

INNOVATION BRIEF

Smart Venues, Exceptional Events

Reimagining venue operations with
an AI-powered command center



WRITTEN BY

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Summary

- The live events industry stands at a pivotal moment. Attendance is soaring, investments are rolling in, and emerging technologies are offering new possibilities. Yet most venues remain shackled by siloed, complex, and reactive legacy systems that create frustrating experiences and leave money on the table.
- The future is an Intelligent Operations Command Center that acts as an AI-powered centralized nervous system for event and venue management, upping the game for time-critical operations.
- The command center will drive business value by using intelligent technologies to:
 - Shift from reactive to proactive management
 - Optimize operations
 - Deliver personalized, premium experiences for fans, athletes, performers, and staff
- This isn't just a technology solution; it's about creating seamless, unforgettable events. In the future, these smart venues may be the difference between selling tickets and selling out.

Picture this: You depart your house 90 minutes before the match, leaving plenty of time to get to the stadium and explore before the event. But then, two blocks from the parking lot, local authorities and private security have blocked off roads. There is no guidance about where to go, and the standard road signs and navigation apps are no help. You end up going to the other side of the stadium, far from your seats and well behind schedule.

Finally, you park and rush to the gate only to find

long lines. There is a swarm of gate security, but half are standing around while others are manually searching bags and scanning tickets with a rugged mobile device that seems to weigh as much as your heavy heart as you hear the national anthem begin.

Inside, the crowds start cheering and you envy the lucky fans who made it to their seats in time. Finally, you get inside only to spin in circles, trying to figure out where you are and how to get to your seats. The signage is confusing, and when you

ask an usher, they pull out a paper map to guide you. Meanwhile, the roar of the crowd intensifies as the spectacle begins.

For anyone who has attended a live event recently, this scenario likely hits a little too close to home. Despite the incredible pace

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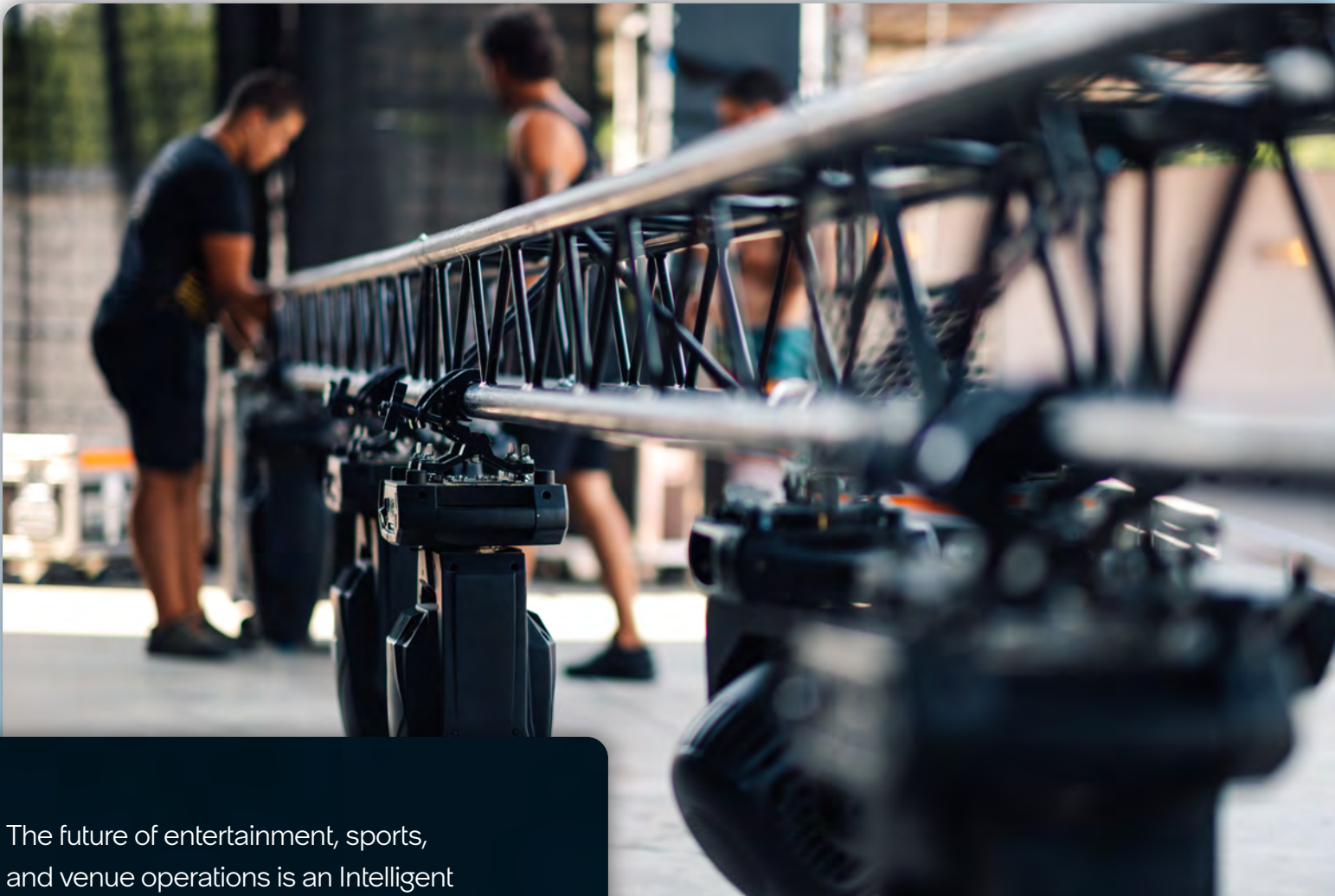
of technology accelerating the evolution of operations across industries, processes developed decades ago still dominate many venues, and it shows. Too many fans still experience long lines, overflowing trash bins, broken seats, inaccurate signage, empty shelves, and staff that isn't there when they need them.

For fans, venue operators, sports executives, and event leaders, the stakes are high. Everyone expects exceptional live events, yet today's event experience is fragmented, antiquated, and frustrating. Rather than proactive problem-solving, today's live events are largely reactive coordination. They are plagued by cumbersome manual reporting and friction-causing delays



instead of real-time, suggestive action-taking and seamless event delivery.

But what if your entire event operation could think, see, and adapt in real time? What if your innovative venue operations and logistical experiences were part of the appeal? Other industries are already benefiting from capabilities like automated crowd control and flow management, predictive inventory and order management, personalized notifications to mobile devices, touchless entry, and seamless security checks. And the next frontier is AI-supported workforce management, allowing for dynamic staffing allocations that target where staff is really needed, while also enabling employees with digital assistants that anticipate questions and suggest answers. It is time for live events management to capitalize on today's technology and envision a new future for the industry.



The future of entertainment, sports, and venue operations is an Intelligent Operations Command Center. This AI-powered, digital mission control acts as a centralized nervous system that integrates with existing technology stacks; surfaces data in actionable visuals; provides the status of assets, workers, and operations; and offers suggestions on how to solve problems before they even happen. The command center will power the next generation of smart venues to drive new business value by providing better experiences for fans, athletes, performers, partners, vendors, and stadium operators.

How today's sports and venues operate behind the scenes

Event management is an incredibly complex juggling act. Imagine transforming an ice rink into a concert venue within 24 hours. Picture managing thousands of contract employees through vendors who need to be onboarded and supported while maintaining robust security and background checks. Consider the difficulties in managing the traffic flow of thousands of fans to avoid bottlenecks and

promote safe, smooth movement.

To handle these challenges, many arenas and stadiums have digitized some systems, but these efforts are often limited use cases and isolated, failing to encompass the entire ecosystem of live event management. Others still rely on antiquated systems, such as pen and paper, Excel spreadsheets, and walkie-talkies. This creates complexity and eliminates opportunities to connect data. Systems remain siloed and unable to learn or predict what will happen, leaving organizations vulnerable to unexpected events like severe weather, worker disruptions, or security incidents.

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On top of using outdated systems, many of today's venues operate on a shoestring budget, with small IT or technology departments that spend more time fixing connectivity issues than on actually providing a great experience. This is

not their fault: Budgets are small, technology infrastructures are outdated, and investments and commitments into smaller niche solutions were often made years ago. Event management software is often a cumbersome replica of general project management and doesn't meet the demands of the hyper-dynamic environment it has now been purposed for. Equally cumbersome is the software that brings all the sensor-collected data into one single system but just dead-ends, instead of automatically linking to the rest of operations to generate insights and actions.

The bottom line: Limited budgets, legacy tech, and fragmented digitization are holding back today's live events operations management, especially at a moment of tremendous opportunity.

Today's transformative opportunity

This is an optimum time to pursue improved sports and venue operations. First, the live events business remains on a growth trajectory. Live Nation, one of the largest producers and promoters of live events, reported that worldwide “some 151 million people attended nearly 55,000 Live Nation events in 2024, an increase of 4% year-on-year,” and they saw a 3% year-over-year increase in revenue.¹

PricewaterhouseCoopers projects that global entertainment and media industry revenues, which hit \$2.8 trillion in 2023, will reach \$3.4



trillion in 2028.² The majority of consumers report attending at least one live event in the last six months, and the average attendee went to seven.³ The next 2.5 years alone see major tournaments such as the 2026 Milano Cortina Olympic Games; the 2026 FIFA World Cup in Mexico, Canada, and the U.S.; the 2027 FIFA Women's World Cup in Brazil; and the 2028 Los Angeles Olympic & Paralympic Games. They all promise record-breaking live attendance and viewership, as well as significant budget allocations for technology.

Second, big-money investments are surging across the sports world.⁴ U.S. college athletes now have more power to earn money and build their personal brands, thanks to new rules that let them profit from their name, image, and likeness (NIL) through social media, sponsorships, or merchandise. At the same time, major investors, including entire countries through their national investment funds, are putting money into high-profile sports leagues, franchises, and tournaments to grow and diversify their wealth.

Third, technological advancements present an unprecedented opportunity to reimagine sports and venue operations. Breakthroughs in AI, computer vision, and IoT (Internet of Things) have the potential to transform how venues operate, how fans engage, and how decisions are made.

These technologies are helping venues become smarter and more responsive

because they can access information in real time, giving them operational oversight and predictive analytics that help forecast crowd flow and resource needs. Enhanced connectivity, including 5G and edge computing, enables seamless mobile experiences and supports innovations such as augmented reality, dynamic ticketing, and personalized in-venue services.

Sticking with the status quo comes at a cost. Venues that fail to modernize risk falling behind. Operational inefficiencies, outdated fan



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Even back-of-house functions like security, maintenance, and vendor coordination are being streamlined through automation and integrated digital platforms. These advancements aren't just experimental—they're becoming essential infrastructure for the next era of live events. New technological developments are enabling capabilities today that were previously unimaginable, but they are just starting to penetrate the live events industry, often in a piecemeal fashion.

experiences, and limited flexibility can quickly erode profitability and reputation. As fans grow to expect real-time personalization and seamless digital interactions, and as investors demand smarter use of capital, legacy systems and siloed operations will become liabilities. In a competitive, high-stakes environment, standing still isn't neutral—it's moving backward. Stadiums that lead in using AI and platform technology will excel in tomorrow's competition by providing superior experiences both on and off the field.

The opportunity to transform is now.



Imagining tomorrow's Intelligent Operations Command Center

When it comes to live events, venue operators are dealing with an unrivaled level of complexity combined with high expectations. For every major event:

- Athletes and performers at the peak of their performance need to be free of frustrations and distractions so they can focus on delivery.
- Hundreds of vendors and their staffers need access, instructions, and space allocations.
- Thousands of workers must be trained, security-checked, scheduled, and assigned based on their skills.
- Tens of thousands of fans (aka customers), many of whom have travelled long distances and spent a lot of money to be there, expect an amazing event.

Today's legacy technology can hinder the ability to successfully manage the complexity and high expectations of live events. Another challenge is that technology is often viewed as a cost-center, not a value or growth driver for fan and customer experiences. The responsibility sits with the venue operations teams, the event coordinators, and the technologists to anticipate frustrations and mitigate challenges and delays before they occur. This presents a unique opportunity for customer/fan experience executives to partner with cross-functional teams on operational and

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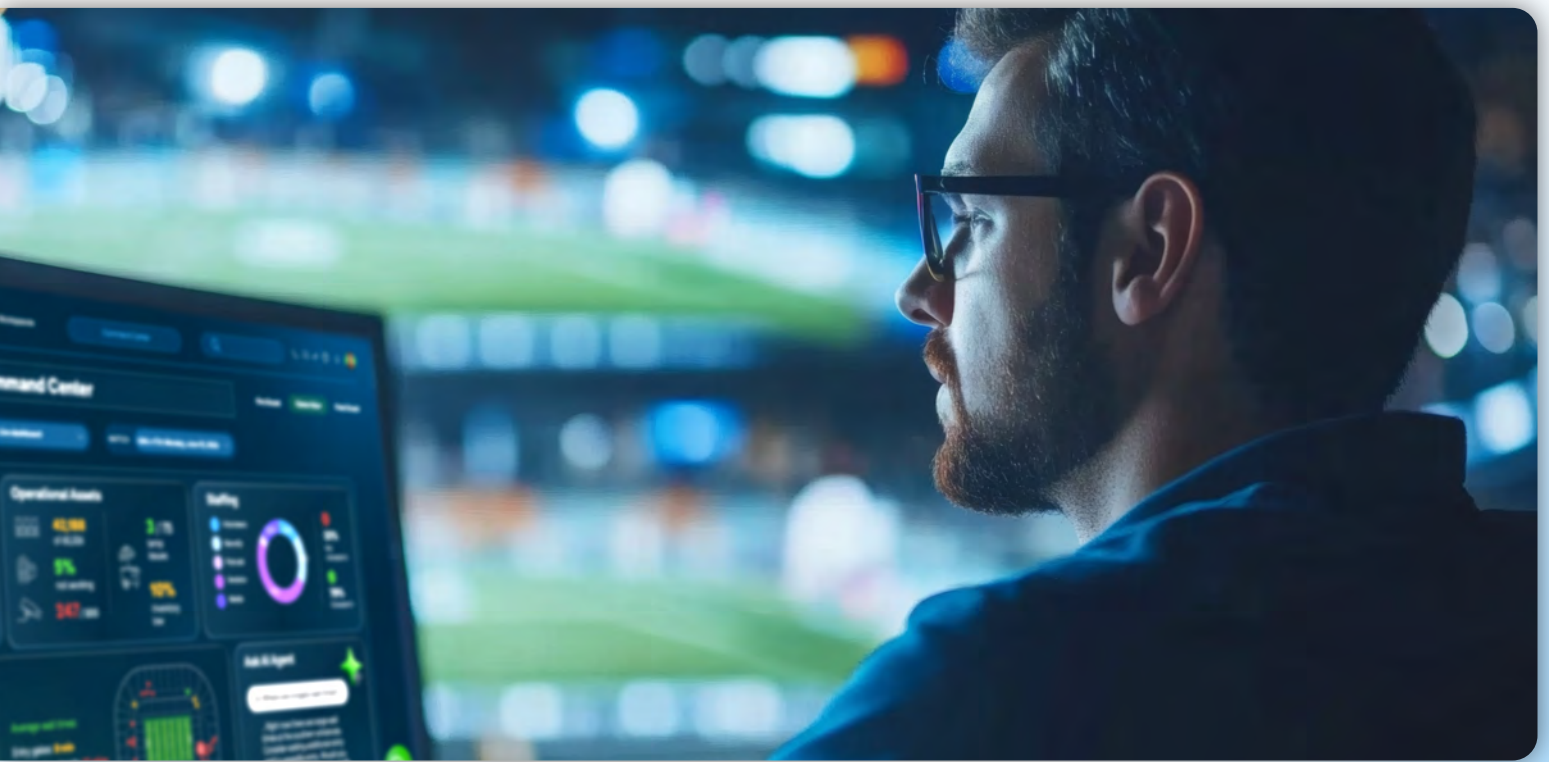
service innovation to enhance overall experiences.

The Intelligent Operations Command Center is set to revolutionize sports, entertainment, and overall venue operations. Think of it as the nervous system of event delivery: controlling, monitoring, managing, and operating the technological systems that support the most advanced event delivery.

Data from the systems that manage ticketing, crowd control, inventory, vendor management, logistics, accreditation, security,

transportation, cameras (both surveillance and broadcast), workforce scheduling, event project management, maintenance, and facility management all flow into the command center, providing visibility of every aspect of an event.





This command center then uses AI to:

- Compare current and historical data to understand patterns in food and beverage consumption, crowd flows, wait times, etc.
- Overlay current data and compare camera-collected imagery to databases for security and safety, while directly interfacing with local authorities.
- Analyze incoming sensor alert data to initiate workflows that assign workers to fix issues, manage delays, and provide support based on their skillset, availability, and location.
- Mine data to predict and proactively mitigate bottlenecks, maintenance needs, and delays.

The Intelligent Operations Command Center, especially when powered by AI, can use the data collected to allow the organizers, operators, and managers to control what is happening at all times for a successful event delivery. The command center spans all operations: from transportation to security and safety, from seamless entry to smart wayfinding, from a personalized locker room experience to digitally enhanced signage, from workforce management to vendor accreditation and access management. By encompassing all operations and harnessing the power of AI, the command center helps deliver frictionless and modern events, ultimately providing the experience consumers (aka fans) expect and the incredible speed of delivery that operations and event managers demand.



Key capabilities to drive business value

First and foremost, the foundation of the Intelligent Operations Command Center is technology: It is an AI-powered platform and control center that connects isolated software systems, uses historical and current data to drive suggestions for decision-making, and provides automated mitigation.

Beyond technological improvements, the command center delivers business value in six key ways:

1. Boosts operational efficiencies by shifting from reactive responses to proactive management.

In high-stakes environments where every minute matters and tens of thousands of

people are on-site, anticipating issues before they escalate is crucial. By combining historical data with real-time inputs from sensors, cameras, and crowd analytics, venues can detect early warning signs of potential disruptions, like bottlenecks, equipment malfunctions, or weather-related delays. This enables teams to take preemptive actions that minimize risk, optimize staffing, and keep operations running smoothly. Instead of reacting to problems after they occur, venues gain the ability to act ahead of them, saving time, reducing costs, and enhancing the overall event experience. For example, when an asset malfunctions and triggers a sensor alert, the system automatically connects to the skills management platform to dispatch the right technician to the right location.

2. Cut costs and complexity by unifying fragmented, siloed systems.

Stadiums and large venues often rely on a patchwork of disconnected technologies, covering everything from transportation coordination and staff accreditation to timing systems and performance monitoring. This fragmentation creates duplicate systems, redundant infrastructure, and isolated data silos that make it difficult to act with agility or gain a complete operational picture. By integrating these technologies into a single, Intelligent Operations Command Center, venues can streamline operations, eliminate redundancies, and retire outdated tools—ultimately lowering overhead costs and simplifying day-to-day management.

3. Reduce infrastructure complexity and minimize churn across teams and tools.

Complex, disjointed technology stacks not only drive up costs, but they also lead to operational friction. When systems don't speak the same language, teams are forced to toggle between platforms, duplicate efforts, or rely on manual workarounds. This creates inefficiencies, frustration, and ultimately employee churn, especially among IT and operations staff tasked with managing the chaos. By consolidating technologies into a unified digital infrastructure—anchored by a central command platform—organizations can simplify workflows, reduce training overhead, and empower teams with consistent, real-time access to the tools and data they need. The

result: a more stable environment, higher productivity, and better talent retention.



4. Optimize end-to-end operations with real-time orchestration—from overnight turnovers to on-the-fly decisions.

Modern venue operations require fast, coordinated execution across dozens of moving parts. The Intelligent Operations Command Center helps streamline complex workflows such as flipping a stadium from a concert to a sports event overnight—assigning crews, sequencing vendor tasks, and monitoring progress in real time. When a food vendor runs low on inventory mid-event, the system can trigger automatic restocking or

reassign deliveries from elsewhere in the venue. If a last-minute artist soundcheck runs long, the command center can immediately adjust staff scheduling, gate opening plans, and traffic routing. By centralizing control and enabling real-time orchestration, venues can reduce downtime, avoid miscommunication, and deliver smooth experiences at scale—even under pressure. This reimagines service and event delivery as flexible, AI-enabled, and continuously optimized, designed to adapt instantly to any situational change.

5. Grow revenue by turning passive data into personalized, premium experiences.

The future of venue monetization lies in using every available data point not only for insight but also for intelligent, real-time action. In the future, the Intelligent Operations Command Center will integrate fan preferences from past events, mobile app behavior, ticketing history, and even movement in the venue to dynamically push personalized offers, like exclusive access to a VIP lounge or a reminder to pick up pre-ordered merchandise. Athletes' biometric data could trigger automated climate and lighting adjustments in locker rooms to optimize recovery. A touring performer might receive a real-time dashboard showing crowd energy levels by section, allowing them to tailor stage cues and increase engagement. These are not just conveniences—they are monetizable moments, turning personalization into premium value that keeps fans spending, sponsors investing, and talent returning.

6. Deliver a seamless, elevated experience for every stakeholder.

At its core, intelligent venue operations are about delivering exceptional experiences, not just for fans, but also for athletes, performers, and staff. By orchestrating real-time data, predictive AI, and connected systems, venues can anticipate and respond to needs before they arise.

- For fans, that means crowd flow optimized to reduce wait times, personalized mobile offers triggered by location, and concessions stocked precisely for expected demand based on historical patterns.
- For athletes and performers, AI can manage personalized environmental settings, recovery conditions, and even event pacing based on biometric or performance data.
- Thanks to predictive maintenance alerts and task automation, staff benefit from dynamic scheduling, streamlined communication, and fewer manual escalations.
- Security teams gain a critical edge with AI-powered surveillance that can flag unusual crowd behavior and identify potential safety risks before they escalate.

From the moment doors open to the final act, the Intelligent Operations Command Center transforms complex, multi-stakeholder environments into responsive, data-driven ecosystems, where every decision leads to a smoother, smarter, and more satisfying experience for everyone involved.

From vision to action

Modernizing venue operations with the Intelligent Operations Command Center isn't a moonshot—it's a structured, achievable transformation. The key is to start with the foundational building blocks and scale with intention by taking these three steps:

1. Collect data from the very first touchpoint.

Whether it's ticket scans, mobile app activity, concession purchases, or environmental

sensors, every interaction is a signal. Capturing this data early—across fan, staff, and vendor journeys—sets the stage for everything else.

2. Unify the data across your existing systems.

Most venues already have dozens of technologies in place, such as security systems, HVAC, ticketing, WiFi, crowd analytics, and more. Rather than ripping and replacing,

layer in a single platform that connects disparate systems into one operational command layer, enabling real-time visibility. This foundation can then ingest, monitor, and act on signals across all domains.

3. Start small with AI-powered, high-impact use cases.

For example:

- Use computer vision to flag overcrowding in specific zones and reroute traffic.
- Automate security alerts based on anomaly detection.
- Recognize and authorize staff with facial ID, reducing credential fraud.
- Predict inventory spikes and automatically trigger restocking based on past sales and weather forecasts.



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This isn't just about catching up—it's about creating the future of live events now, while building the agility to evolve with whatever comes next.



Critically, you don't have to do everything at once.

This journey can be built in phases. Pilot one use case, show value, and expand from there. To support this transformation, foundational technology infrastructure is essential. That includes:

- High-density connectivity and edge computing to power live experiences
- Smart, sensor-ready equipment, including digital signage, gates, escalators, and HVAC
- IoT sensors to track everything from seat occupancy to restroom usage
- Digital twin environments to test operational scenarios before they happen
- And an orchestration platform to turn real-time insight into immediate action

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Upping the live events game

The time to act is now, and it's not about adding additional tools. It's about utilizing technology to create higher business value and deliver enhanced and innovative experiences. The convergence of market



growth, capital investment, and technological breakthroughs has created a defining moment for live entertainment. The Intelligent Operations Command Center represents more than an upgrade—it's a competitive imperative.

As the industry evolves, venues face a clear choice: Embrace intelligent operations and thrive, or cling to legacy systems and watch as smarter competitors capture both market share and fan loyalty. Now is the time for venue and live event management to step up their game. "Smart stadium" and "smart space" are not just buzzwords, but the future of the industry. Intelligence, integration, and orchestration will be the guiding principles in this transformation, determining who is on the winning side of this growing market.

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Endnotes

¹ Daniel Tencer, "Live Nation saw 151m fans attend its events in 2024, as revenue rose 3% to \$23bn," *Music Business Worldwide*, February 21, 2025, <https://www.musicbusinessworldwide.com/live-nation-saw-151m-fans-attend-its-events-in-2024-as-revenue-rose-3-to-23bn/>.

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³ Jana Arbanas, Kevin Westcott, Brooke Auxier, Bree Matheson, and Akash Rawat, "'Funflation'—and live event hype—goes up against more cost-conscious consumers," *Deloitte*, October 8, 2024, <https://www2.deloitte.com/us/en/insights/industry/technology/digital-media-trends-consumption-habits-survey/2024/funflation-goes-up-against-cost-conscious-consumers.html?id=us:2el:3dp:wsjspon:awa:WSJCMO:2024:WSJFY25>.

⁴ Pete Giorgio, Kat Harwood, Brooke Auxier, David Jarvis, Chad Deweese, Laura Jordan, and Jeff Loucks, "2025 global sports industry outlook," *Deloitte*, February 13, 2025, Insights, <https://www.deloitte.com/us/en/insights/industry/technology/technology-media-telecom-outlooks/sports-industry-outlook.html>.

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