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Informing IoT and the Connected World

IoT gets tops scores from sports teams worldwide

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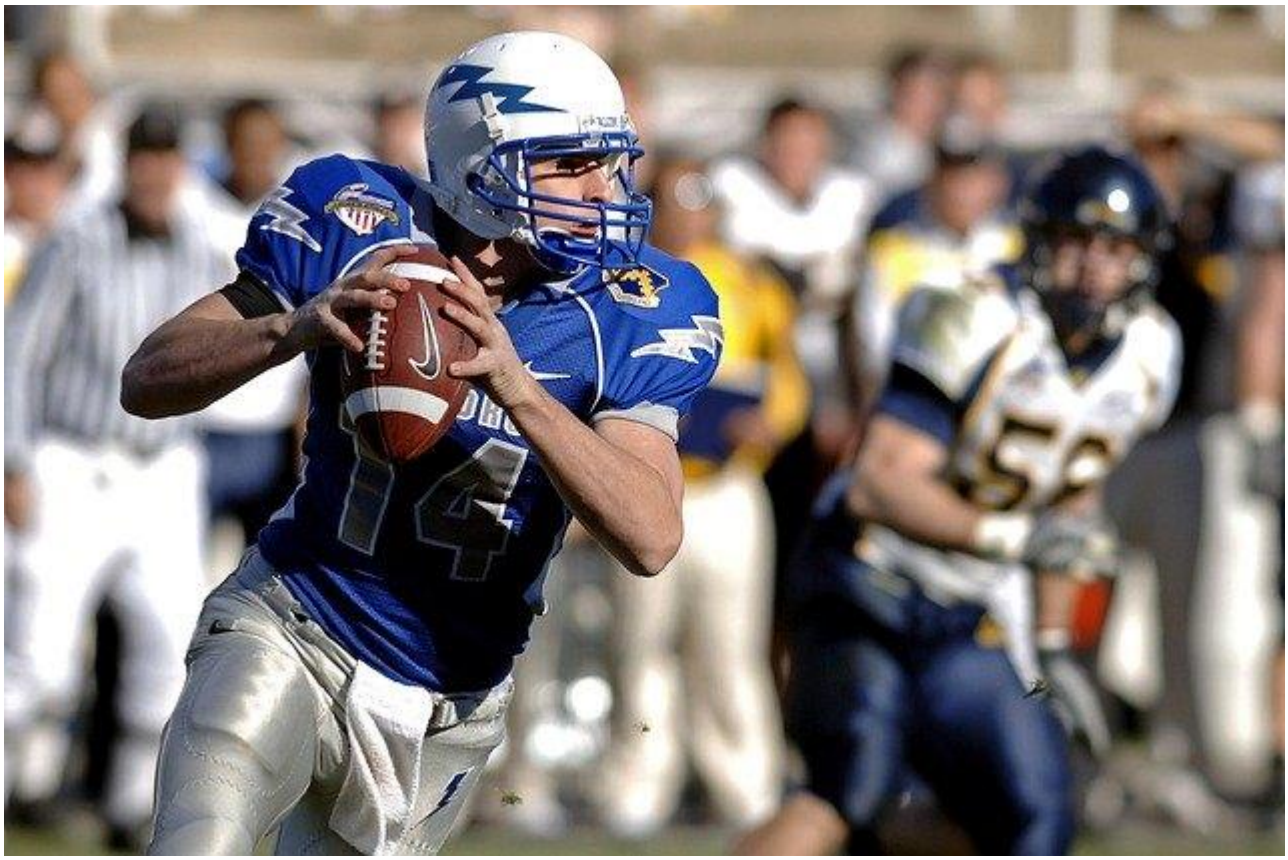

The sporting world is a growing market for IoT technologies, as teams and sports organizations increasingly seek to benefit from the opportunities generated by valuable data analytics. Their goal? To improve both athletic and business performance.

To get an idea of the potential of IoT in sports, one need look no further than the National Football League (NFL) in the US. It has enthusiastically adopted IoT, using sensors worn by players to measure and record team plays. More recently, it expanded its game data collection effort by using sensors secured in the footballs themselves.

US-based Zebra Technologies, a specialist in printers, scanners and mobile computers, is an important player in this area. Its RFID sensors have been carried in NFL team players' shoulder pads for the last three seasons now. The player data from every game, meanwhile, is transmitted to around two dozen IoT data collection beacons deployed around stadiums, and then forwarded to a Zebra network operations centre located in San Jose, California.

Statistics mad

The data is analyzed on behalf of NFL.com and media organizations, who can then use it to illustrate how a game is unfolding for American football fans around the world. From this season, a Zebra RFID tag has also been successfully deployed in every Wilson ball used in games, in order to add to the enjoyment of statistics-mad fans and measure everything from ball location to velocity and height.

About one-third of NFL teams also use Zebra's sports practice solution to get training analytics that measure player performance and health. These include the New Orleans Saints, who recently beat Miami Dolphins in an NFL showdown at Wembley, London.

The data collected can be sent to a coach's laptop, tablet or phone in real time. Sean Payton, head coach for the New Orleans Saints, says: "The information provided by Zebra has proven to be a vital asset to our staff in evaluating and training our entire squad. Adding tracking capabilities to the ball will take things to another level for us."

Other players in this field

But it's not just Zebra that wants a slice of the action. The company's sports IoT efforts face competition from others, including Australia-based Catapult, which also supplies its player measurement system for practice to one-third of NFL teams and, like Zebra, has extended its use to US college football teams.

Catapult's customer base is arguably more diversified though, as it also includes several top soccer teams like Chelsea Football Club in the UK, Paris Saint-Germain in France and Bayern Munich in Germany. The company's systems have also been used in rugby union (by Saracens in the UK), a number of NBA basketball teams (including Golden State Warriors in Oakland, California), and teams in Australian Rules football and cricket.

A third player in the sports IoT field is US-based Zephyr Technology, which makes a 'bio-harness' that allows coaches to measure players' heart rate, breathing rate, core temperature, acceleration and other parameters.

Opportunities and obstacles

On a recent trip to San Jose, California, *Internet of Business* was invited to Zebra's sports command centre to find out how IoT opportunities were shaping up, and what obstacles must be overcome for wider use.

Mention IoT deployments, for example, and a conversation about data security is sure to follow. The IoT data beacons in NFL stadiums receive information from the chips in players' jerseys – and from footballs – at a rate of 25 pings per second.

Mike King, director of sports products at Zebra, said that since these pings are so rapid and randomly sent to different beacons in the stadium, in line with moving play, the threat of wireless data being compromised in this process is not an issue. However, he added that a big issue around data security is around how the recorded data is perceived by players' agents.

Actual game data is controlled in a protected NFL database and distributed by that body to all teams after the weekly games have been completed, and it is down to them to decide what is publicly released.

Typically, only portions of it are released to the media during game play. King explained: "Agents want specific player data [including team practice data] to stay private, as it could affect player values, in their eyes." But he pointed out that this works both ways – if an individual player's stats look good, their value could rise.

Data security is also highly relevant for the information collected on player health and fitness. King said that coaches are mindful of this, as are the players themselves.

An obvious question, though, is why doesn't the NFL put RFID tags in players' helmets, to help measure the potential effects of brain trauma – an increasingly controversial issue in the game. Studies have shown that some recently retired NFL players show signs of rapid brain ageing, a condition linked to trauma injuries incurred on the field.

A Zebra spokesperson told *Internet of Business*: "Based on the requirement and direction of the NFL, and the purposes they are looking to serve, we together determined that placing our chips in the shoulder pads to be optimal. We do not measure or calculate force or impact information. Those needs were not requested as part of our engagement."

For the record, however, Catapult does offer a body solution to measure impact force, which has already been used by Australian Rules football and rugby teams.

Extending IoT to other matches

How the game of football (or, to be more specific, 'soccer') extends its use of IoT in professional matches will be dictated by world football federation Fifa, which so far has not endorsed the use of wearable technology outside of training.

Slow-moving Fifa has a track record as a technology laggard. It was virtually dragged into endorsing goal-line technology only after a number of high-profile matches – including some in the Fifa World Cup – saw goals wrongly disallowed by overstretched referees and their linesmen.

The NBA (National Basketball Association) has also not endorsed the use of wearables in actual matches, although many teams in Australian Rules football already use Catapult in professional games. Zebra's Mike King counters that other sports are already showing signs of adopting IoT outside of practice – including soccer.

He added: "This pre-season, we tested our technology in the ball at a [soccer club] Seattle Sounders friendly match and it worked. It was quite funny when the ball went into the crowd and we could trace the ball to the nearest seat, which was important as we never had too many of them!"

As Seattle Sounders are the reigning Major League Soccer (MLS) champions, this could be a potential breakthrough in the sport for IoT.

Zebra is also in talks with the International Olympics Committee (IOC) about introducing its systems into the training regimes of athletes who take advantage of facilities in Colorado and also Olympic swimmers.

It is clear that professional sports is a growing industry vertical for IoT, and if the data generated is a winner for clubs, players and fans, then the ensuing contest between technology providers could prove compulsive viewing for all.