People have been playing Games without Technology. As the timer ticks, they’re now playing Games with Technology. Hang on, but ain’t it Technology that’s playing Games with People?
As the Rio 2016 Olympics kicks off for the first time in South America, digital technologies are also breaking new records in their quest to make it to the Olympic squad. There’s a radical change in technology outlook since the first Olympics in Greece in 776 BC as competing technologies are looking to outplay the others in solid terrain, choppy aquatic masses and the oceanic Cloud!

Fred Wojciechowski, Head of Olympic Games Technology says that in most industries the delay acceptance is agreed upon, even for NASA! But at the Games, on-time delivery cannot be more sacrosanct! While golfers are holding their breath to tee off in the 2016 Games after 112 years, the Games would want to fit schedule executions to a tee!

Is the momentum enough to rev up the engine, sail through fluctuations and take aerial flight to the azure skies? Or would Technology duck beneath the cyber attacker’s bow, somersault through the gymnast’s loop and take a dive into outlandish golf turfs?
If **Technology** is to break down geographic barriers and face the rigours of an Olympic test, it would do well to undergo a process of **Digital Discovery** in assessing:

- How can **Digital Transformation** turn the Games into a more connected global experience?
- How would every stakeholder be empowered to achieve a state of **Digital Alchemy**—synthesizing the best of technologies for digital excellence?

Let’s examine the history of how technology has championed the Olympic experience.

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
<th>Innovation</th>
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<tbody>
<tr>
<td>1912</td>
<td>The Stockholm Summer Games</td>
<td>Electronic stopwatches were used for the first time on a mass scale</td>
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<tr>
<td>1936</td>
<td>The Berlin Summer Games</td>
<td>Live television broadcast of any sporting event</td>
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<tr>
<td>2002</td>
<td>The Salt Lake City Winter Games</td>
<td>Instant video replay made its official debut</td>
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George Smith and his grand-daughter Georgina have been ardent fans of the Olympic Games. When he was interviewed at the age of 82 at the London Olympics in 2012, he remembered the race to the finishing line in 1948 that had stop watches and a tape whereas that year a laser was used and the difference of a vest’s breadth could actually determine a winner! As a teenager in 1948, George and his family huddled around a valve radio as they couldn’t afford a television.

1948 was the first time the Games were broadcast into homes with 60 hours of television broadcast compared to 5000 hours in 2012. George’s grand-daughter Georgina used her smartphone for real-time updates of the latest Olympic events as she tuned in to her radio app.

London was after all the first 3D Olympics with in-depth coverage across HD and ultra-HD devices. Super Hi-Vision developed by Japanese broadcaster NHK was 16 times the definition of HD. The highlights were developed by Adobe and broadcast by NBC and BBC, providing users a means of going back to the specific moment marked by real-time packages without the need to rewind. Who would have known television viewing to be so interactive!

The old proverb, necessity is the mother of all invention was embraced even before the 1960 Winter Olympics in Squaw Valley, California with many more inventions. At a skiing event in 1960, officials couldn’t determine whether one skier had missed the gate or not. The CBS Television team was asked to review the videotape so that they could confirm the result. This led to the invention of the universal ‘instant-replay’.

Virtual imaging saw the world get its first yellow ‘world record line’ at the 2000 Sydney Olympics, which was connected to an electronic timer and projected to the viewer’s screen.
At the 2016 Olympics, real-time results would be transmitted to 8 billion different devices all across the globe. Predictive and personalized services are made available to viewers for augmented user engagement.

Sky is really the limit as General Electric used drones to draw viewers for its ‘Drone Week’ with users tuning into GE Facebook broadcasts for a bird’s eye view of Olympic venues and a peek into emerging technologies highlighting developments in data analytics, power, lighting and healthcare.
Trust China to control even the weather Gods at the 2008 Beijing Olympics! The Beijing Meteorological Bureau bought one of IBM’s most powerful supercomputers to forecast weather and pollution levels around Beijing. China literally took the sprint to the cloud with cloud seeding being done through rockets so that early rain showers would aim to put off rain during the opening and closing ceremonies!

Olympic timing technology has made quantum leaps over the century. Automated timing systems made their debut at the 1964 Tokyo Games where the starting pistol was connected to a timer and photo-finish equipment. Omega has been the official timekeeper of the Olympics making its debut in the 1932, Los Angeles Olympics and maintaining high standards ever since. For the Winter Games, its Data Collector for a bobsled run involving 3D acceleration sensors, 3D gyro-sensors and speed sensors was used to measure speed and velocity angles.

When it’s down to the wire, high-tech timekeeping like electronic touchpads, infrared beams, high-speed digital cameras have rescued contestants in all sports to win by the slimmest of margins. Olympic athletes are now measured at one-millionth of a second! Michael Phelps beat Milorad Cavic by one hundredth of a second in the 2008 Olympics.

Scoring technologies are also developed to become more sensor-driven to avoid controversy. The 2008 Olympics saw Sarah Stevensen of Britain eliminated after the referee failed a count but it was overturned and she subsequently went on to win a bronze. Notwithstanding, the IOC took notice and the World Taekwondo Federation in 2012 introduced a system that has sensors in the fighters’ body armor and socks thus registering kicks and punches successfully.
THE TECHNOLOGY SQUAD FOR RIO 2016

- **Visa**: First NFC enabled payment ring
- **Cisco**: IP video distribution networking, security etc.
- **Panasonic**: Audio and visual equipment
- **Samsung**: Interactive 360° virtual reality (VR)
- **Microsoft**: Website video streaming and maintenance
- **GE**: Infrastructure solutions, EMR etc.
- **Nissan**: 4500 Clean energy vehicles
For Atos, the worldwide IT partner for the 2016 Olympics, Digital Transformation is a core theme as they're looking to deliver flawless IT services. They have performed **200,000 hours of IT testing**. Data variation peaks have made cloud computing grab a spot in the Olympic squad this time with a more secure and scalable architecture. Real-time data analytics would play a key role in fighting cyber security.

At the Rio 2016 Olympics, Taekwondo or ‘Techwondo’ would go a step further than the body armor sensors of the 2012 Games to have headgear sensors and magnetized socks operating on Wi-Fi for ‘Techwonders’.

**Key technology differences 2016**

- New centralized delivery for greater consistency & efficiency involving a ‘build-once’ Games environment and new CoE’s for implementation, integration, testing and support
- Secure, scalable cloud infrastructure
- New sustainability initiatives with carbon neutral hosting at data centres
- IT Security with real-time data analytics for scanning millions of security logs for zero impact
- Enhanced Collaborative platform with advanced Knowledge Management for different project stakeholders

New sustainability initiatives with carbon neutral hosting at data centres
Has technology performance been able to push itself to the limits to match the strength, flexibility and grace of super-charged athletes all with their artistic gymnastics, kicks, swings and paddles?

In George’s 1948, cyclists wore basic shoes, helmets and T-shirts while in 2012, athletes took a full-body scan for aerodynamic comfort. Battery powered ‘hot pants’ were used to warm the athletes’ muscles just before a race and in George’s favourite event, rowing kits were designed to provide maximum performance. Cycling, rowing and sailing have seen the most impact from technology advances to improve performance.

Boxers recorded their movements through overhead cameras that helped them deliver many a sensational punch! Divers also dived into their iPads for feedback on their body angles in the air to swim away from any twist in the tale!

SkyTechSport developed a Ski and snowboarding simulator for the Sochi 2014 Winter Olympics that used virtual reality, GPS data, and 3D glasses for a mountain course simulation on a 27 foot panoramic screen. The machine engineered every movement and sensation on the downhill course that could be felt by a skier or snowboarder with timely precision! Ice skating on-body sensors translate movements to a 3D visualization that could reduce the impacts of injury in the long term by correcting techniques.
For the 2016 Games, analytic wearable technology has been making waves. Michael Phelps, LeBron James, other stars and 20 athletes would be wearing the personal fitness band, WHOOP during the 2016 Games to monitor their travel, training, sleep per night, changes in behaviour, off-the-field issues.

High performance breathing technologies are also used to condition the body to a state of breathlessness. The Oxygen Advantage is a book that inspires The Oxygen Advantage Program using proprietary methodologies devised by Patrick McKeown to reach peak oxygenation levels effectively. Patrick says he likes The Training Mask which was used by Marshawn Lynch, aka Beast Mode, at the peak of his career with Seattle Seahawks. High Performance Breathing Technology is a company that rewires the brain to make a muscle movement habit and attempt it with ease thereby progressing to the Oxygen Advantage Program for minimizing oxygen saturation and maximizing athletic output according to Founder Dr. Denbar.

Competing nations are trying to outdo the other in the run-up to the 2016 Games by developing cutting-edge technologies like sensors and augmented reality. Germans have taken to analytics to help them sail their way into the competition with SAP Sailing Analytics for real-time data on wind speed and ocean currents. US Olympic Training Centre in Colorado Springs have ‘Rio simulated rooms’ that mimic the real stage while cyclists are using special goggles to view critical ride information like speed and wind conditions. The Brazilian Caoeining team is using a General Electric app that can measure athletes’ strokes and emotional complications thus revealing their performance. Alas, even girlfriend issues were detected in one athlete!

20+ stars, athletes would be wearing the personal fitness band, WHOOP during the 2016 Games to monitor their travel, training, sleep per night, changes in behaviour, off-the-field issues.
Tokyo is already preparing for the 2020 Games, having showcased shinkansen, the world’s first high-speed bullet train at the 1964 Olympics. More than 10 billion passengers have used this service since then without a single accident!

The 2020 Tokyo Olympic Games is projected to have self-driving taxis, hydrogen powered vehicles, superspeed trains, 5G wireless connections, artificial meteors amidst talks with Panasonic to have a total surveillance system to integrate the network of cameras and sensors with image-processing and microphones for voice recognition in specific areas.

### THE TECHNOLOGY SQUAD FOR TOKYO 2020

- **Robot Village**
  - An army of robots to cater to every need

- **Superspeed Trains**
  - Fastest next-gen maglev trains

- **Artificial Meteor Showers**
  - Manmade shower to descend from above for opening ceremony

- **5G Wireless Connections**
  - Increase network capacity by 100-1000 fold
Let the GAMES BEGIN

The first modern Olympic Torch relay was used in the 1936 Berlin Games and it’s gone from venue to venue and country to country symbolizing decades of harmony and goodwill. 1936 differs from 2016 in the evolution **Technology** has made in reigniting the human spirit to present to us “A New World” (**Official slogan for the Rio 2016 Olympics**) every single time!

While every viewer, venue and athlete gears up for this Olympic challenge, **Technology** is also staying true to the Olympic motto, **Faster, Higher, Stronger** to keep its flame burning bright for all of it to come together in a flash! As the moment transitions, it changes hands and passes the baton to its worthy **digitally discovered** counterparts who have made the Olympic squad and would keep the glorious flame burning brighter than ever!

Ah, the Games Technology Plays!
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