

Real-Time GPS Tracking and AVL Integration for ArcGIS Velocity and Esri® Environments

Delivering Operational Intelligence into ArcGIS Velocity, GeoEvent, and Enterprise GIS Systems

Executive Summary

ArcGIS Velocity is redefining how organizations process and analyze real-time geospatial data in the cloud. However, the effectiveness of Velocity—and any ArcGIS environment—depends entirely on the quality, consistency, and reliability of incoming field data.

Most organizations struggle to deliver structured, real-time GPS and operational data into ArcGIS at scale. Disparate data sources, inconsistent telemetry, and fragmented communication networks limit the ability to achieve true real-time situational awareness.

CompassCom addresses this challenge by providing a proven integration layer that delivers real-time GPS location, AVL data, and operational intelligence directly into ArcGIS Velocity, GeoEvent Server, ArcGIS Online, and ArcGIS Enterprise environments. By aggregating and normalizing data from LMR radios, vehicles, mobile devices, and IoT systems, CompassCom enables organizations to fully operationalize ArcGIS as a real-time decision platform.

The result is a unified, authoritative view of field operations—supporting faster response, improved coordination, and greater return on ArcGIS investments.

The Need for Real-Time GIS Integration

ArcGIS platforms are built to visualize and analyze geospatial data, but they are not designed to collect, validate, or transport real-time operational data from the field. This creates a critical gap between field activity and GIS awareness.

In many environments, GPS data arrives late, inconsistently, or not at all. Systems operating across LMR, LTE, and IoT networks often remain disconnected, forcing teams to rely on fragmented data sources and manual workflows. As organizations adopt ArcGIS Velocity to enable real-time analytics, this gap becomes more visible—and more impactful.

Without a reliable data integration layer, ArcGIS environments become reactive rather than operational. Dashboards lag behind real-world conditions, and decision-makers are left without the confidence to act in time-sensitive situations. To fully realize the value of ArcGIS Velocity and real-time GIS, organizations need a continuous, validated stream of operational data that reflects what is happening in the field as it happens.

CompassCom Solution Overview

CompassCom delivers a purpose-built platform for real-time GPS tracking and AVL integration within Esri ArcGIS environments. Acting as the integration layer between field systems and GIS platforms, CompassCom ensures that operational data is consistently ingested, normalized, and delivered in real time.

The platform brings together data from LMR radios, AVL-equipped vehicles, mobile devices, and IoT systems, creating a unified data stream that feeds directly into ArcGIS. Whether deployed in the cloud or on-premise, CompassCom integrates seamlessly with ArcGIS Velocity, GeoEvent Server, ArcGIS Online, and ArcGIS Enterprise.

This approach allows organizations to maintain a single operational picture across all environments. Rather than introducing new systems or workflows, CompassCom enhances existing ArcGIS deployments by delivering the real-time data required to make them operationally effective.

How It Works

CompassCom ingests GPS and telemetry data from diverse field assets operating across LMR, LTE/5G, Wi-Fi, and satellite networks. Unlike generic data pipelines, the platform is engineered to support mission-critical environments, including radio-based GPS and low-bandwidth conditions.

As data enters the system, it is normalized, validated, and time-synchronized to ensure consistency across all sources. Disparate protocols are translated into a common structure, noise is filtered out, and data is prepared for real-time GIS consumption.

For organizations leveraging ArcGIS Velocity, CompassCom streams data directly into the platform, enabling real-time analytics, event detection, and dynamic visualization. In secure or on-premise deployments, CompassCom integrates with GeoEvent Server and ArcGIS Enterprise to support controlled, internal processing.

The same data can also be shared with ArcGIS Online, mobile applications, and external systems, ensuring that operational awareness extends across teams, agencies, and command environments.

Core Capabilities

CompassCom enables organizations to transform ArcGIS into a true operational platform by delivering continuous, real-time GPS and AVL data into both cloud and on-premise environments. It provides unified visibility across LMR radios, vehicles, and mobile assets, regardless of the underlying communication network.

The platform is designed to operate reliably in mixed and challenging environments, including disconnected and low-bandwidth scenarios, while maintaining secure deployment options aligned with organizational and regulatory requirements. Its open integration approach allows operational data to flow not only into ArcGIS, but also into CAD systems, TAK Server, and other mission-critical platforms.

Operational Impact

With CompassCom, ArcGIS evolves from a visualization tool into a live operational system.

In public safety environments, command staff gain real-time visibility of personnel and assets—including GPS-enabled LMR radios—within existing ArcGIS dashboards. This improves coordination during active incidents and supports faster, more informed decision-making.

In wildland fire and search and rescue operations, teams often operate in disconnected environments where traditional tracking systems fail. CompassCom enables radio-based GPS tracking in these conditions, ensuring that location awareness is maintained in the field and synchronized into ArcGIS for broader visibility and post-incident analysis.

Utilities and infrastructure operators benefit from real-time insight into field crews and assets, allowing them to respond more quickly to outages and manage resources more effectively. Transportation agencies and DOTs can monitor fleet activity, work zones, and operational movement within ArcGIS-based systems, improving both safety and efficiency.

Across all use cases, the impact is the same: improved situational awareness, faster response, and more confident decision-making based on real-time data.

Why CompassCom

CompassCom brings deep expertise in delivering real-time GPS location intelligence into Esri-based environments. Unlike generic integration providers, the platform is purpose-built for mission-critical operations where reliability, security, and interoperability are essential.

With direct integration into Motorola Solutions™ and BK Technologies® radio systems, CompassCom enables capabilities that extend beyond traditional AVL solutions. It supports operations in disconnected and denied environments, where standard cloud-based systems are not sufficient.

The platform is designed to meet the security and compliance requirements of federal, public safety, and critical infrastructure organizations, supporting deployments aligned with FIPS, NIST, and Information Assurance standards. At the same time, it integrates

seamlessly with ArcGIS Velocity, GeoEvent, and Enterprise systems, ensuring compatibility with existing GIS investments.

Conclusion

ArcGIS Velocity and modern GIS platforms provide powerful tools for real-time analytics and visualization, but their effectiveness depends on reliable field data.

CompassCom delivers that foundation by providing structured, real-time GPS and AVL data into ArcGIS environments through proven integration with Velocity, GeoEvent Server, ArcGIS Online, and Enterprise systems.

By bridging the gap between field operations and GIS, CompassCom transforms ArcGIS into a true real-time decision platform—enabling organizations to operate with greater awareness, faster response, and improved coordination.

Next Steps

Organizations looking to enhance real-time visibility within ArcGIS environments can review how CompassCom integrates directly into their existing environment.

CompassCom provides a focused system overview demonstrating how GPS location, AVL data, and operational intelligence are delivered into ArcGIS Velocity, GeoEvent, and Enterprise systems, enabling real-time visibility within existing maps, dashboards, workflows, and operational platforms.

To move forward, schedule a session with CompassCom to review your environment, discuss integration options, and see real-time GPS location and operational data in action.

Request a System Overview or Demo

<https://compasscom.com/request-demo/>

