

Investing in Ephemeral Virtual Worlds

An Educational Perspective

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Abstract: The increased demand for the use of virtual worlds in higher education has led many educators and researchers in in-depth analysis and evaluation of a number of different virtual environments, aiming to highlight their potentials. Until recently, Second Life was one of the most widely used virtual worlds for educational purposes. However, the decision of Linden Lab to stop offering the educational discount, the rumours around its future and the emergence of a novel technology called OpenSim challenged institutions' decisions to keep using Second Life. In a try to identify the way institutions make their decision to use a virtual world, 34 interviews have been conducted with university educators. The results of this study reveal that both the cost and the persistence of a virtual world play an important role on this decision. However, there are still some unique benefits offered by each world affecting to a great extent the educators' decision. We conclude the paper by advocating the use of a cross-institutional hypergrid.

1 INTRODUCTION

While much of research on virtual worlds (VWs), and in particular Second Life (SL) – the possibly most prominent of these – has been performed about projects within the VW itself (Bredl et al., 2012; Childs, 2010; Miller et al., 2010; Vosinakis et al., 2011) it would be naive to restrict oneself only to the “inside” of these worlds and ignore the “real world” environment in which these exist. The relevance of this aspect has been already highlighted by Shukla and Conrad (2011) who identify such experience external to the VW via the notion of “broad environment” and “direct environment”. Specifically for the educational use of VWs the concurrent consideration of both an “intrinsic” and “extrinsic” view led to the development of an evaluation framework (Conrad, 2011) that, in further discriminating into an “individual” and a “world” aspect identifies the four dimensions: cost, persistence, context and immersion.

Since the authors have already examined the “intrinsic” perceptions of the use of VWs in previous works (Christopoulos and Conrad, 2012; Christopoulos and Conrad, 2013), this paper aims to enlighten its extrinsic view of persistence, focusing on three specific VW paradigms: (i) SL, (ii) non-isolated VWs based on the OpenSim (OS)

technology and hosted by Dedicated Providers (OSDP), and (iii) isolated and closed VWs based on the OS technology and hosted Internally (OSIH). At this point the fact that OSIH can also be open and interconnected through hypergriding is essential to be pointed out. However, this case is not in depth analysed in the following sections.

In this paper first we provide a short and summative account of our results concerning Immersion and Context in so far as they are relevant for the further discussion on the extrinsic dimension of Cost. The main sections on Persistence then contrasts the view found in the literature (Section 3) with educators' opinions on these themes derived from our interviews (Section 4) and analysed via Grounded Theory (Strauss and Corbin, 1998). The findings of this paper (Section 5) are based on data collected and analysed within the wider context of a Masters by Research thesis of one of the authors (Christopoulos, 2013). We conclude the paper by highlighting the authors' position on how to move forward.

2 IMMERSION & CONTEXT

Many attempts have been made to evaluate the context of SL and OS based VW's (Diener, 2009;

Miller et al., 2010; Vilela et al., 2010). In one of our previous works (Christopoulos and Conrad, 2013) we comparatively examined these and concluded that both SL and OS have many positive and negative features in common as far as their contexts are concerned, but at the same time, one differs from the other, each having its own separate positive and negative characteristics. However, the negative elements of these worlds are not powerful enough to discourage academics from exploiting them in education. It became apparent that both SL and OS can cover various needs that are difficult to be covered or may not be covered effectively through the use of the educational tools of the physical world. As a result, educators consider each one of them suitable for different types of educational activities.

In addition to context, several researches have been pursued to quantify immersion (Bredl et al., 2012; Childs, 2010; Vosinakis et al., 2011). Indeed, VWs are not immersive by definition (Christopoulos and Conrad, 2012). Taking into account the features of SL, it seems to be coming first in preference, however slight it may be, over OS. These two VWs were judged by educators as almost equivalent in developing a sense of presence to students, but the broader and richer network of interactions that exist in SL gave it the lead. Second in line come the OSDPs, and last of all come the OSIHs.

Unlike context and immersion, very limited studies have been conducted regarding the cost and the persistence of such VWs. In the following two sections we therefore attempt to fill this gap and establish how educators view these two extrinsic aspects of virtual worlds. The findings are based on semi-structured interviews that are contextualized within the available literature.

3 RELATED WORK

Undoubtedly, the future of a VW and its persistence over time cannot be predicted with certainty. Nevertheless, the possibility of a VW stop operating is certainly not a pleasant prospect, considering the fact that educators and universities are based on it for the implementation of successful projects, investing time, effort and money on it.

Up until December 2010 Linden Lab was offering a 50% discount to non-profit and educational institutions for the acquisition and maintenance of land, a fact that encouraged the educational community to engage in SL. As from January 2011 that discount stopped being offered

and that caused great inconvenience to the universities maintaining their virtual land in SL, since the cost became unbearable, and great displeasure to many educators using SL (Christopoulos, 2013). Even though a new discount came to replace the previous one, very few universities were able to be benefited from it (Harrison, 2010). As a result, some universities stopped using SL, some moved to other, cheaper VWs such as OS, while others opted to coexist in a shared piece of virtual land (Christopoulos 2013).

The universities, however, were not the only ones that left their spaces in SL. Even the private estates, the fees of which are the main source of income from SL for Linden Lab, decreased considerably during the previous years (Au, 2012). This obviously implies an income reduction for Linden Lab, which, according to estimates, will have to face serious economic problems (Llewelyn, 2012; Au, 2012), if this issue is not addressed to soon.

The “workspace sharing” practice of many universities in SL that aim to reduce the cost of using the world, without, however, losing the multiple benefits it offers, is not just a practice which only universities follow. It is a general trend of many individuals, businesses and educational institutions to opt to share a common virtual space, as well as its fees (Llewelyn, 2012).

Thus, the future of SL looks uncertain. Even more so, given the situation in SL and Linden Lab’s attitude towards educational institutions, predictions like this of Rogate (2012) should not be taken lightly: “SL as a product for educators is actually dead, unless something dramatically changes with the strategy of Linden Labs—which always remains unclear”.

On the other hand, although OS technology had several glitches and instability issues at its first steps, it has become considerably stable over time. The qualitative improvement of OS, in conjunction with its low economic cost of use makes it attract new users, whereas SL keeps losing them (Gracious, 2012). Therefore, OS has lately become a very worthy competitor of SL, since it has evolved into a VW almost as functional as SL (Reeve, 2012).

Moreover, the features of keeping backups of the world and hypergridding, i.e. the teleportation from one grid to another, are exclusive advantages of OS, which enhance its persistence over time. OS, essentially, is not a VW, but a technology open to anyone who wishes to develop a VW. This world can be backed up along with all its content at any time and reused whenever necessary, by anyone holding the backup files (Miller et al., 2010). This

means that each VW persists for as long as its backup files exist and independently of the operation of the others (Fishwick, 2009).

4 EDUCATORS' VIEWS

For the needs of this study 34 educators were interviewed. The interviews took place through skype or within SL or OS. The questions asked were the following:

1. If Second Life were to close many educational institutions would be left "homeless". Have you taken this issue into account? What is your opinion?

2. Are you concerned about Second Life's closure? Does this possibility affect your decision to use Second Life?

3. If eventually Second Life terminates, will you attempt to replace it with another virtual environment? Can you, please, name this alternative solution?

4. OpenSim is a new technology used for the development of virtual environments. How stable do you expect this technology to be?

5. A major advantage of OpenSim technology is the opportunity given to its users to keep backups. How useful do you consider it?

6. OpenSim grids have the potential of "hyper gridding" (teleportation of avatars and items from one grid to another). How useful do you consider this fact?

7. OpenSim technology faces stiff competition from other well established virtual worlds such as Second Life. Thus, do you consider that this competition will affect negatively its persistence?

4.1 The Future of Education in SL

The spreading rumours about the future of SL and its potential closure raise interviewees' concerns about the future of their projects running in-world. They state that they worry less about their educational projects, which anyway may find shelter in other VWs, but more for research projects on SL which cannot be carried out into another world. They are also concerned about the resources spent for the needs of these projects that will be lost if SL terminates. Furthermore, the concern that, if SL terminates, its community and the thematic groups will be lost, was also expressed. Then, these groups will no longer be able to organize in-world professional events, which are considered to be very

useful and constructive for professionals in any industry operating in SL.

However, some educators indicated that they will continue using SL for educational purposes. Some of them stated that their stay in SL will last until the expiration of their contract with Linden Lab, or until their projects stop being funded. Others stated that they are not intending to stop using SL, either because it is money, time and effort consuming to create their workspace from scratch within another VW, or because they have not yet found another VW as worthy as to replace SL. Contrary to them, some other educators stated that they are intending to replace or have already replaced SL with another VW or technology such as OS, OpenWonderland, Unity3D, Blue Mars and Active Worlds. Finally, the view that if Linden Labs keeps following their strategy of not supporting education, educators will opt to continue without the use of VWs, was expressed, as well.

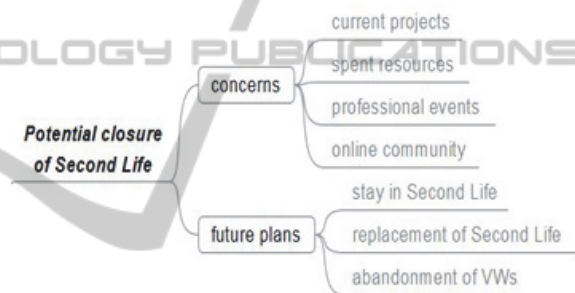


Figure 1: Educators' views for the potential closure of Second Life.

Nonetheless, at this point it should be noted that it is rather the high cost of using SL that affected educators in making these decisions.

4.2 The Educational Potentials in OS

The participants stressed that the OS technology has been significantly improved in the recent years. The competition with other well-established VWs had a positive effect on improving its stability, its reliability, and its interoperability. Nevertheless, this competition has a negative effect on its evolution too. The OS worlds have online communities narrower than SL, and given that it is open-source software, its upgrading may be slow, since it depends on the involvement of its own community, rather than a company's. It was also suggested that competition has no impact on the evolution of OS, as it provides services very different from other worlds.

During the interviews, the importance of backups

for the persistence of OS worlds was also highlighted. More precisely, it was stated that it is very useful for cases where the workspace retrieval is considered necessary. In these cases, the educator keeps a backup of the world when it is in a desired state, introduces students to the world so as to carry out their activities, and then uses the backup file, in order to “regularize” the world and bring it back to its previous state. The same technique can be used in cases where technical issues that affect the smooth conduct of activities arise. Other educators reported that they use the backups in order to transfer to other servers and share with other educators objects, tools or even their entire workspace.

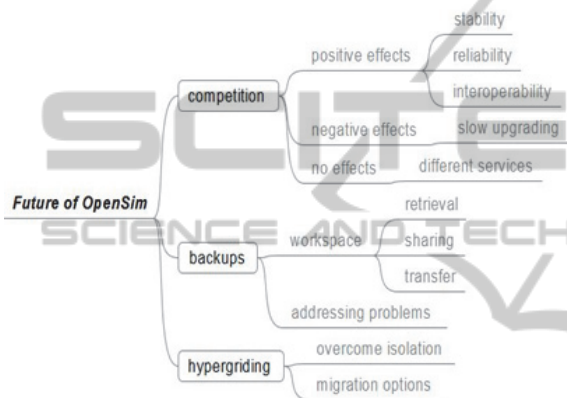


Figure 2: Educators' views about the future of OpenSim.

Finally, the interviewees' view of the hypergridding potential was very positive, even though some of them seemed never to have used it. It is thought that hypergridding contributes to the overcoming of the isolation that is likely to occur in OSIHs or in worlds with a very small community. Consequently, interuniversity communication and collaboration can be achieved. Students have the opportunity to see the creations of others, and this may be an inspiration for them, making that way the lesson more interesting. Beyond these, it was reported that migration options are given to universities, and therefore a training group or the entire university can carry out their activities in another OS world, any time and for any reason.

4.3 Discussion

It seems, overall, that whether and for how long SL will persist depends purely on Linden Lab. Therefore, educators have to accept the decisions of the enterprise and then decide about their future plans. On the contrary, the persistence of the OS worlds depends on the aims and plans of the

educators.

5 FINDINGS AND DISCUSSION

In conclusion, each VW has different advantages in terms of utility costs, while each can cover different needs. Specifically, SL is the ideal choice for those educators seeking a more time and effort effective option, or for educators who cannot devote much of their time for the preparation of the educational activities, or even for those who do not have enough knowledge on building and scripting to create the virtual space in accordance with their teaching needs. This is actually the case because of the existing wide marketplace in SL where educators can buy various items ready for use. Furthermore, there are many builders and scripters working in SL, able to offer their services to anyone upon payment. Additionally, educators often resort to the solution of “workspace sharing” or “items sharing” within the VWs, and are greatly facilitated by the fact that SL has a very wide community. Nonetheless, universities that face a decision to use SL for educational purposes should be prepared to pay high enough monthly fees for the rental of the virtual land, and they should also be aware that additional charges apply on the uploading of files and the use of more primitives than those granted along with the purchase of the land.

Exactly the opposite applies in the case of OSIHs. This choice is ideal for the universities which seek the most cost-effective option, but a basic prerequisite for this is the existence of proper infrastructure and qualified personnel which is able to spend time and effort to set up, maintain and ensure the server's proper operation, and which is also able to build and script for the creation of the needed in-world facilities for the educational activities. Therefore, even though the economic cost of this option for the university is minimal, it cannot be considered as time and effort effective. Nevertheless, the required effort by the university staff can be significantly reduced, if these actions are assigned to students as part of their internship. It is also worth mentioning that the OSIHs are an ideal choice in cases where the main purpose of the in-world sessions is to allow students to build and script. In these cases, on one hand both the effort and time which has to be devoted by the university staff for the preparation of the in-world spaces is reduced, while on the other hand students can freely “play around” with the space, since there are no restrictions similar to those that occur in SL

regarding the amount of objects and scripts. Moreover, the “workspace sharing” and “objects sharing” mentioned in SL also apply in the OSIHs, even in a different way than that of SL, since the backup files which are parts of the OS technology can be run in any OS server. Thus, the workspace created by a university can be copied and given for use to another university. Obviously, this is a highly money, time and effort effective practice.

Finally, choosing an OSDP is the “middle ground” between SL and OSIHs. Even though the university has to pay monthly fees for the provider’s services, the land fees of dedicated providers are considerably lower compared to the fees charged by Linden Lab for SL. Furthermore, unlike Linden Lab, the providers offer, from the beginning, the maximum number of primitives which can be used in each piece of land, while their cost is included in the monthly land fees. Therefore, similarly to the OSIHs, this option is also very suitable for building and scripting activities.

An apparent disadvantage of OSDPs, compared to SL, is the lack of a marketplace which helps educators to save effort and time. However, the “workspace and objects sharing” practice applies in OSDPs as well, as described both in the case of SL, i.e. the temporary use of the in-world facilities from other universities, and in the case of OSIHs, i.e. the backup files exchanging. Besides, there are no additional charges for files uploading.

Therefore, it seems that the case of OSDPs gathers many of the advantages –in terms of cost– that the other two solutions have, but it also shares few of their disadvantages, as well. It seems to have the lowest cost in terms of money, time and effort, if seen in total, but which one is the most “cost-effective” choice clearly depends on the needs and capabilities of each university.

Regarding persistence, the educational community appears to be very disappointed with the overall current situation in SL and some educators have already dropped out of it, choosing to use other VWs, even though it keeps operating. Therefore, the question is “for how long the educational community will be present within SL?”, or, in other words, “for how long will SL worth being used as an educational tool?”, rather than “for how long will SL persist?”. Regarding these questions, the views of the educational community members vary. A part of them still sees SL as a very convenient educational tool. Some consider it appropriate under certain circumstances, while others believe that education in SL has no future.

The advantage of OS regarding its persistence is

that it is a technology for the creation of VWs, which is not supported by an enterprise, but by the open source community. Therefore, the persistence of OS depends on the choices of individual educators or universities. However, even if an educator opts to use the services of an OS provider, there is always the potential of transferring the activities to the server of another provider, or a private server, if it is deemed necessary, using backups and the hypergrid architecture.

This leads to the conclusion that educators who wish to obtain the widest possible control of the persistence of their world should opt to use either an OSIH or an OSDP. In cases where the long-term persistence of the world is not a major concern for educators, they may use SL, if they think that its benefits are essential for their projects.

In summary it can be seen that the extrinsic view is a matter of concern of educators using SL and OS. Given the SL issues concerning a possible closure (persistence) or increased costs a move towards OS based solutions is tempting and in many cases indeed has happened. Our findings seem to suggest that – unless Linden Lab positions itself clearly concerning their long-term SL strategy, in particular towards educators – this shift towards OS will continue as educators are more and more willing to accept a loss of the intrinsic dimensions of context and (possibly) immersion in order to get reassurance and a perspective concerning the extrinsic dimensions cost and persistence.

6 POSITION & PERSPECTIVE

Following from the above the University of Bedfordshire is hosting their activities now on their own OSIH (after extensive experience with SL and OSDPs in previous years). The virtual world is used to teach LSL as an event driven programming language and to foster activities of students learning Project Management.

The control provided within an OSIH is an advantage not only in providing an environment for students but also to analyse their activities as part of ongoing research.

Nevertheless to create the ‘look and feel’ of a true virtual ‘world’ we are now actively seeking collaboration to join educational virtual worlds as part of a hypergrid. The technology is readily available and it is our belief that seamless utilisation of virtual worlds across educational institutions will create a persistent and cost efficient virtual environment in which educational activities can be

made available.

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