



# FASTER, FARTHER, HIGHER: The Role of Open Innovation in Sports

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*By: Andy Zynga, CEO, NineSigma*

Sports, by their very nature, are an organized and competitive process for testing the limits of human strength, endurance, talent and skill. Never before has technological innovation had such a direct impact on how fast, how far and how high virtually all sports, and the athletes they engage, can go.

Driving the innovation is the world's universal passion for sports and the growing global market, and revenues, the industry supports. A recent Forbes article cites Real Madrid — the Spanish soccer [football] franchise as the world's most valuable sports team, valued at \$3.44 billion. The New York Yankees are valued at \$2.5 billion. The Dallas Cowboys, \$2.3 billion.

With so much at stake, the industry as a whole has amped up its focus on using innovation to push the participant and spectator experience above and beyond expectations. Indeed, there is no aspect of the sports industry that isn't being transformed by technological innovation. From global access to professional events to individual athletic performance, technology is shaping business strategies and delivering increasing value across the industry.

Coaches and trainers are using augmented reality – a technology that just a few short decades ago belonged on Star Trek, not a football field – to sharpen athletes' reactions and response times. Trainers use biometrics to measure a player's vital signs and energy levels in real-time in order to make better informed decisions of when he or she can return to competition after an injury/trauma. These are examples of how the sports industry is looking outside itself for innovation that provides a competitive advantage. As these and similar advances change and accelerate the future of sports, they are also redefining the industry by blurring the line between humans and technology. Medicine, information technologies, lightweight materials from the space and aviation industries — all are making their contribution to sports, often through the process of Open Innovation.



## ABOUT THE AUTHOR



**Andy Zynga,**  
CEO

Andy Zynga joined NineSigma in February 2008, establishing and growing the European company presence rapidly. In September 2009 Zynga was appointed the Global CEO of NineSigma Group, expanding business across all regions.

During his career, Zynga has built four high tech and service businesses successfully in both Europe and the USA. He also spent six years at KPMG Consulting (now Bearingpoint) in Germany and London where he successfully grew a division of the Information, Communication, and Entertainment (ICE) Consulting Practice into a major international player.

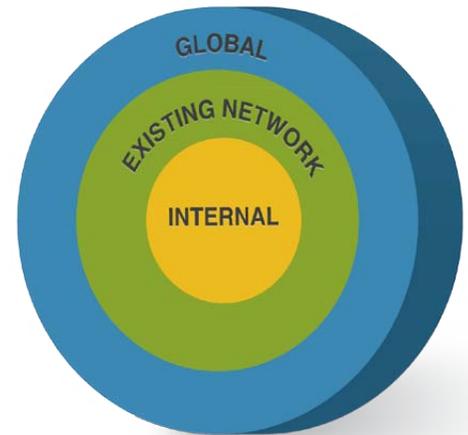
Prior to joining NineSigma, Zynga spent four years as a member of the Executive Committee of Telindus, a global network integrator and outsourcing company with more than \$1B in revenues and 3,000 employees in 14 countries. While there, he turned around a region from loss-making to more than 10% of EBITDA, and growing revenues by more than 30% to over \$150M.

Zynga earned a dual Master's degree in Business Administration and Mechanical Engineering from the Technical University of Berlin, Germany.

## WHAT IS OPEN INNOVATION?

Open Innovation is about organizations going outside their own four walls to find or inspire new technologies or knowledge. In fact, it also means going beyond the existing “trusted” network of suppliers, and other partners in order to avoid reinventing the wheel. Many companies discover that when they practice Open Innovation by connecting with the global innovation community, they also get better at connecting internally, or across their trusted network.

There are now hundreds of organizations large and small, and thousands of practitioners taking advantage of Open Innovation globally. Pressured by competition and tight time to market deadlines, companies often use Open Innovation intermediaries and their respective networks of solution providers to find the best innovations fast and in a secure manner.



*The Three Tiers of Innovation Networks*

## THE GROWING DEPENDENCY OF SPORTS ON OPEN INNOVATION

The sports industry is a natural for Open Innovation. First, because it is simply so vast and has so many different aspects to it. Looking at three segments within the industry shows just how great the innovation needs and opportunities are. Cross-pollination with outside solution providers has the potential to elevate the sports experience and, in doing so, give investing organizations a competitive advantage.

These segments are Sports Delivery Services, Sports Products and Equipment, and Sports Requirements\*. Taken individually, each represents its own complex and wide ranging spectrum of organizations that must keep their innovation constantly in motion in order to satisfy fan and athlete expectations and remain competitive within their particular field.

\*Segments are described by Leigh Robinson in a chapter on “The Business of Sport” within the book, *Sport and Society, A Student Introduction*, edited by Barrie Houlihan, Loughborough University (Sage Publications, 2008).

## OPPORTUNITIES FOR SPORTS DELIVERY SERVICES

**Sports delivery services** refer to organizations and companies that connect sports to both participants and fans. They include professional sports leagues like the NFL and NHL, amateur organizations such as collegiate sports and the organizations that manage and support them, such as the NCAA. The Olympics also fall into this category as well as sports outlets for consumers such as fitness clubs, ski areas and golf courses.

These organizations, be they commercial or trade, bear the significant burden of responsibility for the very future of their respective sports. This means constantly working to grow participation by coming up with new ways to keep fans and athletes engaged. In some cases they’re challenged with solving issues such as athlete health and well-being. In others, they must continuously develop innovations that enhance the fan or athlete experience.

For example, The National Collegiate Athletic Association has announced plans to use Open Innovation to address athlete safety and head health at the college level. John Parsons, Director of Sports Science for the NCAA states, “Open Innovation gives us the power to effectively address an issue that we simply couldn’t impact on our own. Our first step was to convene those from a variety of industries to narrow the scope of the problem. We continue to work with those partners and collaborators toward the pursuit of a solution.” The partners that Parsons refers to include major universities, the National Institutes of Health and the Department of Defense.

The concept for a systematically gathered sports database for every athlete starting from the day he or she enters organized sports as a youngster is being explored by various stakeholders within the sports industry. This would provide a complete chronology of the child’s sports-related health including any remarkable injuries, treatments and outcomes. Athletic trainers in both high school and college environments could then use this information to better monitor athletes and guide them through healthier, amateur sports careers.

### ***Bringing Sports Open Innovation to the people***

As in the United States, exercise levels among European youth are down and obesity rates are up. The ProFit project is a European sports innovation initiative based in the Netherlands that brings together local public authorities and knowledge institutions on behalf of the advancement of sports and exercise. The lead partner in the consortium is the Sports and Technology Foundation. Other partners are the cities of Eindhoven (NL), Delft (NL), Kortrijk (BE) and Sheffield (UK). Participating universities are Sheffield Hallam University, University of Ulster, Eindhoven University of Technology, Delft University of Technology and Howest (University College West Flanders).

ProFit establishes FieldLabs — sports and physical activity research facilities in real-life environments — and invites local citizenry in to test and evaluate projects. For example, the FieldLab in Kortrijk, a small city in Belgium, was recently the test site for smart basketballs that give players feedback on shooting and ball-handling skills in order to improve their games. Another FieldLab currently under construction in Ulster will bring businesses, knowledge providers and users together to test new types of exercise and activity equipment against fixed equipment in the existing playground next door. Ultimately, the goal is to assess the potential of the new equipment to encourage physical activity across generations, with interaction between children and adults being the core focus of the study.



*Cone2020, developed by Bart Wolfs and Spinnov, was the winner of the ProFit Innovation competition 2012 at the FieldLab Sheffield. Cone2020 uses light to direct players. ProFit is funded by the European Union, under the Interreg IVB North West Europe programme. [www.fieldlabs.eu](http://www.fieldlabs.eu)*

## **SPORTS PRODUCTS: MOVING INTO THE FUTURE**

**Sports products** include everything from equipment and apparel to satellite television — any manufactured goods and technology that athletes or participants use in order to experience sports.

Over the past several decades, as technology has played an increasingly important role in both the performance and marketing of new products, sports manufacturers have become accustomed to adopting innovation from far outside the industry.

Basketball shoes are perhaps one of the most competitive athletic shoe categories. Not only because professional players consider them equipment, but also because unlike other sports footwear (i.e., soccer and football spikes) the same shoes worn by the pros are highly sought after and worn by fans. Nike in particular has maintained its brand dominance due in large part to its basketball footwear.

In fact, Nike turned to NASA technology when it developed its “Elite” series – a limited edition playoff design. Basketball players need shoes that don’t weight them down and allow them to move with speed and jump. But they must also provide support and stability. Strong yet light, carbon fiber was originally developed for air and spacecraft. It also makes an ideal heel counter and thin, light and durable foot plate.



Innovation in sports products and equipment doesn’t always come from the commercial world. In one case, two avid sportsmen – one a surfer and one a hang-glider — put their two disciplines together and invented the Kitewing. Designed in Finland and made in China, the Kitewing provides experience enhancing propulsion in traditional sports — skiing, skating, snowboarding, surfing — by capturing the power of the wind. Similar in concept to an old-fashioned skate sail, the athlete acts as the mast and maneuvers the Kitewing like a foil. Not only did the two amateur athletes originally create the Kitewing, they continue to tap a network of avid users around the globe for feedback and ideas on new prototypes.

For another example of how Open Innovation has advanced and enhanced a recreational sport, consider alpine skiing. Over the past decade, the entire European ski industry has embraced wireless Radio Frequency Identification systems to improve the “guest” experience. RFID chips embedded in ski passes help mitigate one of the most challenging aspects of downhill skiing: lift lines. The RFID chips send a signal to a reader that instantly validates the passes, eliminating the need for an attendant to manually check each one. This allows skiers to move smoothly and quickly through lift lines while also reducing labor costs. More sophisticated RFID systems enable mountain administrators to track volume patterns and move skiers around to less populated runs.

The systems give European ski areas a distinct competitive advantage over ski areas in countries slow to adopt RFID technologies — including the U.S. Airfares and accommodation costs being relatively equal, skiers who want to have more time on the slopes, and reduced wait times are choosing to go to Europe over North America.

The roots of RFID technology can be traced back to WWII but it began to really develop in the early 1970’s when the U.S. Government laboratory at Los Alamos was asked to create a system for tracking nuclear materials. The same technology evolved into today’s highway “fast pass” systems that move cars quickly through toll plazas.

## ***Using Open Innovation to advance the role of an established brand***

Professional and amateur athletes alike are familiar with Under Armour – the sports apparel innovator. The company had already developed its own performance monitoring system, the Armour39®, but wanted to identify completely new applications for the sensor. A phased Open Innovation challenge began with an invitation to solution providers all over the globe to submit potential applications for the device. Those who made the cut were given the device and an Armour39 Software Development kit that allowed them to take their concepts to a prototype level. One proposed solution from the University of Calgary was a sound feedback mechanism to help runners in maintaining a proper posture during exercise. In addition to useful technology that it can eventually implement and market, Under Armour's Open Innovation initiative gained a significant amount of publicity that helped build on the company's reputation as a cutting edge manufacturer of performance products.

## SPORTS REQUIREMENTS: PUTTING PARTICIPANTS FRONT AND CENTER

Sports requirements covers products and services necessary to produce and enhance sports. For example, sports medicine, fitness trainers, governing bodies, sports officials and sports education. Similar in responsibilities to those in sports delivery services, those in sports requirements put the participant at the center of effort. They are the ones most likely to introduce athletes and fans to new forms of training, emerging education and techniques that enable a healthy sporting experience. Conversely, they also provide insight and guidance on what fans and athletes alike are truly thinking and want.

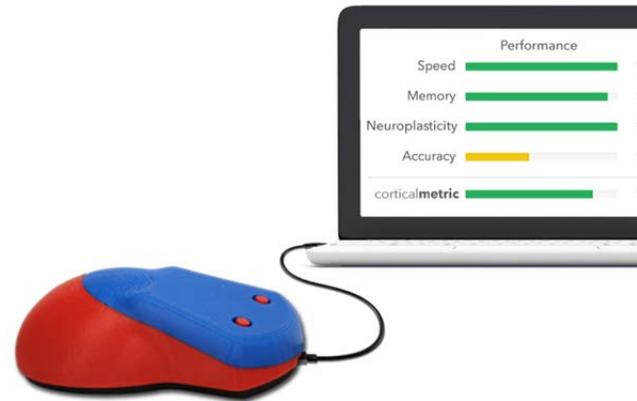
Sports requirements organizations are taking advantage of real-time or near real-time feedback technologies spawned by social media in order to continuously adjust to fan and athlete preferences. For example, during the 2012 London Olympics, the Emoto project funded by The British Arts Council scanned Twitter accounts for tweets about the games, filtering words that convey emotion. The results were displayed in a swarm visualization of ribbon-like pennants. Warm colored pennants confirm a favorable response while cool colors such as blue indicate a negative one. When Emoto followed tweets during the opening ceremonies, the swarm graphic of a large orange pennant showed fans were overwhelmingly in favor of the show. Commercially, Emoto and similar instant research technologies can be used to measure sports enthusiasts' reactions to particular players, coaches and commentators. Given the revenues at stake, especially in professional sports, these are akin to likeability tests and can inform critical decisions regarding which athletes to keep, trade or pursue, which commentators to assign to primetime games, and even factor into salary negotiations.

## HOW OPEN INNOVATION IS MAKING SPORTS SAFER FOR ALL

Sports organizations recognize the need to create a safe environment and standards for athletes. Keeping players healthy is not only an ethical responsibility, it is good for business, too. Athletes can have longer careers, fans are happy that their favorite heroes are still on the field and not on the bench, teams can compete more successfully in their leagues, and there is a trickle down impact as well. Parents are more likely to encourage their children to play sports when they know safety is a national priority.

The NFL, in partnership with General Electric and Under Armour, is using Open Innovation to address the issue of head health and establish guidelines and protocols for avoiding traumatic brain injury.

An article co-written by NFL Commissioner Roger Goodell and GE CEO Jeffrey R. Immelt and published just before Super Bowl XLVIII (2014) states: “As parents, sports fans and stewards of the games we love, we have a sense of urgency to bring the best minds to the table to address this great challenge. Investing in technology and research is the most direct path to the results we all want: improved diagnosis, treatment and protection for brain injuries. Our aim in rewarding innovation is to reduce risk in sports -- not just for elite athletes on the biggest stage next Sunday, but for all of us.”



*Developed by Cortical Metrics, the Brain Gauge was one winning solution in the GE/NFL Head Health Challenge I. The Brain Gauge generates metrics of brain performance by pulsing information through one's fingertips.*

The article marked the completion of the first phase of a multi-year, \$60 million Head Health Initiative. The goals of the Head Health Initiative are to identify technologies that enable the accurate diagnosis and assessment of sports-related brain injuries and to fund technologies that will help prevent them.

The first [Head Health Challenge](#) invited proposals for scanning technologies and biomarkers. Among the winning submissions were a blood test to rapidly identify and measure mild traumatic brain injury; a brain imaging technique to identify connections broken in the brain after a traumatic brain injury; and an electroencephalography (EEG) that may serve as an on-field imaging test. The second Head Health Challenge sought new innovations and materials that can protect the brain from traumatic injury and new tools for tracking head impacts in real time. Winning solutions to that challenge will be announced in Fall 2014.

## A GLIMPSE OF THE FUTURE

As innovation continues to push the limits of the sports industry and its athletes, scientists and biomedical engineers are already developing technologies of the near future. Hyperoxic masks will enable athletes to breathe in higher levels of atmospheric oxygen in order to train harder and more efficiently. Space-age prostheses will someday enable a double-amputee to effectively compete in the regular Olympics. Athlete camera systems will allow fans to experience the game not as a viewer but as a player.

One aspect will remain constant and that is the insatiable hunger the world has for experiencing sports in increasingly heightened and satisfying ways. As more and more organizations feel the pressure to meet these expectations, Open Innovation will continue to drive every aspect of sports forward and shape the very future of the industry. Those who evolve their innovation strategies to take full advantage of technology's vast landscape and global sources will be more likely to realize commercial success from the evolution.

## ABOUT NINESIGMA

NineSigma is currently working with leading organizations in the public, private and nonprofit sectors to find solutions and partners through prize-based innovation programs. Our clients are achieving excellent results with Innovation Contests and Grand Challenges that are not only uncovering game-changing technologies but are transforming the way they innovate. [Contact us](#) to learn more about these and other solutions.

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