



**Company:** Innovative Timing Systems (ITS)

**Application:** Race timing platform

**Area of Use:** Finish line and checkpoints at races held in the United States

**RFID Supplier:** Alien Technology®

**Status:** Production

**Frequency:** 915 MHz

**Range:** 30 feet

**Challenge:**

- Accurately time athletes competing in sporting events, including marathons, triathlons, cycling, and motocross
- Reduce costs; older race timing systems require expensive mats and timing chips that have to be collected after each race

**Solution:**

- ITS Jaguar Timing Platform uses disposable RFID tags
- No timing mats required
- ITS uses an integrated hardware and software platform that provides an instant, complete database of results
- Toolset includes:
  - Alien ALR-9900 series readers
  - Disposable Squiggle® tags

**Benefits:**

- Fast and accurate, allows race officials to identify athletes in seconds
- Wireless interfaces for multiple race split points
- Custom designed RFID tags are waterproof, sweat proof

# ALIEN® RFID A WINNER AT INNOVATIVE TIMING SYSTEMS

*To produce a successful sporting event, a race organizer has to count on one thing—an accurate timing system. The race timing platform has to be quick to set up and easy to operate. Because it is used in a harsh outdoor environment, the system has to accommodate all types of unpredictable interference, including bad weather, mud, water, electrical fields, sweat, and even lost timing chips. The race timing platform also has to be completely failsafe and accurately record live results, which can be challenging when a high-density group of athletes are racing for a finish line.*

**CHALLENGE**

Traditionally, event timing systems relied on bar code or LF RFID systems that scanned athletes as they crossed a finish line. This arduous process required costly timing chips—tagged to the shoes of each athlete—which race directors had to collect at the end of the event. Those systems also needed a cumbersome finish line mat that not only had to be transported to each event, but placed in a safe location; it could not be used on an open road, as cars and trucks could destroy it.

“The early timing systems had technical and engineering problems,” explains Kurt Hansen, president and founder of Innovative Timing Systems (ITS) in Chesterfield, Missouri. Not only was the mat an expensive problem, but collecting all the timing chips post-event was a hassle. “A runner at the end of a marathon doesn’t want to immediately stop (and take off a timing chip), he or she wants to cool down,” says Hansen.

To solve these issues, Hansen—a runner himself—teamed up with experienced race directors, athletes, and engineers to form ITS, a premier race timing solutions provider. Using Gen 2 RFID solutions from Alien Technology®, ITS worked with system integrator BlueBean to create its Jaguar Timing Platform. After a year of beta testing at more than 50 U.S. events, ITS released Jaguar in August 2008.

**SOLUTION**

The Jaguar Timing Platform is designed to handle running events (5Ks, 10Ks, trail runs, and marathons) as well as cycling races, time trials, duathlons, triathlons, and motocross racing. The system can handle races with as few as 50 athletes and as large as 500,000 competitors.



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Jaguar is a comprehensive platform that includes all the software and hardware needed for race timing. It includes the Jaguar cabinet, circular antennas, and waterproof RFID tags for each racer. Inside the Jaguar cabinet are Alien's 9900 RFID readers, backup power, network interfaces (including Wi-Fi), a dedicated computer, fan, and support tools. Race directors place the cabinets at the start, transition, and finish to collect split and final times for athletes.

Each racer is equipped with a bib or identifier with a specially designed waterproof timing chip that incorporates Alien Squiggle® or Squiggle SH tags. These tags can be detected by Jaguar's RFID readers. With Alien's consistent and reliable UHF readers and antennas, Jaguar has an extremely high accuracy rate.

"We have a 99.5% read rate, and in some races we have had a 100% read rate," explains Hansen. He credits the accuracy to Gen 2 RFID technology from Alien along with his company's software and hardware implementation that uses a failsafe multiple reader system. Jaguar can even determine the finish time for a participant who loses a timing chip during the race.



## RESULTS

ITS has done extensive RF engineering in antenna design, allowing the system to work in unpredictable outdoor environments. The chips can be read accurately from as far as 30 feet, and its antennas can be placed overhead or beside the course, making Jaguar ideal for races on open roads or trail runs.

"In race timing, you can't control the environment or the people," says Hansen. "They can take off the bib, put it in a pocket, and scrunch it up. Race directors don't have that lovely controlled environment that you see in warehouses that use RFID."

The Jaguar system utilizes redundant processors for high-availability. It can operate for up to 8 hours without external power and can be managed remotely.

The Jaguar software includes a database for managing participant numbers and results. The software provides live updates with race split times and accurate finish times, and it generates extensive race reports.

Optional modules for Jaguar can capture event photos and videos. With those modules, the platform can provide real-time updates on each racer to their fans. For instance, when an athlete passes a transition point, the system can send a TXT message, photo, or video to a cell phone of a family member. This function "offers a truly rich experience for the runner," adds Hansen.

## BENEFITS AND NEXT STEPS

ITS sells the Jaguar platform directly to race companies. Buyers receive two days of training on Jaguar, and they get in-person help using the platform on their first event. ITS also uses Jaguar at its own races held throughout the Midwest.

"Our future plan is to further perfect Jaguar," adds Hansen. "We use it, and we see how our customers are using it. So we can build improvements back into the platform."

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