

太和殿

太和殿

Hall
of
Supreme
Harmony



“If you want to see what business leadership may look like in three to five years, look at what’s happening in online games.”

—Byron Reeves, Ph.D., the Paul C. Edwards Professor of Communication at Stanford University and Co-founder of Seriosity, Inc.

Game On

As the business world becomes more distributed and virtual, do online games offer lessons on the future of leadership?



What's next? It's the simple question that businesses spend millions trying to answer every year, all with the goal of learning what the business world of the future will look like. But there are some elements of this future that are already falling into place. For example, we know that business is becoming increasingly global. We know that enterprises are increasingly distributed, faster paced, and fiercely competitive. And we know that more work will be conducted virtually, using technology to bridge previously impassable communications gaps.

All of which begs certain questions: What new skills and competencies will leaders need to succeed in work environments that are increasingly virtual and distributed? What types of training and tools can forward-thinking companies use to enable a new breed of leader that thrives in these uncertain environments? Are there people who already have these skills, or places where these new skills are being developed and refined?

Online games, and specifically massively multiplayer online role-playing games (**MMORPGs**), offer a glimpse at how leaders develop and operate in environments that are highly distributed, global, hyper-competitive, and virtual.

MMORPG:
Massively multiplayer
online role-playing
games.

“You can never stop earning
the right to be their leader.”

—Tom Cadwell, MB student at Kellogg School
of Management and former employee at
Blizzard Entertainment, the maker of World of Warcraft™

“You always have to be
sensitive to the concerns of
members, and you always
have to sell decisions you make.
Goodwill from past successes
doesn't last forever.”

Hundreds of thousands of players—sometimes millions—interact daily in highly complex virtual environments. These players self-organize, develop skills, and settle into various roles. Leaders emerge that are capable of recruiting, organizing, motivating, and directing large groups of players toward a common goal. And decisions are made quickly, with ample, but imperfect, information. Sound familiar?

“MMORPGs mirror the business context more than you would assume,” says Byron Reeves, Ph.D., the Paul C. Edwards Professor of Communication at Stanford University and Faculty Director of the Stanford Media X Partners Program. “They presage one possible future for business—one that is open, virtual, knowledge-driven, and comprised of a largely volunteer or at least transient workforce.”

Of course, online games do not provide a perfect analog for the business world of the future. The stakes in the real world are obviously much higher. But it’s easy to see how some of the qualities of gifted gaming leaders could translate into a corporate setting. The collaborative influence that online leaders exhibit is extraordinary in some cases. Gaming leaders are more comfortable with risk, accepting failure, and the resulting iterative improvement, as part of their reality. Many of these leaders are able to make sense of disparate and constantly changing data, translating it all into a compelling vision. And the relationship skills of the best gaming leaders would put many Fortune 500 managers to shame.

“You can never stop earning the right to be their leader,” says Tom Cadwell, an MBA student at Kellogg School of Management and former employee at Blizzard Entertainment, the maker of **World of Warcraft™**. “You always have to be sensitive to the concerns of members, and you always have to sell decisions you make. Goodwill from past successes doesn’t last forever.”

**WORLD OF
WARCRAFT™**:
an MMORPG
with over 8 million
players worldwide.

In a survey of IBM's own internal gaming community, which includes more than 200 gamers, nearly half believe that game playing is improving their "real world" leadership capabilities; and four out of 10 say they have already applied MMORPG leadership techniques and approaches to improve their leadership effectiveness at work.

But the lessons that can be learned from MMORPGs don't stop there. While studying the personal attributes of online game leaders is useful, perhaps more important is the role the environment plays in their development. Many of the qualities of online game environments facilitate leadership, and speed up the process of identifying leaders.

Most games make each player's capabilities openly known, which eliminates much of the guesswork when assigning roles. They offer clear economies that provide for easily understood incentive programs. And the communications channels that are utilized by online gaming leaders are more sophisticated and varied than those in most workplaces.

While these games attract players of all ages, the first generation that grew up navigating these environments is beginning to enter the workforce in earnest, and managers will need to adjust their styles accordingly. Winning in business will require enterprises to fully understand how these games are shaping the next generation of leaders and to apply those learnings to their own operations.

THE UNSIGHTLY CRONYM

What are MMORPGs, anyway?

The not-so-short answer is: massively multiplayer online role-playing games. For the purposes of the discussion that follows in this report, however, we'll simply refer to this mouthful as "online games." But there are important distinctions between just any game that can be played online and MMORPGs.

MMORPGs are a unique and evolving area of online entertainment. They can bring together millions of different players who assume digital personalities known as **avatars**. Within these online games, each of which is constructed with different rules and goals, players interact with each other, form relationships, join **guilds** or in-game corporations, and carry out complex and collaborative missions. Some of the more popular games include World of Warcraft,TM Eve Online,TM and EverQuestTM. Virtual social worlds, like Second Life,TM share many of the same characteristics as MMORPGs, and can develop leadership capabilities as well. But for the purposes of this discussion, we will be focused primarily on online games in which there are set goals and motivating factors.

AVATAR:

player's online character.

GUILD:

popular term for a group of characters working together towards a common goal.

Serious Gaming

The what, why, and how of the gaming and leadership study.



Inspired by findings from the Global Innovation Outlook 2.0,

IBM decided to delve deeper into these increasingly popular virtual worlds and to research whether real business lessons can be learned from observing leadership in online games.

Working with a group of GIO participants, domain experts and leaders from IBM's Research, Center for Advanced Learning, and Executive Development organizations outlined the primary focus area and key research questions to be explored in mid-2006. Consistent with the increasingly open and collaborative nature of innovation itself, IBM partnered with Seriosity, Inc., a software company that develops enterprise products and services inspired by online games, to refine and execute this unique research. The subsequent study provided the basis for many of the findings in this report.¹

The study was led by Byron Reeves, Professor of Communication at Stanford University and co-author of *The Media Equation: How People Treat Computers, Television and New Media Like Real People and Places* (Cambridge University Press); and Thomas Malone, the Patrick J. McGovern Professor of Management at the MIT Sloan School of Management, Founder and Director of the MIT Center for Collective Intelligence, and author of *The Future of Work: How the New Order of Business Will Shape Your Organization, Your Management Style, and Your Life* (Harvard Business School Press, 2004). Both are board members of, and advisors to, Seriosity.

The strategy for examining games was both inductive and deductive. The goal of this dual approach was to roam freely within the online gaming domain looking for leadership moments and strategies, but also to be directed by a comprehensive model of leadership when making comparisons to real world behaviors.

The model selected to guide the analysis was developed by Deborah Ancona, Thomas Malone, Wanda Orlikowski, and Peter Senge at the MIT Sloan School of Management. The Sloan Leadership Model breaks leadership qualities and action into four parts: Visioning, Sense-making, Relating, and Inventing. This model has been described in a number of publications (most notably *Harvard Business Review's* February 2007 article “In Praise of the Incomplete Leader”), and has been used as a basis for MIT workshops on distributed leadership.

With the Sloan Leadership Model as a guide, the study captured over 50 hours of in-world activity from five different games that were most representative in demonstrating leadership behavior in action. The team also reviewed 173 anonymous online surveys covering leadership in online gaming and conducted 10 one-hour interviews with prominent gaming leaders.

The researchers found all four elements of the Sloan Model were readily apparent in online game leaders, and this provided one aspect of the framework for the conclusions that were drawn.

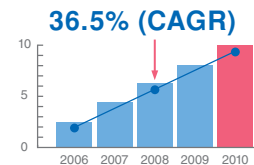
Finally, a team from IBM's Institute for Business Value (IBV) built upon this research and surveyed IBM's Virtual Universe Community to better understand how successful leaders behave in online games and what aspects of the game environment leaders use to enable guild success.

QUICK FACTS

Number of
online gamers worldwide:⁷

73 MILLION

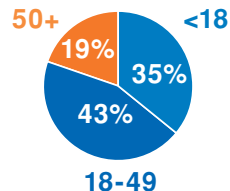
Rate at which MMORPG
economies are growing:¹



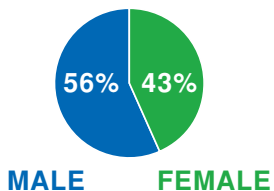
Average age
of online gamers:⁶

27

Distribution of age:²



Game Player Gender:⁵



"Real" money spent in 200 by
game players to acquire virtual assets
or insights from other players:⁴

\$1 BILLION

Average number of
hours per week gamers
spend playing online:³

22

¹ Nelsestuen, R. (2007). Online Social Worlds as Emerging Markets: A Dose of Virtual Reality. The Tower Group.

^{2,5} No author (2007). Essential Facts about the Computer and Video Game Industry. Entertainment Software Association.

^{3,6} Yee, N. (2007). The Demographics, Motivations and Derived Experiences of Users of Massively-Multiuser Online Graphical Environments. PRESENCE: Teleoperators and Virtual Environments.

^{4,7} Castranova, E. (2007). Synthetic Worlds: The Business and Culture of Online Games. Chicago: University of Chicago Press.

Making Leaders from Lemmings

Environmental factors can facilitate leadership in otherwise reticent employees.



It's the classic nurture versus nature debate.

Are leaders born or are they made? There are compelling arguments to be made for both. But even the most die hard behaviorists would likely agree that by the time an individual reaches adolescence, leadership potential is either there, or it's not.

However a close look at leadership in online games tells a different story. Using massively multiplayer online games as a template, it can be argued that leadership is as much a by-product of environment as it is intrinsic.

Leadership happens quickly and easily in online games, often undertaken by otherwise reserved players, who surprise even themselves with their capabilities (see *The Need to Lead*, page 18). There is no reason to think that the same cannot be done in corporate settings of various sizes, missions, and markets.

However, this is not to say that every person within an organization can and should lead, but simply that if given the right tools in the right circumstance, leadership can emerge. And in working environments that are increasingly project-oriented, more leaders could yield better efficiency.

Three of every four players surveyed in the IBM study believe that the techniques and approaches found in online games could enhance their leadership effectiveness in the workplace.

Leadership happens quickly and easily in online games, often undertaken by otherwise reserved players, who surprise even themselves with their capabilities.

So what is it about these gaming environments that make leaders out of lemmings? For starters, there are many opportunities to lead. Online games are very iterative.

While there is an overriding goal of the group, there are a series of **raids** or missions that make up the journey, each of which requires leadership of player groups of varying size. Spreading around the leadership wealth in this way provides the opportunity for many players to try on leadership roles, decide if leadership agrees with them, and pursue it further if so inclined. Also, there is no expectation of permanence in these leadership roles, an important factor that encourages experimentation (see *Impermanent Power*, page 22).

RAID:
guild effort in war-oriented games that involves strategizing, attacking, and eventually toppling an enemy.

Three of every four players surveyed in the IBM study believe that the techniques and approaches found in online games could enhance their leadership effectiveness in the workplace.

“I was approached by several friends to assume leadership of the guild, and agreed even though I was uncertain of my suitability,” says one guild leader. “I’ve grown more accustomed

now to directing various aspects of running the guild and providing a vision and leadership to the members. Follow-up and assertiveness now feel more natural to me, even in real life. It has been an amazing opportunity to push myself beyond my boundaries.”

Players in online games are also given tools that make leadership easier. The skills and competency levels of each member of a guild are readily apparent to a potential leader, making delegation a relatively straightforward task. And risk assessment tools provide real-time information in advance of any action, a luxury any corporate manager would love to have. The **incentive systems** that are used to motivate players are also openly available, which facilitates trust and credibility among players. This transparency of information is directly related to the Sensemaking element of the Sloan Model,

INCENTIVE SYSTEMS:
approaches used in online games to motivate and reward players based on performance and willingness to take risks.

The skills and competency levels of each guild member are readily apparent to a potential leader, making delegation a relatively straightforward task.

in which leaders are able to understand the context of the world in which they are operating. It also breeds confidence in potential leaders, and reduces the guesswork in decision-making.

“Some tools that can foster this kind of confidence have emerged in business environments, with the adoption

Instant messaging, online chats, web site forums, and voice over IP (VoIP) are just a few of the different communications mediums that are utilized over the course of a game.

of business intelligence software that helps make sense of disparate information,” says Jim Sphorer, Director, IBM Research. “But there is also an opportunity

to improve risk assessment (trending) software, and more transparent incentive and skill rating systems likely would be a significant step forward in most enterprises.”

Finally, the multiple levels of communication within the online gaming world give leaders many options when it comes to communicating with their direct reports. The Sloan Model refers to this as Relating, the act of developing key relationships within and across organizations. As a guild leader, mediating conflict and maintaining relationships is an important part of the job. As with companies, the personal dynamics of guilds can interfere with the mission of the group.

Stanford University Ph.D. student and Seriosity consultant Nick Yee studied this phenomenon as part of his research for *The Daedalus Project*, an ongoing study of online gamers (<http://www.nickyee.com/daedalus/>). “In any situation where people have different needs and motivations, conflicts will arise,” writes Yee. “Inevitably, the guild leader will be asked to become the mediator.” He goes on to say that conflict mediation can be time-consuming and, quite often, petty.

But through the use of various communications mediums, leaders can keep the mediation to a minimum. Instant messaging, online chats, web site forums, and voice over IP (VoIP) are just a few of the different communications mediums that are utilized over the course of a game. Each medium serves a specific purpose. For example, when communicating changes in the incentive system that affects the entire organization, a post to the online forum would be appropriate. When discussing a personality conflict with a player, perhaps a dedicated online chat would be preferred. When conducting a raid, real-time VoIP may be needed. In very complex or involved raids or missions, a leader may in fact use broadcast (VoIP), narrowcast (group IM), *and* microcast (IM) simultaneously to move the group toward their objective. The more methods of communication a leader has, the more opportunity exists to lead effectively.

In Summary:

Online gaming environments facilitate leadership through:

1. Project-oriented organization
2. Multiple real-time sources of information upon which to make decisions
3. Transparent skills and competencies among co-players
4. Transparent incentive systems
5. Multiple and purpose-specific communications mediums

The Need to Lead

The story of one gamer's
unexpected rise to management



Helen Cheng got her first taste of online gaming three years ago, when a friend invited her to join up with *Star Wars Galaxies*,™ a game modeled after the epic movies. “I was pretty skeptical,” she recalls. “I mean, fighting dragons in a fantasy world? Sounds kind of nerdy.”

It took three days and Cheng was hooked. And her opinion of online gaming has changed considerably since then.

It wasn't long before Cheng moved on to *World of Warcraft*,™ an online game that counts more than 8 million members. She quickly moved up the ranks of the game, and spent six months as a level 60 guild leader, the highest level of leadership in the game. Here are some of the leadership lessons Cheng, a Stanford graduate, took away from her gaming experience.

Q: Do you consider yourself a natural leader?



CHENG: No. I'm a pretty quiet person, actually. The first time I thought that I could be a leader was during a raid that involved 10 people. The raid went bad, and everybody died. The designated raid leader went silent. Everyone was waiting around for instruction, and the leader was just stewing. Finally, I pushed my button to talk and rallied the troops to revive one another and try again, mostly because I didn't know what else to do. It was me, this girl, talking to a room of 10 guys. And to my shock and surprise, everyone complied and we got going. That was a defining moment for me, and eventually led to me becoming a guild leader.

Q: What was it about the environment that made it easy for you to try on a leadership role?



CHENG: The speed at which things happen contributes a great deal to that. You don't have a lot of time, and decisions have to get made. Also, there are so many different forms of communication.

You can send instant messages to anyone, or use a chat channel to communicate with your guild, or speak over voice over IP connection, even leave messages on the web site forum. These different communications mediums afford more opportunities to lead.

Also, the way a particular game is designed has a huge bearing on how easy it is to lead. There are decisions that the designer makes, like how many people will be needed for a particular raid, that will have an effect on leadership roles. If a guild leader has to build a team of 10 or 80 people, that's a recruiting challenge, and it requires a complex incentive system to motivate the guild. But if you only need 20 or 30 members in a guild, it provides more opportunity for leadership. The point is, you can change a simple mechanic within the game, and it has lasting effects on leadership.

Q: What is it like managing people that you never see in person?



CHENG: Not that different from real life. I've had my share of personality conflicts that I had to mediate. In my last guild, we had a raid officer that was extremely capable and knowledgeable. He was great at leading 10-man raids in real time. But he was

“Finally, I pushed my button to talk and rallied the troops to revive one another and try again, mostly because I didn’t know what else to do. It was me, this girl, talking to a room of guys. And to my shock and surprise, everyone complied and we got going. That was a defining moment for me, and eventually led to me becoming a guild leader.”

—Helen Cheng, Level 10 Guild Leader and Stanford graduate

extremely practical, and did not care about other guild members’ feelings, or guild unity. On the other hand, we had a recruiting officer that was very friendly. He was very gung ho about building relationships. They often went head-to-head on issues. And I found it very difficult to mediate between them. So eventually I left to go raid with another guild that was more advanced.

Q: Kind of like climbing the corporate ladder?

CHENG: Something like that.

Impermanent Power

Contrary to traditional management strategy, business leadership roles can be temporary.



There is an unspoken understanding among those

well-versed in management technique that once a strong leader has been identified, that person should be installed as a manager, regularly promoted based on performance, and given a steadily increasing amount of responsibility over an indefinite period of time.

Of course, this organizational strategy has come under criticism in the past, mostly because, as the Peter Principle succinctly states, it's a good way to elevate an employee to the level of their incompetence. For instance, it should not be assumed that just because an employee has demonstrated an aptitude for leadership in one set of circumstances, that same person will be an effective leader in all circumstances.

That's where the world of online games has the potential to teach the business world a strong lesson. In many online games, there is no expectation about permanence of roles.

Leadership roles are more ephemeral, lasting 10 minutes, 10 days, or even months at a time. Leadership is seen as a job that needs to be assumed in order to get a specific task done, not an identity that follows a player around forever.

This "Temporary Leadership" emerges as a result of the pace of play, and the project-oriented nature of online games. Because decisions need to be made quickly, and the cast of characters present during any given session is constantly changing, leaders are chosen quickly, on the basis of experience and skills suited to the task at hand.

Leadership roles are more ephemeral, lasting 10 minutes, 10 days, or even months at a time. Leadership is seen as a job that needs to be assumed in order to get a specific task done, not an identity that follows a player around forever.

The analog in the Sloan Model is Inventing, where leaders design new ways of working together to realize a vision.

That means not just promoting leaders that are flexible, but having the option of swapping leaders in and out, depending on the task, the time frame of a project, and the skill sets of the available team members.

Those leaders do not expect to continue to lead the group beyond that particular mission, and they understand the very real possibility that tomorrow, they will be followers. And decisions on who will lead

and who will follow are made organically, by the group itself, rather than coming from some higher authority.

The implications of this for corporate settings are obvious. Given the rapid pace of change in today's global business environment, the need for this kind of leadership flexibility is apparent.

That means not just promoting leaders that are flexible, but having the option of swapping leaders in and out, depending on the task, the time frame of a project, and the skill sets of the available team members.

That is not to say that long-term leadership stars don't and shouldn't emerge in this environment. Some gamers (and certainly business managers) with exceptional relationship skills are able to build effective teams, delegate leadership responsibilities to their lieutenants, and keep a large group of direct reports moving in the right direction for extended

periods of time. In the Sloan Model, this is called Visioning, or the ability to create a compelling vision of the future. Some leaders yearn for this kind of role, and fight to hold on to it. But for others, leadership can be tiring and lead to burnout. Especially during trying times. One gaming leader that was interviewed in the study found himself dealing with interpersonal conflicts for several hours each night. He created an alternate character so that he could play without acting as a mediator of disputes. That scenario lends itself to dynamic, shifting roles of leadership that continually change as a group develops.

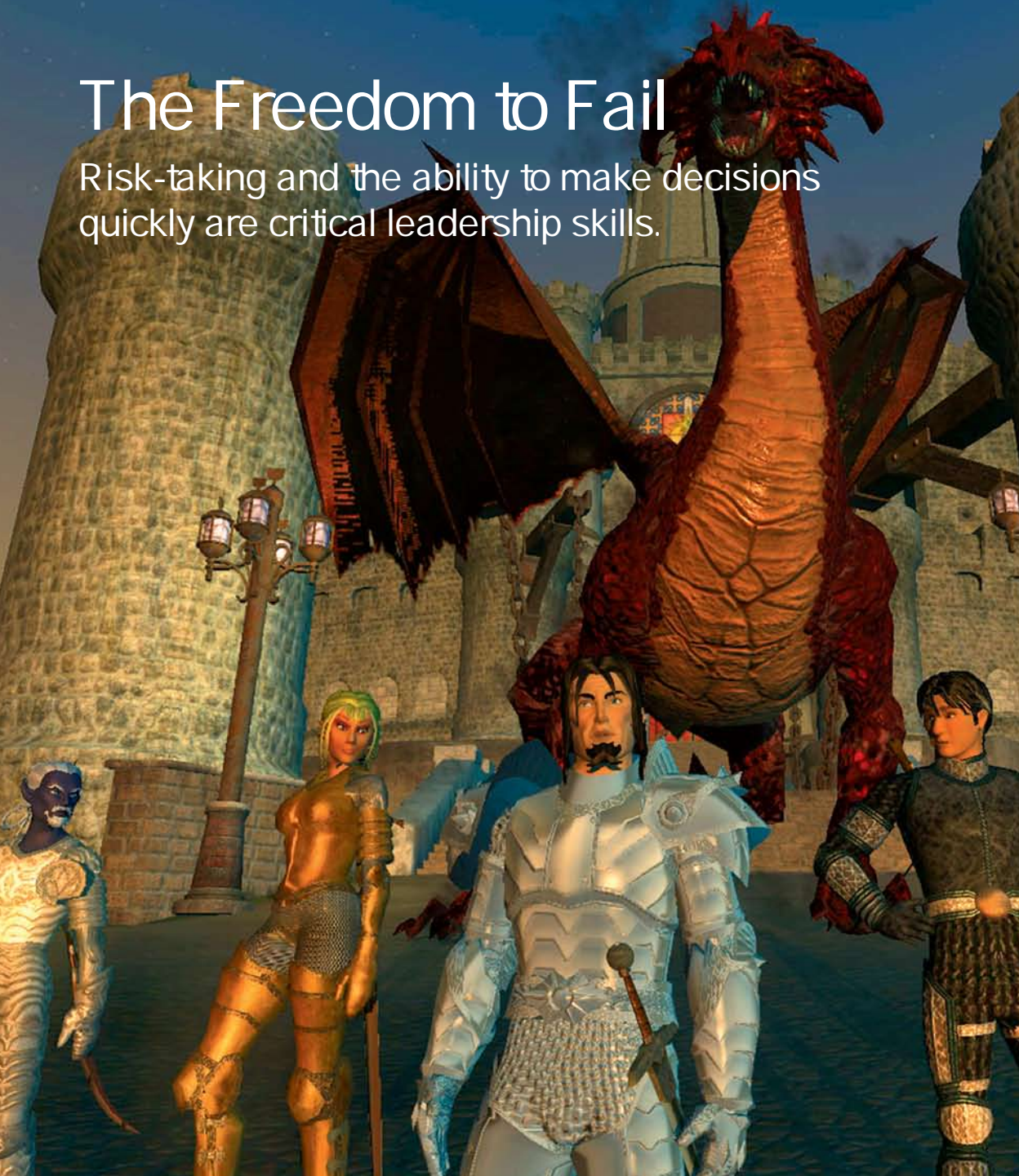
In Summary:

In fast moving distributed environments, leadership can be:

1. A temporary phenomenon
2. Task-oriented
3. Dynamic and constantly changing

The Freedom to Fail

Risk-taking and the ability to make decisions quickly are critical leadership skills.



Some elements of the online gaming world, like its

project-oriented structure or the transparency of skills and incentives, are relatively easy to replicate in business environments. Others, like the inherent tolerance for risk in games, are far more challenging to implement when it comes to the real world.

But the issue of risk tolerance is highly relevant in today's fast-paced business environment, one in which rapid turns of innovation can mean the difference between financial success and failure. Businesses of all sizes, but especially big ones, struggle mightily with the need to evolve quickly and out-innovate their competition. Ironically, embracing risk in the enterprise is itself a considerable risk. There is an ingrained fear of failure that holds many corporate employees back when it comes to taking big risks that could yield big rewards. Online gamers do not share this fear.

In the online gaming world, risk-taking is encouraged. It is even considered a necessary precursor to success.

In the online gaming world, risk-taking is encouraged. It is even considered a necessary precursor to success.

Leaders formulate strategies quickly, with imperfect data, and put their strategy into motion without fear of consequences. Yes, it is only a game. And more often than not there is no real money (and certainly not life) on the line.

But to assume that there is nothing ventured would be a mistake. Many games have severe penalties for failure. These setbacks can range from time-wasted to squandered status, all of which affect the enjoyment of the game. Millions of dollars are not riding on each raid, but try telling a hardcore gamer that failure doesn't matter.

There is another reason risk is tolerated in online games. The structure of the games is such that failure is accepted as a cost of doing business, rather than a permanent black mark or a career killer. Whereas the Sloan Model refers to Inventing, this trait of games might be called “re-inventing.” True innovation requires trial and error, iterative approaches to solving big problems. This is understood in the online gaming world. But business environments in which this tolerance is not afforded will certainly suffer under the weight of their own conservatism. And employees who feel they cannot make mistakes and take risks will provide little in terms of innovative value.

There are interpersonal risks in online games and businesses as well. It’s called politics. Working to impress the right people with an eye towards promotion or other benefit can be just as destructive as operating out of a fear of failure. In online games, perhaps because players are represented as avatars and are not face-to-face with each other, heated disagreements are common and accepted. Players even claim to become desensitized to group conflict over time. Perhaps this kind of passionate honesty has a place of value in the modern enterprise as well.

“I’ve learned that guild and other leaders are just as human as the rest of us, and they often need our help as much as we need theirs,” says David Abecassis, Product Designer at Seriosity, Inc. and former President of the Stanford Gaming Society. “I have tried in my personal and business life to be mindful of the strain that is often placed on leadership, and to be as helpful to well-meaning leaders as possible.”

The structure of the games is such that failure is accepted as a cost of doing business, rather than a permanent black mark or a career killer.

Next Steps to Consider



Psychologists and sociologists are already conducting

research in virtual worlds in an effort to better understand human nature. That is why IBM is applying the lessons it has learned from online games to its own business and providing related solutions to interested organizations. And there are a number of basic lessons we have learned from our early efforts.

For example, from an organizational perspective, breaking major operations into smaller projects and assigning leadership for those projects based on expertise allows for more employees to try their hand at leadership. It also allows for more temporary roles that can frequently shift based on who is performing. As a result, employees that are simultaneously leading in one project and following in another will develop a more complete understanding of effective leadership.

Smaller projects also allow for more failure, and the ability to tackle big problems in an iterative fashion. Encouraging employees to make mistakes has its obvious drawbacks, but instilling the confidence to try new things has benefits that far outweigh the risks. Breaking projects up into bite-size pieces makes failure more palatable, and more affordable.

From a technology perspective, giving leaders tools to make effective decisions is nothing new. But in the last ten years, business performance management software and business intelligence software has taken a quantum leap forward, providing real-time statistical analysis of a business directly to an executive's desktop. But there is still work to be done as business intelligence works its way deeper into the enterprise. And it is critical to deliver the right information to the right people, because too much or too little data can result in major inefficiencies.

Finally, embracing emerging communications and Web 2.0 technologies gives leaders more ways to communicate, which in turn allows them to be more effective communicators. Many corporations tend to play it safe when introducing new tools and applications that promote greater transparency—a misguided grasp for control that will ultimately be lost anyway. Not so long ago, email was once resisted due to concerns about productivity and security. Today it is hard to imagine doing business without it.

It's not a stretch to think resumes that include detailed gaming experience will be landing on the desks of Fortune 500 executives in the very near future. Those hiring managers would do well to look closely at that experience, and not disregard it as mere hobby. After all, that gamer may just be your next CEO.

For more information on the GIO and the 'Gaming as a Metaphor For 21st Century Leadership' study, please visit www.ibm.com/gio.

- IBM, the IBM logo, *ibm.com* and *Global Innovation Outlook* are registered trademarks or trademarks of International Business Machines Corporation in the United States and/or other countries. Other company, product and service names may be trademarks or servicemarks of others. © Copyright IBM Corporation 2007. ALL RIGHTS RESERVED.
- *Eve Online* is a trademark of CCP HF, Company, NR.
- *EverQuest* is a registered trademark of Sony Online Entertainment LLC.
- *Image on page 8*: © CCP HF, Company, NR. All rights reserved.
- *Second Life* is a registered trademark of Linden Research, Inc.
- *Star Wars Galaxies* is a registered trademark of Lucasfilm Entertainment Company, Ltd.
- *World of Warcraft* is a registered trademark of Blizzard Entertainment, Inc.

¹“*Leadership in Games and at Work: Implications for the Enterprise of Massively Multiplayer Online Role-Playing Games*,” B. Reeves & T. Malone, with N. Yee, H. Cheng, D. Abecassis, T. Cadwell, M. Abbey, J. Scarborough, L. Read and S. Roy. Seriosity, Inc., Palo Alto, CA (2007)



INTERNATIONAL BUSINESS MACHINES CORPORATION
NEW ORCHARD ROAD, ARMONK, NY 10504

© International Business Machines Corporation 2001
All Rights Reserved



seriosity™

SERIOSITY, INC.
200 WILSON CT., SUITE 100, PLOMPTON, CT 06032

