RAJANT

CASE STUDY

# Rajant's Reios Smart IoT Lighting Increases Sustainability and Energy Efficiency at Italy's Premier Indoor Arena

The PalaVela is a multi-purpose indoor arena in Turin (Torino), Italy. It was initially built for the 1961 World Figure Skating Championships and has since hosted numerous events, including sports competitions, concerts, and exhibitions. Known for its distinctive, modernist design, featuring a unique, sweeping, tent-like roof, PalaVela has a seating capacity of around 8,000 for sporting events. During larger events, like concerts, seating capacity expands. PalaVela also served as a venue for the 2006 Winter Olympics. To increase sustainability and energy efficiency, the management of PalaVela sought a provider of a Smart IoT Lighting solution to leverage comfort with cost reduction and grant additional services for the users.

## The Challenge

Combining functionality with efficiency was key for PalaVela as they sought to improve lighting. Looking to modernize, Rajant's Reios IoT platform became the top contender for PalaVela to replace the outdated lighting system. Reios' solutions provide cutting-edge design for real-time, edge-based, and wireless communication in industrial applications, including Smart IoT Lighting. The platform is built around Rajant's highly scalable Kinetic Mesh® wireless network, which uses BreadCrumb® nodes for continuous, high-speed, and reliable connectivity.

The PalaVela project entailed the replacement of part of the existing lamps over the arena with highly efficient new generation LED lights coupled with IoT devices and integrated into the platform. The solution grants the ability to monitor and control lighting remotely, allowing for efficient management and adjustments based on need while collecting real-time data on lighting performance and energy consumption. Rajant Cardinal BreadCrumbs were also installed to provide a dedicated and reliable Wi-Fi network to the area.

## The Solution

Reios replaced 32 existing lamps installed over the PalaVela's arena with the latest high-efficiency LED lamps. The lighting fixtures offered powerful floodlights specific for sports competition and events areas, providing a comfortable illumination while granting the lighting requirement standards for

## Customer Description

- **Location:** Torino, Italy
- **Customer:** PalaVela – An iconic multi-purpose indoor arena for sports and entertainment

## The Partners

- **Rajant -** Pioneers of peer-to-peer radio communications enabling real-time voice, video, and data to connect machines, robots, and people together as part of a secure private mobile network.
- **Reios -** Bringing intelligent insights to all facets of IoT operations through various devices that support the platform's different applications – Smart IoT Lighting, sTrack, Iot BMS, sDesk, and Smart Picking.

## Solution Components

**Kinetic Mesh Components:**

Smart IoT Lighting

Rajant Kinetic Mesh wireless

sky.Act LC

sports tournaments and training sessions.

Rajant's Cardinal provided a high-speed, reliable, and secure wireless connection. Its modular design, edge computing capabilities, and integration within Rajant Kinetic Mesh architecture make it a flexible and scalable solution that ensures real-time data processing, increased efficiency, and minimal downtime, all while being cost-effective and adapted to harsh environments.

Coupled with the Wi-Fi dimmer controllers (sky.Act LC), the lamps receive programming from the Reios IoT platform through the dedicated Kinetic Mesh generated by Rajant's Cardinal wireless node.

The platform's control panel is accessible via browser and allows easy and flexible lighting management over the arena.

Reios IoT platform processes data at the edge, reducing latency and enabling immediate responses to changes, like adjusting lighting levels based on environmental factors or user preferences.

Also, the platform supports automation by integrating with sensors, timers, and control systems that allow smart lighting to adjust based on real-time data automatically. For example, lights can dim or turn off when rooms are unoccupied, saving energy.

> We are thrilled with the new lamps installed just in time for the 2025 Winter World University Games to be hosted at PalaVela. The IoT smart lighting system is perfect for the varied lighting demands of a major international event; it improves visibility and ambiance, enhancing both performance and the overall experience. This upgrade has certainly elevated the quality of our venue, and we're excited to host such a prestigious event with the best possible lighting technology!
>
> **— Daniele Donati,**
>
> General Director at Parcolimpico

> I am extremely pleased with the new IoT lamps installed over the arena. We noticed several advantages, like the improved quality of the light – brighter and more evenly distributed throughout the space – and the enhanced responsiveness of the lighting system, which adjusts instantly and seamlessly, creating a more comfortable and functional environment while helping reduce electricity bills. Overall, this upgrade has been a great investment, and I'm confident it will continue to benefit athletes and staff members in the long run.
>
> **— Stefano Bompard,**
>
> Head of PalaVela Facility

Next Steps:

- Replace the remaining lighting fixtures over the arena, the stands, and the entire facility
- Install additional RGBW lamps over the arena and the stands, which can contribute to the general lighting or be used to create basic scenic lighting effects
- Add sensors and actuators to enhance automation, boost flexibility, and increase savings

## The Results

By providing automated, real-time control over lighting systems, the Reios IoT Platform reduces energy consumption and operational costs while lowering the carbon footprint. Lights are adjusted based on usage patterns, leading to significant savings. The platform also provides analytics for lighting usage, performance, and energy efficiency, allowing facility managers to make data-driven decisions and optimize the lighting system even further.

Moreover, Rajant Kinetic Mesh ensures that communication between devices remains stable and continuous, making the system highly reliable in dynamic and large-scale environments. Encrypted communication between devices ensures protection against cyber threats, a crucial security feature for critical infrastructure, safeguarding the city's water and wastewater management against potential disruptions.

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