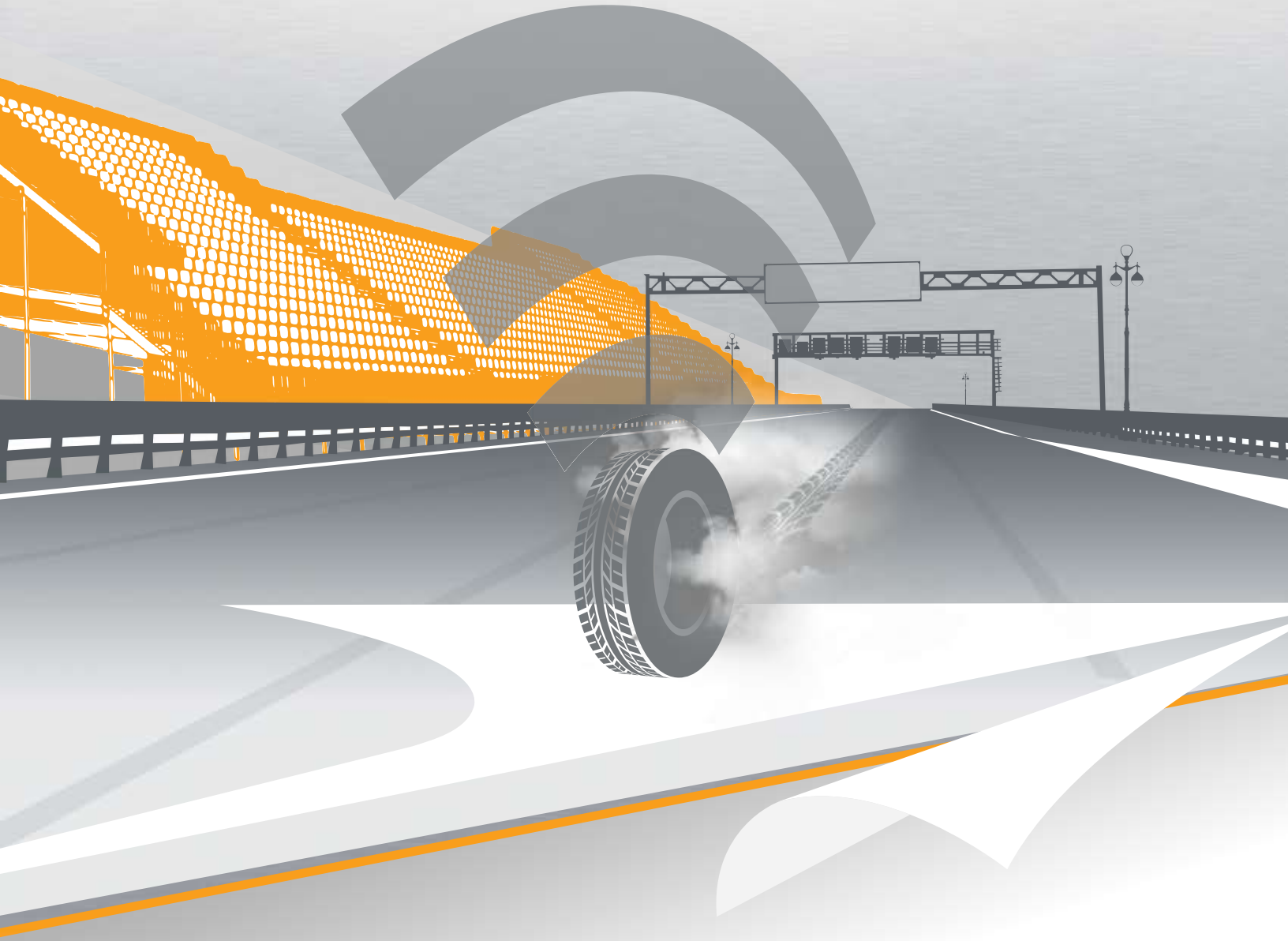
DELIVERING A REWARDING WI-FI EXPERIENCE AT DAYTONA INTERNATIONAL SPEEDWAY

Problem. **Solved.**



ARRIS®

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Race fans are incredibly loyal and passionate. They travel far and wide to see live races, they make friends that become family and they know every detail about their favorite drivers. Suffice it to say, the fans embrace the experience, making it a culture all their own. International Speedway Corporation (ISC) aimed to return that loyalty and contribute to the culture by offering an enhanced, more personal experience. As part of its initiative to create that optimal event, it launched a redevelopment project announced as DAYTONA Rising at Daytona International Speedway (DIS), to improve the spectator experience. Part of this vision was to help fans stay connected to the latest motorsports information and news.

CARRIER-GRADE WI-FI NETWORK BENEFITS

- Monetization opportunities for added revenue
- Scalability for business growth
- Analytics and intelligence for targeted marketing
- Flexibility for changing event types

A new carrier-grade, Wi-Fi network at the DIS would make that vision a reality. Fans would have access to an ARRIS-powered, high-speed Wi-Fi network that would let them engage and interact on a deeper, more meaningful level at each event.

Aside from rewarding loyal fans with an exciting, positive day at the races, the Wi-Fi network would offer ISC the opportunity to monetize certain network functions, as well as become its own service provider. ISC would be able to extend the Wi-Fi to different types of events such as concerts, civic gatherings, car shows, photo shoots and car production tests, and potentially to other ISC-owned tracks around the country.

The Problem: A Stadium Makeover has the Entire Premises under Construction

In all sports stadiums, the layout, usage and architecture can pose several hurdles to successful Wi-Fi deployment. Generally, these venues cover massive square footage, they feature unique topologies and obstacles, they host tens of thousands of people at a time and their usage patterns shift throughout events. However, the DIS presented a whole host of additional challenges.

The sprawling DIS is 15 times the size of any other stadium in Florida, inside the venue alone. They needed a system that could serve at least 150,000 people at any given time,while satisfying multiple stringent security requirements. For many stadiums, Wi-Fi service needs to extend outside of the building so attendees can connect before and after the event. In this case, ISC needed to deliver Wi-Fi coverage beyond that to the camping areas on the outskirts of the property, 300 feet from the nearest and remote access points to extend the reach an additional 600 feet.

The DAYTONA Rising project went beyond delivering a robust Wi-Fi experience. A massive venue make-over was part of redefining the motorsports experience. The remodeling effort turned the stadium and surrounding grounds into a major construction site. If the situation weren't challenging enough, the new Wi-Fi network had to be in place and working smoothly in time for the next race. ARRIS was working with a tight and firm deadline with hundreds of thousands of people depending on the new network. ISC needed a partner that could work under such demanding conditions.

ARRIS Solution: Innovating on the Fly to Manage the Unpredictable and Drive to the Finish Line

The ARRIS Service Provider Wi-Fi architecture combines key service components—Authentication, Authorization and Accounting (AAA), policy enforcement, web portals, wireless access gateways, radio resource management, access points and access point controllers—to deliver a single, seamless, carrier-managed Wi-Fi network. This unified Wi-Fi architecture provides an advanced monitoring, reporting, and management platform for the entire Wi-Fi ecosystem. As a result, the system has the ability to manage and report on back office server infrastructure including all threads and processes, disk utilization, network interfaces and even uninterruptible power supplies (UPS). A unified dashboard also serves as a central point for data collection and analysis. By utilizing these flexible and customizable tools, ARRIS was able to rapidly customize its pre-integrated, best-in-class, carrier-grade Wi-Fi solution so that ISC could hit its fast approaching deadline.

The first priority was to put Wi-Fi in the common areas where the foot traffic would be the highest: entrances and exits, concourses, concessions, underneath the stadium seats and ticketing areas. The next phase would be to extend Wi-Fi to other critical communications areas such as the Sprint FANZONE, DAYTONA 500 Club, Gatorade Victory Lane, suites/hospitality and the Paddock Club Suites. A third phase, in the near-term, will cover the outer camping areas. To pull it off, the ARRIS team would need to cover a lot of ground in a short period of time.

Delivering a high-performing, scalable and reliable Wi-Fi experience in a cost-effective manner requires thorough research and planning, sound network design and expert installation practices. The ARRIS process began by working closely with ISC's team to develop Wi-Fi service and business goals. ARRIS gathers and analyzes critical information to determine optimal service locations, current and potential users of Wi-Fi, physical obstructions, existing power and backhaul infrastructure and the overall layout of the facility.

In the case of DIS, ARRIS had to conduct its standard best practices alongside the ongoing construction effort in order to ensure that the network was operational on opening day. This meant strategically determining the optimal placement for access points based on blueprints, along with the standard

site audit. To make the most efficient use of time, ARRIS installed the access points as each section of construction was completed. This type of adaptation required a deployment team that is capable of developing complex installation plans based on theory, and adjusting them as needed based on ever-changing site dynamics.

The expertise of ARRIS Global Services was invaluable as the team had to incorporate new rooms that were not on the blueprint, complete with custom mounting equipment to accommodate new architectural obstacles. Also not on the blueprint were cars hanging from the ceiling and designer walls as part of a sponsorship. These new features required the access point engineering and layout to be adjusted on the fly to ensure optimal Wi-Fi coverage and performance.

In addition to delivering Wi-Fi in the common gathering areas, the service would also need to be extended into the venue's sprawling campground. This would allow fans who arrive for a lengthy stay in their campers to stream Netflix, Skype with friends and family, post videos to Facebook and do anything else they would normally do at home. That means going beyond making free Wi-Fi available to fans on event day, and offering them a premium service that will support their high-bandwidth activities. These RVs are large, mobile obstructions, forcing the access points in the camping area to be mounted 20-30 feet in the air to provide a clear signal. Delivering Wi-Fi to the camp site required wireless meshing as well as fiber to be laid underground since there was no broadband connection point nearby, thereby leveraging ARRIS's experience with fiber backhaul.

Typically, as the initial installations are completed, ARRIS conducts real world surveys through the course of multiple events, where RF engineers measure existing Wi-Fi spectrum usage, characterize attendee movement throughout the arena and survey the access to physical plant resources under live event conditions. In fact, during an audit of a live event, the ARRIS team noticed that a huge video screen was placed in one of the concourses which had not been part of the initial blueprint. The result was a change to the expected traffic patterns, requiring the access point locations to be re-engineered quickly to handle the higher amounts of Wi-Fi traffic in that location.

One of the objectives at the outset was for ISC to deploy a scalable network that it could monetize and manage on its own, and from there have multiple, geographically separated networks running off the same architecture investment in DIS. ARRIS built the Wi-Fi network with that in mind, incorporating a large amount of flexibility for future monetization and scalability, as well as stronger security and targeted marketing. Concessions, vendors, employees, executives, fans and media would all have their own SSIDs, enabling ISC to apply different security policies based on user type. ISC could use the same access points and segregate the traffic to keep proprietary information secure.

Daytona Venue Wi-Fi Reference Architecture

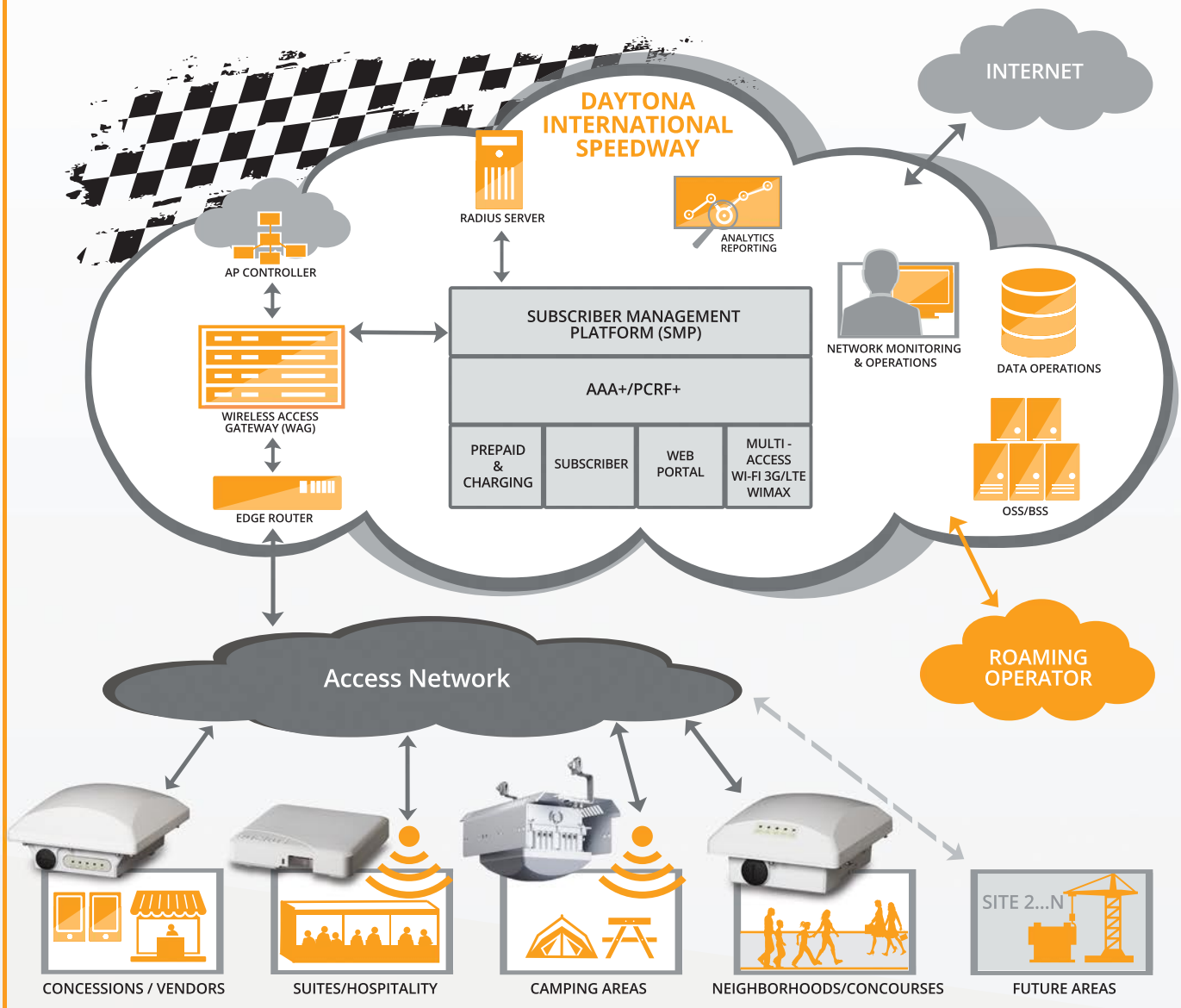

Figure 1 – ARRIS service provider Wi-Fi architecture

As seen in Figure 1, the primary components of the ARRIS service provider Wi-Fi architecture include:

- The Service Management Platform – centralizes user authentication, billing, policy enforcement and captive portals to the operator's cloud, supporting a wide range of Wi-Fi business models.

- The Wireless Access Gateway – enables seamless mobility between access networks, terminating tunnels from Wi-Fi access points and providing a consistent user experience across the network.
- The ARRIS portfolio of enterprise, consumer and carrier Wi-Fi access points – provides a variety of options to cater to each service provider's needs.
- The ARRIS Service Provider Wi-Fi Dashboard – the management and reporting system covering all system elements from a "single pane of glass," which is fully customizable and vendor-agnostic. This capability enabled the ARRIS team to adjust the system on the fly to meet ISC's requirements.

When logging onto the guest network, users interact with a portal page designed to capture information and ensure that security rules are met, and also to let ISC, vendors and sponsors market to fans with more personalized offerings. Sponsors and vendors could also derive additional information by asking willing fans a few questions about their experience to glean intelligence that they could use to fortify their marketing efforts. They would also be able to stay in touch with fans after the race to advertise the next event or offer merchandise, for example. An intermediate page following the portal serves as real-estate for interested sponsors to purchase.

The robust, multi-functional Wi-Fi network was also designed to support a mobile application that uses Bluetooth and geolocation technology to pinpoint a fan's location on the premises. Because of the expanse of the speedway grounds, the mobile location app serves as another tool to market to fans on a more personal level, such as allowing a vendor to send a coupon to customers when they are near his concession stand.

The Result: A Wi-Fi Network that Enables Monetization, Scalability and Fosters a Thriving Community

The extreme amount of flexibility built into the network offers so many monetization options that ARRIS continues to assist ISC in their analysis of how to capitalize on those opportunities. For example, ISC is now in a position to offer Wi-Fi access to area businesses; sponsorships to businesses whose web sites are accessed frequently during events; and premium access to fans in the campground before and after the events.

ARRIS's back-end technology enables the data and information captured from the portal pages and access points to be aggregated and analyzed. The resulting intelligence can be used to optimize coverage and throughput, strengthen marketing, improve security and elevate the overall event experience. For example, using a networked handheld scanning system, ISC can easily prevent fraudulent tickets from getting through the scanners at the entrances. The Wi-Fi network can also

be used to improve the experience by offering incentives and promotions to attract people to concession stands where lines are shorter than others.

ISC is looking ahead to using its new Wi-Fi network for even more enhanced experiences such as letting the fans hear audio from the race track with their own smartphone and ear buds. Because the required infrastructure is already in place, the cost to deliver these exciting new experiences is extremely low. The organization is now in a position to leverage its nimble and scalable infrastructure to easily and quickly deliver the same enhanced Wi-Fi experience to its other speedway fans and businesses.

ARRIS – Problem. **Solved.**

For more information about ARRIS's pre-integrated, carrier-grade Wi-Fi solution, please download the **Data Sheet.**

Note: The ISC Fan Wi-Fi coverage area is being deployed by phases during the 2016 racing season.