Digital Transformation Monitor

The Internet of Things: reshaping the sport industry

May 2017
The Internet of Things: reshaping the sport industry

While initially dominantly found among runners, companies have started to expand their connected device offer to additional sport markets, thus pushing innovation and technology in the entire sport industry. Traditional sports companies have realized the importance of keeping up with the newest innovative trends to improve their sustainability. At the same time, the IoT has offered new innovative companies the chance to enter a market longtime dominated by a few traditional players.

1

The race is on for connected devices in sport

Sport is a key vertical in IoT

Today, sport has become one of the principle vertical markets for connected objects and the Internet of Things. Broadly speaking, we see two types of connected objects in this vertical: general purpose connected objects (such as smart watches and activity tracking bracelets), and dedicated connected objects (such as pedals, rackets and balls).

Reasons for introducing connected devices into sport

The use of connected objects in the field of sport pursues two main objectives. The first objective is to measure the sporting performance, also often referred to as the concept of the “Quantified Self”. The other objective is to increase the safety and security of the athletes which will be discussed in greater detail below.

Differing brand strategies are emerging

Sports apparel brands

The major sport apparel companies have had to adapt to the IoT in order to maintain their innovative and cutting edge image. The acquisition of “pure” players (i.e. those specialised in providing connected devices in sports), such as Under Armour acquiring Endomondo and Adidas acquiring Runtastic, have helped these players remain competitive despite connected devices being outside of their core competence.

Sports accessory companies

Historically positioned on the high-end market targeting intensive sports users, sports accessories (such as Garmin and Polar) have steadily diversified into other activities such as fitness, golf and swimming. They are also increasing their presence on the market by introducing their own connected bracelets.

Consumer electronics

For those businesses focusing on consumer electronics, smartphones remain the main connected device. To expand their market presence, these companies rely heavily on partnerships with major apparel brands, such as Apple with Nike and HTC with Under Armour.

Pure Players

There are two types of pure players in connected devices for sports; wearables manufacturers and sensor providers. Whereas the former is aimed at the general mass market, the latter tends to target top athletes and professionals.

Internet Players

Faced with the ever increasing amounts of applications and connected devices, the Internet giants are aiming to create an ecosystem, which aggregates personal sporting data by providing platforms (such as GoogleFit, Apple HealthKit and WatchKit).

The connected sports devices market in 2021:

253M unit sales, 37B EUR market

<table>
<thead>
<tr>
<th>Connected object manufacturers</th>
<th>Connectivity providers</th>
<th>Platforms providers</th>
<th>Applications providers</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sport apparel companies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sport accessories companies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pure players</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumer electronics manufacturers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet players</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telcos</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: IDATE
The Internet of Things: reshaping the sport industry

Performance measurements - the quantified self

Connected devices aimed at monitoring running performances at the heart of the connected devices trend in sports

Performance measurement is the primary factor of connected devices entering the world of sports. In particular, performance measurement for running has taken center stage for connected devices in sport.

The running market has been continuously growing for years. In France for example, the number of regular runners has doubled from 6 million in 2000 to 12 million in 2016. The volume of runners thus presents a huge potential market, estimated at 1 billion EUR in 2016 according to the French Federation of sport & leisure industries.

This positive trend has been accompanied by the arrival of connected devices and mobile applications allowing runners to follow and measure their performances. 65% of runners use a smartphone (versus 44% in 2014), with 40% launch a dedicated application upon their running session.

The table on the right summarises the four major quantified self running applications. It is estimated that each application has tens of millions of active users worldwide. It is worth noting that all four of these applications are owned by a leading brand specialising in the sport domain.

Service offering and business model vary between the applications

As can be seen from the table, service offering varies: there are features to track and monitor performances (session statistics, guides, history), to motivate the user (challenges, live encouragement, stimulating music), to promote interaction with the community (publication on social networks, challenges) and to enhance the training sessions (music, stories).

Concerning interoperability with other connected objects (such as a smartwatches, bracelets, and heart rate monitors), most models are compatible with other wearable devices except for the Nike application which only allows interconnection with the iWatch. Such wearables allow the users to follow, manage and analyse their performances in real time without having to take a device out of its place (typically the smartphone). This is one of the key elements explaining the growth of connected devices within the sports domain.

Pricing strategies differ according to the brand

What is particularly interesting are the differences in approach to the pricing of services. At one end of the scale is Nike, offering everything for free, whereas on the other end of the scale one can find Adidas offering the bulk of its services as a premium offer (it should also be noted that Nike offers the least amount of services). Asics and Under Armour base their model on a generally free offer, focusing on select paid services for the more experienced runners (personal training programs, weather and nutrition guides, VIP support and so on).

IDATE estimates Adidas’ Runtastic generates the most revenues, generating approximately EUR 220 million.
A dedicated running mobile application - a must for all sport apparels

All traditional sports apparel makers now have a dedicated mobile running application that has either been created in-house within the Group (such as Nike and Puma), or through a strategic acquisition (Runtastic by Adidas, Runkeeper by Asics, and Endomondo by Under Armour). The importance here is that these applications provide access to a potential pool of customers that could be interested in purchasing their more “traditional” equipment, such as shoes, clothes and other branded goods. To remain a cutting edge sports brand, it is increasingly becoming a prerequisite to offer connected devices; the risks of missing out on the increasing power of digital in sport being simply too great.

Even connected sportswear!

The sports market is increasingly focusing on specific technical devices, and some of the major brands such as Nike and Garmin are now looking at connected textiles. Sensors are integrated directly into the clothing, allowing for more accurate data to improve performance measurement. At present the development of connected textiles primarily focuses on professional athletes. However, in the medium to long term this trend is also expected to enter in the consumer mass market, as its popularity increases and price points fall.

The connected ball - connecting sports equipment

In the ball sports domain, Wilson has introduced the smart basketball. The Wilson X Basketball has multiple sensors integrated, allowing for various measurements such as shooting accuracy, shooting distance, most successful shooting zone, shooting history, and so on.

The data is transmitted via Bluetooth to the users’ smartphones. A dedicated application then allows the users to analyse the statistics, and to share their data with friends. The application also proposes various challenges such as the buzzer beater, time challenge and free throws, providing an immersive experience to customers.

This connected basketball is available for around EUR 180, and an American Football version is expected for Autumn 2016.

One of Wilson’s main objectives for creating a connected basketball is to remain competitive against the video game industry, which by its nature is an indoor activity and thus goes against the principle of practising sports outside. Wilson thus targets the general mass market with its connected balls. At the same time however, more sophisticated versions of the connected balls are planned for the longer term, to target the professional markets.

Involving the professional sports market

Performance measurements play an integral role in the world of professional sports as can be observed on the case of Stats Sport, who provide around 140 of their clients with the solution ViperPod.

Various objects are inserted into the sportswear: four processors, a GPS, a long range radio system, a cardio meter, an accelerometer, a gyroscope and a digital compass. These are then connected to a dedicated tool which allows performance measurement in real time: distance run, heartrate, speed, acceleration and deceleration, metabolic charge, impact reporting, signs of tiring, stress levels, and so on.

The large amounts of data gathered in this way can be used to prepare athletes for matches, to check recovery levels, to vary the training depending on physical attributes, the strategic positioning of the players, and so on. It can also be used to assist in the easing back of players from injury requiring specific training menus.

The Irish and English national teams are, for example, professional sports bodies using the ViperPod solution.
The safety of athletes

The safety of the athletes has always been, and always will be the priority for any sport. Connected devices are expected to further develop in order to help keep athletes safe and secure.

Connected caps to measure head impacts

Reebok offers a connected cap for practitioners of combat sports, American football and hockey. The connected cap measures the impacts received on the head, registering information on the number, force and position of the impacts. The cap not only measures the moment of impact, but also the movements following the impact rather than the impact itself. The cap is expected to further develop in order to encourage the use of connected devices in these sports.

This raw data can then be even further then complemented by applications that analyse the data and offer services based on the information received. Coaching services, for example, inform the athlete of past and current performances, and suggest ways for improvement thus keeping the customer engaged with the services provided.

Cycling helmet

Chinese maker Livall has developed a connected cycling helmet. An LED device on the back of the helmet allows the user to be visible at night, and is also equipped with indicators to notify other motorists when changing direction; a dedicated device is attached to the handlebar to control these lights.

In the case of a fall, the helmet automatically sends a signal to a predetermined list. The helmet also contains a hands-free kit, equipped with a mic and speaker so that the rider can keep his or her hands on the handlebar. The helmet is expected to be available for around EUR 129.49, aimed at the general public.

The spread of connected devices to new sport activities

Basic measurement data such as speed, distance and calories burned can be applied to a wide variety of sports. To this information, sport-specific data can be added, such as shooting accuracy for basketball, swing data for golf, or tricks and moves for skateboarding.

The emergence of connected objects is spreading to all sports as can be observed in the table below. While running remains the main sporting activity incorporating connected devices today, the use of connected devices is diversifying and spreading to a wide variety of sports.

<table>
<thead>
<tr>
<th>Sport categories</th>
<th>Sports</th>
<th>Type of measured data</th>
<th>Services</th>
<th>Device/support object (brand)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Athletic</td>
<td>Running, jumping, throwing</td>
<td>Speed, length, distance, calories, heart frequency, time, altitude, foot contact, foot landing, cadence, steps, hydration</td>
<td>Coaching, social sharing, weather</td>
<td>-Smartwatches (Apple, Garmin, Samsung...) -Wristband (Fitbit, Jawbone, Runtastic) -Shirt (Hexoskin, Vert, Athos) -Socks (Sensoria) -Shoe (Tune) -Sole (Rcup)</td>
</tr>
<tr>
<td>Gymnastics</td>
<td>Gymnastic, aerobic, dancesport, yoga</td>
<td>Intensity, stress, jump, amplitude, position, foot pressure, speed</td>
<td>Coaching</td>
<td>-Shirt (Vert) -Mat (SmartMat) -Bra (Sensoria) -Wristband (Move) -Shoe (E-Traces) -Skipping rope (Sophia)</td>
</tr>
<tr>
<td>Watersports</td>
<td>Swimming, diving, waterpolo</td>
<td>Speed, length, distance, tempo, efficiency, position, water contact</td>
<td>Coaching, safety</td>
<td>-Watch (Garmin) -Wristband (Speedo, Decathlon, Withings) -Headphones (Swimbolt) -Headband (Swimband) -Glass (Institute)</td>
</tr>
<tr>
<td>Boating</td>
<td>Rowing, canoeing, sailing, water skiing, surfing</td>
<td>Number of waves surfed, speed, duration</td>
<td>Coaching, social sharing, weather</td>
<td>-Surf (Samsung) -Smartwatch (Glassy Pro One, Rip Curl)</td>
</tr>
<tr>
<td>Racket or butts</td>
<td>Tennis, table tennis, baseball, softball, golf, badminton, squash, field hockey, ice hockey</td>
<td>Power, swing, speed at impact, time to impact, attack angle, tempo, position, rotation, spin, heart frequency, shock, impacts, speed of stroke, shot duration, weight transfer</td>
<td>3D analysis, video analysis, social sharing</td>
<td>-Racket, bat, club (Piq, Zepp, Sony) -Wristband (Babolat, Smash) -Helmet (Shockbox) -Hockey stick (Fast Powershot) -Shoe (IOFIT) -Field (Mojio) -Ralph Lauren (shirt)</td>
</tr>
<tr>
<td>Sports ball</td>
<td>Soccer, football, handball, basketball, volleyball, beach volleyball, rugby</td>
<td>Speed, length, precision, strike force, shot efficiency, zone efficiency, rotation, spin, trajectory, intensity, stress, jump, amplitude, shock, impact</td>
<td>Coaching, game play, social sharing, live streaming</td>
<td>-Ball (Wilson, Adidas, Inside Coach...) -Shirt (Vert, ViperPod, Citizen Sciences, Zebra) -Capsule (BodyCap) -Helmet (Shockbox) -Basket (ShotTracker) -Swatch (HoopTracker) -Tooth protection (FITGuard) Cap (Reebok)</td>
</tr>
<tr>
<td>Cycling / skating</td>
<td>Cycling track, road cycling, BMX</td>
<td>Tracking, speed, length, distance, calories, altitude, flashing lights, amplitude, air time, hauteur, tricks, power</td>
<td>Coaching, 3D analysis, video, social sharing</td>
<td>-Pedal (Connected Cycle) -Bike (LeEco, Xiaomi, Vanhawks...) -Helmet (Livall, Volvo, Lifebeam...) -Shoe (Misfit) -Handlebar (SmartHalo) -Skate (Syrmo, Trace) -Wristband (Move)</td>
</tr>
</tbody>
</table>

Source: Reebok
About the Digital Transformation Monitor

The Digital Transformation Monitor aims to foster the knowledge base on the state of play and evolution of digital transformation in Europe. The site provides a monitoring mechanism to examine key trends in digital transformation. It offers a unique insight into statistics and initiatives to support digital transformation, as well as reports on key industrial and technological opportunities, challenges and policy initiatives related to digital transformation.


This report was prepared for the European Commission, Directorate-General Internal Market, Industry, Entrepreneurship and SMEs; Directorate F: Innovation and Advanced Manufacturing; Unit F/3 KETs, Digital Manufacturing and Interoperability by the consortium composed of PwC, CARSA, IDATE and ESN, under the contract Digital Entrepreneurship Monitor (EASME/COSME/2014/004)

Authors: Vincent Bonneau, IDATE and Laurent Probst, Bertrand Pedersen & Jill Wenger, PwC

DISCLAIMER – The information and views set out in this publication are those of the author(s) and should not be considered as the official opinions or statements of the European Commission. The Commission does not guarantee the accuracy of the data included in this publication. Neither the Commission nor any person acting on the Commission’s behalf may be held responsible for the use which might be made of the information contained in this publication. © 2017 – European Union. All rights reserved.