

## World class innovation

As innovation connoisseurs, one of the most difficult things we have to do is get a true measurement of change over time. We get used to the quick pace of change and sometimes miss important new innovations because of the sheer amount of noise in the system. This is one of the reasons that I really enjoy having way stations in life. One of the way stations that is most effective is a checkpoint to evaluate changes in the Olympics every four years. The event stops time every four years, for just a couple of weeks, and allow us to measure changes four years later. Here are some of the great things that we were able to experience this year that we either did not have at all, or did not have to the degree that we do this year.

## Training and analytics

With the onset of the Internet of Things (IoT), we now see sensors embedded in everything from shoes to clothes to heads-up displays. Obviously, some of these tools have been available for years, but as these sensors become mainstream and trainers and coaches are able to measure the effectiveness of training – sky is the limit. While many of the world records that fell this year were because of advances in training and sensors, one notable record that fell was in the men's 400 meters. In a race where the world record had stood for 24 years, Wayde van Niekerk recorded a 43.03, smashing the previous record of 43.18.

Of course, we do not know if there were any advances in technology, but so many records fall each Olympics cycle that it is hard to believe that it is all about humans getting better. Michael Phelps was in his fifth Olympics and a relatively old man in the swimming pool. There was also a 35-year-old swimmer on the American team. Of course, we also have Usain Bolt, who has now won more consecutive gold medals in the men's 100 meters than anyone ever. It could be that older athletes have always been in a position, both physically and mentally, to compete in their thirties, and that the ability to finance their training is a relatively new phenomenon; but would that also not be an innovation? Regardless, I will admit that I once competed in the elite levels of track and field and the understanding of diet, weights, rest and training was more or less a guess thirty years ago.

It has been reported that many boxing teams are tracking punch speed and intensity in training via sensors taped to the wrist of the athlete. These sensors not only track progress in training, but also tell the athlete which of their punches are most powerful and at what angle they should punch.

## Performance enhancements

If you noticed strange tape on any athletes, it may have been Aeroblades. This is the tape that disrupts airflow past the body, making the athlete less wind resistant. In a world where fifteen thousandths of a second means something, the less air drag you have against your body, the better. Personally, I did not see anyone wearing the blades, but it cannot be too long before they become common.

It has been reported that the US cycling team used augmented reality glasses with heads-up displays to track important training information, such as cadence, heart rate,

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speed, distance, duration and more, all laid out on the road in front of the rider. Being able to train with this information available is a critical component of a training regimen. One would expect this to be available to track athletes and more in the near future.

Although you probably never noticed, when swimmers in the Olympics complete laps, especially in longer races, they have a judge who holds up a sign telling what lap they are on. In this year's Olympics, they actually placed lap counters at the bottom of the pool (with really cool cameras), to show the swimmer what lap they are on, meaning they do not have to look up, potentially improving their times. As innovation professionals know, it really is the little problems that we solve that add up.

BMW created a technology that the US swimming team used to track motion inside the pool. Sensors are placed on the swimmer and cameras are placed in the pool to analyze every aspect of the swimmers' strokes. Previously, swimmers had only the clock to tell them they were doing better or worse, and they would adjust their swimming, check the time, and then adjust something else. Not only is this non-scientific (are you having a good day or a bad day, and other variables), but it also did not give the swimmer much to look at. This new technology allows swimmers to see where and how they move and what to adjust to swim faster.

### **Other innovations**

Maybe you simply log this one into the "of course" category, but Visa, the official sponsor of the games, outfitted all competitors with a wearable (bracelet), that allowed the athletes to simply wave their hand above the payment terminal. Known as near field communication (NFC), the ability to perform these transactions is similar to Apple Pay or Google Pay, but it makes more sense in a closed venue such as a school, camp or the Olympics.

Surveillance balloons were deployed at the Olympics this year. The cameras are able to take about three pictures a second and can cover an area approximately 50 miles around. For a large-scale event, with as many possible problems as the Olympics, the technology makes sense. Expect to see this type of technologies at future venues such as the Super Bowl or large outdoor concerts. Combine this with the Eros-B low orbit satellite and security is greatly enhanced around large public events.

Try Googling for the Games (or Google Maps Street View for walkers). Google mapped the *favela* neighborhoods, which had never been done before, and created many instant update opportunities for Olympic fanatics. Not only could you do a walking tour of the city, but you could pop into venues and get instant results.

Finally, Getty Images has taken and curated thousands of images of the Olympics and made them available within minutes of the event taking place. The news in images is closer than ever.

Virtual reality (VR) programming was available at limited venues during these Olympics. Although you needed a Samsung phone and Samsung VR headset, the ability to be inside the opening and closing ceremonies must have been impressive. Imagine as this technology advances, and you can be in the middle of a battle in Game of Thrones, or sitting in the cockpit of a plane in a dogfight with the ability to look up, down, back and to the sides at will. I am not sure how you would do this in a theater, but I would not worry about that too much just yet.

Did you happen to notice that Michael Phelps changed his jacket in the opening ceremonies of the Olympics? If you responded "yes", you would be wrong. In fact,

Michael Phelps was wearing a jacket with electro-luminescent panels that allowed him to change from the US logo to the team logo.

As I did not know which category to place this under (it could be a training opportunity later), Michael Phelps also wore 3D printed shoes. While only a novelty at this point, having a custom shoe pattern in the future begs the question of what else we might want to customize. Shoes are obvious; if they are 3D printed to precisely fit your feet, you could reduce injuries. What about clothes? Glasses? While I have no specific examples, I am sure that the Para-Olympics will definitely feature custom-printed prosthetics.

While I am not sure I captured even a fraction of innovations that have appeared since the last Olympics, the point is that having the ability to stop time every four years is a great way to measure progress. Last Olympics, many of the athletes took selfies; this Olympics, EVERY athlete took selfies. Whether you like it or not, Facebook, Instagram and other social media platforms are changing the way we experience the Olympics. It is wild to see the changes in four-year increments. Sometimes, when implementing innovation inside a company, you miss the subtle, yet important changes that take place. Perhaps you can establish your own benchmarks and have fun with the changes that you see in your own organization.

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**Further reading**

Polidoro, F. Jr (2013), "The competitive implications of certification: the effects of scientific and regulatory certifications on entries into new technical fields", *Academy of Management Journal*, Vol. 56 No. 2, pp. 597-627.