Enabling SME User-Driven Service Innovation through Virtual Worlds

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New services creation has become easier to attain, thanks to the Internet providing a very fertile ground for entrepreneurship with short development times and low entrance barriers. A cornerstone for successful services is the entrepreneur's ability to anticipate and fulfil users' needs. However, innovation is complex and characterized by a high failure rate because fulfilling customers' needs is challenging. Therefore, both theory and practice recommend collaborating with customers for the creation of new products and the Internet has greatly facilitated this process of customer integration.

Recent developments within virtual worlds offer unprecedented opportunities for entrepreneurs to tap into the innovative potential of consumers and consumer communities for new service creation. Inspired by avatar-based innovation and drawing upon theories of user-driven innovation as well as service innovation, our aim is to shed light on the opportunities and challenges that virtual worlds provide, especially for SMEs. Using a design research approach, we developed a user-driven service innovation workshop within the virtual world of Second Life. We collaborated with RunAlong.se, a Swedish start-up developing a web community for joggers, entirely designed through a user-driven innovation approach based on a series of workshops both in the physical and the virtual world.

Presenting the outcomes of the RunAlong workshop, we highlight that the project has benefited significantly by the diversity of the participants who impacted the final design of the service. These positive outcomes provide support to further investigate the use of virtual worlds by SMEs aiming to develop new services with easily customizable and scalable user-driven innovation workshops.

**Keywords:** User-driven Innovation, Service Innovation, Virtual Worlds, New Ventures, globalization

Objective

Services represent one of the most dynamic industries accounting for 70 percent of the GDP in the OECD countries (OECD, 2008) characterized by a constant growth during the last 30 years. In the last decade we have witnessed the emergence of the online service sector, consisting of services delivered through the Internet. Different streams of research refer to this type of services with different terminology, and for clarity we adopt the term "e-service" (Baida et al. 2004). The e-services market is by its nature global and rich with competitors requiring companies to be very dynamic and competitive. One of the usual remedies suggested by scholars and practitioners to gain competitiveness is to invest in innovation. However, looking to the success rate of e-service innovations (Eklund, 2009), extracted from sampling 200 new web 2.0 services, it was found that more than 40% are not successful, A very similar figure was found by Griffin (1997) about new products and services success rate. This suggests that traditional approaches to service innovation may be ineffective, and several scholars (Alam, 2002; Kristensson et al., 2004; Prahalad and Ramaswamy, 2000; Thomke, 2003; von Hippel, 1986) have recently begun to investigate how the user could be brought into the innovation process with the hope of improving outcomes.

In the last decade, the technological advances of the internet have led to new opportunities to support user involvement in the innovation process, attracting the attention of various corporations and academics (Sawhney et. al, 2005). While web 2.0 technologies have proven to suffer quite strong limitations in supporting user innovation process, such as limited sensorial and interaction cues, recent developments in the 3D internet, or virtual worlds, offer promise in overcoming these limitations. For example, recent work from Kohler et al. (2009) shows the efficacy of using virtual worlds in user innovation processes. Thus, our objective with this research is to develop and evaluate a user innovation process in virtual worlds for e-service SMEs.

Prior Practices

Innovation and the service industry

User innovation in the service industry is a controversial subject, which until late received limited attention by scholars. For a long time, many scholars approached service innovation using the same theories they used for manufacturing, described by Coombs and Miles (2000) as the "assimilation approach". However, this approach has been noted to overlook peculiar characteristics of services like intangibility and interactivity, which are argued to fundamentally distinguish them from products (Gallouj and Weinstein, 1997; Gadrey and Gallouj, 1998, Sunbo and Gallouj, 2000). Support for this can be found in an analysis of the "innoBarometer 2002" data, generated by surveying top managers at 3014 European companies with more than 20 employees (Tether 1985). This analysis revealed that service companies do innovate differently compared to manufacturers in that they leverage more "soft" capabilities and stress the human interaction side. This study, however, did not reveal any particular innovation pattern among service innovations. This may not be too surprising as the service sector includes a very broad range of activities from mass services to specialist providers, using the most diverse technologies (Sheean, 2006; Thether, 2005).

E-services, defined as all the services provided through an electronic network (Rust and Kannan, 2002), are connoted by a strong intertwining between the user and the service (Rowley, 2006), and having users connected in a digital network has proven to be a strong competitive challenge (Rust and Kannan, 2002). It is suggested that involving the users in the ideation and design phases of service innovation strongly increases the chances for success (Kristensson et al. 2004) since user involvement not only delivers products better tailored to the users' needs but also provides the opportunity to easily access marketing intelligence and

identify emerging trends (Day, 1994, 2002), thus improving the company's overall responsiveness (Matthing et al., 2004).

The idea of involving the user in innovation processes has developed through several different streams, most notably: user innovation (von Hippel, 2005), open innovation (Chesbrough, 2003), co-creation (Prahalad et al., 2004), and crowdsourcing (Howe, 2008). Von Hippel proposed the user innovation concept already at the beginning of the 1980s with users being defined as being both firms and individuals expecting to benefit from a certain service or product (von Hippel, 2005). The research subsequently developed into two major approaches: lead user innovation and user toolkits. Lead users are people experiencing needs ahead of the average users in the market and are therefore capable of identifying new market trends and often looking to find a solution to their needs that can benefit them. Lead users are hence to some extent comparable to the Early Adopters as defined by Rogers (1964). Researchers (Urban and von Hippel, 1988; Herstatt and von Hippel, 1992; Olson and Bakke, 2001) and practitioners in this area have developed the lead user method, which is a systematic way to support companies in selecting lead users and involving them in the creation process with the goal of achieving innovation breakthroughs. The second approach, user toolkits, engages the users through a set of tools and elements, leveraging user creativity in developing solutions using the available tools. Both approaches demonstrate the value added of involving users to achieve innovations, but to date the focus has been primarily on the lead user approach.

Research investigating user involvement in the innovation process has identified three elements of successful innovation processes: interaction between users, the involvement of users, and a diversity of user backgrounds. Interaction among users and companies appears often in the literature (Matthing et al., 2004) as a key factor leading to knowledge exchange argued to be fundamental to the creation of new knowledge (Nonaka and Takeuchi, 1995). The way users are involved in the innovation process is also argued to have a strong influence on the innovation outcomes, suggesting design activities that maximize the engagement of the users (Magnuson et al.2003). Last, bringing together users with different and complementary skills and perspectives while fostering dialog through conducive processes and a stimulating environment is also argued to be supportive of innovation (Grant, 1996; Swan et al., 1999).

One commonly used approach in involving users is the workshop format, which has shown to produce successful results in both the lead user method (Von Hippel, 2005) and in the co-creation theory (Kristensson et al. 2004). Based on the above and according to the idea of Von Hippel (2005) that *"to the extent individual user-innovators benefit from the process of developing or modifying a product as well as from the product actually developed, they are likely to innovate even when the benefits expected from the product itself are relatively low",* we are interested in investigating how a workshop that brings together users with different backgrounds, skills, a shared interest and willingness to freely engage can be valuable for innovation by an e-service SME.

Virtual Worlds a new medium for user innovation?

Virtual worlds, such as the most prominent example Second Life, are computer-generated physical spaces, represented graphically in three dimensions, that can be experienced by many users, or so-called avatars, at once (Castronova, 2005). Avatars are the graphic representation of the self in a given physical medium that other users can see or interact within a virtual environment (Galanxhi & Nah, 2007). Virtual worlds are common in multiplayer online games (such as Citypixel), virtual environments (such as Second Life), and role-playing games (such as Entropia Universe and World of Warcraft). These worlds, thanks to recent advances in 3D graphics, bandwidth and network connectivity, are becoming increasingly sophisticated and realistic, enabling organizations and individuals to "step into the internet" to communicate,

collaborate, create, and even organize economic activity. The playful environment of virtual worlds has been described as engines of creation that provide the freedom to experiment and lead to unprecedented rates of innovation (Ondrejka, 2007). The usual face-to-face setting of the physical world is exchanged with interaction via the Internet mediated by the computer. Virtual worlds incorporate avatar-mediated communication that differs from the traditional Internet in several key respects. The traditional Internet as a communication medium is characterized by three significant disadvantages, namely that it is generally asynchronous, it lacks place, and it is descriptive rather than experiential. Virtual worlds partly eliminate the communicative shortcomings or at least improve the existing technology to approximate the opportunities of the physical face-to-face contact (Ondrejka, 2005). Avatar-mediated communication already now represents a real-time, two-way, and low-cost communication mode. Interactivity between the users, as well as between users and the virtual objects and the virtual environment, allow for rich collaboration opportunities. The majority of Second Life users perceived that the virtual world improves collaboration, communication and cooperation between people (Fetscherin & Lattemann, 2007). This is critical for the context of this study since innovations are seldom the result of lone individuals but rather originate from the collaboration of diverse individuals. Besides the key benefits of virtual meetings such as reduced geographical and financial limitations, a study of IBM in Second Life revealed that this environment provided a unique quality of interaction while enabling a sense of camaraderie (Ringo 2007).

Companies are beginning to explore how they might apply the interactive technology of virtual worlds for an open innovation process where customers and manufacturers may jointly work on new products. The initiatives of a few pathfinding companies (e.g., Coca Cola, Toyota, Starwood Hotels) are indicative of the potential of tapping into the creativity in these worlds. For example, the Coca-Cola Company, is using virtual worlds for idea generation with customers from all over the world. Michael Donnelly, Director of Coke's Global Interactive Marketing, sees virtual worlds as enablers of radical innovations because they enable individual creativity and set no limits to one's imagination (Kacur, 2007). Even the possibility of immersing avatars in a different environment and providing them with stimuli make virtual worlds also very attractive from a financial perspective.

Acknowledging this phenomenon, Kohler et al. (2009), proposed an avatar-based innovation approach linking open innovation and virtual worlds with an interactive new product development process, where manufacturers collaborate with virtual world avatars, generating "real" value from their innovation activities. This approach focused on identifying the factors contributing to a compelling experience with a co-creation approach of products in collaboration with large corporations (e.g., Philips Design and KTM-Sportmotorcycle AG).

In the service development process, the stage of preliminary investigation deals with the generation of new service ideas, their initial evaluation, and preliminary appraisal of other potential factors that might affect the success of the new service ideas under consideration (Alam, 2002). With this paper we would like to shed light on the opportunities for SMEs focusing on service innovation, which due to its relatively new appearance has not yet been investigated. Tying together the above, we decided to develop a user service innovation workshop inside the virtual world of Second Life with the aim of investigating how an SME can gain knowledge about users in various foreign markets as well as to gain insights and extract ideas useful for service development.

Approach/Methods

As just mentioned, the purpose of this research project is to develop a user innovation process in virtual worlds for e-service SMEs. Hence, the outcome of our research is an artifact, i.e. a method for virtual user innovation, rather than a theory. For designing the artifact we use a

Design Research approach, a research approach that is increasingly applied in the field of Information Systems research. The philosophy behind Design Research is that new scientific knowledge can be generated by means of constructing an artifact (Guba & Lincoln, 1994; Vaishnavi & Kuechler, 2004; Hevner, March, Park & Ram, 2004). In its core, the design research approach is a problem solving process that is used to develop the artifact (Hevner et al., 2004). Methodological guidelines for using design research have proposed in the IS literature. A major milestone is the work by Hevner et al. (2004) who define seven guidelines for design research. In this paper, we describe our research approach according the design research cycle from Takeda et al. (1990) as described by Vaishnavi & Kuechler (2004). This cycle provides a good overview of the major steps in design research. Each of these steps is elaborated below.

Problem awareness: Awareness was particularly raised by a SME, i.e. RunAlong, which approached us on the issue of a more effective user innovation process. RunAlong.se is a Swedish start-up, aiming to develop a web community for runners. The entrepreneur adopted a radical user innovation approach for her venture, involving the users from the ideation phase through the service release process in order to tailor the product to the users' needs. The initial ideation and design phases involved the users through a series of workshops in the physical world, but this presented a few shortcomings. The workshops were onerous and more important limited in terms of insights because investigating only local users gave a limited view. Moreover, because of limited financial resources RunAlong was looking for potential solutions, supported through ICT, to bring runners together from all over the world to discover their needs and values. In several interviews, the problem of RunAlong became clear and it was realized that it is an important problem that is faced by other SMEs as well.

Suggestion: Based on the input of RunAlong, we searched the existing literature for user innovation processes, co-creation and requirements collection. Furthermore, available practices in the business world were analyzed; especially applications of virtual worlds in user innovation processes by international companies attracted our attention, i.e. we already mentioned Coca Cola, Toyota, Philips, IBM and others. This combined with the positive experience of the authors concerning practical applications of virtual worlds made us suggest the application of virtual worlds in the innovation process.

Development: Inspired by the lead user approach, avatar-based innovation, co-creation theory and virtual world characteristics, a workshop process has been designed that could enhance the user experience. This workshop process has been implemented in the virtual world called Second Life. In Second Life an environment has been created where avatars can interact with each other as with certain objects, such as a brain board, to facilitate the workshop process.

Evaluation: To evaluate the workshop process, as well the Second Life environment that supports it, several rounds of workshops have been organized. In these workshops the avatars, i.e. participants being runner enthusiasts, interacted through facilitated discussions and presented and prioritized the outcomes of these discussions with each other. The primary methods for evaluation concerned: participatory observation (i.e., running the workshop), collecting feedback through a survey at the end of the workshop and in the near future we will have interviews with some of the participants. The outcomes of these immediate evaluations lead to ideas for fine tuning and improving the workshop process for the next sessions. Furthermore, we plan to compose panel of experts, from several disciplines, evaluating the final workshop process.

As we have already discussed the problem awareness and suggestion steps above, we focus on the latter three steps below.

Development

The workshop develops through 4 steps for a duration of about 75 minutes:

Step 1: Get Inspired
When the participants arrive they are confronted with several informative panels providing a summary of the workshop activities and they are invited to get some running gears. The running gears are the first mean to create a group spirit, dressing up all the same and provide a good moment for people to have some interactions. Following, the avatars are invited to take an immersive run (Figure 1) on the track available at the workshop area. These activities play a great function in the desirability dimension, stimulating the playfulness of the participants. The step concludes with a brief introduction of the purpose of the workshop and more insight about the upcoming activities. This activity is planned to last around 10 minutes.

Figure 1 – Get Inspired, step 1.

Step 2: Get active
After the introduction briefing, the participants split up into groups, without any sort of selection, just based on their location on the principal platform. The break out sessions (Figure 2) take place in separate areas, with groups of four participants and one facilitator. The areas are equipped with posters portraying runners in several atmospheric conditions, a set of sitting pods and a questioning table. The facilitator leads the discussion supported by the questioning table, prompting the avatars with questions aimed to explore the running experience from several not trivial angles. The questions have been designed following Coyne et al. (2007) proposing a set of questions formats tailored for developing new products. The questions dig into the challenges faced by the participants and as well into emerging trends they have been experiencing or learned about, unleashing knowledge for discussion and new creations. Before the start of the discussion, one of the participants is invited to be note taker for the session.
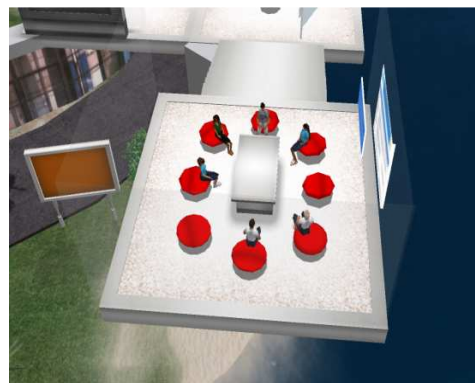
Figure 2 – Get Active, step 2.

Figure 3 – Get creative, step 3.

Step 3: Get creative
The participants continue working in the break out setting (Figure 3) and going more in detail on the aspects concerning the development of a web community for runners. The values are the

first theme of discussion, concerning what participants see as the most appropriate to be represented in the web community with which they can identify themselves. Then the discussion moves forward to brainstorming about features that the participants would consider useful and attractive for perspective runners, i.e. users of the web community.

Step 4: Get critical
After finishing the discussions in the breakout sessions, participants are gathered together in the main platform, where the note-takers briefly summarize the outcomes of their discussion group. Here the goal is to exchange ideas and create a moment of confrontation between the two groups. Then, the group is introduced to a tool called BrainBoard with a trial session were people briefly learn the functioning and will be used to sort and lastly vote about the values and functionality they consider more opportune for RunAlong. The use of the Brainboard enhances the interactivity allowing the user to interact with a tool and easily display and summarize the outcomes of the workshop (Figure 4). The session concludes with a short wrap up from the entrepreneur commenting on the ideas proposed.
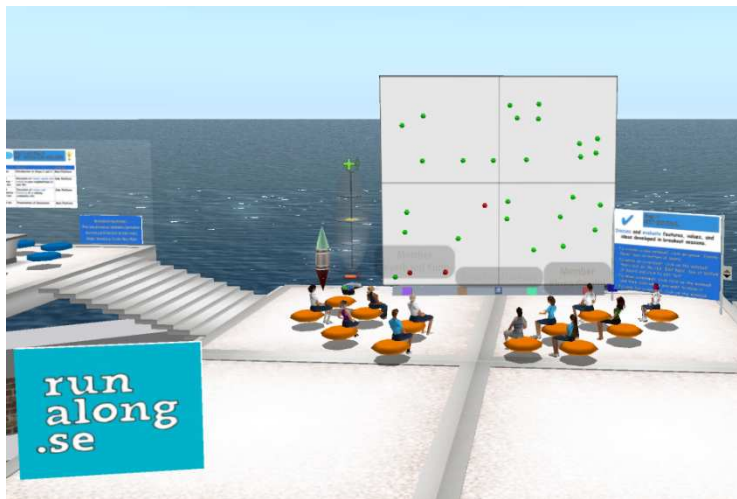

Figure 4 – Get critical, step 4.

Evaluation

To evaluate the workshop, participants were asked upon completion of each workshop to click on a presentation board that then opened a web browser with an online survey. Participants were encouraged to answer the survey through the offer of 500 Lindens (just under USD 2) for a completed survey. The first survey section covered questions relating to the participant's demographics: location, age, occupation, running experience, SL experience, and innovation experience. The core of the survey is then based on the four components of Nambisan & Nambisan's (2008) successful virtual customer environment (VCE) to better understand how well our workshop fulfilled these components: pragmatic (experience of gathering information about the product/service), sociability (perception that member of a group or community), usability (quality of the human-computer interactions), and hedonic (feeling of being mentally stimulated or of entertainment). We used the same four components to better understand how well our workshop scored on these aspects of a successful virtual environment. In addition, we asked one question related to "flow" (Hoffman et al, 2000), a state of mind experienced by users when fully engaged in a task, that lead to intrinsic reward. This intrinsic reward, according to Amabile (1996) is one of the main drivers of users' creativity.

As suggested by Nambisan & Nambisan (2008), the focus of the four VCE component questions and the workshop were more on the pragmatic, usability, and hedonic components with little weight on the sociability component. In addition to these four components, we also

developed our own open-ended question about flow, considered to be key factor in achieving valuable innovation. Complementing these scientific questions, we introduced direct questions relating to how the participants evaluated the workshop. Finally, we asked the respondents what story they would tell other respondents about this workshop as well as whether or not they would have participated in this activity if it had been a physical event in their hometown. The majority of the questions were open ended. The complete survey is presented in appendix A.

Research results and insights

While this research is still in process and we are not yet able to draw a full set of conclusions, we do have some preliminary insights. First, even with only an initial set of results, this user innovation workshop has been successful in terms of showing the potential of virtual worlds as a medium for user innovation. Through these workshops, we brought together people from across the globe without the costs and time that would be required in physical workshops. Moreover, the majority of participants were of the opinion that they were able to contribute to the discussions. Thus, for SMEs with limited resources, virtual worlds present a tremendous opportunity when considering internationalization or the introduction of new services in an existing market.

Second, with regard to the four dimensions of a virtual computer environment (Nambisan & Nambisan 2008), we do find that these dimensions are very helpful in designing the workshop from the perspective of the participant to encourage his/her involvement and engagement in the task at hand. Of interest is that our preliminary findings support the use of these VCE dimensions for an internationally diverse set of participants. Further research should, however, focus on how these dimensions should be adapted to the national culture or demographic background of participants. In terms of areas for further development, when it comes to the purpose of this workshop, in this case to help an entrepreneur to develop a running community site, we find that these VCE dimensions focused too little on the actual outcomes creating the environment or workshop. When designing the workshop, we should have paid more attention to the aspect of how to promote innovation through the interaction between users. While the dimension of sociability does focus on a sense of camaraderie with the other participants, which can be developed through interaction between participants, this does not necessarily need to be the case. However, innovation and knowledge creation are innately a social process among individuals (Wittgenstein, 1953; Vygotsky, 1962; Berger & Luckman, 1966), occurring through interactions between individuals who bring together different knowledge sets as well as who challenge each other's norms and assumptions due to different perspectives. Interestingly, the majority of survey respondents thought that the most engaging part of the workshop was the actual discussion between the participants in which individuals could share their ideas and experiences from across the world. Further related to the purpose of innovation, several respondents did remark that they would have liked to have had a better understanding of workshop's purpose. Thus, we would like to add one dimension to the four, that of an overarching sense of purpose, and that this sense of purpose should be adapted to the specific environment purpose, in this case to focus on promoting innovation through communicating the workshop purpose and facilitating interaction between participants to encourage the development of ideas for the running community site.

Third, with regard to the VCE usability dimension, we found that there was a clear need for defining and developing the role of facilitators or moderators in these workshops due to the high degree of interaction required. In all steps of the workshop, stumbling blocks, such as the inability to use SL voice chat or a misunderstanding due to a language barrier, arose yet were overcome by the moderators in the workshop. This demanded a high level of flexibility and "thinking on one's feet" by the moderators.

Fourth and somewhat related to the pragmatic dimension is that not only was it difficult to create awareness and attraction for the workshop itself initially but even when people did register for the workshop, around 50% ended up not coming. Clearly, we did limit the pool of potential workshop participants to being SL savvy or English speaking due to the means with which we "recruited" participants; however, we decided to this in the essence of keeping things simple in the first development of the workshop. It is important to note that this selected pool may impact our final results as well and should be taken into consideration as a limitation.

Finally, it is of interest to compare these workshops with similar physical workshops. While there are clear benefits as noted above, one challenge is that while a virtual workshop may fulfil all four dimensions, real-life activities may intervene. When taking a look at survey answers related to Flow, we found mixed answers. While some individuals did experience a sense of flow, others stated that they were occupied with real life events. For example, one person even admitted to multi-tasking as we heard her phone ring on several occasions and she said that she had to participate in a real life telephone conference at the same time. As the workshop outcomes are dependent on the interaction between participants, how to resolve this is an issue for future workshops. Additionally, we expected that the "anonymity" of Second Life combined with the ability to text and/or voice chat would lower barriers to participation. For example, only the researchers knew the participants' real names. However, there still seems to be some hesitancy among participants to interact. Again, the moderator was an important factor in keeping the momentum of discussion going.

In summary, as noted above, our research has shown the potential of using virtual worlds as a medium for user innovation for SMEs involved in e-services; however, our findings also indicate that that there is also potential for product SMEs as well as even larger organizations. While we focused on the service of a community site in this workshop, the ability to interact in groups and to create and develop virtual representations of physical objects and environments is one area that shows great promise for product and even some service companies regardless of their size. In conclusion, two respondents made the following comments: "The process was very fluid. I seemed to think that the workshop was a success from my perspective" and "I thought the process was really excellent. The table and the brainboard technologies made it easy for everyone to contribute ideas."

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Appendix A – Workshop Evaluation Survey

Component	Question	Answer
Pragmatic	Have you learned something through this RunAlong workshop that you could apply to running or some other aspect of your life? If so, what?	Open
	What ideas did you get from the workshop about using virtual worlds for innovation in your work or elsewhere?	Open
Sociability	Did you feel a sense of camaraderie (i.e., that you had a lot in common) with the other workshop participants? Please explain.	Yes/No Open
Usability	What is your opinion of the RunAlong workshop in terms of process and functionality? For example, moving around, knowing what to do, etc.	Open
	Did you experience any difficulties in participating in the workshop?	Yes/No Open
	How well could you contribute your knowledge about running needs and trends in your home market to the discussion? Please explain.	Open
	How well could you contribute to the discussion about values and features of a running site? Please explain.	Open
	Did anything hinder you from being able to contribute to the discussion?	Yes/No Open

Hedonic	What was the most engaging part of the RunAlong workshop? Why?	Open
	What was the least engaging part of the RunAlong Workshop? Why?	Open
	The word "flow" is used to describe a state of mind sometimes experienced by people who are deeply involved in some activity. One example is the case where a professional athlete is playing exceptionally well and achieves a state of mind where nothing else matters but the game; he or she is completely and totally immersed in it. The experience is not exclusive to athletics: Many people report this state of mind when playing games, engaging in hobbies, or working. Activities that lead to flow completely captivate a person for some period of time. When one is in flow, time may stand still, and nothing else seems to matter. Flow may not last for a long time on any particular occasion, but it may come and go over time. Flow has been described as an intrinsically enjoyable experience. Thinking about your experience in the RunAlong workshop, did you feel at any time that you were in a state of flow? Please explain.	Open
Workshop evaluation	What recommendations do you have for improving the RunAlong workshop?	Open
	After my experience with this workshop, I plan to participate more often in innovation activities in virtual worlds.	1-5 scale Strongly disagree to Strongly agree
	After my experience with this workshop, I plan to participate more often in innovation activities in real life.	
	I would recommend this workshop to my peers.	
	I would like to run an innovation workshop like the RunAlong workshop at my work or elsewhere.	
	Overall, how did you enjoy the RunAlong Workshop experience?	1-5 Extremely unenjoyable – Extremely enjoyable
	How valuable is a workshop like the RunAlong workshop for organizations and their innovation activities?	1-5 Extremely invaluable – Extremely valuable
	Do you have any other comments for the RunAlong crew?	Open
Other	What story would you tell others about your participation in this workshop? For example, is there something exciting or unexpected that happened during the workshop, etc?	Open
SL & RL	If the RunAlong workshop had been a real world activity in my hometown, I would have participated.	1-5 scale Strongly disagree to Strongly agree