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Final Project 3.0: A Student Virtual World Conference on the Future of Collaboration

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Abstract

There is currently little research of any kind on enterprise virtual worlds or using these collaborative tool ecosystems for geographically distributed education in organizational studies. In 2013, a group of multidisciplinary graduate students created and executed a conference in a 3D virtual world as a class project. The topics presented in the conference were crowdsourcing and mobile virtual worlds, but the overall experience resulted in learning well beyond those topics. The project team encountered a significant learning curve over planning and executing in person meetings as well as technical challenges that would threaten the success of the project. This paper describes the end-to-end process taken by the team to plan and execute the conference, and shows the challenges, successes, and the lessons learned that can be applied to future conferences in 3D virtual worlds, which promise incredible potential for improving collaboration across businesses.

Keywords

Virtual Collaboration

Comments

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FINAL PROJECT 3.0: A STUDENT VIRTUAL WORLD CONFERENCE
ON THE FUTURE OF COLLABORATION

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March 18, 2014

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ABSTRACT

There is currently little research of any kind on enterprise virtual worlds or using these collaborative tool ecosystems for geographically distributed education in organizational studies. In 2013, a group of multidisciplinary graduate students created and executed a conference in a 3D virtual world as a class project. The topics presented in the conference were crowdsourcing and mobile virtual worlds, but the overall experience resulted in learning well beyond those topics. The project team encountered a significant learning curve over planning and executing in person meetings as well as technical challenges that would threaten the success of the project. This paper describes the end-to-end process taken by the team to plan and execute the conference, and shows the challenges, successes, and the lessons learned that can be applied to future conferences in 3D virtual worlds, which promise incredible potential for improving collaboration across businesses.

INTRODUCTION

Virtual Worlds designed specifically for enterprise are in their infancy. There is currently little research of any kind on enterprise virtual worlds (Surakka, 2012) or using these collaborative tool ecosystems for geographically distributed education in organizational studies (Kapp & O'Driscoll, 2010). We are not aware of any published work on 3D peer learning conference design from a student learning perspective although our Lab group has written several white papers about the topic. This paper intends to begin to fill this gap.

The Organizational Dynamics Master's program at University of Pennsylvania offers a unique opportunity to explore the challenges and solutions associated with managing distributed teams through a Virtual Collaboration class. The course helps students to become immersed in the topic since it is held 100% in virtual environments and students are asked to NOT meet in person until after the semester is over. This ensures that students grapple with virtual teamwork and explore topics that impact collaboration across distributed teams. These include time, distance, and situational factors; culture and language differences; knowledge management challenges; and project management and leadership challenges. Since the majority of class sessions are held in "3D immersive environments," or computer generated virtual world spaces such as Second Life, 3D ICC's Immersive Terf, and ProtonMedia's Protosphere, students also experience the benefits and challenges associated with the gamification of teamwork.

The class begins in Adobe Connect, which, like other web-conferencing solutions (ex. WebEx), allows users to connect through video, voice, screen sharing, polling, and other meeting aids. 3D immersive environments include similar features, but take them several steps further by providing dynamic and customizable virtual 3D spaces (ex. meeting rooms, classrooms, courtyards) complete with an avatar representative for each user. During the 2013 Spring

semester, the five graduate students taking the multidisciplinary seminar were asked to work as a team to design, plan, and execute an event in one of the 3D immersive class environments. The goal was to provide the students with the experience of working as a virtual project team while becoming familiar with the benefits, challenges, and strategies associated with using collaborative tools. The team selected 3D ICC's Immersive Terf for the peer learning conference, a highly advanced emerging 3D virtual world. The event was designed by the project team to complement the class's experiential learning by opening the event to others outside the class. Peers from the Masters Program were invited to participate in a conversation about two collaboration topics: Crowdsourcing and Mobile Virtual Worlds. Figures 1 and 2 below show small and large group scenes from the conference. From the beginning of the design work through the execution of the conference, the project team encountered unexpected challenges and learning curves. However, when all was said and done, all who participated considered the conference a great success. This paper endeavors to highlight key lessons learned, particularly technical and cultural, from the conference.



Figure 1. Participants of a small group session interact in conversation about crowdsourcing.



Figure 2. Participants of the conference listen as 3D ICC Executives are introduced.

While much of this paper focuses on challenges and lessons learned, particularly around technological ease of use, it is critical to note that this way of *conferencing* was nothing short of

exciting, magical, innovative and fun. There were many benefits associated with this new frontier of virtual collaboration. These include achieving new levels of engagement and global interaction across the corporation. No longer is it necessary to bring teams together in person as the best way to enable productive meetings and outcomes. The effectiveness of the 3D immersive environment far outweighs any potential negatives associated with the task of becoming familiar with the technology. These trials will largely disappear as the technology evolves and corporations develop and adapt their platforms to accommodate this kind of innovative and meaningful software.

METHOD

This paper was written as an ethnographic case description (Murchison, 2010). The students acted as participant observers in the conference design, execution, and evaluation. The event video, planning, and conference artifacts from digital records were utilized to confirm the accuracy of the case description. Wiki pages, pictures, and journal entries were also included to maintain the accuracy of the case description. The participant observer experience was validated by a post event debriefing conversation, a class project debriefing conversation, and a post-conference evaluation survey of all participants. The initial draft of this paper was then validated by the CTO and CEO of the platform used for the conference.

EVENT PLANNING AND PREPARATION

The topics of crowdsourcing and mobile virtual worlds were chosen for the 3D conference after researching emerging technologies through course readings and studying the Gartner HypeCurve showcasing future Virtual Collaboration technologies presented in Figure 3 (Prentice & Ghubril, 2012) below.

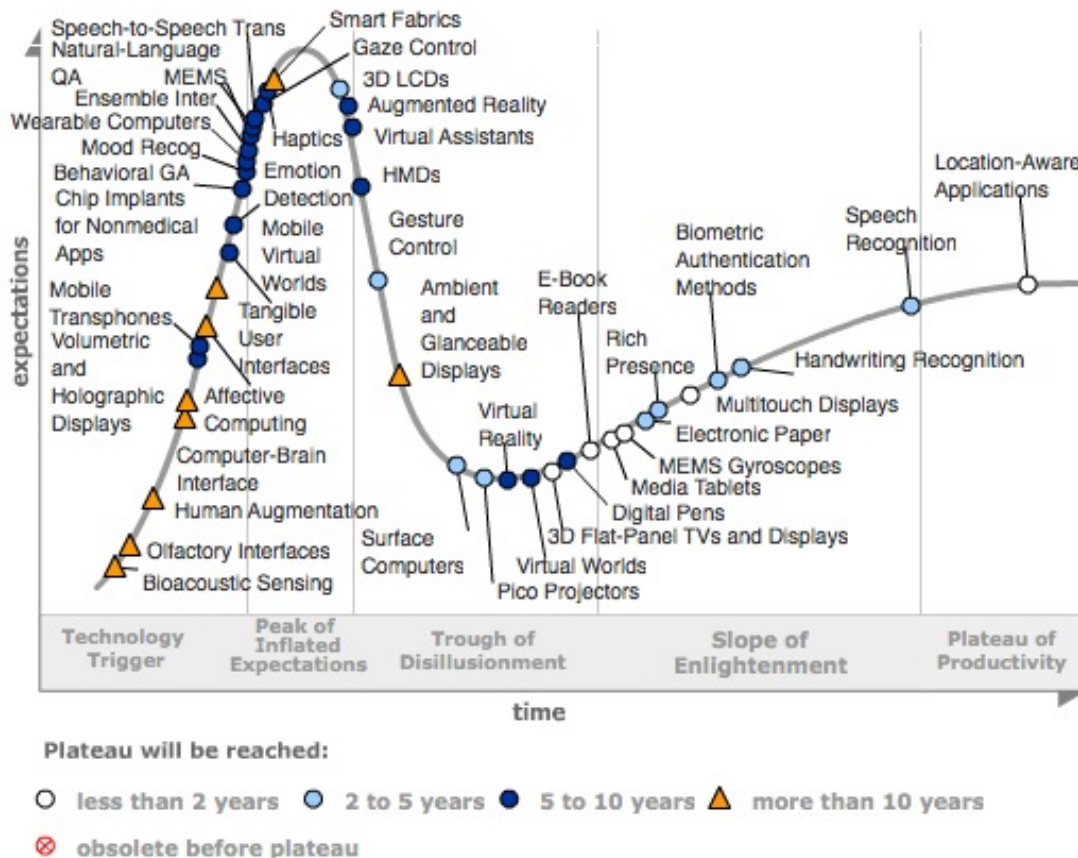


Figure 3. A Gartner HypeCurve used by the project team to pick topics for the conference.

Each of the five project team members took responsibility for specific focus areas and two team members were dedicated to researching and presenting the content. A fifth team member was designated as the facilitator for planning and execution. This included oversight of preparation, establishing the project plan for task completion, structuring the event, and acting as moderator for the event. Each project team member was assigned individual tasks to help organize and prepare. The project plan was created as a task list on a Wiki Space (www.wikispaces.com). This provided the team with flexible management of multiple work streams and allowed for a common online view of deadlines and status indicators for each task, as shown in Figure 4.




Item No.	Description	Assigned to	DueDate	Status
1	Send Invitation	Angela	3/20	Completed
1a	Prepare Conference Invitation List	Angela	3/20	Completed
1b	Define requirements for participation (Immersive Terf System Requirements), instructions, cap on number of participants, and how to RSVP	Geoff	3/17	Completed with registration info
1c	Finalize agenda based on example provided by Ana  Sample Conference Agenda Template.pdf Details Download 429 KB	Geoff	3/17	Completed: De and will be upd
1d	Create Invitation including requirements, how to RSVP, cap on participants. Also include the Immersive Terf Brochure  . Example:  PennVOD Conference Introduction (4).pdf Details Download 302 KB	Angela	3/20	Completed
1e	Send to Larry Starr for distribution to the OrgDynn community	Angela	3/20	Completed

Figure 4. Example of a wiki-based project plan used to assign project tasks to project team members.

The two topic sub-teams met separately via virtual meetings to research and prepare their presentations in parallel with the other planning activities. While a structure was agreed upon for these topic preparation meetings, the content of the sessions was left up to the individual topic teams. The facilitator used the content produced by the topic teams to prepare for the group discussion that would take place following their presentations during the conference.

The project team determined it made sense to hold two presentations in parallel. It was thought that it would be more effective to break into smaller groups to ensure that each guest had ample opportunity to contribute to the dialogue. While individuals are able to raise their avatar's hand to ask a question, there are instances in virtual world settings when people talk over one another because body language cannot be read in the same way that it is in person. It was also determined that two smaller group discussions would be easier to facilitate than one large group, increasing the likelihood of providing participants with an engaging and positive experience.

It was also important to keep the sessions moving. The conference was held in the evening, with a goal of finishing in two hours so as not to keep the participants too late after their work day. Separate rooms for each presentation allowed everything to be set up in advance, thus decreasing the possibility that something might go wrong during a "just-in-time" set-up. This would be analogous to a physical meeting to which a presenter brings a laptop into a conference room and then spends several minutes looking for the presentation file, thereby wasting everyone's time.

Along with the goals of promoting an interactive discussion and keeping the sessions moving, the project team wanted to encourage virtual movement between sessions. This was intended to provide a fun and networking-friendly atmosphere during the session transitions, similar to circulating during an in person conference. The great advantage that a 3D immersive


environment offers over traditional audio or web conferencing is that it simulates physical environments, including the human experiences of participating in activities together in the same context and being able to move through the environment together.

5	<ul style="list-style-type: none"> Breakout into two groups - count off 1, 2 - Group 1 go to Elm for Mobile Virtual Worlds by Forums -> Elm (Angela and Greg) - Group 2 go to Cedar for Crowdsourcing by Forums -> Cedar (Anthonise and Kathleen) 	Geoff	5 min
6	<ul style="list-style-type: none"> Session 1 - Mobile Virtual Worlds in Elm with Group 1 - Crowdsourcing in Cedar with Group 2 	Anthonise Angela Greg Kathleen	20 min
7	<ul style="list-style-type: none"> Keep facilitators updated on time Switch rooms - Group 1 - Move from Elm to Cedar by Forums -> Cedar - Group 2 - Move from Cedar to Elm by Forums -> Elm 	Geoff	5 min
8	<ul style="list-style-type: none"> Session 2 - Mobile Virtual Worlds in Elm with Group 2 - Crowdsourcing in Cedar with Group 1 	Anthonise Angela Greg Kathleen	20 min
9	<ul style="list-style-type: none"> Bring everyone back in the Penn Training Room - Move from current room to UPenn Training Center by Forums -> UPenn Training Center <p>Do Not use the doorway from Elm to the training center - you will not end up in the right place...</p>	Geoff Anthonise Angela Greg Kathleen	3 min

Figure 5. The agenda used by the facilitator to keep the conference on track.

An agenda was created, presented in Figure 5, and e-mail invitations, shown in Figure 6, were distributed to potential guest participants. Based on conference design lessons learned the


previous year by the advanced level University Virtual Collaboration Design Lab, a detailed technical set-up section was inserted into the body of the invitation. Due to the steep learning curves associated with using these environments and their specific technical constraints, the Lab team found that a preparatory session, held before the conference date, was critical for success. This helped potential participants to determine whether it was technically feasible for them to join by outlining the specific equipment and bandwidth required to enable virtual world conference participation. It also allowed participants to get their feet wet in the environment so that their participation in the formal event was not like the experience of seeing a big city's skyscrapers for the first time, where they could not help looking up.




The Future of 3D Collaboration: An Experiential Learning Opportunity

3D Virtual Event Monday, April 8, 2013 (Pre-Event April 1, 2013)
7-10pm Eastern US

Hosted by the Penn Organizational Dynamics 640 Virtual Collaboration Class



Conference Overview
A select group will have the rare opportunity to “play” in a live 3D collaboration space. Experience the future of business collaboration in an “action learning” environment! Two collaboration technologies will be introduced – mobile virtual worlds and crowdsourcing.



Is your up-to-the-minute avatar running on your mobile device? Are you developing amazing ideas in real time with hundreds of your colleagues? What does the future hold for business collaboration? Don't miss this “one time only” encounter in a fascinating 3D world!

Agenda (all times are shown in Eastern US time zone: GMT -5)

Event Agenda
Pre-Event: Monday, April 1 from 7:00 PM to 8:00 PM EST
7:00 - 8:00: Welcome to Immersive Terf! Let's get you situated.

Event: Monday, April 8, 2013 from 7:00 PM to 9:30 PM EST
7:00 - 7:20: Welcome and Introductions
7:20 - 7:30: Breakout into 2 groups and move to different rooms in Immersive Terf
7:30 - 8:00: Breakout Session 1
8:00 - 8:05: Quick Break / Instructors will move between groups
8:05 - 8:35: Breakout Session 2
8:35 - 8:45: Quick Break / Meet back in the big room
8:45 - 9:15: Full group discussion about findings from the two breakout sessions
9:15 - 9:20: Wrap-up
9:20 - 10:00: Participant networking and extra exploration time

Event Registration

Space for this event is limited to 16 people and is expected to fill quickly, so submit your registration now. To register for this event, please email Angela Palermo at apalermo@sbcglobal.net. Before registering, please make sure that you are able to meet the technical requirements of the event listed below. Prior to the event, you will receive an email from support@3dicc.com with your user and password information.

Technical Set Up for Participants

This event will be conducted on 3D ICC's Terf™. Terf™ supports both browser clients and installed clients. For this meeting, you are required to install SW on your computer to attend. If you are using your business computer you may need to ensure that you have the appropriate IT permissions/access to install the program prior to signing up for the event.

Set up is 3 simple steps:

1. Download 3D ICC Immersive Terf by visiting <http://www.3dicc.com/client/> and choosing the Windows or Mac download options and install it by selecting download and run or downloading and then clicking on the file.
2. If you are installing on your business computer, you should make sure your company's policies allow you to install the software on your computer.
3. Have a headset with a microphone and a good Internet connection **WARNING: Users without headsets will be disabled during communication.**

Figure 6. The invitation sent to potential conference participants, which includes technical requirements for participation.

The project team realized that most guest participants would attend with little, if any, previous exposure to virtual worlds, and as a result, would require special assistance to introduce them to the basic tasks of navigating the environment. While the class had weeks to work through the technical challenges presented by this emerging technology, the preparatory session was designed to fast track one-time event participant readiness, avoid frustrations associated with technical issues and quickly get participants focused on the conference content for optimal participation. For example, proper advance testing of noise cancelling headphones and computer memory capability to handle the virtual world software requirements could be completed prior to the conference.

The focus on the importance of the prep session led to a number of additional interactions with participants leading up to the day of the conference. Two of the guest participants were not able to attend the preconference event and received off-line tutorials from the CEO and CTO of 3D ICC. The project team also held a practice session following the prep session to make last minute adjustments to the conference agenda and prepare the virtual rooms in advance. In the end, the prep session achieved the goal of familiarizing participants with the technology, setting expectations for the event and providing the project team a logistics pilot environment and insight into the personalities of the participants.

Immersive Terf was chosen as the virtual world for the event for a variety of reasons, including its easy installation and availability for both Windows and MacOS users. The class had most successfully functioned in Immersive Terf for the majority of the semester compared to other platforms. One of the reasons for this was support that the CEO and CTO of 3D ICC provided. They were quick to respond to issues around the clock and were highly engaged and

invested in facilitating a positive class experience. Prior classes had not held an event in Immersive Terf so this represented an opportunity for both the class and 3D ICC to test and explore this product in a unique learning capacity.

Throughout the semester, the class faced technical challenges with each of the virtual world environments. Persisting through the challenges resulted in many invaluable lessons about the considerations necessary for integrating 3D immersive environments into a project. As the technology matures, it is likely that many of these issues will be mitigated. However, until such time, it is important to understand that technical challenges are a part of the process of adopting emerging technologies. Dealing with each technical issue is an opportunity for improving each tool and adopting strategies to better utilize them. An important part of piloting is the need to set expectations around technical constraints, thereby preparing users to expect a certain amount of interruption in exchange for the benefit of operating more collaboratively. While some companies will be later adopters of immersive environments, those who start piloting and productively using these environments early will be able to more quickly reap the benefits of newer improvements and features as the solutions mature because they have learned usage strategies through early adoption.

Specific examples of the types of technical challenges encountered by the project team during the event planning included network connectivity and sound related issues, as well as user computer CPU and memory deficiencies. One of the most severe problems encountered was network related. Users' systems would freeze and their audio would randomly discontinue. During one session, shortly after displaying slide media in the virtual world, several of the team members observed that they could no longer be heard and that their avatars were essentially frozen. Another time, multiple users engaged their webcams and observed slowed reaction time

of user movements and patchy sound. Based on statistics from Immersive Terf, both of these incidents appeared to be related to a lack of network bandwidth. Some team members experienced significant differences in performance when accessing the environment from their home, office, and hotel locations. Even though all of these locations used high-speed internet connections, the connections were not always fast enough. These types of issues emphasized the importance of holding a preparatory event for guest participants and also ensuring that 3D ICC staff was accessible to provide technical support during the event to minimize the risk of failure.

The team also experienced a near disaster due to sheer lack of experience. After spending hours setting up the virtual rooms where the conference would be held, determining event flow and posting presentation materials, a member of the project team mistakenly deleted the rooms. This provided a dramatic lesson learned for the project team. Fortunately, 3D ICC was able to recover the project team's work. Even this experience did not diminish the thrill of being exposed to the latest, most advanced ways of collaborating. Rather, it provided valuable lessons learned about 3D event planning and execution and allowed the team to understand that attempting a complex task without proficiency with the tool, would lead to mistakes. As will be shown later in this paper, the formal event was successful. With that in mind, other teams surely can accomplish great outcomes using 3D spaces with minimal experience in 3D spaces.

Following the recovery, an intimate breakout area was created with tables, chairs, two display boards, and a customizable wall to be used for affinity diagrams during the event. Conference set-up in the virtual world is similar to a physical set-up with storage areas and various sizes and types of furniture available to be inserted and adjusted. A display board was set up with a presentation slide, which continuously exhibited the agenda, and another display was set up to keep the introductory presentation in view. The environment is incredibly dynamic, and

thus with more time available to plan, multiple configurations can be explored to customize the space.

Significant time was spent on technical issues and therefore, less time was available to focus on the meeting content. A steep technical learning curve resulted in lengthier meetings. It was easy to get distracted and off topic while attempting to overcome these technical challenges that continued to arise when working within the virtual environment. Further, the need for detailed schedules, structure and leadership is amplified in a virtual environment, as there is no physical, on site presence to compensate for flaws in planning and organization. The team relied upon the detailed event schedule and facilitator task list during the prep-event and main conference to ensure that nothing would be missed. It would have also been beneficial to arrange for designated technical support during project team meetings similar to engaging audio-visual support for meetings in the physical world.

Soliciting guest participation turned out to be a challenge due to the short window of time provided by a single semester class to acquire the relevant knowledge to plan and execute a collaborative final project virtually. The project team concurred that sending “save the date” invitations early in the semester, would have likely increased attendance at the end of semester event even if was sent out before event topics were established. Since the project team worked on a small free server provided by 3D ICC for the course pilot, the capacity of the event was limited to sixteen attendees. Fourteen were confirmed in advance of the event, however, only twelve actually attended. This included the project team, technical support team and guest participants. Two guests dropped out the day of the event, one due to a personal emergency and another due to network connectivity issues.

THE CONFERENCE

Upon arrival to the conference, participants were welcomed into a large room complete with display walls for presentations, stadium seating, and a terrace. Figure 7 shows the main conference space. As they arrived, attendees were asked to place sticky notes on a map to show their favorite vacation spot, as seen in Figure 8.



Figure 7. The layout of the main conference space used for the introduction and final group discussion.



Figure 8. Conference seating during the introduction and the map used for an icebreaker discussing favorite vacation locations.

The conference began with the facilitator providing a brief introduction outlining what was about to take place. All attendees chose their avatars for the evening and sat at the tables in the main space. The instructor introduced the Virtual Collaboration class and the CEO and CTO of 3D ICC to the invitees. Participant self-introductions followed, which included posting their favorite vacation locations on a world map in the main conference area. This icebreaker in the virtual world functioned similarly as in the physical world by providing an informal way to get acquainted and settle into the environment.

The agenda was reviewed. Participants were introduced to the two different topics that would be explored and then were split into two groups. Group 1 participated in the Crowdsourcing discussion in the Cedar breakout room (Figure 9), while Group 2 participated in the Mobile Virtual Worlds discussion in the Elm breakout room (Figure 10). At the end of the first session, each group teleported to the opposite breakout room to participate in the alternate

session. Each avatar moved individually from room to room (or station to station) to view and discuss different presentation displays.

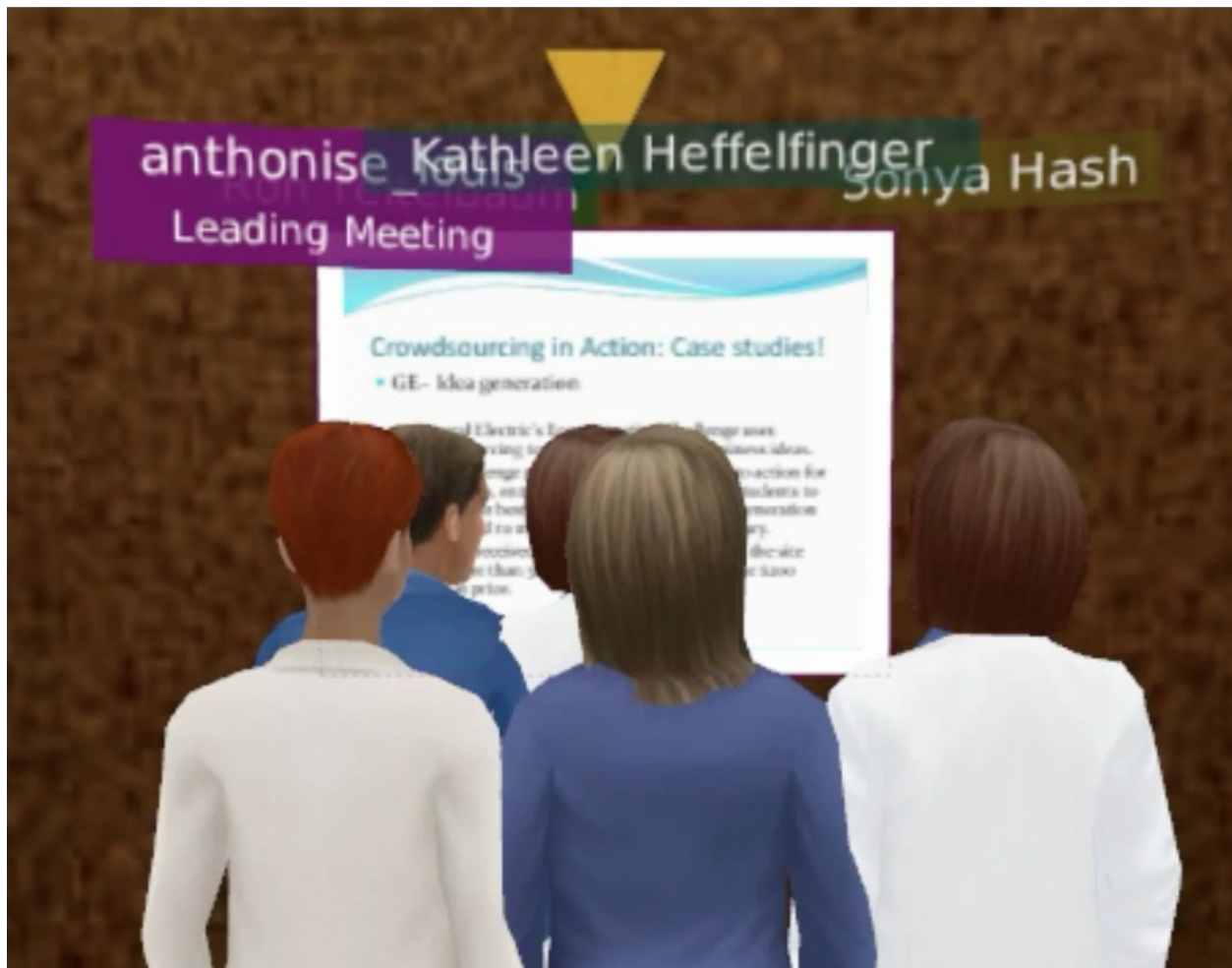


Figure 9. Participants of the first Crowdsourcing small group session listen to a presentation about the topic in the Cedar breakout room.



Figure 10. Participants of the second Mobile Virtual Worlds small group session listen to a presentation about the topic in the Elm breakout room.

Separate rooms and smaller sessions were not the only ways that the project team ensured that they kept to the agenda. During the sessions, the meeting facilitator was in constant communication with the session teams via Immersive Terf's instant messaging feature. Updates were provided on how much time had passed and how much was left so that they were able to tell whether they were on track or not. The facilitator attended the Crowdsourcing session with Group 1, and then moved with Group 1 to the second Mobile Virtual World session, all the while utilizing instant messaging to stay connected to the rest of the project team in the other room.

Each session started with a presentation and concluded with a group discussion. A 3D ICC executive participated in each of the parallel sessions in order to deal with any technical issues that might arise, and also to provide their perspective on the topics. There were minimal technical issues during the sessions.

A number of interesting dynamics occurred during the small group presentations that were noted as lessons learned for future events. First, the interactive experience was too limited in the small group sessions. The participants would have liked more time to continue the robust discussion that each presentation generated. The facilitator recognized this while monitoring the first crowdsourcing session, and adapted by extending the discussions by several minutes, but ideally, the presentations might have been shortened or the session time lengthened. Secondly, a phone ringing in the background and an echo during one of the sessions became very distracting, a reminder that the headsets used for web audio and voice communication are extremely sensitive, and it is a best practice for participants to mute their microphones when not speaking.

As the conference progressed, the project team realized the intellectual benefits of having executives from 3D ICC in each session. Not only did they provide technical support, but also their subject matter expertise added tremendous value to the discussions. Their support enabled the success of parallel sessions, which added variety and vitality to the conference. Additionally, the two executives helped compensate for the smaller number of participants by adding substantive points of view.

Despite being placed in small groups, the inexperienced participants had a difficult time engaging in the discussion. In retrospect, they required more clear direction up front than they actually received from the project team about how to interject to ask a question or add a thought. Being able to do so would likely have enriched their experience. The body language of an avatar

cannot be read to know when one is getting ready to speak if it is not used. If someone did not raise his or her hand before speaking, it was likely that someone would speak over him or her. This is not a new online challenge as it also happens on phone or web conferences where participants cannot be seen and must assert themselves to actively engage. Virtual environments require that interaction norms be established up front. The use of 3D spaces counters this by encouraging active engagement. Users can assert themselves by utilizing the non-verbal features of their avatar (ex. raising their hand) to communicate effectively and participate in the discussion. Non-verbal features also allow the facilitator to guide the discussion, solicit participation and mitigate disruptive participants. For example, if someone is “hijacking” the conversation, the facilitator can use another participant’s raised hand as a reason to break in and regain control of the conversation.

Taking time in advance to learn the names of the guest participants would have been prudent. Some signed in with user names (also referred to as handles) that were misleading and caused mistakes in how others addressed them. Being addressed incorrectly by the hosts could potentially have caused a guest participant to feel unwelcome or to perceive the project team as unprofessional, unprepared, careless or even rude. The project team learned this lesson when the facilitator called one person by their handle name (ex. BRose123), rather than by their actual name (ex. Beth).

One of the most valuable cultural lessons learned occurred in a session where the presenters made a decision to control guest participant movements in order to keep the group moving together. Several poster stations were set up along the wall in the room. In order to help the group of avatars walk along the wall synchronously, virtual world controls were put in place to move the group of avatars with the facilitator from one poster to the next rather than allowing

for individual avatar movement. Following the first small group session, one of the participants spoke up and expressed that she felt violated by being dragged around and prevented from moving on her own. As a result, an adjustment was made during the second session so that participants were able to move their avatars independently. This virtual group dynamic raised consciousness about how critical it is to apply emotional intelligence and cultural sensitivity to the virtual world so as to not create an uncomfortable environment. If control is truly necessary, informing participants of the control in advance is advised and may result in a more positive outcome. This mirrors findings from an article published by Lee and Takayama (2011), which described the use of a virtually controlled robot that could move around an office space and attend meetings. During the meetings, those controlling the robot felt violated when someone adjusted the volume on the robot without asking first. It was considered better practice to ask the person to lower or increase his or her own volume. People using avatar representatives in any environment may still feel that a certain amount of personal space or control is needed in order to function comfortably.

The transition between sessions worked well as the project team guided participants in how to teleport to their next session. Following the second topic session, participants teleported to the main conference area and took a short break “outside” on the terrace (see Figure 11) to get some “fresh air” and socialize. It was remarkable to experience how much the virtual world simulated the feeling of actually experiencing an outdoor break at this conference. There are a multitude of sound options including chirping birds or flowing streams as well as decorative elements such as flowers in pots and tables with umbrellas to enhance the environment. After the break, the remaining time was spent in a large group discussion, which included everyone, followed by closing remarks.



Figure 11. An avatar walks through the outdoor space in which the outside break session was held.

The facilitator guided the large group dialogue, with assistance from the project team, by asking a set of questions about how the participants might apply the information gained in the Crowdsourcing and Mobile Virtual World sessions to their professional environments. This led to a lively discussion that enhanced the original small group dialogues. As comments were made, sticky notes documenting the themes were placed on a display wall. The sticky notes were then grouped together, as would be done for an affinity diagram, to help summarize the discussion themes. Generally, the guest participants expressed that they enjoyed the conference and felt it was a worthwhile use of their time. Two of the four felt that they weren't sure how they might apply the knowledge to their current work environments while the others had thoughts and ideas that they decided to explore.

CONFERENCE EVALUATION

A post-event survey was distributed to participants requesting feedback. Participants reported that they found value in attending the event and also echoed some of our findings related to advanced preparation and cultural interaction. Overall, the professor, project team, participants, and executives from 3D ICC considered this 3D conference a success. Following the event, the project team worked to recap and assess the challenges experienced during the event and the lessons learned, most of which are captured in this paper.

DISCUSSION

Virtual Worlds provide distributed teams with an opportunity to connect in new ways. Through all of the conference activities and previous class sessions, the project team quickly bonded. This bonding resulted from the exciting interactional possibilities presented within the environment, the stimulation of actually working together in the 3D immersive environment with avatars and audiovisual tools and, and the need to work through issues together in order to produce an end product. While it will take time for the adoption of such gamification solutions to become more widespread in academia and industry, based on our experiences, the flexibility of this technology to quickly adapt to its users requirements will open up opportunities for connecting teams, divisions, businesses and universities that are not yet imagined by mainstream individuals. This kind of connectivity will comprise a significant part of our collaborative future as a global society and will further the ability to collaborate without the limitations currently imposed by travel budgets and geography.

The experiential lessons learned from the 3D immersive peer learning conference were invaluable. The major findings that can be applied to future meetings and events are summarized below.

1. When inviting new users to conferences in 3D immersive environments, much higher lead-time is required than when executing an event with a simple tool such as Adobe Connect or WebEx. This is especially important when inviting participants from organizations outside your own as some networks may block access to or have bandwidth issues that limit the use of immersive environments. As a result, designing and planning conferences may need to start earlier as well.
2. A high level of active engagement and excitement was generated by the possibilities this form of collaboration offers. This was universally felt by all who participated. Lively discussion occurred throughout the conference, particularly in the end after the breakout sessions when everyone came together as a group to summarize their experience.
3. The conference was mostly free of technical issues. However even a small number of users with technical issues have the potential to affect the progress of a collaborative event. It is best to take care of these issues in advance by offering preparation meetings for new users, including technical support. These meetings will ensure users can logon without issue, that their computers can handle the software requirements, and that user audio and video devices are configured and operating properly.
4. If your event requires a minimum number of participants to provide value, it is advisable to invite a higher number of participants than you need to compensate for nonparticipation due to technical issues or no-shows. Though small in scale, the event illustrated how major trade conferences with many participants and multiple breakout sessions could work. Participants all provided feedback that they could see the benefits of using various concepts explored during the conference in their own workplaces.

5. The project team executed a truly successful event with next to no experience which indicates that others can do the same. While any conference benefits from an organized moderator, there is an enhanced need in virtual conferences. A detailed plan that can be driven by the moderator, especially when the conference has multiple breakout sessions, is highly recommended.
6. Establish clear meeting protocols up front. For example, avatars should raise their hands when they would like to speak, mute their microphone when not speaking, and create user handles (the names that display above an avatar) that reflect the name by which the person would like to be addressed.
7. Have fun! Simulating an outside fresh air experience worked really well to break up the conference and allow people a chance to network. There was much to discuss about the terrace, furniture, birds, running stream and what it felt like to fly!
8. Fascinating cultural lessons were learned about personal space. Consider that the “personal space” of an avatar applies just as it would in person. This means that adjusting someone’s volume or controlling their avatar movements without their permission is not advisable. Ask or help a participant to follow you or request that they adjust their own volume rather than forcing it on the participant. Observing and commenting on what it felt like in relation to a physical environment, including moving as a unit led to interesting comparisons between a 3D immersive environment and other forms of on-line collaboration such as audio conferencing, web meetings and teleconferences.
9. One of the project team members participated in the conference from her office, a physical open plan collaborative workspace. Inevitably, she would look up from her screen at different points during the event to find a group of co-workers observing her screen. They

were captivated by what they were watching and deriving vicariously. They were intensely curious, asked many questions despite the fact that they couldn't hear any audio and asked if they could have a demonstration of the software. Their enthusiasm was infectious and they all expressed interest in participating in a workplace pilot.

These are certainly not the only lessons on delivering 3D immersive events. However, these are the ones that the project team most clearly observed and experienced in the peer learning conference. The utilization of such environments is still in its early stages and there is more learning and best practice for early adopter communities to pass on. The beauty is, however, that the collaborative future is here now. It's not necessary to wait until the technology matures to apply the lessons presented here. The only remaining question is: What are you waiting for? We invite you to join us as early adopters in exploring the possibilities presented by this amazing new world of 3D virtual collaboration!

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