INNOVATION INSTITUTE FOR FAN EXPERIENCE

intel.

Enhancing the Fan Experience

Optimizing Operations with Technology
Solutions for Sports & Entertainment Venues

XPERIENCE CONSORTIUM

Overview

The future of sports and entertainment venues

Sports and entertainment events have always been about the fans. From nationally televised annual championship and specialty events to regionally important games of the week and concerts, fans gather to celebrate elite performers and to create memories they revisit for years. Every aspect of a sports or entertainment experience represents a small step in the fan journey, from the moment an event ticket is purchased online to the first time when fans take their seats at the venue. In short, the fans are there for the spectacle and for the experience.

The agreement between fan and venue is simple. Whether it's a sports competition, concert, or festival, fans expect access to memory-making events that flow seamlessly from one stage of their journey to another, in exchange for their patronage and loyalty. When the performers or teams put their best on display and truly thrill them, fans will spend more, return for future events, and bring along others to share in the joy of the experience. But disappoint those same fans at any point on their journey, and they will ultimately spend less and possibly never return, while passing along tales of woe and regret to friends and family members. In this way, venues must deliver an elevated experience for every fan, or risk diminished profits and reputational harm.

Today, large venues are increasingly leveraging new technologies to transform the fan experience and grow new revenue streams while reducing operating costs through greater efficiencies. Venues can maintain the integrity and excitement of the fan experience while enhancing safety and security and remaining "out of the way," given the exponential growth in FANCENTRIC™ technologies. Whether a new build or updating a legacy sports and entertainment venue, technology can create the experience today's fan expects at every point of their journey.

Venues should implement innovative solutions via flexible and connected technology to satisfy customer demand and keep pace with forward-thinking competition across the sports and entertainment industries. Through the adoption of a "wrap-around mentality," where the health, safety, security, and quality of service starts before an event occurs and lasts well in the future, venue operators can employ new technologies to surmount the key challenges facing the sports and entertainment industries today.

"The Xperience Consortium will lead and drive development and adoption of digital technology in all aspects of the sports and entertainment industry to keep it on the cutting edge and drive ROI for venues and organizations."

Dr. Lou Marciani
Director & Co-Founder
Innovation Institute for Fan Experience (IIFX)

"Given rapid advancements in technology, a diverse and best-in-class partner ecosystem, and the need to create meaningful experiences for fans all around the world, IIFX is ready to support stadium and venue operators everywhere to increase competencies and enhance capabilities for all personnel, and Intel is proud to be a part of this effort."

Kasia Hanson
Global IOT Video Sales Leader
Intel® Corporation

IIFX XPERIENCE CONSORTIUM

The IIFX Xperience Consortium is comprised of companies and organizations collaborating and working together to create memory-making fan experiences for the sports and entertainment industries.

Current Market Trends and Challenges

Enhancing the fan experience: creating a "frictionless" fan journey

When fans consider purchasing tickets for an event, especially since the start of the global pandemic, they now expect a great deal more in exchange. From the moment fans decide to leave the comfort of home to enter your venue for an event, to the time when they take their seat after arrival, taking in the experience, event managers and venue operators face many considerations that factor into the process.

For venue operators, managing fan expectations affects the degree to which fans think of the experience as being positive or negative. Here, the ability to conduct multi-modal communication with the fans before, during, and after the event is crucial. In the past, there was only limited access; direct email exchange or text message updates were the entirety of the direct communications with fans.

This limited communication creates numerous challenges and left much to be desired, certainly for the fan. Fans do not know what to expect on the day of the event—both at the venue, and on their way there. Further, key information like fan code of conduct, what to bring, when to arrive, where to park, how to enter, and more is often missing. If the fan does not know what to expect from the facilities—such as what amenities, conveniences, concessions, and more will be available—there is almost no way to maximize revenue by creating a personalized experience.

Developing a unique, immersive, and personalized fan experience

Technology enables the personalized experience, making it entirely accessible by the fan through things like video apps and kiosks or message boards. Through near real-time dissemination of relevant information about the venue, event, special offers, and amenities, venues can provide fans with the experience of a lifetime. Technology empowers event managers, creating more opportunities to enhance fan appreciation for the event and the overall experience. Deepening fan loyalty to the event, artist, team, and venue generates future revenue opportunities through a strong relationship, with a personal touch connecting the fan and venue.

Similarly, creating immersive, frictionless experiences while improving convenience for fans has long been a noteworthy challenge for venues of all sizes. Technology connected with every mode of communication can provide options to best manage the fan-venue relationship, even when there are so many signals competing for fan attention. For venue operators, this process starts with enticing the fan to attend an event, and discerning ways to appropriately celebrate their commitment from the moment they purchase their ticket.

Communicating with the fan early and often about all the ways in which the venue is protecting their health, ensuring their safety and security, and enhancing the service offering on site is essential. Proactive communication and anticipating and answering fan questions before they arise builds confidence in the fan-venue relationship and enhances the venue and team brands.

Venue operators should understand and visualize the fan journey, know the pain points throughout the journey, and help fans by advising them on the best times to arrive, available modes of transportation, the best routes to the venue, how to access public transportation and parking, ADA options, and by providing actionable, real-time information about traffic and crowds. Fans want to know what to bring, where to park, how to move from public transportation and parking areas to their gates, locations of lavatories and concessions, and much more. Every event is different, and "Event Day" brings several fan concerns. These concerns may include:

- Where to enter
- Security and health screening requirements
- Food and beverage options
- What fans can bring in and prohibited items
- Payment methods for concessions
- How to locate their seats
- What amenities and services are available
- How to conduct themselves during the event
- ADA entrances, seating areas, and conveniences

For all these concerns and more, venue and even team apps can be created or leveraged to provide fans with helpful information and a mechanism to report incidents or request assistance, to deliver coupons, and to facilitate wayfinding.

Solution needs

- Analytics
- Command & control
- Crime & terrorism
- Crowd monitoring
- Data analytics
- Food & beverage
- Guest services
- Healthy environment
- Housekeeping
- Incident management
- IT/cyber
- Parking & transportation
- Retail
- Safety and security
- Signage
- Situational awareness
- Sustainability
- Ticket purchase
- Touchless systems
- Wi-Fi & cellular service

Minimizing environmental challenges and eliminating obstacles

The fan journey has hundreds of touch points between the fan, the venue, staff, vendors, teams, talent, media, and more. All of these touch points can make or break the fan experience and affect revenues. On site, parking can be a significant pain point for most fans. Large parking lots and off-site parking are often sources of stress, but they also offer a potential opportunity to enhance the fan experience. Easy-access parking, variety of payment options, and clear, easy-to-read signage can ease the fan journey from home to their event seat.

Venue operators should consider ways to minimize wait times for parking/transportation, queues, security screening, and ingress and egress. Creating efficient flow of operations and simple, frictionless processes to minimize wait times can help fans enjoy the event, even before it starts. Transit time for fans to move from parking and transportation hubs, through security, and to their seats should be less than 30 minutes. Longer transit times often result in decreased sales and increased fan complaints.

Speedy lines at concessions (food and beverage, merchandise, autograph sessions, fan zones, etc.), as well as lines for conveniences (lavatories, hand washing, comfort and aid stations, etc.) reduce pain points and enhance the fan experience. Managing fan expectations throughout their journey can be as simple as informing them where there are shorter lines for entry, lavatories, and food and beverage. Knowing how long it will take to enter the venue can create a low-stress experience, given access requirements that may shift from time to time or based on the event.

Parking, tolling, and traffic management can also benefit from the use of apps or mechanisms that permit online payment, cashless entry and exit, touchless purchases, and more. Offering high-speed connectivity on-site further delivers value to the fan, but accessing scalable capacity as well as reliable, high-speed service can be a challenge for venue operators.

Creating conditions for memory-making experiences

Memory-making experiences are more than the spectacle of sports and entertainment events, and every fan and group is different. Venues strive to create and deliver unique, interactive, and customized offerings that distinguish various levels of experience. The goal is always to satisfy and create memorable experiences from start to finish, and to entice every fan to return, especially VIPs. Technology is available to help fans procure food and beverage or to locate seats, providing VIP fans with concierge-style service from the moment they enter the venue. Similarly, people with disabilities or physical limitations may require dedicated ADA entry and exit points (for both normal and emergency conditions), in addition to special services to support visual, physical, auditory, or cognitive impairments.

When emergencies or significant incidents occur, access to clear communication among and between members of security, law enforcement, venue, staff, and fans must be available. This includes survivable and reliable, multi-modal communications that can perform when they are needed most.

Ensuring security and safety, no matter what

Another challenge exists in delivering enhanced security, safety, and public health services where gaps in coverage may exist and costs are high. For fans, this includes:

- Availability of public transportation
- Clear, easy-to-see and follow signage throughout the fan journey
- Clean and sanitary facilities
- Accessible entry, seating, conveniences, and services
- Touchless ticketing, screening, parking, and concessions
- Access to high-speed, high-capacity wi-fi and network services on-demand

Safety and security for fans, artists, players, staff, and vendors requires staff who are well-trained, properly equipped, and proficient with technology. Technology can be a force multiplier, especially during the pandemic, with challenges posed by high turnover rates and difficulty recruiting talent.

Deep learning and AI capabilities can enable venue operators to analyze customer behaviors in real-time, allowing available staff to deploy as needed to trouble areas. These same capabilities can support after-action reviews and facilitate development of new routes, pathways, and signage, or they can be used to optimize screening and cleaning processes to help keep guests healthy, safe, and secure.

Safety and security technology can seamlessly enable coordination between the venue and law enforcement (private-public partnership) during normal operations and when incidents occur. Technology can alert people, provide emergency instructions and wayfinding, and light the way when power fails during emergencies.

Drone technology can provide other means for the detection and reporting of incidents within restricted airspace. It can also be used to manage and control the airspace around venues.

Employing technology to streamline operations

Rapidly evolving technologies are used by leading-edge venues to optimize operations, lower costs, and increase revenue and fan satisfaction. New technologies are available to supplement and enhance current safety and security protocols, while creating new opportunities and new revenue streams. Using technology to facilitate proactive management of potential contingencies and emergency scenarios can help venues enjoy greater efficiency at lower cost.

The pandemic showed that low-probability, high-consequence risks can occur with devastating human and financial implications. The pandemic demonstrated the importance of preparedness, transparency, and strategic planning when considering fans' safety, security, and quality of experience. During the first year of the pandemic, 20,636 sporting events were cancelled (including the Indianapolis 500), and events at all levels of competition were compromised. The sports and entertainment industries in the United States lost more than $200 billion in revenue (as well as 9.3 million jobs), and faces labor force recruiting and retention challenges, with as many as 47% of leisure and sports and entertainment workers planning to leave their current job.

The World Health Organization (WHO) indicates that pandemic conditions will likely exist in most of the world through 2023. Venue operators will continue to need technologies to create a healthy building with advanced filters for air handling systems, cleaning and sanitation, and sustainable products that protect the environment. Technology that provides for a FANCENTRIC™ experience will enable venues to create the spectacles through music, entertainment, and sports that bring people together and help people and fans return to public life.

How IIFX can help
venue operators

The Innovation Institute for Fan Experience (IIFX) has set as its benchmark to become the leading and most trusted global authority on providing exceptional fan experiences for the sports and entertainment industries.

Through Intelligent Venue Technologies offered by partners in its best-in-class ecosystem and supported by Intel and all members of the Xperience Consortium, IIFX works with technology partners to create the ideal fan experience so that members and sports & entertainment partners see measurable revenue growth, new and repeat attendance, workforce professional growth and development, and maximized health, safety, and security through best practices, innovative technology solutions, and high-quality services.

When venue operators deploy innovative technology that moves the sports industry forward in its digital journey, the possibilities are endless. The IIFX Xperience Consortium is committed to helping organizations drive revenue, provide professional development, maximize security, public health, and safety, and increase physical and digital fan engagement.

To **advocate** for innovative digital footprints for closer interaction between fans, artists, teams, entertainment agencies, sports leagues, and venues.

To **provide** the necessary personnel, finances, and energy to address challenges in health safety, security, and business operations in sports and entertainment.

To **assist the deployment of technology** for an improved fan experience and to advance the sports and entertainment economy.

Benefits

When assessing the impact that leveraging new technologies can have, venue operators typically highlight three key areas where these new solutions can help to achieve goals.

1 First, **optimizing processes and operations** allows venue operators to enhance the fan experience in a variety of ways, including faster queues and reduced wait times. Enabling intelligent crowd management, for example, within sports venues can help to maximize health, safety, security, and service efficiency. To support this process, having access to near real-time edge analytics can help to increase reliability, efficiency, sustainability, and functionality at all levels of operations.

Case Study: Super Bowl LIVE

Super Bowl LIVE (2017), a 10-day fan festival that included football experiences, concerts, a local food showcase, and other attractions, promised to add a large security demand to the city of Houston. The event was slated to take place at and around Discovery Green, a large green space situated in the heart of downtown. A 750,000 square foot perimeter was secured by fencing leading up to the event. Though attendance was non-ticketed and free, any attendees would need to go through secured gates to access the event.

The City of Houston utilized a selection of Axis Communications network cameras, including PTZ (pan, tilt, zoom), thermal, and flexible options to cover all bases. Streaming through a combination of fiber and wireless provided by Verizon Wireless and Siklu respectively, the city gathered data without interruption, maintaining alert status in case of incidents.

A wide selection of government and local agencies used the overall camera system for their own needs. These included police, fire, emergency management, and transportation entities. A successful event overall for the City of Houston, the cameras and its partner network added a necessary tool with analytics that not only provided assistance and support for ground operations surrounding this event, but also laid out the platform for continued advancement of technology use in the city for general safety needs.

2 Second, **lowering costs, improving the fan experience (customer service), and increasing safety** are other net benefits of implementing advanced technology. Innovative, intelligent, open IoT solutions; cross-functional systems; and smart digital technology can all function seamlessly to create and maintain a robust and holistic strategy that delivers the desired fan experience while ensuring staff are well-trained and prepared for anything.

Case Study: 5G-Enabled Smart Stadiums

Today's networks are often overwhelmed with thousands of fans uploading content to social media sites simultaneously. Demand for greater connectivity is necessary to enhance and enable the fan experience. The proliferation of 5G technology offers stadiums high bandwidth and low latency, and allows fans to fully experience large-scale live events. This enables fans to personalize their experience, while taking advantage of better service through greater efficiencies.

5G trials within Smart Stadiums are generating a new, highly connected fan experience throughout their journey, even guiding fans to the best possible and available parking space. Entrance queues move faster because security screening is augmented by AI. Tickets are scanned automatically from phones located in fans' pockets as they enter, while their food and drink requests are submitted via apps and delivered to their seats.

Through a custom app tied to the venue, exclusive stories about fans' individual favorite performers and players or action in the arena can be delivered before, during, and after the event. Viewing the action from a variety of angles throughout the venue is also possible, giving fans and VIP guests the ability to create, curate, and direct their own personalized experiences.

3 Third, new technology is vital to **enhance physical security and reduce health, safety, and security risk** for fans, players, artists, staff, and vendors at venues. Venue operators can also leverage this technology to enable greater resilience to incidents and economic shocks.

Case Study: USTA

When the United States Tennis Association (USTA) required specialist network engineers to deliver high-density connectivity throughout the US Open and to manage the operations of their ICT network, solutions from across the Intel ecosystem were the answer. PMY implemented Intel-backed solutions throughout the venue. These included design and deployment of temporary wi-fi throughout the 14,000-seat stadium, network audit and rectification for the installation of 35 cameras for grandstand capacity monitoring, and campus-wide network monitoring and reporting leveraging over 80 network sponsors.

At the US Open, the network that was implemented provided connectivity for 100% of users, and enabled real-time crowd management, enhanced fan experience, increased revenues and operational savings, and improved safety and security.

Just this March, NTT announced its plans to deploy a sensible venue pilot at Little Caesars Environment in Detroit, Michigan, in partnership with the Innovation Institute for Fan Expertise (IIFX), members of its Xperience Consortium, and others. The partners will collaborate to improve the fan experience of the venue, especially with regard to occupancy ranges. The venue continues to host the NHL, NBA, and leisure experiences while maintaining its Security Act Certification, a top honor awarded by the US Division of Homeland Safety.

"NTT, in partnership with other IIFX members, will be observing occupancy degree on the venue by making use of predictive and correlative analytics to the information collected from optical sensors and ticket scans," noted Bill Baver, Vice President of NTT SMART World. The system that the partners put in place will relay data on the variety of individuals entering the venue, as well as from the tickets scanned. With site visitor volumes available for analysis, technology can predict in real-time an expected degree of stadium occupancy and the wait times at various entrances and more.

"Followers are more and more in search of immersive, linked, and social experiences that begin from the second they depart the dwelling, and finish upon their return. By way of this IIFX Xperience Consortium mission, which incorporates expertise innovators Axis Communications and Johnson Controls," Baver went on to say, "the newest expertise options developed for the Little Caesars Environment will assist operators in handling both ongoing and novel challenges within the stadium."

> "Followers are more and more in search of immersive, linked, and social experiences that begin from the second they depart the dwelling, and finish upon their return[....]the newest expertise options developed for the Little Caesars Environment will assist operators in handling both ongoing and novel challenges within the stadium."

Bill Baver
Vice President
NTT SMART World
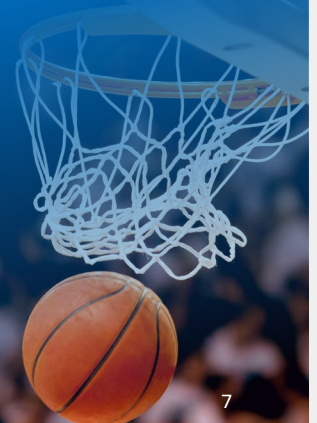
Intel And Partner Platforms

Intel Technology and Components

Stadium operators are in a squeeze play between fans expecting a more captivating experience, and host cities looking for higher returns on their sports complex investments. Faced with compelling home entertainment systems as competition, operators know they need to find new ways to fill stadiums, compel fans to spend more, and keep everyone safe. Smart stadiums, a core component of the solution, provide fans with an abundance of insight and information, from parking availability to seat upgrade opportunities, special offers, and more. Through the use of networking sensors and existing systems in the stadium supported by Intel Internet of Things (IoT) technologies, such as our enhanced for IOT hardware and AI inferencing software, operators can facilitate an elevated fan experience cost-effectively and with ease. These IoT technologies help deliver convenient, personalized experiences to fans. This could mean shorter lines and preferred navigation routes from parking lot to seat and near-real-time updates to stadium staff to help increase efficiency, helping to secure the premises and maintain safety for all.

- Intelligent Venue Technologies
- Responsive Digital Experience
- On-premise Data Aggregation with Edge Compute
- Ubiquitous Connectivity and Access
- Smart Hub Information Displays
- Smart Security with Video Analytics
- Intel® True View Immersive Media Platform
- In-Room Digital Experience

Intel, together with our partners and IIFX, is working to deliver solutions that solve for some of the biggest challenges facing venues and stadiums today. With more than 130 IoT solutions and nearly 90 percent repeat deployments to date, Intel partners deliver integrated solutions that help reduce the time, cost, and risk of deployments. Learn more about some of these partners below:

AXIS COMMUNICATIONS

How do you keep thousands of people safe without spoiling the experience? The task starts long before the event begins and ends well after the last fan leaves. With innovative, flexible network technology, Axis Communications can support you from start to finish. Hosting thousands of people in a limited space will always pose security challenges, but by integrating network cameras, access control systems, loudspeakers, and analytics, Axis can help stadium operators to keep fans out of danger. Whether an Axis end-to-end solution or Axis hardware combined with existing stadium surveillance tools makes the most sense,

easily integrated Axis products improve the quality and quantity of stadium video coverage. Axis camera technologies—such as 4K Ultra HD, Lightfinder, and thermal imaging—provide outstanding detail, even in very low light. Edge analytics help stadium operators leverage this hardware to detect and evaluate threats with reliability and efficiency.

BABELSTREET
DISCOVER. DECIPHER. EMPOWER.

Babel Street is the world's leading AI-enabled data-to-knowledge company. The company's technology allows customers to rapidly discover and decipher the insights they need to empower their missions, regardless of origin, language, or platform. Babel Street solutions feature extensive, up-to-the-minute insight into content that is especially relevant for event and executive protection – informed by hundreds of languages and billions of online data sources. As a result, we are consistently trusted to protect major professional sporting events due to our unique ability to constantly monitor publicly available information for threats and filter out noise. Erasing the language barrier while extracting actionable insights from billions of online data sources is what we do best.

Databuoy®

Databuoy is a developer of IoT Sensor Networks for cities. Databuoy designs for anywhere people congregate. Databuoy provides reliable, accurate and timely response to gunfire or emergency incidents using Shotpoint, a gunshot detection and localization providing <2 meter accuracy and notifications within 2-seconds of detection. Databuoy also offers Geofob, an RF Panic/Assistance buttons that provides localization within the sensor network.

DELL Technologies

Dell knows that professional athletes aren't the only ones showing up to sports stadiums to work on their competitive edge. Similarly, there's much more to a successful fan experience than what's happening on the field. Looking beyond the sidelines, Dell goes into the depths of the data center to deliver optimized performance that's behind successful stadiums delivering innovative, cutting-edge fan experiences by virtue of the venue itself. For example, each electronic item, from the massive HD video display boards to the concessions check out register can be digitally connected in the stadium.

Read brief: Smart Stadiums Lead in Profitability, Fan Experience, and Security

Tickets can be scanned instantaneously to eliminate long lines, and concession stands transactions can be accelerated. Video highlights shown immediately in HD throughout the building ensure fans will never miss a single second of the excitement. With free Wi-Fi throughout the venue to enhance the "second screen experience," fans are sure to return to sports stadiums, wanting to relive memorable experiences time and time again. When it comes to stadium security, Dell EMC's Isilon and Genetec's surveillance cameras enable operators to monitor every seat in the venue and increase real-time video storage retention up to 45 days while augmenting archival capacity to hold more than three years of video footage. By providing a streamlined, automated, cost-efficient data center, Dell supports stadium operators to focus their attention on the future of stadium, and the delivery of the ultimate fan experience.

Genetec

Ensuring that guests have both a memorable experience and a safe one is no small feat for security teams involved with stadium operations. Here, the need for a solution that can bridge multiple security technologies and keep evolving with the venue itself is critical to delivering a safe, secure, and noteworthy fan experience. Genetec offers a comprehensive unified platform capable of making all the difference in keeping the stadium venue, staff, and guests safe. Solutions include enabling effective parking management with a holistic system that improves the flow of traffic. Here, operators can track lot occupancy, identify unpaid parked vehicles, and direct drivers to open spaces. This parking solution employs a layered security strategy that extends reach to the venue perimeter, with systems that unify video, access control, and automatic license plate recognition to offer security personnel greater oversight. Genetec can help stadium operators to improve collaboration with all stakeholders, to effectively manage complex access rights and maintain a secure environment, and to improve data unification so that personnel view stadium concerns through a common framework and deploy tools that efficiently gather, analyze, and associate critical information in a timely manner.

GZ Guardian Zone

Guardian Zone, LLC bridges the communication gap between fans and security by putting safety in everyone's hands. Guardian Zone is an easy-to-use, cloud based, incident management alternative to cumbersome facility management competitors and old-fashioned paperwork. Our solution lets concert attendees and sports fans connect directly with in-house security or a security operations center. Crowdsourcing information provides improved incident response time for security. Guardian Zone empowers staff and visitors to act and directly contact security during an emergency.

Security can also send direct messages or mass alerts to staff and visitors. This creates a network of everyone with the Guardian Zone app on their smartphones, which helps extend a security team's reach, and shorten the response time after an incident. By deploying geofencing technology, protection is provided to all users within (a) desired location(s). Geofencing creates a temporary "closed-community". All reported emergencies and incidents allow exact location positioning utilizing both GPS and IPS technologies within the designated perimeter.

Hanwha Techwin America

Hanwha Techwin America provides the most advanced solutions for securing people, property, and data while delivering a superior customer experience through continuous innovation, unparalleled service, and the highest standards of integrity. Hanwha provides Surveillance Video Solutions - IP Cameras, Video Management System, and Video and Audio Analytics. Hanwha technologies are designed to enhance user, customer, and fan experience by providing shorter wait times, better advertising, and quicker response time to security issues and threats.

Johnson Controls

Today, the sports and entertainment industry must embrace technology to make the fan experience richer, operate the venue more efficiently and sustainably, and ensure the health and safety of players, guests and staff. At Johnson Controls, we bring together traditional operational technology, IT systems, cloud applications infused with AI, and our cutting-edge OpenBlue digital solutions to gain unprecedented insight, integration and collaboration to power the fan experience.

The team at Johnson Controls helped Fiserv Forum, Chase Center, Allegiant Stadium, and venues around the globe re-imagine ways to better operate buildings and improve occupant experiences. Digitally transforming an environment to more effectively use the data gathered at every fan touchpoint—from parking patterns to ticketing to concessions—helps venues delight fans, unlock new revenue streams, and capture operational efficiencies. Bringing together our leading expertise with a collection of data platforms, applications, core building systems, smart edge devices, and ecosystem partners, we partner with venues to transform buildings and actualize the outcomes a smart building can deliver.

MERIDIAN
RAPID DEFENSE GROUP

Meridian Rapid Defense Group provides perimeter security solutions that protect people, communities, and places. Meridian is the first point of entry that fans see before entering any arena, stadium, or event. Meridian is SAFETY Act certified and delivers its products through the company's fully trained Field Specialists. Meridian provides signature Meridian Archer Barriers (Anti-Vehicle Barriers) that are mobile, easy to emplace, and are manufactured in the United States using 100% American steel. Meridian's Vehicle Safety Mitigation Plans and drone coverage, which is also included in the After-Action Reporting. In the future, Meridian will add facial recognition and other AI integration to improve the entry process.

Microsoft

Fans, athletes, and teams are getting closer to the action and information that make sports so fast-paced and exciting. Microsoft believes that when passion and technology come together, we can change the way the world watches, plays, coaches, and experiences sports. In today's stadium experience, fans want to get even closer to the action. From replaying the winning goal from multiple angles, to connecting with other fans from around the globe, Microsoft Cloud technology is empowering new ways for every fan to be a part of the game, and for the team to customize experiences that inspire and delight each individual. Talent, hard work, and data-driven insights add up to how athletes are reaching the top of their game. Through Microsoft Cloud and new performance tools, centralized data and real-time predictive analytics help teams train, prevent injury, and ultimately take home the win. In one noteworthy partnership, the NFL collaborated closely with Microsoft—consulting with coaches and players—to develop its Surface Sideline Viewing System (SVS). SVS provides insights to improve game-time performance and coaching, helping players adjust their tactics in near real time.

NMEITC
NATIONAL MINORITY EMERGING AND INNOVATIVE TECHNOLOGIES CONSORTIUM

National Minority Emerging & Innovative Technology Consortium (NMEITC) is an organization of certified, best in class minority owned small businesses specializing in emerging and innovative technology solutions such as Cybersecurity, Green Technology, Big data & analytics, Artificial intelligence, Cloud-based architecture, augmented reality, and sustainability. NMEITC partners and works with Unions, HBCUs, and Minority Serving institutions, universities, and community colleges to deliver emerging & innovative technology solutions, Research and Development, small business innovative research efforts, and assisting with design and delivery of special projects to support Commercial, Federal, (DoD,& Civilian agencies, and Nonprofit enterprises.

NTT

NTT believes that every player on a sports team represents a precious piece of information; every corner of an operator's stadium is producing valuable data; and all the matches and fans that congregate within a stadium deliver information that can be useful. The important piece? Bringing this all together can create a whole new era for the sports industry, where data analytics informs every aspect of stadium operations and delivers a positive impact for fans, enhanced security and efficiency for staff, and better returns for the business. Through the use of NTT Smart Solutions , stadium operators can accelerate smart sports and enhance the fan experience. NTT Smart Solutions enable streamlined management of visitors to the venue (e.g., real-time information on traffic and transit, parking, wayfinding,suggested activities); improved safety and security (e.g., crowd analytics, vehicle analytics, behavioral analytics); and new revenue generation (e.g., data to increase concession sales and push ad-hoc ads and notifications to visitors). NTT Smart Solutions support the implementation of smart technology with a goal of enhancing the fan experience to achieve maximum engagement for sports stadium operators.

OnePlan

OnePlan is the ultimate way to plan fan experiences at events and venues. Its ground-breaking technology empowers sports and entertainment organizations to design stadium and arena experiences that are safe, successful and drive revenue. OnePlan makes your team more productive, saving you time and money.

Easy-to-use and centimeter-accurate, OnePlan lets teams and partners plan together in real-time. Existing CAD files can be imported, and you can plan on any floor level - making it ideal for multi-purpose venues.

Its hyper-realistic digital twin software, Venue Twin, unlocks new operational and commercial opportunities for venues. Security and operations teams can plan for any scenario, while commercial teams can design and sell hospitality, tickets and fan experiences in the most visually advanced way. Venue Twin empowers your sustainability initiatives, with colleagues, partners, suppliers and any stakeholder able to access it 24/7 from anywhere in the world - reducing the need for site visits and associated CO2 emissions.

OnePlan's software has been used by 8,000+ events and venues in over 100 countries - including by NBA, NFL and English Premier League teams, International Federations, motor races and many other major sports and entertainment organizations.

PatriotOne
TECHNOLOGIES

Patriot One Technologies offers next generation threat detection solutions, to covertly deploy as a layered multi-sensor platform to detect and combat active threats before they occur. The Gateway, an alternative to traditional walkthrough metal detectors, detects concealed weapons using AI coupled with multiple advanced sensors to covertly detect guns and knives. The Video Recognition System integrates with existing video systems to automate the detection of weapons, crowd disturbances, and anomalous behavior, while the AI-powered security Platform provides remote access to real-time insights including camera feeds, sensor data and access controls. The design allows for greater deployment and ease of use than any competitive system; all packaged as a uniquely integrated, cost-effective AI-powered security system.

The NFT Brewery

The NFT Brewery understands that fan experiences are dynamic and change depending on the event itself. Starting with the Millennial generation, younger fans are digital-first and have different expectations when going to a sports event versus a musical concert. We believe that sports and entertainment venues will provide the perfect space for the intersection of physical and digital experiences where fans interact with celebrities, teams, and their friends at the venue or those watching the event in a Metaverse. The NFT Brewery is empowering businesses to develop and deploy innovative products built with Web3 technology, loosely referred to as computing applications built on blockchain technology. Non-fungible tokens (NFTs) are enabling a much closer relationship between the fans and the performers, creating novel product offerings and monetization paths for sports and entertainment businesses. For example, a venue's digital twin can serve as its own Metaverse with fan experiences powered by NFTs and Web3 technology, enhanced with AR/VR, games, etc to incentivize participation and create a community that evolves over time. The NFT Brewery makes it easy for enterprises to create a solid Web3 foundation to seamlessly engage with fans in physical venues and the Metaverse.

Security Brief

Security Brief is credentialing reimagined – protecting people and the companies that serve them. Security Brief provides a unique Qualification-based Venue Access Credential for any venue area, a single system capability independent of legacy structures. It utilizes biometrics to store a patron's qualifications to generate access credentials while protecting privacy. Patrons solely control their information on their device, eliminating the fear, possibility, and liability of a privacy/data breach.

Getting Started

Starting point for optimizing sports and entertainment venues with digital technology

Phase 1

Identify the challenge

Identify the unique challenges to the venue that are affecting positive guest experience. Understand the current physical and digital security/access control implementation within sports and entertainment venues. Assess where digital technology can be implemented for the purposes of improving the guest experience through enhanced health, safety, security, and services.

Phase 2

Understand existing infrastructure

Implementing available capabilities to address the operational and security challenges that your sports and entertainment venue identifies as being "most critical."

Phase 3

Propose and accept digital solution

Identify the additional capabilities/technology partners and solutions required to close the technology capability gaps for a sports and entertainment venue in order to achieve comprehensive operational and security optimization.

Phase 4

Identify gaps between current infrastructure and solution

Conduct an iterative process to continuously learn from and improve upon the evolving process of implementing technology to improve security, enhance the guest experience, and optimize operations and costs.

Explore more

Explore more about sports stadium solutions powered by Intel® technology by visiting the IIFX Resource Directory ⊙

Xperience Consortium

The fan journey

04 Transit from parking/transport hub to venue

03 Arrival at parking/transport hub

02 Transit from home to parking/transport hub

Circulating outside venue

Reflecting on experience

Transit from venue to home

10 Arrival at parking/transport hub

Transit from venue to parking/transport hub

11

09

08 Egress
- *Gate*
- *Access control*

07 Event

06

05 Ingress
- *Gate*
- *Access control*

01 Home
- *Decision*
- *Purchase ticket(s)*
- *Develop event day plan*

Circulation through venue
- *Seating areas/ADA Areas*
- *Food, beverage, concessions, special activities*
- *Lavatories and other conveniences*

There are hundreds of touch points and many more use cases throughout the fan journey. Each touch point is an opportunity for solution providers to enhance the fan experience.
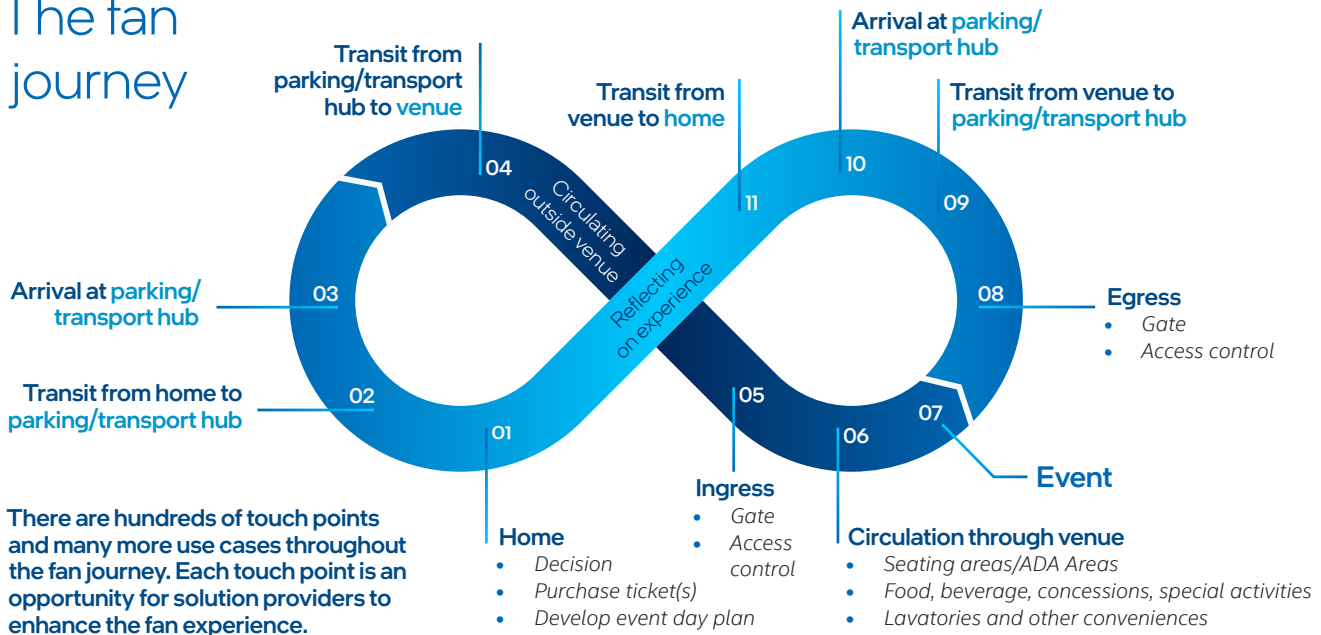
Potential use cases

Analytics
- Real-time
- Predictive
- Correlative
- Historical

Command and control
- Situational awareness
- Communications
  » Cyber
  » Multi-modal (public address, cellular, first responder network, radio, etc.)
- IT/wireless/cellular

Concessions
- Food and beverage
- Alcohol management
- Merchandise
- Touchless systems (grab-and-go)

Crime and terrorism
- Human trafficking
- Drug
- Vandalism

Crowd monitoring
- Ingress
  » Health
  » Security screening
  » Ticket taking
- Crowd counting
- Circulation through venue, ancillary spaces

Crowd monitoring (cont.)
- Movement to/from parking
- Egress

Environment and sustainability
- Smart trash
- Recycling
- Landscaping and hardscape
- Water management
- Waste management
- Reduce plastic use
- Electric vehicle charging

Guest services
- VIP
- General
- Season ticket holders
- Pre/post surveys of fans

Housekeeping
- Cleaning
- Sanitation
- HAZMAT

Incident management
- Communications
- Command and control systems

IT/cyber
- Information manager
- Cybersecurity

Parking
- Lot management
- Vehicle counting
- License plate readers
- Signage
- Transit to and from venue from parking lot

Safety and security
- Perimeter Security
  » Signage
  » Video/CCTV
  » Barriers (fencing, bollards, architecture, etc.)
  » Expand perimeter throughout "last mile"
- Access Control
  » Biometrics (sensors, privacy, database protection)
  » Ticketing (paper, digital)
  » Credentialing (staff, security, vendors, media, etc.)
  » Database management
  » Privacy protection

Signage
- Directions/wayfinding
- Marketing
- Safety/security
- Evacuation routes

Situational awareness
- CCTV
- Passive sensors
- Social media
- Crowd counters
- Scanners – tickets, parking, etc.

Ticket purchase
- Online
- Secondary (reseller)
- On-site

Touchless systems
- Tickets
- Parking
- Screening (health/security)
- Concessions
- Food and beverage
- Merchandise
- Hand dryers

Communication, Wi-Fi, and cellular services
- 5G networks
- Cybersecurity
- Capacity
- Multi-modal communications
- Fan engagement with safety and security elements

THINK BIG
...not just smarter, but **better** cities, transportation, and fan experiences

START SMALL
Get going with projects and opportunities

MOVE FAST
Learn, adjust, **iterate**