

# Implementing Cost Savings & Efficiencies through GSE Tracking & visibility



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Inseego Answer the Call



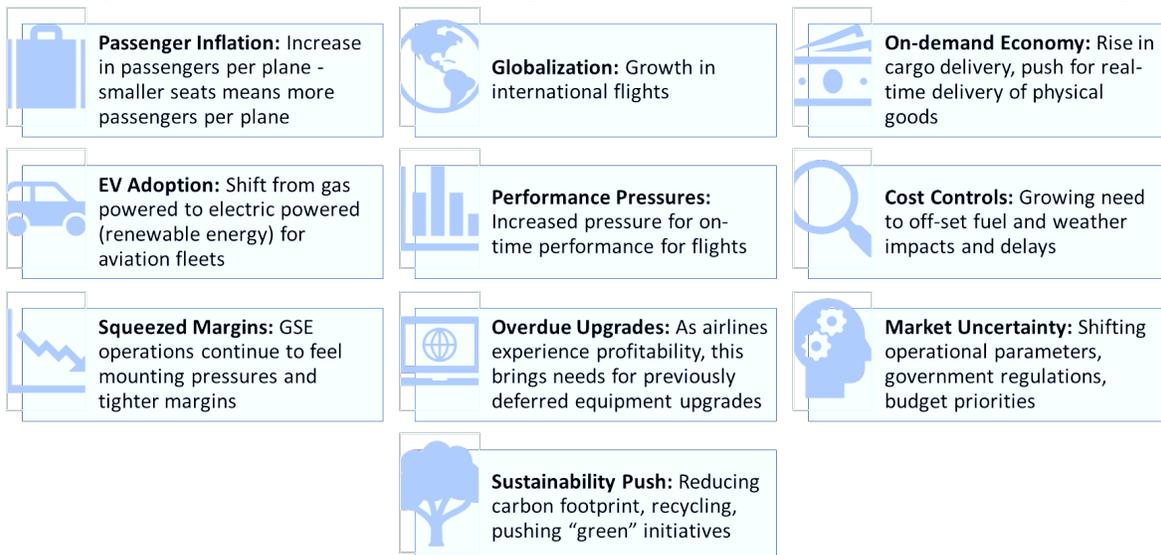
## Setting the 'Apron' Stage

As with other industries, the aviation industry must automate operations or lose billions of dollars keeping up with the mounting market pressures. Today's aviation industry continues to be pressured with rising fuel costs and on-time arrival with zero accidents or safety breaches. While these pressures are generally uncontrollable or unpredictable, the industry can embrace and take advantage of controllable and predictable operations by leveraging automation and greater visibility into operations through technology solutions. Compass Intelligence predicts an overall cost savings of between \$2.0 and \$4.0 billion through the adoption of ground support equipment (GSE) automation and IoT (Internet of Things) technology over the next 5 years. This sets the stage for exploring winning solutions, more specifically a chance for airports and GSE operations to focus on technology and automation solutions to support in improving efficiencies, reducing costs, and improving customer services and experiences. As such, this paper will present the state of the GSE market and services, and present solutions and key applications to reach overall cost savings through innovative solutions.

Cargo Services	Aircraft Services	Fuel Services	Passenger Services	Other Services
<input type="checkbox"/> unit load devices (ULD)	<input type="checkbox"/> push-back tugs	<input type="checkbox"/> re-fuelers	<input type="checkbox"/> boarding bridges	<input type="checkbox"/> conditioned air vehicles
<input type="checkbox"/> bulk cargo loaders	<input type="checkbox"/> tractors	<input type="checkbox"/> fuel service vehicles	<input type="checkbox"/> passenger loading bridges	<input type="checkbox"/> potable water vehicles
<input type="checkbox"/> cargo dollies	<input type="checkbox"/> bulk loading systems	<input type="checkbox"/> hoses/nozzles	<input type="checkbox"/> steps/stairs	<input type="checkbox"/> cabin cleaning vehicles
<input type="checkbox"/> electric belt loaders/conveyors	<input type="checkbox"/> Tow tracks	<input type="checkbox"/> reels, pumps, tanks	<input type="checkbox"/> Transport buses/vehicles	<input type="checkbox"/> catering/galley service vehicles
<input type="checkbox"/> baggage carts	<input type="checkbox"/> Chocks			<input type="checkbox"/> lavatory service vehicles, tow tracks
<input type="checkbox"/> containers and pallets	<input type="checkbox"/> Jacks			<input type="checkbox"/> air start units jacks
				<input type="checkbox"/> ground power units (GPU)

There are an estimated 15,000 airports operating in the U.S., with an additional 1,000 airports operating in Canada. The airport or aviation ecosystem is vast and made up of maintenance-repair-overhaul (MRO) companies, logistics companies, service companies, component/sub-component companies, ground support equipment (GSE) companies, and of course airline/airport authorities and companies. This ecosystem is often relied on by 3<sup>rd</sup> parties or outsourced vendors, with over half of all GSE and service companies being outsourced by airline companies and airports based on statistics gathered from the International Air Transport Association (IATA). A depiction of the GSE services and equipment systems is shown above.

The following core aviation trends are impacting the global market and thus put increased pressure to manage costs:



# GSE Operational Imperatives

The value in managing costs on the ground is the predictable nature GSE presents, as operations can be automated, detected, planned, and controlled, whereas the unpredictable nature of weather and other aviation delays in air is not something industry can control and even prediction is challenging. The ground support equipment (GSE) market success factors include efficiencies in time and accuracy in handling all ground operations, and all services and operations activities managed upon arrival and before departure. In addition, operational and passenger assets and fleets must be managed at the optimal level to maximize performance, reduce maintenance time, and support with on time flights. At this stage, airports are faced with long overdue infrastructure and technology repairs and upgrades, and are playing catch up as the market reaches higher levels of profitability. The challenge is prioritizing which projects to take on and demonstrating return on investment (ROI) and performance metrics (i.e. total cost of ownership (TCO), cost savings, time saved, reduction in maintenance, etc.).

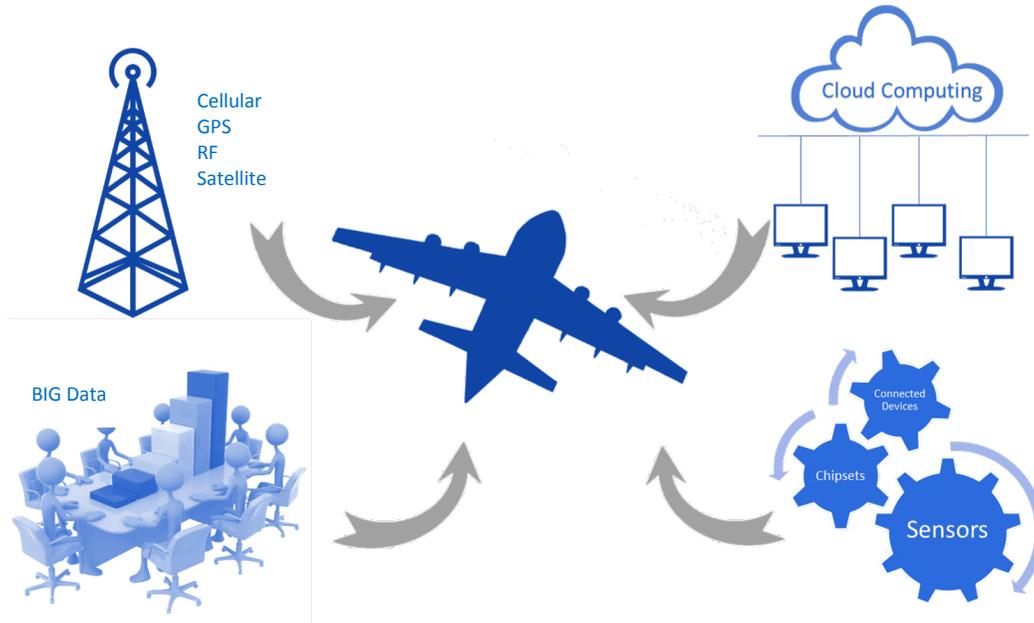
Outside of managing general operational (equipment, parts) and passenger assets (cargo, luggage), GSE operations maintain and manage many fleets for services including luggage/baggage, passenger, food, fuel, and cargo delivery, as well as fleets that support in some of the services listed below:



To add to the success factors, important operational performance metrics for GSE fleet management include reducing fuel costs, improving safety, providing visibility of drivers, lowering maintenance occurrences, and limiting accidents and fleet downtime. Aviation fuel management is an ongoing concern and by helping identify and eliminating vehicle idling, managing fuel and power across GSE fleets, and utilizing fuel sensors (accelerometer, GPS, temperature, tire pressure, proximity, load position/presence, other), additional insights provide actionable information for operators. One example is a diesel truck running out of fuel where re-priming the engine is performed by 1 to 2 mechanics and may use up to 3 hours of downtime for valuable assets. This is not only costly because of fleet downtime, but the labor and manpower involved for maintenance can be lessened through improved analytics, information alerting, and sensor systems that predict and dispatch fuel trucks in real-time.

As the aviation industry goes through a digital transformation, the use of wireless communications (cellular, GPS, Radio frequency-RF), real-time data (Big data, data analytics, Internet of Things), cloud computing, and sensor systems will be the boost the industry needs to automate and advance. This advancement will rely on sensors relaying information from the GSE asset or fleet vehicle to provide vital information for maintenance, repair, safety, performance, and real-time information to improve operations. Some data will be pushed to the cloud for processing and analyzing, while some computing will occur at the asset or vehicle level and pushed to the stakeholders as real-time alerting and information may be critical.

## GSE Asset & Fleet Management – The Future is Digital



The aviation and more specifically the GSE segment of the market continues to require cost-effective and flexible payment solutions for technology and automation buying, which is why technology leasing and financing will be important for asset and fleet management automation. Preserving capital for other important and unplanned costs is imperative for the overall aviation industry, so leasing and financing of technology investments is ideal. The overall goal is to leverage sensor systems, software, and real-time communications to GSE workers to better utilize time and resources and improve operational efficiencies, and in the end reduce accidents and meet GSE safety, standards, and on-time performance goals.

It is also important to understand the key stakeholders, as they either are part of the decision-making process or will influence key strategic, planning, and investment decisions.

### GSE Stakeholders

- Ground Support Equipment (GSE) Manufacturers
- Original Equipment Manufacturers (OEMs) and Service Providers
- Subcomponent Manufacturers and Suppliers
- GSE Retailers, Wholesalers, and Distributors
- Maintenance, Repair, and Overhaul (MRO) Service Providers
- Technology Support Providers
- Logistical Partners and Transporters
- Solutions & Software Providers
- Airport Authorities and Airlines



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## Implementing Measures for Cost Containment & Operations Improvement

Reducing overall GSE costs and improving operations are major drivers for automation and technology investment decisions. When thinking about which projects to dive into, below are a few ideas that can be implemented today that showcase ROI for fuel management, fleet and asset tracking, and operations automation and their key applications.

### Asset & Equipment Tracking

- Luggage and cargo tracking (location, delivery, GPS enabled)
- Equipment, tools, and supplies tracking
- People tracking (airport and 3<sup>rd</sup> party staff)
- Damage & force (weight) detection
- Equipment up-time and usage time (supports in better maintenance planning)

### Fleet management & Tracking

- Geo-location identification of all fleets on the ground for safety (GPS/cellular/RF)
- Real-time identification of fuel levels for on-time fuel services
- Alerting for maintenance and repair (diagnosis and maintenance dispatching)
- Routing of fleets to correct location for improved efficiencies and accident reduction

### Sensor Systems & Networks

- Apply to assets, equipment, and fleets
- Management portal for visibility and setting thresholds
- Real-time alerting (SMS, emails, mobile ready)
- Take action on alerts (speeding, idling, maintenance)
- Data analytics for key operational metrics, information sharing, and prediction
- Ongoing monitoring of overall operations

By better managing passenger assets, along with all operational assets on the ground, the industry can improve the overall customer experience and satisfaction levels for on-time flight arrivals and departures. The sensors placed on assets and fleets provide real-time intelligence to plan, predict, dispatch, repair, and improve overall safety for workers and equipment.

## Inseego ANSWERS THE CALL, Introducing Ctrack Airport Solution

Inseego's Ctrack Airport solution provides better visibility of airport assets, fleets, and equipment and gives GSE service providers a GPS-based airport equipment management solution that provides controlled access to their equipment as well as real-time visibility through a web-based software-as-a-service (SaaS or IoT-to-Cloud) platform. Ctrack is a user-friendly IoT device-to-cloud management solution that includes tools for asset usage, condition, maintenance schedules and automatic billing for multiple users. The Ctrack platform provides real-time actionable data for analysis by airlines and GSE operators, ultimately driving maximum customer ROI.

### The Solution includes:

- Ctrack Fleet Management Solution (motorized and un-motorized)
- Access Control
- Standard & Ruggedized RFID (radio frequency identification) Reader
- Remote Immobilizer
- Battery Control System
- Fuel Management System
- API with Billing Engine
- Asset Optimization

Cellular modules are used to transmit data from anywhere for a truly untethered connection to all vehicles and assets. This allows communication of vital statistics from the asset, as well as control over asset functionality. Carrier networks extend to all parts of the airport, which allow for constant monitoring and control.

### Key Benefits



### Inseego, your trusted Aviation Technology Partner

Airlines require robust and consolidated solutions to administer, maintain and control motorized/non-motorized assets. Inseego's airport experts have the know-how and solution capabilities to support airline operations while providing long-term, mutually beneficial partnerships with clients. Inseego brings 30 years of connected asset management expertise with over 1 million subscriptions worldwide. Inseego is headquartered in San Diego, California with offices around the globe.

For more information on Inseego's Ctrack Aviation Asset Management and Tracking please go to <https://www.inseego.com/aviation-industry/> or contact us at [aviation@inseego.com](mailto:aviation@inseego.com) or 1-800-683-4818