



Simulation Training and Prototyping in Virtual Worlds:

Northrop Grumman in Second Life



“It didn’t take long to identify a myriad of effective uses that could either save corporate monies or generate them. We found a way that this could benefit every single NGC employee.”

— *Matt Furman, Developer & Second Life Project Lead, Northrop Grumman*

Executive Summary:

Northrop Grumman Corporation (NGC), a \$32 billion dollar global security company with 120,000 employees, has a rich heritage of innovation. In keeping with that heritage, NGC has now entered the virtual world, with a sophisticated five region presence in Second Life that enables the company to simply and inexpensively prototype products, conduct simulations, and train employees in environments that would be prohibitively dangerous, expensive, or even impossible in the physical world.

Maintaining Leadership in Innovation to Deliver First Class Products & Services

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— *Matt Furman, Developer & Second Life Project Lead, Northrop Grumman*

As one of the world’s most reputable and influential providers of innovative systems, products, and solutions (in the aerospace, electronics, information systems, shipbuilding and technical services industries) to governments and commercial enterprises worldwide, NGC’s top priority is meeting the highest global standards in technology and innovation.



Matt Furman is a NGC Developer, the Second Life project lead, and a key member of the Netcentric International Operations Division (NIOD) who has long been fascinated by the collaboration, training, and communications challenges the corporation faces working amidst a sea of classified information. Since 2004, NIOD has been

“It didn’t take long to identify a myriad of effective uses that could either save corporate monies or generate them,” Furman said. With official sanction and investment, the Second Life project was presented to clients who wanted to get started right away. “I’ve been able to collaborate with people I would never have been able to collaborate with before. I can’t begin to tell you how important this is,” Furman said. “We’re now doing development work for clients where one hundred percent of the product and the client relationship is virtual.”



Immersive training offers a much richer opportunity than training manuals do, especially when the training involves equipment that is expensive or dangerous.” —*Ted Vera, Department Manager, Northrop Grumman Information Systems*

exploring cutting edge and emerging technologies to solve these challenges in innovative ways. They investigated everything from Computer Aided Design (CAD) applications to Massively Multiplayer Online Games (MMOGs) before discovering virtual worlds and Second Life in 2005. “There aren’t any [virtual worlds] that I’d consider in the ballpark of Second Life...” said Furman.

Furman and his team then championed an extensive internal communication campaign to help the NGC recognize the power of virtual worlds and the potential of various Second Life initiatives. Fellow Northrop Grumman colleagues began to understand that the environment is not a game, but rather an innovative new collaboration tool that safely bridges communications gaps between NGC business development teams and clients while saving R&D and training costs.

Combat Information Center Simulation: Immersive Contextual Group Training

Second Life is a powerful training platform because it enables global teams to quickly and inexpensively create virtual prototypes of complex and expensive equipment and working environments. Employees can learn new skills and procedures in-context and in real time with their colleagues, rather than reading manuals or viewing slideshows. Second Life brings participants together to interact in one time and place, and allows others to join in, all without leaving their desks.

For example, NGC built a model Combat Information Center (CIC) in Second Life. The CIC is located inside a perfect scale virtual replica of the USS Blue Ridge - the US Navy’s Flagship of the Seventh Fleet. The CIC workstation is the command center for combat



operations aboard the virtual Blue Ridge. NGC’s virtual simulation of the CIC can accommodate up to ten trainees sitting side-by-side performing their functions simultaneously. The concurrent nature of the training allows people to experience real life nuances of team interaction - replicating not just the environment, but the experience as well. NGC Information Systems Department Manager, Ted Vera believes the experience of being in a virtual



virtual training opportunity because of the prohibitive real world cost and dangers associated with bomb disposal. Furman said, “the ease with which we could replicate a complicated system without having to learn advanced code was hugely valuable.”

“It works just like the real one!”
 — Northrop Grumman Cutlass Robot Project Manager referring to the virtual replica

environment can have the effect of a real physical space. “It’s a memory. You can become familiar with an environment that you haven’t actually visited yet in the physical world.”

Reducing Cost and Safety Risk with the Virtual Cutlass Bomb Disposal Robot

NGC uses Second Life in a variety of ways for employee learning and training. Virtual world immersive environments can be particularly useful in reducing training expense, eliminating danger and connecting trainees in one location despite their physical distance. The Cutlass Bomb Disposal Robot was selected as a



The Cutlass Robot is an armored all-weather six-wheel vehicle equipped with a complete 360° pivot manipulator arm with a state of the art gripper. It’s a very impressive machine, costing NGC thousands of dollars to transport



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to training locations and even more to conduct physical training exercises. Very few of them exist in the real world. A replica of the Cutlass Robot was built in Second Life—where there was no risk of damage, trainee safety hazards, or accessibility constraints. When the Cutlass Robot project manager saw the Second Life version, he felt the fidelity of the design was so good that people should train on the virtual version before ever touching the physical machine claiming, “It works just like the real one!”

Unifying a Geographically Dispersed Global Workforce

Prior to the development of their Second Life environment in 2008, NGC employees often approached similar problems as colleagues in other departments or locations, but lacked a means to easily interact with one another. Now NGC’s space in Second

Second Life space and there are plans to expand to several hundred.

NGC now has developed five regions in Second Life, enabling the company to pull together geographically dispersed workers. “Second Life allows us to pull together a team that’s distributed. Our meetings are more memorable when they are virtual,” explained Vera. “We’re conducting real business, but there’s an element of fun that enhances the collaboration. For instance, somebody might do something silly like have their avatar stand on a table that creates a memorable moment. It’s fun. We have side conversations and one on one interactions in addition to collective meetings.”

Moving Forward

NGC has created dozens of successful projects within Second Life including



Life is a secure way for employees to share their work without needing to travel or meet face-to-face. Once word spread about the NGC presence in Second Life, employees started asking for access to it to meet, collaborate, and network. A hundred and fifty employees now share NGC’s

virtual conference centers, auditoriums, classrooms, help desks, meeting places, and even an interactive library. As the space and the program expand, so will NGC’s ability to connect members of their global workforce and continue to innovate in a virtual environment that improves their real world businesses.

**For More Information**

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<http://secondlife.com/land/>

visit our blog:

<http://blogs.secondlife.com/community/grid>

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Developed and launched by Linden Lab in 2003, Second Life is the world's leading 3D virtual world environment. It enables its users – known as Residents – to create content, interact with others, launch businesses, collaborate and educate. With a thriving inworld economy that saw over US\$360 million in user-to-user transactions in 2008, and a broad user base that includes everyone from consumers and educators to medical researchers and large enterprises, Second Life has become one of the largest hubs of user-generated content (UGC) in the world.

Linden Lab, founded in 1999 by Chairman of the Board Philip Rosedale and headquartered in San Francisco, develops revolutionary, immersive technologies that change the way people communicate, interact, learn and create. Privately held and profitable, Linden Lab is led by CEO Mark Kingdon, and has more than 300 employees across the U.S., Europe, and Asia.

Linden Lab

945 Battery Street

San Francisco, CA 94111

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