



Developing the **Esports Arenas of the Future**

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Nuno Guerreiro is an architect and principal with HOK's Sports + Recreation + Entertainment practice. He's passionate about designing places and spaces for people to convene, participate, and enjoy the live event experience. With a deep interest in esports, Nuno has done extensive design explorations and research on the emerging market to better understand how architecture can support a new kind of venue experience.



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Federico Winer brings to the table expertise and a deep understanding of how humanities and IT can coexist. He has been working within the media, sports, and entertainment sectors since he started his career and is a highly-sought-after industry influencer and passionate evangelist in his field. Besides his commitment to the industry, Winer is a dedicated lecturer at several leading international educational institutions and is currently studying for his doctorate at the Institute for Sports Business at Loughborough University in London. He ranks in the top 1% of social media networks LinkedIn and Crunchbase.

Supported by technology advances, esports is emerging as one of the fastest-growing sectors in the sport and entertainment industry. In addition to online gaming, demand for arena-based tournaments is also increasing, opening up multibillion-dollar opportunities. In this paper, designers from design firm HOK and experts from software company SAP explore the esports venue of the future. Together, they reimagine traditional arena design and **consider what tech-savvy customers are looking for in an esports venue** – from greater connectivity to hospitality-driven environments.



Understanding How Technology Is Redefining Sports

Sports have long played an important cultural role and been universally valued across societies and governments. From the first Olympic Games in Ancient Greece to the present day, entire communities come together around competitive games. Each year the world's most-attended sports are football (4 billion spectators), cricket (2.5 billion spectators), baseball (500 million spectators), basketball (400 million spectators), and American football (400 million spectators).¹

These traditional sports will always have a place in shaping culture. However, with access to the Internet now enjoyed by more than half the world's

population, technology is erasing geographic and physical boundaries. Recent figures indicate there are 2.3 billion video gamers worldwide,² with around 250 million people watching esports.³

As technology helps break down cultural barriers, esports are redefining fan expectations and experiences, leading to the development of new entertainment ecosystems with distinct values, challenges, and needs. Esports are more easily scalable than traditional sports, and new leagues, tournaments, and events are launched every day.



1. [“With Viewership and Revenue Booming, Esports Set to Compete with Traditional Sports.”](#) Whitman Syracuse University, January 2019.
2. Tom Wijman, [“Newzoo’s 2018 Report: Insights Into the \\$137.9 Billion Global Games Market.”](#) Newzoo, June 2018.
3. [“With Viewership and Revenue Booming, Esports Set to Compete with Traditional Sports.”](#) Whitman Syracuse University, January 2019.

Charting the Rise of Esports

Though they're touted as a new phenomenon, esports go back more than 40 years. In the 1970s, universities around the world hosted the first local area network (LAN) parties. In 1977, a German TV station first aired a program called Telespiele (Video Games) that showed two people competing in a game of Pong by Atari SA in front of a live audience.

The growth of esports is often associated with specific games or platforms. Well-known examples include multiplayer games such as *League of Legends*, *Counter-Strike*, *Fortnite*, and *Dota 2* and live-streaming video platforms such as Amazon-owned Twitch Interactive Inc.

However, the success of esports does not depend on any one of these. Consider the birth of the film industry in the early 20th century. While specific directors became known for their blockbusters, no individual was responsible for the industry's long-term success.

Today, with millions of dollars in prize money at stake, esports players compete in multiplayer games and organized tournaments. These take place online and, increasingly, in arenas packed with spectators who want to experience the event live and take in the competitions on large screens. For the League of Legends World Championship Finals in Incheon, South Korea, on November 3, 2018, more than 50,000 fans filled the stadium and tens of millions followed the action online.⁴



4. Sam Kim, "[Inside the World Cup of Esports.](#)" Bloomberg, November 2018.

Tapping into a Rapidly Expanding Market

Total revenue for the global esports market will surpass US\$1 billion in 2019 and could reach US\$1.8 billion by 2022.⁵ Sponsorships, media rights, and advertising generate most of this revenue, with the rest coming from ticket and merchandise sales and game publisher fees.

Nearly 453.8 million people will view an esports event in 2019, with 201.2 million of these fans considered to be esports enthusiasts as opposed to occasional viewers.⁶

It's no surprise that esports are now key to the competitive strategies of game publishers and professional sports leagues alike.

The esports events that fill venues and generate billions of dollars in revenue offer unprecedented levels of interactivity between players and spectators, many of whom grew up playing these games. Many aspects of traditional sports – including performance analytics, ticket sales, fan interaction, betting, and media coverage – are also important to the success of esports.

5., 6. Jurre Pannekeet, "[Global Esports Economy Will Top \\$1 Billion for the First Time in 2019](#)," Newzoo B.V., February 2019.



Designing Experiences for a Switched-On Generation

Technology is embedded into how we process, interact, and engage with the world. The computer functions as an extension of our brain and headphones as extensions of our ears. Glasses have the potential to serve as purveyors of immersive virtual experiences. Our lives are both analog and digital, and both elements are essential.

The esports experience is inextricably tied to its technological infrastructure. To design for the next generation, we need to understand how people will use technology in the years to come. We believe that they value experiences over possessions, having the flexibility to tailor offerings to satisfy their own preferences and making in-person and virtual connections.



Accommodating Future Generations of Fans

Architecture firm HOK and software company SAP have collaborated to develop design concepts for the esports venue of the future. This exercise explored the potential for large-scale spectator venues that may be beyond the limitations of current design and construction procurement systems. The project is a work in progress, as new technology enables us to continuously reimagine new design and technical solutions.

One of our concepts envisions an architectural design that blends physical and virtual worlds, with integrated digital technology and systems that enhance fans' enjoyment. The design creates an electronically activated spatial experience for users that complements and expands what's happening in the game (see Figure 1).

During the development of this concept, we considered:

- **The venue's user groups:** How can we address both the requirements for operational efficiency and the desire for memorable experiences shared among spectators, gamers, and staff?
- **Typology specifics:** What makes this venue distinct from others dedicated to different events?
- **Experience:** What are the fundamental characteristics that must be part of esports events? What could still be enhanced?
- **Range of events:** How can we cater to the different types of esports events and gaming cultures in the same venue?
- **Flexibility:** How can we maximize flexibility? Can the building adapt to accommodate all types of uses, including hosting nongaming events?

Figure 1: Esports Arena Rendering with an Electronically Activated Spatial Experience



Reimagining the Esports Experience

In the following pages, we explore how we can reimagine the esports experience to accommodate future generations of fans through:

- Purpose-built facilities
- Data-driven design
- Use of location data
- Immersivity
- Geometries, spatial organization, and intimacy
- Integration of the bowl and concourses
- Blending of technology with the built space

Purpose-Built Facilities

The venues where today's gaming competitions take place include everything from small theaters to large-scale overlays in arenas and stadiums originally designed to host traditional live sporting or entertainment events.

However, esports fans who attend gaming events in person instead of streaming them from home expect curated, immersive, and highly social experiences. As more purpose-built venues are constructed for esports, there are significant opportunities for architects to shape the future of this industry.

Data-Driven Design

Video game companies capture large amounts of data on the preferences of their users. How can we use this data to explore new design possibilities for purpose-built esports venues?

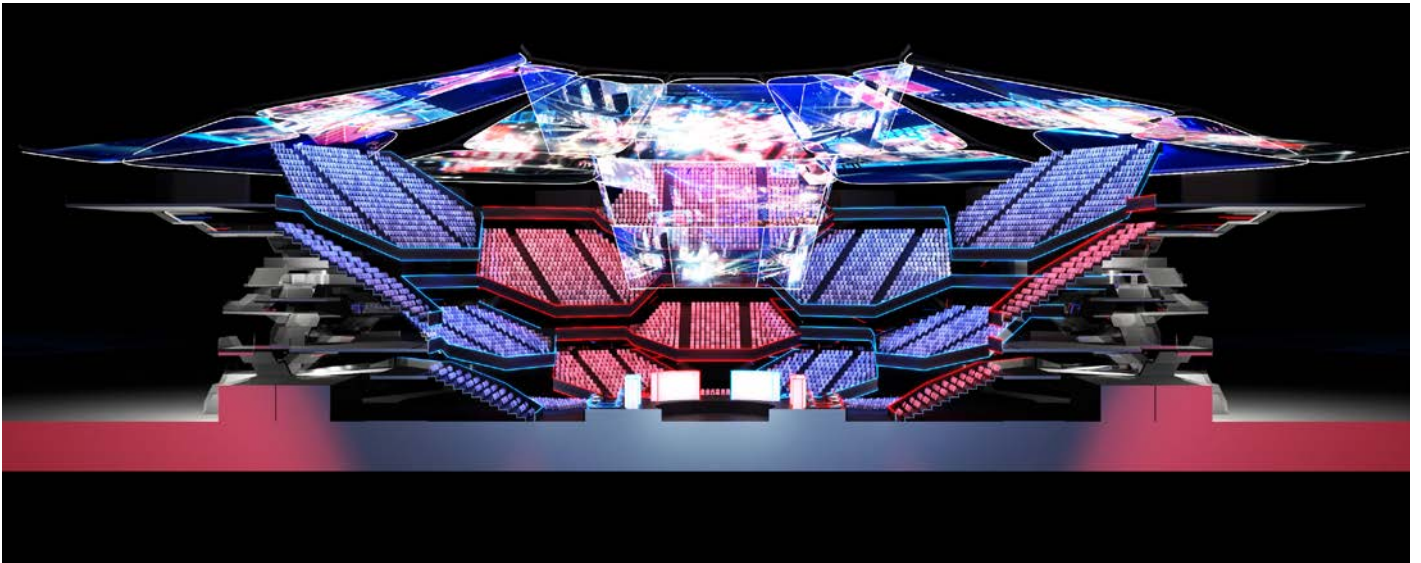
While data has always been an integral part of the architectural design process, its easy accessibility now provides opportunities to redefine the fan experience. For live sports venues, data analysis is already helping clubs enhance the experience of fans who, rather than being passive consumers, generate their own content streams.

Current operational procedures rely on real-time data retrieval and processing through sensors that provide up-to-date information on everything from parking lots to concession-stand lines. The need to further personalize the experience for fans and spectators has driven operators to look at how to leverage data in new ways.

To form a building's brief, spatial organization and aesthetic, contemporary architectural design strategies incorporate distinct environmental data flows (see [Figure 2](#)).



Figure 2: Spatial Organization of Proposed Esports Venue



Understanding patterns around everything from transportation and crowd movement to energy consumption and efficiency is key to planning a building.

Procedural, parametric, and generative architectural design approaches typically rely on specific digital processes and techniques. These approaches have previously focused on setting predefined parameters, such as fabrication constraints, to determine how a design is conceived.

While there has been a longtime ambition to bring more external data into design development, the avalanche of data now generated in the esports sector has finally made this achievable. We can retrieve and interpret in-depth insights about fan behavior to inform design decisions. The challenge for architects is to find the best ways for these evolving data sets to inform design and technical solutions.

Use of Location Data

Data about esports events, attendance, and fan distribution can inform decisions about the best locations to build dedicated esports venues. Esports fans have a high median income and are willing to travel and spend large sums of money on these experiences – provided they are great ones.

Cities with a strong public transportation infrastructure and interesting tourism attractions would be favored locations for esports venues. There is also potential for esports arenas to be integrated into amusement parks and entertainment districts. Meanwhile, some new real-estate developments have used esports venues as anchors for broader science and technology districts.

Immersivity

While people can enjoy esports events remotely, the live experience immerses fans in a stadium or arena environment. Emerging virtual- and

augmented-reality technology could expand the remote experience and simulate a degree of immersion. Yet, the key elements of a live experience – including the journey, arrival, concourses, fan zones, and sitting in a theatrically lit space with like-minded spectators – can't be replicated artificially (see Figure 3).

We want to explore and amplify the effect of an enthusiastic crowd wherever possible, as proximity and intimacy in a large-scale event space are key to making it fully immersive (see Figure 4). An ideal venue would be flexible enough to accommodate events with different crowd sizes yet small enough to always feel intimate. The audiovisual experience can help recreate the atmosphere of a large-scale live event and its crowd behavior.

Geometries, Spatial Organization, and Intimacy

Is the right geometry for this event space still a seating bowl – that is, a tiered seating arrangement proceeding from a field of play or stage? Smaller esports events, LAN parties, and hackathons may require only an enclosed, flat, and continuous floor similar to what you'd find in a warehouse. Existing cinemas and theaters have been successfully adapted to host these events.

The multipurpose North American arena model developed over the past few decades has accommodated the requirements of various events through “black-box” space and audiovisual systems. Yet, these venues were conceived with traditional sports and entertainment shows in mind. The hospitality strategies – including a

Figure 3: Activation of Illuminated Concourse Zones During Events

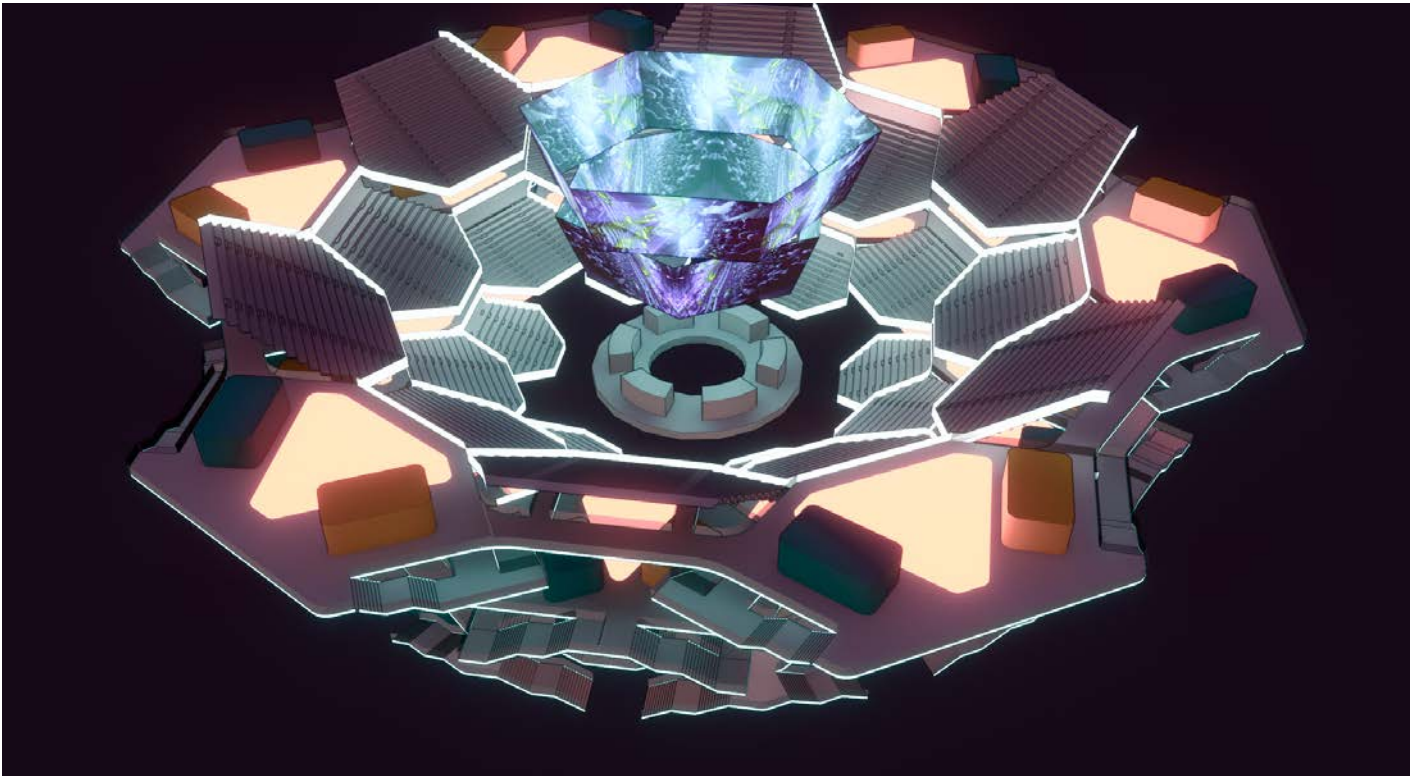


Figure 4: Screens Forming a Canopy over the Seating Bowl for an Immersive Experience



strict division between the concourses housing ancillary, food and beverage, and circulation elements and the seating bowl – reflect this.

The esports event experience is dramatically different than a traditional sporting event. Spectators follow the game primarily through projection screens that are as large as possible. Though they are aware of the presence of the competing teams, fans may only cheer for or address them directly before and after the match.

Communal cheering goes beyond supporting a team. From the recognition of special moves to playfully addressing sponsors, esports spectators are actively engaged with many aspects of a match. They also circulate more often and may even move between seats throughout the event.

We have provisionally concluded that a compact auditorium space that departs from the conventional horseshoe bowl configuration can enhance the experience of an esports event. By maximizing spectator proximity to the playing teams with a more compact “in-the-round” arrangement, fans can enjoy both communal and individual experiences.

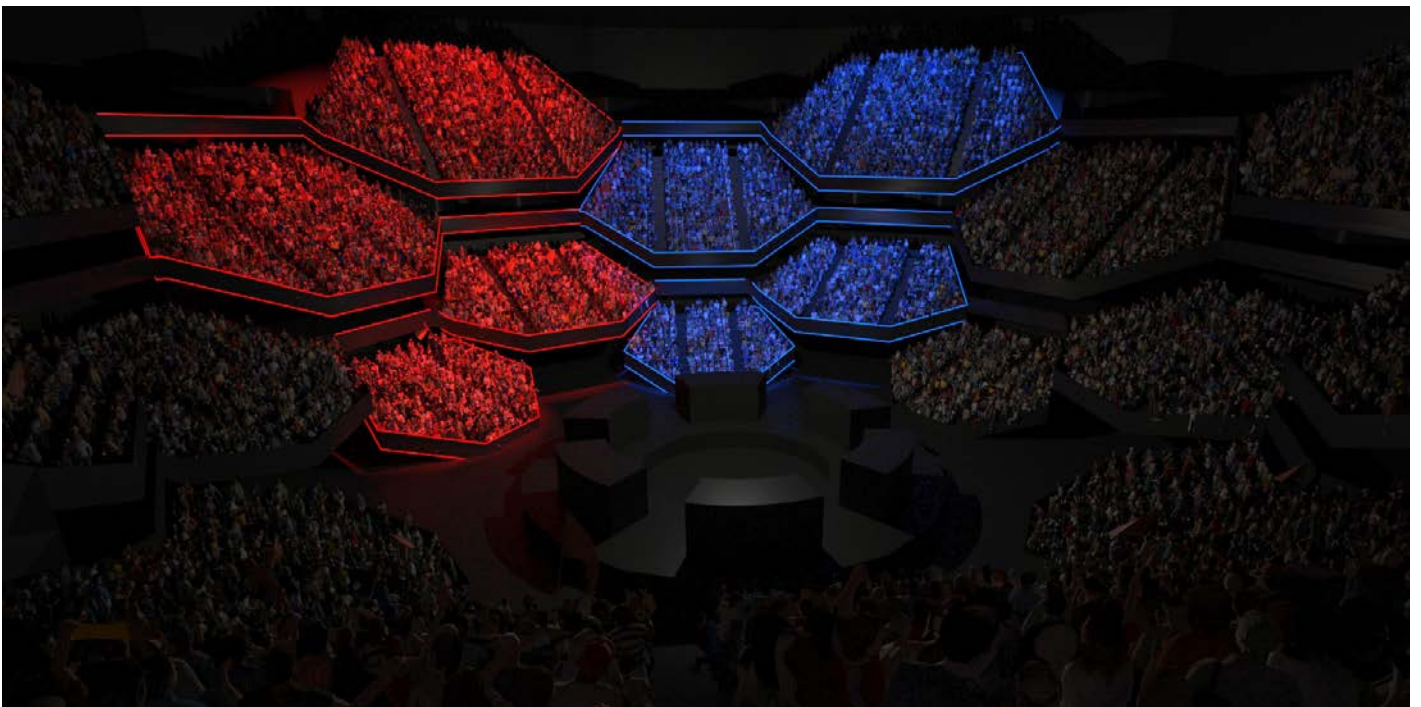
Subdividing the bowl into geometrically defined areas facilitates a distribution of different-sized groups. It also enables the esports venue to host all types of gatherings – from an intimate, 500-person audience to a raucous, 10,000-person crowd (see Figure 5).

Integration of the Bowl and Concourses

Our proposal for the esports venue of the future further blends the experiences of tiered seating areas with the concourse spaces. Like music festivals, esports events can last several days. This means we must reevaluate the position, scale, and organization of concourse spaces and their relationship to the bowl. Key considerations include:

- **Unique demographic factors:** Because of the potential length of events, fans often bring significant others, family members, and friends who may themselves not be fans.
- **Interest in technology:** The fan base has an elevated interest in technology and competitive leisure activities, as well as complementary events such as small concerts or DJ appearances.
- **More diverse hospitality offerings:** With the event length and elevated expectations of esports fans, there are ample opportunities to reimagine concessions and hospitality offerings.

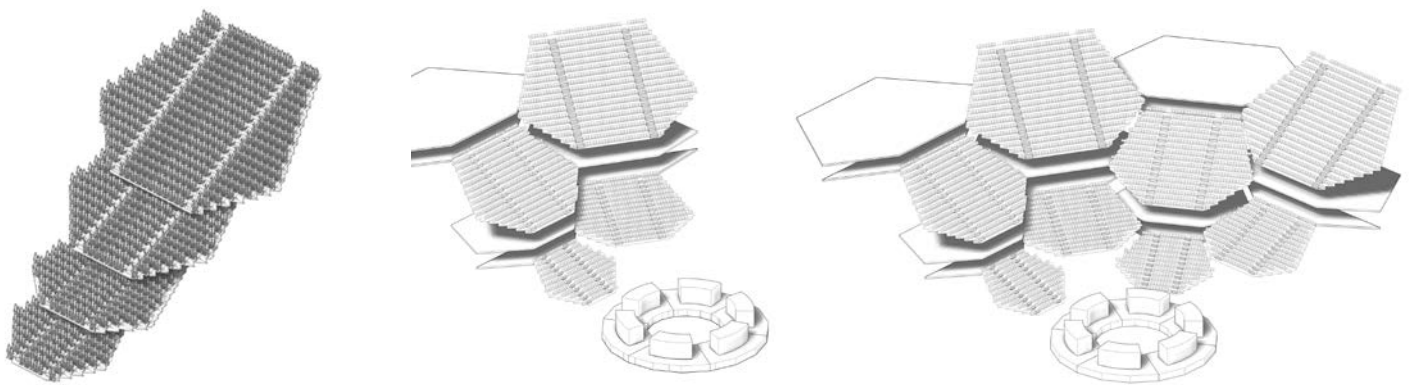
Figure 5: Seating Modules with Integrated Lighting to Identify Groups of Fans



Our proposal suggests breaking up these spaces, traditionally restrained by ancillary and circulation functions, into more intimate areas that are closely linked with tiered seating. This allows for closer connections between concourses and the bowl, enabling fans to follow and be part of the action while engaging in auxiliary activities (see Figure 6).

This approach also accommodates the creation of several linked “microambiences” that work separately (on nongame days) or in conjunction, offering users myriad experiences that complement and expand the main event. With this model, multiple spaces are orchestrated into a unique configuration that sets the venue apart as a cultural destination. These areas may

Figure 6: Intimate Areas Linked with Tiered Seating Configured in Unique Ways

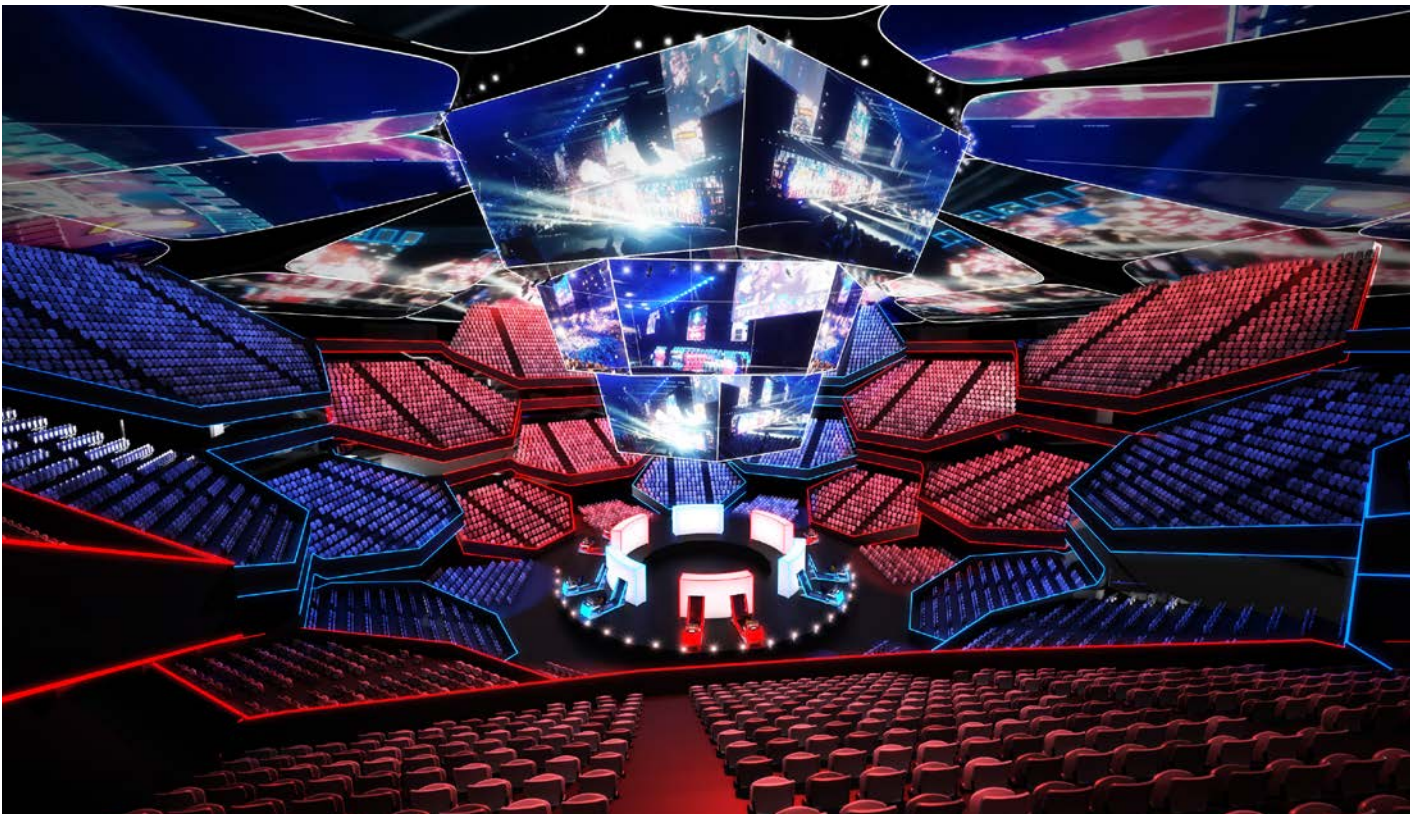


include immersive, digital art exhibits; gaming spaces; experiential, virtual- and augmented-reality environments; small, stand-alone bars; and technology demonstration spaces showcasing innovations beyond the gaming world (see Figure 7).

Blending of Technology with Built Space

Several nascent technologies could be relevant to the vision for these venues. Our design emphasizes “in-between” systems in which the boundaries between physical and virtual environments are blurred. This has led to a preliminary exploration of several architectural devices that can retrieve, manifest, and convey event-related data in expressive or spectacular ways, from integrated screens to kinetic assemblies.

Figure 7: Design with Three Screens to Push Content to Viewers on Each Seating Level



Meeting Physical and Digital Demands

Major technological revolutions bring about massive changes that shape behaviors, cultures, and communities. Esports is a cultural phenomenon that has grown far beyond a specific game or event. It is here to stay. Businesses, sponsors, venue developers, and operators need to explore opportunities to connect with esports fans and the young, vibrant communities they are building.

The geographic proximity around communities is no longer a necessity. Instead, the future esports venue should provide a holistic user experience encompassing both physical and digital venue realities.

This means designers of the venues of the future need to consider technology needs as well as physical building requirements. The ability to recreate the arena virtually through virtual- or augmented-reality experiences will also be key, with venues creating digital replicas or “digital twins” of esports arenas.



Learn More

For further information on how SAP and HOK are working together to create designs for the future, visit us at www.sap.com and www.hok.com.

THE GAMIFICATION CULTURE

Applying principles of game playing – such as scoring points and competing with others – can affect how societies learn, socialize, and incentivize productivity. With gamification, participants (or “players”) earn rewards as they accomplish tasks. This concept is deeply embedded within us. We reward newborns with smiles and claps as they start interacting with their parents. In school, children are rewarded with good grades after they learn a lesson correctly.

There are several examples of cities using games as a strategy to engage and improve the lives of citizens. Smart cities have been built around the idea of gamification, with the infrastructure serving as levels within a game.

Songdo, a smart city in South Korea where buildings have sensors that monitor energy use, encourages residents to reduce energy consumption by sharing data in real time. People who conserve the most energy and earn the highest scores are rewarded at the end of each month.

A circular economy aims to keep resources in use for as long as possible, minimizing energy use and material loops. It's a sustainable alternative to the linear economy, where raw materials are used to make things that are then used and disposed. The circular economy maximizes the value of input resources through maintenance, repair, and reuse.

In 2017, as part of the “Games for Cities” project, Amsterdam engaged five local entrepreneurs to create games promoting a circular economy.⁷ These introduced urban issues, such as plastic recycling and water recycling, to citizens through competitions.

BUILDING COMMUNITIES

The nature of esports means that gamers are competing against people dispersed across the world and are challenged to build recognition and connections in their local communities. All games have different stories and narratives, with each attracting different types of people.

The most successful video games have built communities of players who provide feedback on new game features in seconds. The best players are quickly identified by sponsors, which include well-known brands and emerging companies. This sponsor support is key to enabling players to pursue careers as esports professionals.

7. Sjors Martens, “[Games for Cities – The Circular City Game Jam](#),” The Mobile City, March 2017.

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Studio SAP | 63221enUS (19/05)

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