A fleet manager's guide to prepping for winter operations

GEOTAB

Intro

No public works agency wants to get caught off guard when it comes to winter operations. Snow storms and ice events can bring heavy focus and criticism from the community to agencies ill-prepared to clean roadways safely and efficiently.

According to the **Federal Highway Administration**, these winter road activities are also very costly, accounting for nearly 20% of state Department of Transportation maintenance budgets.

Providing clean roads and meeting maintenance standards is an essential service for public works agencies. Doing so promptly requires keeping track of a roster of road-worthy vehicles and managing material usage cost-effectively.

Agencies that harness the power of data to streamline their winter operations will not only have a leg up in clearing roads on time and on budget but also safeguard their crews from liability for compliance or damage claims.

"It's been eye-opening to move from manual processes to a digital approach with the Public Works telematics solution from Geotab. We're seeing improvements across the board in asset deployment, activity tracking and our general response time to winter events."

Daniel Lai, Smart Mobility Manager with the City of Bellevue Public Works Department

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Let's explore the key areas for prepping your agency for smooth winter operations and how a data-driven approach can save you time and resources.

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CHAPTER 1

Prepping your vehicle lineup

Staying on top of your equipment's health during winter is crucial so that your crews have everything they need to clear roads rapidly when a storm hits.

All winter operation vehicles take a beating due to prolonged exposure to salt, sludge, etc. and face a higher probability of equipment failure due to the harsh weather conditions. In the lead-up to your active winter season, look at the state of your vehicles and note any needed repairs well before the snow starts to fly.

Here's a 5-point winter fleet maintenance checklist to keep your equipment in tip-top shape for more accurate reporting:

Check the state of plow sensor mounting brackets – Make sure the bracket is in good condition and not bent or otherwise positioned incorrectly. Look out for any rust that might indicate a bracket needs to be rewelded.

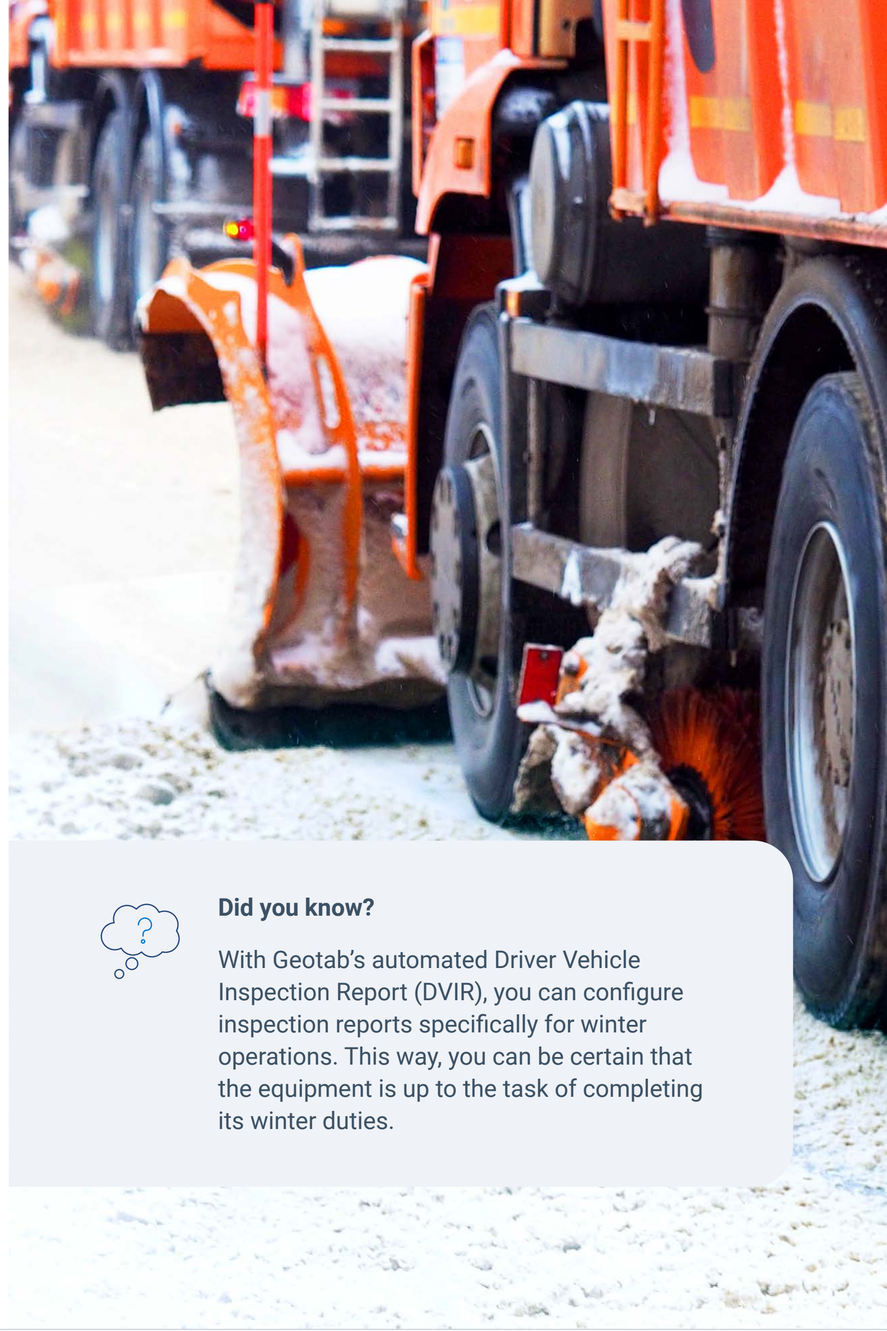
Check the plow sensor – You'll want to check if the sensors are connected in the correct location and that the sensors are uniform throughout the fleet. If not the same across all equipment, standardize the installation to increase the accuracy of logged data. There are three different types of sensors: proximity, hydraulic and mechanical. You'll want to test the sensor functionality and make sure they are calibrated to plow positions. Double-check those positions are confirmed on the map.

Check the controller – Make sure it is set up to log Automatic Vehicle Location (AVL) data.

Calibrate the equipment – Validate the calibration of the plow, wing and spreader with a few test runs.

Review Geographic Information System (GIS) route data – Check the accuracy in your software platform of route completion reports and route material management reports.

For even more winter fleet maintenance tips, **check out this blog**.



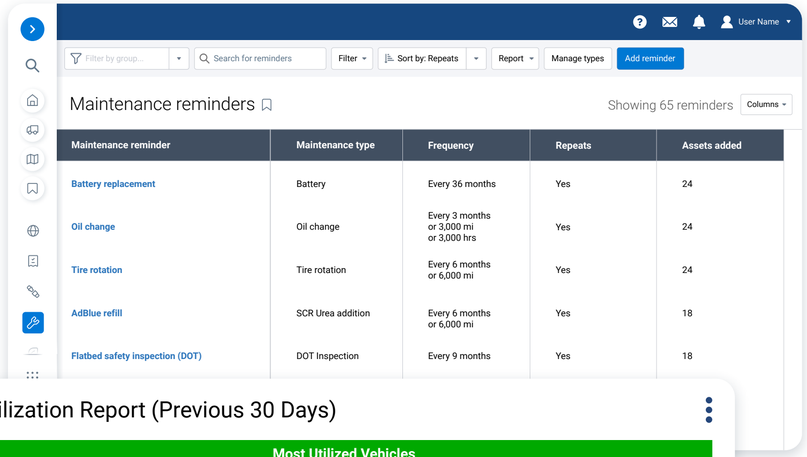
Did you know?

With Geotab's automated Driver Vehicle Inspection Report (DVIR), you can configure inspection reports specifically for winter operations. This way, you can be certain that the equipment is up to the task of completing its winter duties.

Maximize winter vehicle usage

To plan for winter effectively, you must understand what vehicles and equipment you have on hand. Taking a proper inventory of your winter asset mix will be the first step in your preparation plans. Make a detailed list of all winter equipment and vehicles ready for snow clearing and other winter road work.

To know if your current inventory is up to the task, look at the previous year's operations to see if any areas lacked or missed service requirements due to inventory not being available. This could be because the vehicle was missing entirely from the roster or equipment was pulled due to maintenance.



Driver training

Prepping your vehicles is a key step, but so is preparing your drivers. In off-winter months, train new staff accordingly on equipment such as plows and spreaders. Keep track of operator licenses so that equipment can be matched properly to each driver in winter.

Drivers, particularly seasonal or contract employees, should be provided a refresher course in plow and spreader controller operations, especially regarding winter driving safety protocols. A safe driver is an effective driver.

Utilization Report (Previous 30 Days)

Most Utilized Vehicles

	Vehicle	Days Driven	Vehicle	Drive Time	Vehicle	Mileage
1	Vehicle 47	30	Vehicle 47	78:21:47	Vehicle 109	2919.32
2	Vehicle 15	30	Vehicle 37	47:08:51	Vehicle 93	2816.15
3	Vehicle 100	29	Vehicle 12	46:02:37	Vehicle 12	2711.51
4	Vehicle 63	28	Vehicle 23	45:46:35	Vehicle 87	2705.80
5	Vehicle 23	28	Vehicle 46	45:18:41	Vehicle 77	2415.79

Least Utilized Vehicles

	Vehicle	Days Driven	Vehicle	Drive Time	Vehicle	Mileage
1	Vehicle 2	1	Vehicle 2	00:02:11	Vehicle 42	0.04
2	Vehicle 4	2	Vehicle 9	00:28:32	Vehicle 45	7.34
3	Vehicle 9	2	Vehicle 11	01:29:19	Vehicle 63	68.24
4	Vehicle 10	3	Vehicle 22	03:57:19	Vehicle 8	102.57
5	Vehicle 11	3	Vehicle 68	04:35:40	Vehicle 39	165.92

Tip

Telematics can provide a data-driven approach to monitoring asset usage and preventative maintenance to see which vehicles or equipment are in heavy rotation and likely need servicing. Asset utilization reporting is an important step to understanding which vehicles are ready to go for winter operations.

CHAPTER 2

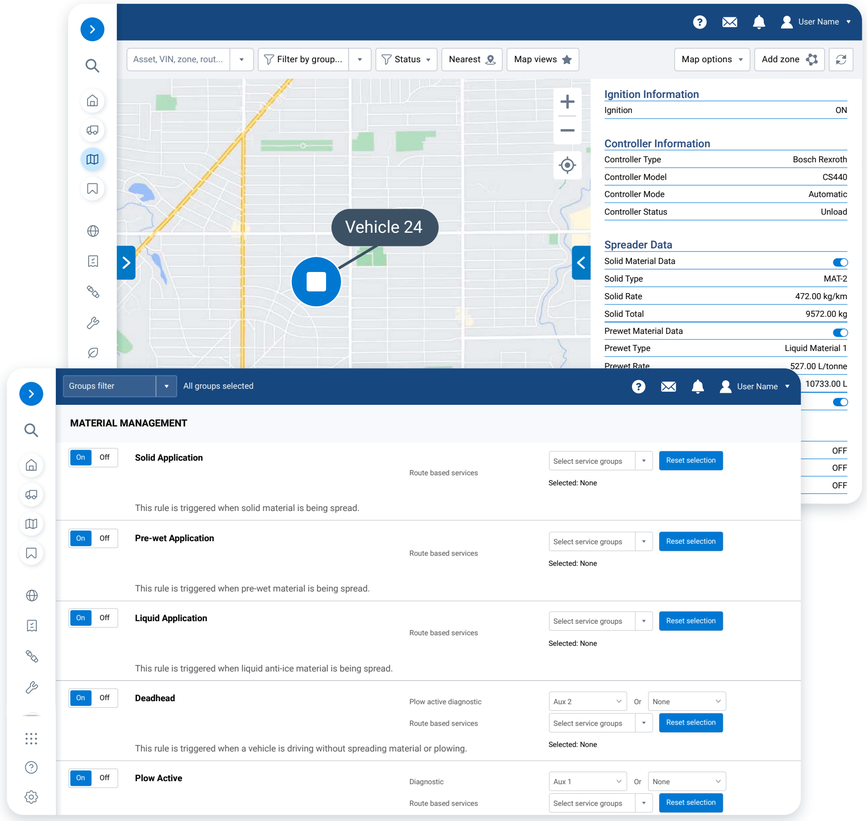
Budgeting for materials

Winter operations fleet managers are responsible not only for providing clear roadways but also for doing so sustainably. Monitoring material usage is an important aspect of a winter operations fleet manager's job. It is the fleet manager's responsibility to help keep roadways snow-free while avoiding excessive material usage. This is an important consideration for the winter fleet manager as **the use of excessive de-icing agents poses harm to the environment and society as a whole**.

The concern with over-salting or over-usage of de-icing material stems from the fact that salt or de-icing liquid used in ice control operations eventually ends up in roadway drainage. Road salt (sodium chloride), ferrocyanide, phosphorus and other materials can contaminate groundwater and are **difficult to remove**.

That's why it's critical to look at your salt usage trends from previous years and set benchmarks for how much salt is actually needed. This prevents salt overload and allows you to budget accurately for each year's material requirements.

Looking at previous material usage records also prepares you to be adequately stocked for the upcoming season. Many agencies have been caught without enough materials on hand to deal with bad storms or unexpected weather events and run into issues meeting minimum service standards. Plus, material prices fluctuate, and if you run out of materials mid-winter, you could be stuck paying top dollar to top up.



Tip

Manually recording material usage, particularly salt, is prone to human error and estimations that can skew your forecasted budget. The Geotab Public Works solution allows for digital tracking of material usage through spreader sensors rather than pen and paper. This improves accuracy and allows for better budgeting with a truer sense of how much material is being used and how much is needed.

Getting granular about salt usage

The **Department of Public Works in Blacksburg, VA** was keen to get a different perspective on their materials reporting when they switched to Geotab telematics. They've since moved from assumption-based to data-driven decision-making when it comes to their salt usage.

In the past, when a plow went through the geofence surrounding their salt shed, it was assumed the plow was loading more salt. From there, it became a guessing game about how much salt was being loaded, with team members even physically following trucks to try and confirm estimates.

Now the team has real-time data with Geotab's Public Works solution to show exactly how much salt is being used and how it's being spread onto roadways during a snow event.

"We compared the numbers this past season with previous winters and have seen significant savings in materials."

John O'Shea,
Safety and Special Projects Manager,
Town of Blacksburg Department of Public Works

CHAPTER 3

Meeting compliance challenges

Now that equipment has been properly inspected and maintained, materials are ordered and stockpiled, and operational crews are assembled and trained, agencies face one more area of concern — meeting service level standards and fighting off liability claims from their constituents.

It's a chilling fact that every year **24% of weather-related vehicle collisions** occur on winter roads across the U.S. Keeping drivers and pedestrians safe during the winter season is of utmost importance to your crews, but it's proving difficult. Public Works agencies must show evidence that snow-clearing and de-icing work is completed on time.

Agencies know how phone calls and complaints can pile up in winter when citizens are concerned about their safety heading onto the roads. Worse yet are liability issues if a citizen is injured due to a snow or ice event. Geotab's route completion and material use report data can assist in managing compliance and mitigating risk in these scenarios.

Digital tools for safety and accountability

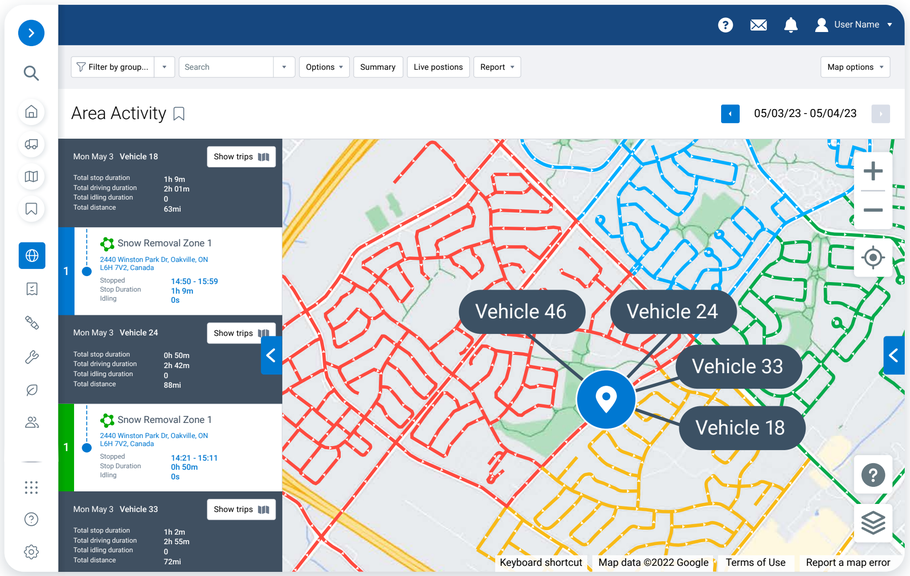
It's the nature of the job that during a snow event, crews are working around the clock to help clear roads as quickly as possible. That can lead to longer shifts for some operators and equipment overload issues when vehicles run non-stop. However, with telematics keeping track of hours worked, fleet managers can be assured that rested drivers are behind the wheel of plows and spreaders, limiting safety concerns.

Vehicle utilization also needs attention during major winter storms, as you want to make sure that equipment hasn't exceeded duty cycle limits and is properly serviced and ready to go. Telematics can aid in keeping a watchful eye on overused assets in the mix so you can easily identify equipment that can be used instead.

Tracking vehicle activity using the map allows for greater accountability to see exactly where and when a plow or salt spreader has made its way through a neighborhood. Having access to live service maps generated by telematics to view in real time which streets have been plowed or salted gives fleet managers peace of mind and arms them with the need to settle citizen complaints.

When issues arise, fleet managers can access route completion reports to show a crew meets minimum maintenance standards and material use reports to demonstrate adequate spreading. Agencies can now paint a detailed picture of what a vehicle is doing at the time of a claim with telematics providing:

- Plow position status to know exactly when a plow is operating
- Speed data to validate how fast equipment is going when plowing
- Spreader controller data to show how much salt or sand was used in an ice event
- Precise vehicle location with exact timestamps to corroborate when a street was cleared



Tip

Geotab's Public Works solution lets you pinpoint which activity is being performed and where. It shows each snow plow route comprised of different zones so you can calculate the completion percentage of each route.

Some agencies have even decided to go above and beyond for their community, making service-level information available to motorists via public information systems. **Geotab's Citizen Insights platform** allows agencies to tap into vehicle and road activity data captured through telematics. The platform offers a public-facing dashboard that can provide citizens with detailed information about when a service has been or is set to be performed for their street or neighborhood, including street sweeping, snow clearing or salt spreading.

Platforms like Citizen Insights provide three major benefits to an agency's fleet management toolbox:

1. **Increase public trust –** Build trust and improve transparency with a simple, powerful service that requires no extra effort from your team. You can provide data to the public and stakeholders to prove you meet snow-clearing targets and deliver first-rate service to your community.
2. **Maintain control –** Empowering your citizens with data through a public portal helps keep them safer on winter roads. At the same time, you must also empower your operational teams to do their jobs. By controlling exactly what the public sees on the dashboard, you can give relevant information while keeping specifics of your operation for internal use only.
3. **Reduce inquiries –** Free up your contact centers and cut costs related to inquiries. Frequent inquiries into activity statuses affect the ability of crews to get the job done on time. Now concerned citizens will have the information they need to help them stay safe while letting operations continue as planned.

Did you know?

Charlottesville, Virginia was one of the first government agencies to launch Geotab's Citizen Insights platform, fulfilling a long-hoped-for dream of Systems Performance Analyst Ron Cook. "I've envisioned something like Citizen Insights for ten years and now I'm finally able to push information to the public in real time."

Piloting the program during leaf collection service, Cook and the team hope to reduce callbacks, increase service standards and improve dispatching and routing during winter

CHAPTER 4

A digital future for winter operations

Road activities performed by your crews are central to ensuring cities, municipalities, counties, highways, etc., function normally during the winter, a season that can bring very abnormal circumstances. Without effectively managed winter operations and clear, safe roads, all aspects of life can ground to a halt — kids can't go to school, people can't get to work and deliveries can't be made.

Winter operations need a digital transformation and an evolution from pen-and-paper manual processes to a key smart city contributor that provides essential services to citizens on time. Telematics can act as the brains of these operations, gathering critical data from the entire fleet of mixed assets and equipment, from snowplows to salt-spreaders, to improve safety, communication and transparency.

Impactful insight

Daniel Lai from the City of Bellevue tells a story of a snowstorm that kept ambulances from getting to a resident of Bellevue who was a patient in urgent need of dialysis. The storm had blocked the driveway, so ambulance services contacted Daniel's team to help. Using telematics to quickly identify the closest plow to deploy to the patient's location, Daniel's team could assist this patient in receiving the timely, critical care they needed. Before digitizing their approach, Daniel would have wasted precious time radioing each driver for their proximity to the patient's location.

But transformation does not happen overnight. Instead, there needs to be a thoughtful approach to moving towards a digital future for winter operations. A process that can be divided into four phases:

Step 1

Start with a strategy for adopting new technologies and do thorough research to decide on the technology path required to meet your goals.

Step 2

Implement the technology and familiarize yourself with the data outputs possible to streamline your operations most efficiently.

Step 3

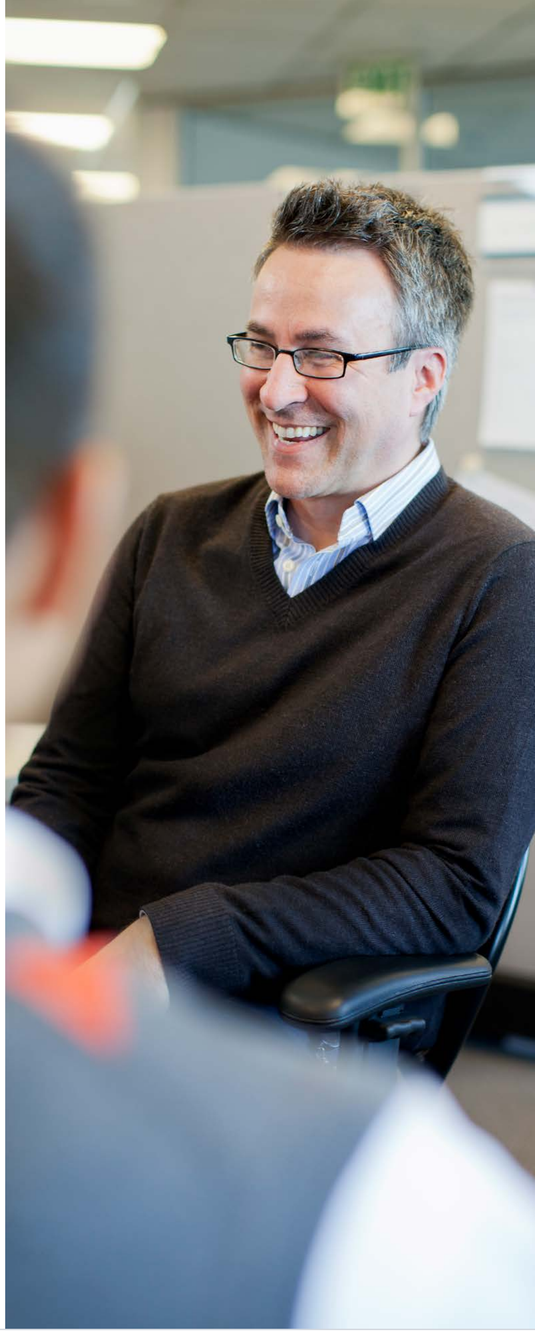
Share your crew's activities through a public-facing display and explore possible integrations with other operating agencies across city or state departments.

Step 4

Integrate Public Works data initiatives into those other agency's platforms to create a more intelligent city or state.

Step 4 is where you can start seeing the possibilities for winter operations when they are fully connected and integrated across other regional mobility agencies.

For example, think about how often you see a plow waiting for a red light to turn green, wasting valuable time not clearing the roads. Now if plow location data was integrated into traffic management systems, that plow could see a green light instead to shave a minute or two off per intersection, allowing crews to complete routes in shorter periods of time, covering more ground.



Automation makes for easier preparation

Just as a digital future for winter operations will create an abundance of efficiencies, so too does automation for helping to prep your winter fleet today. With a data-driven approach aided by telematics, you can better understand how your current assets are performing, which ones need attention and which should be replaced altogether. Track material usage easily to stay on top of service mandates while keeping in line with environmentally-friendly practices. Keep your crews and communities safe and free from liability, knowing that streets are being cleared promptly and efficiently.

Telematics is your secret weapon for maximizing the output of your fleet during winter and allows you to stay a step ahead for annual planning. **Visit us online** for more information on winter fleet management or how telematics can play a role in your winter fleet operations.

About Geotab

Geotab is advancing security, connecting commercial vehicles to the internet and providing web-based analytics to help customers better manage their fleets. Geotab's open platform and Marketplace, offering hundreds of third-party solution options, allows both small and large businesses to automate operations by integrating vehicle data with their other data.

The in-vehicle device provides additional functionality through IOX Add-ons as an IoT hub. Processing billions of data points a day, Geotab leverages data analytics and machine learning to help customers improve productivity, focus on sustainability, optimize fleets by reducing fuel consumption, enhance driver safety and achieve strong compliance to regulatory changes. Geotab's products are represented and sold worldwide through Authorized Geotab Resellers.

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