

IGF 2017 Reporting Template

- Session Title: **Virtual Reality: the next computing platform for development**

- Date: 20/12/2017

- Time: 17h20

- Session Organizer: Mr Diogo Cortiz (Ceweb.br/NIC.br) / Ms. Caroline Burle (Ceweb.br/NIC.br)

- Chair/Moderator: Mr Vagner Diniz (Ceweb.br/NIC.br)

- Rapporteur/Notetaker: Ms. Nathalia Patricio

- List of Speakers and their institutional affiliations:

Mr. Diogo Cortiz (Ceweb.br/NIC.br, Brazil)

Ms. Lorryne Porciuncula (OECD, France)

Ms. Ana Cristina Azevedo (Mackenzie University, Brazil)

Mr. Charith Fernando (Keio University, Japan)

Mr. Dominique Hazaël-Massieux (W3C, France)

- Key Issues raised (1 sentence per issue):

Virtual reality is the next computing platform. By 2025 the market will be \$80 billion, the same size of the desktop PC markets today.

Major technologies companies are investing in Virtual Reality and Augmented Reality (VR/AR) to develop their own products.

Web has a critical role to play on VR. It needs to become more accessible to a broader set of creators and developers. And web browsers can be a channel of the VR experience.

VR and Telexistence will improve remote work and improve working conditions in hazardous locations

Streaming is the new normal for VR, and that's why it matters for Internet governance issues. The expectation that content will be streamed has important implications for the network.

Bandwidth is a current problem. Estimates from VR providers show that 720 VR video stream now takes at least 50 megabits for connection.

Latency is another Issue. VR requires also ultralow latency. The latency simulators need to be equal or smaller than the latency between our eyesight and other sensors in our brain.

Privacy in VR is more complicated. It is not just about data collection, it is also about interfering in our cognition while we are immersed in a VR experience. It is about privacy of senses.

- If there were presentations during the session, please provide a 1-paragraph summary for each presentation:

Mr. Diogo Cortiz started the session explaining the main concepts of virtual reality. VR is not a buzzword, in fact it's a research area that has been around since the '60s. the technology have gone through development

process and improvements that have brought us to the current level where we are able to view effective applications of virtual reality. leading technology companies have identified this trend, and they are focused on developing their product and service in these areas. This movement drives even more the development of virtual reality. To get a sense of the market, this report from Goldman Sachs that point out that virtual reality investment, the investment in virtual reality have already reached \$3.5 billion last year. And they project that by 2025 the market will be \$80 billion. It's the same size of the desktop PC markets today. It has the potential to impact many areas, specially education, research, entertainment, and so on. But it brings some challenges. We have talked a lot about data privacy. But now using virtual reality, we need to tell about privacy in our human senses. Because the user by immersed in an environment that was developed by a third party. That you could be a big industry, could be a small industry, for example. Great risk about new type of data is collected and maybe shared: voice, movement and sentiment reactions.

Mr. Dominique argued that if we do think that virtual reality is whenever computing is heading to needs to become more accessible to a broader set of creators and developers. That's why the web has a critical role to play. And by that, if we can enable virtual reality in web browsers, if we can make web browsers a channel of the virtual reality experience, we address many of these challenges. First, the web is almost by definition a platform that we have all the platforms, and we can run a web browser on your desktop, on laptop, mobile phones and tablets and even in some cars. In some -- pretty much all the connected devices you can think of. It's a great place to start a virtual reality experience. And most importantly, the web is an Internet platform. There is nobody controlling the web. It's a platform that is built collectively. There are some initiatives to take VR to Web, such as WebVR, that integrates the Head-mounted display directly with Web Browser.

Mr. Charith Fernando discussed more about the integration between VR and Robotics to create Telexistences projects and he showed some projects in Japan. He also discussed the main infrastructures challenges for telexistence. When it is necessary to have realtime communication or realtime control with a robot, the prioritization is very much important. For example, for audio communication or video communication, resolution is important, but when you want to control a robot, latency and the frames per second is more important in order to keep it working. Infrastructure plays a important role in Telexistence.

Ms. Lorraine Porciuncula focused her presentation on infrastructure and infrastructure issues. She argued that while VR is growing in rapid rate in terms of hardware and software, and investment, the world is still struggling to catch up in terms of infrastructure. She agreed that Latency is one issue. VR requires ultralow latency. The latency simulators need to be equal or smaller than the latency between our eyesight and other sensors in our brain, otherwise it causes motion sickness. So for VR, the delay between action to reaction is the threshold of 15 milliseconds to 7 milliseconds. That is a low latency. She also discussed about coverage, stating we are very much behind in terms of high speed Internet coverage. Lorraine's four concerns: streaming, bandwidth, latency and coverage.

Ms. Ana Cristina Azevedo discussed about privacy and security on VR. She argued that these new VR applications innovate because besides storing so much data about -- just information that we give them --, they also store data about our movements and also about voice and can interfere in our senses.

Gender Reporting

- Estimate the overall number of the participants present at the session: 50 people
- Estimate the overall number of women present at the session: 20 people
- To what extent did the session discuss gender equality and/or women's empowerment? Little

- If the session addressed issues related to gender equality and/or women's empowerment, please provide a brief summary of the discussion: