

# Case Study

Intel® Xeon® Processors



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# Digital Twinning Platform Solution Simplifies Olympic and Paralympic Games Venue Planning

**Intel® Xeon® processors and Intel® Arc™ graphics cards accelerate detailed 3D simulations of event spaces, saving organizers time and money.**

## Solution Summary

- Intel® Xeon® processors
- Intel® Arc™ A770 graphics cards



## Executive Summary

Intel® Xeon® processors are powering a user-friendly digital twinning platform that helps event planners and stakeholders design, map, and plan venue layouts for the Olympic and Paralympic Games Paris 2024. Using customer information, the development team uses gaming workstations equipped with Intel® Arc™ A770 graphics cards and Intel® CPUs to create highly detailed digital models of stadiums and other event spaces.

Once uploaded to upstream computing instances supported by custom Intel Xeon processors, Paris 2024 operations and planning stakeholders can simultaneously explore the digital simulation and modify the virtual venue layouts through any web browser. In addition, because the event models reduce the need for Paris 2024 organizers to visit physical sites, the digital twinning platform has the potential to save time and money, while helping to reduce their carbon footprint.

## Challenge

Designing an Olympic and Paralympic Games event space to accommodate athletes and thousands of spectators requires collaboration among many professionals, including broadcasting, catering, security personnel, and more.



The digital twinning platform team uses workstations featuring Intel® Xeon® processors and Intel® Arc™ A770 graphics cards to build initial 3D models faster. Once uploaded to upstream computing instances, the application allows stakeholders to simultaneously explore the digital simulation and modify the virtual venue layouts through any web browser.



Intel partner Chantal Abadie explains that the digital twins for Paris 2024 using Intel® CPUs and graphics cards provide access to advanced 3D digital models of event spaces and significantly benefit planners by enabling them to work both efficiently and collaboratively.

Coordinating these efforts is particularly challenging given the number of global stakeholders who traditionally travel to venues, incurring significant expenses and creating a negative environmental impact.

Paris 2024 stakeholders need a way to collaborate remotely to design venue layouts and experience those virtual environments as a digital twin of the real-world location. Virtual ‘walkthroughs’ can facilitate the strategic positioning of physical structures such as entry gates, food stations, and broadcasting cameras. Other insights help planners design a secure and easily navigable on-site experience or understand how varying weather conditions and the time of day may impact the dynamics of their event.

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The user interface for Paris 2024 stakeholders was also a key consideration, requiring easy access to each venue’s digital twin and the ability to alter event maps collaboratively without high-end computers. A seamless front-end user experience necessitated fast and reliable cloud instances to host the digital venue models and to stream high-resolution video renderings.

## Solution

To address all these challenges, Intel’s partner takes a multi-faceted approach. Starting from a 2D Computer-Aided Design (CAD) drawing or a 3D model provided by Olympic and Paralympic Games operations stakeholders, the team uses workstations featuring Intel CPUs and Intel Arc A770 graphics cards to make building initial 3D models faster. With 16GB of onboard VRAM, the cards also help the development team render complex lighting scenarios and textures for the digital twin that evoke those at the physical location.

Once developed on the digital twinning platform, Paris 2024 venue models move to a unique upstream platform featuring customized Intel Xeon processors. The hosting environment manages all compute and video rendering

work on the backend, enabling seamless digital twin experiences for end users on any computer or smartphone using a web browser.

Multiple users can modify the digital twin simultaneously, and each stakeholder can see the latest modifications to the virtual event space in near real-time. The sophisticated venue models can accommodate changes to structures like barricades or the layout of the athlete warm-up area. It can also simulate objects around the venue with details as small as leaves on trees.

Beyond Paris 2024, the digital twinning development team hopes to do even more with the Intel Arc A770 graphics cards. The solution will incorporate AI and Intel® OpenVINO™ to accelerate the 3D build process and assist with tasks like automating model quality assurance.

Because every Paris 2024 stakeholder can explore the digital twin from any location, the solutions dramatically reduce the travel required by event planners. The International Federations and National Olympic and Paralympic Committees can benefit by exploring the venue layouts in detail before their competitions and prepare for possible weather conditions.

## Results

By using Intel CPUs and graphics cards with exceptional memory management on their workstations, the team reduced the time required to create 3D models of Paris 2024. Additionally, upstream platform instances supported by Intel AI-ready processors offered the performance, availability, and stability the application needed to streamline site rendering. The solution also provided the flexibility to accommodate third-party services like crowd simulations.

“Thanks to workstations and upstream computing instances powered by Intel technologies, and excellent support from Intel’s technical team, we have an ideal application platform to simulate venues in detail and help make our clients’ jobs much easier.”

—Stephan Reed, Technical Lead, Intel Partner

Ultimately, the team created 30 digital twins for Paris 2024, including venues co-located at the Eiffel Tower, the Place de la Concorde, and Invalides. Access to advanced 3D digital models of event spaces significantly benefits Paris 2024 planners by enabling them to work both efficiently and in collaboration. Remote preparation of security measures, logistics, and crowd control strategies reduces costs and lessens the event’s environmental impact by minimizing travel.

## Key Takeaways

The digital twinning platform takes a hybrid approach to its solution. Using Intel technologies, the team can complete model creation on workstations and then host their application on an Intel-powered upstream computing platform for fast and reliable simulations.

With this powerful technology at their fingertips, Paris 2024 organizers can harness cutting-edge technology using any device with browser capabilities to view the digital twins.

Leveraging digital twinning technology in planning the Olympic and Paralympic Games Paris 2024 ensures audiences and athletes have a seamless welcome to Paris and sets the stage for a global celebration.



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