



## Discussion

# Use of modern Technology in the recently concluded 2022 Quatar World Cup Football.

Saikot Chaterjee

*Associate Professor and Head & Director Sports Ex-Office, Department of Physical Education, University of Kalyani.*

## ARTICLE INFO

### Article history :

Received: 19<sup>th</sup> April, 2023

Received in Revise form:

10<sup>th</sup> May, 2023

Accepted: 12<sup>th</sup> May, 2023

Available Online: 6<sup>th</sup> June, 2023

### Keywords :

Technology, Football, World Cup

## ABSTRACT

From the very dawn of human civilization human folk have been engaged in some form of physical activity for earning their livelihood. With the passage of time and advancement of men's ideas and know-how the crude activities started getting organized forms. In due course the activities acquired the shape of games and sports. It is also noteworthy that from the beginning of human society men always tried to correlate sport's and games with his advancement and development, and henceforth the advancement of science and technology always influenced the sports field. The use of science and technology matured and advanced with the advent of human race. In the present era the sport field is articulated with latest technological gadgets. Sports has totally become technology based. The Quatar World Cup football was no exception rather exhibited ultra modern technological extravaganza. Use of apps, ground cooling system, offside determining technology were most prominent among all. The use of technology enriched the sports field like the world cup football as well as enriched human society as a whole.

With the very dawn of human civilization man have been engaged in invention of technology and their application in human society. With the advancement of ages progression of technology was inevitable. With the development of science and technology men tried to enrich the areas of art, culture, sport etc. from the very early era sport field is a platform for exhibition of countries technological maturity. So far the present global scenario is concerned sport feats use the latest technological extravaganza. Even if the under developed as well as the developing nations are coming up with their best technological knowhow for better show in the arena of sports and games. Every nation tries to surpass the other in the sport warfare. Sport rivalry seems to be most prominent in the world of globalization. The Olympics the world cup football is considered to be the largest sport events shaking the entire Universe. Every

version comes up with updated technological system to support the sport persons and satisfy the desire of the spectators. The 2022 World Cup was no exception. The gulf country with its limitations and barriers used best resources and technological treasure to decorate the biggest football show. The nation under the auspices of FIFA staged the 22<sup>nd</sup> version of the tournament. Uses of numerous ultra modern technologies astonished the world.

The 2022 FIFA World Cup was an international football tournament contested by the men's national teams of FIFA's member associations and 22<sup>nd</sup> edition of the FIFA World Cup. It took place in Qatar from 20 November to 18 December 2022, making it the first World Cup held in the Arab world and Muslim world, and the second held entirely in Asia after the 2002 tournament in South Korea

and Japan. It was held over a reduced time frame of 29 days with 64 matches played in eight venues across five cities. Qatar entered the event—their first World Cup—automatically as the host's national team, alongside 31 teams determined by the qualification process.

Argentina was crowned the champions after winning the final against the title holder France 4–2 on penalties following a 3–3 draw after extra time.

Like the other previously host nations Qatar employed and exhibited latest scientific gadgets and technology to show sport extravaganza and accomplish the mega sport event.

### **Semi-automated Offside Technology:**

The tournament used Semi-automated Offside Technology (SAOT) to provide offside alert to the video match official's team. The Semi-Automated Offside Technology (SAOT) was composed 12 optical tracking cameras, which track 29 points on the body for every player at a rate of 50 times per second, in conjunction with an inertial sensor embedded in the match ball transmitting at 500 hertz. Artificial intelligence collects and analyzes the data and flags any player that is an offside position. The video officials then manually confirm the automation—the precise moment the ball was kicked and the positioning of the offside line—and relay the decision to the match referee. SAOT has been trialed extensively, including at two FIFA-sanctioned tournaments, the Arab Cup and Club World Cup, as well as by three independent universities: the MIT Sports Lab, Victoria University's Track program and researchers at ETH Zurich.

### **Connected Ball Technology**

In the initial part of this year Adidas introduced the 'Al Rihla,' the official match ball of the 2022 World Cup. Al Rihla in true sense means 'the journey' in Arabic and it is designed to support the highest game speeds as it travels faster in flight than any FIFA World Cup ball created before it in the tournament's 92-year history. The latest Adidas Suspension System was fitted at its core, containing a motion sensor that tracks every touch of the game at a rate of 500 times per second. The motion sensor inside the ball will enable the collection of incredibly accurate ball movement data, which will then be transmitted to Video Match Officials within seconds throughout the tournament. This data is then used by Video Assistant Referees (VAR) for instantaneous information to help optimize decision-making.

### **3D Animation**

3D animation technique was one of the innovative techniques used in the tournament. With the help of this amazing technology the data generated by the cameras and the ball will create automated 3D animations to depict the exact position of the players at the precise moment that they were offside. The video is able to pick up the position of the player's limbs at the moment the ball was played. This 3D animation will show the best possible perspectives for an offside situation and will be shown on the screens in the stadium, as well as being made available to FIFA's broadcast partners to show audiences in the clearest possible way.

### **Cooling Technology**

Beyond the turf, Qatar used technologies to help players and fans keep cool in the desert climate, with temperatures anticipated to reach between 21 to 26 degrees Celsius. Seven of the eight stadiums have been built with Advanced Cooling Tech, a revolutionary technology that kept the atmosphere inside the stadium cool. Energy centers situated near the stadia helped to operate the process. From those energy centers chilled water was brought in by a pipeline to the venue. Once it arrived, cold air is pushed onto the field of play and spectator seating areas. The systems used insulation and spot cooling to make them as environmentally friendly as possible. Qatar, a country so hot that summer temperatures can exceed 110 degrees Fahrenheit (43.3 Celsius), provided eight fully operative air-conditioned outdoor stadiums to host the 64 matches for the 2022 World Cup.

The College of Engineering at Qatar University, explored the cooling technology inspired by old-style car radiators. Within the stadiums, cooled air wafts are produced by water refrigerated by massive absorption chillers, powered by the energy produced from water heated by solar panels, which are stored in temperature-controlled tanks. The cooled air is released using grilles placed in the stands and nozzles facing the game field.

**The goal-line technology:** The goal-line technology helps to instantly determine when the match ball has crossed the goal line. The information is gathered using 14 dedicated high-speed cameras placed under the roof of the stadiums. The information helps to create a 3D animation to visualize the final decision and broadcast it anywhere intended. The information is transmitted to the referee's watch.

**Facial recognition technology and drone surveillance at stadiums:** The Aspire Command and Control Center (ACCC) used 22,000 security cameras to monitor the eight stadiums and Qatar's streets to offer better security to spectators. The ACCC had the latest facial recognition technology enabling to zoom in on each of the 80,000 spectators present at the Lusail Stadium. In addition, with a single click, the ACCC can shift views from one stadium to another stadium.

With the help of artificial intelligence the ACCC had the ability to forecast crowd patterns using the exact number of people expected at each sports venue. Thus, the ACCC can predict crowd surges and/or the formation of potential stampedes using data such as time of arrival, points of entry, and/or movement of people at any given time.

Drone surveillance, recently developed by Qatar University, helped to produce information about the number of people using city streets. This data is sent to the ACCC and allows for safety and transportation systems monitoring. The use of Interceptor Drones aimed to deter potential attacks from other unmanned aircraft systems at the stadiums.

**Enabling visually-impaired fans to enjoy the game experience:** Thanks to the technology employed during the 2022 world cup, even the visually impaired are accounted for. Visually impaired fans have the opportunity as never before to enjoy the World Cup games experience thanks to two portable assistive technology platforms. The Bonocle works as a smartphone/tablet controller and converts the content of the screen into Braille in real-time. The Felix Palm communicates electrical impulses to broadcast a braille-like message directly on the individual's palm. The Felix Palm does not restrict people's hearing or physical movements.

**Visa deploys face biometrics as proof of payment:** To complete this story, fans have the opportunity to enable facial recognition as a form of payment. This innovative approach, used for the very first time in a sports event, is VISA's Pay with your face. Customers are required to enroll so once face biometrics are recorded, they are only required to show their faces as a form of contactless payment without the need for cards or smartphones. The facial recognition technology is brought by the Qatar National Bank and POP ID, supported by 'Visa via tokenization.' Visa has installed 5,300 contactless payment terminals in Qatar.

### **Summing up:**

From the above literary materials it is clear that science and technology have occupied a noteworthy position in the arena of Sports and games. Science enriches the sport field with modern facilities and Sports in its turn provide spectators with more and more enjoyment, fun and satisfaction. Sports and games simultaneously, opening new avenues for the researchers in the field of engineering and technology for new innovations and explorations. As a whole human folk is marching towards the pinnacle of development with the help of Sports, games, science, and technology.

### **References:**

1. <https://www.fifa.com/technical/football-technology/football-technologies-and-innovations-at-the-fifa-world-cup-2022>
2. <https://www.adda247.com/upsc-exam/saot-fifa-world-cup-2022/>
3. <https://wired.me/technology/all-the-technology-in-qatars-fifa-world-cup-2022/>
4. <https://www.drishtiias.com/daily-updates/daily-news-analysis/fifa-world-cup-qatar-2022>