



LOSS CONTROL SERVICES

Guidance for large fleets in selecting a telematics system



Vehicle telematics is a general term that involves capturing vehicle, driver and/or cargo information and utilizing that information to manage operations, safety and maintenance.

Telematics systems vary greatly in:

- How they capture data: through a dongle, a smartphone, another device, or a combination of devices.
- What data is captured: Not all systems can collect engine data or detect distracted driving, for example.
- How often vehicle location is updated: every minute, every two minutes, when a trip has ended.
- How the data is portrayed/analyzed/displayed, and how it is made available for use by management and the driver.

When considering a telematics system, an organization should:

- Determine which functions and features are critical to their needs.
- Network with others in their industry to obtain feedback on common vendors used.
- Evaluate several vendors whose product meets those needs.
- Test/trial each system with multiple vehicles before committing to a contract.

The purpose of this guide is to assist you with identifying common telematics systems and functions that are important to your organization. It can also be used to document capabilities of systems you are considering. This guide is geared toward large fleets with light- to medium-duty vehicles. For smaller fleets, please refer to our Telematics Selection Guide – Basic.

Common system configurations

The following is a generalization of the 3 most common systems used for light- and medium-duty vehicles. While these systems may function for larger vehicles, some additional hardware may be required, and some features may not work. The estimated costs are for core features that most organizations would require

Dongle-based telematics systems

These systems have been around the longest. A dongle is plugged into the engine control module through an OBD-II port for small and medium vehicles or a 6- or 9-pin port for larger vehicles. The dongle collects engine data such as speed, braking and maintenance information.

Dongles have a built-in Global Positioning System (GPS) and often have integrated accelerometers and gyroscopes which help collect location, speed, braking, cornering and acceleration information. They also have a built-in cellular card to transmit data.

Advantages of dongle-based systems

- Because they are installed in the vehicle, they track the vehicle's location at all times, no matter who is driving.
- Because they are plugged into the vehicle's engine control module, they can collect maintenance-related information such as diagnostic trouble codes (DTCs).

Disadvantages of dongle-based systems

- You do not know who is driving.
- They are generally more expensive because each dongle has its own cellular data card and data fees.
- They generally do not monitor or track cellphone-related distracted driving.
- They do not provide post-trip driver feedback.

Costs: Service has an annual fee of \$250 to \$350 per vehicle. Dongles are a one-time cost of \$75 to \$125 and may be built into the annual fee. Vehicles without OBD-II ports require a J-bus connector that comes with a one-time cost of \$15 to \$135.

Cellphone/tablet application (app)-based telematics systems

These systems are becoming very popular. They use the GPS and built-in accelerometer/gyroscope from the phone or tablet to collect positional, speed, braking, acceleration and cornering information. They may also have a tag or other device permanently installed in the vehicle which connects to the app via Bluetooth®.

Advantages of app-based systems

- You know who is driving because it is tied to a specific phone or tablet.
- They're generally less expensive because data is transmitted through the driver's phone/tablet, utilizing that device's data plan. Tags used in the system are substantially less expensive than a dongle.
- They often track cellphone use, including talking, texting, swiping and/or cellphone movement. They may also restrict any cellphone use. Keep in mind that if you provide a driver with a locked-down company cellphone, they may still use their personal phone while driving.
- Driver apps typically provide a driver with immediate post-trip feedback regarding their driving habits: speeding, hard braking, accelerating, etc. Many include a driver safety score and gamification features such as safe driving streaks, teammate rankings, etc.

Disadvantages of app-based systems

- Because there is no connection to the Engine Control Module (ECM), engine information such as DTCs is not available.
- If the vehicle is driven by someone without a functioning app, the vehicle location will not be tracked.
- You are relying on a phone. Did the driver remember the phone? Is it on? Is the app on, if required?
- A smartphone is required. The system will not work with basic flip phones. Are drivers provided a cellphone? If not, is the organization comfortable requiring drivers to use their personal cellphone? Will the driver be reimbursed for data used, which is usually very minimal?

Costs: Service has an annual fee of \$80 to \$150 per vehicle. Tags or other required devices add a \$30 to \$80 one-time cost that may be built into annual fee. Cellphone data usage is minimal. On average, data used during 8 hours of driving is similar to the data used when downloading an MP3 song.

Hybrid Systems

These systems use both a dongle and a smartphone app, incorporating the advantages of both systems.

Connectivity

Mobile connectivity is a consideration when selecting a telematics system.

- Does the network provider have good coverage in the area where your vehicles operate? Are there any roaming fees, etc.?
- If you operate along the Canadian or Mexican border, you should discuss with providers how the system functions when the devices pick up a Canadian or Mexican network. Will you lose tracking during that time?
- 4G and 5G networks are standard now. Before selecting a telematics provider, you should investigate what platform they are using and their plans for upgrades. If they upgrade, will you be required to purchase new equipment, such as dongles?



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Telematics System Evaluation Guide — Advanced

Vendor: _____ Mobile network: _____ 4G 5G

System type (check all that apply): Dongle Tablet app Cellphone app Other: _____

Costs and contract length: _____

Can the unit be self-installed: Yes No Installation cost per unit: _____

Vehicle Applicability

- Y N Will the system work for all vehicles the organization operates? Engine connectivity typically involves an OBD-II port for light/medium vehicles and a 6- or 9-pin port for larger vehicles.
- Y N Are additional adapters, cords, etc. needed? Cost: _____
- Y N Will the algorithms for determining critical events (accidents, hard braking, accelerating, cornering) work equally well for all vehicle types? Are you able to adjust thresholds for different vehicle types if needed?

Comments: _____

Location-Related Features

Driver Identification:

- Y N Can the system tell who is driving the vehicle? Some dongle-based systems do not have this capability, reporting only at the vehicle level. Typically, identification is by driver cellphone app or key fob Bluetooth connection with the dongle or a tag.

Vehicle Tracking:

- Y N Does the system provide live tracking/location updates? Check on the frequency of location updates:
 1 minute 2 minute _____ minutes Post-trip
 Other (Describe) _____
- Y N Does the system identify which vehicles are parked and which are en route (via color coding, arrows, etc.)?
- Y N Does the system allow another person or entity (customer, supplier) to track a specific vehicle for a set period of time?
- Y N Are there special map views? Check all that apply:
 Satellite Traffic (congestion) Weather

The following are related to smartphone/tablet app systems only:

- Y N Can the system monitor the vehicle when someone without the app is driving?
- Y N Can the system identify when the system is not tracking and why? (Phone not connected, low phone battery, Bluetooth not on, etc.)
- Y N Does the system have a process for determining who is driving when multiple staff members with the app are in the vehicle?

Driver Routing, Trip Optimization and Trip Archiving

- Y N Does the system have dispatch capabilities? This is not common on standard systems.
- Y N Does the system provide GPS routing for drivers? For larger vehicles, a “Truck Routing” GPS system should be used.
- Y N Does the system track daily vehicle stops (ignition off)? This is important for some business operations.
- Y N Does the system allow you to add landmarks to the map to identify customer, supplier or other locations?
- Y N Does the system provide route optimization, learning from past trips to provide the quickest route based on traffic, etc.? This is not common on standard systems.
- Y N Is each vehicle trip archived and does the archive include start and stop times, the route, and any critical events occurring during the trip? Historical trips are available for: _____. The information can be used to substantiate deliveries or service visits made, confirm billable hours, verify employee work hours and defend against false claims.

Geofencing

- Y N Does the system track or send alerts when a vehicle goes into or out of a specific area?
- Y N Can multiple geofences be set up?
- Y N Can geofences be vehicle-specific?
- Y N Geofences can be (check all that apply): Circle Square Rectangle Any form

Unauthorized Usage

- Y N Does the system track/send alerts when a vehicle is operated outside a prescribed time of day? 8 p.m. to 5 a.m., for example.
- Y N Does the system track or send alerts when a vehicle is operated on non-workdays? Saturday and Sunday, for example.

Comments: _____

Vehicles

Maintenance

- Y N Does the system alert/report engine Diagnostic Trouble Codes (DTCs)?
- Y N Does the system alert/report excess idle time?
- Y N Does the system report the current odometer reading?
- Y N Does the system have vehicle maintenance scheduling/tracking?
- Y N Can you import vehicle maintenance/repair records?
- Y N Does the system report fuel use/economy?
- Y N Does the system have a pre- or post-trip inspection feature?

Mileage Tracking

- | | | |
|---|---|--|
| Y | N | Does the system track mileage of each vehicle? |
| Y | N | Does the system track mileage of each driver? |
| Y | N | Does the system allow a driver to designate business miles vs. personal miles? |
| Y | N | Can the system report mileage by state, assisting in fuel tax reports, etc.? |

Security

While dongle-based vehicle tracking and geofencing can help identify unauthorized vehicle use, most telematics systems do not do a good job with theft prevention and recovery because a dongle can easily be removed by a thief. Smartphone apps provide no theft protection.

- | | | |
|---|---|---|
| Y | N | Does the system send an alert if the dongle is removed, which indicates possible theft? |
|---|---|---|

Accidents

- | | | |
|---|---|---|
| Y | N | Does the system identify when an accident occurs and send an alert? This feature has limited availability in the market. |
| Y | N | Does the system generate an accident profile which provides critical accident data, such as speed, direction of movement, location of impact, force of impact, whether brakes were applied, etc.? |

Comments: _____

Driver Behavior

Critical Events: An indication of unsafe or aggressive driving, which can lead to an accident; excessive wear and tear on suspensions, tires and brakes; and reduced fuel economy on a vehicle. Critical events are typically measured in G-forces or speed change over time (10 mph/second). Does the system identify/track:

- | | | |
|---|---|---|
| Y | N | Speeding: Does the system identify when a vehicle goes over a set top-end speed – 75 mph, for example? |
| Y | N | Speeding: Does the system identify when a driver goes over the posted speed limit (PSL)? Typically, these systems have a grace level of 5 to 9 mph over the posted speed limit. |
| Y | N | Speeding: Can top-end speeds and grace levels over PSLs be adjusted? |
| Y | N | Hard/sudden acceleration? This is often associated with pulling out in front of another vehicle, sudden lane changes, etc. |
| Y | N | Hard braking? This is often associated with following too closely, approaching intersections too rapidly, etc. |
| Y | N | Lateral force/cornering? This often indicates going into a curve too rapidly, sudden lane changes, etc. |
| Y | N | Does the system have multiple-level triggering for these events? Medium or harsh, for example. |
| Y | N | Can the threshold be adjusted? This is more important for heavy vehicles. |

- Y N Does the dongle or app provide an audible warning or alert when an event occurs?
- Y N Audible warning can be turned off by (circle all that apply): Management Driver
- Y N Do trip maps indicate exactly where events occur so that drivers can be shown where they are occurring? This is useful in coaching sessions.

Cellphone Restrictions/Monitoring/Blocking: This is typically available only with smartphone apps.

Restricting/blocking use

- Y N Does the app prevent or block all cellphone use (conversation, texting, social media) while driving?
- Y N Does the app allow hands-free conversations, which are still distracting and discouraged?

Monitoring use while driving

- Y N Does the app track any movement of the phone?
- Y N Does the app track any screen interaction (dialing, swiping, etc.)?
- Y N Does the app differentiate between hand-held and hands-free use?
- Y N Does the app include length of call or texting when calculating the distraction score?

Seat Belt Use

- Y N Does the system identify when a driver is not wearing a seat belt? This feature has limited availability due to car data variations.

Driver Scorecard: The system should have a scoring feature that evaluates all driving habits being tracked: speeding, cornering, distractions, etc. The scoring should allow for quick identification of problem drivers who need coaching to improve performance. Often, a color-based system is used to place scoring into quickly identifiable groups such as green, yellow or red. Scoring can also be used in incentive programs.

- Y N Does the system have an overall driver/vehicle safety score?
- Y N Does the system have subscores for each event type, such as speeding?
- Y N Can you evaluate scores over different periods of time — by trip, daily, weekly, monthly?

Comments:

Driver App, Feedback, Rewards and Coaching

Telematics can be a powerful tool to identify unsafe driving and drivers. Improving driver behavior starts with the driver's understanding of their behavior and needed areas of improvement. Management can share this information, but the trend is for telematics systems to provide drivers with immediate feedback through driver apps. Driver safety scores, safe driving streaks, rankings compared with other drivers and other "gamification" features are now common.

- Y N Does the system have a driver's app?
- Y N If there isn't an app, can drivers access their information through a web portal? The app is preferable.

Can the driver see:

- Y N Their scores and subscores if applicable?
- Y N Scores and feedback on a trip-by-trip basis? This is a great learning tool.
- Y N Tips to improve scores?
- Y N Maintenance notices or diagnostic trouble codes (DTCs)?

Does the app have any other gamification features, such as:

- Y N Score comparisons or rankings of drivers in a team/group?
- Y N Tracking of streaks of event-free driving, good fuel economy, etc.?
- Y N Does the app have a reward/incentive feature, where management can acknowledge positive performance? Some systems allow gift cards or other incentives to be rewarded to drivers who improve their own scores or remain on top of leaderboards.
- Y N Does the system provide any types of driver coaching tools?

Comments:

Management Portal and Tools

Management Dashboard — Web Portal

- Y N Does the dashboard allow for different levels of access: administrator, manager, maintenance, etc.?
- Y N Can the vehicles be grouped by location, team, type, use, etc.?
- Y N Can drivers be grouped by location, team, role, etc.?
- Y N Can vehicles/drivers be easily moved from one group to another?
- Y N Is it easy to add/replace vehicles and drivers?

Management Dashboard — Smartphone

- Y N Has the management dashboard been optimized for smartphone viewing?
- Y N Is there a specific smartphone app?

Management Displays and Reports

Are webpages set up to easily display the following data?

- Y N Vehicle location and status. Clicking on the vehicle will provide additional info, including links to past trips.
- Y N Intuitive display of data flow.
- Y N Driver/vehicle rankings: Can you quickly identify drivers/vehicles with poor safety performance?
- Y N Team ranking and performance comparisons.
- Y N Are date ranges and sorting functions in place to organize data, see trends, etc.?
- Y N Can data be exported to common formats such as Microsoft Excel or Adobe PDF?

Management Alerts

Management can benefit from system-generated alerts, such as a text when a vehicle is involved in an accident. However, alerts can become overwhelming if a notification is sent every time a vehicle exceeds the speed limit. Some systems have moved away from alerts and are focusing on management reports within the dashboard.

- Y N Can alerts be sent to management in a text or email format?
- Y N Can alert distribution be customized based on the manager's role? For example, maintenance receives only maintenance alerts, or a terminal manager gets alerts only for vehicles assigned to their terminal.
- Y N Can alert values be adjusted? For example, can you select how many miles per hour over the posted speed limit you want to get a speeding alert?

Comments:

Are there additional features that would be needed (dash cams, electronic logging devices, timecards, nonvehicle asset tracking, etc.)?:

Key advantages of this system:

Key disadvantages of this system:

Overall Evaluation (1 to 10 scale): _____