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The Virtual Military

As the global military technology industry surges forward, both traditional and emerging powers are seeking new innovations in virtual training for the modern battlefield.

By Jody Ray Bennett for ISN

While much of the international system remains mired in the economic doldrums, many global military powers continue to increase defense budgets focused upon the research and development of simulation technologies. As part of our week-long focus on the importance of games to international relations and security, today we consider how Russia, China and the United States are using virtual simulators to train its armed forces.

The Russian pre-Game

While the Russian defense establishment has yet to invest heavily in virtual training, it is certainly heading in this direction. In July 2011, Russia's Chief of General Staff, General Nikolai Makarov, [announced](#) that by 2013 its armed forces would be using 3-D simulation and virtual training software. Makarov further stated that Russia's virtual simulation and training software would be "comparable and in some aspects even superior to those implemented in countries with the most advanced military forces."

A few months earlier, the Russian Defense Ministry awarded a contract to Germany's Rheinmetall to develop physical and virtual training arenas for its armed forces at Mulion, located in the Volga region of Russia. One of Rheinmetall's partnering contractors, JSCo Oboronservis, [stated](#) that, in addition to a robust physical training regime, the center will also incorporate Live, Virtual and Constructive (LVC) simulation elements. Russia is also set to complete a contract with [Transas](#) – a St Petersburg company headquartered in Cork, Ireland – to [develop](#) a battlefield simulator that allows for "3D simulation training for combat theaters."

China warming up

Like Russia, the Chinese military establishment has yet to embrace 3-D or virtual simulation training on par with Western defense establishments. Traditionally, China has relied upon more on 'real-time' techniques that simulate military scenarios ranging from combat situations to [nuclear fallout](#). However, the People's Liberation Army (PLA) has hired a private firm to develop software modeled on the US Army's "[America's Army](#)" and other Pentagon-funded games that target Middle Eastern and Southeast Asian adversaries. In the Chinese model, entitled [Glorious Mission](#), the adversary was (unsurprisingly) changed to the United States' Armed Forces. And while [Glorious Mission](#) was initially restricted to the Chinese military, it became available for public consumption in May 2011.

America leads the way

Yet Beijing and Moscow still have a long way to go before they make use of [virtual technology](#) on the same scale as Washington. Not only does US defense expenditure far outstrip that of its nearest rivals, investment in 3D simulation software to [virtual training](#) also accounts for a significant proportion of the defense budget. Indeed, there has been an overspill of military simulation technologies into other markets, such as law enforcement or healthcare. Indeed, from a geopolitical and economic perspective, these are advantageous technologies for a superpower looking to reduce personnel numbers and downsize its physical presence in Afghanistan and Western Europe.

The demand for virtual technology has also provided a much welcome boost for the US defense sector. In February, for example, Lockheed Martin was awarded a five year [contract](#) valued at \$94 million, to set up and upgrade virtual systems used for the US Air Force. Indeed many contractors have now expanded beyond the defense sector to provide virtual training platforms for civilian and law enforcement purposes.

The United States' defense companies are, therefore, at the cutting edge of virtual technologies for the battlefield. This year, for example, the US Army will begin using a virtual simulator for dismounted soldiers. Instead of soldiers training through a virtual simulator 'video game', the [Dismounted Soldier Training System](#) includes a virtual monitor and headset that straps onto an army helmet. The helmet will also include body sensors to capture position that will be able to integrate nine soldiers at once for specific mission training. With the creation of the [COMBATREDI](#) system it is now also possible for soldiers to create and teach a [digital avatar](#). Soldiers using the application can not only specify a gender, race, facial features, and hair style for their digital characters, their avatars [will be able](#) to remember a soldier's performance during physical training, reaction times, various role sensitivities, and skills.

In February the Pentagon also approved a \$7 million dollar [project](#) entitled "Avatar" that aims to develop interfaces and algorithms that will enable a soldier to 'partner' with a semi-autonomous bi-pedal machine. The machine will act as the soldier's surrogate in order to perform combat duties such as room clearing, sentry control and casualty recovery.

"The major benefits of using simulation include safety, cost-effectiveness and reducing environmental pressures. They also provide a repeatable training environment which is easy to assess. In a military environment, simulation can provide an environment where all arms can be brought together to train in a virtual world," Trevor Nash, Editor of Military Training & Simulation News, told ISN Insights.

Words of warning

In an interesting aside, human rights groups have recently pondered some of the legal and ethical differences between physical and virtual military training. The International Committee of the Red Cross, for example, is [concerned](#) that virtual worlds and real war crimes could conceivably be linked. Accordingly, any training simulations that violate the Geneva Conventions could arguably be considered as a criminal offense even if events occurred in a virtual reality. Indeed, as virtual systems are increasingly used to teach, train, and challenge those who perform a military function, the legal and ethical ambiguities that surround virtual military training are likely to evolve and become even more complex.

While it remains to be seen just how effective these new virtual training technologies will be for the US military, the Pentagon is convinced that they are necessary to sustain and enhance an array of defense capabilities. Moreover, the United States is not alone, as Russia, China and other military powers continue to invest virtual training and simulation. And just as knowledge of Unmanned Aerial

Vehicle (UAV) technology was, until quite recently, scarce, in coming years the role that virtual systems play in training simulation may evolve in a similar fashion. How this will impact upon moral or ethical debates remains to be seen.

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