

TECHNOLOGY WATCH REPORT



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TECHNOLOGY WATCH REPORT

Smart Sports

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Overview of innovation and tendencies in Smart Sports

The **definition of sport** in the “European Sport Charter” published by the **European Council** in 2001 refers to “all forms of physical activity which, through casual or organised participation, aim at **expressing** or **improving physical fitness** and mental well-being, forming **social relationships** or **obtaining results** in competition at all levels”.

Sport lifestyle and wellness

Driven by **socioeconomic and cultural changes**, the global sport industry has not ceased to transform itself and grow. **Motivation for movement** grows stronger in open as well as closed environments; among women and the elderly. In Spain, it is estimated that over five million members exercise at one of 4,650 fitness clubs, which is equivalent to a **penetration rate** of close to **11.5% of the total population**, whereas the top ten European fitness operators, as measured by revenue, achieved total revenues of EUR 3.3 billion in 2018¹.

The challenge of **overcoming** one's own limits and the desire to **feel better** physically, mentally and emotionally are two of the most frequent reasons given by sport and wellness enthusiasts. The **sense of belonging** to a group, as well as the recreational aspect associated with playing a sport, is also important and favours social cohesion activities.

Developed countries have greater awareness of the importance of **maintaining our physical and psychological faculties**, and the sport lifestyle has influenced sectors, including tourism and fashion, which place emphasis on healthy lifestyles.

Segment mapping

These **paradigms of beneficiaries and consumers** affect the **sports industry** whose mapping integrates various **segments**²:

- **Products and services associated with sport:** sports equipment; clothing and accessories; functional nutrition; healthcare, welfare and performance services and, finally, sports tourism.
- **The sports facility business:** constructors (of swimming pools, tracks, sports centres...), with their corresponding tradesmen; companies manufacturing and distributing sports equipment (markers, public address systems, software, etc.), as well as the management of sport installations.
- **The events (and other) segment:** Organisers; clubs; marketing companies; support services for the organisation of events; producers and companies exploiting image and news rights, as well as companies providing sports consulting, education and research and training services.

Understood in this wider sense, it is undeniable that sport has become a **powerful industry** that capitalises on its enormous capacity to stir up emotions regarding group identities. It transforms

¹ Deloitte (2019) *European Health & Fitness Market Report*.

² INDESCAT (2015) *La indústria de l'Esport a Catalunya. Update 2015*.

Capitalisation of emotions

emotions into profit and, furthermore, places this in the hands of specialists in marketing, who are even more expert in exploiting this vein to obtain the largest possible economic benefit.

The global sports market is witnessing continuous growth and expansion. Having come a long way from being a traditional industry, it has grown to encompass an entire ecosystem comprising multiple stakeholders and various layers of engagement. In 2018 the global sports market was valued at **471 billion dollars**³. Over 57% of the industry was in the hands of only five countries: The **United States** (32.5%), **China** (12.7%), Japan (4.6%), Germany (4.1%) and France (3.2%). All segments grew compared to 2017, with **shoes and clothing**, accessories and equipment showing the greatest increases.

The same analysts predict that this sector will still **grow by 33%**, to represent 626 billion dollars by 2023⁴.

Opportunities arise rapidly and in large numbers, but the significant evolution of this business takes place in **markets that are not without a certain complexity**. Over the last few years, sports experience has been enormously influenced by the evolution of the media, digital platforms, Internet and mobile telephony, and in a context of million-dollar investments in leagues, achieving the physical and virtual presence of **spectators at sporting events** is a considerable challenge.

Market tendencies

The **changes taking place** arise from the combination of socio-demographic and technological factors. Some of these tendencies⁵ are:

- Increase in real-time **physical safety** protocols in stadiums and their surroundings to prevent and control violent incidents and terrorist attacks. It is important to guarantee followers enjoy safe experiences, as well as to control markets for the fraudulent **resale** and sharing of tickets both off- and on-line. There is also a tendency to promote security and **transparency** when placing bets.
- **Flexibility in ticket** pricing and promotions often associated with opportunities for the active participation of fans. Stress the **experiences** of sporting events to compensate for the temptation to watch them from the comfort of home. Launch of **personalised offers** to **millennials** and the **Gen. Z** based on the capture and exploitation of data gleaned from digital platforms.
- Greater expectation of fan **communication** with **elite athletes**, a situation making them sporting and social **content creators**. The athletes become companies, overcoming intermediaries to connect directly with consumers and become key interlocutors of society. In this way, some athletes concentrate enormous power in favour of breaking down physical, mental, sexual, racial or religious stigma.
- Complement the presential experience at events by offering **synchronised added value digital contents**: statistics, close-up replays, highlights from another angle, etc. The collaborations between clubs and **on-line gaming companies** will tend to consider real time data flow and generate new interactions, especially if they want to attract younger fans who, rather than passive receptors, prefer to be participants and players.

³ NPD Group, Inc. (2019) *Global Sports Market Report*.

⁴ NPD Group, Inc. (2019) *Global Sports Market Report*.

⁵ Deloitte (2018, 2019) *Deloitte's sports industry starting lineup*.

Technological disruption

In short, the sport industry is not only going through an interesting **convergence** of sport-health welfare and influence on materials, equipment, fashion, nutrition and construction. It is also experimenting an intricate coexistence of events and media, sectors where the **technological irruption** reigns supreme, driven by advances in computing power, storage and software capacity, hardware miniaturization and network connectivity.

Technological solutions for sport

The **coupling of technology and sports** enables promoting a data-based sport culture and drive the next generation of monitoring, communication and experience. From improved athlete performance to transmission technologies, **sport technology is booming**. The **global sports technology market** size was valued at 9.80 billion dollars⁶ in 2018 and is estimated to register a CAGR of 20.3% over the period 2019-2025⁷. In **Europe**, the figures indicate⁸ a **growth rate of 27%** between 2017 and 2018.

The sport technology industry is a **widely diversified sector** comprised of companies that operate throughout the value chain, with often **interconnected and overlapping categories** that drive different **implementations** or solutions.

Classification of sport related technological solutions

Activity and performance	<ul style="list-style-type: none"> Equipment Analysis Orientation
Marketing and communication	<ul style="list-style-type: none"> Contents Social platforms Fantasy sports and betting
Management	<ul style="list-style-type: none"> Organisation Marketplaces
eSports	<ul style="list-style-type: none"> eSports

In-house data based on Penkert & Malhotra (2019) European Sportstech: Report 2019

The technological solutions surrounding the **activity** (before, during and after) and **sporting performance** share the common objective of increasing motivation, having fun, improving entertainment efficiency, safety and performance. They include offers for leisure, for amateur athletes, and professional athletes:

⁶ Markets and Markets (2020) *Sports Technology Market Size, Share & Trends Analysis Report by technology type, sports, region and segment. Forecasts, 2019 – 2025.*

⁷ Taxa anual composta de creixement.

⁸ Penkert & Malhotra (2019) *European Sportstech: Report 2019.*

- **Equipment:** Physical resources used during training sessions and competitions, such as materials with specific technical characteristics, wearables, instrumentation or areas with sensors.
- **Analysis:** Applications and solutions that record data and measure activity when it takes place, and then provides later analysis.
- **Orientation:** On-line training, tutorials and apps that provide knowledge, preparatory advice, guidelines or directives for practicing certain physical or well-being activities.

The **marketing and communication technologies** between fans and spectators capture, process and publish information, as well as entertain and build relationships between athletes, teams, brands and fans. They may be placed in the real world, the virtual world or a combination of both:

- **Contents:** Content applications and platforms provide news, audiovisual presentations, data or other types of contents to people interested in sport, whether broadcast live or recorded.
- **Social platforms:** Applications, on-line communities and social networks connecting fans of particular sports, often with useful and often entertaining outlooks.
- **Fantasy sports and betting:** Classic betting applications, to encourage contributions during sports events, game prediction or non-competitive on-line games, where participants act as trainers of imaginary teams, building their own teams from the profiles of real players.

Other technological solutions contribute to organisation management and the interchange of goods and people related to sporting activities:

- **Organisation:** CRM and other solutions for organisational management (Sports Clubs, facilities, associations, leagues, events), playing areas and equipment, for economic, relational or operational purposes including ticket sales or membership fees.
- **Marketplaces:** Platforms for searching for, booking and purchasing products and services, together with their corresponding offers. Some are oriented towards ticket purchases or sport related travel; others the search for athletes or trainers.

Finally, the **eSports** category refers to competitive games for a minimum of two players and professional videogames. The constant flow of new and exciting contents, the advances transmission technology, the boom of social network platforms and the displacement of consumer preferences towards increased participation and community experiences are some of the factors driving the rapid growth of the eSports market. This growth has been accompanied by the arrival of a whole **subindustry**: game editors, hardware manufacturers and media companies position themselves to provide services in this booming area and its growing base of young customers.

In constant evolution and expansion, the sport technology industry is in a race to identify **emerging and next generation technologies**, outstanding⁹ among which are **sensors** and wearables, **data analytics**, **RA**, **IA** and **IoT** and, finally, **multimedia**.

⁹ Deloitte (2018, 2019) *Sports Tech Innovation in the Start-up Nation 2017*.

1. Sensors and Wearables

Never before have we been as capable of understanding and exploiting the vast potential of the capabilities of the human body. Fan and athlete behaviour can be captured through the use of **advanced sensors** to analyse the physical condition, performance and safety of the player, as well as for prevention of injuries; these products are revolutionising training sessions.

The emergence of wearables in the past years is mainly built on physical-based sensors that collect and disseminate information using **GPS, accelerometers and gyroscopes**. Beyond these physical-based sensors, **other types of sensors** are emerging such as chemical-based, genetic-based, optical and brain-based sensors.

Wearables consist of **small electronic devices** incorporated into items that can be either worn or attached to various body parts. Comprising one or more sensors and possessing **computational capabilities**, they enable the users to track and collect data on various performance metrics. In this area, innovations are assigned to a various product categories:

- Smart bands and watches
- Earbuds and computer interfaces
- Smart clothing and footwear
- Embedded sensors

This technology often includes additional systems, such as **remote cameras and sensors arrays** placed around the playing field, allowing to record and analyze numerous types of data streams and metrics, including movement, speed, heart rate, respiration and even brain waves.

The next generation of “**wearables 2.0**”, are expected to progress from standalone devices to entire systems that incorporate multiple connected devices and cloud services, as part of the overall technological transition to **IoT**. New systems will be born that integrate **digital, physical and biological systems**¹⁰.

2. Data analysis

Outstanding among the technologies with greatest potential is **data analysis**. The application of high data management capabilities is transversal; it is used for performance, gaming, e-commerce, research and marketing solutions.

Cameras and sensors capture and recover huge amounts of data, and purchase, betting and gaming platforms control millions of users across the globe using automated algorithms that analyse every interaction. Through complex analysis, patterns, correlations and trends can be identified, providing previously unattainable insights and creating the basis for the design of efficient training sessions and highly popular applications.

In summary, the main areas of application are:

- Ball tracking technology providing exact metrics of trajectory and speed.
- Analysis of historical and actual game patterns with predictive purposes.

¹⁰ Zok, Cortadellas, Ferré, Shehabi (2019) *What's N3xt In Sports? 2019 Trends in sports technology*.

- Websites presenting statistical breakdowns and performance indicators.
- Analysis of fan preferences in order to predict attendance rates and optimal game scheduling.

Extending beyond sports performance analysis, clubs, leagues, media companies, and sponsors alike are utilizing analytics to study fans preferences and behaviours, seeking to expand their reach and market penetration. In this sector **dedicated data analysts** have become the norm; large clubs invest millions of dollars in creating their own analytics departments which provide the ability to make **highly informed decisions** at a faster pace than ever.

3. AR, AI, IoT and IoE

The transition of stadiums towards **immersive environments** based on technology has already begun. In an effort to boost attendance rates and reinforce their value proposition, organizers of major sporting events and owners of sporting venues are turning to mobile technologies and **augmented reality** to enrich and complement the fan experience by providing unique sensations that can only be achieved live.

On the other hand, **artificial intelligence-based** (AI) sports analytics are being used in developing strategies for scouting new talent. With recent advances in artificial intelligence including natural language processing (NLP) and **speech recognition**, voice is emerging as the next interface of data and technology interaction¹¹.

Moreover, the increasing adoption of IoT technologies for adequate management of stadium infrastructure is expected to be a key factor driving the market growth over the forecast period.

But these devices have already made the next leap, facilitating interactions and communication with humans and other objects, multiplying the number of potentially available connections. Thanks to advances in natural language processing, computer vision, voice recognition and machine learning, systems will talk, listen, see and understand the way people do.

This phenomenon is called the **Internet of Everything (IoE)**. These interactions will create radically new and elegantly simple experiences, driving new dynamics and yet unimagined opportunities.

4. Multimedia platforms, streaming and 5G

New multimedia platforms offering **immediate, continued and personalised** access to sporting events are influencing the relationship between the physical and the digital experience. Thanks to technological advancements, globalisation and better infrastructure, the breadth and quality of the broadcasted content is constantly improving. **3D technology and 4K resolution** offer new visual perspectives and more detailed analysis. The emergence of voice/audio companies focused on personalizing the fan's viewing experience will allow sports fans everywhere to consume their sport in the language of their preference. This level of personalization follows on from the announcement of **volumetric video**, which promises to transport the viewer to any point on the field to look at a play from any angle.

¹¹ Zok, Cortadellas, Ferré, Shehabi (2019) *What's Next In Sports? 2019 Trends in sports technology*.

Mobile and tablet devices are spearheading this change in viewing habits, serving as the primary conduits for accessing content through direct **on-line streaming** and participating in interactive activity. The ecosystem will be fully transformed once 5G capability and integration take place. With the promise of 10x less latency, 50x more speed and 1000x more capacity than 4G, 5G will provide a new opportunity to sports organizations to create unforgettable fan experiences.

5. Blockchain

The digital landscape continues to benefit fans and sports organizations to explore new ways of deepening their relationship with each other. Over the few years we will see the rise of various crowdfunding and fan facing initiatives such as Fan Token offerings, driven by underlying blockchain technology¹². These new financial ecosystems bring fans to the table and provide organizations with new methods of engagement.

Just like any evolving industry, emerging technologies and solutions present a plethora of interesting **opportunities** for both businesses and **investors**.

But in spite of the considerable investment taking place, paradoxically for a few years sport has been one of the most intriguing markets when speaking of assuming economic risks¹³. One possible reason is the relative **immaturity** of the sports technology market. A second explanation stems from the fact that sports tech start-ups, in spite of being based on cutting-edge technologies and referring to predictable fan behaviour, in some cases only target very specific sports; **niche markets**. Finally, it could be that some of the business models assessed by investors are not clear enough about which interest group the product is really targeting, due to the **complex monetisation relationships** between teams, clubs, the media, sponsors and fans.

Nevertheless, in this area numerous **start-ups and specialised venture capital funds** are being created. On a global level the top three technologies for investment are¹⁴:

- Media and content-related platforms.
- Measurement platforms for data, analytics and biometrics.
- eSports.

Other notable areas include athlete technology and performance optimization, IoT, gambling and gaming and **recovery health and home fitness**. There will be a marked increase in the number of companies providing smart home solutions, which can be extrapolated to sports at home with the ability to provide massive value to the sports industry¹⁵.

Sports influence our lives in numerous ways, culturally, socially, nationally and now more than ever, also economically and financially. These advancements are transforming the way sports are played and experienced in previously unimaginable ways, and influence **transformations in the roles** of athletes, manufacturing companies, clubs, leagues, the media, sponsors, investors and the fans themselves. In this new paradigm, in order to stay in the game, sports organizations require holistic outlooks and strategies that incorporate the **language of innovation**.

¹² Zok, Cortadellas, Ferré, Shehabi (2019) *What's N3xt In Sports? 2019 Trends in sports technology*.

¹³ Deloitte (2018, 2019) *Sports Tech Innovation in the Start-up Nation 2017*.

¹⁴ Michael Provan (2019) *The future of sports tech: Here's where investors are placing their bets*

¹⁵ Zok, Cortadellas, Ferré, Shehabi (2019) *What's N3xt In Sports? 2019 Trends in sports technology*.

Entrepreneurship
and investment

Managing the
change

Successful sports organizations in the future will be those that are capable of developing experiences that bring their brand closer to their fans wherever they may be in the digital world. The growing need for data processing will transform sports organizations into data organisations.

But the capacity to search, analyse and interpret data is tedious, requires time and needs trained **staff**. On the flip side, deployment of sports technology requires a high initial **investment and a long timeframe** for the return on investment¹⁶. Moreover, increasing risk of technology glitches are expected to challenge the sports technology market growth. Additionally, the complexities involved in replacing and upgrading legacy systems are also expected to hinder the market growth.

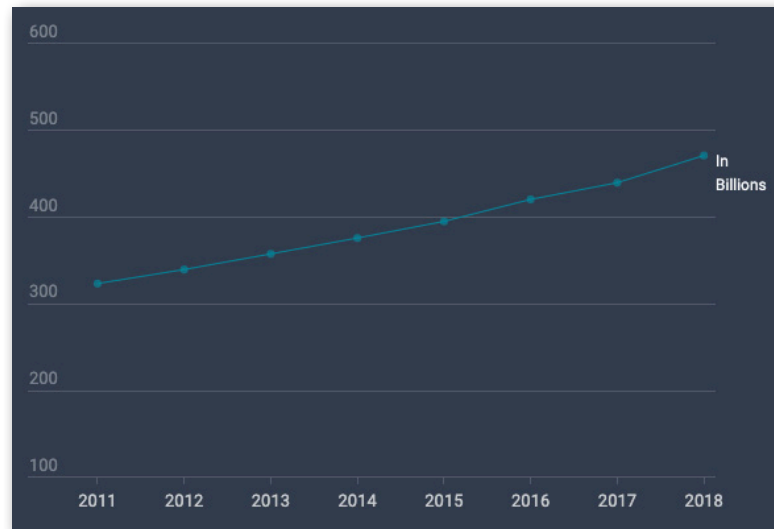
Modern companies are forced to manage the change, and this recommends achieving **sophisticated collaboration agreements** with technology suppliers, expert knowledge and contents. The world of sports has come a long way from merely being a popular pastime activity. It is in constant evolution and expansion and has grown to encompass a **complex ecosystem** that includes various interest groups and multiple forms of engagement. This transformation process will not be complete without **redesigning regulations and policies** and **upskilling talent** to accommodate these changes.

¹⁶ Markets and Markets (2020) *Sports Technology Market Size, Share & Trends Analysis Report by technology type, sports, region and segment. Forecasts, 2019 – 2025.*

2

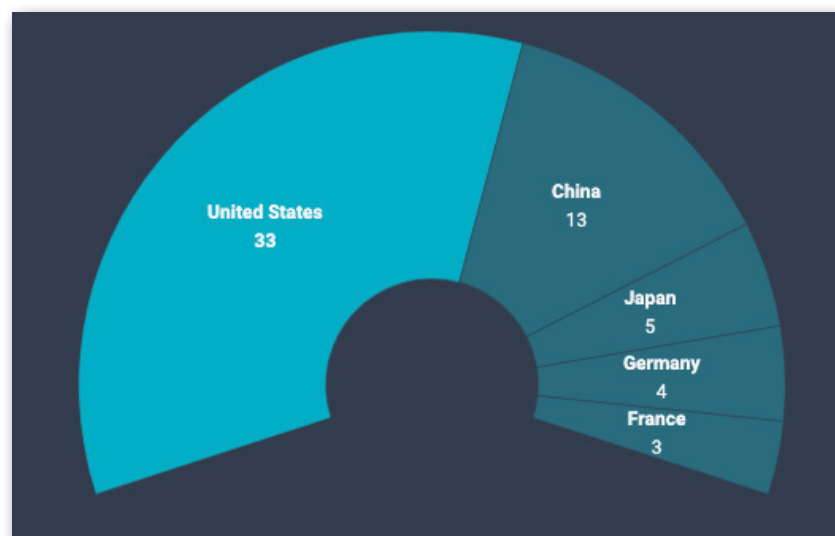
Smart Sports: Key infographics

2.1. Global sports Market



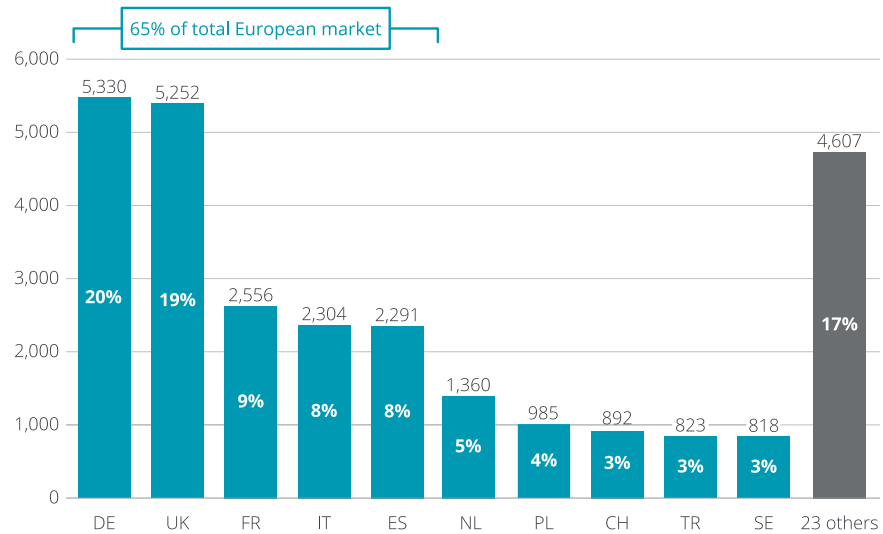
Source: NPD Group, Inc. (2019) Global Sports Market Report
<https://footwearnews.com/2019/business/retail/global-sports-market-2019-statistics-1202804732/>

2.2. Country contribution to the global sports market



Source: NPD Group, Inc. (2019) Global Sports Market Report
<https://footwearnews.com/2019/business/retail/global-sports-market-2019-statistics-1202804732/>

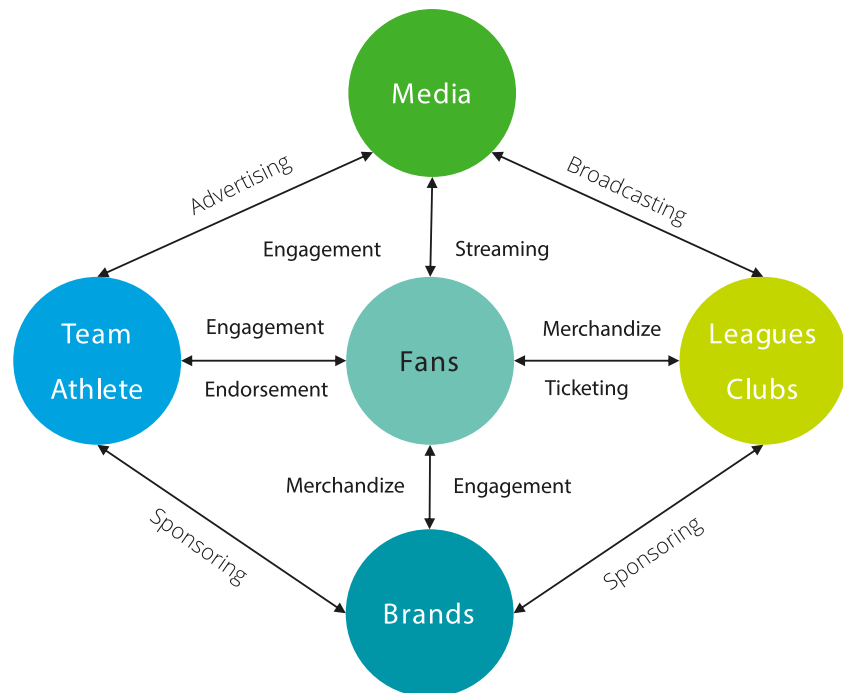
2.3. Top 10 European fitness markets 2018 (revenue in Million EUR)



Sources: EuropeActive, Deloitte

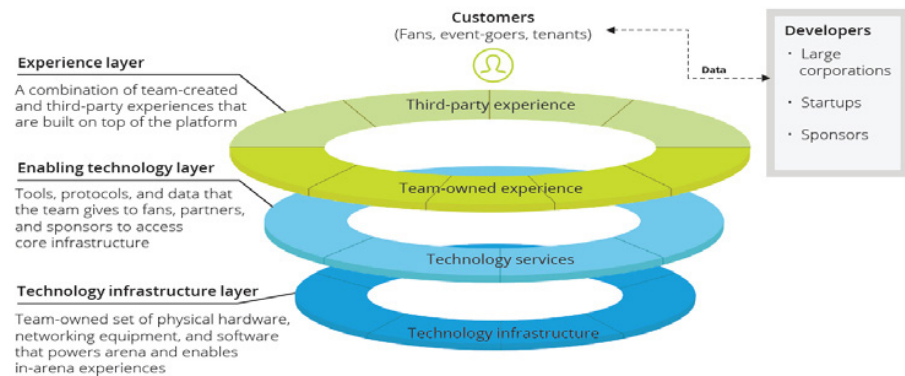
Source: Deloitte: European Health & Fitness Market. Report 2019

2.4. Sports ecosystem: 5 main Stakeholders



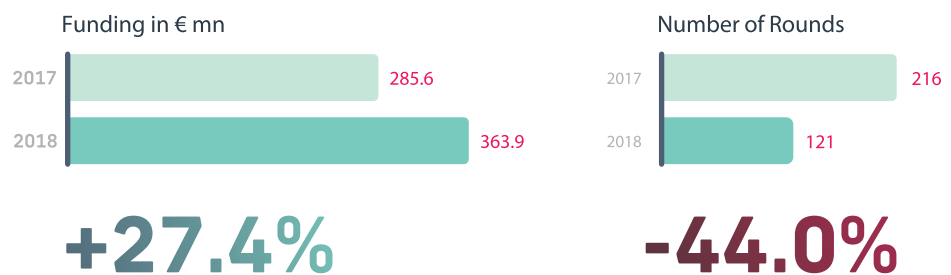
Source: Deloitte: Sports Tech Innovation in the Start-up Nation. 2017

2.5. Key variables to add value to the stadium



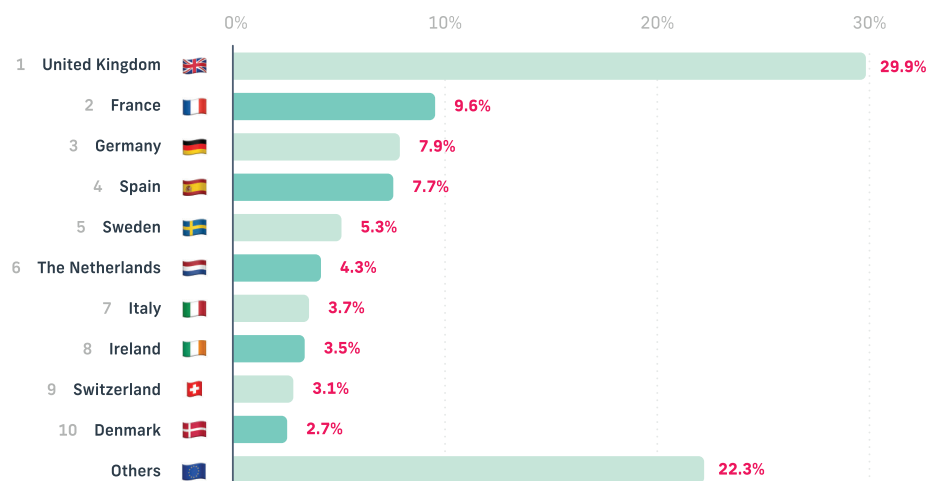
Source: Deloitte: Sports Tech Innovation in the Start-up Nation. 2017

2.6. SportsTech Investment Activity in Europe (2017 vs 2018)



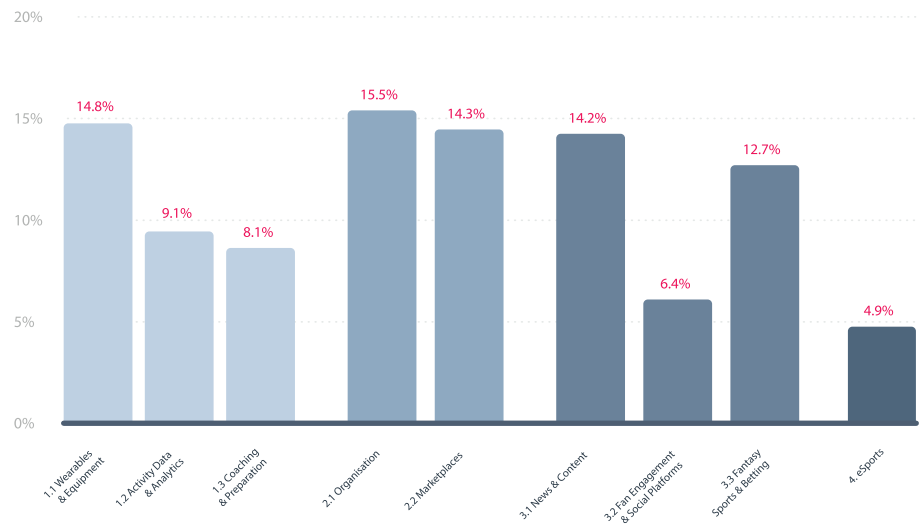
Source: SPORTSTECH: EUROPEAN SPORTSTECH: REPORT 2019

2.7. Top 10 SportTech Countries in Europe 2018 (by Amount of Startups)



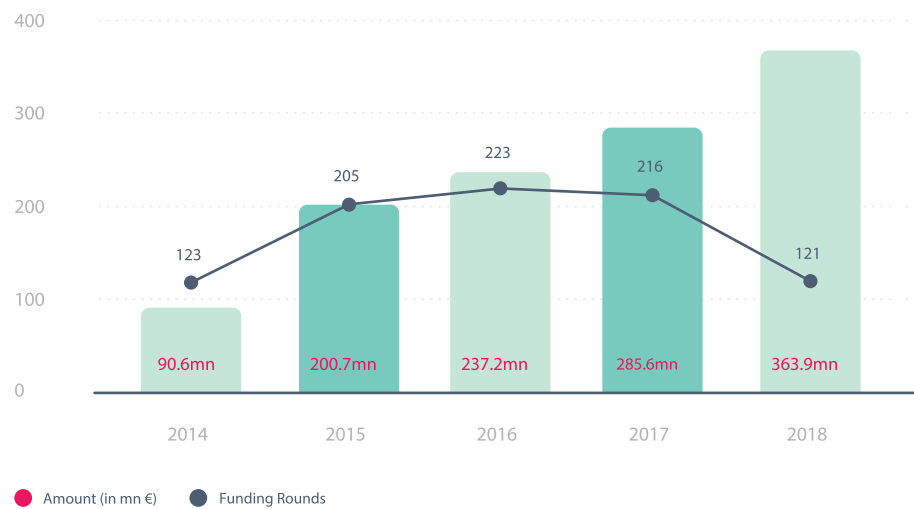
Source: SPORTSTECH: EUROPEAN SPORTSTECH: REPORT 2019

2.8. Top Sportstech sub Sectors in Europe 2018 (by amount of Startups)



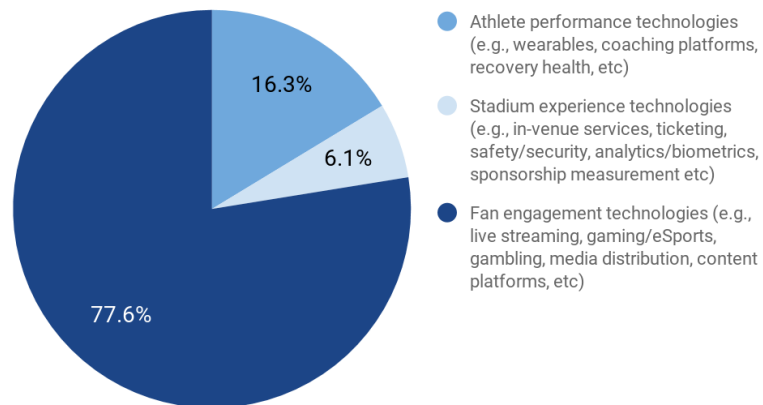
Source: SPORTSTECH: EUROPEAN SPORTSTECH: REPORT 2019

2.9. Funding Amount & Number of Rounds in European Sportstech 2014-2018



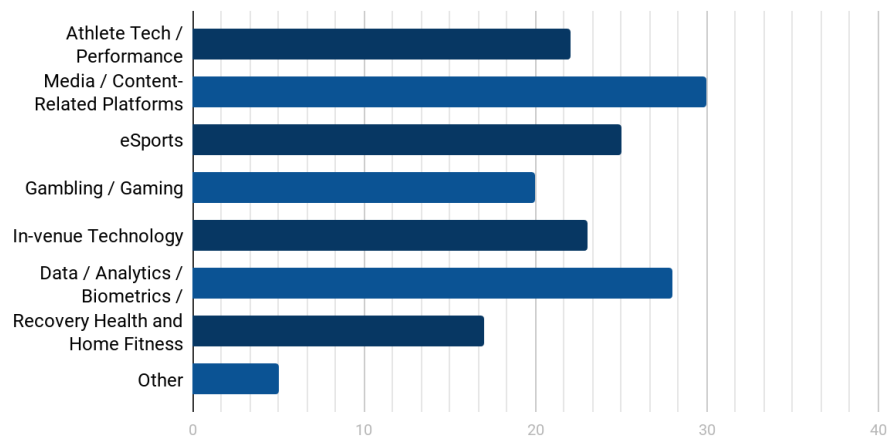
Source: SPORTSTECH: EUROPEAN SPORTSTECH: REPORT 2019

2.10. Technologies that will make impact on the Sports industry 2019



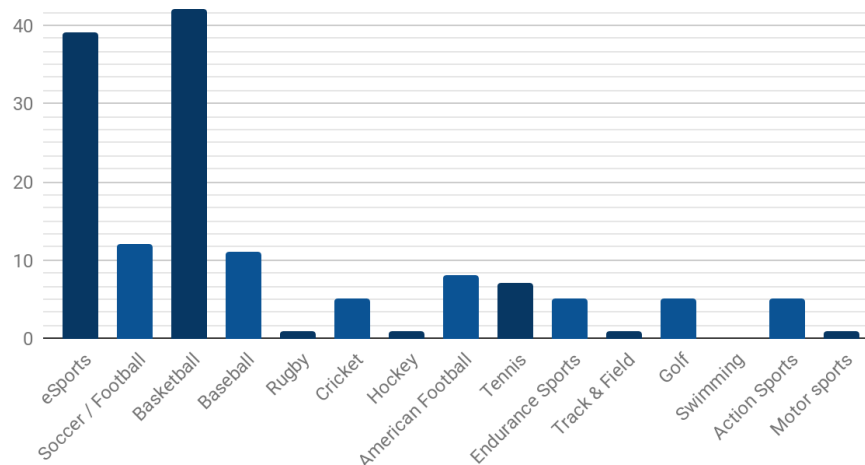
Source: The future of sports tech: Here's where investors are placing their bets.
<https://techcrunch.com/2019/10/01/the-future-of-sports-tech-heres-where-investors-are-placing-their-bets/>

2.11. Most attractive SportsTech for investors prospective



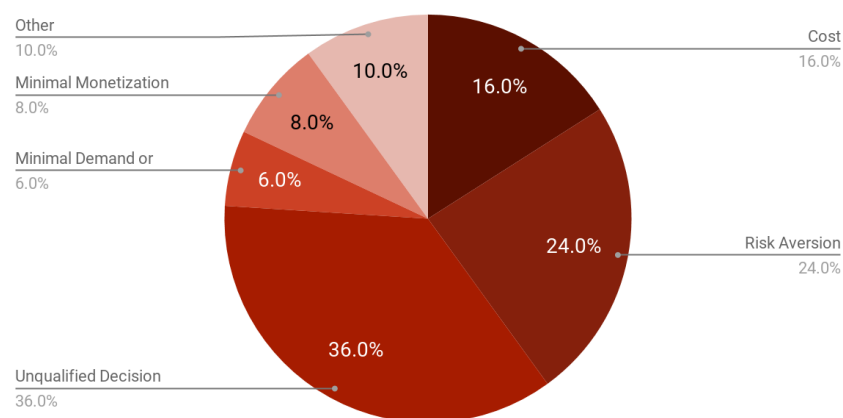
Source: The future of sports tech: Here's where investors are placing their bets.
<https://techcrunch.com/2019/10/01/the-future-of-sports-tech-heres-where-investors-are-placing-their-bets/>

2.12. Sports in the forefront of technology prospective



Source: The future of sports tech: Here's where investors are placing their bets.
<https://techcrunch.com/2019/10/01/the-future-of-sports-tech-heres-where-investors-are-placing-their-bets/>

2.13. Main Reasons why new sports Technologies are not adopted



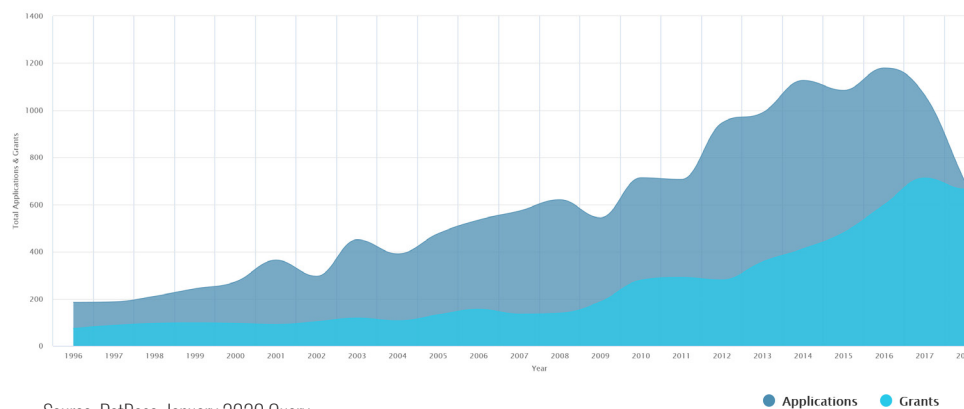
Source: The future of sports tech: Here's where investors are placing their bets.
<https://techcrunch.com/2019/10/01/the-future-of-sports-tech-heres-where-investors-are-placing-their-bets/>

3

Patent analysis

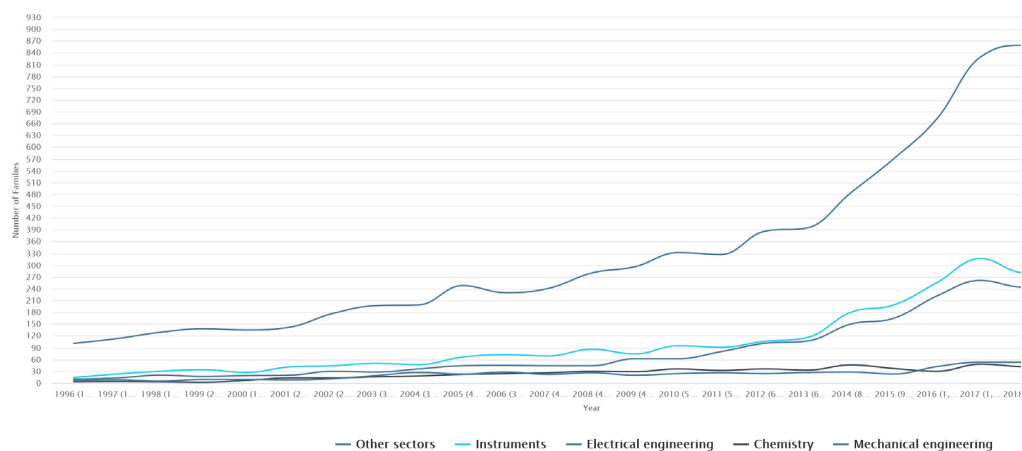
3.1. Evolution of patents applied for and granted

The analysis of patents applied for and granted in the field of Smart Sports enables seeing a **growing tendency** over the last two decades. While at the same time illustrating that the proportion of patents applied for and finally **granted** was **46%**.



3.2. Technological sector of the patents applied for

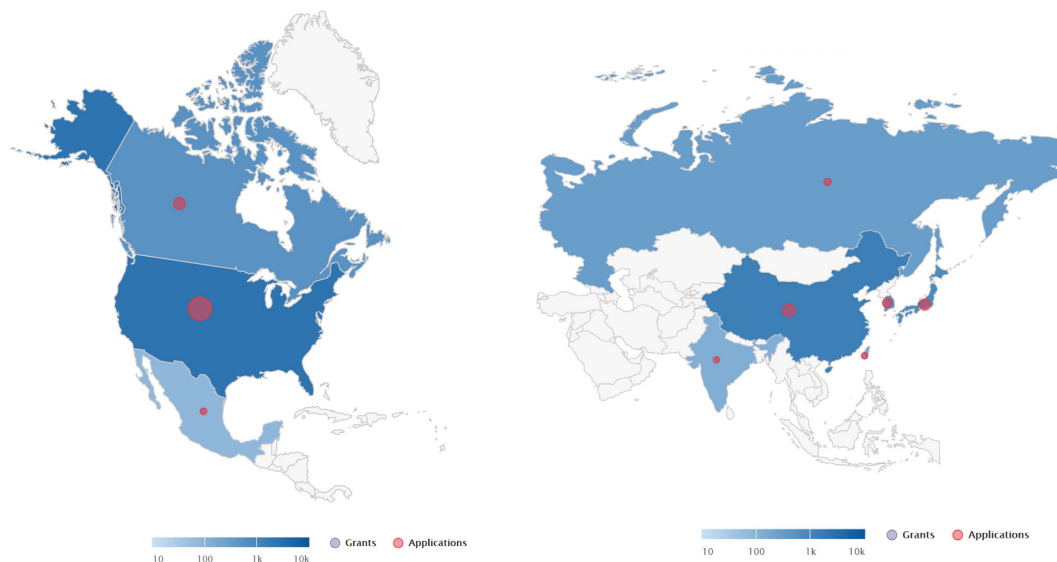
Over the last 20 years, the most active technologies in patents applied for in sporting and associated industry mainly belong to the following fields: **instruments**, **electrical engineering**, **chemistry** and **mechanical engineering** and **other** sectors.



3.3. Territorial location of patents

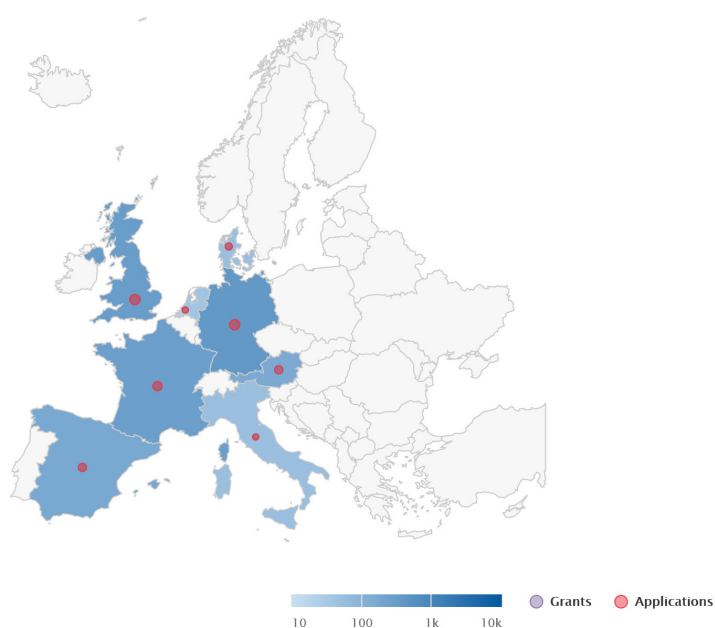
On a **global level**, over the last 25 years, the regional offices leading the demand for patent applications are North-American. The **United States** are particularly active in applications in this area, as shown in the graph below.

In Asia this ranking is headed by **China** and **Japan**.



Source: PatBase, January 2020 Query

Within the **European Union**, the countries with most patent applications are, as shown on the map below, **Germany, Spain, Austria, France and England**.

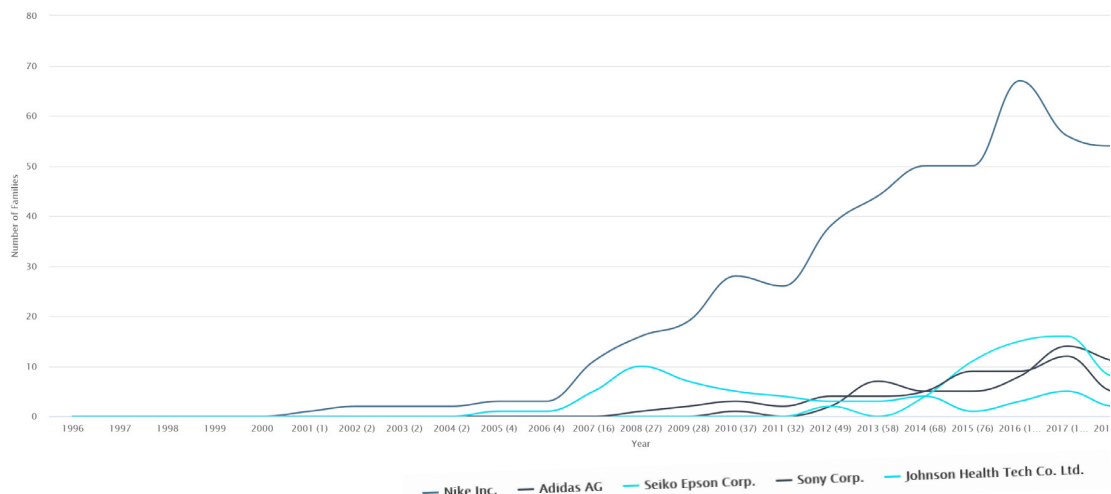


Source: PatBase, January 2020 Query

3.4. Most active patent applicants

The graph below shows the most active organisations as patent applicants over the last 25 years, as well as the periods in which these applications were concentrated.

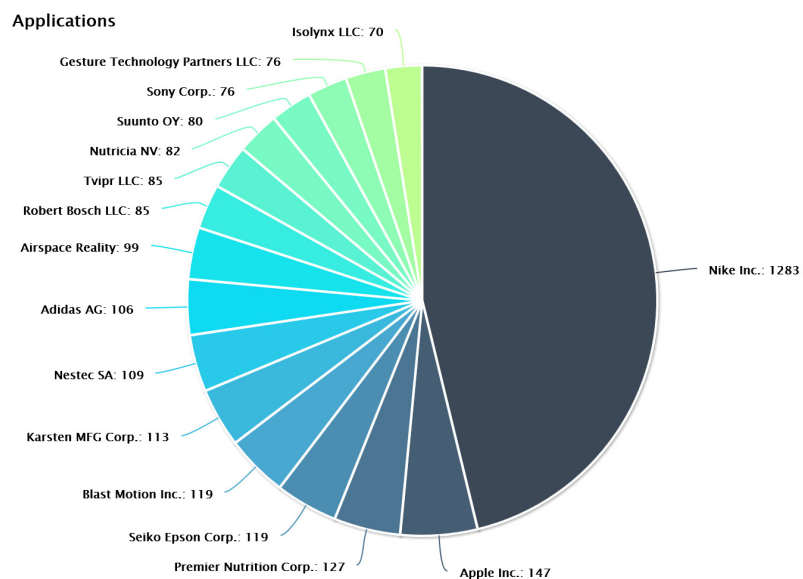
Outstanding, among others, are the following five: **Nike Inc.**; **Adidas AG**; **Seiko Epson Corp.**; **Sony Corp.** and **Johnson Health Tech Co. Ltd.**



Source: PatBase, January 2020 Query

3.5. Other active patent applicants

The sixteen most active **bodies** (companies, institutions or people) filing patent applications, including the **number of applications** for each one are shown below.



Source: PatBase, January 2020 Query

3.6. Keywords attributed to patents in this field

The main keywords associated with patent applications in the field of study are: **sports equipment, system, sports clothing and training devices.**

This is coherent when considering that the query and patent analysis included electronics, various devices, sports nutrition and smart textiles (see methodological appendix).



Source: PatBase. January 2020 Query

3.7. METHODOLOGICAL APPENDIX

The information provided in the “Patent analysis” section refers to the study performed on a sample of **11.116 patent applications** in the area of Smart Sports.

2.866

Patent family

Total number of families in this set of results

1.620

Family of patents granted

Total number of families with publications granted with this set of results

11.116

Applications

Applications with this result

15.321

Publications

Publications within this result

Source: PatBase. January 2020 Query

Some important reflections about the method used are:

- The study was focused on **global** patent activity over the last twenty-five years, with special emphasis on **Europe**.

- The **criteria** used for the query to generate the sample were of **maximum scope** within the field. The following **fields** were **included** to delimit the area of “Smart Sports” and its analysis:
 - Electronic
 - Sports equipment
 - Sports nutrition
 - Smart textiles

With these principles in mind, two observations are required:

- The field most active field is **functional foods** and food processing.
- The fields with least activity is **artificial intelligence (AI)** in the food industry, probably because AI applied to food science is less active than in other fields such as telecommunications, transport, life science or safety (WIPO AI report 2019). Furthermore, it is necessary to point out that, in Europe, computer programmes (algorithms) are excluded from patent application (even though when applied to a technical problem they are patentable). Therefore, as the existence of changing tendencies in this regard is well known, a technology watch report should be drafted only for this specific field, and in a more recent timeframe.

Patent databases are organised using different **international classification systems**, the most common being the International Patent Classification (**IPC**) and the Cooperative Patent Classification (**CPC**) for more specific fields.

Pursuant to this nomenclature, obtaining the sample for this report considered the inclusion of certain indexes.

In accordance with **IPC** nomenclature:

- A63B2102/00: Application of clubs, bats, rackets or the like to the sporting activity ; particular sports involving the use of balls and clubs, bats, rackets, or the like
- A63B24/00: Electric or electronic controls for exercising apparatus of preceding groups; Controlling or monitoring of exercises, sportive games, training or athletic performances
- A63B69/00: Training appliances or apparatus for special sports (training of parachutists B64D23/00)
- A63B2220/00: Measuring of physical parameters relating to sporting activity
- A63B22/00: Exercising apparatus specially adapted for conditioning the cardio-vascular system, for training agility or co-ordination of movements (force-resisting aspects A63B21/00; for particular parts of the body, e.g. to strengthen particular limbs or muscles A63B23/00; electric or electronic controls therefor A63B24/00)
- A63B2225/00: Other characteristics of sports equipment
- A63B24/00: Electric or electronic controls for exercising apparatus of preceding groups; Controlling or monitoring of exercises, sportive games, training or athletic performances

In accordance with **CPC** nomenclature:

- G06F19/3481: Computer-assisted prescription or delivery of treatment by physical action, e.g. surgery or physical exercise (surgical instruments, devices or methods A61B17/00; apparatuses for physical training A63B)
- A41D13/0015: Sports garments other than provided for in groups A41D13/0007 - A41D13/088
- A23L33/40: Complete food formulations for specific consumer groups or specific purposes, e.g. infant formula.

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