GLIMPSE Position Paper for NSFCloud

Dr. Marjorie Zielke, Jeremy Johnston, Michael Kaiser

A short description of GLIMPSE

A Game to Learn Important communication Methods for Patient Safety Enhancement, GLIMPSE, is a platform being developed by a team under Dr. Marjorie Zielke at the University of Texas at Dallas (UT Dallas) Arts and Technology Department (ATEC).

GLIMPSE aims to be a key Massive Online Open Course (MOOC) platform for medical domain content, focusing on providing a seamless interface between interactive simulations in Unity3D and web-based content, including text, image, and video media. We want to provide online tools that subject matter experts can use to add new exercise content for users in real-time to adapt to real world events. An example of a site built with our platform is at http://glimpsegame.com/login, (login jpj054000@utdallas.edu, password: 1111).

MOOCs and Cloud platforms today

MOOCs are already quite popular, with the most well-known platforms being EdX (EdX 2012) and Coursera (Coursera Inc. 2012). MOOCs using traditional web content, with limited interactive content, are already very successful, and allow students to learn more and on the go with mobile technologies (Inge de Waard 2011). As this trend continues in the future, MOOC software will need to adapt and evolve to new cloud architectures.

There are few options for cloud solutions dedicated to the nature of GLIMPSE. That is, support for *complex interactive simulations and games* with heavily integrated web and MOOC capabilities. The closest example of a current cloud service with web and gaming support would be Google's Cloud with their App Engine and Compute Engine (Google, Inc. 2008) which has a number of game application case studies such as Rovio's "Angry Birds" (Rovio, Google 2011), or Amazon Web Services (Amazon, Inc. 2006), whose customers include Ubisoft (Amazon, Inc 2012) and Coursera. However, these cloud services are still evolving. A way to experiment with different or new cloud architectures is needed, especially for applications with unique needs, before committing to any one cloud platform.

If the GLIMPSE platform is to grow to provide more complex first-person and third-person view simulations, a full environment for user generated content, and tools to analyze user performance, a large cloud based test-bed is needed. No current cloud service is tailored to provide the support for MOOC capabilities, a complex game server environment, and live content creation for simulations.

How GLIMPSE would use the NSFCloud

Our team has in the past created exercises to train first responders against past events in order to be better prepared for similar events in the future, both offline (Zielke 2011), and online (Zielke, et al. December 2013). The goal of GLIMPSE is a cloud-sized content creation network with an active repository of medical domain assets that would allow first responders world-wide to prepare virtual exercises in response to global or localized events happening now. The recent Ebola outbreak started small but has already had many cases across the world (Center for Disease Control and Prevention 2014).

While efforts are starting now to provide both hands-on training and computer-based training to responders, an online cloud-based tool might have allowed training exercises to be prepared sooner. Such a tool could also be accessible to anyone with a modern online computer and browser, or even a mobile phone or tablet. This degree of accessibility would open the door for any nation's nurses, doctors, and even citizens to prepare themselves for new medical events.

But before such an online software tool can be made, a stable platform such as GLIMPSE must be developed and deployed on a cloud service capable of providing the best environment for all facets of the platform. Committing to any one cloud architecture early could limit an online application down the road, especially one without a proven predecessor.

The NSFCloud as provided by Chameleon and CloudLab can provide a unique academic focused sandbox, ensuring that we can prepare GLIMPSE to work better with both current cloud architectures, and cloud architectures of the future.

References

Amazon, Inc. *AWS Case Study: Ubisoft.* 2012. http://aws.amazon.com/solutions/case-studies/ubisoft/ (accessed October 28, 2014).

Amazon, Inc. *Amazon Web Services.* 2006. aws.amazon.com (accessed October 28, 2014).

Center for Disease Control and Prevention. *2014 Ebola Outbreak in West Africa.* 2014. http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/index.html (accessed October 28, 2014).

Coursera Inc. *Coursera.* Founders Andrew Ng and Daphne Koller. April 2012. https://www.coursera.org/ (accessed October 28, 2014).

EdX. *edX.org.* Massachusetss Institude of Technology and Harvard University. May 30, 2012. http://www.edx.org (accessed October 28, 2014).

Google, Inc. *Google Cloud.* 2008. http://cloud.google.com (accessed October 28, 2014).

Inge de Waard, Apostolos Koutropouous, Nilgun Ozdamar Keskin, Sean C. Abajian, Rebecca Hogue, C. Osvaldo Rodriguez, Michael Sean Gallagher. "Exploring the MOOC format as a pedagogical approach for mLearning." *10th World Conference on Mobile and Contextual Learning.* Beijing, China, 2011.

Rovio, Google. *'Angry Birds' Soars Online with Google App Engine.* 2011. https://cloud.google.com/files/Rovio.pdf (accessed October 29, 2014).

Zielke, Marjorie A. "First Person Cultural Trainer Whitepaper." University of Texas at Dallas, Dallas, 2011.

Zielke, Marjorie PhD, et al. "Board 554 - Technology Innovations Abstract An Asynchronous Social, Web-Enabled Serious Game for Improving Physician-Nurse Communication." Edited by MD David M. Gaba. *Simulation in Healthcare: The Journal of the Society for Simulation in Healthcare.* Lippincott Williams & Wilkins, December 2013.