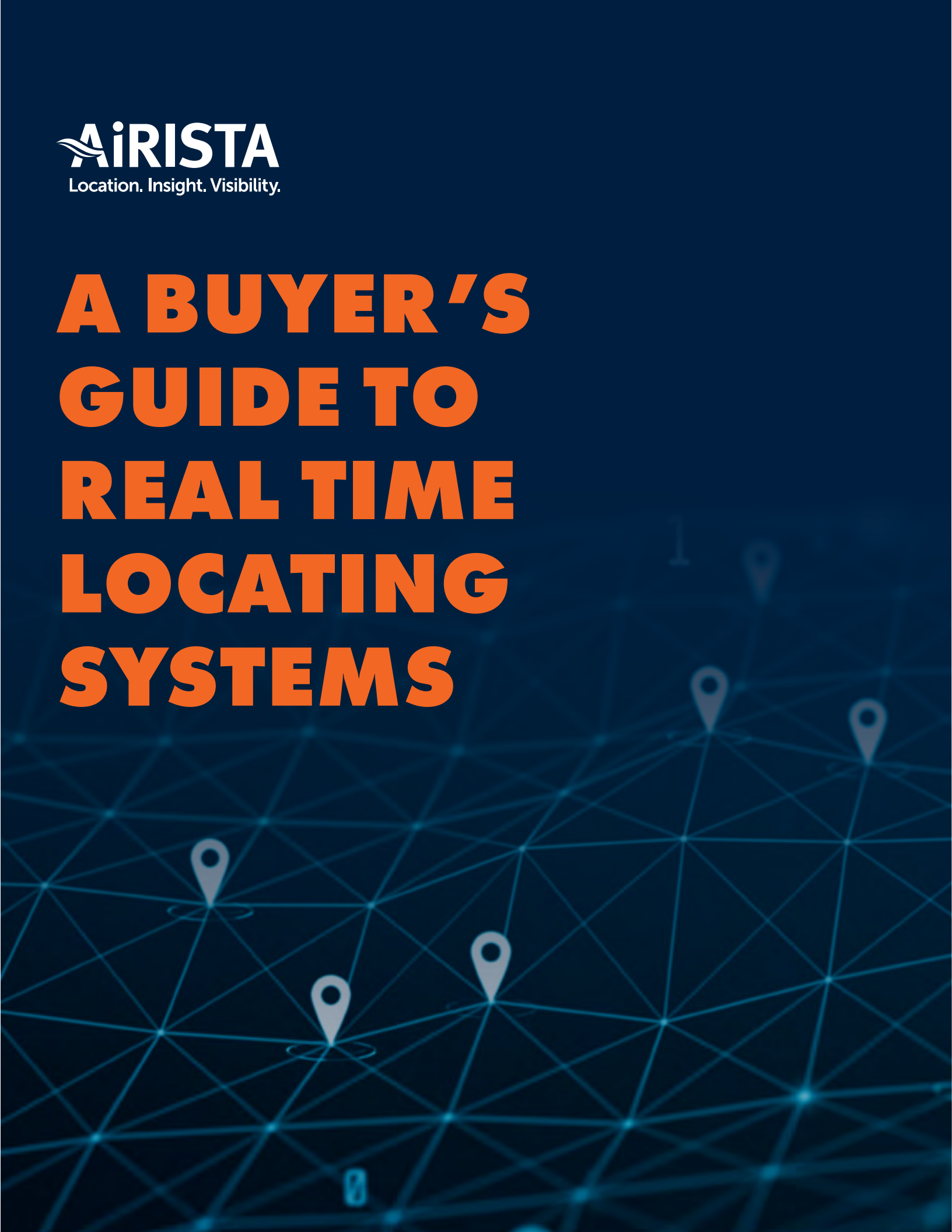
AiRISTA
Location. Insight. Visibility.

A BUYER'S GUIDE TO REAL TIME LOCATING SYSTEMS



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Introduction

Across various industries, the need to increase efficiency is a key driver for businesses. For many, the challenge is finding suitable solutions that can be easily implemented in a way that complements the existing processes and infrastructure, rather than one that requires a complex and disruptive overhaul to current operations.

Efficiency Challenges Companies Face Today

Depending on the nature of your business, you may find efficiency challenges in several areas. Some of the most common and impactful revolve around asset management and people's safety — whether it's staff, patients or customers.

Asset management means different things in varying industries, but the underlying principle remains the same: Keeping a detailed and up-to-date record of all your assets — whether it's tools and equipment, stock, machinery or drugs and other consumables. The ability to easily and accurately locate vital equipment at any given moment, track its progress along a process and view its past locations, offers significant opportunities to optimize processes and reduce inefficiencies in the working environment.

Staff security is paramount to all organizations. Regardless of how impactful injuries and incidents are on

operations, all employers have a moral imperative to ensure their employees' wellbeing by maintaining a safe working environment. Furthermore, challenges such as patient tracking and addressing wander management issues in care homes demonstrate a growing need for creative, simple solutions to maintain the safety of others as well as staff.

How, then, can real time locating systems help to tackle these challenges?

The Solution: Real Time Locating Systems (RTLS)

RTLS combines location algorithms with connectivity solutions, such as WiFi and Bluetooth® Low Energy (BLE), to create a wireless infrastructure that provides visibility to resources within the network. Using tags to uniquely identify each person or piece of equipment, their real-time location and status can be monitored using a centralized unifying software.

In a nutshell, here's how it works:

- The software retains unique identifier information for each tag (differentiated using RFID).
- Each tag is assigned to a person or asset.
- The tags communicate wirelessly with one another, as well as with the central system — where characteristics of the wireless signal are used to determine location and status information (e.g., via Wi-Fi, BLE or Global Position Systems (GPS)).
- Operators can use the system to accurately pinpoint the location of a specific person or asset to ensure the right resource is at the right place at the right time, and check key status indicators, such as temperature.

Finding The Right Solution For You

The right solution for your organization depends on many factors, depending on your industry and specific needs. There are two main areas that you should consider when determining an RTLS solution, though:

- It must tend to your immediate needs.
- It should be future-proof against how the industry may change.

In this buyer's guide, we'll take you through how you can identify your unique requirements, both immediate and in the future. We'll also break down the types of solutions you can consider so you can understand what benefits they offer and determine if they are suitable for your specific needs.

Identifying Immediate Needs

Ask yourself: What efficiency problems does my organization face?

Before you consider solutions, it's important to understand what challenges you need to overcome. Survey your stakeholders to understand their pain points first hand. Here are some examples of what you might find different departments highlighting:

- Finance will have goals around leased assets.
- Front line workers might cite equipment hoarding.
- Maintenance needs an accurate accounting of product updates.
- Security and HR must adhere to personnel safety protocol requirements.

Once you fully understand the problem(s), knowing what will and won't fix it is much easier to do. Assess every aspect of your organization to establish a comprehensive RTLS solution that addresses all your needs in synchronicity.

Here are some examples of some common challenges faced by various industries:

Assets

Different industries have different critical assets to manage and track through RTLS. Here are some examples of challenges various industries face and how RTLS could help alleviate them:

In healthcare: It's common for assets to not be fully utilized across a hospital or medical center because of misplacement, equipment hoarding and the need for repairs. Accurate location tracking and asset management software allows better inventory-keeping, more strategic asset allocation, swift asset

retrieval and an effective way to implement maintenance scheduling.

In manufacturing: Many organizations experience difficulties with ensuring equipment is properly utilized to its full potential. By having clear visibility of where assets are located and the level of their use, users can find and use them more easily, cutting down on time wasted looking for things, or multiple operators sharing a limited number of tools when more are available.

In industries using consumables (e.g., food and medical): Products and medical supplies, such as drugs or samples, can go to waste if they aren't properly maintained at specific temperatures. Using RTLS tags to monitor refrigerator and freezer temperatures and alerting to excursions can make all the difference in preventing wastage.

Staff

In environments where sudden emergency situations occur, using RTLS tags to generate an alert with programmable functions to coordinate a response could greatly improve response times for assisting a staff member under duress.

Patients Or Customers

In healthcare and elderly care facilities, the risks associated with absconding patients or residents could be exceptionally serious. Using RTLS solutions to improve wander management can help protect seniors or patients from harm. The same concept can be applied to visiting contractors to monitor their location and time spent in various areas.

Ranking Your Immediate Needs

Once you've determined all the aspects of operations that you'd like to address with the help of RTLS solutions, a good next step is to categorize them for relevance and importance.

One way to do this is by using a RAG rating scale — Red, Amber, Green (RAG) is a well-established means of rating scenarios and situations so that you can be sure to focus on the most important or pressing issues first. Here's how to rank your immediate needs:

- **Red** items are those that cause recurring, serious difficulties and require an immediate solution — e.g., a comprehensive inventory of all usable assets to prevent loss, theft or maintenance neglect.
- **Amber** rated items are any that are important enough to need to be addressed, but they can be implemented at a secondary or tertiary stage without causing serious problems for operations — e.g., improved preventive maintenance scheduling of IV pumps in a hospital to keep them in good working order while also ensuring sufficient pumps are available and operational at any given time.
- **Green** rankings are for issues that have less gravity to them. These are "nice to haves" in the future, rather than essential for imminent resolution — e.g., pinpoint location tracking accuracy for tagged items more specifically than room allocation.

By examining each element of your operations in this way, it's clear how you can develop a detailed understanding of exactly what challenges you'd like to address with an RTLS solution. This is also ideal for helping you select the right solution offering for your organization.

The various use cases you consider will have differing requirements. To avoid the overhead of managing multiple vendors, part of your evaluation should include the breadth of requirements each vendor can deliver. Examples include:

- Establishing zones and corresponding alerts when assets enter or leave.
- Easily identifying the location of mobile assets at the moment.
- Tracking people not only for safety, but also for time and location accounting.
- Monitoring shrinkage and deterring theft of assets.
- Tracking assets that are primarily stationary.
- Tracking interactions between people and assets based on proximity.
- Identifying resources that travel indoors and outdoors, requiring multiple radio technologies.

It's important that the solution provider you choose is able to fully address all points on your **Red** list immediately, while also having the capacity to incorporate solutions for all **Amber** items in the future. The **Green** items are less imperative, but the more of these that can be handled by the RTLS, the better.

Thinking About The Future

Planning for the future is a difficult thing to do, especially when it comes to technology and how it will integrate into our lives and businesses.

It's important to identify potential future changes and how these will affect the operations of your organization, but knowing exactly what's to come is near impossible.

A perfect example of this is the ever-expanding Internet of Things (IoT) universe. As more industries launch and adopt new digital "things", device interconnectivity becomes a greater necessity. To maximize efficiency, any new IoT device that is introduced will likely include location as an attribute. Therefore, a good RTLS solution will have the capacity for expansion — both in regards to connecting to new hardware and integrating with new software.

Finding The Right Solution For Your Organization

When looking at all the RTLS options available to you, there are several key considerations to keep in mind to ensure you're choosing the right solution for your organization and its needs.

Hardware

One of the primary things to think about when it comes to the RTLS technologies and devices is their **location accuracy.** The most advanced solutions will offer x/y/z-axis precision, which not only tracks the positioning of a tag on a two-dimensional map, but can offer vertical elevation information too. Many AiRISTA products, for example, use angle of arrival technology to measure accuracy to less than one meter in all three directions.

Various RTLS devices use different **connectivity methods**, which can play a significant role in how well and easily they can be integrated into current network systems. Wherever possible, it's beneficial to incorporate devices that can take advantage of already existing wireless technologies, doing away with the necessity for potentially costly infrastructure expansion. Vendors like AiRISTA can augment existing wireless infrastructure with low cost gateway devices to help extend their reach and increase accuracy.

Not only should vendors support a range of location technology choices, but many tags support a mix of RTLS technologies, such as:

- BLE (Bluetooth Low Energy).
- WiFi.
- NFC (both indoor and outdoor tracking variations).
- IR (infrared).
- Sonar.
- Ultrawideband.
- GPS.

Solution extensibility is massively important for simple and effective implementation. So consider the following questions when assessing different solution options:

- Does the solution leverage your existing wireless infrastructure?
- Are multiple wireless technologies available for redundancy?
- Can the system extend to cover dead spots in wireless coverage?
- Can you choose between a variety of location engines?
- Can you leverage a centralized repository for maps?

Many RTLS devices come with additional features, which can enhance their performance and address other key requirements. Here are some examples of useful extra features to look out for:

- Software programmable buttons.
- Messaging functionality and text display.
- LED indicators.
- Audible alerts.
- Vibration sensing.
- Sensors to monitor temperature, humidity or motion.
- Remote programmability to configure settings and run firmware updates.

Depending on the intended use of the tags, some, all or none of these features may be advantageous. A key part of the process is determining which are worth having and using. Of course, tags with more features and functionality invariably cost more, so it's always beneficial to ask whether those features are necessities or simply nice-to-haves.

Other important factors to consider include commercial terms — i.e., perpetual versus subscription payment for devices and software — and maintenance and support costs. Reparability is also important; you want to be confident that your devices can be effectively maintained within the capabilities of your team or service provider. A quality RTLS solution will let you confirm/reset the position of your infrastructure, debug devices in the field with a real-time inspection of the data stream, and perform remote tag debugging.

Software

In addition to simply locating resources, the software platform must turn that information into business value information and data. Careful evaluation of the software platform will help ensure your investment scales with your needs. A quality software solution will accommodate new sources of input such as additional sensors or other applications. To avoid the trap of a siloed, departmental solution, the following criteria help distinguish a true enterprise platform.

Workflow Variety

Having a range of workflow options means being able to create a more customized system:

- Simple workflow creation with pull-down menus can be used to create basic steps and results. Pull-down menus might be used to monitor assets inside and outside of zones, or to ensure sufficient equipment is available in specific areas.
- More sophisticated workflows can collect data from external sources and enable you to react to the data. For example, the AiRISTA platform provides a low-code studio composer to connect to apps and databases. This can be used to combine asset location information with its condition to specifically identify assets that are not in use.
- Full custom workflows provide tools for programmers to develop complex scripts when interfacing proprietary devices or generating complex analytics.

Reports And Dashboards

Reports and dashboards are what drive business decisions, helping drive the solution's return on investment. To be effective they must be industry and use case specific. The best solution will allow you to create custom reports and dashboards that provide value-added insights for your teams. Be sure to involve users of the RTLS platform into the evaluation process — they're in the best position to judge whether the reports and dashboards help in their decision making.

Agility

It's hard to know what your future needs will be, so aim to choose an RTLS platform with a range of capabilities that will continue to provide value as your needs expand. Be cautious if you are considering a solution to address a specific department's needs. Instead, try to consolidate vendors with a focus on solutions that will meet the needs for all. Evaluate the range of location technologies the platform supports, such as:

- Consolidated location information from passive RFID readers.
- A variety of location technologies like WiFi, BLE, ultrawideband, infrared or sonar.
- Room level accuracy at a low cost, including sub-meter accuracy, vertical dimension tracking and x/y coordinates.
- Extended tag location visibility for both indoor and outdoor tracking.
- Versatile integration with your existing wireless infrastructure.
- Extension capabilities, both physically and digitally — reaching location areas not yet covered and the ability to transition to cloud-based delivery.

Manageability

- Being able to centralize support for the platform is massively important, and often overlooked. Once you've established a specific person or team responsible for platform management, it's beneficial to assess whether the platform is going to be easy to maintain. This requires consideration of various factors:
- User and tag management ease, including types of users and permissions available.
- Simple zone creation and grouping.
- Sufficient alerting mechanism options, covering issues regarding zones, battery levels, missing tags and infrastructure changes.
- Easy alert initiation.
- Create debug logs for submitting trouble tickets to the vendor.

Scalability

Being able to scale in accordance with industry changes and organization expansion are vital for a future-proof system that will continue to provide an ongoing comprehensive RTLS solution. This is one of the reasons for many companies to move to cloud delivered solutions. Having a suitably adaptable hybrid system that can ease this transition incrementally provides the ability to centralize sensitive data while making use of the cloud's ability to scale appropriately.

As more IoT devices come online, scalability takes on new meaning. These devices often communicate via massive streams of data, so scalable platforms will need to interact and manage this streaming data, with the ability to identify and react to specific data records within the stream (e.g. machine learning, data lakes, etc.).

Integration

It's important to have an RTLS solution that integrates seamlessly with current systems. Before choosing an RTLS system, gather information from users regarding what third party applications and systems need to link with your software. These typically require web oriented or RESTful APIs to integrate. There might also be a need to integrate with building systems, such as cameras, stack lights, door locks, sirens and even displays. These likely require RESTful or streaming APIs. Review the vendors' support for these APIs to ensure your system will be fully integrated. It's also worth asking about developer support and any associated cost. Often a crowd sourced community of support has been created.

Packaging And Pricing

Because packaging and pricing models vary, you should compare costs over a period of time — typically three to five years — including upfront costs and aggregate costs for subscription models.

Support and maintenance costs are also an important part of the discussion. Annual maintenance costs associated with an upfront purchase can amount to a significant expense over time. Many vendors offer subscription-based pricing for the software platform and, in some cases, the tags as well. Subscription models encourage the vendor to pay close attention to customer satisfaction to better ensure that the subscription is renewed.

Professional services should be included when considering pricing. The cost to deploy various technologies can vary widely, depending on the infrastructure required or calibration of the system.

Professional Services And Support

Just as important as the hardware and software packages you can choose from, picking the right support partner can make all the difference to how an RTLS solution can benefit your business. Professional services are critical for the successful deployment and ongoing success of your RTLS platform. Services might come directly from the vendor or a third party partner. A comprehensive service and support package should include:

- Discovery sessions with department heads.
- RF environment assessments.
- Best practice sharing and recommendations.
- Findings documentation and proposal creation, including customization recommendations.
- Custom reports, dashboards and workflows to drive processes.
- Recommendations regarding privacy concerns (where personnel are tracked).
- Review of severity levels, response times and escalation processes.
- Suitable levels of support for global operations (i.e., "following the sun" hours).
- Online self-help or crowd sourcing support.

The best RTLS service providers bring creativity to problem solving and offer agile ongoing support service packages to keep everything running smoothly, allowing for scalability so you can expand in the future. A broad range of products and service packages will allow you to customize your choices for a flexible, specific solution.

AiRISTA FLOW

What does AiRISTA offer?

AiRISTA was named a LEADER in Gartner's Magic Quadrant for Indoor Location Services for 2022 and 2033. Our experience and expertise results in robust, versatile solutions that integrate our highly adaptable software and a broad range of hardware options to suit your needs.

If you'd like to learn more about how AiRISTA has helped companies develop a flexible RTLS deployment solution, why not take a look at some examples of recent case studies:

California Department of State Hospitals • Prisma Health • Sky View • High School Veterans Affairs • National Indemnity

Contact us today

Find out what AiRISTA can do for your organization by getting in touch for a consultation.

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