just steal from me. If Linden Lab would have simply asked me to use my materials, I would have said ‘yes.’ But they chose to steal instead.”*

When we first wanted to register, we found that the registration with InWorldz was easy. When we needed to select a viewer, we could choose among linux-, mac-, and windows viewers. It only took a couple of minutes to login and create an avatar. At the beginning, we were only represented by a “shadow” or a “light”. As soon as we got there, a volunteer avatar, kindly helped us to have basic clothes. The volunteer avatar expressed it is just like a two to three years earlier version of Second Life. Not long after we arrived, we were directly in touch with one of

the founders of this virtual world. Unlike our experience in other virtual worlds, it was amazing to be able to get in touch with responsible people so quickly.

### **Virtual World Platform 3: Active Worlds**

Webpage: [www.activeworlds.com](http://www.activeworlds.com)

Company: Activeworlds Inc. [www.activeworlds.com/info/index.asp](http://www.activeworlds.com/info/index.asp)

Activeworlds is a pioneer in the 3D Internet interactive technologies and applications industry. We did not create an avatar for this site because we already had sufficient information about the platform. Since 1995 the platform provider has experienced a tremendous growth. Activeworlds does not only represent one virtual world but offers several. As of May 2011 they have over 2 million individual users worldwide who have downloaded the browser. More than 70,000 users have registered to be a "citizen" of one of the 1,000 active worlds. "Citizenship" cost \$6.95 per month. Users who do not register are called "tourists" and do not have to pay anything. As a tourist, users can visit the different worlds and use the chat function. Citizens can create their own avatar name, build virtual worlds, be a part of the Activeworlds community, and interact with other citizens via chat and voice. They also have control and ownership of what they build.

Activeworlds acts as a host and developer for the many virtual worlds. Their clients include Fortune 500 corporations, schools and universities. The goal is to be the leader in 3D Internet virtual environments and interactive communication. In addition to offering clients the ability to create virtual worlds, Activeworlds also licenses its technology to enable the establishment of its own three-dimensional world independent of their universe. Activeworlds sees that the market for 3D interactive Internet technologies is growing and positions themselves in the 1) business segment, 2) distance learning/training segment, and 3) the entertainment segment. Thus, there are opportunities for Internet-based advertising, selling products, on-line corporate training, making presentations, entertainment, e-commerce, chat and other online activities.



*Screenshot from Activeworlds environment*

#### **Virtual World Platform 4: Second Life**

Webpage: [www.secondlife.com](http://www.secondlife.com)

Company: Linden Lab. [www.lindenlab.com](http://www.lindenlab.com)

Second Life still has a leading position among virtual worlds and positions itself for 1) the business segment, 2) entertainment segment, and 3) the educational segment. According to their webpage, Linden Lab is reporting more than 795,000 regular users on a monthly basis with an average user age of 33. Users can use voice, chat, and make presentations.

Second Life is described as a user-generated content platform where it is possible to create “anything you can imagine” such as dresses, entire clothing line, cars, and homes. Its residents have built replicas of real locations, held art openings, music concerts, meetings, training seminars, etc. The learning curve of designing in Second Life is considered as steep; however, promotion of products / services is possible and what is being created is possible to sell. Second Life facilitates a virtual economy through the Linden dollar currency system. This means that objects can be sold and there has been an increasing volume of virtual goods and services sold in Second Life. There is no cost of entering Second Life and an avatar is automatically assigned the first time one register. However, the avatar can be modified later. Buying a region costs \$1,000 and comes with a monthly maintenance fee of \$295. The islands can be converted out of Second Life and installed for instance in InWorldz.



*Screenshot from Second Life environment*

There is also considerable support on the listserv for education and there are several hundred educational institutions using Second Life for education and training. Corporate training has also attracted attention from companies like IBM and Telus Communications.

### **Virtual World Platform 5: Olive**

Webpage: <http://www.saic.com/products/simulation/olive/>

Company: SAIC [www.saic.com](http://www.saic.com)

OLIVE was developed by Forterra Systems Inc. and sold to SAIC, a FORTUNE 500 scientific, engineering, and technology applications company, in February 2010. OLIVE is an enterprise-grade, virtual world technology solution that provides private and secure 3D environments. With OLIVE, organizations can host their own virtual world tailored to their needs and industry. The virtual world is tailored for collaboration, training and education. Users can use voice and chat.

OLIVE is a proprietary enterprise solution where the annual cost per user typically is \$200. The content is customized by SAIC which also offer support, training and documentation. However, the users can personalize the appearance of their avatars. With the focus on the simulation business of military and emergency services, OLIVE has interoperability with other simulation systems. Thus, Olive has clients such as the U.S. Department of Defense (engineering) and other private and public clients within the health care industry. They are offering unique solutions for simulations to a wide range of industries.



*Screenshot from Olive environment*

### **Virtual World Platform 6: World of Warcraft**

Webpage: <http://www.worldofwarcraft.com>

Company: Blizzard Entertainment, Inc <http://eu.blizzard.com/en-gb/>



*Screenshot from WoW environment*

World of Warcraft is an online role-playing game allowing many players simultaneously to play against/with each other. It is entirely dedicated to the game segment and has reached a leading position within this segment with 12 million subscribers. According to the Entertainment Software Association's 2010 report, World of Warcraft is the number one selling computer game in the U.S. IBM has used the game to teach strategy to their employees. According to the webpage, the average user age is reported to be 32 years. Each game costs around \$20 and there

is a monthly web access fee of \$15. There is a company behind the game and users are able to develop their own environments. However, there are not any options for business or education.

### **Virtual World Platform 7: Entropia Universe**

Webpage: [www.entropiauniverse.com](http://www.entropiauniverse.com)

Company: Mind Ark PE AB [www.mindark.com](http://www.mindark.com)

Entropia Universe is a 3D Internet virtual universe with an environment for social interaction, entertainment and e-commerce. Users can use voice, chat, and make presentations. It has a real cash economy where virtual entrepreneurs can start businesses. Since Entropia Universe was featured in the Guinness World Records Book when a 22-year-old gamer obtained a virtual real estate for \$26,500 in 2004, several expensive virtual objects have been traded. In November 2010 for instance, one of the popular destinations was sold from one developer to another for \$355,000. The previous owner, Jon Jacobs, was according to Forbes making a \$200,000 a year in revenue from sales of virtual goods and services (<http://onforb.es/qye2eQ>). MindArk, the company behind the Entropia Universe, is the only company that backs their virtual currency at a guaranteed exchange rate of 10 PED to \$1USD. Christian Björkman, MindArk's chief marketing officer, expressed in an interview with the Wall Street Journal, that Entropia recently had sold five commercial banking licenses for \$320,000 each. In 2009, the equivalent of the Gross Domestic Product (GDP) of Entropia Universe was 422 million USD.

MindArk also offers a secure entertainment and business platform, the Entropia Platform, which enables companies and organizations to build content on differently themed planets inside Entropia Universe. The planets vary in content, activities, storyline and target group, and can all be tailored to the users' concepts and designs. For instance, Planet Calypso is a Sci-Fi adventure that offers activities such as hunting, crafting, trading and exploration, but it is also a social environment. Rocktropia is a planet where users can discover music, socialize, play games, party or build a business. It is free to join the game. In order to download the platform, the users need heavy graphics capabilities. Downloading requires heavy graphics capabilities.



*Screenshot from Entropia (Calypso) environment*

#### **4.0 Selection of the Platform for the VCEI**

Above we presented seven different virtual worlds, including two massively multiplayer online role-playing games (MMORPG). The latter two are excluded since they do not offer learning opportunities and the VCEI needs to be positioned beyond the scope of the game industry. IMVU is also excluded since it mainly is focused on dating. Olive is an enterprise solution that is tailored for their customers. Among the three other virtual worlds<sup>1</sup>, we suggest that Second Life is the platform that should facilitate the Entrepreneurship and Innovation Center. The reason for this is that Second Life is fulfilling the following parameters and requirements:

- 1) Offers a substantially **user mass** – by far the most recognized and popular virtual world.
- 2) Although not booming, it has also proved an increasing **growth trend**.
- 3) The infrastructure facilitates both **business and learning opportunities**.
- 4) The flexibility and usability of the platform makes it possible to **create content**.
- 5) **Cost** structure and platform **sustainability**
- 6) **Communication and multimedia** opportunities

#### **5.0 Building of VCEI**

The VCEI was drafted according to the needs of the activities listed at the beginning of this report. A team consisting of five NVWN partners constituted the planning committee. Dr. Göran

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<sup>1</sup> However, InWorldz is also a stable platform based on OpenSim and has been able to attract many users. In the longer term, InWorldz might be an alternative in addition to the VCEI in Second Life.

Lindqvist at the Stockholm School of Economics took the lead in the design of the center. All the other project members were given a say in the process and could thus evaluate the design at selected phases. Changes were made along the way (such as adding flagpoles of all the Nordic countries at the entrance, improving the sound environment, changing the chairs, etc.), and there was a period set aside for testing the VCEI. For instance, the NVWN Fashion Symposium (<http://bit.ly/oG1C1W>) was held at the VCEI before the official launch. Before the launch, the planning committee decided upon the details that remained and implemented all necessary changes (e.g. entrance, etc.).

Creating the Virtual Center was a task that involved **three main steps**. First, a group of project participants discussed and evaluated in which virtual world to operate. As described in section 4.0, Second Life was selected as the primary choice because of the user-generated content that allows for both innovation and entrepreneurship activities. We also discussed what kind of functions a Center should support and found that the main functions needed were presentation areas, collaboration areas, and information areas. Lindqvist, who also is the technical manager of the SSE island in SL with several years of experience as a builder and designer in SL, took on the task to set up the new Center.

The second step was to decide on the design and location of the Center. The two main options were to build the Center from scratch (as had been done with the SSE Island), or to purchase pre-fabricated buildings. A search of [Second Life's Marketplace](#) revealed several suitable buildings. A complete set of several integrated buildings from Second Life architect and builder Indigo Orbit offered the best solution requiring only a minimum of construction work. The cost was 30 000 Linden dollars (93 EUR) for the complete set. In addition to this, some accessories and decorations were acquired to the Center (flag poles, teleporters, an artificial ground) at an additional cost of 6 EUR.

Third, the Center was assembled. The new Center was too big to be incorporated in the current island design. Therefore, an artificial “ground” level was established high in the air above the SSE Island to accommodate the Center. When the new “ground” was in place, the Center’s buildings were put in place, and signs and other decorations were added to help visitors find their

way. The area was divided into different so-called parcels, which separates voice communication so that what is said in one building is not heard by users in another building. Finally, a teleporter installation was built on the lower ground level to allow transportation between the SSE Island and the Virtual Center.

The Center contains **five functional areas** arranged around a central Plaza:

- The **Arrival area** is where visitors arrive when teleporting to the Center. It provides basic information for beginners to SL on how to move, communicate, and so on.
- The **Galleria** is an exhibition area for static poster-type information about projects and activities.
- Two **workspaces**, called the Oval and the Circle, function as meeting rooms. Their interior can be reconfigured depending on the type of use.
- The **Auditorium** is the main meeting area, and it can seat up to 96 participants, which is more than the limit imposed by the server running the Center. (More than 50 simultaneous visitors puts a strain on the server.)



Using a prefabricated, integrated solution offered great savings in time and ensured a speedy solution with a consistent look and high quality. *In total, setting up the Center took less than three working days and cost less than 100 EUR in purchasing costs (which was offered as sponsorship with no cost to the project).* The drawback of using a prefabricated solution is lack

of flexibility in the exact details of the design. In this case, it was found that the products available were close enough to an ideal solution for the savings in time and effort to outweigh the loss in flexibility.

It is worth noting that although the Center is now in place and the main installation and building work is over, installations like this require continuous tweaking and technical maintenance. Having permanent access to technical competence is therefore an advantage.

## **6.0 Launch of VCEI**

On Wednesday, **November 9, 2011 the VCEI was officially launched**. Invitations had been sent to the NVWN partners, the Euroversity network and posted on the NVWN blog and various mailing lists and websites, <http://nordicworlds.net/2011/10/28/welcome-to-the-launch-of-the-vcei-virtual-center-for-entrepreneurship-and-innovation/>. Around 25 individuals from across the globe showed up via Second Life and joined the launch.



Robin Teigland of NVWN opened the launch by stressing the goal of the VCEI, which is to stimulate and facilitate knowledge and resource sharing and networking among individuals and organizations interested in 3D Internet entrepreneurship and innovation.

Euroversity member, **Luisa Panichi**, presented the Euroversity network (<http://euroversity.ning.com>). The aim of the network is to collect examples of good practice in teaching and learning in virtual worlds from different subjects and national and local contexts. Panichi explained how they seek to facilitate transfer of core knowledge to new contexts and provide a framework for creation of a pan-European virtual-world university. The network consists of 19 partners from 12 countries (Austria, France, Germany, Sweden, Norway, Cyprus,

Portugal, Spain, UK, Netherlands, Italy, Israel). According to Panichi, virtual worlds represent the following added values: 1) Distance learning platform for telecollaboration, 2) Synchronous communication, 3) Multimodal communication, 4) Highly immersive with greater potential for learner engagement, participation and sharing of experience, 5) 3D rendering (joint building, design, simulations), and 6) Huge potential for transformation of knowledge. Her slides are here: <http://www.slideshare.net/eteigland/euroversity-at-vcei-launch>.

Entrepreneur and CEO **Henrik Scheel**, presented his start-up company, Sputnik 5 (<http://sputnik5.com>), which is developing a new framework to teach high tech entrepreneurship and customer driven innovation through gaming. By utilizing the dynamics from gaming they motivate the players to fully engage in the learning process and inspire them come up with great solutions for today's challenges. Scheel highlighted that there is a lack of good entrepreneurship educations and illustrated how start-ups are becoming engines in the economy and creating most new jobs. So far they have run "Start-up Experiences" ([www.startupexperience.com](http://www.startupexperience.com)) in Denmark, Ireland, USA, Malaysia, and Jordan, but is constantly searching for new opportunities in other countries. At the end, Scheel challenged the listener to reflect upon how to facilitate creative workshops in virtual worlds and how to engage students in a virtual learning environment.

After the presentations, a **tour of the VCEI** was arranged by Robin Teigland and Bjørn-Tore Flåten. The participants had a chance to see the 96 seat auditorium, the two workspaces equipped with discussion group layout, office layout, presentation opportunities etc., all of which can be changed according to the needs of the users. The gallery where information and ads can be showcased was also visited.



## **7.0 The Future of the VCEI**

The NVWN project members have in addition to developing and launching the VCEI initiated specific efforts to make the center sustainable. The plan is that entrepreneurs and researchers interested in using the VCEI will be given the opportunity to use the center in the future. Firstly, in order to make the center self-sustainable as suggested under section 2.0, a network of active users who will continue to use the center after the research project is over, will be recruited. As described in section 2.0, a temporary advisory board consisting of Robin Teigland, Eilif Trondsen, Göran Lindqvist, Elia Giovacchini, Lisbeth Frølund, and Bjørn-Tore Flåten, has been selected. Secondly, two specific activities have been initiated.

- 1) On Thursday, November 17 the temporary advisory board met at the VCEI in SL and discussed the possibilities for establishing a monthly seminar at the VCEI. A decision was made to arrange an **informal monthly seminar** that we believe could strengthen the Nordic network of people interested in virtual worlds. Specifically the board suggests a "Virtual Wednesday" arranged on the third Wednesday every month between 4 p.m. and 5 p.m. This will make it possible for attendance on both sides of the Atlantic. The first 15 minutes can be dedicated to newbies who would like to learn more about VWs. Then the next 20 – 30 minutes can be spent on various presentations before splitting in small groups to continue the discussion. In the short term, the last hour of the NVWN monthly meetings will be used to launch the seminar. Future potential speakers include Mikhail Fominykh of NTNU in January. The University of Turku will use the center for an innovation seminar in January. The VCEI will also be showcased as part of the scientific program at ESOF in July 2012 (<http://www.dublinscience2012.ie/>), in which the focus of a panel will be on the impact of 3D internet/virtual worlds on the healthcare industry.
- 2) NVWN has also initiated a discussion of coordinating the SL islands and activities with several of the Nordic universities engaged in virtual worlds and that have an island in Second Life. On Friday, October 28, 2011, NVWN organized a meeting to discuss how Nordic Higher Education Institutions that are currently working with virtual worlds could collaborate (<http://bit.ly/u7T3mx>). Thirteen people from a variety of institutions in Denmark, Finland, Norway, and Finland gathered on the Stockholm School of Economics Island and had a very productive conversation. It was clear from the

discussions that this is a very experienced group of Second Life users – with a tremendous amount of collective knowledge related to virtual worlds. (See Appendix 1 for a list of the participants and Appendix 2 for an overview of the VW activities and presence. Here are the slides: <http://www.slideshare.net/eteigland/nordic-initiative-on-vws-meeting>.



One question that was debated was whether the SL islands should be co-located – what were the benefits of this? EduFinland with its three islands and the surrounding 23 islands with approximately 50 educational organizations on them noted that they definitely had experienced a psychological benefit to being co-located in the virtual space. It gives the appearance of critical mass when one teleports there or looks from above. Moreover, it is easier to meet others if one sees green dots – one just teleports over to say hello.

However, it would be difficult for those with several islands to move their islands. Clearly, a decision to co-locate should be made by each institution. SSE is going to investigate moving closer to one of the other islands since it feels like it is out on its own. One drawback of moving is that the old slurls no longer work. Another option offered is to somehow use the z-axis too, i.e., park specific environments in the sky.

An alternative to co-locating island was developed during the group's conversation. It is possible to create some kind of HUD with a tour or a board that each island could then display. This board could give an overview of all the other Nordic region islands with a description and ability to teleport there. All agreed that this would be a good idea and Göran Lindqvist of SSE is currently developing a board with the plan to locate this on each island during January 2012.

*Discussion of other potential collaborative activities*

The question was raised as to whether it made sense for VW actors in the Nordic region to collaborate. For example, should the VW actors try to form a collaboration across one's discipline instead, e.g., business administration, linguistics? All voiced the opinion that this collaboration should be pursued as there is a good base for a Nordic network, e.g., culturally co-located, close educational systems, close research systems, overlap in students, etc. Moreover, this interest in collaboration across the Nordic region is clearly seen in higher education as there are Nordic conferences and journals.

Once there was consensus to pursue collaboration, the potential avenues for this were discussed. Another question that was raised is how to collaborate in order to raise awareness about virtual worlds and the activities in the general public. One concrete suggestion that was put forward was to find a Nordic conference for arranging a mixed reality session/panel. For example, the SCIS & IRIS conference arranged by Uppsala University will be held in Sigtuna, Sweden in August 2012: [http://iris.im.uu.se/?page\\_id=2](http://iris.im.uu.se/?page_id=2). The theme is *Designing the Interactive Society*, which would fit nicely with what the group is doing. Robin Teigland will contact Per Ågerfalk, who is the General Chair of the Organizing Committee, to see what kind of interest there might be around this (See Appendix 3 for a detailed list of action items).

## **7.0 Media Plan for the VCEI**

In addition to establishing the VCEI on a 3D Internet platform, a holistic plan for the marketing of the center is included. The report has identified Nordic individuals and organizations interested in 3D Internet as the target group for the center. One of the objectives with the center is to stimulate and facilitate networking and knowledge sharing among the target group. Whilst the VCEI will provide the virtual space for the networking and knowledge sharing, other media platforms need to be considered. First, a web platform will be included in order to promote the VCEI. The existing NVWN blog will serve as a community site in which all can become a

member and make their own posts. It will be possible to share information about projects, attract a community of the VCEI, and offer events and announcements. It is also possible to create discussions and feedback forums as well as presenting white papers and case studies. Also relevant academic research would have a natural part on such a site. For the users (community), it would be easy to network and participate. Additionally, various social media such as Facebook and Twitter will be naturally integrated and utilized on the site. After one year, the three different channels will be evaluated in order to learn how effective and efficient they have been to attract the necessary attention and awareness for the VCEI.

**Table 3: Overview of Media Channels for the VCEI**

<b>Media channel</b>	<b>Rationale</b>	<b>Tasks</b>
<b>Web platform</b>	Promoting the VCEI, provide information	Make changes on existing blog
<b>Facebook</b>	Promoting the VCEI, provide information	Include on the blog. Attract “like” on the page by arranging a competition
<b>Twitter</b>	Promoting the VCEI, provide information	Spread the information about a common hashtag (#NVWN)

## **8.0 Conclusion**

The purpose of this report has been to present the rationale, development, launch and sustainability of the NVWN Virtual Center for Entrepreneurship and Innovation. The evaluation of the platforms is not based on the traffic or popularity but based on the needs to be fulfilled. As of the current situation, Second Life still appears as the ultimate choice. However, the authors would also like to suggest that the advisory board keep an eye on InWorldz as well as other OpenSim based worlds and the development of browser-based worlds such as Kately (<http://www.kately.com/#!home>). As for InWorldz, this is a stable platform based on OpenSim and has been able to attract many users. There is also a trend among several Second Life users/developers that they appreciate the freedom and intellectual proprietary rights of InWorldz and have ‘moved’ their virtual presence to this virtual world. In the longer term, InWorldz might be an alternative in addition to the VCEI in Second Life. We believe the NVWN has created a

*Virtual Center for Entrepreneurship and Innovation (VCEI)*

VCEI that will facilitate networking and knowledge sharing among Nordic individuals and organizations interested in 3D Internet, also when the project is over.

## **APPENDICES**

### **Appendix 1: Attendees at the Discussion of VW Collaboration Possibilities and Links to their sites in Second Life**

#### **Denmark**

- Linda H. Nielsen, University College Lillebæt

#### **Finland**

- Anu Sivunen, Aalto University
- Eero Palomaki, Aalto University
- Isto Huvila, Åbo University (Uppsala University)
- Kim Holmberg, Åbo University

#### **Norway**

- Björn-Tore Flåten, University of Agder
- Ekaterina Prasolova-Förlund, NTNU – Norwegian University of Science and Technology
- Judith Molka-Danielsen, Molde University College
- Kalle Gjesvik, Tromsø University
- Mikhail Fominykh, NTNU – Norwegian University of Science and Technology

#### **Sweden**

- David Richardson, Linnaeus University
- Mats Deutschmann, Umeå University
- Robin Teigland, Stockholm School of Economics

#### **Other**

- Steve Mahaley, Duke CE

**Links to Nordic Sites in Second Life**

Univ	SLURL	Informational links
Aalto U.	<a href="http://slurl.com/secondlife/Aalto%20University/20/145/22/">http://slurl.com/secondlife/Aalto%20University/20/145/22/</a>	<a href="http://j.mp/LabLifeVideo">http://j.mp/LabLifeVideo</a>  <a href="http://bit.ly/lablife">http://bit.ly/lablife</a>  twitter: #vmwork
Åbo U.	<a href="http://slurl.com/secondlife/EduFinland%20III/20/238/23/">http://slurl.com/secondlife/EduFinland%20III/20/238/23/</a>	<a href="http://m2n4sl.library2pointoh.fi/">http://m2n4sl.library2pointoh.fi/</a>  <a href="http://prospects.library2pointoh.fi/">http://prospects.library2pointoh.fi/</a>
Linnaeus	<a href="http://slurl.com/secondlife/Kamimo%20Island/121/139/24/">http://slurl.com/secondlife/Kamimo%20Island/121/139/24/</a>	<a href="http://www.flexlearning.se/englishcourses/bt/index.htm">http://www.flexlearning.se/englishcourses/bt/index.htm</a>
Molde U.	<a href="http://slurl.com/secondlife/Kamimo%20Island/121/139/24/">http://slurl.com/secondlife/Kamimo%20Island/121/139/24/</a>	
NTNU	<a href="http://maps.secondlife.com/secondlife/NTNU/">http://maps.secondlife.com/secondlife/NTNU/</a>	<a href="http://www.cocreat.eu/">http://www.cocreat.eu/</a>  <a href="http://www.reachyourtarget.org/">http://www.reachyourtarget.org/</a>
SSE	<a href="http://slurl.com/secondlife/SSE%20MBA/134/198/26/?title=SE%20MBA&amp;msg=Welcome">http://slurl.com/secondlife/SSE%20MBA/134/198/26/?title=SE%20MBA&amp;msg=Welcome</a>	<a href="http://www.youtube.com/watch?v=Quh2OiPHkm8">http://www.youtube.com/watch?v=Quh2OiPHkm8</a>  <a href="http://tinasuniversum.blogspot.com/2010/01/utbildning-i-second-life-avapreneurship.html">http://tinasuniversum.blogspot.com/2010/01/utbildning-i-second-life-avapreneurship.html</a>
Umeå U.	<a href="http://maps.secondlife.com/secondlife/Kamimo%20Island/77/79/30">http://maps.secondlife.com/secondlife/Kamimo%20Island/77/79/30</a>	<a href="https://assis.pbworks.com/">https://assis.pbworks.com/</a>
U. College Lillebaelt	<a href="http://maps.secondlife.com/secondlife/CaseConnexion/128/128/25">http://maps.secondlife.com/secondlife/CaseConnexion/128/128/25</a>	<a href="http://www.ucl.dk/content/dk/udvikling_viden/professionskompetence/professionsdidaktik/caseconnexion">http://www.ucl.dk/content/dk/udvikling_viden/professionskompetence/professionsdidaktik/caseconnexion</a>

## Appendix 2: Overview of participants' VW activities and presence

*From the summary of the discussion on the 28<sup>th</sup> of October 2011 related to collaboration possibilities:*

We heard very informative presentations about VW activities at SSE, Linnaeus, Umeå, NTNU, Aalto, and Åbo. It was interesting to learn that most have been actively involved in activities in Second Life for several years and all had a Second Life presence primarily through island(s) ownership. It was clear from the discussions that this is a very experienced group of Second Life users – with a tremendous amount of collective knowledge related to virtual worlds.

The participants displayed a deep level of understanding of how the affordances of virtual worlds can be leveraged for educational purposes since the activities presented were primarily of a more complex nature and went considerably beyond the traditional “talking head” lecture style of pedagogy.

One interesting island collaboration to note is **Kamimo Island**, which is a virtual platform for education, co-developed by Molde University College (Norway), University of Kalmar (Sweden) and the University of Central Missouri (USA), and it was developed by Design Container (Slurl above under Linnaeus and Molde).

While some had designed and built their own island or parts of it, others had outsourced this activity. One company that several had used was the Oslo-based firm, Design Container. However, there were mixed levels of satisfaction with this company, i.e., some were very pleased yet others were dissatisfied with their work. Another name that was mentioned was Inge Knudsen, who was contracted by University College Lillebælt with very satisfactory outcomes.

The educational activities presented ranged from **well-established courses in Second Life** as part of the curriculum, e.g., *David's course was now in its 8<sup>th</sup> cycle*, to more ad hoc integration of Second Life in a course, e.g., *Robin's strategy module in the Media Management course* at SSE. Students were bachelors, masters, and trainees; however, no mention of any PhD course or students was made.

There is quite a diversity in the educational activities (e.g., roleplaying, simulation, visualization, action learning, traditional classroom lectures, “experiments”) performed by these educators as well as in the representation of different disciplines (business administration, humanities, information science, linguistics, natural sciences). This is a great benefit for the Nordic region in that the educators very much complement each other in their educational activities, disciplines, and island facilities and this provides a fertile ground for collaboration.

For example, one interesting spinoff from **Aalto's Lablife training**, in which they built a chemistry lab in Second Life, is that it is now used in the university's mandatory Swedish course. As part of the course, students roleplay in Swedish in the lab in Second Life. David Richardson from Linnaeus was very interested in this and immediately saw a possibility for collaboration, e.g., bringing his Business English students to the lab for an immersive experience.

In addition to educational activities, the majority of participants were part of an EU or other externally funded project (e.g., NICE, Norwegian Armed Forces, IBM, Nokia). One EU project that several are involved in that will start in late 2011/early 2012 is the **Euroversity project**, a project that brings together 18 EU partners and 1 from Israel: <http://euroversity.ning.com/>. Several of these externally funded projects are coming to an end shortly, but people expressed that they would continue their activities within Second Life.

**Appendix 3: Specific action items discussed on the 28<sup>th</sup> of October 2011 related to collaboration possibilities:**

1. Each participant is to look into ideas for creating tour HUD or board that can be displayed on each other's island.
2. Individual participants can investigate the possibility of co-locating their islands.
3. We will arrange a tour of our islands. One suggestion would be to arrange a reoccurring presentation (bi-weekly, monthly) during the next few months in which we rotate around the islands. An alternative would be to arrange for a half-day in which we arrange a tour of all the islands consecutively.
4. Participants agreed that a mailing list of Nordic educators would be a good next step. NVWN is looking into how much a listserv will cost. In the meantime, we can just have a normal mailing list that participants can use when they are looking for help, have questions, etc. Robin will put this together.
5. NVWN is finalizing its blog ([www.nordicworlds.net](http://www.nordicworlds.net)) that will serve as a community site in which all can become a member and make their own posts.
6. Participants are also encouraged to use the NVWN facebook group: <https://www.facebook.com/pages/NVWN-Nordic-Virtual-Worlds-Network/112896335390904> for communication as well.
7. Participants should mail to Robin ([robin.teigland@hhs.se](mailto:robin.teigland@hhs.se)) any comments/ideas they have for Linden Lab by Wednesday, Nov 2, 8:00 pm CET.
8. Participants should investigate what Nordic conferences might be of interest to arrange a session at during the next year and make suggestions to the group.