



# The Digital Athlete

## Gaining a Competitive Edge

by exploiting the digital transformation of sports



Run Simple



**We envision athletes at all levels being able to harness the data produced in the digital revolution of sports to maximize player performance and win more.**

Mark Lehew  
Global Vice President  
Sports & Entertainment Industry  
Business Unit  
SAP

Dear Customers and Partners,

There is a fine line between winning and losing. For example, the difference between the gold and silver medals in the 2008 Men's Olympics 100 meter butterfly swimming final was just a hundredth of a second. (.01 of one second)

The brutal nature of sports – both professional or amateur – means your job often relies on whether you win or not. There is always someone looking to beat you and take your place. It's a continuous cycle. Athletes and teams work to gain a competitive edge. When they find something that works, the competition copies it. The playing field is then leveled and the cycle starts again.

Yet something new is happening in sports that offers the possibility of a competitive edge that is tougher to copy. The sports industry is experiencing a massive digital transformation centered on the capture, real-time analysis, and utilization of data. Traditional methods in athlete management, scouting, health, fitness, training, development, game execution, and compliance are all being transformed by the digitization of sports. The result is the "digital athlete."

Anyone and everyone will collect the data. As more organizations hire analysts, the playing field has leveled yet again. Competitive advantage won't necessarily be won by those who can collect the most data, but rather it will go to those who can make the most sense of the data and act on it in real time. The potential impact across all facets of individual athletes and team operations is significant.

- **Reimagine athlete insight** with a deep, unified view of an athlete and team across all data sources and departments
- **Reimagine acting faster** by processing vast amounts of data in real time
- **Reimagine working smarter** by integrating and simplifying team operations

Sports has always been an art, but it's rapidly becoming more of a science also. Data won't drive all decisions, but it will enable informed decisions. There is still much to learn and prove as well as cultural and data security challenges to address, but the potential benefits are hard to ignore.

You have a choice; wait and see how the competition adopts to this new world, or gain a competitive edge by embracing it early and harnessing the benefits. Our vision is to help every sports organization fully embrace the digitization of sports to maximize athlete performance and win more.

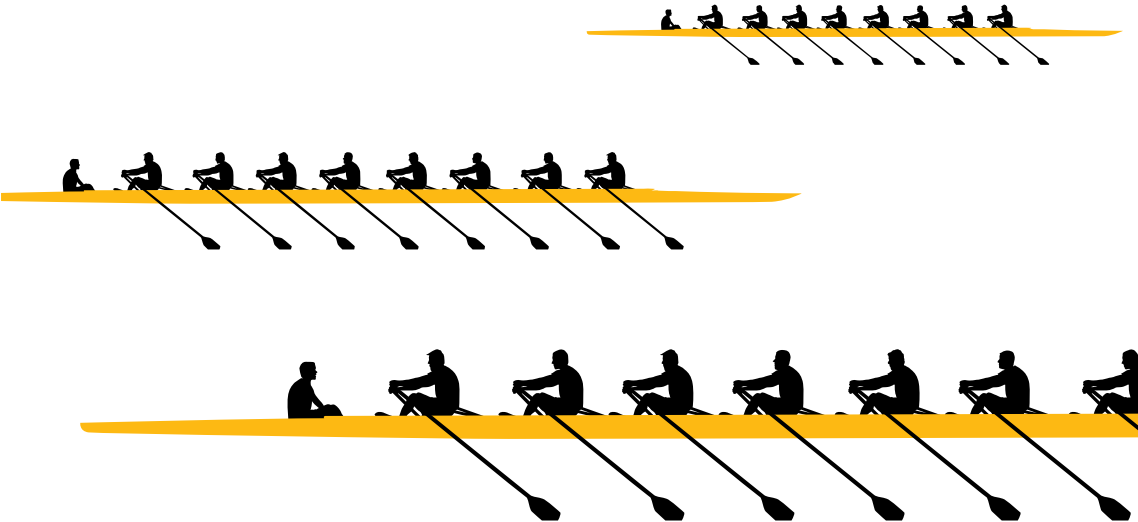
This document offers our perspective on where the industry will go and how SAP contributes to the evolution of the digital athlete. Thank you for your interest, and I look forward to our journey together.

*Mark Lehew*

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Global Vice President  
Sports & Entertainment Industry Business Unit  
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## EXECUTIVE SUMMARY

**Big picture:** The digitization of sports is real and is changing the game

### The Digitization of Sports

#### Technology trends

Five technology trends are transforming athlete performance – hyperconnectivity, supercomputing, cloud computing, a smarter world, and cybersecurity. Leading sports organizations are determining how to best leverage these technologies to gain a competitive edge in areas such as:

- Athlete management and engagement – especially with a younger generation of athletes and coaches that has grown up “digital and connected”
- Scouting and player evaluation across a global talent pool
- Health, fitness, and injury prevention
- Player training and development
- Game execution and insights

#### Technology is changing rapidly

New innovations enabled by the real-time data collection from wearables, sensors, and video are hitting the world of sports at a rapid pace. These offer exciting opportunities for athletes, teams, leagues, and associations to collect data on an athlete and team at unprecedented levels.

#### Early adopters are winning

Those who first embrace and adopt these new technologies are winning. They leverage this new treasure trove of data create a competitive edge, often combining technologies to create something new. There is no standard playbook.

#### Constant innovation is required to stay ahead

As results are proven and translated to wins, competitors will quickly copy successful models. It's the nature of sports. Continual innovation is essential to maintain the competitive edge.



### Digitization is disrupting athlete performance

- **The Women's Tennis Association (WTA):** For the first time ever in professional tennis, the WTA allowed players and coaches to access real-time performance data during live match play for in-match coaching<sup>1</sup>
- **The National Basketball Association (NBA)** has deployed digital technology in all 30 arenas. Movements of every player on the court and the basketball are tracked 25 times per second to deliver a plethora of innovative statistics about speed, distance, player separation, and ball possession<sup>2</sup>
- **The TSG 1899 Hoffenheim** soccer club uses advanced technology for its under-19 team to optimize training and gain a competitive advantage in developing professional players and talent. Wearable sensors capture player and ball data on the practice field. The data is then visualized in 2D and 3D in real time for coaches and trainers.<sup>3</sup>
- **The Extreme Sailing Series** relies on Internet of Things devices in the water and sensors on the boats to produce a real-time virtual picture of the boats' performance. The information is processed in the cloud, providing results in seconds to allow race team coaches to make adjustments in time for the next race.<sup>4</sup>

## THE RACE FOR THE DIGITAL ATHLETE HAS STARTED

### Keys for gaining a competitive edge through digitization:

- Embrace and adopt the digital revolution in sports
- Turn mass data to smart data by eliminating silos
- Unify and connect holistically for a 360-degree view of the athlete and team
- Continuously improve and innovate (plan, do, check, act)



## EXECUTIVE SUMMARY

### Burning platform: Complexity is an obstacle to the digital athlete

#### Complexity alert

**New data collection technologies are hitting the market at a rapid rate.** Most devices are point solutions that have a specific purpose – from heart or load monitoring to health and nutrition information. As devices become mainstream, they will provide massive amounts of data on every individual athlete. Unfortunately, the information captured is unique to each device and stored independently. This results in data silos from the multitude of devices that are not linked, therefore there is little transparency across all facets of the athletes performance. The problem gets worse as you utilize these technologies across an entire team or association. There is no consistent way to turn mass data into smart data, nor clear responsibilities for data ownership or security. This creates complexity.

**Complexity is a barrier to gaining a competitive edge.** Time is precious in sports. Schedules are demanding, and the pace is relentless. There is little time between events to scout and prepare for the next opponent or engage with the athlete. You can't afford to waste time manually sifting through scattered data locked in silos. Answers and insight are needed immediately. Speed and efficiency are critical to gaining a competitive edge. You can't reschedule just because you're not ready.

Everyone is racing to implement new technologies to gain a competitive edge. The results are remarkable. But still, complexity exists. What good is the data if it can't be used?

#### The answer is simple

To get the most out of this new world of the digital athlete, you need to run simply.

With so little time between matches and games, finding ways to **run simply** is essential to gain a **competitive edge**. Running simply requires reimagining athlete and team insight by having a deep, unified view of an athlete and team across all data sources. It's when you can process vast amounts of athlete and game data in real time to get immediate answers. It's when you have a platform that integrates all facets of team operations, enabling you to work smarter so you can spend more time on the field and less on administration.

**Make sense of the data.** SAP integrates all of the applications and data sources across the team in real time so you can gain key insights from the sea of data being collected on the athlete.

**Act on it in real time to deliver an impact.** The foundation of the digital athlete is a flexible, secure, real-time innovation platform that makes all this possible – SAP HANA. In-memory technology enables instant processing of vast amounts of data so insights can be instantly acted upon to impact athlete and team performance.



**99.9%**

time compression of content required for team presentation in order to prepare for a match (6,000 minutes of generated content down to approximately eight minutes)<sup>5</sup>



**7TB**

uncompressed data generated during a single major league baseball game. At 2,430 games per year, that's 17 petabytes of raw data per season.<sup>6</sup>



**81%**

of executives surveyed believe simplification is important for their organization, and 88% admit IT investment is important to achieve simplification.<sup>7</sup>

#### FROM: STAND-ALONE SILOS



#### TO: HOLISTIC SIMPLIFICATION



## EXECUTIVE SUMMARY

### The future: The transition to the digital athlete

#### Sports as a digital information business

From wearables that collect athlete data to mobile apps for athlete engagement, everything in sports is going digital. As a result, industry leaders are supplementing observation and gut feel with data to make better-informed decisions. This will quickly become the norm as more positions are filled by the “connected generation.”

#### Challenges of the digital revolution

- **Cultural** change is tough in sports. With jobs on the line each season, many are reluctant to take a risk and change how things are done. They take a “wait and see” approach and only adopt once an innovation is proven. By then, any competitive advantage is lost and they have to struggle to simply keep up
- **Data quality** is impacted by the sheer number of multiple technologies and point solutions generating information in different formats. Valuable time is wasted cleaning and making sense of raw data before it can be used
- **Discovering insight from a sea of data** is challenging because data volume, velocity, and variety are exploding. The problem is compounded when a question is asked that requires data from multiple sources to be combined and analyzed
- **Complexity** impedes adoption and usage because the data cannot be quickly converted from its raw form to visual insights that are intuitively understood and easily manipulated by non-technical users
- **Time** is the enemy. There's little available time between training sessions or games. You have to manually work around the challenges above, resulting in a lot of data and no ability or time to act on it. Speed and efficiency from the point of collection through action are critical to creating a competitive edge
- **Cybersecurity** risks increase when data becomes a competitive weapon. The first known case of sports corporate espionage occurred in 2015 when an employee of the St. Louis Cardinals made five unauthorized intrusions into the Houston Astros players' databases.<sup>8</sup> Securing this treasure trove of information has to be a top priority with a combination of robust, secure technology and stringent data security policies and procedures

#### Embracing the digital world

Leaders in sports are reimagining how they can gain a competitive edge enabled by the possibilities of the digital athlete.

- **The connected athlete** will become commonplace from the professional level down through amateur and youth. Lifestyle technologies in the areas of mobile and wearables will converge with sports through affordable, non-intrusive data collection devices, improved connectivity, and mobile apps
- **A holistic and unified real-time view** of the individual athlete and team will be delivered on any device through simplified role-based dashboards across all data sources
- **Data as a competitive weapon:** Innovative uses of the data will lead to a competitive edge in the areas of global scouting, injury prevention, training, development, game performance, and roster management.
- **Mobility** will be the prime channel for engagement and action. Insight will be available anywhere, on any device, and at any time to deliver value.



**\$125M to \$4.7B**

Growth of the sports analytics market from its current level to 2021<sup>9</sup>



**173 million**

IDC estimates that wearable device shipments will reach 173.4 million units by 2019, up 500% in just five years.<sup>10</sup>



**77.7 million**

Data points are captured and processed within one hour of football (soccer) training<sup>11</sup>



## EXECUTIVE SUMMARY

### Road map to the digital athlete: Steps to digitize your business

#### REIMAGINING

Do you have the right strategy? Start by reimagining how you would use data to gain a sustainable competitive edge.



##### REIMAGINE ATHLETE INSIGHT

Unify data from across all of the disparate, siloed solutions to gain a holistic real-time view of each athlete and the entire team.



##### REIMAGINE ACTING FASTER

Process vast amounts of data in real time to enable data-driven decisions and immediate action.



##### REIMAGINE WORKING SMARTER

Improve existing processes based on simplification, speed, scale, and efficiency. Do more with less.

#### PLATFORM

In order to reimagine your team operations, you need to have the right platform in place. Leaders are investing in digital capabilities that are congruent with a holistic strategy across team operations. The right technologies ensure agility and a rich environment for innovation. In addition, the platform should provide a competitive edge.

SAP's **digital athlete framework** is based on the four key pillars of a digital plan and architecture:

1. **Digital athlete core** to consolidate and process all athlete data in real time across various disparate devices and systems
2. **Athlete sensor data and the Internet of Things** to connect and collect athlete data
3. **Sports intelligence** to rapidly find key insights from mountains of data so you can quickly act to impact performance
4. **Unified team operations** to bring all disciplines together on a real-time platform to maximize athlete performance and engagement

**Innovation drives this significant phase** of the transition to digital. It's not about any one of the four pillars, but rather how they all interconnect in real time to create a competitive edge.

We apply **Design Thinking** as our key approach during the reimagining phase. Design Thinking is a mindset backed by a set of tools that gives us a powerful new way to solve problems and unlock potential. It focuses on understanding the human side of things – what technology is and what it means to your athletes and team. Technical features and functions are not in and of themselves disruptive; it is the impact on people that makes technology disruptive. This is what creates the competitive edge you are seeking.

## EXECUTIVE SUMMARY

### Fundamental changes: Five technology trends changing everything

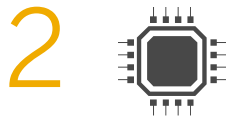
We are witnessing an unmatched era of true technical and athletic innovation. Breakthrough technologies have matured and hit scale together, enabling five defining technology trends:

#### HYPERCONNECTIVITY



Every athlete can be connected – from pros down to amateurs – creating endless possibilities around monitoring and tracking. Mobile is the primary engagement channel in sports. Connectivity and enhanced bandwidth are becoming the norm at all venues.

#### SUPER COMPUTING



The limits of 20th century computing power are gone. The digital athlete will generate massive amounts of data that will need to be consumed broadly and analyzed instantly. The power of real-time in-memory computing will make this possible.

#### CLOUD COMPUTING



Technology adoption and delivery of new applications will grow exponentially as the value of the digital athlete is proven out in the industry. Cloud-based computing platforms will simplify and speed deployment of these new solutions at a lower cost.

#### SMARTER WORLD



Sensors, wearables, and smart devices will become key enablers of the digital athlete. They will allow for real-time data collection and measurement across all facets of an athlete.

#### CYBER SECURITY



The data produced from the digital athlete is a prime target for attacks and sabotage. Cybersecurity must be a top priority in the design and operation of the digital athlete platform.





# REIMAGINING

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## THE DIGITAL ATHLETE OFFERS INFINITE NEW OPPORTUNITIES

In a connected world, every team will innovate and leverage technology in the effort to gain a sustainable competitive edge.

# DIGITAL INNOVATION IS REAL

Improvements in team performance are going to be driven by hyperconnectivity, Big Data, and real-time in-memory analytics. Based on our collaboration with leading sports organizations, forward-thinking teams are moving quickly to find value in three strategic areas.



### REIMAGINE ATHLETE INSIGHT

In sports, the athlete is the team's most valued asset. Holistic measurement is essential, resulting in an increase in systems and data.

- **A platform that consolidates** athlete and team data from disparate stand-alone solutions across all facets of team operations. It easily handles the explosion in the volume, velocity, and variety of structured and unstructured sports data and video
- **A 360-degree unified view of the athlete and team** where all information is at your fingertips, providing a single source of the truth. Analysis and modelling over this consolidated data set offers opportunities to find unique competitive advantages
- **A central command cockpit** for quick and simple access across all disparate solutions used in team operations



### REIMAGINE ACTING FASTER

The more insight provided, the more questions generated. These questions need to be answered quickly for the data to impact performance and wins.

- **Instant processing** of massive streams of athlete performance data as it's generated from sensors, wearables, video, etc., without first having to manually scrub and prepare it
- **Acting on data in real time**, because you no longer have to collect, consolidate, and tune the data for analytical performance. The data is acted upon while it is fresh and relevant. This opens vast opportunities for approaches like data-driven coaching
- **Answer your own questions** by having a platform that supports non-technical users so they don't lose time waiting for experts. Have tools that produce quick answers to unpredictable questions that result from all of the data, just like a Google search



### REIMAGINE WORKING SMARTER

The current way of doing things can be simplified. Data-driven decisions enable working smarter and doing more with less.

- **Scale scouting** by utilizing a richer and more comprehensive set of information across a global talent pool. Act faster than the competition
- **Predict and prevent injuries** through better use of data across all facets of the athlete
- **Tailor training and development** to the individual player based on his/her specific performance and areas needing improvement
- **Utilize virtual reality and gamification** to simulate playing situations and increase practice repetitions without the risk of injury in live practice
- **Make informed coaching and managerial decisions** and take action on tactics, strategy, and coaching, both in training and in the game
- **Manage and engage** the player at a more relevant level based on his or her personal data

## SAP HANA: THE GREAT SIMPLIFIER

In order to reimagine everything regarding the digital athlete, agility and flexibility are required to adjust course and stay ahead of the competition. This involves two key concepts: **simplification** and **innovation**.

- **Simplification** is all about doing things better, faster, and cheaper
- **Innovation** is all about reimagining and improving the way things are done today by leveraging the five technology trends.

The diagram below is at the heart of the digital transformation. The idea is very simple: unifying team operations on a real-time platform. Uniting structured data (e.g., medical) and unstructured data (text, video) will change the way teams and athletes prepare, scale, and innovate.

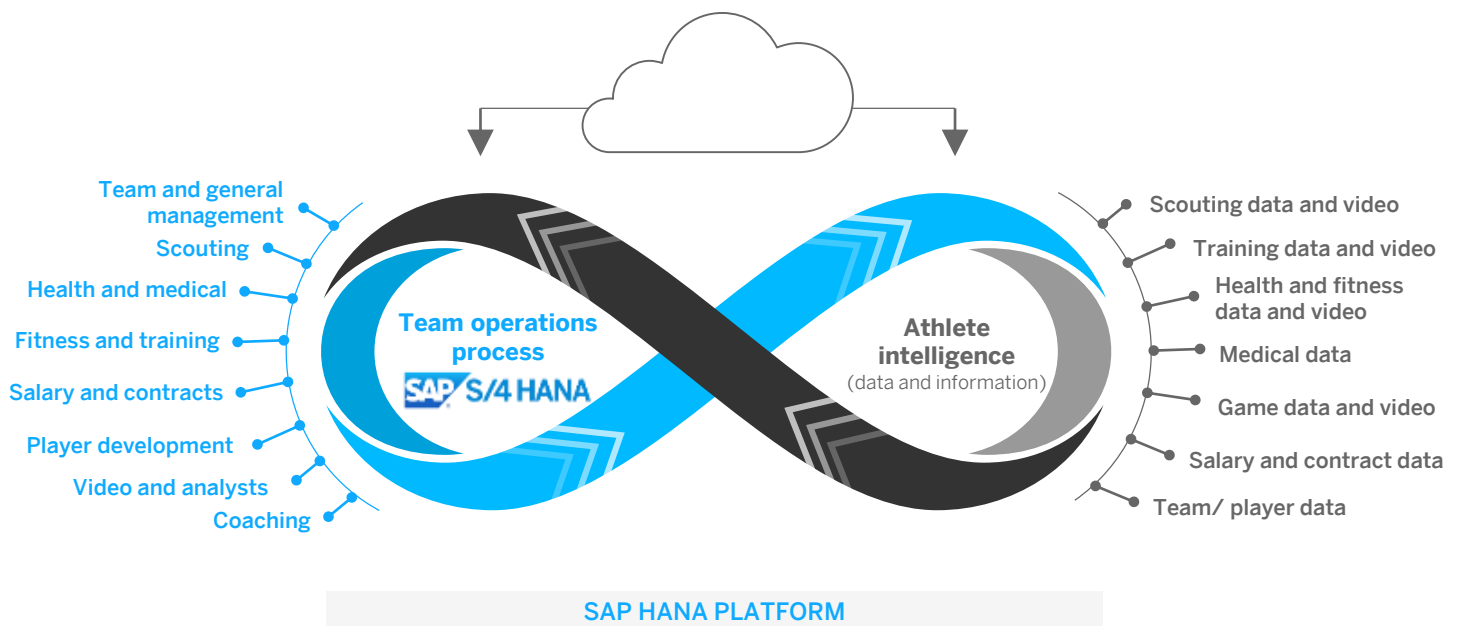
In-memory computing is a concept brought to life by the breakthrough SAP HANA platform. While relatively young by commercial standards, SAP HANA's rapid adoption across multiple industries validates its massive potential for the digital athlete.

With in-memory computing, we can now finally:

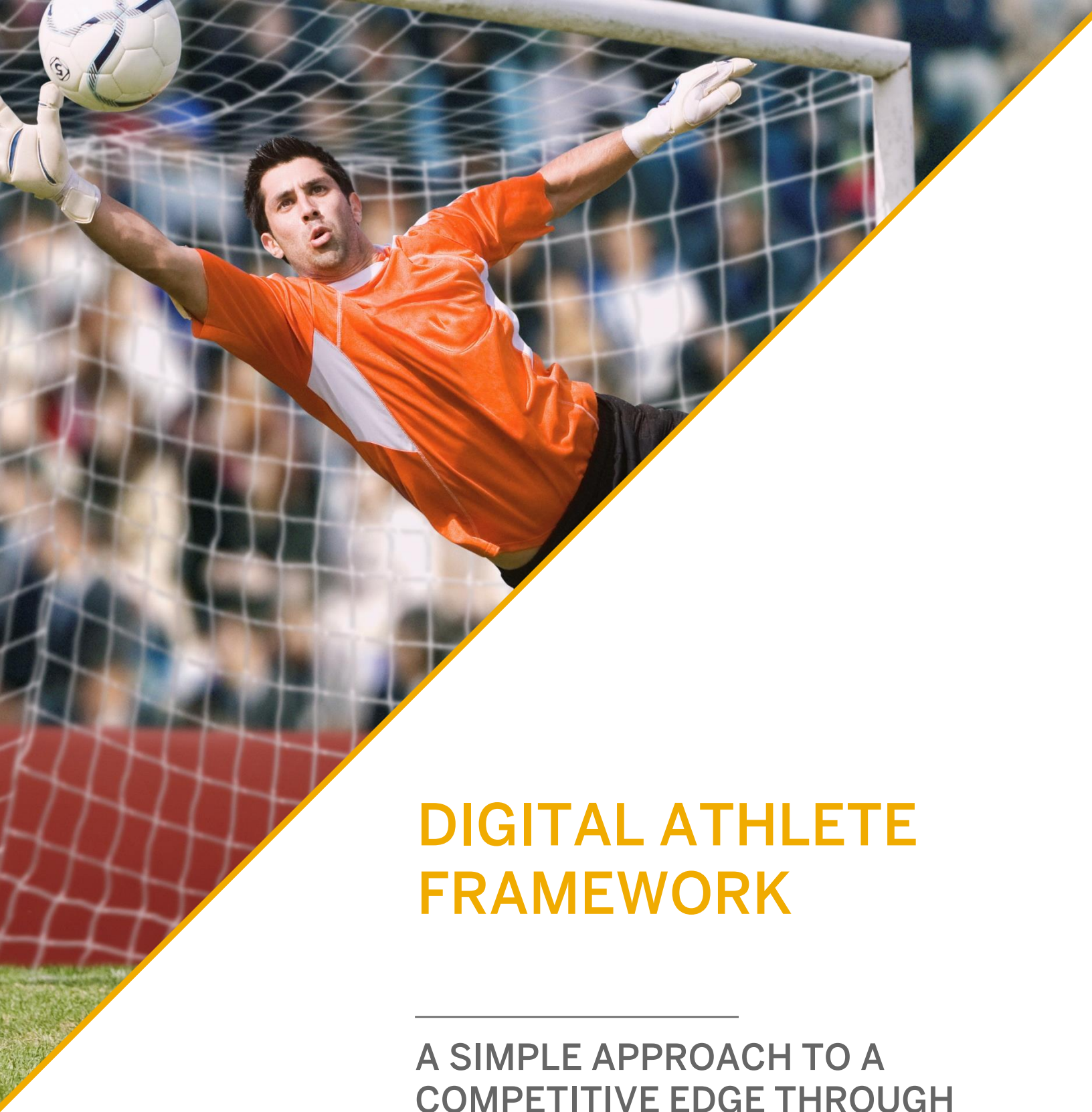
- **Leverage Big Data** from sensors, geospatial, video, and social sources. Bringing all data signals together across massive historical data sets enables the perfect prediction and recommendation.
- **Act immediately to impact performance** due to the ability to process data as it streams off the athlete without having to prepare it. In a world where decisions need to be made in seconds, Big Data is of little help if it takes hours to process
- **Answer any question** because you no longer have to collect, consolidate, and tune the data for performance. New questions are a constant in sports. They can't be easily predicted or planned for ahead of time. Everyone can get answers to any question – at any time in any level of granularity

These capabilities open infinite new ways of optimizing team performance and provide the agility required to stay ahead of the competition.

## SMARTER DECISIONS + QUICKER OPERATIONS = COMPETITIVE EDGE







# DIGITAL ATHLETE FRAMEWORK

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## A SIMPLE APPROACH TO A COMPETITIVE EDGE THROUGH DIGITIZATION

Every team requires a simple digital approach to build a pragmatic and executable vision of its digital strategy.

## DIGITAL ATHLETE FRAMEWORK

Every team needs to think about digitization across four key pillars

SAP understands the five technology trends driving digitization in sports. The continuously changing requirements pose big challenges.

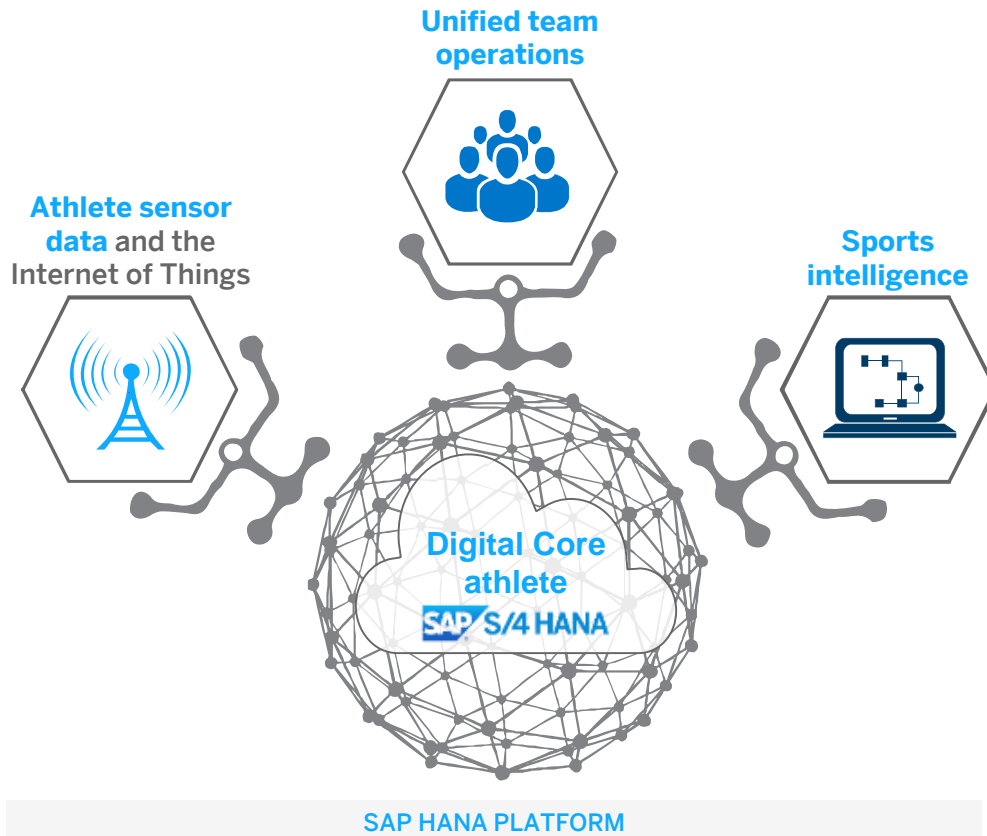
We have built the digital athlete framework to support team operations in developing and executing on their digital strategy. Teams must digitize to gain a competitive advantage. The value of the digital athlete is not based on who collects the most data, but what is done with the data.

SAP provides a platform that enables you to gain a competitive edge by:

- Making sense of all athlete and team data being collected across the organization
- Making information available in real-time so you can act on the data immediately to impact performance and increase wins

**There are four key pillars of SAP's digital athlete framework:**

1. **Digital athlete core** to consolidate and process all athlete data in real time across various disparate devices and systems
2. **Athlete sensor data and the Internet of Things** to connect and collect data as it streams from equipment and athletes
3. **Sports intelligence** to rapidly find key insights from mountains of data so you can quickly act to impact performance
4. **Unified team operations** to bring all disciplines together on a real-time platform to maximize athlete performance and engagement







## THE DIGITAL ATHLETE CORE

SAP HANA is the **ultimate simplifier** and the **platform for innovation** and the digital athlete.

As the adoption of sensor, video, and the internet of things grows around athletes, three key trends are emerging:

### Technology development and adoption accelerates

As more teams and athletes gain an edge through the use of technology, competitors will quickly copy to keep pace. The rate of new application development and adoption will accelerate, leading to more data sources.

### Teams create a single source of the truth

As a result, the volume, velocity, and variety will grow further, and the data will be richer and more detailed. This data will need to be consolidated into a common platform to generate maximum impact across all aspects of the athlete and team.

### Real-time processing creates a competitive edge

The ability to process millions or billions of data points in real time and boil them down to a few key insights will have a major impact. GMs, coaches, scouts, trainers, medical staff, athletes, and even referees will be able to act on the data instantly to impact their performance.

## Digital Training

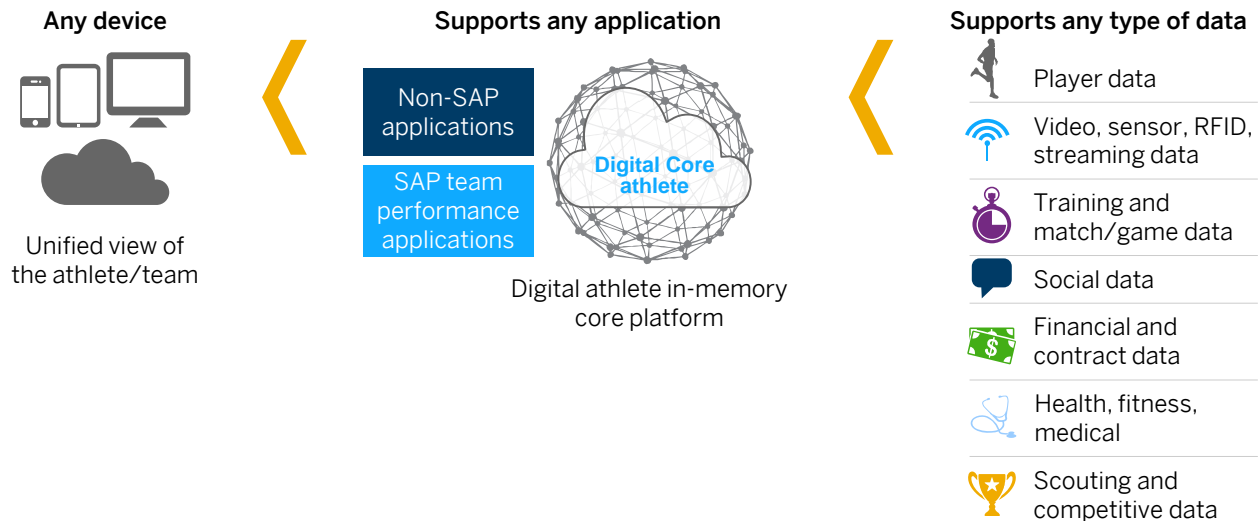
TSG 1899 Hoffenheim: "The **coaching staff is able to react** so quickly because SAP HANA provides data to us in real time. We can then react directly from one training session to another to individually address the stress tolerance of any given player in any specific training element. We believe we can **considerably optimize the training process** this way."<sup>3</sup>

## Digital athlete core – powered by SAP HANA

Advanced in-memory computing signals an end to complexity and delays. With SAP HANA as your core platform, tap into the full power of the digital athlete to run simply:

**Consolidate and act on data in real time while it is still fresh and relevant.** In-memory processing can be 10,000 times faster than traditional databases. Process massive amounts of data in-memory as it streams in from devices, saving the time from collecting, consolidating, preparing, and tuning for performance. Consolidate data from all sources into one place for a single version of the truth.

**Answer any question.** SAP HANA empowers anyone to instantly answer any question on their own. Go wide – span across all data sources in any combination. Go deep – drill down to lowest level source data. Go long – analyze years of history and splits.





## ATHLETE SENSOR DATA AND THE INTERNET OF THINGS

The most **dramatic change** enabling the digital athlete will be driven by hyperconnectivity and Big Data science, which will **transform nearly every athlete and team**.

The sports industry is finally understanding the full potential of the interlock between physical and digital assets and the internet of things. Below are some key trends.

### Player performance tracking

Most professional leagues are realizing the benefits of player tracking during games. They are investing to standardize and deploy the capability in each venue based on the promising potential they see in using the resulting content for new revenue streams and deeper fan engagement.

### Data-driven coaching

Many sports are starting to migrate solutions originally intended for fan engagement over to the team, coaches, and athletes. Based on real-time data/ video streaming from the event, the information can now be used to enhance in-game performance.

### Mobile everything

Research shows that sometime in early 2014, a monumental shift in the way people access the Internet occurred. For the first time, mobile Internet traffic surpassed desktop traffic, representing an ever-increasing trend in the world of technology.<sup>12</sup> This shift will drive many changes in sports around how data and video is collected, presented, and consumed. It also has a big impact on how teams communicate and engage with their players.

### By 2020:

the existing 6.4 billion connected "things" will increase to 21 billion, growing at a rate of 30%<sup>13</sup>

### \$4–11 trillion

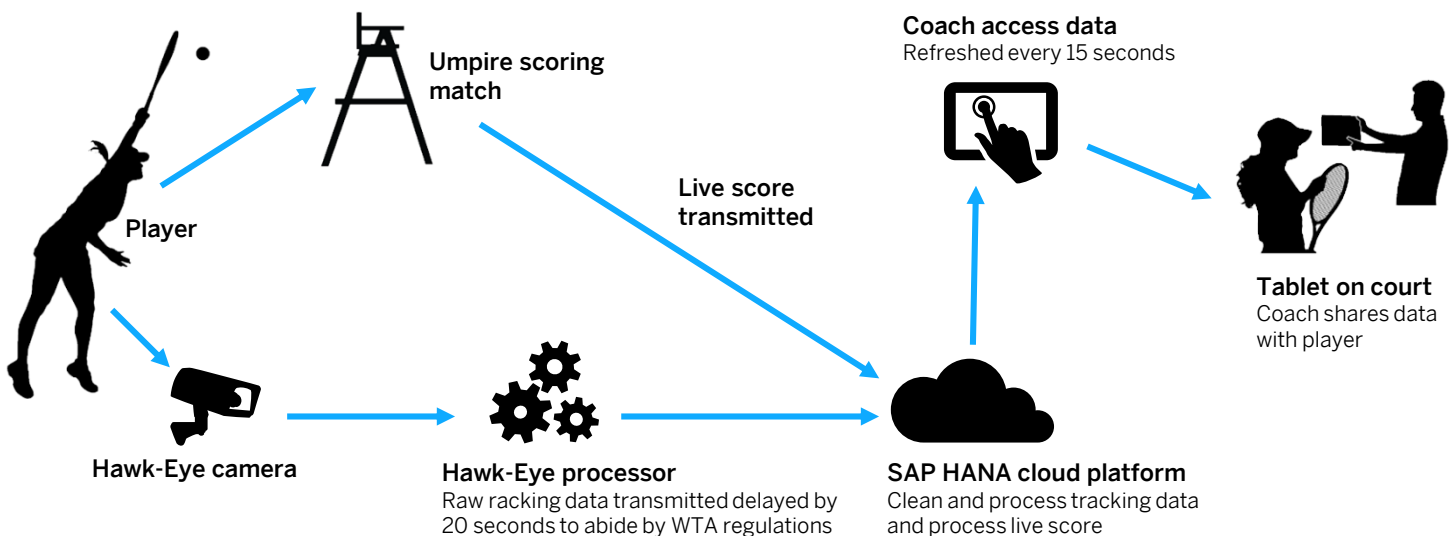
Estimated potential economic impact of the Internet of Things per year by 2025<sup>14</sup>

### SAP Equestrian Analytics

uses a camera attached to the rider's helmet combined with software to track routes, speed data, time gaps, and heart rates of both the horse and the rider. The solution helps quantify riders' intuition with hard facts to help them fine-tune their training.<sup>15</sup>

## WTA example of connected athlete and the Internet of Things with SAP Cloud Platform

SAP analytics solutions process raw data sent from Hawk-Eye cameras on court during WTA tennis matches and send results to coaches' tablets courtside with a refresh every 15 seconds. The results produce a full statistical and visual understanding of player performance, through serve stats, match plays, and ball placements. This technology creates a layer of information that addresses and answers the "why" of players' performances instead of just the "what."<sup>1</sup>





## SPORTS INTELLIGENCE

A new generation of analytics, running in real time, integrating predictive, Big Data, and mobile, will turn raw data into sports intelligence: The future is here.

Data collection in sports will continue to grow. The key will be making sense of it all. Three trends are emerging around athlete data analytics:

### Discovering insights is the key

As more and more data is collected, everyone is finding that raw data offers little value. The winners will be those who can quickly analyze the data and boil it down to a few key insights.

### Visualization of data with video is the prime communication method

Users don't have time to dig into the details of raw data. Nor are they IT experts. They want the answers and insight visualized with video. This will allow the athletes themselves to think of and try different things. They will be able to see instant feedback about what works and what doesn't work, allowing for rapid performance improvement at reduced injury risk.

### Prediction and simulation adoption grows

As more data is collected and expertise built, predictive analytics will be leveraged for many different use cases ranging from injury prediction, to scouting, to contract negotiations.

## SAP sports intelligence tools

The winners aren't the ones who can collect the most data, but the ones who can quickly turn it into intelligence and act on it. SAP delivers the tools necessary to make that a reality:

**Discover** SAP's powerful business intelligence software allows you to put decision-ready information within end users' reach so they can quickly discover key insights to gain a competitive edge across the team.

**Visualize** SAP Lumira makes it easy to visually explore data so you can discover trends, outliers, and insight of interest.

**Predict** Anticipate and drive better outcomes with SAP Predictive Analytics. Capabilities include network and link analysis, predictive modeling, predictive data management, and scoring.

## Player Information

Is provided to Major League Baseball's 30 clubs from an SAP BI solution called Player Information Application Plus (PIA+). The result is a sophisticated baseball information system linking the wealth of Major League Baseball Advanced Media (MLBAM) baseball information with up-to-date contract and transactional data<sup>16</sup>

## 100%

transparency into races provided to Sailing Team Germany from SAP Sailing Analytics. The team has found that every race's data is a treasure trove of insights for excelling in the next race. With push-button ease, they can test hypotheses and perform "what if" analyses.<sup>17</sup>





## UNIFIED TEAM OPERATIONS

With little time to prepare for the next event, athletes and teams need holistic management and visibility across all team operations to ensure **maximum performance** and the **best chance of winning**.

An athlete's or team's success depends on many different disciplines/ departments working in unison: general manager, coaches, analysts, scouts, training, fitness, medical, etc. Based on the success the German National Team had using SAP technology during the 2014 World Cup,<sup>18</sup> SAP has recently co-innovated with leading clubs to develop SAP Sports One for football: a solution built by the industry for the industry. SAP Sports One is a platform of integrated modular applications to unify and improve team operations. The modules are:

### Team Manager

Enables you to manage and plan all facets of team and athlete operations. It also includes SAP Team One, which is an easy-to-use, intuitive, and secure mobile application enabling social communication between coaches, scouts, and players. It provides each user with relevant, secure, role-based information from anywhere, at any time.

### Training Planner

Align training planning with your playing philosophy. Plan training units and dimensions on high and granular level. Plan with insight into player availability.

### Player Fitness

Easy-to-use desktop and mobile app that provides an overview of each player's fitness status and availability. Monitor health to prevent further injuries.

### Scouting Insights

Win complete control over your scouting processes. Access and monitor relevant data of your favorites with one click.

### Match Insights

Ability to take data from training or matches and provide sport-specific insight based on critical KPIs to improve player performance.

## Digital Transformation

Bayern Munich: "We'll have a **completely new digitalized world**. It will be state-of-the-art in our club."<sup>19</sup>

## The Digital Athlete

Oliver Bierhoff (Manager German Football Association): "Thanks to SAP, we have the opportunity to work very specifically with individual players – **fast and smart**."<sup>20</sup>

### Co-innovation partners



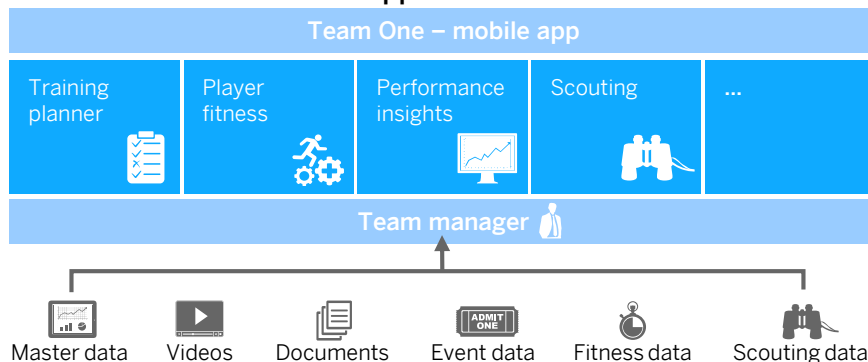
### Clubs and associations

Coaches  
Sport directors  
Team coordinators



Players  
Medical staff  
Video analysts

### Applications



### Open for third-party content and solutions

Content providers



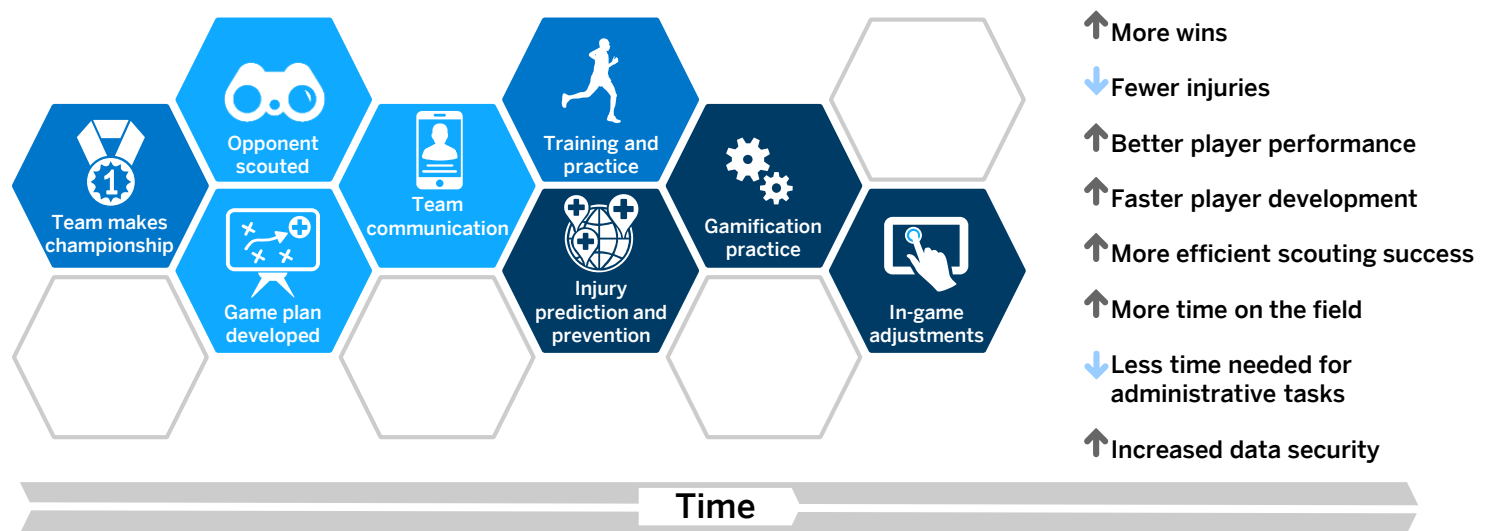
Technology partners

Panasonic  
Fraunhofer

## HOW DOES IT ALL COME TOGETHER? – EXAMPLE

While the four digital athlete pillars deliver significant value independently, the ultimate goal is to holistically design the next generation of digital athlete to span across all the pillars. The digital athlete will be instrumental in providing teams a sustainable competitive edge.

### DATA-DRIVEN ATHLETE AND TEAM PERFORMANCE OPTIMIZATION



#### Example: Sports industry

The process flow shown on this page portrays how information can be leveraged holistically and in real time for data-driven decision-making.

A team makes it to the championship. In seven short days, the team needs to create a competitive edge against the next opponent.

Scouts and analysts review video and data on the next opponent. Because all relevant information is unified on a single platform, they avoid wasting time trying to collect and consolidate data. They quickly spot their competitor's weaknesses. Analyzing historical data reveals tactics and tendencies that they can exploit. This critical information is sent to the coaches' mobile devices.

Using the information, the coaches devise a game plan. They create training and practice plans. Leveraging the insights and trends in the platform, the plans are designed to maximize results while minimizing injuries to each player. The coaches send this information to the team on their mobile devices. Within 24 hours everyone has the critical information needed to prepare for the game.

The next five days are spent practicing and training based on the game plan. During practice, data and video streams in from cameras and sensors worn by players and in the equipment. Trainers see the data warning of high loads and stress on a key starter. Predictive models show that if the player continues to practice, the chance of injury is greater than 80%. He is told to stop. A serious injury has been avoided.

Gamification and virtual reality are used to simulate the opponent and game-day situations. The players get more repetitions in shorter time without increasing the risk of injury or fatigue.

Game day arrives. During the game, the players notice that a defender on the opposing team seems to be tiring or hurt. After assessing the data and video streaming in, their suspicions are confirmed. In fact, the player has slowed down by two miles per hour as the game enters its final minutes – with the score tied. The coach decides it's time to exploit this sudden weakness by attacking the defender. A play is called to exploit this new opportunity, plus a known tendency identified earlier in scouting. As predicted, the defender is slow to react. The team scores and wins the championship.





# HOW TO START

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THE JOURNEY TO THE DIGITAL  
ATHLETE BEGINS WITH A  
CAPABILITY ANALYSIS THAT  
RESULTS IN THE DIGITAL  
TRANSFORMATION ROAD MAP

## HOW TO START

### THE JOURNEY TO THE DIGITAL ATHLETE

Every team, club, or organization is unique in how it realizes the digital athlete. This is a continuous journey of combining new technologies in unique ways and refinement based on lessons learned. The journey to gain a competitive edge from the digital athlete involves all disciplines of team operations and requires a proven, systematic approach.

### THE COLLABORATIVE VALUE AND INNOVATION FRAMEWORK

Associations, teams, and athletes embarking on the transformation journey to the digital athlete typically start to reimagine the outcomes with a focus on areas where a competitive advantage can be gained.

For innovation today, a new level of collaboration is required. As a result, we have developed a framework that will be a continuous and holistic partnership model designed to drive true collaboration and engagement. Outlined below are the five steps of [SAP's collaborative value and innovation framework](#):



1. **Strategy alignment:** Understand opportunities and strategic direction and identify initiatives
2. **Opportunity assessment:** Opportunity deep-dive based on strategic initiatives and prioritization
3. **Solution road map :** Document end-state solution, implementation plan, and investment justification
4. **Realization:** Implement and deliver solution on time, on budget, and on value
5. **Governance:** Maximize return on investment with governance based on executive engagement, delivery results, and continuous innovation



## WHY SAP?

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### **DIGITIZATION IS A NATURAL NEXT STEP FOR THE #1 BUSINESS APPLICATION COMPANY**

It took years of innovation, strategic investment, and the forging of new strategic relationships to build the end-to-end digital platform.

## SAP IS COMMITTED TO INNOVATION

### Vision

Help the world run better and improve people's lives

### Mission

Help our customers run at their best

### Strategy

Become the cloud company powered by SAP HANA



- **77K employees** representing 120 nationalities
- **300K customers**
- SAP operates in **191 countries**



- Solutions for **25 industries and 12 lines of business**
- **98% of top-valued brands** are our customers
- **74% of the world's transactions** are managed on SAP



- **95 million** business cloud users
- **2.0 million connected** businesses
- **\$740 billion+** in B2B commerce
- **99%+ of mobile devices** are connected with SAP messaging



- 2011 **SAP HANA** launched
- 2012 **SAP Cloud** launched
- 2014 **SAP business networks** the largest marketplace in the world
- 2015 **SAP HANA Cloud Platform**
- 2015 **SAP S/4HANA**: most modern ERP system



- **250 sports customers** added globally in the last three years
- Powerful analytics not possible with other systems: For example, the NBA stats site can generate more than **4.5 quadrillion combinations of statistics**<sup>21</sup>

### DEUTSCHER FUSSBALL-BUND

The German Football Association (DFB) collects massive amounts of data (in just 10 minutes, 10 players with three balls can produce over seven million data points). The DFB processes this data in real time to analyze and customize training to prepare for the next match.<sup>22</sup>

### NATIONAL BASKETBALL ASSOCIATION

The NBA has standardized on in-game tracking technology in all 30 of its arenas using six cameras to track the movements of the ball and every player on the court.<sup>23, 24</sup>

### TSG 1899 HOFFENHEIM

This German football Club uses sensors to capture and analyze a wealth of data for nearly all aspects of player performance in real-time using cutting-edge technology, including Google Glass and spatial analysis of player movements. The results optimize training and gain a competitive advantage in developing players.<sup>25</sup>

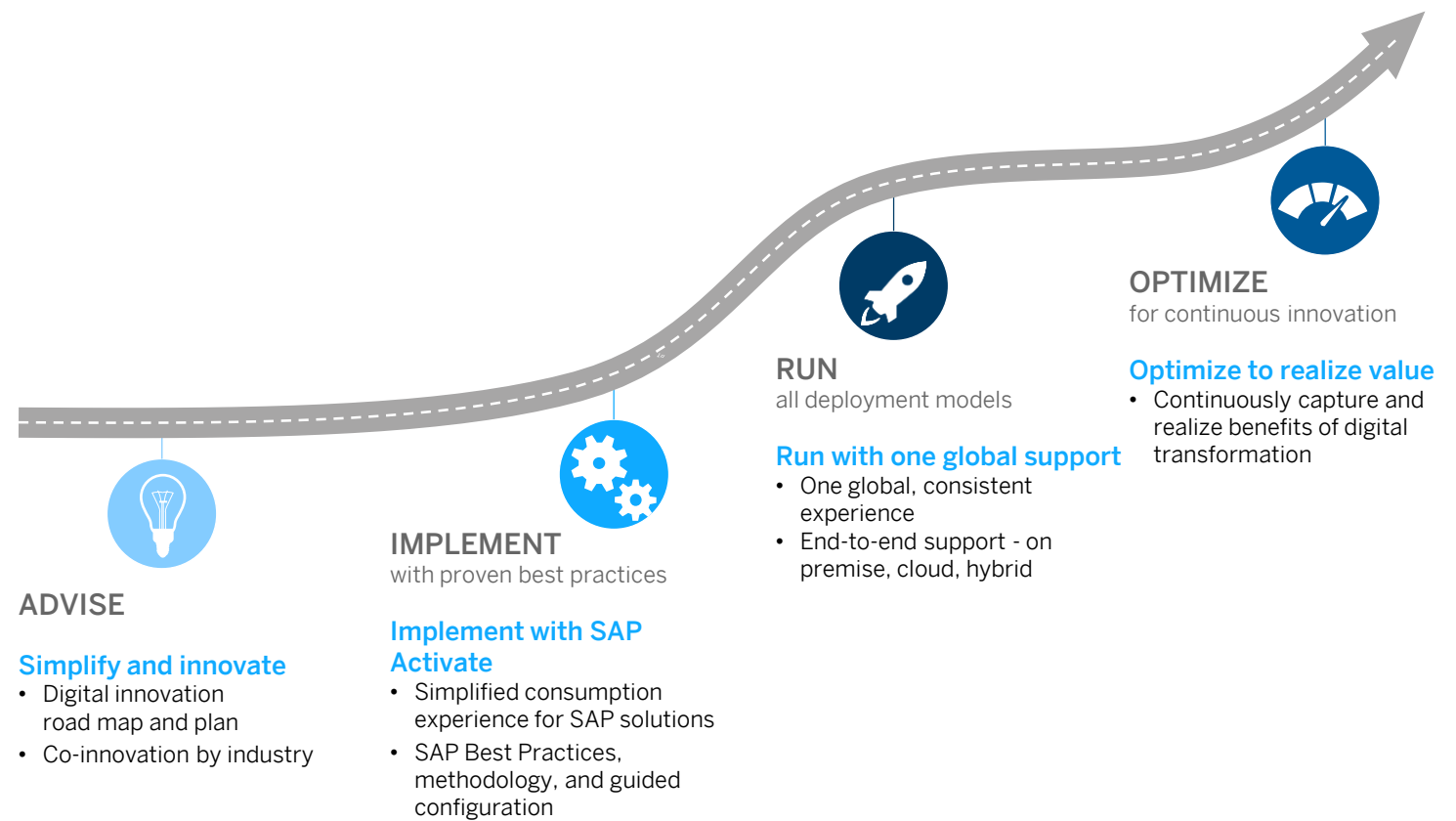
# SAP GLOBAL SERVICES AND SUPPORT TO DRIVE YOUR SUCCESS

In the digital economy, simplification and business innovation matter more than ever. SAP has a broad range of services to cover the end-to-end digital transformation journey, ranging from advising on a digital innovation road map and plan, to implementing with proven best practices, to the ability to run across all deployment models and ultimately optimize for continuous innovation across your digital journey. SAP provides both choice and value within our services, allowing you to tailor the proper approach based on your needs.

Turn to the 30,000 consultants and support professionals who can bring your digital strategy to life. SAP's Global Service & Support (GSS) organization provides a consistent experience –

on premise, cloud, or hybrid. GSS provides the expertise, assets, and the proven methodologies required to accelerate business innovation, reduce TCO, and run a stable platform (on premise or in the cloud).

SAP Activate is a new, simplified consumption experience introduced for cloud adoption. It offers a combination of SAP Best Practices, methodology, and guided configuration. In addition, our leadership in learning drives quick time to value realization and a solid engagement foundation with SAP MaxAttention, SAP ActiveEmbedded, and SAP Value Partnership across the end-to-end customer lifecycle.



Learn | Extend / Innovate | Engagement Foundation | Support



## SAP COMPREHENSIVE ECOSYSTEM

Orchestrating the world to deliver faster value

Our comprehensive ecosystem offers:

- A wide range of services (data and content providers, etc.)
- Open architecture: choice of hardware and software
- Complementary and innovative third-party solutions
- Reach – partners to serve your business of any size anywhere in the world
- Forum for influence and knowledge
- A large pool of industry experts with broad and deep skill sets

Our partner ecosystem includes, among others:



### BUSINESS NETWORK

- 2.0 million suppliers
- 200 major travel partners (air, hotel, car)
- 50K service and contingent labor providers

### INFLUENCE FORUMS AND EDUCATION

- 32 user groups across all regions
- 40+ industry councils
- SAP community >24 million unique visitors per year
- 2,650 SAP University Alliances

### INNOVATION

- 1,900+ OEM solution partners to extend SAP solutions
- 2,700 startups developing SAP HANA apps

### CHANNEL AND SME

- 4,800 channel partners

### IMPLEMENTATION SERVICES

- 13,300 partner companies
- 3,200 service partners
- 800 service partners

### PLATFORM AND INFRASTRUCTURE

- 1,400 cloud partners
- 1,500+ platform partners



## ADDITIONAL RESOURCES

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