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## *Solving business problems with game-based design*

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# A business view of gamification and human motivation

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***Message from the editor***

Few new technologies have entered the corporate mainstream with a label as off-putting as *gamification*. The term brings to mind employees wasting time playing video games. But there is a deeper, more compelling story behind gamification than most would suspect.

A big part of that story has to do with motivation. A person on an assembly line performs the same task over and over again to make a living. But knowledge workers are more effectively motivated by much deeper, enduring factors.

Video games have somehow tapped into these deeper motivations. Why are video games successful? It's not as though gamers are paid to play. Gamers are curious about other worlds, eager to test the limits of their own abilities, and interested in interacting with others playing the game. The best multiplayer games offer many levels of challenges, rich virtual worlds, and the opportunity to lead, compete, and collaborate. For decades now, video games have directly tapped into the human need for autonomy, mastery, purpose, and relatedness. Business could learn more from the gaming industry. And it has been.

Companies don't need to build games themselves to be able to tap deeper sources of motivation, but they do need to get more inside the heads of their customers and employees the way games have.

Jun Kim, a senior user researcher at Tableau Software, performed field studies on the use of deal-of-the-day coupon services that underscored the appeal of discovery. "I found that people were going to their favorite site every day, not for the discounts, but for the discovery experience," Kim says. "They wanted to find something new that they can do—an activity that they hadn't thought of. They would say, 'One day I found this blueberry picking activity. On another day, I found this balloon ride. I would never have thought of those things, and it gave me some new ideas of things I could actually do and save money at the same time.'"

When done well, gamification is really the studied, thoughtful, and creative application of game design elements to business processes. Companies already acknowledge their business outcomes are tied to how well their employees engage. Introducing game elements to their business processes gives them a new way to encourage much higher levels of engagement.

This issue of the *Technology Forecast* examines the wide range of game design techniques that can be used in nongame environments for business benefit. These techniques are turning out to be pivotal in motivating customers, employees, and other stakeholders, and the most compelling use cases underscore the degree to which success depends on a thoughtful reassessment of the user experience.

The article, "The game-based redesign of mainstream business," on page 06 explores how techniques long used in video games are now being used online in business to engage and motivate the workforce and inspire customers. Companies don't need to build games or make business a game to take advantage of these techniques. Instead, they can take tips from gamers on how to motivate and challenge stakeholders, and they can modify their online environments to enrich interaction.

"Improving the customer and employee experience with gaming technology" on page 30 describes the baseline technology that can help enterprises become familiar with the use of game mechanics and dynamics. Enterprises that readily mix capable user experience design, psychology, social group dynamics, and enterprise architecture will reap the most rewards. There are straightforward ways to start small when it comes to gamification, but enterprises should plan over the long term for more ambitious efforts that are sure to follow.

"Getting past the hype of gamification" on page 48 considers the topic from a CIO viewpoint. For most CIOs, the first reaction to gamification is dismissal, either because game approaches just don't feel like they belong in serious business, or because the CIO team's agenda is already overloaded with mobility, social media, cloud, big data analytics, IT security, and other major initiatives. But in dismissing the opportunity, CIOs may forgo some very tangible benefits and a creative new way to make IT much more productive by leveraging the human factors that are the essence of gamification.

This issue also includes interviews with executives who are using gaming techniques and with subject matter experts who have been at the forefront of development in this area:

- Bryan Neider of Electronic Arts shares what a game publisher thinks about when it designs its own internal training software.
- Bill Fulton of Ronin User Experience compares and contrasts examples of good and bad emotion design in socially networked online environments.
- Ari Lightman of Carnegie Mellon University ponders the challenge of workforce disengagement and how game mechanics can accelerate knowledge sharing.
- Milt Riseman, former president of Advanta Mortgage Services, describes how he used business simulation to get employees across the enterprise to see the mortgage business through his eyes—before the advent of the web.

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As always, we welcome your feedback and your ideas for future research and analysis topics to cover.

# The game-based redesign of mainstream business

## Gaming companies have plumbed the depths of motivation for decades. How can what they've learned be applied to business?

*By Alan Morrison, Bo Parker, and Christopher Carfi*

Millions of potential customers have visited the Autodesk website each year, and many of them have downloaded trial versions of its professional design software. But until recently, most haven't been motivated to work with the complex tools long enough to see their value. Autodesk needed to more directly encourage visitors to train themselves in enough basic functions to experience the usefulness of the software. In 2012, the company tried a new approach.

Autodesk took a fresh look from the customer's point of view at its eStore and the demos it made available on YouTube for one of its products, Autodesk 3ds Max—a creative suite used by game developers, media design professionals, architects, and others. "There were all kinds of tutorials on our learning channel for 3ds Max, but nothing that said, 'OK, you have a blank workspace. Here is how you sketch out the skeleton of a person so you can get started doing some cool animation,'" notes Andy Mott, whose role at Autodesk focuses on moving qualified traffic from software trials to the company's eStore.

Autodesk made some major upgrades to its customer experience design for its learning channel and its 3ds Max sites with the help of gamification technology from Badgeville. One of Autodesk's key decisions was to cater specifically to developers and design professionals who were intimately familiar with games. The trial experience they created mimicked a game with a highly directed experience and tiered set of missions. Users start at the beginner's level and learn the software's basics; as they "level up"—acquire skills—the missions become more sophisticated. Much of the value is in helping users learn gradually without boring them in the process.

A three-month pilot test in 2012 confirmed something Autodesk knew: the more that people are engaged with trial software, the more likely they are to buy. During the pilot period, Autodesk saw a 15 percent increase in the buy click rate for this product. Autodesk is now preparing to use game mechanics for other sites, but the company doesn't plan to design a full game for every product. "We did a full-blown game that was right for the 3ds Max market, but in most cases,

> *"We did a full-blown game that was right for the 3ds Max market, but in most cases, we'll use some fundamentals from game mechanics and psychology in less flashy ways."*
>
> —Dawn Wolfe, Autodesk

we'll use some fundamentals from game mechanics and psychology in less flashy ways," says Dawn Wolfe, senior digital marketing manager at the company. She thinks this humbler form of motivation-oriented design will eventually "just become part of the marketer's tool chest."

As the example illustrates, game design concepts can be applied to online business environments and can achieve concrete results. Game mechanics work in the business environment for one of the same reasons they work in games: when designed into the environment appropriately and thoughtfully, they play on intrinsic motivation, which is more reliable and sustainable than external rewards or punishments. Intrinsic motivation produces higher engagement, and with surveys showing that employee and customer engagement is low, enterprises should be looking for ways to give it a boost.

This issue of the *Technology Forecast* examines the use of game design concepts in the online business environment. Using Autodesk and other examples from different business contexts, this first article describes the importance of intrinsic motivation to engagement, and how some forms of gamification are more effective than others at creating and sustaining passion for work, products, and services. The examples point to the emergence of a more studied approach to online spaces to create more engaging work and buying environments.

This kind of redesign is challenging, because it requires that enterprises really try to get into the minds of their customers and employees in a way most haven't been able to before. But a more thoughtful approach to designing online environments can result in many business benefits, whether the goal is innovation, customer support, marketing and sales, training and development, or strategy. The second article, "Improving the customer and employee experience with gaming technology," on page 30, examines some of the technologies and vendors of game mechanics, and the third article, "Getting past the hype of gamification," on page 48, looks at how CIOs can adopt game design concepts to the IT organization.

### *Disengaged workers and disaffected customers*

The application of game-based design to human factors is an extension of business process improvement efforts. During the last 20 years, enterprises have focused on improving most business processes by establishing consistent ways of performing and consistent data descriptions for those processes. How employees think and feel about the work—what's called *engagement*—has not been part of this process improvement. The more the human part of work moves online, the easier it is to capture and study how it is performed and how to improve it. PwC calls this activity *active engagement modeling* and explores it in depth in the article, "Getting past the hype of gamification," on page 48. Game design concepts are central to this process, for reasons examined in the sections that follow.

It is imperative to note at the start that *gamification* does not mean turning everything into a game—although it can mean that, as the Autodesk example illustrates. It means more broadly using what the gaming industry knows about intrinsic motivation and how it, in turn, stimulates engagement. Gamification in a business context could be as simple as a bar that shows percentage of completion, such as the one LinkedIn uses for profiles, or something as complex as the *World of Warcraft* game with multiple levels of mastery. Even online activities not typically associated with gaming can use game mechanics—crowdsourcing, for example. (See the sidebar "Motivating Magnum Photos' Twitter followers.")

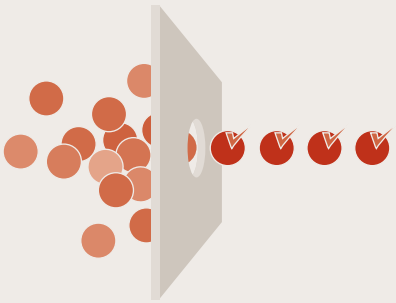
# *Motivating Magnum Photos' Twitter followers*

When prominent photojournalists, including Henri Cartier-Bresson and Robert Capa, founded the Magnum Photos cooperative in 1947, it is doubtful they envisioned the volume of images that would exist in the digital era. The six people who manage the repository at the agency today certainly do.

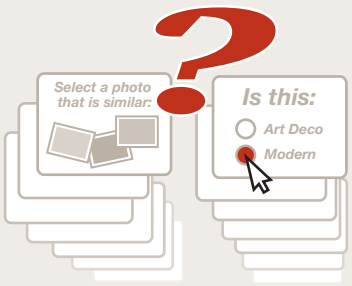
With more than a half million digital images in the archives needing descriptive tagging, and 200,000 of them containing only basic metadata and no tags at all, the staff was simply overwhelmed.

Working with Tagasauris, a metadata tagging service, Magnum experimented with crowdsourcing to solve the problem. The breakthrough came when they blended elements of a gaming environment with social-media-oriented crowdsourcing and a semantically linked tagging system. (See Figure A.)

**Figure A: Summary of a game-based approach to image tagging**

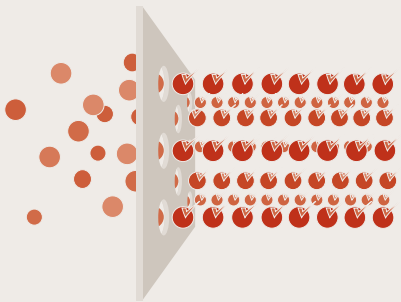


1 Challenge: Magnum Photos has just six staff members to tag 6,000 museum-quality photos a month being added to the agency's repository.




2 Tagasauris helps Magnum crowdsource the effort, slicing up the work into 23 microtasks.


3 Tagasauris encourages people to join the tagging effort by scoring their work and making their accomplishments visible to the community.



4 Magnum now makes it possible for search engines and thus potential users to find more than 1 million of the agency's photos online.

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### *Seven steps to a scalable image tagging effort*

According to Tagasauris CEO Todd Carter, the process hinges on two elements: making users visible to one another, so they can interact, compete, and build relationships; and a careful design that guides users to better choices and checks their work. The process includes seven steps:

1. **Start small:** "We started with small groups of users, testing, getting feedback, and then opening up to a larger group, just so we didn't shoot ourselves in the foot," Carter notes.

2. **Set up a process that helps select and segment the user base:** Tagasauris found influencers who were following Magnum on Twitter and sent each an invitation to compete with others in a game-based tagging environment. Magnum and Tagasauris assessed the quantity and quality of the image tags the users provided.

3. **Segment the workflow by specialization and the tasks into microtasks:** "The more you can break it into parts, the more specialized the work becomes," Carter advises. "Use specialists where you need specialists, and generalists where you need generalists."

4. **Crowdsource task and task review, and check after both:** "More than one person enters a number of tags, and then those tags are fed to more workers who adjudicate the work of the workers who put those tags in the first place. Then we measure the effectiveness of the adjudicators."

5. **Use human judgment to retrain the machines:** "Machines are often competent in determining if people are smiling or not, for example. We feed that output to humans who then adjudicate the task and use the output of that human adjudication to retrain the machine."

6. **Provide real-time game-style feedback to users:** "We added scores to the dashboard so people can see in real time whether their performance is getting better or worse."

7. **Recognize user contributions:** "Users wanted us to take the dashboard out of the application and embed it on the home page," Carter concludes.

In this way, Tagasauris helped retool a portion of Magnum's work environment based on an analysis of the thinking processes surrounding photos, how they're used, and who's able to describe them. The solution tapped Magnum's most influential Twitter followers—about 120,000—and placed them together in an environment where they could interact, share knowledge, and gain recognition for their efforts.

Among the tangible results were the following, Carter says:

- **Reduced costs:** Magnum cut the cost of annotating a single image from $3 to 25 cents, amounting to a total savings of more than $250,000 per year.

- **Increased revenue:** Magnum doesn't cite specifics but experienced a double-digit increase in revenue.

- **Supply chain optimization:** Images without metadata are undiscoverable and cannot be monetized. Magnum added descriptive metadata to more than 300,000 assets that were previously undiscoverable.

- **Knowledge organization:** Magnum added more than 20,000 concept terms to its thesaurus.

- **More visitors due to search:** Since 2010, visitors to the website from search increased by 4,131 percent.

- **More website visits:** Visits increased 5,481 percent from 2010 to November 2012.

The very term *gamification* might be off-putting to some, but dismissing opportunities to use it in online business environments ignores the tangible benefits and a creative way to approach engagement. Beneath the hype of gamification are fundamental principles that can increase the passion workers and customers bring to your business. Passion is not just a feel-good emotion; it has tangible business results. A disengaged workforce is a less productive workforce.

"Businesses are in a rush to create gamification because they know there is disengagement within work," says Ari Lightman, director of the CIO Institute at Carnegie Mellon University.

For years, Gallup surveys have indicated that the number of disengaged workers worldwide is surprisingly high. In the latest 2012 results, for example, Gallup's survey of Japanese managers indicated that "only 9 percent of respondents strongly agreed with the statement 'I recommend my company's products and services to friends and family members.'" Moreover, 67 percent of Japanese employees are "not engaged"—they pick up a paycheck but aren't really enthusiastic about their work or their companies. The remaining 24 percent are "actively disengaged."[1]

1 "Grim News for Japan's Managers," *Gallup Business Journal*, 2012, http://businessjournal.gallup.com/content/17242/Grim-News-Japans-Managers.aspx, accessed October 17, 2012.

When interpreting similar results from an October 2011 Gallup survey taken in the United States, Lightman notes: "If you look at mainstream companies, something like two-thirds of the workforce is disengaged, which is really shocking. There's no 'Oh my God, I've got to rush into work because it's so much fun.' Gallup actually calculated the efficiency or the productivity loss. It's some staggering number, like $300 billion lost in the US annually because people are disengaged with work."[2]

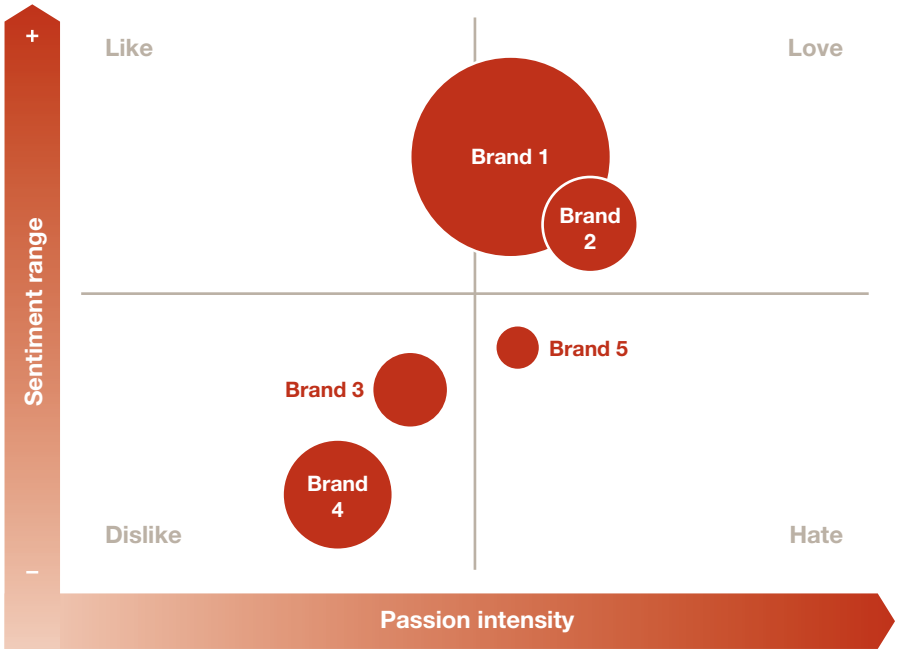
One can agree or disagree with these studies, but Lightman argues that "workers are more disengaged than ever. It's causing productivity loss—workers are doing other things that are work related because they're bored out of their minds."

2 Teresa Amabile and Steve Kramer, "What Your Boss Needs to Know About Engagement," *HBR Blog Network*, November 16, 2011, accessed October 17, 2012.

***"Workers are more disengaged than ever. It's causing productivity loss—workers are doing other things that are work related because they're bored out of their minds."***

—Ari Lightman, Carnegie Mellon University

**Figure 1: Brand passion index**




In this graphic, the amount of chatter about a brand is indicated by the size of the bubble, while the placement of the bubble shows the sentiment and the intensity of passion.

Source: NetBase, 2012

Another important set of business health metrics has to do with customer indifference for many major brands. (See Figure 1.) Using its Brand Passion Index, NetBase analyzes customer sentiment expressed in social media to gauge customer passion for brands. Among package shipping companies, for example, there is a like–dislike continuum from high to low, but brand passion isn't particularly high for any of the major carriers.

Enterprises are aware of their engagement problem. Motivating others to participate and contribute in productive ways has become a primary objective in some enterprises, whether engagement involves employees, buyers, suppliers, partners, or other stakeholders.

Because engagement is mental, not behavioral, enterprises should focus on understanding and targeting individual thought processes—from dispassionate logic to heated emotions. Companies don't always know intuitively how to engage employees or customers. The place to start is to understand the role of intrinsic motivators.

### *Boosting business engagement: The underappreciated role of emotion*

Enterprises don't tap customer or workplace emotion enough, says Bill Fulton, a psychologist, game designer, and founder of Ronin User Experience. Referring to the ABCs of psychology—affect (feeling or emotion), behavior (doing), and cognition (thinking)—Fulton argues that business managers focus too much on thinking and acting to the exclusion of feeling.

"Enterprises need to focus more on engaging people emotionally," Fulton says. "Most businesses want people to see the value or benefit of their product, and not consider price. They never come to the conclusion that it would be better if people loved their products. It's much harder to pull away customers who love your stuff."

Car designers, for example, are acutely attuned to emotion, he says. "If every car came in matte black, there would be a lot fewer people who love cars. The designers know that color and shape, things completely separate from a car's usefulness as transportation, play a large role in whether one loves a car," Fulton says. "To get a healthy chunk of sales and a lot of customer loyalty, car designers know they need to inspire love."

### *Intrinsic motivation versus extrinsic motivation*

Motivation does differ among individuals. The Myers-Briggs Type Indicator and similar categorizations of personality types could lead to a conclusion that a predominantly judging person might find plans and schedules more inherently motivating than an easy-going perceiving person would. But many motivators are effective across the general population regardless of personality type.

Richard Ryan and Edward Deci of the University of Rochester are the progenitors of an established approach to motivation called self-determination theory that contrasts intrinsic with extrinsic motivators. Ryan and Deci highlight autonomy, competence, and relatedness as three core intrinsic motivators. These are comparable to the 21st-century motivators of autonomy, mastery, and purpose that Dan Pink spells out in his book *Drive*. Pink's book takes its cue from self-determination theory.

In Ryan's mind, purpose is closely tied to autonomy. "For instance, in fostering autonomy, it is helpful when people have a rationale that contributes to a sense of purpose," Ryan says. "If the boss says, 'Here's what needs to happen this week,' it's a lot easier for me to have autonomy in doing it if I understand why and the boss gives me the rationale."

Ryan stresses the importance of intrinsic motivators rather than the extrinsic reward and punishment of classic behaviorism pioneered by B. F. Skinner. In fact, Ryan thinks the field of psychology has done a "Copernican turn over the last 20 years," essentially reversing its position from behaviorism to favoring self-determination and other consistent theories. "The field of motivation today," he says, "is much more about what supports or sustains people in the choices they make, rather than how you make people do things with rewards and punishments."

***"The field of motivation today is much more about what supports or sustains people in the choices they make, rather than how you make people do things with rewards and punishments."***

—Richard Ryan, University of Rochester

**Figure 2: Four kinds of motivation**


Source: Alexander Kjerulf, "Why 'Motivation by Pizza' Doesn't Work," *Chief Happiness Officer* (blog), December 19, 2006, http://positivesharing.com/2006/12/why-motivation-by-pizza-doesnt-work/, accessed October 22, 2012

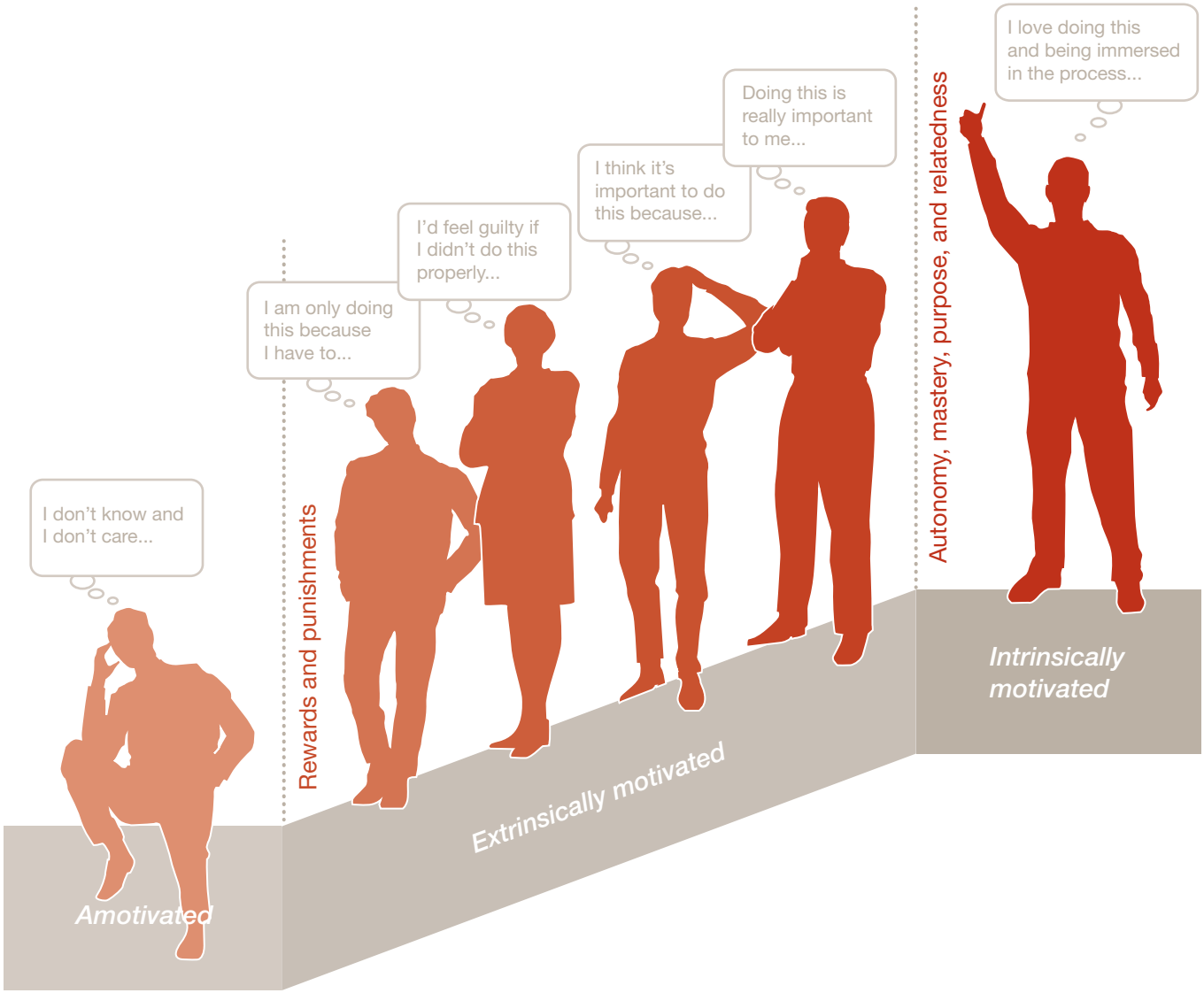
If a person is indifferent, she's not engaged. She could be externally motivated, as in Skinnerian behaviorism—some kind of payment or reward causes her, at least initially, to be motivated to complete a task, or threatened with a consequence or punishment if she doesn't.

There's widespread agreement that tapping intrinsic, positive motivators is an effective and sustainable approach. "Rather than being the source of motivation, the manager must help employees to find their own intrinsic motivation," says Alexander Kjerulf, a business author and consultant who divides motivation into four quadrants. (See Figure 2.)

***"Rather than being the source of motivation, the manager must help employees to find their own intrinsic motivation."***

—Alexander Kjerulf, author and consultant

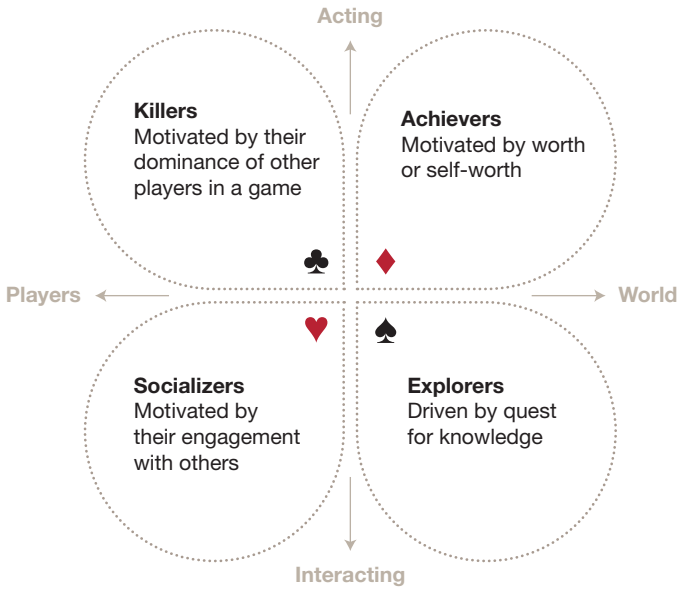
**Figure 3: The continuum of extrinsic and intrinsic motivation**




Source: PwC, derived from Fergus Bisset, *Framework of Motivated Behaviour* (v.0.1) 2009

If a person loves what she's doing, then at some deep level a blend of autonomy, competence (mastery), or relatedness may be active, and effectiveness and productivity will follow. She'll be in Kjerulf's upper right quadrant. Perhaps it is a project that challenges her or one she's been given freedom to plan and execute as she sees fit. Or perhaps it's the benefits of interacting with co-workers, partners, or customers and the connections she's making. Most likely it is a blend of factors. A combination of intrinsic motivators can be powerful in encouraging the feelings that lead to positive customer or employee behavior. (See Figure 3.)

**Figure 4: Interest graph of four different player types**




Source: Richard A. Bartle, "Hearts, Clubs, Diamonds, Spades: Players Who Suit MUDs," *Journal of MUD Research* 1, no. 1 (June 1996), http://www.mud.co.uk/richard/hcds.htm, accessed December 1, 2012

### *Personality types and motivation*

Motivation varies by personality type. Richard Bartle in 1996 identified four key player types in multiplayer gaming environments. Each of these four key player types can respond differently to the same situations and incentives. Understanding these player types provides insight that can improve the effectiveness of gamification in the business context. In particular, these player types provide a framework that can be used when developing initiatives such as customer advocacy programs.

Bartle created a matrix that explored two dimensions: a dimension of "does the player think more about *her environment* or about *other players*?" and a dimension of "does the player act *on*, or does the player interact *with*?"

The answers to these questions result in a 2x2 matrix (see Figure 4) with four player types:

- **Achievers ("Diamonds"):** Achievers are motivated by worth or self-worth.
- **Explorers ("Spades"):** Explorers are motivated by knowing everything they can about a subject or area of interest, and they are driven by that quest for knowledge.
- **Socializers ("Hearts"):** Socializers are motivated by their engagement with others.
- **Killers ("Clubs"):** Killers are motivated by their dominance of other players in a game.

These four types are the cornerstone of Bartle's model. In a subsequent revision of the model, Bartle added a third dimension that captures the fact that motivations can be implicit or explicit, consistent with the self-determination model of motivation described in this issue of the *Technology Forecast*.

Motivation is not a one-size-fits-all concept. In fact, each of the four player types has different types of motivations:

- **Achievers:** In a traditional gaming environment, maximizing her points in a game drives the Achiever. Feedback mechanisms that show how an Achiever is doing in the game (via mechanisms such as leaderboards that show high scores) are especially important. In the application of game mechanics to business, Achievers are motivated by competition with others ("Will the San Jose office beat the New York office on its health and fitness scores?") or competition with themselves ("I bet I can be in the top 5 percent of sales reps and go to President's Club this year.")

- **Explorers:** In games, the Explorer is the one who goes to every corner of a map to see what is there; in the business setting, the Explorer is the one who invests the time to understand every setting on her new smartphone. Since Explorers are motivated by knowledge, giving them access to exclusive information or behind-the-scenes glimpses into a process can result in higher engagement.

- **Socializers:** The Socializer draws motivation not from the environment in which she is interacting, but instead is driven by the interactions with the people in that environment. In an online setting, ensure that Socializers have a way to interact with other individuals who have similar passions or goals. For this group in particular, integrating both online and real-world networking opportunities is an important design goal.

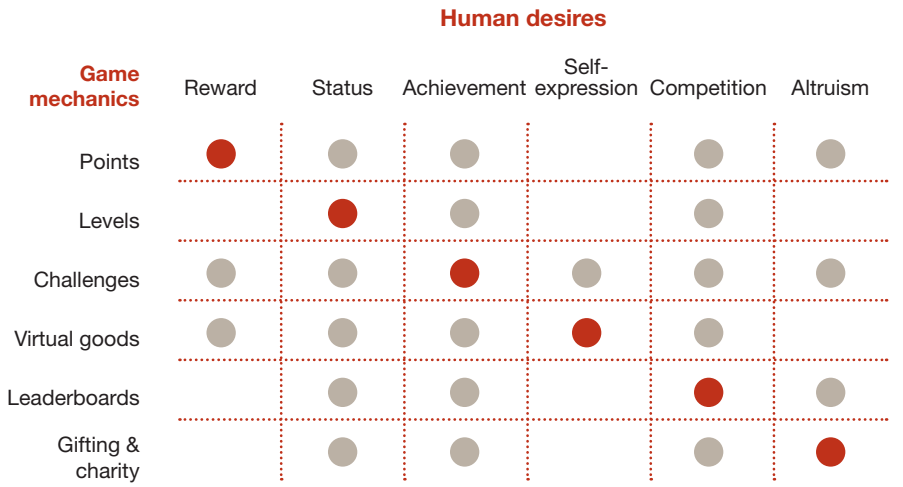
- **Killers:** The Killer gets motivation from being the "alpha dog" in any given situation. (Contrast this motivation to the Achiever player type, where motivation is driven by acting on her environment, rather than by acting on others in the environment.) Having a few Killers in a given situation is not necessarily a bad thing, as they do add a dynamic aspect to social interactions. However, too many Killers in a group may have a tendency to drive others out of it.

Additionally, one cannot assume that all players, employees, or customers fall into a single player type in a particular situation. There will always be a mix of player types in any given population.

Understanding these player types has particular significance when developing customer advocacy programs. Envisioning a menu of identity, privileges, and benefits that will motivate customer advocates ties directly into understanding the motivation of the various subgroups in a particular customer advocate community. The Microsoft Most Valuable Professional (MVP) program, for example, tapped strongly into aspects of the Achiever, Explorer, and Socializer archetypes. By giving these MVPs public recognition, specialized information, and the ability to connect with others in the community, the program created a feedback loop that resulted in significant, measurable business benefits.

***Motivation is not a one-size-fits-all concept. In fact, each of the four player types has different types of motivations.***

**Figure 5: Common game mechanics and how they can affect motivation**




Source: Bunchball, 2010

### *How success in motivating gamers translates to business scenarios*

The body of scientific research around human motivation is substantial, but some of the most relevant research for online environments is informed by gaming. In contrast to other business verticals, the gaming industry has been fully attuned for decades to the challenge of motivating users. The industry is now starting to directly share its knowledge with other businesses.

Ryan, the self-determination theorist, confesses, "I got into this field, in part, because I was impressed by the motivational power that games had. Most people in psychology were looking at the negative effects of video games because of overuse and other side effects. I thought, if people are overusing video games, we need to know what's motivating them."

Through trial and error, the best game designers managed to crack the motivation code needed for successful gaming environments. One central element of their success is their focus on intrinsic motivators and the associated mechanics used to deepen engagement. Within the past several years, vendors such as Bunchball have taken the simpler mechanics of games into online business environments and mapped those to the potential motivators they could tap.

Figure 5 illustrates the interaction of basic human desires and gameplay. The red dots signify the primary desire a particular game mechanic fulfills, and the gray dots show the other areas that it affects. Each human desire listed is tied to deeper intrinsic motivators, including the autonomy, competence, and relatedness of self-determination theory. Rewards that come when underpinned by intrinsic motivators gain more effectiveness.

These game mechanics and design strategies provide ways to motivate the disengaged. As long as they're well thought through, the use of game mechanics can be helpful in a range of applications. Online business environments, like gaming environments before them, are now becoming laboratories for experimentation.

Mario Herger, technology strategist and community manager at SAP Labs, points to four traditional and emerging business concerns that are seeing the most adoption: marketing and branding, training, community management, and human resources. Here are some examples.

### Marketing: Boosting the use of trial software at the Autodesk eStore

According to Senior Digital Marketing Manager Dawn Wolfe, Autodesk faced a common online marketing problem: the undirected experience that site visitors often have when trying to find out what's important about a new product. The Autodesk website offers various online demos, training videos, and noninteractive training manuals to help visitors learn more, but even if they use them—and many don't—they often do not become well enough versed to understand the value of these complex design tools.

Game mechanics give site visitors a more directed, interactive experience. Autodesk is creating accessible feedback-response loops and on-ramps for different kinds of visitors who are interested in various products. Autodesk works with Badgeville, which provides leaderboards, badges, and other basics for gamifying trial software through an application programming interface (API). (See Figure 6 for an example badge set.) At low levels of difficulty, badges and leaderboards are more important than they are at higher levels. In its recent pilot test and expanded use of game mechanics in its eStore, Autodesk set definite goals for the customer segments it targeted.

## *Autodesk 3ds Max*

***The pilot test with Autodesk 3ds Max was a success. Trial downloads increased 10 percent and usage of trial software increased 40 percent during the pilot period.***

*"What are the key things we want customers to experience that we think will get them to that aha moment and to understand how this is going to improve their workflow and save time?"*

—Dawn Wolfe, Autodesk

**Design appropriate experience levels with the right kinds of rewards.** When it comes to multi-level user experiences, Wolfe thinks *World of Warcraft* provides a model. "If you're a brand new user, your experience is simplistic. It's all about just understanding—understanding how the game works and how to get around in it. But if you're a Guild Leader, the experience almost looks like you're flying an aircraft. It's outrageously complex. If you were to show that to your beginning user, they would run away."

**Get customers to the aha moment.** One of the main goals with trial software is to encourage visitors to spend enough time getting familiar with the software to see how it could be valuable. "What are the key things we want customers to experience that we think will get them to that aha moment and to understand how this is going to improve their workflow and save time?" Wolfe asks.

**Move customers out of their comfort zone into evaluating new products and features.** Current AutoCAD customers, for example, might benefit from a suite, but they need to know more about the tools in the suite. AutoCAD Raster Design, a tool available in the AutoCAD Design Suite, creates editable digital files from drawings on paper. Raster Design is not as complicated as some other products, but users need to experience it to see the value.

The pilot test with 3ds Max was a success. Trial downloads increased 10 percent and usage of trial software increased 40 percent during the pilot period, Wolfe says. Besides the increase in 3ds Max buying activity on the eStore, Autodesk saw a 59 percent increase in 3ds Max channel revenue during the pilot compared to the period a year earlier. This increase is harder to tie directly to the online experience, but was likely impacted by it, she says.

Autodesk also uses site and other customer analytics extensively and has pondered the preferences of targeted user groups. Accordingly, Autodesk has tailored the game elements in the trial software to specific groups:

- **By interest and background:** A high percentage of users of 3ds Max are themselves game or special effects developers, already attuned to games. So Autodesk developed a story line for the trial and created different entry points for each level. In contrast to a standard online tutorial, the *World of Warcraft*–style story lines and mission levels make the trial package more familiar to those who are gamers.

- **By type of marketplace:** Autodesk recognizes that some core markets wouldn't benefit from a full-blown game. In general, Wolfe believes, companies would benefit more from building simple real-time metrics into web pages to encourage customers to complete a learning task, for example. Visible rewards and feedback such as percentage of completion is often enough.

- **By context:** Adding game elements to an online system can be simpler than some might believe. Wolfe points to YouTube or LinkedIn as examples. The LinkedIn site user profile includes a completion metric, which is based on whether your current position, past two positions, education, and other parts of the profile are filled out. The bar chart showing percentage of completion "is very compelling when you see that you're only 65 percent along that progress bar and if you just do this one next thing, it'll get you another 10 percent. There are some innate elements in human nature that respond to that," Wolfe says.

**Figure 6: Example badge set**

Badges are one well-known way to recognize progress and milestones. Their effectiveness depends upon how well they are underpinned by a solid game-based design, social networking, and associated visual displays such as leaderboards.


Source: Badgeville, 2012

### Training: User engagement in corporate training efforts at Electronic Arts

Game developer and publisher Electronic Arts (EA) has applied what it has learned about gaming to its internal training. Its training platform, called EA University, uses game mechanics "to educate our creative and development talent about financial constraints and how to manage profit and loss," says Bryan Neider, EA Labels chief operating officer.

Training of this sort is one of the *least* engaging activities, going step by dry step through explanations of income statements, balance sheets, budgets, and the like. Recognizing this barrier, EA University approached budget and talent constraints as challenges in a game. "The creatives really have a lot more control over the variables of making a game than they realize. This exercise was to increase their awareness of budget and resources, and how they can influence the [profit and loss] outcomes," Neider says.

Framed as a puzzle to solve rather than a set of learning goals to achieve, participants competed with each other while trying various strategies to "win the game" (make the most profit). The strategy that ultimately won has been broadly adopted throughout EA, an incentive that further boosted EA University's success. It didn't hurt that EA employees all love games and competing.

EA continues to refine EA University and use it to raise awareness within the creative and development teams about "everything from game pricing to retail distribution to digital distribution," Neider says. "The variables of how you make a game vary widely, depending on if it's a *Madden* football game or a *Battlefield* first-person shooter game. So the application of the knowledge varies, and teams have different motivations and personalities."

> ***"The creatives really have a lot more control over the variables of making a game than they realize. This exercise was to increase their awareness of budget and resources, and how they can influence the [profit and loss] outcomes."***
>
> —Bryan Neider, Electronic Arts

The real breakthrough at EA is the recognition that learning comes after engagement is established. Solving puzzles, competing with colleagues, and other game dynamics encouraged staff to think about the profitability of a development project in new ways.

### Community management: Game mechanics in Microsoft's MVP program

Like most software vendors, Microsoft relies on its online user communities to educate customers and help them use its myriad products. Microsoft's Most Valuable Professional (MVP) program has made inroads by engaging and harnessing the talents of some customers in these volunteer support communities.

Before he co-founded the social business consultancy Ant's Eye View in 2008 (acquired by PwC in 2012), Sean O'Driscoll spent 16 years at Microsoft, most recently as the head of strategy and operations for these online communities. O'Driscoll's work focused on moving communities beyond the noninteractive experiences of Web 1.0.

> ***"The variables of how you make a game vary widely, depending on if it's a* Madden *football game or a* Battlefield *first-person shooter game. So the application of the knowledge varies, and teams have different motivations and personalities."***
>
> —Bryan Neider, Electronic Arts

Specifically, he looked at more dynamic communities for best practices. For example, he studied the autonomy and purpose implicit in open source communities. "We looked at the Linux communities," O'Driscoll says, "and we found these open source communities with a vibrant user base who weren't just fans, but rabid fans. They gave birth to this code, and so they would defend it to the death."

Once they saw how dynamic online user communities could be, O'Driscoll and Microsoft instituted the MVP program to energize the communities by rewarding the most active in ways that tapped intrinsic motivators—giving them public recognition and acknowledging their positive roles. That program provided a means of "systematically finding, thanking, and engaging nonemployee participants in brand conversations," O'Driscoll says. One of the largest communities under that program was a support forum for Microsoft Office products, where the most active participants did a great job of answering others' how-to questions. That forum provided an example of how Microsoft's communities could become more dynamic.

In most online communities, O'Driscoll observes, "only about 1 percent of unique participants" will proactively engage with your brand and products in "extreme" ways. However, this 1 percent is highly valuable in helping to identify motivators that could boost the engagement level in other parts of the user base. "It's not a matter of raising all boats to the same norm," he says. "It's a matter of raising all boats proportionately."

*Gallup survey results show consistently high levels of workforce or customer disengagement. These results don't necessarily indicate that enterprises aren't interacting with user constituencies. But they do indicate that the nature of the interaction is shallow and uninspiring.*

O'Driscoll emphasizes that social strategies such as game-based design are not a solution to creating non-existing behaviors, but a way to expand and capitalize on normative behavior that already exists. "Our job was to essentially create the structure and incentives necessary to facilitate the exhibition of these behaviors in the marketplace," he notes.

O'Driscoll and his team identified five user community motivators that boosted participation the most:

- **Specialized knowledge:** "Give your audience specialized or privileged access to information" not available to the general public, O'Driscoll says. Users want to be "treated like insiders." This approach connects to the intrinsic motivator of mastery.
- **Identity:** Give the target audience a way to "publicly highlight their expertise and credibility in a particular discipline," O'Driscoll says. Badges can be used here. Microsoft also gave the Office community MVPs the opportunity to present at Microsoft conferences.
- **Involvement:** Interact with the most active users and create a relationship that is bidirectional. This approach connects to the intrinsic motivator of purpose.
- **Belonging:** Make the users feel connected to each other and the community.
- **Trust:** Before all else, build a trust in the quality of the product you are putting out in the market. Purpose is an intrinsic motivator here.

In one research study, Microsoft compared the quality and quantity of responses from MVPs in the online forums before and after it thanked them for their efforts. "We saw a 30 percent uplift in contributions to our forums by those individuals in the 30 days following our acknowledgment of their contribution, compared to the previous 30 days," O'Driscoll says.

A key insight that O'Driscoll's team developed is to attract users who relate to your brand and products, as opposed to "point collectors"—users who are interested only in the game. Someone will eventually "develop a better point collection system than you," which forces you back to competing on price. "You don't want to compete on price. You want to compete on relationships," O'Driscoll says.

### *Conclusion: Gaming techniques address the disengagement challenge*

Game environments provide insights into how to tap sustainable intrinsic motivators that lead to high engagement levels. *World of Warcraft* and similar games create challenges for users and an incremental path to mastery; in the process, they tap into autonomy, mastery, purpose, and relatedness. These multiplayer role-playing games make users visible to one another, so they can interact, compete, and build relationships.

The same techniques are being used in business to engage the workforce and inspire customers. It's not that businesses need to build games to elicit this responsiveness; rather, they should modify their online environments to enrich interaction, give and get feedback, and generally warm up these places with the right kind of gaming techniques, because so many of them seem a bit cold and uninviting at this point.

A focus on intrinsic motivators can be powerful in encouraging positive customer or employee interaction in various business activity areas that Mario Herger identified earlier:

- **Marketing:** "Marketing and branding groups in enterprises have been driving this topic for the past two or three years because they have to be very innovative in the attention economy."

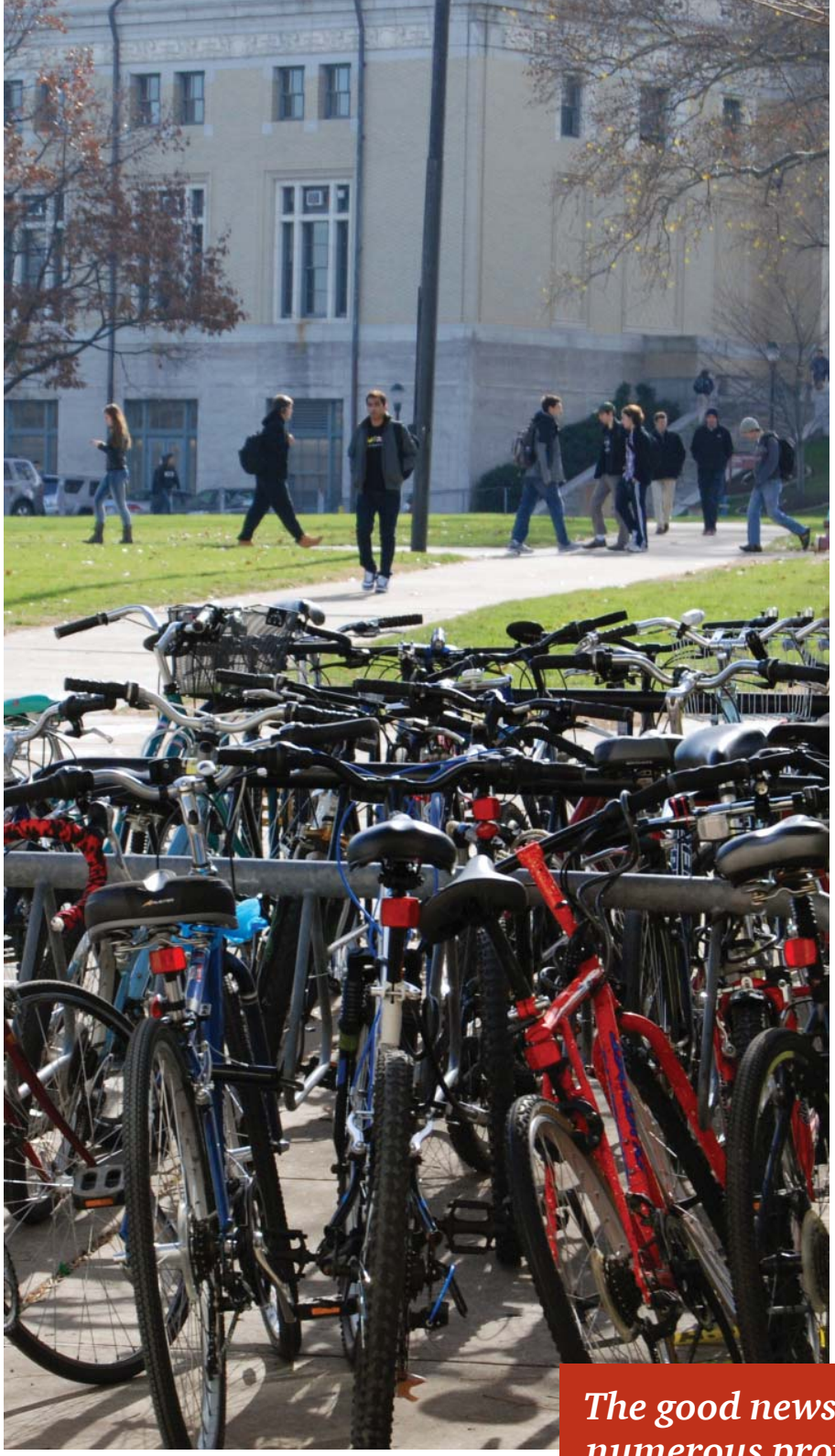
- **Training:** "Major developments such as Khan Academy are turning around the world of education. People are not willing anymore to sit a week in the classroom."

- **Human resources:** "HR can use game mechanics when training and onboarding employees, but also when giving employees a career path." Crowdsourcing is a related HR example.

- **Community management:** "Social media is very tightly integrated with gamification, including game mechanics such as ratings, clicks, and different kinds of feedback. By being responsive and recognizing people for doing certain activities or being helpful inside the community, you make the community stronger.

Gallup survey results show consistently high levels of workforce or customer disengagement. These results don't necessarily indicate that enterprises aren't interacting with user constituencies. But they do indicate that the nature of the interaction is shallow and uninspiring. As Fulton points out, more interactions should include more feeling as well as thinking and learning components.

Online environments offer unprecedented opportunities to stimulate user engagement, but adoption of the mechanics to encourage greater engagement has been slow. Emotion and overall responsiveness are lacking from many online business environments. So it's no wonder that users have been disengaged. The good news is that there are numerous proven techniques from the gaming industry that everyone else can build on.



*The good news is that there are numerous proven techniques from the gaming industry that everyone else can build on.*

# *A game publisher's view of gamification*

## Bryan Neider of Electronic Arts describes how EA trains its own workforce.

*Interview conducted by Alan Morrison and Bo Parker*

**Bryan Neider**

Bryan Neider is senior vice president and chief operating officer of EA Labels, where he oversees global software development for EA.

***PwC: What are you seeing in the gaming business that's applicable to non-gaming businesses?***

**BN:** That's a great question. Gaming in general provides non-gaming businesses an opportunity to accelerate change or improve learning and knowledge sharing across their organizations. Whether or not companies are in the gaming business, they can use gaming techniques to improve business processes and do quite a bit that's comparable to what we've done.

Let me give you an example. Several years ago, we put together an exercise and a game called EA University for an internal group. It was meant to educate our creative and development talent on financial constraints and how to manage profit and loss on development projects.

Rather than go into a very dry explanation of "here's an income statement and here's a balance sheet," we actually used a game model to set up resource management, as well as time, budget, and talent constraints, and then have participants figure out how to optimize that mix to ship a quality game on time and on budget.

The cross-functional team and the creatives had to play that exercise as a game. The goal was to increase their awareness of both budget and resources and how they could influence the outcome, rather than it seeming like something that a corporate suit like me is telling them to do. They learn that they really have a lot more control over the variables of making a game than they realized. EA University educates them on that process.

It's a very fun exercise. We still do it today and have continued to update it for new variables as the businesses evolve. But it included everything from game pricing to retail distribution to digital distribution—they had to figure out all of that. And the payoff was that somebody would win the best model and idea. Because we make games, people here love to compete all the time.

So by having that compulsion and by having people present their ideas and then vote on the best one, they really got into it. That's a far more interesting way to teach finance and certainly helps us educate our work staff on a very important aspect of their business. Some of these producers and executives on the game team side are managing more than $100 million, and a few of them as much as $500 million.

***PwC: You mentioned the ability of developers to affect the outcome and see the results of their efforts directly. How does EA University reflect what specific developer teams confront in terms of project financial management challenges?***
**BN:** The variables of how you make a game vary widely. If you're working on a *Madden* football game, it's one thing. If you're working on a Maxis *Sims* game or a *Battlefield* first-person shooter game, it's another.

They are so different in design and creative elements that we can't and don't want to have a cookie cutter approach to how the teams should work together. The application of EA University isn't universal; it needs to be tailored. Our teams have personalities; they are very different, and they are motivated differently. We need to account for that and factor that into how we teach, learn, and share. As for most organizations, it is not a one size fits all.

***PwC: One of the fascinating things about gaming environments is how there's so much quick self-organization in multiplayer games; the teams just gel so quickly. There's a mission that's spelled out clearly, and each person takes a role and a lot of times the leadership differs. For example, somebody can be the leader this time and if there's a vacuum there, then the team realizes it and the new leader jumps into it. Is that kind of dynamic at work here, too?***
**BN:** Online gaming communities self-regulate pretty effectively. It's more difficult for what we call a newbie to get into a more hardcore game, because the social online protocol has been established. But they do self-regulate, and they do form around scripted tasks that they have to perform. For gamification—or the use of game design techniques—in businesses, it certainly suggests a way to set up a learning exercise that stresses cooperation and a goal orientation.

Sometimes we'll have people from our executive team run red team versus blue team. The two teams are pitted against one another to achieve the best outcome when tackling a particular market. By pitting two teams against each other in a game scenario, you actually get a more three-dimensional view of a business challenge, risk, or opportunity, and that view might be more informative in reaching the final recommendation. And you can do all that inside game design.

***PwC: It seems like a lot of the effectiveness might come from the transparency that must be evident in the game-oriented environment itself.***
**BN:** The end objectives are fairly clear and transparent, but the path to get there will be a little bit more opaque because that makes the journey inside the gaming experience more interesting.

Another factor is how you create the ability to collect and manage user feedback. We have what we call telemetry—real-time game data that tells us where people are hung up in part of the game where it's too hard, or maybe other areas where it's way too easy. Sometimes we modify the design to improve that experience.

In the same way, when using game design concepts inside a company, you'd want to know that people miss the point of what you're trying to achieve in that particular scenario inside the experience and why. Perhaps they get hung up in it and spend way too much time there. You would want to have some sort of feedback mechanism in the game design itself.

**Monitoring stats**

"For our online-only games, it's critical to monitor the stats that are run real-time 24/7."


That's a very important part of our online feedback loop. For our online-only games, it's critical to monitor the stats that are run real-time 24/7. We use that data to modify and improve the game experience and to make updates, code changes, and compulsion loop changes. That's absolutely an important part of a real-time online game.

***PwC: In spite of best efforts, a lot of games get launched that ultimately aren't successful. The recovery from that kind of failure and the willingness to incorporate the lessons learned as a part of overall development would seem to be important.***

**BN:** We do fairly extensive postmortems for successful or for less successful titles. And that is an absolutely critical process of developing and improving for the next iteration. Very deep debriefs. Sometimes we have peer reviews where people who weren't on the game team provide input.

With an online game, it's a little bit easier because it's alive and it's providing real-time feedback every minute of every day. So, as I mentioned earlier, you can track and find out—are people coming into the game and then dropping out? Are they playing the game for a while and dropping out at a particular point? Or are people not even clicking on and playing—is that a marketing issue or a branding issue? When it comes to live online games—social games, mobile games—we're getting that kind of feedback in real time.

We do use input from focus groups, in terms of game feedback and adjustment. The people who come to those sessions are usually skilled gamers who are a lot more critical on the mechanics that are important. But for some games that are broader or that have a more mass appeal, we want to bring in people who are not as familiar with gaming so we can understand the user interface and usability experience. Things that we in the gaming community think might be intuitive could be extremely confusing to a mass market consumer. In other businesses that are applying game concepts, usability and reducing barriers of engagement are absolutely critical. It can't be too geeky.

***PwC: What are the trends in the evolution of gaming?***

**BN:** Through the last decade, the rise of computing power on phones and tablets and the rise of social networking certainly have brought gaming as an entertainment form to audiences that did not experience it before.

You can assume that for roughly 400 million new smartphones every year, nearly everyone is going to buy at least one game and play a game. Consider also the nearly 1 billion people in social networking in North America, Europe, and Asia. A large amount of that audience is playing social games as well.

And so you have two ends of it. One is the desire to be networked with friends and family in playing games and sharing that experience. The other is the portability of games in the same way that TV or movie viewing has been time shifted. Smart devices allow location shifting from what used to be just the family room sitting in front of the TV or in the basement or den playing a computer game to now having that capability with them when they're waiting in line for something.

That shift changes the interface, the speed of the compulsion loops in the game, and the reward mechanisms, because it's not the same as sitting down with a 40-hour predesigned game experience. The device allows and people expect a faster payback. They don't require production values to be as high.

The funny thing is if you look at good game design sensibilities, a lot of the tablet designs are almost a carbon copy of the early designs on Atari and Nintendo. That learning is new for both developers and consumers, but in fact it's been around for the better part of 30 years. It's just now been rediscovered because you can do it on a phone and a tablet and provide far better graphics than we had back with early Nintendo and Atari.

Imagine the chase and capture or be captured kind of element of the game. You're seeing a lot of those core elements in tablet and smartphone designs—those core elements of how we get rewarded and our compulsion to avoid being captured and to find the loot and increase our score. But now we can provide a far richer environment with nearly the same compulsion loop. Imagine it's a formula for the game design: chase equals *x*, rewards equal *y*. You want the right kind of balance between reward and penalty for how you actually close out and go to the next level.

But because people today didn't play those games 30 years ago, it's all brand new to them. The fact is a lot of designers are dusting off old game designs because they were so good. But now we can provide a much richer and more inviting experience for consumers because the graphics weren't very good and the processing power was extremely limited.

***PwC: So a lot of the challenge is distributing this kind of environment where it hasn't been before. Not so much designing it from scratch, it's just repurposing it for all these different environments—including where it might be applicable inside a business, for example.***

**BN:** I'd agree. Keep in mind that today's workers are going to be accustomed to game mechanics. They will have played games. In a work environment in the right setting, playing games is not going to seem unusual or odd to them. It's going to be second nature to them. A game-oriented design allows a very good team building and educational experience. Companies can engage employees to tackle tough goals in a much more intuitive manner.

> *"Through the last decade, the rise of computing power on phones and tablets and the rise of social networking certainly have brought gaming as an entertainment form to audiences that did not experience it before."*

# *Improving the customer and employee experience with gaming technology*

## The best platforms and tools are already helping companies add game mechanics to their environments.

*By Dion Hinchcliffe and Steve Alter*

Gamification is a set of techniques that generally revolve around engaging and motivating individuals and groups to perform specific actions, but technology is a primary enabler. And although the technologies are in a nascent state, elements and functions for adding game mechanics to non-gaming contexts—including online business environments—are available now.

Incorporating gaming techniques into business processes or any other structured activity consists of several clear steps. For those familiar with software development or IT implementation, these steps will seem relatively straightforward despite being an amalgam of new technology, careful user experience design, and business process reengineering.

As it stands today, the process of gamification tends to fork early into two main approaches. The first applies elements of gameplay to existing enterprise applications or processes. The second conceives an entirely new experience from the ground up, intertwining game mechanics with the application itself. Both solutions produce useful results, but the second tends to produce more impactful outcomes. The first is the most extensively supported by commercial gamification vendors and may be the easier starting point. Either way, the motivational aspects remain the most important element for success.

### *The vendor landscape*

With M2 Research predicting the overall gamification market will grow from $100 million in 2011 to more than $2.8 billion by 2016, it's not a surprise to see vendors racing to get a slice of that pie. But what can those vendors actually do for you, and how can you tell if it's worth your investment?

Although enterprise adoption of gamification is still in its early days, the business of providing game-based design services is not; platform provider Bunchball was founded in 2005. Even more recently founded companies have garnered significant investment and, more importantly, attracted first-rate talent from game design companies such as Zynga and social platform providers such as Jive.

**Table 1: Example gamification vendors and boutiques**

Example vendors
Vendors in this grouping offer enterprise-level platforms that include a gamification engine, analytics capabilities, and a set of APIs for integration with enterprise applications.

| | |
|---|---|
| Badgeville | Bigdoor |
| Bunchball | Playgen |

Example boutiques
Game design and user experience experts have been involved before there was anything called *gamification* and are now offering consulting services.

| | |
|---|---|
| dopamine | Shuffle Brain |

That talent is the primary reason to hire a vendor, whether you're looking for an end-to-end platform or a standalone application. Effective game-based design experiences blend behavioral psychology, social networking, customer experience, game design, loyalty marketing, reputation management, business process, real-time analytics, and more—all wrapped up in technology that can integrate with multiple systems, is customizable, and can function at massive scale. This combination requires leadership that can bring together great individual talent and create a great cross-discipline and cross-functional team.

In the current landscape, only a few vendors provide end-to-end solutions that demand that breadth of talent. Most are specialists in a particular area, such as game design or social media marketing, while others consult to enable companies to leverage their own internal resources in building and deploying solutions. (See Table 1.)

"The problem is that a lot of businesses are not really thinking about the incentives and the motivational aspect behind why you would gamify anything," says Ari Lightman, director of Carnegie Mellon University's CIO Institute. "If you try to put game mechanics into a process without looking at the incentives and the motivational patterns around it, your effort is going to fail."

### *Business goals first, then technology*

Companies can apply gaming techniques to marketing campaigns, product development efforts, sales activities, or any other business or nonbusiness process. To provide the desired effect—and for gamification technologies to be useful and the outcomes achieved—the goals of the game elements being applied must be connected in some well-defined and meaningful way to the business activity. The key is to embed the gamification technology into the process of getting work done, and connect that to the desired business goals.

These goals generally fall into the following categories and provide the motivation for engagement:

- Improve engagement by customers, workers, and the marketplace
- Enable personal development and growth
- Encourage competition toward achieving business goals
- Foster collaboration for shared outcomes
- Improve productivity in core business activities

*"If you try to put game mechanics into a process without looking at the incentives and the motivational patterns around it, your effort is going to fail."*

—Ari Lightman, Carnegie Mellon University

## *The CMO's role in gamification*

Marketing departments have been among the earliest adopters of gamification in many major corporations, particularly for demand generation programs. These new investments are designed to deepen customer engagement and long-term customer loyalty by encouraging and rewarding more frequent interactions, the sharing of information, and brand advocacy.

Adoption is really just beginning, though. According to a recent CMO Council study, only 7 percent of brands currently offer social customer incentives and rewards, even though 46 percent of consumers expect them when connecting with brands online.* Clearly, companies are missing an opportunity to reward customers for engaging with their brands, which can create trust and loyalty while also encouraging positive sentiment and word of mouth.

Game-based design provides new methods for implementing such marketing initiatives. Game mechanics help move consumers along in the decision-making process by encouraging a specific outcome or choice, such as converting from free trials to purchase. Loyalty and customer retention efforts can also benefit from game mechanics that make the consumer feel valued.

Different incentives work best at different stages of the sales cycle. Understanding game design and mechanics is critical—CMOs can partner with the CIO or external consultants to ensure they are building in the right mechanics at the right time in the customer interaction to incent the behaviors they are trying to achieve.

Tracking behaviors and rewards also helps the marketing organization assess how individual customer relationships are progressing. Many customer relationship management (CRM) tools have incorporated consumer social activity, and game behavior can be tracked as well. When combined with traditional customer demographics and sales records, the result is a more holistic view of each customer and their relationship with the company.

***Game mechanics help move consumers along in the decision-making process by encouraging a specific outcome or choice, such as converting from free trials to purchase.***

* *Variance in the Social Brand Experience,* CMO Council, September 2011, http://www.cmocouncil.org/cat_details.php?fid=216, accessed December 3, 2012.

*Many executives and technology professionals are familiar with defining business requirements and then applying technology to them. However, gamification technology is relatively new, and it is worth taking a closer look at the common forms it can take.*

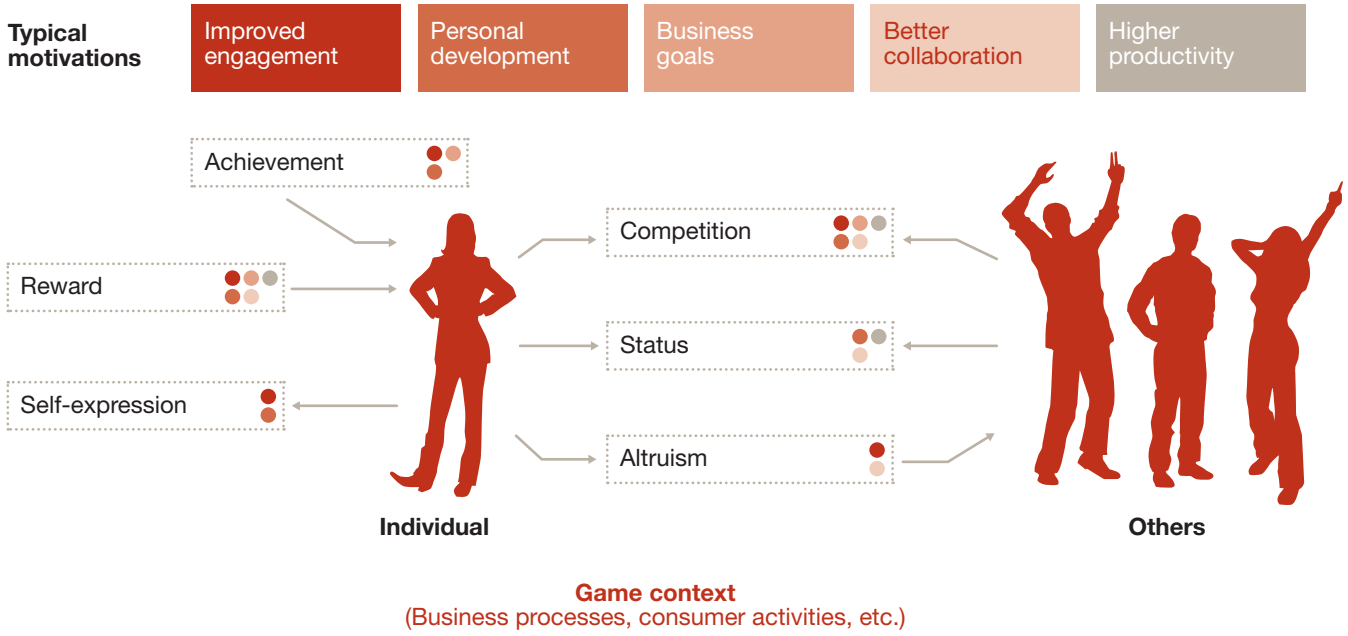
Enabling those outcomes through game-based design requires a working understanding of the palette of technologies available. Existing platforms, applications, and enterprise architecture standards of the local environment will determine the technologies suitable for most organizations. However, some organizations might blaze their own trails in determining how to incorporate gaming technology into an effective business solution.

In the various commercial offerings of technologies, game mechanics are relatively easy to separate from business context. In addition, the separation of applications and technology infrastructure in many organizations means that game-based design techniques can be readily inserted into most existing business processes and applications.

A typical example of connecting the pieces is the following: ABC Corporation has an urgent need to improve median sales of the organization. It determines that a sales leaderboard would promote healthy competition, while informing and encouraging the sales staff of the exact state of their efforts compared to others. The leaderboard technology, whether it's virtual, a display in the sales office, or a mobile application, is connected to the customer relationship management (CRM) system via a real-time data feed. A reporting system then allows sales executives to compare the results to previous quarters, and the system issues appropriate rewards to the sales staff—rewards that are likely predefined to encourage competition.

Many executives and technology professionals are familiar with defining business requirements and then applying technology to them. However, gamification technology is relatively new, and it is worth taking a closer look at the common forms it can take.

**Figure 1: Connecting game objectives to business goals**




As Figure 1 illustrates, game-based design technologies can enable the following behavioral drivers, adapted to specific audiences or scenarios:

- **Reward:** Rewards are discrete benefits to a participant in the gaming environment. Rewards usually are connected to the goals of the game and can be virtual or real. Participants get to keep the rewards for achieving an objective and usually cannot lose them once attained. Rewards typically have some intrinsically useful value that participants can take advantage of after receipt.
- **Status:** Status can be a way to motivate game participants who want to improve their reputations. Generally, status is most effective in social or collaborative games, where other participants can perceive mutual status. Status invests people in the process of participation and bestows benefits on them for staying involved and/or contributing value. Status can also be used as the objectives to unlock rewards or achievements. Status is typically earned through work; it can also be lost through inactivity or lack of a desired behavior.

- **Achievement:** Achievements are milestones a participant accrues by meeting objectives or attaining goals. These milestones demonstrate progress, guide desired behavior, and psychologically reinforce involvement. They are often tracked in a participant's user profile through points, levels, badges, virtual goods, and other marks of accomplishment. Achievements are usually not lost once gained. Virtual badges, for example, typically consist of a visual widget that symbolizes a particular goal has been met. A good example is the widely used Nike+ online service that tracks exercise for its users and issues "trophies" to them when they have accomplished an objective, such as running a certain distance or keeping a regular schedule.

- **Self-expression:** Looking at participants as more than just cogs in a gaming environment is often required to sustain long-term involvement. It can also be essential for encouraging activity that has meaningful and useful outcomes in terms of the contributions to the gaming activity itself. Using self-expression as a reward—such as allowing participants to create their own names, badges, or titles—is a key gaming technique.

- **Competition:** All humans love challenges, yet many people are often the most motivated when they compete with each other. Gaming environments that pit participants against each other using leaderboards, status, achievements, and other techniques can help increase both initial participation and sustained use longer term. The outcomes of participation can be winner-take-all or a graduated series of benefits, depending on which is most useful and effective in the game context.

- **Altruism:** Some game situations benefit from having participants reward each other. In addition, gaming activity might need to have real-world effects, otherwise participants might not feel the rewards are meaningful. Game outcomes certainly can be tied to individual benefits that are tangible, instead of virtual, but sometimes a game situation benefits from a perceived contribution to something larger than itself. For example, game participants could be given the option to contribute to charities and other beneficial gifting activities. Giving virtual or real goods can also be used to draw in participants initially or re-involve participants who have become disengaged.

## *Integration point: User identity*

User identity is a primary point of integration between technology and existing enterprise applications and IT infrastructure. Today's user directories generally are not game-ready. Gamification tools and platforms typically augment user directories, so user information related to the gaming activity is tracked, stored, and made available to gamified applications.

**Figure 2: Gamification technologies and how they are delivered**

| Visual integration | Social integration | API integration | Standalone solution |
|---|---|---|---|
| JavaScript | App connectors | REST API | App wizards |
| HTML widgets | OpenSocial | JavaScript API | Code generators |
| Mobile SDK | Feeds | Flash API | Frameworks & SDKs |
| App connectors | Custom development | Mobile SDK | Vertical apps |
| Custom development | | Database integration | Open source projects |

### *System integration possibilities for gamification contexts*

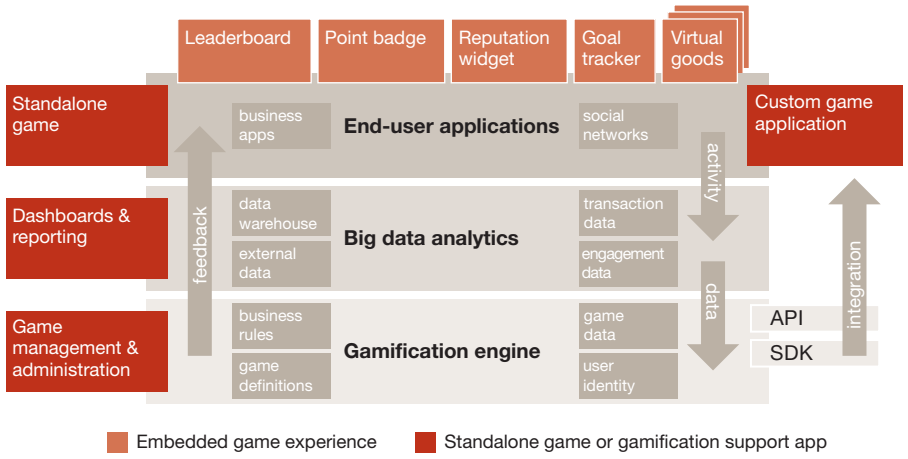
Today's vendors use a number of methods to add game elements to a user experience. Perhaps the most significant distinction among vendors is whether they offer a self-contained solution or add gaming technology to existing software applications.

Looking at the focus and capabilities of vendors can reveal the different ways that technologies can be applied. These possibilities fall into several categories:

- **Visual experience:** Many game-based design technologies integrate primarily at the user experience level and provide a set of easily installable and configurable modules, often called widgets, which can deliver leaderboards, activity streams, and achievement showcases into existing or new user interfaces. These visual components—typically the simplest form of game-based design—require integration only with existing user identities.
- **Social environment:** Some technologies work in conjunction with consumer and enterprise social networks to deliver the gaming experience. These technologies rely on the user profile to keep and display game rewards. Badgeville is an example of a gamification vendor that provides off-the-shelf integration with common enterprise social networks.
- **API-level integration:** Often, the user experience already exists but game mechanics are missing to establish and track user identity, gaming rewards, notifications, and to set rules. A number of vendors, including Bunchball, provide a working gamification platform that can be integrated into enterprise applications.
- **Standalone solution:** Some solutions are completely self-contained and require no integration with existing applications or the design of custom user interfaces. These solutions are typically developed for specific industries or special-purpose needs.

Vendors span the spectrum, offering one or more ways of delivering technology to those implementing game-based solutions in their business activities. The matrix in Figure 2 summarizes the main approaches and solutions.

**Figure 3: A notional enterprise gamification stack**




### *The enterprise context and game design*

While gamification should align with business objectives and support a particular business process, the effort must also attempt to get inside the participants' heads. This approach usually starts with a psychological hypothesis of user engagement. The hypothesis consists of conjectures about how best to tap into the motivations, interests, and reward centers of the users. The initial hypothesis is periodically validated and adjusted to maximize the outcomes as the game-based design solution is monitored and refined.

To enable and support this hypothesis, an organization's digital user experiences (typically enterprise applications) can be designed with a special engagement layer, within which game-based design technologies are situated. In this approach, the technologies are incorporated into the IT systems of a company as shown in Figure 3.

One of the more delicate aspects of game-based design is the relationship among the user experience, the gaming technology, and the business process. While some vendors provide a default user interface, such as a leaderboard or a reputation score wired into an existing social network, many leave the exercise up to the implementer, assuming that it must be situated appropriately for the local environment by those who know it best. Thus it's often up to IT organizations to take the selected technology, redesign—or at least instrument—an existing business process, and perform the integration across the various systems involved.

From a pure IT perspective, gamification is a systems integration effort, an application development effort, and an enterprise architecture exercise. How can an enterprise realize game-based design in the full context of a typical organization's technology landscape?

## *Case study*

The USA Network used Bunchball products to add game features to its website for *Psych*, a popular television show. From the outset, site visitors surged to 16 million, up from 9 million the season before. After the application of game mechanics and dynamics, the average visitor used the site four to five times per month, compared with twice a month before game features were added. Visitors on average remained on the site for 22 minutes per visit, compared to 14 minutes previously.

*While gamification should align with business objectives and support a particular business process, the effort must also attempt to get inside the participants' heads.*

First and foremost, gamification is about situating, usually through lightweight systems integration, gaming technologies into an enterprise's digital workflows. Specifically, these systems include primary and secondary IT systems, such as systems of record (CRM, finance, human resources, and other line of business applications) and systems of engagement (communication and collaboration systems, including content management, workflow, and social networks).

The inclusion of game mechanics and game dynamics in business applications will vary depending on the technologies selected and the business requirements. However, the resulting gamified solution typically delivers the following capabilities in some formal or informal way:

- **Feedback:** Provides visual, social, and psychological feedback mechanisms inside existing digital user experiences to encourage sought-after behavior by end users. This feedback typically manifests itself through the gaming techniques described in Figure 3, such as points, leaderboards, virtual goods, and so forth. This can be an entire self-contained business "game," a workflow or business process with gaming feedback, or a user profile that collects rewards based on different activity across systems that the business finds valuable.

- **Analytics:** Connects the gamification feedback mechanisms to the relevant big data analytics sources that measure and depict progress against desired business outcomes. Such data sources are typically the underlying databases of the enterprise applications being gamified, providing the measures of performance and other business metrics required to guide the behavior of participants.

- **Business intelligence:** Supplies useful and relevant business intelligence, usually in near real time, on user behavior (via dashboards, reports, and so forth) that allows the game architects and business stakeholders to monitor the effectiveness of the game design and the progress against key performance indicators (KPIs).

- **Management and administration tools:** Consists of a set of management and administration tools to adjust performance targets, gaming objectives, business rules, and other in-game parameters. End-user features are sometimes available to adjust either the run-time hypothesis or the game design, as needed, although this capability often only exists in code.

- **Ready integration:** Offers a simple, easy-to-use set of lightweight technology components that allow ready integration into existing enterprise applications (via badges, widgets, web parts, and so forth). Gamification vendors often compete on how easy it is to incorporate their technologies into existing applications, and many of the leading offerings make it easy to update web applications with game-inspired features.

- **APIs:** Provides a more formal and sophisticated set of structured application programming interfaces (APIs) that allows deeper integration of the gamification platform into line of business systems. While lightweight integration is useful for basic gamification, getting to higher-impact results can require deeper integration of the business process with gaming technology. Some gamification software development kits (SDKs) come with advanced APIs that allow their full feature set to be incorporated into business applications that need the detailed control over or sophisticated capabilities of a full gamification platform.

- **Underlying platform:** Consists of the underlying gamification platform itself, which provides various capabilities to the enterprise applications that need it. The platform includes the user experience (both individual parts, such as badges, as well as default user interfaces), robust systems integration features, a gamification engine, a reporting system, administration tools, programming language libraries, and so on.

This list of capabilities provides a sense of the entire gamification stack—from the game experiences themselves to the underlying mechanisms that supply the game with business-relevant data and allow monitoring and control over the process.

### *Conclusion: Start early and iterate often*

However it is applied, game-based design is a deft combination of three key elements: people, business, and the technology. Without a strong appreciation of all three, organizations can be challenged to hit the mark and may be perceived as overly cynical or naive in the way they apply gamification to their work. Technology is only one leg of this tripod.

The good news is that a growing body of evidence shows that businesses can achieve results by incorporating gaming techniques into some business processes. As with any IT effort, the end result of applying gamification technologies should be measureable achievement of business goals. A lot of trial and error is required to find the right balance between game design and features that effectively gamify aspects of work. Enterprises that can readily mix capable user experience design, psychology, social dynamics, and enterprise architecture will reap the most rewards.

As for the future of this approach, the real question is not gaming technology itself, which is here to stay, but whether enterprises can sustain gaming approaches, which tend to be highly involved and engaging, in a world where attention is increasingly fragmented. In addition, gamification is an approach that may have the most relevance and value between the time a user is getting to know a process and when that user is proficient and no longer needs to be guided.

As Dawn Wolfe, senior digital marketing manager at Autodesk, says, "The simplest game mechanics work with a novice, but the same techniques wouldn't motivate an expert user, and we have a lot of them. There's something altogether different that we need to be doing with process. Your feedback mechanism has to change. It cannot stay the same throughout that journey, and the tactics that you take and the way that you engage must change based on their needs."

In this respect, motivation-centered design is a journey more than a destination, and while the technology will become much more systematized and ambient in enterprise applications, executives must be careful not to forget the human element and how people adapt to their environment.

Businesses that are open to the possibilities of this more psychologically oriented approach to design can see the way forward to unlocking a new level of engagement and productivity.

*"The simplest game mechanics work with a novice, but the same techniques wouldn't motivate an expert user, and we have a lot of them. There's something altogether different that we need to be doing with process. Your feedback mechanism has to change. It cannot stay the same throughout that journey, and the tactics that you take and the way that you engage must change based on their needs."*

—Dawn Wolfe, Autodesk

# Elements of effective game-based emotion design

## Bill Fulton of Ronin User Experience describes his empirical yet emotional approach to game design and how it relates to customer engagement.

*Interview conducted by Alan Morrison and Galen Gruman*

**Bill Fulton**

Bill Fulton is the founder of Ronin User Experience. He started and led Microsoft Game Studio's user research group.

***PwC: When you look at how games are being designed and how game design approaches could be improved, what shortfalls are you seeing?***

**BF:** The problem is that the people who are most competent and best situated to design and develop games—and this is true of all kinds of designs, not just game designs—are the least qualified to remember what it's like not to know what they know. The curse of knowledge is that you know so much you can't remember what it's like to be ignorant of the topic.

***PwC: So what's an antidote to the curse of knowledge?***

**BF:** One antidote to the curse of knowledge is to do empirical testing of the intended target market. It's not good enough to let people who understand linear algebra and programming make Excel for Microsoft. Excel is a product for people who don't know linear algebra, don't understand matrices, and aren't programmers. And yet they need to be able to use that product to crunch numbers for themselves.

That gap in knowledge leads to massive frustration on the part of end users who often simply can't understand the instructions they've been given. So the antidote is to constantly check yourself and make the experts acknowledge that their target is not as educated as they are.

You do a test and see where things break down, where people don't understand instructions, where they don't understand feedback, where symbols don't mean the same thing, and where icons don't mean the same thing.

***PwC: How do you engage the right people with what you've just empirically designed?***

**BF:** One of the limitations that business puts on itself is that it cares only about a few things, and not the whole thing. For instance, profit maximization is obviously a goal, but business generally takes a very narrow approach to how to accomplish that. A squishy psychologist like me would say that happy workers are better workers, but it's very hard to quantify how that's going to maximize profit.

But it doesn't make it not true. If companies fail to measure that happiness and work on it, then they'll maximize profit in the short run, but they'll wonder why they're not getting more out of it. Over the long term, they will have unhappy workers, and their turnover will be terrible.

Game designers try to engage the whole person and not just a narrow slice of a person. They look at the range of human experience, which can be broken down into three components: feeling, doing, and thinking.

In the same way that every color we see can be broken down to red, green, and blue components, every human experience can be broken down into those three experience components. One of the things that game designers do to maximize engagement is try to use all three of those components as opposed to just one or two.

***PwC: And businesses, by contrast, stay focused on just one thing?***

**BF:** In most places in the business world, the focus is solely on behavior and a little bit on thinking, and almost nothing on emotion. That's essentially like trying to paint a picture using just yellow. You could, but it's not going to be as good a picture, or it's going to take a lot more skill to make a just-yellow picture interesting compared to one that has a full range of color.

If game designers are going to pull a person away from every other voluntary social activity or hobby or pastime, they're going to have to engage that person at a very deep level in every possible way they can. And so they try to engage thinking, doing, and feeling at the same time.

***PwC: If businesses haven't really thought about design in terms of engaging customers from an emotional standpoint, how do they start?***

**BF:** First of all, start with it as a goal—not a lip service goal, but a goal. The goal is this: People should love our product.

Most businesses want people to see the value or benefit of their product, and not consider price. They never come to the conclusion that it would be better if people loved their products.

It's much harder to pull away customers who love your stuff. But that love is not an explicit goal and therefore no one ever works toward that. Even if you make it an explicit goal, then you're at the point of asking, "How do we do that?" Well, that's where you start to get into some other very squishy things.

User experience designers ask themselves, what would cause someone to love this? If every car came in matte black, there would be a lot fewer people who love cars. The designers know that color and shape, things completely separate from a car's usefulness as transportation, play a large role in whether one loves a car.

To get a healthy chunk of sales and a lot of customer loyalty, car designers know they need to inspire love. Now this is true in some cases and less true in others. With a sports car, it's absolutely true. Perhaps with a very sensible four-door sedan, it's less true.

***PwC: Should every situation be a fully engaged situation?***

**BF:** Every situation certainly doesn't have to be. If you're a key designer, investing all the effort you can into making sure your customers love their house keys, for example, is just a waste of effort. But if there's not a reasonable amount of liking even mundane designs, then you're in trouble.

*"Emoticons have nothing to do with the strict requirements of communication, but they have everything to do with a fuller, richer, human communication."*

Let's take a look at instant messaging [IM]. That's just a communication tool. But people developed emoticons in e-mail, and then IM turned them into even more interesting-looking things. They have more funny pictures of emoticons in IM. It sometimes seems like over half of the development effort is spent making emoticons look good, animating them, and so on. Emoticons have nothing to do with the strict requirements of communication, but they have everything to do with a fuller, richer, human communication.

And people grow attached to emoticons. They dislike it when the emoticon they want to pull out doesn't look as good in this IM client or that IM client. Their feeling about emoticons becomes a reason not to switch IM clients.

***PwC: Where do businesses choose to apply this emotional approach besides products and services? Inside the enterprise there are training activities, for example. Should there be an emotional component to the training that folks have to do?***

**BF:** Absolutely. The problem is that there is an emotional component. If you don't design it, then you're not controlling the emotional component. So in other words, training is a very, very emotionally fraught scenario.

For one thing, if you're a participant, the need for training means you're ignorant at something or else they wouldn't send you to training. For another, there's a reason you're there, whether it's fear of losing your job or motivation to try to move up or improve your skill set. And then there's the post-training aspect of it. Did the training actually help me? Did I use my time well? A whole slew of emotions occur in something like training.

And if an instructional designer doesn't try to shape that into something that is a positive and good experience, then people will wish they hadn't taken the training. They'll bad-mouth it, perhaps, or they won't take full advantage of it, because they're not prepared emotionally to maximize the value of that training.

***PwC: Can you give us an example of a service where the emotional component has been controlled effectively?***

**BF:** Sure. Let's take the airlines Virgin America, which shows a video of the announcement for using seatbelts and other safety measures. The company uses a little humor in the video, and it uses some very pleasing graphics. Virgin America spared passengers the attempt by flight attendants to be friendly and funny. Those attendants have given that speech 1,000 times and can't imagine anyone doesn't already know it, and so they have to become these great actors or desperately look for some way to keep it fresh. Instead, Virgin made one really good short video, which is actually amusing enough that I still watch it more than I ever watched the other flight attendants present the information manually.

Virgin thought about the emotional experience at the beginning of a flight, where the first major thing travelers think is, "Great, we have to try to act like we're paying attention, but we're not." Virgin flipped it around and with just a little bit of humor and a little bit of investment, changed it to a minor positive for the experience of flying on Virgin America.

***PwC: You've published before on incorporating social functionality into games. You've seen the evolution of so-called gamification as it relates to social platforms. What are you seeing right now? What's happening in that space that our readers should be aware of?***
**BF:** I'd say that the social world is still underappreciated and misunderstood. We are slowly fumbling toward better social software, and Facebook is a step. It is one of many possible steps. Despite its clumsiness, I'd argue it's a huge social benefit to people.

The great frontier that people are fumbling their way toward is helping people socialize with others who like the same things they already like. We see this on Twitter: you can follow comedians or famous people or whatever and can already share a like of them. You can't quite socialize with other people as much, but there is an aggregation of people around common interests. Pinterest is another one that's beginning to aggregate people around common interests and let you socialize with people who already like what you like and love what you love.

One of the things I love about games is that you already share a love of a particular game and then you have the opportunity to socialize with people who also love that thing.

***PwC: It seems that some of the shallower approaches to gamification could seem like manipulation. What about the negative feelings that might result from just a partial solution to the problem, say in a social context?***
**BF:** Yes, poorly designed social is very dangerous. Poorly designed emotion in general is very dangerous. Humans are very good at detecting disingenuousness. Clumsy emotion design will feel terrible. It feels worse than doing nothing. But it doesn't have to be bad or heavy handed. You can find designers who can think about that aspect of design.

I would very, very carefully test game mechanics applied to business processes before you release them. Make sure that the goals you had for the emotions you're trying to achieve are in fact being achieved. But that's what you do for everything. If you want to make a car that can go 40 miles per gallon, you must test it to see if it gets there. And if it doesn't, you must revise it until it does.

Designing for emotion is definitely in its infancy. I'd say a great number of companies don't even have it as a goal yet.

*"I'd say that the social world is still underappreciated and misunderstood. We are slowly fumbling toward better social software, and Facebook is a step. It is one of many possible steps. Despite its clumsiness, I'd argue it's a huge social benefit to people."*

# Getting past the hype of gamification

## Game mechanics can help CIOs increase employee and customer engagement with new systems.

*By Bud Mathaisel and Galen Gruman*

Enterprise IT agendas are already overloaded with mobility, social media, cloud, big data analytics, security, and other major initiatives, so it is understandable if CIOs are put off by gamification—the use of game design techniques in online business environments to engage and motivate the workforce and inspire customers. But they ought to consider three things before they ignore it.

First, most major system rollouts do not gain the user uptake that CIOs would hope. A common reason for low usage is a lack of employee engagement, a problem explored in the article, "The game-based redesign of mainstream business," on page 06. By using appropriate game mechanics in online business environments—including enterprise resource planning (ERP) and other enterprise systems—you can stimulate the kind of intrinsic motivation that leads to higher employee and customer engagement. No CIO should ignore that.

Second, there's the engagement level of the IT staff itself. There's no evidence that IT employees are any more engaged than the broader workforce. No CIO should ignore this, either.

Finally, who better to lead game-based design efforts than the CIO? The CIO is the enterprise expert on structured data and all the unstructured data from employee collaboration and interaction. The two types of data can help enterprises understand their engagement problem, choose the appropriate game mechanics to create more engagement, and monitor progress.

*"CIOs are being called into these conversations much more. They understand data at a greater level than any other executive within the organization."*

—Ari Lightman, Carnegie Mellon University

"CIOs are being called into these conversations much more. They understand data at a greater level than any other executive within the organization," says Ari Lightman of Carnegie Mellon University's CIO Institute. "They can help design mechanisms, whether it's gaming or communities of engagement, to identify the data that's required to put into the systems so the systems are working the way they should. CIOs are the ones who understand the data."

### *The case for game mechanics in IT projects*

The failure rate continues to be fairly high for IT deployments—often due to low use or indifference, not poor quality technology. During the past five years, $1 trillion of software was sold, but the uptake by users is estimated to have been 50 percent, and lower in some categories, including internal social media networks.

IT deployments are often crammed down the throats of users, or at least experienced that way. Gamification could be the catalyst to turn around this situation by helping IT initiatives get pulled by the users, not pushed on them. Gamification is something CIOs can bring to the table when the topic is change management. Gamification can harness the psychology of human behavior to make the difference between a failed deployment and one embraced as enthusiastically as many games.

CIOs have always been urged to consider psychology in the design and deployment of applications and infrastructure. Game design techniques suggest a structured way to do this with proven mechanics. Gamification becomes an approach to apply psychology to engage users and leverage their enthusiasm toward what may appear to them as a personal goal, but in reality is a mutual goal of the individual and the business.

The user's sense of progress (goal gradients), the inherent or psychological rewards along the way, and the instinctual cooperation and competition of games produce some passion that can make the difference. Perhaps enhanced collaboration is itself a goal, as in R&D and data analytics; game-based design can be the means to achieve it.

Game-based design approaches also align with the changes in power dynamics and in the nature of work, which come with the changing demographics and work styles of younger employees, including mobility, bring your own device (BYOD), and consumerization of IT.

### Active engagement modeling

Game-based design calls for some technology ingredients, but it primarily requires human ingredients since human behavior is the key differential. PwC refers to this approach as *active engagement modeling* (AEM). AEM is new ground for many CIOs, especially those with technical-track careers and those unfamiliar with how to apply psychology to human motivation. If mastered, AEM is a worthwhile skill that can add to the CIO's personal capabilities and is important to leadership anyway. It is about getting inside the heads of users or customers to understand what motivates them and keeps them motivated.

AEM methodology involves seven steps, and it iterates these steps to move from one mastery level to another. The steps derive from the thinking, feeling, and learning principles described earlier. Using the Autodesk example discussed in the article, "The game-based redesign of mainstream business," on page 06, the seven steps consist of the following:

1. **Establishing the goal and purpose of the game-based design initiative:** For Autodesk, one goal was to improve the awareness and adoption of new software modules that enhance a tool's use, such as the tool for scanning blueprints as a baseline.

2. **Confirming the specific target audience:** For Autodesk, the target audience would be current and prospective users of the other Autodesk tools, introducing them to the new tools.

3. **Establishing specific targets:** Autodesk wanted to turn more visits to its website into purchases of the new tool.

4. **Thinking, feeling, learning:** Autodesk considered how architects and engineers think as they design or remodel infrastructure, what services they need in a specific architecture or engineering project, and how they could use the Autodesk products together. Much of this information is gleaned via marketing analytics and would need to be done well regardless of the use of game-based design techniques.

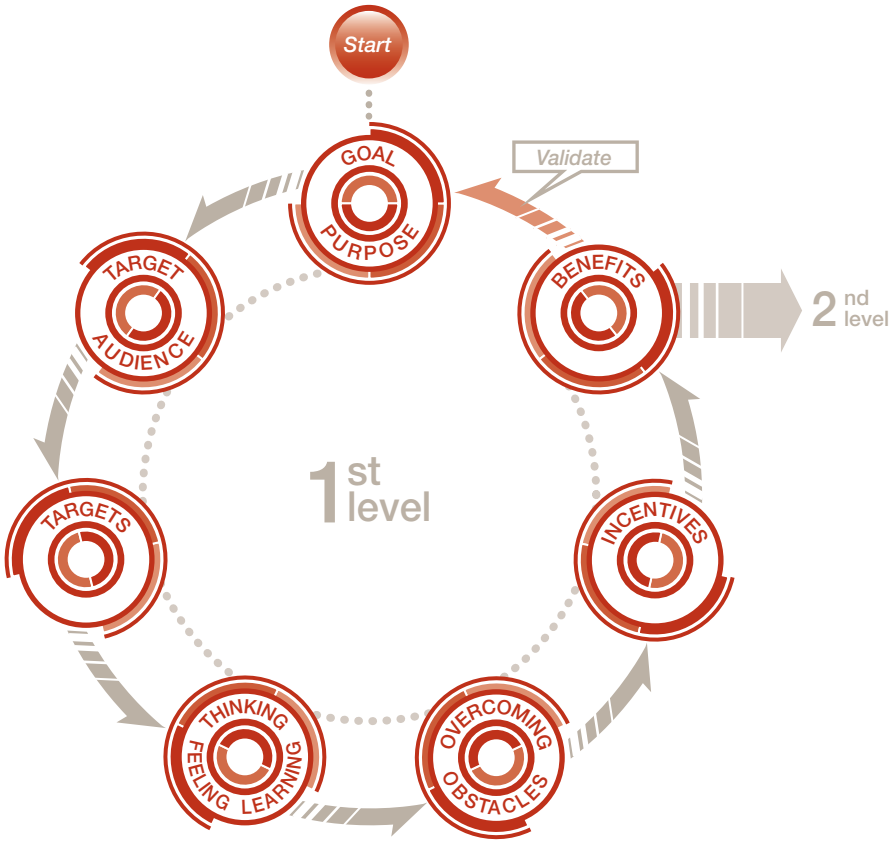
5. **Overcoming obstacles:** For Autodesk, one obstacle is to replace the current process, which is familiar to a product's users, with other tools they might use or manual processes (sending in surveyors to remap the current infrastructure).

6. **Understanding and establishing incentives:** Autodesk wanted potential customers to understand the efficiency and accuracy possible with the new tool.

7. **Benefits:** For Autodesk, measuring things that matter is a central concern, such as time, accuracy, and the professional application of disciplines.

***The failure rate continues to be fairly high for IT deployments—often due to low use or indifference, not poor quality technology.***

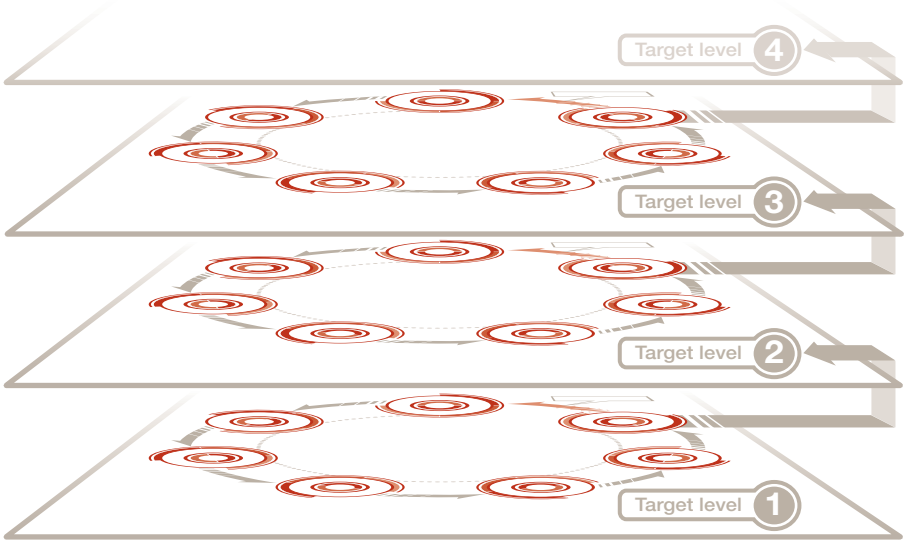
**Figure 1: Seven steps to active engagement modeling**




These seven steps constitute the first phase of AEM. (See Figure 1.) The details associated with each step will be specific to the situation. Determining these details is the essence of making AEM work, and represents most of the work required for game-based design (game tools themselves are a relatively small part). Within this first phase, a feedback loop helps validate that the goal or purpose is being achieved, and may lead to revisions.

After the benefits step, a branch to a second phase also occurs. The next phase is to help users move to the next level of mastery, the next *target gradient*. Target gradients are the stepwise incentives for the gaming—the levels of progress and linked rewards for achievement. (See Figure 2.)

**Figure 2: Leveling up in active engagement modeling**




## AEM in practice

A first phase could be mastery of the basics. The second and subsequent phases would build on that basic mastery to higher levels of proficiency. Determining how many levels of mastery and what should be in each is the essence of AEM work.

As natural gamers, humans easily lose interest in repeating the same steps and achieving the same old goals. If the enterprise wants to keep users and customers engaged, then AEM requires the up-front design of levels of recognition and progress. Software game designers know this fundamental principle and reflect it in their game designs, and they know when to replace a game with a new one and new challenges. These levels must be meaningful to the audience and fit the purpose.

Some of these levels are reflected in intangible rewards, such as merit badges (in Cub Scouts or Boy Scouts, for example), and some of these can be reflected in tangible rewards (gift cards, time off, and so on). Designing these progress levels is complex. The experience of many who have applied game-based design is that intangible rewards are sufficient and more desirable in most situations. CIOs should work closely with HR to ensure the best match of goal gradients and rewards to the enterprise's overall perspective of human capital management.

What motivates one audience may not work for another. What keeps an audience engaged depends on the character of the individuals and the culture of the organization. The challenge of motivating human behaviors requires different techniques and thoughtful application; thus, AEM is not about making the experience more fun for the user.

*"It's all about driving a certain kind of activity or behavior or participation [such as] a great IT security competition where people can show off how much they know, get a sense of accomplishment and satisfaction, and win a competition."*

— Rajat Paharia, Bunchball

One design factor is that AEM must be considered in context, not as just a sideshow. The CIO must take a holistic approach in which the game-based design is aligned with other enterprise business factors, such as organization design, business culture, informal and formal reward and recognition systems, and what else is going on in the enterprise. Since human factors are the essence of game-based design, the crowdsourcing of ideas and the testing of pilots is invaluable. It is better to have the direct feedback of potential users than to try to guess at their thinking.

### *Gamification opportunities for the CIO*

What is game-based design to the CIO? It is four elements, all intersecting for alignment:

- **AEM:** Human behavior and the mission aspects of engagement, progress, collaboration, and competition
- **Business context:** The business goals, current business processes, and ecosystems
- **IT tools:** IT architecture, measurement systems, and analytics
- **Game elements:** The total experience of gaming, including the style and format of the user interface and the forms of incentives and rewards that are built into the application

The word *design* is used as if it was an exact and analytic methodology, but in the game-based design domain, the CIO is dealing with human factors that may be unpredictable and not subject to design disciplines. The CIO can use help from those who have a deep understanding of those human factors. The CIO should establish consensus on game-based design by collaborating with key groups such as HR, marketing, and sales. The consensus should include the goals, the opportunity areas (pilots), the participants (inside or outside the enterprise), and the master plan that has budgets and timelines. Some possible opportunities for applying game-based design are described in the following paragraphs.

Airline flight simulators use gaming techniques to help pilots avoid and mitigate the risks of flying. CIOs can employ similar business cockpit simulations for new applications and infrastructure, new IT security approaches, data analytics, human capital management, use of resources such as call centers, or improving collaboration. In each, the human element is the key to success or failure.

### IT security

Security is viewed by many as a type of game—some would say a war game—one of successive one-upmanship. Humans are natural gamers, and this instinctual drive is often the most powerful of motivators, so why not use this power to demonstrate the best and worst practices that lead to security compromises?

Rajat Paharia, founder of Bunchball, described security as a game-based design idea at a Knowledge@Wharton conference: "It's all about driving a certain kind of activity or behavior or participation [such as] a great IT security competition where people can show off how much they know, get a sense of accomplishment and satisfaction, and win a competition."

It is human behavior that leads to security breaches, often unintentional, so making security a personal game, with a goal of reducing compromises, could be a valuable application of game-based design. During wartime in the pre-digital era, motivational posters—"loose lips sink ships"—were used to challenge individual awareness and action.

Gamification has been applied to hack-a-thons for testing the integrity of new software. In some hack-a-thons, the tangible reward for uncovering compromises in the software is the opportunity to win a tablet device, for example.

*CIOs who have been anxious to prove their value to the business would benefit from a closer linkage with the chief marketing officer and the chief sales officer on game-based design.*

### Data analytics

In data analytics, engaging people, perhaps competitively, to find patterns or hidden objects may yield large rewards to the enterprise as well as encourage and reward those who are the Sherlock Holmes equivalents. Google's image labeler—applying natural languages to image searches—is better than using an algorithm because it relies on humans to identify the image.

Another company, Tagasauris, applies crowdsourcing and game-based design disciplines to data curation and tagging, annotations, labeling, and translation for images.

### Marketing and sales

Not surprisingly, marketing and sales organizations have been early adopters of game-based design techniques. Perhaps the CIO can learn from their progress. More importantly, CIO leadership in game-based design is a productive way to establish a relationship with the chief marketing officer and the chief sales officer. CIOs who have been anxious to prove their value to the business would benefit from a closer linkage with them on game-based design.

### Optimization of assets and resources

Another game-based design opportunity is in optimizing the use of assets and critical resources such as software licenses, call centers, and energy. SAP has employed game-based design in its SAP SuccessFactors initiative, which encourages people to become certified experts. Through game-based design approaches, CIOs can increase the number of certified users for software deployments. Building game-based design into software training would preserve valuable licenses by granting license-to-use only to the certified experts. The important additional benefit of game-based design to certification is that it can help ensure higher levels of competence and collaboration.

JouleBug, a company that uses mobile apps, big data, and game mechanics to promote energy conservation, helps people and organizations save money by monitoring individual behavior on energy consumption. The company also can cover other "green" initiatives such as waste disposal. It provides detailed information on the habits of individuals, giving insight to businesses on the collective behavior of individuals and thus how they can optimize their sustainability programs. With the JouleBug app, individuals can use this information to compete with family, friends, and co-workers. Users are able to integrate their utility bills and other personal data with the application, and they can track habits such as carpooling or using their own mug at the coffee shop. IT is one of the largest consumers of energy in many enterprises, and using this capability, the CIO can take leadership on green.

### Human capital management

Human capital management, which is intrinsically about human behavior, is another natural opportunity for game-based design. Reengineering the mental models encapsulated in game-based design can assist the enterprise in its goals for ethics and regulatory compliance (the Foreign Corrupt Practices Act, bias, or inappropriate behavior in the workplace, for example), leadership development, and health (lifestyle, diet).

## *Game-based design transformation for the CIO and IT team*

While digital gaming itself has been around for a long time, it is no longer limited to just standalone applications outside the enterprise. Gamification is being integrated into enterprise software and linked to an array of other applications via application programming interfaces (APIs). IT organizations will require new skills, a new methodology (AEM), and some new technologies and architecture.

### Skills

The critical new skills needed in IT include capabilities for the following:

- Psychology (motivation, achievement, collaboration, and competition)
- Related goals and incentive systems such as:
  - Progress along goal gradients
  - Tangible (monetary or time off) or intangible (recognition, titles, or badges) rewards
- Meaningful measurement and tracking
- Analytics for real-time assessment of progress toward the goal, failures, repeat attempts, and so on
- Crowdsourcing of ideas and approaches
- Game theory and design—expertise in game theory and practical applications

Talent in these areas may already reside in the IT organization or elsewhere in the enterprise. If not, third-party sources, such as those listed elsewhere in this issue of the *Technology Forecast*, can help an organization to get started. Experienced third-party sources can jump-start game-based design, but it is crucial that knowledge transfer occurs between those with expertise in these areas and those inside IT who are responsible for software development and infrastructure deployment.

### Engagement manager

In PwC's research, several seasoned game-based design sources cited the need for an engagement manager within IT. The engagement manager is a permanent program manager who helps create the master plan for game-based design and adjusts that plan as needed to achieve success. Choosing a qualified engagement manager at the outset will be an early example of the CIO commitment to game-based design, and, of course, a critical factor in the success of the program. The engagement manager should be a dynamic, progressive talent who knows human behavior and motivation, and would be full time in this capacity.

***Experienced third-party sources can jump-start game-based design, but it is crucial that knowledge transfer occurs between those with expertise in these areas and those inside IT who are responsible for software development and infrastructure deployment.***

*"Hire a smart person who knows human behavior."*

—Jun Kim, Tableau Software

*"Appoint a full-time engagement manager at the outset of game-based design."*

—Kris Duggan, Badgeville

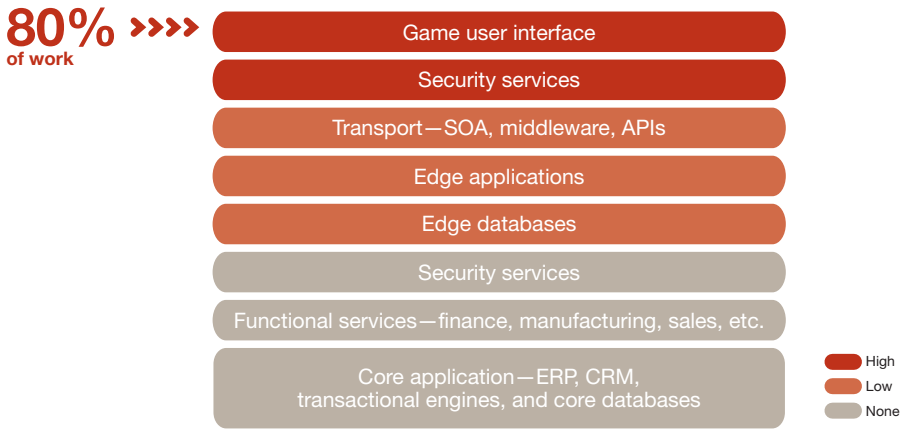
"Hire a smart person who knows human behavior," advises Jun Kim of Tableau Software. This sentiment is echoed by Kris Duggan of Badgeville: "Appoint a full-time engagement manager at the outset of game-based design."

A related issue is where in the IT organization the engagement manager should reside. Deciding whether the role is part of IT applications, IT strategy, IT R&D, or a wholly separate group reporting to the CIO and others (chief marketing officer, the chief sales officer) will require careful consideration of what would work in the enterprise.

### Methodologies

AEM can become part and parcel of the normal design process. CIOs can begin by choosing a pilot or a few pilots where AEM is most promising. Deploy quickly, monitor the pilot faithfully, and be willing to make course corrections. Establish the lessons learned, publish and promote the lessons to engender more insight in AEM, and lead the adoption of AEM throughout the enterprise as it may have applicability outside IT.

**Figure 3: Architectural model for gamification (enterprise view)**




### Technologies and architecture

Game-based design will require some new technologies and a revised architecture. (See the article, "Improving the customer and employee experience with gaming technology," on page 30.) Game mechanics are often applied at the user interface (UI), with the help of the representational state transfer (RESTful) API models. This architecture has a stable core and a dynamic UI. The UI has the design characteristics of games and many advanced smartphone designs—dynamic and intuitively usable—while incorporating the game principles of goal gradients.

Game-based design must work without major barriers or obstacles to use, and must be fully integrated to the UI and underlying core. Figure 3 illustrates what needs to change from current architectures. This field is 80 percent of the UI edge, and that is where most game-based design work is needed, so there is little influence on the portfolio of applications that have been deployed and must continue to work well.

***Game-based design must work without major barriers or obstacles to use, and must be fully integrated to the UI and underlying core.***

*Collaboration with HR, marketing, and sales is essential. HR in particular is crucial to assessing any potential issues with applying game-based design internationally.*

***Conclusion: Getting started***

Just because game-based design has promise does not mean it applies to everything. Prior experiences of some organizations reveal that game-based design applies best to situations where failure is due largely to human factors and where motivators can be intrinsic to the job. However, there is no downside to at least considering game-based design for every major IT initiative that is user or customer facing.

Collaboration with HR, marketing, and sales is essential. HR in particular is crucial to assessing any potential issues with applying game-based design internationally. Mario Herger, technology strategist and community manager at SAP Labs, cautions that some work council or regulatory issues could complicate or crater an initiative. Many employees have negative perceptions (subliminal or outward) of game-based design because they view games as a way for the enterprise to manipulate them. So keep the experiments fresh and true to business goals. HR can be a valuable partner in avoiding these issues during the design phase.

Assign an engagement manager. With goals relevant to the organization, create the master plan, start small, and experiment. It is vital to keep the applications fresh, as humans will not continue to engage unless they have new challenges and rewards. The engagement manager's skills are important to meeting this challenge.

Since the approaches may be broadly applicable on an ongoing basis and may need to be tuned to the human frequencies of the enterprise, internal IT must take leadership early. The CIO's role is certainly to provision the technologies, architecture, databases, and tools. Beyond that, CIOs can demonstrate that they can change the culture and performance of their organizations.

When the value is proven through the measurements of progress toward goals, the enterprise will likely be pleasantly surprised at this new dimension of the CIO and IT. And the new mutual relationships with the chief marketing officer and the chief sales officer are a great way to reinforce the CIO's business acumen and performance. Gamification may well help CIOs to keep their jobs and get recognized for their mastery of leadership.

*It is vital to keep the applications fresh, as humans will not continue to engage unless they have new challenges and rewards.*

# Meeting the workforce disengagement challenge

## Ari Lightman of Carnegie Mellon University shares his thoughts on when and when not to use game mechanics in a business context.

*Interview conducted by Alan Morrison*

**Ari Lightman**

Ari Lightman is a distinguished service professor and director of the CIO Institute at Carnegie Mellon University.

***PwC: How do games and the way they're designed relate to business?***

**AL:** Gamification is one of those completely overused terms, and I'm not saying that in a discouraging manner. It's just that everybody wants to gamify everything. If you talk to any game designer, anybody who really understands game mechanics, they'll say that some processes, some things, just cannot be turned into a game.

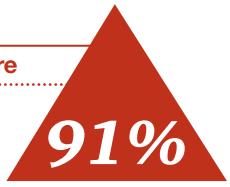
One of the reasons why everybody's looking at gamification is because there's a high level of disengagement. Gallup did a study[1] on the engaged and the disengaged at work. If you look at the mainstream companies, something like two-thirds of the workforce is disengaged, which is really shocking. How did the work environment degrade to the level where it's just all about taking care of business, all about plug and chug?

And there's no creativity. There's no, "Oh my God, I've got to rush into work because it's so much fun," right? It's really becoming a drag. And Gallup actually calculated the efficiency or the productivity loss.

1 Nikki Blacksmith and Jim Harter, "Majority of American Workers Not Engaged in Their Jobs," Gallup, October 28, 2011, http://www.gallup.com/poll/150383/majority-american-workers-not-engaged-jobs.aspx, accessed October 30, 2012.

**There are more gamers than ever before**

Of children between the ages of 2 and 18 in the US, 91 percent play video games.




You might have a lot of cause to disbelieve some of these studies. But the bottom line is workers are more disengaged than ever. It's causing productivity loss—workers are doing other things that are work related because they're bored out of their minds.

Then you compound that with this idea that the next generation of workers, especially as we're looking at Gen Z and we're touching into the millennials, are more connected than ever. There are more gamers than ever before. One of the studies said that of folks 18 years and younger, 90 percent or even more are gamers.[2]

But we all say gaming doesn't have a place in the enterprise. You go to work to do work, not to play games. But look at what Jane McGonigal has done at the Institute for the Future. She has looked at all of the positive attributes that gaming confers to folks who play games—joy, excitement, creativity, understanding failure, and learning how to succeed from failure.[3] All these are things we don't associate with work at all, but we'd like to.

What's happening now is you have this new population of worker—who is hyperconnected, hypersocial, and loves to game—meeting a workforce that's more traditional, doesn't understand game mechanics, and doesn't understand the whole badging mechanism or how to apply that to various processes but would like to. And then thinking, let's just gamify everything.

***PwC: How does the use of gaming concepts help in a way that isn't just papering over a deeper problem?***

**AL:** That's an interesting question. Let me try to address it in two different ways, first through an example. In the example I'm thinking of, a computer science professor noticed the students just weren't learning, or at least they weren't learning well. He basically turned his entire class into a sort of game dynamic, in which students needed to compete with the person above them for a certain number of points based on how many assignments they turned in, the quality of the assignments, and those sorts of things.

I don't remember all the dynamics around it, but I thought it was a really interesting study. He turned his class into a game. And he found that students were *x* percent more engaged in the class. They were more competitive with each other. It was an open environment, so students always knew who was on the leaderboard.

It's the same thing as your own kids spending all their bar mitzvah money on *Pac-Man* because they wanted to get that leaderboard slot. They wanted to be the number one on that specific game. So this professor captured that, and he utilized that for more motivation within his class.

But when it comes to businesses, the problem is that a lot of businesses are not really thinking about the incentives and the motivational aspect behind why you would even gamify anything. If you try to put game mechanics into a process without then looking at the incentives and the motivational patterns around it, your effort is going to fail.

2 91 percent of US children between the ages of 2 and 18 play video games, according to a 2011 NPD Group study. See "The Video Game Industry Is Adding 2-17 Year-Old Gamers At A Rate Higher Than That Age Group's Population Growth," NPD Group press release, October 11, 2011, https://www.npd.com/wps/portal/npd/us/news/press-releases/pr_111011/, accessed October 31, 2012.

3 "Jane McGonigal at TED: Gaming can make a better world," *Future Now: The IFTF Blog,* Institute for the Future, September 1, 2010, http://iftf.org/future-now/article-detail/jane-mcgonigal-at-ted-gaming-can-make-a-better-world/, accessed October 30, 2012.

*"This new generation of worker works differently, thinks differently, and acts differently from any other worker we've seen in the past. We're seeing it from their online profiles in terms of what they do, how they connect, how they access information, how they utilize their communities."*

Some of the older, more hierarchal global organizations have this tendency to hold things very tightly to their vests because their intellectual property is keeping them on-site. And they don't really share very well. This next generation, though, shares everything because that's the way they derive value. So if you try to insert a game dynamic into that environment where you have one group that's sharing everything and another group that's not sharing anything, it's not going to work very well.

***PwC: Dan Pink talked about autonomy, mastery, and purpose after having studied Ryan and Deci's self-determination theory.[4] Are those motivators really the objective of the very simple methods that a business social networking platform such as Jive or Chatter is using?***

**AL:** What we're seeing is an evolution. Remember knowledge management systems? Social is taking that and turning it around, especially if you look at Enterprise 2.0 and the ability to share documents, link documents, offer documents, and those sorts of things.

And if you look at game mechanics, it's just an accelerant for sharing. Once again, it gets down to understanding the motivation of the users. Those motivators are different for different groups of people.

4 See the article, "The game-based redesign of mainstream business," on page 06 for more on self-determination theory.

If you and I were on a social platform, and there were some relatively simple game mechanics associated with recognition, you might want to be recognized much differently from how I want to be recognized. I might be really interested in saying I'm the highest reviewed and five-star rated author of specific content around water conservation. That then gets associated with my profile and now people start looking to me, understanding that I'm an expert on water conservation issues. It's a wonderful mechanism to get the word out to a much broader community. People might really respond to me because I like being thought of as a knowledge leader within a specific subject.

That's me. You, on the other hand, could care less. You might say, listen, I'm going to respond to this thing because my direct report is really interested in how often I'm mentoring the next generation of worker. And that's baked into my job profile.

Once again, we have to look at the psychological motivators around why people want to contribute and then slice and dice it based on market segmentation profiles, just like you do in an external campaign for community analysis.

***PwC: In 2020, as work becomes more about exception management and problem solving, you may need employees who are 80 percent engaged, but maybe they're only 40 percent engaged.***

**AL:** I couldn't agree with you more. I put together a presentation once with an intentionally provocative title: "From the greatest generation to the most disruptive." My premise was that this new generation of worker works differently, thinks differently, and acts differently from any other worker we've seen in the past. We're seeing it from their online profiles in terms of what they do, how they connect, how they access information, how they utilize their communities.

Once they join established companies, one of two things is going to happen. In the best case, they're going to innovate around folks because the level of innovation is not fast enough for them to get viable work done. And we've already seen a bunch of examples of this where folks weren't offered social collaborative platforms at work and they would just innovate outside work, which is bad because you're not collecting all this information. You have no ability to mine it. Instead, they're using Dropbox or stuff that's off the reservation for work-based activity. So they feel ineffective.

In the worst case, they're just going to leave. I've talked to a bunch of financial services firms where they've seen a whole slew of new recruits just leave because the companies think of these tools as nonproductive, as a waste of time.

Such companies don't open up to networks that the new generation of worker is accustomed to—Facebook, Twitter, LinkedIn, or any other social networks. And these companies don't adopt internal mechanisms such as Yammer or Box, because they don't see value in people connecting to each other and sharing ideas.

So this is going to be a real issue. You have a bunch of people who are primed to be problem solvers because of their game consciousness, but then they go into work and they're told, here's your job, sit here, and do what you're told. Maybe they have a small problem to solve every day: align these rows in these spreadsheets and make sure they add up to the right number.

What this next generation really understands is that there's no delineation between their personal life and their work life. Their work life is their friends, and their friends help them out. And they strike the balance incredibly well. I don't know if it's because they understand how to multitask or because they understand that both of them tie into each other. A rich, rewarding work environment can lead to a rich, rewarding personal life and vice versa.

***PwC: What groups are doing the most with these gaming techniques?***

**AL:** I'm seeing a lot in the innovation area. Once again it comes down to culture. When you look at innovation, the innovation groups are the folks that are tasked with identifying new products—the future sets. They're crowdsourcing ideas. They're looking at game mechanics incentives associated with helping people become more involved, and they're looking at the submission process, identifying what the best mechanisms are.

***PwC: What should the CIO do with this set of techniques at a typical enterprise?***

**AL:** CIOs are being called into these conversations much more. CIOs operate at a strategic level. They understand data at a greater level than any other executive within the organization. They can help design mechanisms, whether it's gaming or communities of engagement, to identify the data that's required to put into the systems so the systems are working the way they should. CIOs can work with dynamic data that gets generated by users in combination with structured data, because structured data is not going to go away. The combination of the two is very powerful. The CIOs need to get together with the folks who really understand the application of game design to business problems, as well as the practitioners.

***PwC: Gamification feels like something that can be written off too easily.***

**AL:** Gamification is a buzzword. It will be gone in a year or two. The real challenge is a higher level of employee engagement and understanding the psychological motivators for people. Why do they want to be engaged? How do they define engagement? That's really where the challenge is. So it could be game mechanics or other ways to motivate. I want to be a knowledge leader. Great, here's a mechanism for you to be a knowledge leader. Or, I'm worried about my intellectual property being shared amongst the company because I see no value in sharing. If you demonstrate how value can be generated based on the fact that they can share that information, then they have something different.

So it's this idea of sharing knowledge, looking at visualization, looking at motivational factors, and really creating greater levels of engagement at work.

*"Gamification is a buzzword. It will be gone in a year or two. The real challenge is a higher level of employee engagement and understanding the psychological motivators for people."*

# *Allowing employees to see the business through a CEO's eyes*

## Milt Riseman describes how business simulation at Advanta Mortgage Services was effective, even before the web.

*Interview conducted by Alan Morrison*

**Milt Riseman**

From 1994 to 1998, Milt Riseman was president of Advanta Mortgage Services, a subprime mortgage lender.

***PwC: Can you tell us a bit about the company and where it stood when you became president?***

**MR:** I took over a company that was failing. We turned it around and built it into what at that time was one of the leaders in the industry.

We originated mortgages and then securitized them and sold them into the market. We serviced those loans, and we also acted as a third party to service loans for organizations that didn't have the wherewithal to service loans themselves.

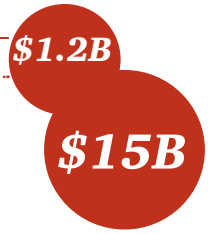
I looked at some old numbers to give you some context. In today's environment they're not very large. In the four-year period between 1994 and 1997, the assets we serviced rose from $1.2 billion to about $15 billion. The assets under management—what we securitized and then originated— went from $1.1 billion to about $7.5 billion. And our monthly loan production went from about $40 million to about $500 million. So there was quite a bit of growth within that period. About 1,200 people worked for us at that time.

***PwC: Back then, subprime mortgages were a pretty edgy business and required a lot of delicacy to manage them sustainably.***

**MR:** The foundation we put in place had three legs. Control—from a risk and operating perspective. We had to demonstrate our understanding of every part of our business, through the quality of our forecasts. Profitability—we did not continue growing any of our businesses until we achieved sustainable profitability. Growth—once we had achieved control and profitability, we

**Mortgage growth in the 1990s**

"In the four-year period between 1994 and 1997, the assets we serviced rose from $1.2 billion to about $15 billion."




felt we could take advantage of the growth opportunities that were available to us.

***PwC: This was in the mid-1990s, well before the crisis in the late 2000s. If you were trying to do the same kind of business today, would it still be feasible?***
**MR:** Applying the strategies of control, growth, and profitability would certainly apply today. Subprime mortgages are an entirely different business now. Credit criteria are specified by three agencies. The only subprime mortgages are ones that the FHA [Federal Housing Administration] will insure. Fannie and Freddie are still buying and insuring mortgages originated by banks. Any financial institution originating mortgages today does so in accordance with the specification articulated by these three entities.

And the business continues to go along. Some are doing very well. I recently spoke with a person who has his own mortgage company and is making a lot of money just doing FHA business. He collects the fees and has no risk. He understands what his situation is. He's not going to try to get into other types of business.

## *Bridging organizational silos*

***PwC: What was the main challenge you confronted that business simulation could help with?***
**MR:** The challenge I had—and one of the reasons I began to speak to Jeff Lefebvre at PriSim [PriSim Business War Games, which offers simulation-based training]—was that we were organized into separate departments and business units. We had salespeople. We had operations people servicing our loans. We had people servicing third-party loans. There were a variety of functions.

Most people, including many in middle management, did not understand how we made money. They knew what their responsibilities were. They knew what they had to do, and they were good at what they did. But they didn't understand the fundamentals of the larger business and the decisions we made on issues such as volume, price, risk, and costs.

***PwC: The challenge was how to balance those tradeoffs, wasn't it?***
**MR:** Yes it was. I wanted folks to understand how we made those tradeoffs and the implications of making the tradeoffs. It struck me that we could develop a simulation of our business and then put people in an environment where we created teams and let the teams compete with each other.

Jeff Lefebvre and the others at PriSim would be able to change the economic and other variables that could affect the business. And our people would begin to understand what the business was about and what the tradeoffs were.

***PwC: Were there four or five metrics that summed up to whether you made a profit or loss?***
**MR:** Sales, revenue, operating costs, servicing costs as well as the cost to originate. And finally the credit risk—what it cost to manage that risk and to manage the losses. Our forecasts had to capture all these dimensions.

Now, one challenge back then was not credit risk as much as it was prepayment risk. Because housing values were growing so rapidly, people could refinance their mortgages very, very quickly because the equity in their houses was also growing rapidly. So you really had to bake in the cost of the prepayment risk in our profitability forecasts.

We developed the simulation, implemented it, and it was a great success. People really got excited about it and enjoyed it. We culminated with a big off-site in San Diego where we put practically all of our managers through the program.

## *Giving employees a view of the business through the CEO's eyes*

***PwC: These people essentially got to play your role in the organization. Is that right? During the simulation exercise, they could see things through your eyes?***
**MR:** That was the whole point. That was what we were trying to create. They really did have that understanding and some sense of what that business was about. They were basically given the numbers in the business and time to understand them. And then we tried to teach them how their decisions could influence what was happening. We conducted a couple of iterations so we could reinforce the learning, and they could understand their mistakes and get some feedback.

***PwC: Once the training was done, you brought some aspects of this training environment back to the operational business itself. Correct?***

**MR:** Yes, because the training mirrored the business. We went through a lot of effort to make that possible. PriSim worked with our chief financial officer and some operating people to really simulate what Advanta Mortgage was, and we called the simulation Deep Pockets.[1] When people went back to their normal roles, they could recognize where their business was within the context of what the company was trying to do. Quarterly, I shared with our managers how we were doing. And they could understand and see what the numbers were and how they were playing out.

***PwC: What were some of the specific operational benefits?***

**MR:** The business generally was going very well. The training reinforced what was excellent morale within the company. People really, really identified with what we were doing and how we were doing it. And it made a big difference to them. It was a soft benefit, but at that time it was very real.

The company ran into some problems after I left, and it was sold. But people remember being part of Advanta Mortgage. They really loved it, and this training was part of the environment that we created at that time.

***PwC: Did you provide some sort of software tool they used in the classroom environment?***

**MR:** We gave them the tools to use as part of the Deep Pockets simulation. They were similar to the tools we would use in each one of the functions. For example, one of the trainees might be a sales manager who might be looking at various risk characteristics. But when he went back to work, he wouldn't be doing risk management. After the training, he understood the tradeoffs in making decisions regarding volume and risk and what kind of credit score we were willing to accept. But that would not have been on his desktop. Remember, this example goes back into a historic period.

***PwC: What's intriguing is that you developed this simulation on the basis of very limited technology—what was available in the 1990s. But what you're describing is really expanding the understanding of people in these organizational silos.***

**MR:** Exactly. They were in silos because that's the way we managed the business. But I felt it was important, if we were going to take the next steps in building our business, that they understand what each part of the organization was doing and how they could contribute to what was happening at that time. And I think that worked. Plus, there was a lot of team building that went on within that context as well.

1 See the Deep Pockets video for more on this simulation example at http://www.prisim.com/News/media.htm.

*"Most people, including many in middle management, did not understand how we made money. They knew what their responsibilities were. They knew what they had to do, and they were good at what they did. But they didn't understand the fundamentals of the larger business and the decisions we made on issues such as volume, price, risk, and costs."*

*"It struck me that we could develop a simulation of our business and then put people in an environment where we created teams and let the teams compete with each other."*

### *Managing the issue of volume and capacity*

***PwC: Jeff Lefebvre said you did a really good job tying together the different pieces. Were a lot of parts more effectively managed as a result of this exercise?***

**MR:** I think so. The issue here is every business has conflict. And if you can start to provide people with information regarding how and why people are coming at something from a different perspective, you're going to make a lot of progress.

For example, the salespeople might not have understood what the risk people were trying to accomplish, or what the volume tradeoffs were and how to understand the issue of capacity. Just laying the volume on if you didn't have the right level of capacity to handle it could be a real problem.

If you read the papers about what went on in the mortgage business in the last decade, many people didn't care about being able to handle volume or risk. All of that stuff faded into the background. People just focused on volume and did not worry about the riskiness of the loans they were originating. The losses were astronomical and basically destroyed the subprime mortgage business.

It's hard to say what we would have done at that time. We had safeguards that might have prevented serious problems, or at least would've caused us to look at it more carefully.

I used to say, "I want you to understand how we make money and what our tradeoffs are. You're in sales or operations and you're managing credit losses or what have you, but this is all part of something bigger. You should understand what the pieces are. You don't have to be experts in them. But understand how they can interact with each other."

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By using postconsumer recycled fiber in lieu of virgin fiber:


4 trees were preserved for the future

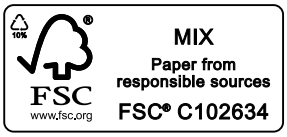

12 lbs of waterborne waste were not created


1,784 gallons of wastewater flow were saved


197 lbs of solid waste were not generated


389 lbs net of greenhouse gases were prevented


2,975,000 BTUs of energy were not consumed

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# Subtext

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| ***Game mechanics*** | Techniques refined by designers to engage users in gameplay. Examples include intangible rewards and recognition for achievements, including points, ranks, badges, leaderboards, and progress bars, as well as penalties and other obstacles to progress. |
| ***Game dynamics*** | Techniques designed to affect the pace of gameplay, including variable reward schedules, time limits or countdowns, appointment requirements, or behavioral momentum. |
| ***Game narratives*** | Epic or dramatic story lines that provide each user at least one role, situation, and mission along with a series of increasingly difficult challenges during the course of gameplay. |
| ***Gamification*** | The use of game mechanics, dynamics, and narratives in nongame environments. |
| ***Self-determination theory (SDT)*** | Richard Ryan and Edward Deci's theory regarding the importance of self-motivated human behavior. Ryan and Deci draw a sharp distinction between such *intrinsic motivators* as autonomy, competence, and relatedness, and the *extrinsic motivators* of tangible rewards and punishments that B. F. Skinner favored in his earlier theory of behaviorism. Dan Pink, in his book *Drive,* based his notion of 21st-century motivators (autonomy, mastery, and purpose) on the intrinsic motivators identified in SDT. Pink believed that knowledge workers needed to be intrinsically motivated to be productive. |