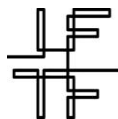




EMERGING PATTERNS IN ACTIVE-PLAY VIDEO GAMES

Synthesis conducted for:
American Heart Association
Nintendo of America

By:
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BACKGROUND

Why active-play video games?

Active-play video games are those designed to encourage physically active play. A recent survey from the American Heart Association and Nintendo of America shows that playing active-play video games can lead players to participate in more real-world physical activity, in what they are calling the “gateway effect.”

The survey was conducted Oct. 25-Nov. 1, 2010, and included a total of 2,284 male and female respondents ages 25-55.ⁱ According to the survey:

- 58 percent of people who play active-play video games have begun a new real-life fitness activity like walking, tennis or jogging since they started playing the games.
- Additionally, 68 percent of people who play active-play video games say they are more physically active since they got involved in video games.

As supported by findings like those above, there is a growing opportunity for active-play video games to contribute to healthy living. In May 2010, the American Heart Association and Nintendo of America joined together in a strategic relationship to help people create healthy lifestyles through physically active play:

Recent research indicates that the average person spends more than eight hours of each day sitting down.ⁱⁱ The American Heart Association has been conducting its own studies to investigate the reasons why many Americans aren't more physically active. In a recent survey, more than half of respondents identified lack of time as one of the main obstacles preventing them from enjoying regular physical activity. Of those who almost never exercise, nearly 40 percent said that “exercise is not fun.” The American Heart Association and Nintendo aim to help eliminate these common barriers with a call to action that motivates people to “Get Informed,” “Get Empowered” and “Get Active.”ⁱⁱⁱ

To help support people in this call-to-action, the two organizations provided leadership in the form of an online information center at www.activeplaynow.com, Nintendo's participation in several of the American Heart Association's Start! Heart Walk events and a face-to-face gathering called *The Power of Play: Innovations in Getting Active*, which this report describes in detail.

Emerging Patterns in Active-Play Video Games

The American Heart Association and Nintendo of America also engaged with Institute for the Future to provide a longer-term, future-oriented perspective on the themes from the summit. Institute for the Future is an independent, nonprofit strategic research group with 43 years of forecasting experience. It ascribes to the notion coined by William Gibson: “The future is here, it's just unevenly distributed.” In the pages that follow, we hope you will see glimpses of the future, and that it will

help inspire more strategic decisions today as you manage your own health, seek better performance on the job or raise a fit family.

Lexicon for Future Pattern Sensemaking

To sense emerging patterns in the field of active-play video games, it helps to take a different perspective by looking five to 10 years into the future, just as presenters were asked to do during *The Power of Play: Innovations in Getting Active* summit.

Future thinking is a dynamic discipline, complete with its own lexicon. Here are a few key terms to help orient and ground you in this approach:

- **Signal:** A signal is an early indicator of a future direction of change, usually a product, service, piece of research or policy from the current marketplace. When signals are combined into groups and aggregated, then patterns become clearer, and drivers of change emerge.
- **Driver of change:** Drivers present opportunities or threats to life-as-usual today. These are waves of change that any individual, household or organization can choose to either ride or to avoid. Sensing these drivers before they fully present themselves helps to prepare people and organizations to *make* the future, rather than react to it.
- **Forecast:** A forecast is not a prediction. Rather, a forecast is a plausible, internally consistent, provocative view of what might happen in the future. Forecasts are designed to help you make better decisions today, and to build a more resilient future.

INTRODUCTION TO THE POWER OF PLAY

The Landscape of Active-play Video Games

On January 12, 2011, the American Heart Association and Nintendo of America hosted *The Power of Play: Innovations in Getting Active* summit at the University of California, San Francisco.

The event gathered thought leaders from diverse fields, including fitness, health care, technology, education and video games, for a conversation about the synergies and potential benefits of active-play video games and physically active lifestyles.

The summit was moderated by Indu Subaiya, who provided a sense of context for how the discussion fit into larger trends in the world of health and health care.

Presentations and small group discussions were punctuated by lively active-play video games and other physical play activities on an indoor playground created specifically for the occasion. Participants were invited to dress in “active-play casual” clothing for the event.



Attendees played Wii Sports Resort and enjoyed other activities during “recess” on the Playground.

Form mirrored content, as the day’s presentations were punctuated by “recess” at breaks, allowing participants to engage in fun, fierce bursts of play. The goal was to provide speakers and attendees with play opportunities that would help illustrate the power of active-play video games as they link to physical activity, as well as to provide a memorable experience to sharpen the focus on the power of play.

Recess was also a time for participants to synthesize what they were learning and re-energize for the next segment of the summit.

Gordon Tomaselli, Incoming President of the American Heart Association, kicked off the summit with a powerful description of the challenges we face in the next decade and beyond:

“Seventy percent: that’s the percentage of Americans who don’t get enough physical activity. Eight hours: that’s the average amount of time an American spends on his or her duff during the day. Less than one percent: less than one percent is the percentage of Americans with ideal cardiovascular health. These statistics are startling, they’re disturbing, and frankly they’re unacceptable.

For the first time in the history of our nation, we face the prospect of our children not outliving us. But of course that’s why we’re here today. We have an opportunity to change the way physical activity is perceived and performed in everyday life and that can save literally millions of lives...we want to change outdated social norms about being physically active.”

The scene was further set by an illuminating conversation between Barry Franklin, Ph.D. (Director of Cardiac Rehabilitation and Exercise Laboratories at William Beaumont Hospital and a volunteer with the American Heart Association) and Jenn Hethcoat (blogger, WiiMommies.com) to discuss the changing understanding of how active-play video games may have a new role to play in encouraging physical activity.

Franklin noted, “Maybe we do need some new solutions to the habitual inactivity that most Americans are plagued with....it’s [video games] something that some people say is the problem. Is there the potential that active-play video games could actually be part of the solution?”



Speakers answer audience questions. From left: Jenn Hethcoat, blogger, WiiMommies.com; Barry A. Franklin, Ph.D., a volunteer with the American Heart Association; Michael D. Gallagher, President and CEO of the Entertainment Software Association; Indu Subaiya, M.D., Co-founder of Health 2.0 (moderator).

Hethcoat shared her first-hand experience of active-play video games' "gateway effect" and how it has impacted her family: "We started doing these active-play [video] games and we spent time as a family...then one day it occurred to me that we were riding our bikes to the park, we were heading to the playground... all of those things before that took energy and were a thought process for me, and were kind of hard to envision myself doing—we were doing."

"Active-play video games are a new way of thinking in that we are participating in activity together as a family," Jenn continued. "We're up, we're moving, we're playing and we're doing things together. It's monitored time for my kids, but it's also family time...it's a new way of perceiving video games."

With this inspiring exchange, the scene was set for the summit to unfold. Below is a sampling of some of the key voices that helped set the scene for the summit and painted a picture of the emerging landscape of active-play video games.

"Today's games create new worlds where players can manipulate and change their environment through realistic animation, unique motion sensor controls, and other tools....During this period of transformation, entertainment software has become one of the fastest-growing industries in the United States, and it makes a significant contribution to our nation's economy. In fact, from 2005 to 2009, the computer and video game industries' real rate of growth per year exceeded 10 percent. Over the same period, the entire U.S. economy grew at an average rate of 2 percent, and our industry last year produced over \$4.9 billion in the U.S. economy contribution to GDP." – **Michael D. Gallagher, President and CEO, Entertainment Software Association**

"... if we really want to make strides at increasing physical activity and maintaining healthy lifestyles for a lifetime, we need to make sure it's a complement and that the teachers and the community around it supports these initiatives and are getting involved...we need to do it [active-play video games] in more than one place. We know if we just do it in schools, it fails. We know if we just do it at home, it fails (longevity). We know if we just do it in the community, it fails..." – **Stephen Yang, M.D., Assistant Professor, SUNY Cortland**

"...one type of [behavioral change in virtual environments] effect is what we call the Proteus effect, after Proteus, the Greek God; that is, adapting to one's body. Nick Yee, now at PARC...gave people taller avatars in immersive virtual environments and put them in negotiation experiments and found out that they were much more successful than if they had shorter avatars..." – **Jim Blascovich, Ph. D., UCSB Research Center for Virtual Environments and Behavior**

"If we want to improve the health of this country, we have to tap the intrinsic motivation to play and the relatedness that you get from it. That's the only way we're actually going to change behavior over time." – **Elizabeth Cushing, Chief Strategy Officer, Playworks**

*"For us, active play is fun, simple, and social...we want to give [people] a cool environment that's really attractive, really engaging, for them to keep coming back to...what people are asking for out there is: 'we want to move, we want to be engaged, we want to feel like we're in the game, we want to play with our friends.'" – **Ed Kasanders, President, Motion Fitness***

"Nowhere is the power of play more needed than our K-12 classrooms. Teachers are busy, PE budgets are slim, and test scores rule the day...physical activity is being minimized and desk time is being increased and the outcomes are definitely less than stellar....I believe children need regular activity throughout every school day." – **Judy Shasek, President, ExerLearning**

More of the cross-disciplinary experts from *The Power of Play: Innovations in Getting Active* are featured in the following pages, along with overviews of their pioneering work. For a full list of biographies, visit <http://powerofactiveplaysummit.org/meet-the-speakers>.



*On left: Attendees discuss active-play video game innovations.
On right: Motion Infusion founder and CEO Laura Putnam on-stage during her presentation.*

Emerging Patterns in Active Play

What follows is a synthesis of *The Power of Play: Innovations in Getting Active* summit cast in the larger context of long-term future. It will profile some of the innovators to give you a sense of the cross-disciplinary nature of the conversation. You will also find five key drivers of change that surfaced during the summit, complete with signals to highlight leading-edge innovations.

First, here is a high-level overview of five key drivers of change that emerged during the conversation at *The Power of Play: Innovations in Getting Active* summit:

Contagious Play

The social aspect of active-play video games will become more important. Families, coworkers and friends will be able to trace and optimize the health network effect they have on other people. Play will be seen as contagious in whole new ways.

Gamify Life

People will begin to quantify more aspects of their lives, including biometric data about their health. Just as a computer programmer interacts with a computer, people will increasingly program the metaphorical levers and dials of diverse aspects of their lives, creating new genres of gaming as they go.

“Fun is Not the Enemy of Work...or Productivity!”

A cultural shift around the usefulness of fun and play will catalyze new uses of active-play video games in the classroom and at work. The engagement economy will inform new paradigms for what is productive and valuable.

Persuasive Interfaces

With the aim of reducing barriers to exercise (and to encourage other positive behaviors), people will begin using active-play video game interfaces to nudge them towards sticking with fitness over time.

Edges of Innovation

Experts are tailoring technologies to meet the needs of increasingly diverse groups of people, including persons with disabilities, for whom active-play video games can play an important role. Communities of persons with disabilities will leverage games in innovative ways that are likely to benefit not only those within the community, but also the world at large.

More details from *The Power of Play: Innovations in Getting Active* summit can be found at <http://www.activeplaynow.com>.

5 INNOVATORS & KEY DRIVERS OF CHANGE

#1 Contagious Play

In September 2009, *New York Times* columnist Clive Thompson caused a stir with his article “Are Your Friends Making You Fat?” As hinted in the article’s provocative title, there is a growing corpus of research that challenges perceptions about how our behaviors influence each other, especially health behaviors.

Network effects show persistence out to the third degree of separation. In other words, your friends’ friends’ friends influence you in ways that have gone largely unmeasured until now. Nicholas Christakis and James Fowler are two leading researchers in this space. Their recent book *Connected: The Surprising Power of Our Social Networks and How They Shape Our Lives* chronicles the way our behaviors and choices (from financial wealth to physical fitness) influence others.

Network analyses of longitudinal studies, such as the Framingham heart study, are leading us to recognize social contagion as a powerful force. Thanks to advances in biometric technology, dynamic visualizations, social media sharing mechanisms and tighter feedback loops in terms of how humans relate to their environments, people will begin to trace and optimize social contagion effects in their networks.

Implications for Active-Play Video Games:

- The act of active play will begin to be understood as a health and well-being behavior that has the potential to spread across networks. People will begin to measure the influence that their activity levels (including active-play video games) have on the well-being of others in their networks.
- Game design may change to take into account these desires to share positive impact on others’ well-being.
- Leagues of active-play video gamers will develop new leadership models around social contagion.

Signal: *I Move You by Contagion Health*

I Move You aims to become the “PayPal for Verified Health Actions.” Through the site, users can issue challenges and leverage social connections for accountability. Participants can either fly solo (i.e., challenge themselves) or flock together (i.e., “I will swim 20 meters if you do 17 pushups.”) to complete microfitness challenges.

Innovations to Track:

- Changing social relationship paradigms around accountability and motivation.
- Dynamic visualizations of influence patterns.
- Designer social networks for gaming, complete with social currency.

Contagious Play Innovator Profile from *The Power of Play: Innovations in Getting Active*:

"We [Contagion Health] are built on the belief that individual healthy behaviors can be contagious using the power of peoples' existing social graphs."

"How do we fight this epidemic [of our sedentary lifestyles]? I think the only way to do that is through social games. To become heroes in our own healthy lives, and then to become heroes for others. And I think the social graph enables us to do that."



*Jen McCabe
Founder and CEO, Contagion Health*

"Our research was the simple commitment that 'I will X if you will Y,' where X are time/activity variables that that would increase people's adherence to complete a challenge. We found, over a year of running the site, now with 6,000 users, that that rate is between 50 and 70 percent depending on a bunch of other factors that we didn't expect. So the good news is, these things do work."

Jen McCabe is CEO and Founder of Contagion Health, an early-stage San Francisco startup that created the social software firm born in 2009 to make healthy behaviors contagious. Contagion Health's tagline is: Illness is viral, health can be contagious too. Its health game *I Move You* has been featured on CNN, BBC's *Click* technology program, The Huffington Post, TechCrunch, FutureTalk TV, O'Reilly Radar, Quantified Self and NPR. Contagion also developed a demo mobile mood-rating and geolocation app called "hands2gether" for health insurer Humana's (HUM) Innovation Center. *I Move You* received a Mission to End Diabetes award in the summer of 2010. Before founding Contagion, McCabe designed concepts for two award-winning mHealth applications. Named one of FierceHealthcare's 2009 Five Fierce Female Bloggers to Watch, McCabe is a prolific speaker on consumer-centric health care innovation (Mayo Clinic, Health 2.0, Medicine 2.0, Eli Lilly, Express Scripts, Mobile Health@Stanford, NBME, Mobile Monday Amsterdam, Casual Connect).

#2 Gamify Life

We are not talking about “gamifying” life by adding a points system, ranking and badges to every facet of your life involvement. Rather, this is about re-conceiving of the world to be increasingly programmable and game-like. In the realm of physical health, people will begin to program their lives through self-tracking efforts in a way that is analogous to how a computer programmer programs a computer.

The growing edge of this new genre for gamifying your life is known as the Quantified Self movement.

As sensor technology becomes cheaper and changes into wearable (and even embeddable) form factors, people will measure aspects of their health, tweak and change elements of their routines and experiment with the results. Digital natives will be prime candidates for this gamification of life, and school curricula will be challenged to respond to these new streams of data about activity. Active-play video game interfaces could be an important part of this shift.

The gamification of life will become even more interesting as interfaces move from a focus on the body to include the brain, with neuro-programming interfaces for health. Together, these streams of self-knowledge will yield new genres of gaming with broader and more integrative kinds of health benefits.

Implications for Active-Play Video Games:

- Active-play video games will be systematically used in every-day life.
- New metrics and data integration could lead to a Healthy Gamer Record.
- New kinds of value exchange: physical activity through active-play video games could give a person the currency to purchase things in either real or virtual worlds.

Signal: Green Goose

Green Goose provides products and services that encourage users to act in accordance with positive intentions – whether the intentions are to more consistently take vitamins, bike to work or walk the dog in order to maintain an active lifestyle. These kinds of sensors and logging mechanisms will increasingly be incorporated into active-play video games so that play happens *in situ* rather than separate from the contextual circumstances of daily lives and decisions.

Innovations to Track:

- Automation of data entry through sensors and wireless transmission, eliminating perceived complexity.
- The rise of computational thinking, complete with feedback loops.
- Self-tracking for health, productivity, relationships and more.
- Games as a tool to teach a culture of play.

Gamify Life Innovator Profile from *The Power of Play: Innovations in Getting Active*:

"We make sensors that measure healthy behavior...not only exercise but also drinking water, riding your bike, flossing or brushing your teeth....I want to talk about how active-play video games could extend into the real world."

"...Jesse Schell talks about how already our activities are being gamed, from airline miles... [to] healthy ways as well."

"Games have an incredible opportunity along with sensors to create the 'stick-to-it-ness' that we talked [about] for long term engagement. I believe that sensors make things real and sensors make games simple...in active-play video games we have console-based sensors, in the real world we have devices with sensors...and these sensors make games real, they make it more fun."

"Sensors are really devices that are connecting reality to the imaginary, and I think that's incredibly powerful in health...sensors have the ability to create triggers [for behavior change] in our paths."



Brian Krejcarek
Founder, SensibleSelf and GreenGoose

Brian Krejcarek's endeavors in health involve wireless sensors that measure actions and personal behaviors. He is most interested in helping people have fun engaging with online games and wellness programs with real-life data tracking. Brian's background in inventing, his interest and curiosity in the Quantified Self, and his bridging between the real world and the virtual one have led him down the path of health and gaming.

#3 “Fun is Not the Enemy of Work...or Productivity!”^{iv}

In the next decade, we will see a proliferation of uses for gaming, including active-play video games in the workplace and in schools. This cultural shift around video games will be catalyzed by a burgeoning understanding of a new economic force in the workplace: the economy of engagement. In the next decade, as attention bandwidth becomes an increasingly scarce resource, the kind of engagement that active-play video games and physical movement generate will be seen in a different light.

Already in schools, the seeds of this kind of change are evident in companies like Generation Fit, which is focused on “student-powered” play. In their view, digital natives (today’s 14 year olds and younger) will likely be the generation to produce a cultural shift in our perceptions of wellness and the tools that are necessary to get there. By the year 2021, just a decade from now, these digital natives will have entered the workplace en masse and will have a different idea of how movement, play, gaming and productivity fit together.

Implications for Active-Play Video Games:

- Engagement economy principles will inform the workplace, as well as the educational context: create emotional incentives, understand diverse rewards and design for the pyramid of participation and build in fun mechanics while creating meaningful work to extend the life cycle of participation.^v
- In a business world characterized by volatile and constantly changing circumstances, immersive learning ability^{vi} will become an important leadership skill. Gaming interfaces will be a prime platform for strengthening this future leadership skill.

Signal: Motion Infusion

Motion Infusion is a company committed to bringing activity into the workplace, not only for the sake of well-being, but also because it is good for the bottom line. Based on the belief that today’s students have “been taught to sit too well,” Motion Infusion brings back spontaneous physical activity and play to the daily routines of the classroom.

Innovations to Track:

- Workspaces redesigned to incorporate games into the built environment.
- Privacy concerns over health data related to active-play video games.
- Game design thinking becomes infused in organizational systems thinking.
- Changing notions of activity patterns in the classroom.

“Fun is Not the Enemy of Work...or Productivity!” Innovator Profile from *The Power of Play: Innovations in Getting Active*:

“[In school] we’re taught to sit. The problem is that we’ve taught our kids how to sit too well...The challenge is how can we start to bring movement not only for us as adults in the workplace, but also how can we start to bring it into the school?...when [people are] active they actually do better because when we stay active, it optimizes all the systems in our brain.”



*Laura Putnam
Founder and CEO, Motion Infusion*

“Number one, it brings more blood to our brain. Number two, it actually helps to increase the synapses or the connections between the brain cells. And then, finally, the most amazing research is showing that we actually produce new brain cells throughout a lifetime through movement alone.”

“Students who are fit, students who are engaging in exercise activity thermogenesis actually do better academically....our smart students are actually the ones who are more active.”

“Non-exercise activity thermogenesis is all the spontaneous movement that kids already do. So the question is, how can we bring it into the classroom?... there are a couple of really simple ways: one is we can call kids up to the chalkboard (really easy). We can also...provide multiple entry points into the curriculum through kinesthetic ways...we can also provide stretching and breathing breaks, we can provide experiential activities...”

Laura Putnam is the founder and CEO of Motion Infusion. Previously, Laura taught in urban public high schools and served as a director of a nonprofit youth-leadership organization.

#4 Persuasive Interfaces

In any moment of decision, choices are shaped by a cluster of influencing factors, a choice architecture within which the decision takes place. The factors that we encounter in these moments can nudge us toward one option over another. This notion has been encapsulated in the work of Richard H. Thaler and Cass R. Sunstein in *Nudge: Improving Decisions About Health, Wealth, and Happiness*.

Nudge is about the science of our decisions and how we can be encouraged to save for retirement, or eat healthier foods in the cafeteria, based on the framework in which our eating decisions are presented. As highlighted in Institute for the Future's recent study on the future of persuasion, "Behavioral sciences, neuroscience, genetics, and social network data are creating a new science of motivation and desire. Networked sensor data, semantic analysis, vibrant virtual and augmented realities, compelling data visualization tools, video everywhere, and mobile supercomputing: just as these systems create new avenues for self and collective expression, they also open us up to new avenues of persuasion. What we do with these tools could not be more important."^{vii}

Implications for Active-Play Video Games:

- The immersive and interactive qualities of active-play video games could provide tools for people to nudge their health behaviors in positive ways.
- Interfaces will increasingly be designed to help people live in accordance with their best intentions.
- The persuasive power of avatars (i.e., virtual representations of oneself) in active-play video games will be an area of growing research and interest in the coming decade.

Signal: MedPlay Technologies

MedPlay creates unique and fun family fitness and wellness centers. It's been specifically designed to appeal to those who find traditional programs boring. MedPlay uses technology to help make fitness fun. The organization works with schools local governments, fitness centers, gyms, senior centers, retirement and medical facilities and more in order to help set people up for success in their active-play health and fitness decisions.

Innovations to Track:

- Increased understanding of behavioral economics, with diverse applications for work and home.
- Emerging social structures to help people stick with the active-play video game fitness routine they've undertaken.
- Intelligent use of competition as a nudging framework for behavioral change.

Persuasive Interfaces Innovator Profile from *The Power of Play: Innovations in Getting Active*:

"How can we overcome this boredom [post-Christmas effect] in active-play video games? One solution that came to my mind over the past years was tournaments and leagues. By having a tournament system we can motivate kids using active games to stick with it long enough to gain the desired health benefits."



*Ernie Medina, Jr., Ph.D.
CEO, MedPlay Technologies*

"I received my inspiration [for long-term active-play video games] from my daughter's experience on a swim team for the last six years...they spend hours [practicing]...and I said, how do they keep doing this day after day, month after month, year after year?...I realized it was the opportunity to compete...and it was a chance to take what they learned in practice and apply it in an exciting format of competition. That's what kept the kids going and sticking with it. You can also imagine how it boosted their self esteem."

"Can we take the same attributes of a team sport like a swim team and combine it with a national competition structure like the national spelling bee — would that work for kids who use active gaming as their main sport?"

Dr. Ernie Medina, Jr., started researching active-play video games in 1998 and specializes in lifestyle medicine at Beaver Medical Group. Since 2005, he has co-founded Xrtainment Zone, MedPlay Technologies and Perpetual Motion Partners (a digital health game studio). He consults on active-play video game grants and is a board member for organizations including Exergame Fitness and the American College of Lifestyle Medicine. He speaks at game and health conferences and is focused on merging the next generation of health games with electronic medical records to enhance lifestyle behavior modification interventions.

#5 Edges of Innovation

Vital work to push at the edges of innovation is taking place in diverse communities, such as among persons with disabilities. A paradox of gaming (including active-play video games) is that the full possibilities of a given game reveal themselves only when people use the game in unanticipated ways. In the next decade, there will be much to learn from how technology is being tailored to meet the specific needs of these audiences.

The applications of these innovations have the potential to benefit millions of people, especially in a country where aging in place means that many will live with disabilities and face constraints that compel them to be creative.

“People around the world are reaching to extend their capacity — not just economically, but physically, mentally and socially as well. New technologies will redefine what human bodies and minds can do, and people will play with these new abilities, turning themselves into laboratories for innovation and creativity. In this context, perhaps everyone is somehow disabled until augmented, and augmentation is a palette of personal expression.”^{viii} – Institute for the Future

Implications for Active-Play Video Games:

- Game design will need to increasingly address the challenges or obstacles of gaming for diverse audiences, such as those with disabilities.
- Autonomous play for all will be a growing edge in active-play video games.
- Growth of vibrotactile and audio-based enhancements as different approaches to make active-play video games even more accessible.

Signal: VI Fit by Eelke Folmer

The VI Fit project innovatively uses vibrotactile and audio cues to innovate standard active-play video game interfaces for people who are visually impaired. Other cutting-edge approaches include real-time sensory substitution and one-switch gaming.

What to Watch:

- Lessons about innovative reapplications of gaming from people with disabilities.
- Reapplication of active-play video game innovations for seniors who are aging in place.

Innovation to Track:

- New ways to provide further accessibility to active-play video games.
- Knowledge-sharing mechanisms for diverse audiences to share their innovations or experiences to benefit others.

Innovation from the Edges Innovator Profile from *The Power of Play: Innovations in Getting Active*:

"There are currently 60,000 children in the U.S. that are blind, and children with visual impairments have much higher levels of obesity than their already-obese sighted peers.

"Research has identified the following barriers that they face when trying to participate in physical activities: they rely on others to help them be physically active...especially children are self-conscious...but most importantly, safety."



*Eelke Folmer, Ph.D.
Assistant Professor
University of Nevada, Reno*

"Individuals with visual impairments have a much higher chance of getting injured while exercising, and fear of injury is a very important barrier that also leads to psycho-social barriers."

"My research focuses on how can we increase their exercise opportunities and of course active-play video games are becoming more and more popular...for children who are blind they have some attractive properties. First of all, you can play them by yourself — you don't need anyone to help you play those games. They're potentially a lot safer, you exercise in place, you're not running around crashing into a tree or a wall, and third of all, they're fun...."

"Unfortunately most active-play video games use visual cues that indicate what to do and when...so my lab is working on focusing on figuring out ways that we can play active-play video games without visual feedback...we use audio cues and vibro-tactile cues..."

Eelke Folmer's work focuses on interaction design, software engineering, games, interaction design patterns, accessibility, active-play video games, haptics, mobile interaction, virtual worlds, motor-impaired usability, visually impaired, multimodal feedback, human navigation and health.

Folmer's research evidences the belief that a disability can be turned into an innovation driver. Through *Extreme Interaction Design*, he and his students try to solve interaction design problems for the most extreme users, with the potential to develop solutions that may benefit anyone.

CONCLUSION

Subaiya closed *The Power of Play: Innovations in Getting Active* summit with some reflections on what we had seen and heard, including these high-level reflections:

- **People are spending not just their interest or attention capital, but also their financial capital on video games:** From a market standpoint, the size of this opportunity sector is growing at five times the rate of the national economy over a period of five years.
- **Two-way gateway effect:** It's not about just one direction (from games to reality); it's also from reality back into game design, which is an interesting dynamic to observe.
- **Pervasive role of games:** Games are being seamlessly integrated into the world around us. We are seeing a gamification of life that has compelling effects because we define what constitutes a game very differently over time.

"So many conversations are just getting started — I think we all have that feeling here. These [ideas] are really going to be the springboard for doing more, and I'm really looking forward to seeing this space evolve ...each of us is going to play a role in ushering this space forward." – **Indu Subaiya, Co-Founder of Health 2.0 and summit moderator**

What do you think are the biggest opportunities and challenges?

How will you join us in making the future of active-play video games?

To learn more, visit <http://www.activeplaynow.com>.

ⁱ For more, see: http://www.nintendo.com/whatsnew/detail/9QjkmnmpU-Yd1DZ_KNka08Q2woU6bTK6

ⁱⁱ According to a research study led by the Institute for Medicine and Public Health at Vanderbilt University that was published by the *American Journal of Epidemiology* in February 2008. Quoted on: http://www.nintendo.com/whatsnew/detail/qfrla8wP7kqnwa_l2Y2uLYfAbO820FI6

ⁱⁱⁱ For more, see http://www.nintendo.com/whatsnew/detail/qfrla8wP7kqnwa_l2Y2uLYfAbO820FI6

^{iv} Quote via Natron Baxter Applied Gaming: <http://natronbaxter.com/>

^v For more, please see IFTF's Engagement Economy report, by Jane McGonigal.

^{vi} For more in Immersive Learning Ability, see Bob Johansen's book *Leaders Make the Future: Ten New Leadership Skills for an Uncertain World*

^{vii} For more, see IFTF's Future of Persuasion report.

^{viii} For more, see http://www.ucp.org/uploads/Big_Sky_Custom_Forecast_Map.pdf