

Introducing the Open Simulation Platform

Ronald (Skip) Cole

Senior Program Officer
United States Institute of Peace
Washington, D.C., U.S.A.
email: scole@usip.org

Skip Cole is a member of the Education and Training Center of the United States Institute of Peace. He helps deliver the important instructional content developed at USIP to the world via technology, and has led the development of the Open Simulation Platform — a tool to allow subject matter experts (with no programming experience!) to create online multi-player training simulations. Cole has extensive experience in the field of simulation, both in terms of content and technology. He has developed molecular dynamics simulations, and developed simulations of business and business decision-making processes. He is a Sun Certified Enterprise Architect, Programmer and Developer. He is also an Oracle Certified Database Associate. He was a nuclear reactor operator in the Navy, has worked for a number of private sector firms (including Arthur Andersen) and has teaching experience. He has a B.S. in biophysics from the University of Connecticut summa cum laude, a master's in biophysics and computational biology from the University of Illinois, and a master's in global management from the University of Phoenix.

*“As the creeper that girdles the tree-trunk the Law runneth forward and back
— For the strength of the Pack is the Wolf, and the strength of the Wolf is the
Pack.”*

Rudyard Kipling

INTRODUCTION

It is apparent that a better preparation for peace operations is desirable. It is understandable that the US, or indeed any nation, has made mistakes. These are highly difficult operations generally conducted with limited resources and with many inexperienced actors. But there is now a clear call for better decision-making.

One bad decision, such as perfunctorily disbanding a country's military, can lead one into a more precarious position with many more dangers and variables and a shortage of time in which to respond: one bad decision can lead one into a rich environment for making more bad decisions. This cascading effect can have dire consequences, which is why it is nearly impossible to estimate a value on 'better decision making.'

Our goal in creating the 'Open Simulation Platform' has always been simple: we want to improve human decision-making. Nothing costs more lives and leads to more misery than bad decisions. Nothing. We want to do something about that.

People make bad decisions all of the time - some under duress, but many in the calmest of circumstances. Providing better information can certainly help improve the quality of decisions, and the information revolution now makes much more information available. But leaders will still have to process that information effectively and make decisions. This is where training in simulated environments becomes so vital.

WHAT IS NEEDED

The traditional forms of knowledge storage, transmission and acquisition are not sufficient for our times. These forms date back to the invention of the printing press and the modern school system. Experience gained by one generation has traditionally been preserved in books and in lectures that are then passed down for future generations to benefit from.

There are several problems inherent in this. First, our quickly changing world invalidates or makes moot many of yesterday's lessons. What worked in one epoch, for example the Cold War may fail or be counterproductive today. So some of the things one may need to know may simply not be in yesterday's books. In fact, the knowledge necessary to meet challenges successfully may be spread out in many people's heads. (Consolidating that information is a difficult task, but here again simulations may prove to be part of that answer. This will be discussed later.)

Secondly, the traditional methods of knowledge transmission do not leverage modern technology as much as possible. Using simulations it is possible to immerse people in situations. It is possible for them to obtain experience in a world in which mistakes do not cost lives and years of setback. The active mental discipline of considering what one knows, how one knows it, and how to make a decision based on limited information is not something can get from reading – any more that reading about weight lifting can improve one's muscles. But one can develop these mental muscles in virtual worlds.

What is direly needed is an inexpensive way for anyone to create training simulations – just as anyone can create a power point presentation. The technology to do so must become 'invisible': so common that no one even thinks twice about it. After a bit of reflection, it does seem obvious that using simulations to help one get one's point across will someday just be part of the everyday fabric of an instructor's life.

Now it is true that today, in 2008, computer simulations are being used more for training purposes. But unfortunately we see several problems in the ways they are currently being created:

1. They cost a lot of money. It is not uncommon for a simulation to cost many millions of dollars. Generally only highly positioned military personnel or bureaucrats can afford them. This precludes many of the people with valuable insights from creating or contributing to them.
2. They are frequently 'black box.' The people taking part in the simulation cannot see the underlying assumptions and the model of reality on which the simulation is based. This makes it quite easy for the participants to dismiss the simulation.

In the modeling and simulation world people frequently discuss their models of reality. But at the end of the day, the only models that matter are the mental models that people have in their heads. To change those models one must allow people to argue against the computer models they are being presented. When a person is presented with a ‘white box’ model in a simulation either one of two things can happen: the person becomes convinced that the model being presented is adequate or the modellers learn something and correct their models. Either way, everyone involved in the process wins.

3. They are highly proprietary. Only the organization that paid for them can use them freely. People can not take and build on each other’s work easily – many people with valuable insights cannot contribute to them at all. This highly limits their usage in information transmittal and acquisition. If people could build on each other’s work then much of the vital information spread out in many people’s heads could be consolidated.
4. They are labor intensive. By either accident or intention many current simulations require a large amount people to run.

Technology is driving the cost of making simulations down. Just as pocket calculators that once cost a month’s salary are now give away items, creating simulations will someday be very inexpensive. By leveraging the open source software revolution, we want to quickly drive this cost down to almost nothing.

When the technology costs are next to nothing, vendors competing to make simulations will not be able to simply sell the tools in their box. They will have to compete based on possessing deep subject matter knowledge and/or on their expertise in the process of conducting simulations. By driving the technology costs out of the equation we can take all of the discussions around simulations to a much higher level. We want people discussing what the real lessons are and on how best for students to be exposed to them. Not on who has the best ‘chat functionality,’ and certainly not on why program X crashes ever couple of hours.

It should be emphasized that the [presensepresence](#) of a platform on which to create, run and share simulations will not remove property rights issues. Intellectual property (IP) rights will not go away and authors will always be able to maintain the copyright over the materials they create. This is as it should be. But just as the printing press enabled mass production of written material, a platform to enable the mass production of simulations will have profound effects. Simulations protected under creative commons¹ type of licenses will be able to proliferate. Some of them will be quite good, and people will be able to build on the best of them and make them even better. This may seem fanciful thinking, but it should be noted that in the world of IP radical things have been happening. MIT has recently put ALL of its course material online² – a move until only recently seen as impossible.

WHAT WE HAVE DONE

¹ <http://creativecommons.org/>

² <http://www.informationweek.com/news/management/training/showArticle.jhtml?articleID=198001568>

We at the United States Institute of Peace have created a tool, the Open Simulation Platform (OSP), that allows subject matter experts (with no programming experience) to create online multiplayer training simulations. Once a simulation has been authored it can be added to an online library and facilitators can then assign students to play the various roles in it. The students are then able to login and assume the particular role in simulation that they have been assigned. Online simulations of this nature can be conducted completely online or partially face to face, as is done in many current ‘human in the loop’ training simulations.

The simulations created by the OSP are currently limited to mostly player-player interaction. Players can chat, make joint decisions and work on documents together. But because this is an open source project, many open source software products can and will be immediately incorporated into our tool. We are also developing application programming interfaces (APIs) to allow anyone’s model of reality to be plugged into our system. This will allow us to leverage off of the many wonderful and freely accessible models already in existence. This bazaar will soon outpace anyone else’s cathedral³.

Truly all of the work that we have done so far can be seen as just attempting to create the right form of crystal around which an open source community can form. Many, many people want to help make this a more peaceful world and find ways to resolve conflicts peacefully. All that we have done has been to try to create a useful way for many people to channel their energy into productive outputs.

WHAT WILL BE

Imagine a world where anyone with an important message can create a simulation that attempts to teach it. People sitting down to write a simulation will find that it is a cumbersome process – it has to be. But the act of creating the simulation will help them focus their thinking. It is probable that several attempts will be necessary to get something right⁴. But when they run into problems they can’t tackle alone, they will be able to reach out to a network of people who have already done it before.

Because the simulations will allow for people to build on each other’s work, many people will be able to contribute to them. The new found Web 2.0 reality, that “We are smarter than Me” will enable many heads to contribute to the complex problems that humanity faces. Deriving the best from people, and increasing the signal to noise ratio from crowd sourced information are still new arts. Open source simulations will help us continue to develop our experience and skill as we perfect these arts.

A CALL TO ACTION

³ <http://www.catb.org/~esr/writings/cathedral-bazaar/>

⁴ “Plan to throw one away; you will, anyhow.” From *The Mythical Man Month* by Fred Brooks.

The OSP is going to be used at a pilot course on leadership in conflict environments to be given at George Washington University in January 2009. Also in 2008 the USIP will be expanding its online library of simulations. If you are interested in joining our Open Simulation Platform community, please visit the web site opensimplatform.org. There you will find white papers, tutorials and people ready to help you get started.

Other people will see far further than we do. All we are trying to do is build a good ladder to help other people stand on the [shoulder'sshoulders](#) of giants.