Executive Summary

Business opportunities provided by 3-D virtual worlds and “serious gaming” (adapting computer-gaming technology for business use) are beginning to emerge. The CIO membership of the Society for Information Management’s Advanced Practice Council (APC) commissioned research to track these opportunities and the management implications. Early experiments of virtual world and serious gaming applications fall into three categories—those that use social presence capabilities, those that use visualization capabilities, and those that use simulation capabilities. This article discusses each of these categories, together with examples, and provides thoughts on other future applications. It also describes the APC’s own first-hand experience of developing SIMSIM, an “island” located in Second Life, one of the most popular virtual world platforms.

Although the business promise of virtual worlds and serious gaming is largely in the future, the enabling technologies are maturing rapidly. Both the upside potential and downside risk of these platforms are too high for businesses to ignore. By 2018, virtual worlds and serious gaming will likely be major, even dominant, platforms for business applications and opportunities.

GROWING POTENTIAL OF VIRTUAL WORLDS FOR BUSINESS

In October 2006, an IBM researcher, Tony O’Driscoll, provided 25 members of the Society for Information Management’s Advanced Practice Council (APC) with a fascinating, if early, look into the emerging world of “serious gaming,” which applies 3-D computer-simulated environments in business environments. For many of the 25 participating CIOs, this was their first exposure to serious gaming business applications and, for some, their first look at virtual worlds. Though he faced initial skepticism, O’Driscoll soon captured their interest and focused their imaginations on the business possibilities of the serious gaming and virtual worlds. Following O’Driscoll’s session, the participants brainstormed a range of potential business applications. Those identified included conferencing, collaboration, recruitment, new employee orientation, training, facilities management, safety, brand development, customer feedback, and product trials.

Few of the participants had first-hand experience with virtual worlds, and not many of their firms were experimenting with them. But they were intrigued and wanted further guidance on possible business applications and the management implications. In response, the APC commissioned a research initiative for further exploration and discovery. Benn Konsynski, a professor at Emory University, spearheaded that project, which was called “Business in Virtual Worlds.”

In this article, we first provide a brief tutorial on virtual worlds and their current and future implications for business. Next, we describe SIMSIM, SIM’s own foray into those worlds. SIMSIM is an APC-financed “island” located in Second Life, one of the more popular virtual world platforms. Finally, we provide predictions about the future implications of virtual worlds and serious gaming for business and industry.
VIRTUAL WORLDS EXPLAINED

Virtual worlds are computer-simulated, usually 3-D, representations that allow avatars\(^1\) to interconnect and communicate in relatively life-like environments. These worlds are persistent—that is, they continue to exist and operate even in the absence of any visiting avatar. Virtual world environments, together with the avatars that populate them, can model real-life worlds or portray fantasy environments populated by animals, fairies, or other outrageous fantastic creatures. The behavior of avatars and the roles they play can similarly vary from business-like and conservative, to war games, to sex fantasy, to gambling. Role playing, sex identity shifting, or avatar dating and marriage are common behaviors. In general, however, non-role-playing, business-like, conservative avatars of real world companies have been late-comers to virtual worlds and have often been poorly appreciated by the worlds they are attempting to colonize. In many cases, they have been greeted with scorn and even “virtual terrorism.” On the other hand, the enthusiasm of some firms for virtual worlds has been dampened by the commonly held real life perception that virtual worlds are primarily about sex, gambling, and harassment.

Two of the most popular gaming platforms are World of Warcraft (commonly known as WoW) and Second Life. The first is illustrative of a type of game, rather like a video game, in which the environment has been created by the producers of the game. Participants come together in this preconstructed exotic environment to join raiding parties—globally distributed groups of avatars that temporarily assemble—with the aim of capturing treasures and defeating enemies. The “economy” is limited and tightly controlled by the WoW creator. While there are opportunities to use this type of environment in business, say for recruitment or leadership development, it is beyond the scope of this article.

Second Life, first introduced by its creator Linden Labs in 2003, is typical of a second type of game. Here, the game creator provides the overarching architecture and tools but allows the game players to create the environments. For instance, a university might choose to create classrooms; a company, an office facility, or an individual might build a house, car, saloon, gambling emporium, or even a bank.

Second Life is currently the most popular of these environments with some 13.5 million registered users, though the actual in-world population at any time is closer to 50,000. Avatars can walk, fly, or teleport themselves throughout the mainland and thousands of islands developed by users. Many islands, however, are private with access restricted to those who have been pre-authorized. Avatars communicate with those nearby via public chat or by private instant messaging throughout Second Life. Voice communication was recently introduced but is limited to nearby avatars.

Avatars create things using provided proprietary tools for land excavation, graphic design, and script production. Entrepreneurs have created items such as clothing, dwellings, transportation systems, scripts to animate avatars (e.g., for dancing or hugging), and objects (e.g., to open a door, move a car, or propel a planetary system). The resulting intellectual property is owned by its creator and can be sold. The money, generated in Linden Dollars, can be converted into real life cash and vice versa. While there is a Second Life economy, some have likened it to the Wild West due to the lack of regulation. To meet some of those concerns, Linden Labs has recently outlawed lucrative, but dodgy, enterprises, including gambling establishments and banks.

VIRTUAL WORLD BUSINESS APPLICATIONS

Much of the initial interest in commercializing virtual worlds began in 2006 and was focused on brands. More than 100 major brands have now colonized Second Life with varying degrees of success. Two of the earliest, American Apparel and Starwood Hotels, attracted a great deal of interest in the business press by being early adopters. However, both later generated less favorable press coverage by being among the first to abandon Second Life. Some of the earliest brands to enter Second Life faced stiff, often disruptive, resistance from long-time residents, especially from gamers who resented the possible transition of Second Life from an exotic role-playing environment into what some saw as crass commercialism. And some entrepreneurs, for instance sellers of virtual automobiles, did not appreciate the arrival of real life companies willing to give away items, such as models of new cars. In turn, real life companies were often annoyed to find their brands pirated by Second Life designers who, for instance, were selling virtual replicas of Rolex watches or Chanel dresses.

\(^1\) An avatar is a graphic identity that a virtual world user chooses to represent him- or herself in this environment. Sometimes, an avatar is created as a representation of a human being but can also take on the form and appearance of fantasy-like creatures.
The tension between Second Life’s original role-playing customers and its new commercial customers has contributed to the latter perceiving Linden Labs as slow to adapt to their requirements. As a consequence, commercial attention has begun to turn toward alternative virtual worlds, including There, Kaneva, Gaia, and Habbo Hotel. Some brand owners have even developed standalone, single-purpose worlds, over which they have greater control. Meanwhile, several open source initiatives are underway to free virtual worlds from proprietary oversight and, perhaps, to allow cross-platform interoperability.

Our intention here, however, is not to predict which platform or platforms will dominate the virtual world landscape, but to consider the current and potential business applications that will reside there. Below, we discuss and provide examples for three categories of virtual world business applications that go beyond branding. The purpose of most of these examples is cost reduction rather than revenue generation. The three categories are applications that employ virtual worlds for social presence, visualization, and simulation. Note, though, that these categories do not include all the possible opportunities for the business use of virtual worlds, so we also provide some thoughts on future business applications.

**Social Presence**

Some businesses make use of Second Life by leveraging its social presence. Virtual offices that serve as alternatives to real offices are being used by companies such as Sun Microsystems and IBM, as well as by companies whose employees develop virtual environments for other firms. Virtual worlds can provide a useful environment for globally distributed team members to meet or work with dispersed clients in convenient, attractive, if virtual, facilities or conference rooms. Interacting in a virtual world can significantly reduce travel costs and a company’s carbon footprint. PA Consulting, for instance, recently held a virtual conference in Second Life that brought together people from 30 offices throughout the world. Companies such as ABN Amro, Manpower, and Kelly Services, and the country of Luxembourg, have also used virtual worlds as recruiting platforms.

Business-to-business marketing and selling presents another rich opportunity to leverage the social presence aspects of virtual worlds. Cisco, for instance, recently used Second Life as an additional medium to announce a new line of routers. Avatars representing some customers attended, thus providing a promising opportunity for Cisco personnel to interact with customers they might otherwise never have contact with. To promote those kinds of “chance” interactions, islands such as those of IBM and Manpower are staffed much of the time, though usually by people who are simultaneously doing something else. If an avatar arrives, say of a visiting CIO, the greeting contact person may be able to marshal other avatar resources to respond quickly to this marketing opportunity.

**Visualization**

Other businesses use the “visitable” visualization capabilities of Second Life to communicate and discuss future designs and developments. Starwood Hotels, for example, used Second Life’s visualization capabilities to develop and design a new, real-life hotel. A three-dimensional blueprint of the new hotel was laid out on a virtual floor on which avatars of clients, architects, interior designers, and engineers could walk. The blueprint served as a platform that provided all stakeholders with a shared common meaning and enabled them to create their own virtual additions and enhance the existing design.

Cisco similarly used Second Life to provide an early vision of the Palomar Medical Center, a 600-bed, state-of-the-art medical facility in North County, Calif., due to open in 2011. Interested stakeholders, including doctors, suppliers, and voters who will pay for and benefit from the facility, can tour the Second Life version of the $800 million project. It also provides a rich environment for Cisco to showcase to other healthcare operators how its networking technology can be employed in their own facilities. Such a model, with more detail, could subsequently be used by prospective patients—for example, to get a better understanding of the procedure they might be scheduled for.

Visualization can also be used to obtain consumer feedback. Toyota, BMW, Lacoste, L’Oréal, and Ben & Jerry’s have all used Second Life to receive feedback from the global range of avatar consumers, as did Starwood for the hotel described above. PA Consulting has also created a virtual bank that can easily be reconfigured in a variety of ways as a discussion vehicle for focus groups considering the usefulness and attractiveness of various bank layouts. An avatar thus becomes an integral part of the design process—a process that is almost impossible to achieve with a two-dimensional representation.
Simulation

Businesses are using Second Life also as simulation environments. Imperial College in Canada, for instance, runs training programs for border and prison guards. Its simulation of a U.S.-Canadian border crossing supports avatars that act as border guards and drivers of vehicles. The trainees, whose avatars are dressed in border guard uniforms, are able to interrogate the drivers, open trunks of cars, inspect truck cargos, and so on. These simulated, but realistic, training environments are particularly useful when the real work environment is dangerous—for instance, a refinery or oil drilling platform. Simulations are also powerful tools for on-the-job training. For instance, animations can show a mechanic how to do a particular repair and ensure appropriate parts and tools are available and employed in the correct manner.

Future Business Applications

While we have taken an upbeat tone in our discussion of the above examples, at present there is little, other than the examples, to highlight. Virtual world business applications are still at an embryonic stage. Collaboration among team members, even in firms deeply involved in building virtual worlds, has generally not migrated to virtual worlds. The early branding experiments were just that, and most of the commercial islands (or sites) in Second Life are empty, or nearly empty, most of the time. The initial applications described above are still, in most cases, primarily intended to help people better envision the future. But there are tremendous opportunities for businesses to use virtual worlds. By 2018, we believe there will be virtual world business applications that go well beyond the examples described above.

Future applications will combine elements of social presence, visualization, and simulation to produce valuable models that, when combined with other models, will provide rich insights, available in no other way. For instance, engineering firms will be able to produce 3-D simulations of chemical plants, including 3-D simulations of plant components that will be made available by suppliers, prior to sale, as part of their marketing packages. Similarly, when the plant is handed over to its purchaser, it will include the plant and component simulations, which can be used for orientation, training, safety awareness, or expanding the plant. In turn, the plant simulation can be combined with simulations of environmental factors, traffic patterns, or nearby plants to simulate the impacts of a fire, terrorist incident, chemical spill, or other type of disaster.

SIMSIM

Benn Konsynski, a professor at Emory University, accepted the APC’s challenge to provide guidance about current and future business uses of virtual worlds and serious gaming, as well as the management challenges. Konsynski has now given two presentations to the APC, most recently in February 2008. Another APC challenge to Konsynski was to oversee the development of a virtual “home” for the APC on Second Life. That home, called SIMSIM, is now one of over 12,000 256-square meter islands on Second Life. SIMSIM is located adjacent to islands owned by Baylor University (BaylorIS), Southern Methodist University (SMU), and the University of Houston (ITWorld). Another neighboring island houses the Association for Information Systems (AIS Information World), SIM’s academic sister organization.

All five islands are being designed and built by Serena Vale and Louis Beuchamp, Second Life “netizens” (their avatar names). In real life, Vale is a professional graphic design consultant in Ontario, Canada, while Beuchamp is a professional architect in New York City. While both take their Second Life building responsibility seriously, as shown by the high quality of their virtual builds, they do so within the context of “playing the game,” rather than executing a business contract, an attitude reflected in their modest charges. While an isolated example, Vale and Beuchamp’s behavior richly illustrates the unusual labor economics often encountered in virtual worlds. These economics are further complicated by the global reach and breadth of a potential work force that can be harnessed in these worlds.

While SIMSIM was initially envisioned as a potential meeting place for APC members in Second Life and a marketing opportunity, Konsynski’s vision for the island went much deeper. In addition to the APC’s three-story headquarters building, the island houses an incubation center for virtual business and government, a pavilion to highlight interesting virtual builds and several attractive destinations for stimulating creativity. A virtual “sandbox” and two “skybox” build areas provide locations for visitors and students to practice their own virtual building skills. The APC’s headquarters building on SIMSIM offers illustrations of recent APC projects.

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2 A sandbox is a collective development area for residents building objects.

3 A skybox is a development area suspended in the air (like a floating plateau), typically restricted to individual or group usage.
SIMSIM and its neighboring islands also provide an early vision of the rich environment for “boundary spanning” that can exist in Second Life. For instance, being adjacent to AIS Information World offers opportunities for coincidental and planned interactions across the membership of two organizations with related but often unconnected missions. The nearness of both organizations’ islands to those of three universities with major IT programs and well-regarded faculties offers further new opportunities for synergy.

None of that synergy is possible, however, without avatars visiting the islands. Despite the promise of Konsynski’s vision, SIMSIM, like most islands in Second Life, gets few visitors, though those that have visited include some notable dignitaries anxious to get a quick understanding of the potential of virtual worlds. Perhaps the most notable was former U.S. President Jimmy Carter, Konsynski’s faculty colleague at Emory.

Largely missing among all the islands in the “IT” cluster are programs, classes, and special events. Just as real world universities are nearly empty during holiday breaks, so too will virtual facilities be unless institutions and organizations take the time and effort to provide desirable offerings. Ways must also be found, either by users or developers of virtual world islands, to overcome the many barriers that currently inhibit new groups from entering virtual worlds or to attract those already there. Building attractive facilities in virtual worlds is quick and inexpensive—attracting and retaining visitors, on the other hand, is a real challenge.

CONCLUSION

At present, there are very few examples of businesses successfully using virtual worlds to generate revenue or cut costs. Business exploitation of virtual worlds lies largely in the future. But this is not unlike the history of the World Wide Web, first developed in 1989. It generated few profits until early successes, such as Dell Online, were documented in the late 1990s. The real revolution did not start until after the “dot com” meltdown of 2001. Since then, eBay, Amazon, Yahoo, Google, Salesforce.com, and others, coupled with initiatives like Napster, Wikipedia, Facebook, Flickr, Skype, Twitter, BitTorrent, Stock Photo and iTunes, have redefined products, distribution channels, and industries. In doing so, they have created massive payoffs for early investors and shareholders, while causing calamitous disruptions, and often business failure, to firms whose business models they have undermined.

While the technical quality of the Web has significantly improved since 1989, those changes may pale in comparison to the improvements likely in virtual worlds over the next 10 years. Moore’s Law, richer user interfaces, spin-offs from videogaming, open source solutions, and cross-world interoperability will inexorably drive virtual worlds towards ever-increasing reach, realism, and usability. These supply-side forces will be reinforced by even more dramatic demand-side forces, including an increasingly Internet-savvy population, increased use of video games, and an emerging population of young adults who grew up with the Club Penguin, Webkinz, and BarbieGirls virtual worlds. Another powerful supply-side force will be emerging strong economies in Asia—for example, China—determined to use twenty-first-century IT to tightly bind Western consumers to their low-cost manufacturing engines. Moreover, the pace of change could be dramatically accelerated by a disaster that makes physical travel and meetings unappealing or impossible. Among these are hurricanes, earthquakes, epidemics, terrorism, or another doubling of the price of oil.

Following O’Driscoll and Konsynski’s presentations, APC members have generally not identified immediate application areas for virtual worlds within their organizations, though several have set up pilot studies or spent some personal time in virtual worlds. One member encouraged all of her direct reports to join her in Second Life as she spent several evenings a week exploring. We believe, however, that most members found the presentations useful and gave them a clearer picture of a world they must, in the years to come, be ready to harness to business operations and strategy. The APC will likely soon revisit the topic of business applications in virtual worlds.

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