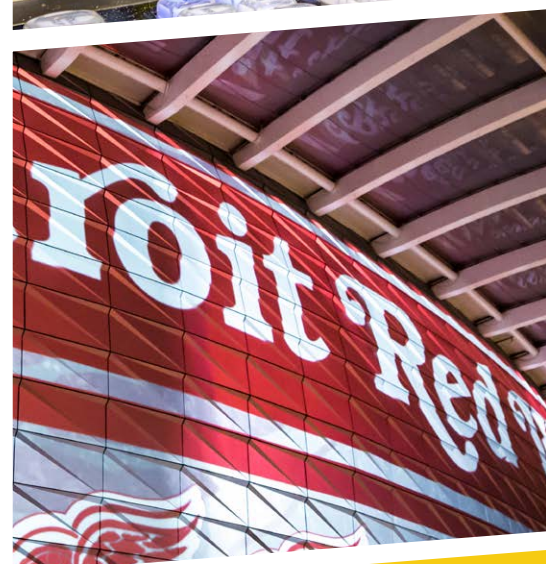




The Evolution of Audiovisual Experiences in

# Sports Venues



# The Evolution of Audiovisual Experiences in Sports Venues

## Audiovisual Experiences Change the Game for Fans, Teams and Venues

Fans attending a race at the ISM Raceway in Phoenix may find themselves more involved in the action than they expect. The venue is experimenting with interactive audio and video displays to insert fans into scenes from previous races.

“Imagine a live video feed of a victory lane from the past, and it appears as though you’re in the victory lane celebrating with the driver,” says Bryan Sperber, President of the raceway. “Then tie that back to your social media, so you could post a video of it on a social media platform. Those are the kinds of ideas that we’re looking forward to unleashing.”

To achieve such a capability, the venue is relying on advanced audiovisual technologies. It’s one of numerous stadiums and arenas across the U.S. and around the world that are using technology to change the way fans experience sporting events.

No longer is it enough for fans to come to a stadium, sit in a seat and watch a game or other event. Venues face competition from fans’ own homes, where they have high-definition TVs and easy access to snacks, beverages and other amenities. To get fans in the door, sports teams and venues must offer much more than a game; they need to deliver a compelling experience. New audiovisual (AV) technologies are the foundation of modern fan engagement.

“By using AV systems such as large screens and designing areas around the stadium where people can come for a shared experience, there’s a real sense of place,” says Scott Ferebee, Project Designer for MEIS Architects. “It’s a destination before the game starts.”

A wide range of AV solutions is essential to these efforts. Stadiums and arenas are employing massive video boards as the centerpiece of many venues, giving fans a central place to focus their attention when it’s not on the action. Video walls, ribbons and individual displays,



advanced audio systems, mobile applications — even next-generation technologies such as virtual reality and augmented reality — are coming into play.

The use cases for these technologies vary just as widely. In addition to providing in-house entertainment for fans, they are used for wayfinding, advertising, digital menus, fan information, even security.

“Everything that we’re doing right now is centered around the fan experience; it touches every single event,” says Alex Rodrigo, Group Vice President for Sports and Entertainment Operations with the St. Louis Blues. “We don’t just see technology as replacing that human touch, but enhancing that element and empowering our staff to be a part of the process as well.”

Many teams are looking to take the fan experience to the next level. For example, at the Dallas Cowboys World Headquarters in Frisco, Texas, the team has installed kinetic kiosks with video walls that allow visitors to engage with different games so they can involve themselves in the Cowboys story. A kiosk may prompt a fan to undertake a series of activities and challenges, such as throwing a football or dodging tacklers as a running back, with a sensor array tracking the fan’s movements in real time. (Fans looking for a less active challenge may opt instead to answer trivia questions.) Ultimately, the fan receives a score that shows their rank among other fans, which can be shared on social media.

“We’re seeing a much greater emphasis on experience, and on the experience being more holistic,” says John Downie, Vice President of Digital Experiences with Advent. “The experience is now more of a two-way street of interaction, with the fans asking to be involved — more than just passive participants and spectators.”

This is the ultimate goal for many teams: using technology to touch fans in special ways that create an experience they can’t find anywhere else.

“That creation of a memorable moment in time is so powerful and beneficial to the brand and the team,” Downie says, “that, if done right, becomes a vitally important touchpoint.”

Following are other examples of audiovisual experiences in sports venues that improve the fan experience and lead to better business outcomes.



# Little Caesars Arena, Detroit

Case Study



## AV Drives Fan Experience for the Detroit Red Wings and Pistons

When Detroit's Little Caesars Arena opened in September 2017, the first-year home of the Detroit Red Wings and Pistons featured floor-to-ceiling innovations designed to enhance the fan experience.

From the floor, the team can use laser projectors to animate images and motion video onto the ice. "We're doing some pretty interesting 3D animations, where it looks like the ice is turning into a wall of ice, or the ice is cracking, or that there's something under the ice that is powering it," says Pete Skorich, Vice President for Entertainment Services with Olympia Entertainment and the Detroit Red Wings. "We're also having fun with showing images of our team's history on the ice."

The team also uses a 12-laser projection system to cast images and video on the "jewel skin," a 600-foot metal-panel canvas that runs along the Via, an enclosed, street-level concourse that surrounds the arena with restaurants, concessions, a team store, rich history and endless amenities.

This unique feature has a massive impact with fans, and the venue may just be scratching the surface of its potential.

"I don't want to say we're just figuring out how to work with it, but we've had a year to play with it, and now our motion graphic artists are becoming a little bit more daring, and they're becoming used to the technology," Skorich says. "Now they can go out and do some really spectacular stuff with it."

On the ceiling, the arena's operators can use its 1,700 LED lights to change colors, adapting the mood of the arena to fit the moment. The venue also features a 5,100-square-foot scoreboard (the largest seamless center-hung video board in the world), a sound system that is powerful yet high-in-fidelity and two large rings of video ribbon signage surrounding the interior bowl.

The Little Caesars Arena Via concourse features 1,300 HD video displays managed by an IPTV system, enabling the team to broadcast both messages from its partners as well as game action, so fans don't have to miss

the event when they get up to use the restroom or for food and beverages. The arena also has additional large LED displays on the concourse to show promotional content such as artwork for upcoming concerts or community events.

Olympia Entertainment is aiming to use these innovative AV solutions as effectively and efficiently as possible. “We want to use our technology to be able to help augment the event without getting in the way of the event,” Skorich says. “We know that people are here to watch a hockey or basketball game; we don’t want to detract from that – we want to add to it.”

The Ilitch organization, which owns Olympia Entertainment, the teams and the arena, also created The District Detroit app, which is designed to improve the fan experience by making it easier for fans to find and obtain whatever they need in the arena.

The app is integrated with Ticketmaster, which enables fans to receive their tickets on a mobile device.

It also offers wayfinding, along with an express ordering function that allows fans to order food and beverage – receiving a text when it’s ready – and pick it up in an express lane without having to wait in line. The venue is continuously working with its app developer to launch increased features and capabilities.

For Skorich and his team, having an arsenal of innovative technologies at their fingertips is a blast. “For the first year we wanted to show off our new technology in a fundamentally sound fashion and now from this point forward, we’re going to have some fun with it. We’re really excited about getting into year two and all the captivating content we can introduce to our fans.”

**“We want to use our technology to help augment the event without getting in the way of the event.”**

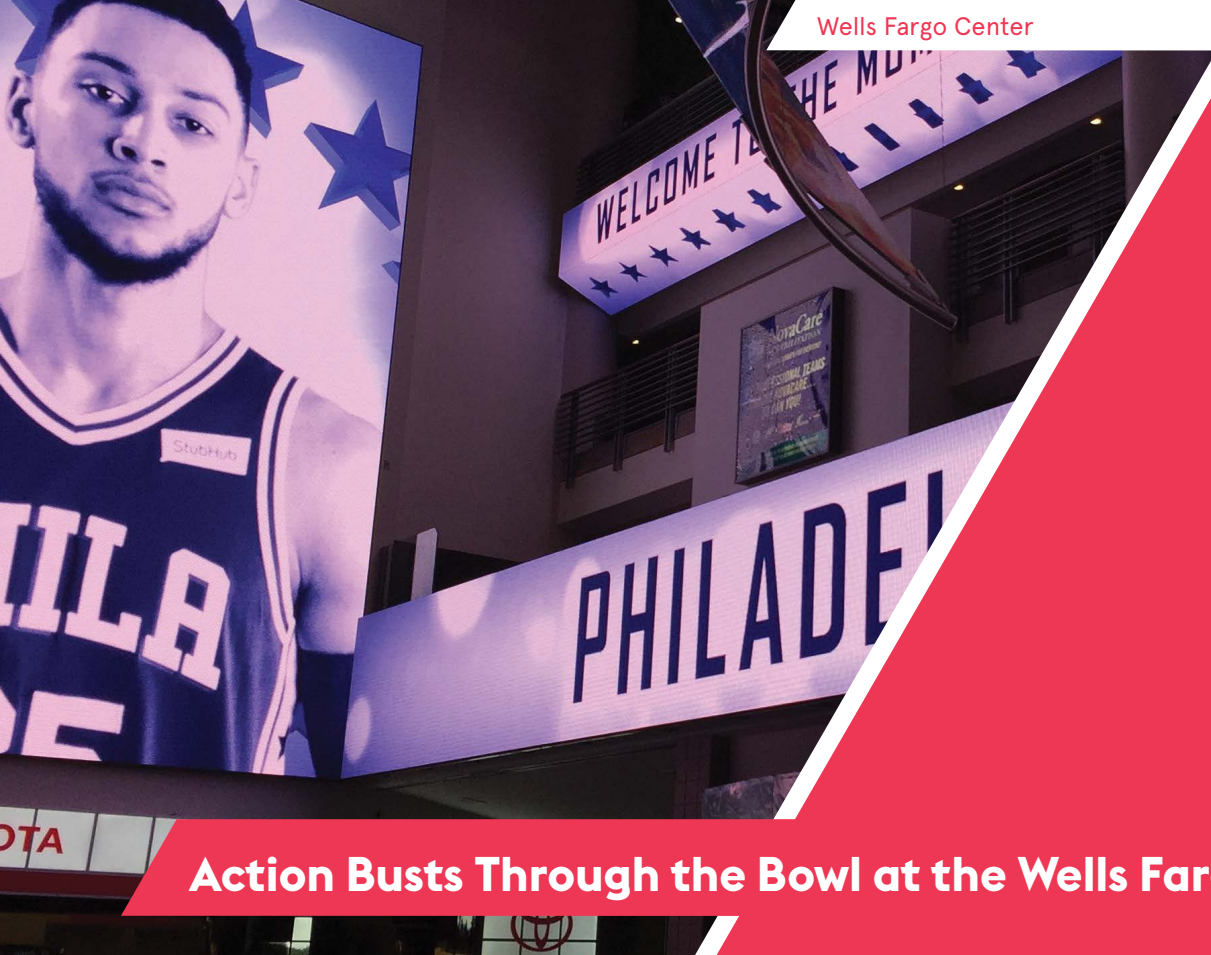




# Wells Fargo Center, Philadelphia

Case Study





## Action Busts Through the Bowl at the Wells Fargo Center

The Wells Fargo Center in Philadelphia has continuously stretched the bounds of large-scale video display throughout its 15-year partnership with AV integration and content specialist ANC. Together they pioneered one of the earliest 360-degree wraparound LED ribbons in the bowl and went big with an upgraded center-hung display back in 2006, and then moved outdoors to add two massive outdoor displays and highway-facing billboards. Lit with content created and managed by a collaborative in-house and ANC team, the integrated display system sends a cohesive message inside and out with video, animations, sponsor content, promotions, and statistics.

The relationship is a tight-knit one, and it's fostered by the Wells Fargo Center's creative team and a media-savvy client ownership group in Comcast Spectacor. When venue management began its latest upgrade process two years ago, it saw an opportunity for even more large-scale video in the space. Having video-bedazzled so many surfaces already, this time it looked in a new direction – the concourses.

The brief was to revolutionize the concourse experience, and to do that, ANC analyzed and maximized each angle of a tremendous blank canvas and illuminated it with 10,500 square feet of LED video walls. Installed in time for the fall 2017 season, the new atrium arrays bring the gigantic scale of in-bowl video boards to visitors entering the venue for its 400-plus sporting and entertainment events annually, immersing them in content from the doorway up through four levels of open concourse wall space.

"The effect is analogous to being inside an aquarium, with a flow of content all around you," says Joshua Keeler, Creative Director for ANC. "There are some venues that have some concourse boards in them, but none to the extent of these two atriums, where there's massive amounts of square footage of communication potential."

Working from the arena's original blueprints, ANC's team of designers created an interactive 3D rendering of the entire arena, enabling a fly-through that would depict how it would feel to move around the newly enlivened





atriums. Keeler says the team was able to work with the client “to not only design a maximal space for advertising, but also combine it into a seamless experience. We wanted to provide the ability to have the same or similar content on all screens, all perfectly synchronized, so instead of feeling like several different screens each with some distractingly different thing going on, it was more like a single screen that happened to be composed of a bunch of little windows onto a bigger world.”

Arriving at a design that placed one large focal board amid several supporting fascia displays and double-sided video banners in both atriums, ANC selected 10mm LED displays for the project. The completed installation placed 26 new surfaces at the fingertips of content creators, the arena’s tenant teams, and sponsors.

The display configuration was unprecedented, so ANC worked with the Wells Fargo Center creative team to develop a template for

managing output to all the displays. To present the best possible canvas, with a realistic flow of content across the many surfaces separated by different concourse levels, ANC measured the distance between the physical boards and then timed the video flow accordingly in the template. “Little tweaks like that are what make a multi-board experience so effective,” Keeler said. “If we have snowflakes start on one board and fall down to the next, they’re not going to instantly pop between the boards. It will take time for them to go the 10 feet between them.”

The creative team at the Wells Fargo Center is well versed in moving video among the many levels of displays in the bowl. But the atrium display arrays offer new options. “It’s a whole new way of thinking,” says Matthew Coppola, Senior Director of Event and Video Production for Comcast Spectacor. “We’re the first arena in the country to be this aggressive with an inside LED system.





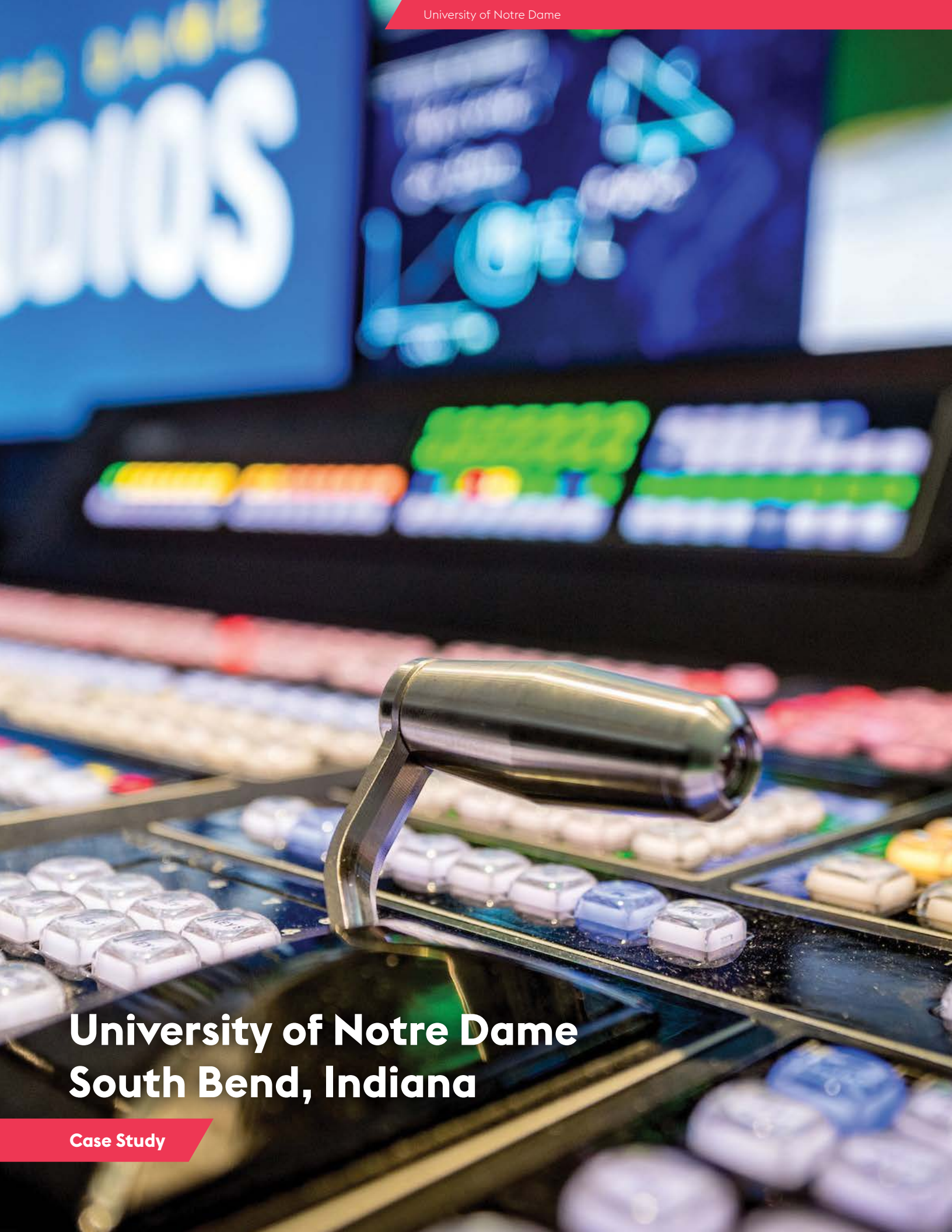
That presents new opportunities, creative and otherwise, for communicating a message. And the fans love them, too. The impact is clear, this changes the entire environment in the building.”

Outfitting the highest-trafficked areas of the venue with floor-to-ceiling video creates two new entertainment zones that can be used for mini events within the main event. It also adds a new option for “moments of exclusivity” sales. From an operations standpoint, this is an easy upgrade. The concourse video displays are controlled through the same system and ANC software as the signage within the bowl, enabling the venue to seamlessly become an immersive experience with the click of a button.

Response to the new atrium displays has been positive. The fans love their effect, sponsors are happy, and the numbers are looking good, too. In the first quarter of use, the Wells Fargo Center advertising sales team saw 152-percent revenue growth related specifically to the newly LED-enhanced atrium areas.

“It’s truly immersive; it affects your state of being,” Coppola says. “These displays are so bright and beautiful and the art the creative team puts on them is so dynamic. Working with the teams and the sponsors, our goal is to create a seamless experience.”

“The effect is analogous to being inside an aquarium, with a flow of content all around you.”



# University of Notre Dame South Bend, Indiana

Case Study



## AV Helps the University of Notre Dame Tell Its Story

In 1991, the University of Notre Dame established a broadcast relationship with NBC. With such a powerful media partner, the university's athletic department didn't need to invest in internal story-telling capability. By the time Jack Swarbrick became the university's athletics director in 2008, however, most of its peers had passed it in terms of using digital media and technology.

"We didn't have video boards in any of our arenas, so we didn't have that reason to become communications and tech creators at that really in-depth level of audiovisual," says Dan Skendzel, Executive Director of Notre Dame Studios. "We let the digital world come screaming past us."

Notre Dame's efforts to get back in the game have accelerated significantly in recent years. The university completed a \$400 million renovation of Notre Dame Stadium in 2017, which included a 96-by-54-foot video screen, ribbon video boards, enhanced Wi-Fi networking and state-of-the-art control rooms and studio spaces.

Before the large video board was installed on the stadium's south wall, a small but vocal contingent of Notre Dame supporters opposed the new technology, says Rob Kelly, Senior Associate Athletic Director for Media and Brand. "After the first year, that conversation is completely gone and almost forgotten. Now, almost nobody would say, we shouldn't have a video board," he says. "But now, people are very opinionated about how it should be used."

With the state of the art display technology, Notre Dame can utilize the football game to tell an institutional story beyond football. The university launched Fighting Irish Digital Media to create content for its AV systems, which later became Fighting Irish Media as it rolled print and other operations into the unit.

In addition to showing action on the field, the university uses the stadium's board to present content such as scholarship promotions, pre-game prayers and announcement of the weekly mass schedule.

“This past season, the video board has been one of the top three highest satisfaction-level components of the game.”

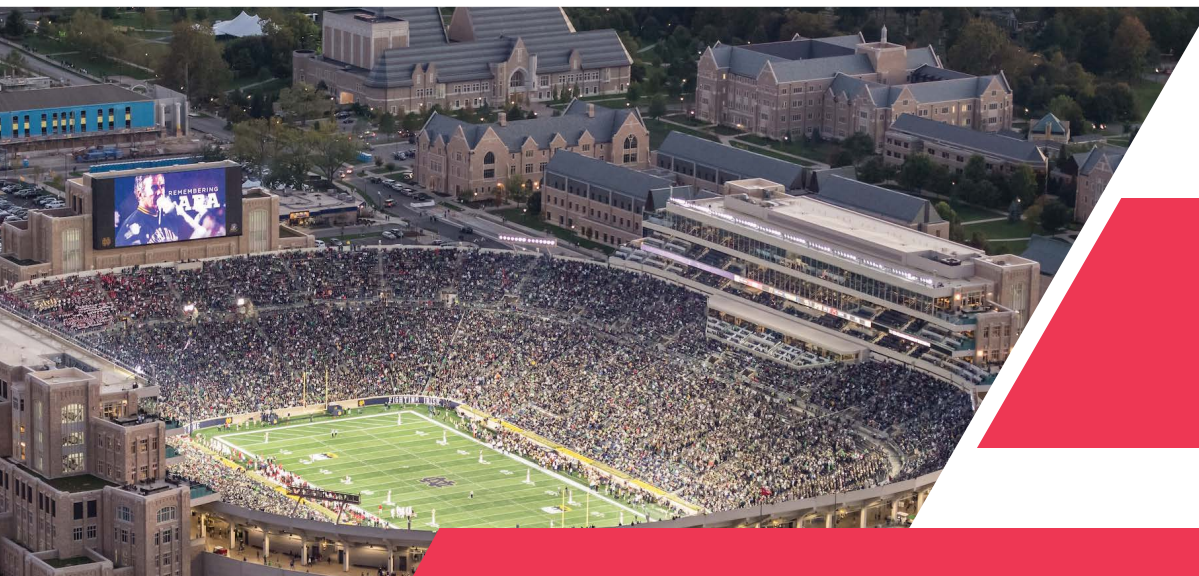
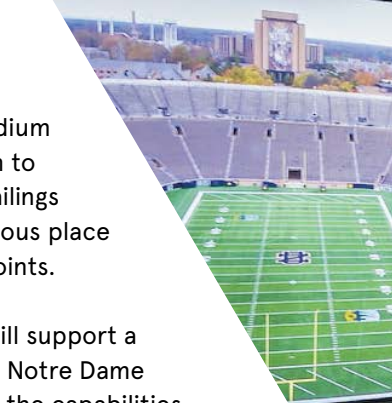
Among the stadium concourses, the premium seating areas and the building interiors, the university installed several hundred digital monitors. These displays carry the NBC game broadcast as well as other messaging.

The new video capabilities in the stadium have been very popular with fans. “After every game, we do a game survey. We ask about the satisfaction levels around various components of the game day experience,” Kelly says. “This past season, the video board has been one of the top three highest satisfaction-level components of the game. It’s been tremendously well received.”

The stadium also features 1,096 Wi-Fi access points to support the new wireless network. In planning the build-out, the university faced a challenge in deciding where to install the access points. Research revealed that some fans were concerned about the lack

of railings in the lower bowl. Installing new railings served a dual purpose during the stadium renovations. In addition to improving safety, the railings provided an inconspicuous place to deploy the access points.

The wireless network will support a mobile application that Notre Dame plans to deploy. Among the capabilities the university is considering for the app are the ability for fans to manage and use their tickets, to access concessions and possibly to purchase merchandise.





# SunTrust Park, Atlanta

Case Study



## AV Turns Braves' SunTrust Park Into a Destination

When the Atlanta Braves were looking for a new home after 20 years at Turner Field, they wanted a stadium environment that gave fans a reason to come early and stay late. Historically, the Braves put quality teams on the field, but still fans generally showed up late and left early.

With SunTrust Park, the organization feels like it has exceeded its goal. The Braves built much more than a stadium 10 miles northwest of Atlanta; the team established an entertainment complex called The Battery Atlanta around the stadium, with chef-driven restaurants, retail stores, apartments, office buildings and a huge sports bar.

"It's got a vibe like a theme park. Literally what we've done is we've built a neighborhood and put a stadium in it," says Scott Cunningham, Vice President of Fan Experience for the organization. "It's unlike any other place I've seen, it's revolutionizing the sports industry in how new stadiums are being planned and built."

Technologies such as sophisticated AV systems are an integral part of the team's strategy to make the complex a fan-favorite destination. The Braves have installed about 32 LED Panasonic scoreboards throughout the park, the largest being a 122-by-64-foot, 16-mm pixel scoreboard in center field. The location of the board is a strategic decision by the team to make it easy for fans to get the information they want.

"For me, placing the main scoreboard in center field is a 'no-brainer', because it symmetrically complements the game on the field with the game presentation," Cunningham says. "You don't have to worry about turning and looking into the corners when you want to see statistical information. It's all right there as part of the presentation."

“We want to make sure that the experience our fans have and the memories they make far outweigh the dollars they spend for it.”

The park also features a 90-by-30-foot scoreboard in left-center field and LED displays above each bullpen in right-center field.

An 830-foot LED ribbon spans from the left field foul pole to the right field foul pole, and a massive LED baseball sits just outside the stadium. The team’s staff operates all the LED displays from a central control room.

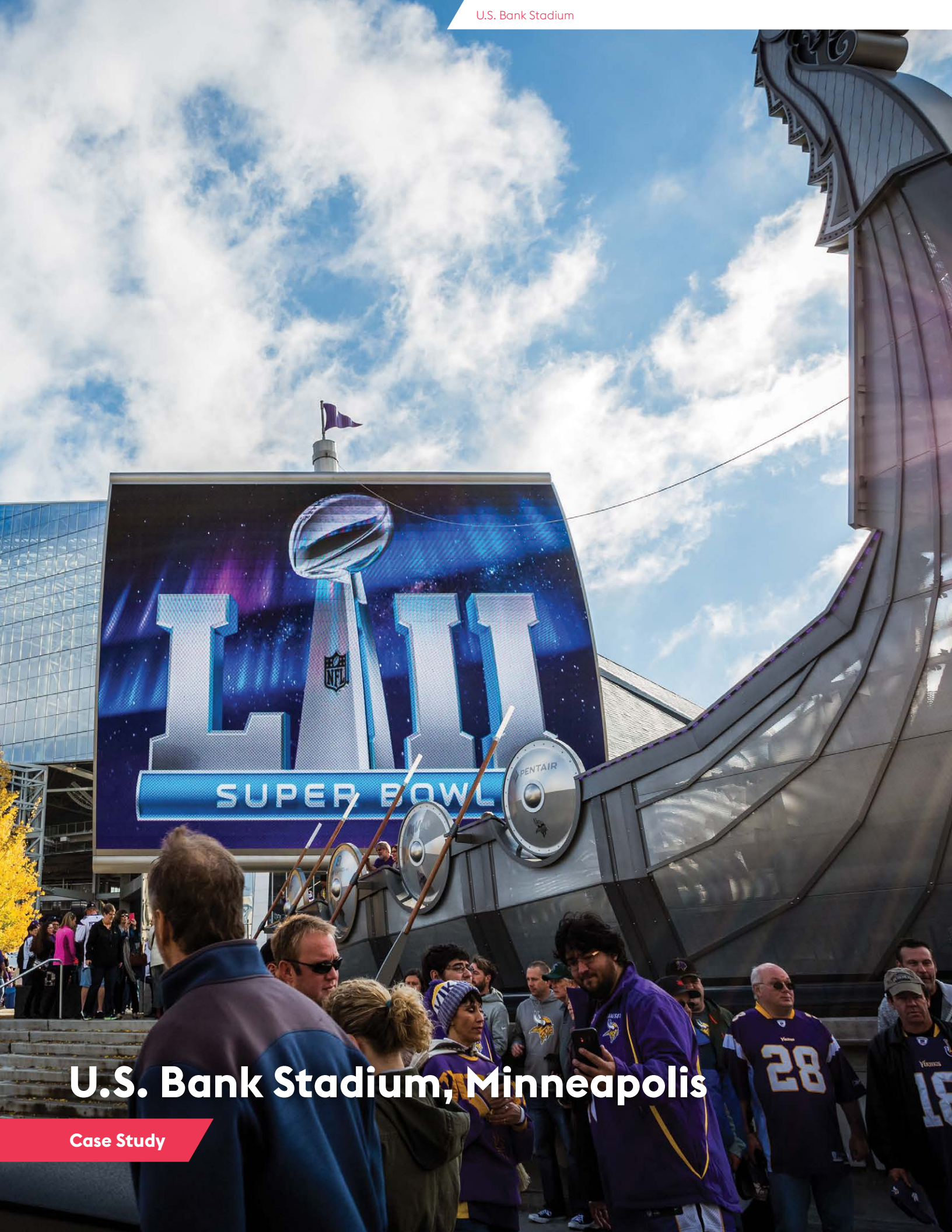
The team also equipped SunTrust Park with what it bills as the fastest Wi-Fi network in the major leagues, with 800 hotspots and 250 miles of fiber-optic cables delivering 200 gigabits of bandwidth. Even the lights are high-tech, Cunningham notes, explaining that the LED illumination is brighter and more energy-efficient than older lighting systems while enabling the team to program the lights into the game presentation.

The Braves intend to continue innovating with their technology. For example, the organization is looking into using augmented reality tools to improve fan experience in the Monument Garden, a sort of team museum in the complex. Fans can use their smartphones to scan an artifact and see enhanced content and details about items such as the bat that Hank Aaron used to hit his 715th home run or the knee brace Sid Bream was wearing when he slid into home with the winning run in Game 7 of the 1992 National League Championship Series.

“We want to make sure that the experience our fans have and the memories they make far outweigh the dollars they spend for it,” Cunningham says, “regardless of whether the team wins or loses.”







# U.S. Bank Stadium, Minneapolis

Case Study



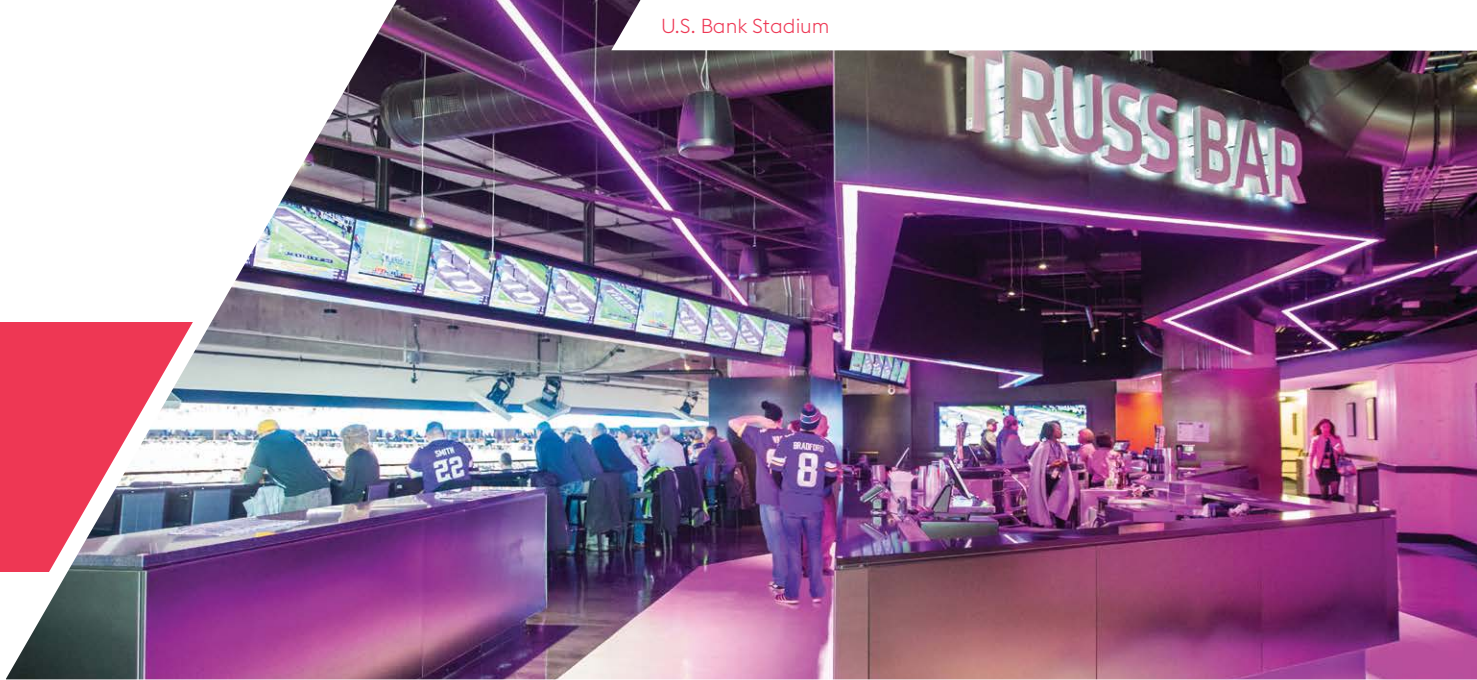
## Vikings Sail Into a New High-Tech Home

Before moving into U.S. Bank Stadium at the start of the 2016 NFL season, the Minnesota Vikings employed the lessons they learned to make the most of their audiovisual technologies and improve the fan experience. The team played at the Hubert H. Humphrey Metrodome in Minneapolis for decades before taking up temporary residence at TCF Bank Stadium on the campus of the University of Minnesota during the 2014 and 2015 seasons.

The Metrodome had small display boards — “postage stamps” according to Bryan Harper, the Vikings’ Vice President of Content and Production — while TCF Bank Stadium boasted a large LED display board at the west end and a smaller board at the opposite end. When planning its move into the new \$1.1 billion U.S. Bank Stadium, the team wanted to place the massive Daktronics video boards (68 feet high by 120 feet wide in the west end zone and 51 feet high by 88 feet wide in the east end zone) as low as possible to provide a more engaging experience for the fans.

“By having them where they’re located, it’s like the replays and all the live pictures that you have, it really makes the fans feel like they’re in the middle of the action,” Harper says. “We invested in the video board and the highest pixel quality that we could get, and we invested on the camera side of things to provide that experience.”

In all, the stadium features 13 video boards of various sizes totaling 31,000 square feet, including video ribbons that stretch across lengthy sections of the concourses. The Vikings use the video real estate to deliver a variety of content to fans, such as out-of-town scores, fantasy stats, crowd prompts and partner advertising. The team also has a memorable video display outside the stadium, a 2,000-square-foot, 55-foot-tall curved LED screen made to look like a sail, part of an outdoor Viking long-ship landmark the team calls the Legacy Ship.



The Vikings control the displays centrally via an IPTV system. This enables the team to group displays throughout the stadium into separate zones, showing varied content for different audiences, such as private events in premium spaces.

“It just gives us a lot of flexibility to do those day-to-day private events, and then on a Sunday, take the whole stadium over and control it from one location,” says Tadd Wilson, the stadium’s broadcast operations manager.

The Minnesota Sports Facilities Authority, which partnered with the Vikings to build the stadium, wanted to deliver the most engaging fan experience possible, Harper says.

The team used an ETFE (ethylene tetrafluoroethylene) roof and huge, pivoting glass doors create an open, outdoor feel to the stadium, even while maintaining a climate-controlled enclosure to protect fans from Minneapolis’ brutally cold winters.

“All those things allow for this experience, and then you add the technology to it, and it just pushes it over the top,” Harper says.

The result? In surveys conducted by the National Football League, the Vikings ranked number one in the NFL in game entertainment for 2017.

“We invested in the video board and the highest pixel quality that we could get.”



## Sports Venues Look to the Future With AV Solutions

The motivation behind how teams use audiovisual technologies varies greatly, says Greg Giordano, Director of Design and Strategy for Sensory Interactive. On one end of the spectrum, some teams have specific revenue targets in mind for the advertising they will sell on their video displays. Other teams are interested solely in how their digital displays enhance the fan experience, with almost no regard to the direct impact on the bottom line.

Regardless of the reasoning behind any specific AV installation, teams are deploying ever-more-sophisticated technologies to help them deliver memorable experiences to their fans.

"As prices come down, as resolution gets better, as content management system capabilities scale, we can do just a whole lot more with making the video feel like a piece of the architecture experience and not a picture on a wall," Giordano says. "We're looking to find ways to make the video feel like an integrated, natural part of the experience."

One key element of the experience that teams want to deliver is a keen understanding of each fan. New technologies, including mobile devices, beacons and data analytics systems, give teams unprecedented capabilities for gathering and understanding information about their fans.

This will enable them to see what fans are interested in, what kinds of content they connect with, and tailor an experience that meets their needs.

"We'll be able to really track these attractions within the attraction, and see what's performing and what's pleasing the fan," says Bryan Sperber of ISM Raceway. "And if there's opportunity for improvement, we'll be able to make that for the next time."

This capability will continue to grow in importance as teams vie for fans' attention with numerous other forms of entertainment. Teams must keep honing their skills in delivering the best fan experience possible, no matter whether the venue is brand new or decades old.

"This building [American Airlines Arena in Miami] has been around since December 31, 1999," says Lorenzo Butler of the Miami Heat. "And we're constantly reinventing ourselves."

**"We're looking to find ways to make the video feel like an integrated, natural part of the experience."**



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