

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.

Telematic systems vary greatly in:

- How they capture data: through a dongle, a smart phone, 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 telematic 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 towards large fleets with light to medium class vehicles. For smaller fleets, please refer to our Telematics Selection Guide—Basic.

Common System Configurations.

The following is a generalization of the three most common systems used for light and medium 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 most organizations would require.

Dongle-based telematic systems.

These systems have been around the longest. A dongle, also known as a data logger, is plugged into the engine control module through an OBD-II 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 Systems (GPS) and often have integrated accelerometers and gyroscopes which help to 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 (DTC).

Questions? Contact Nationwide Loss Control Services: 1-866-808-2101 or LCS@nationwide.com.

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 cell phone-related distracted driving.
- They do not provide post-trip driver feedback.

Costs: Service has an annual fee of \$250-\$350 per vehicle. Dongles are a one-time cost of \$75-\$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-\$135.

Cell phone/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
- Generally less expensive as 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 cell phone use, including talking, texting, swiping and/or cell phone movement. They may also lock out any cell phone use. Keep in mind that if you provide a driver with a locked-down company cell phone, 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 brakes, acceleration, 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 DTC are 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 smart phone is required. The system will not work with basic flip phones. Are drivers provided a cell phone? If not, is the organization comfortable requiring drivers to use their personal cell phone? Will the driver be reimbursed for data used, which is usually very minimal?

Costs: Service has an annual fee of \$80-\$150 per vehicle. Tags or other required devices are \$30-\$80 one-time cost and may be built into annual fee. Cell phone 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 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 network works when the devices pick-up a Canadian or Mexican network. Will you lose tracking during that time?
- 4G networks/systems are standard now for phones but many telematics systems are operating on 2G or 3G platforms. 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, like dongles?

Telematics System Evaluation Guide - Advanced

Vendor: _____ Mobile network: _____ 2G 3G 4G 5G

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

Costs & 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, acceleration, 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, only reporting at the vehicle level. Typically, identification is by driver cell phone 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 Second 2 Seconds 3 Seconds 4 Seconds 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) temporary tracking of 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 with the app are in the vehicle?

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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 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, 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? 8:00 p.m. to 5:00 a.m., for example.
- Y N Does the system track or send alerts when a vehicle is operated on non-work days? Saturday and Sunday for example.

Comments: _____

Vehicles**Maintenance**

- Y N Does the system alert/report engine Diagnostic Trouble Codes (DTC)?
- Y N Does the system alert/report excess idle time?
- Y N Does the system report 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?

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Mileage Tracking

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| 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 as a dongle can easily be removed by a thief. Smartphone apps provide no theft protection.

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

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| 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 & 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 miles per hour, 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 five to nine miles per hour 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 change, etc. |
| Y | N | Hard braking? This is often associated with following too close, approaching intersections too fast, etc. |
| Y | N | Lateral force/cornering? This often indicates going into curve too fast, 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. |

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Y N Does the dongle or app provide an audible warning or alert when an event occurs?

Y N Audible warning be turned off by: (Circle all that apply): Management Driver

Y N Do trip maps indicate exactly where events occur, so drivers can be shown where they are occurring? This is useful in coaching sessions.

Cell Phone Restrictions/Monitoring/Blocking: This is typically only available with smart phone apps.

Restricting/blocking use

Y N Does the app prevent or block all cell phone 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 handheld and hands-free use?

Y N Does the app include length of call or texting when calculating the distraction score?

Seatbelt Use

Y N Does the system identify when a driver is not wearing a seatbelt? 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. Green, yellow, red for example. 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 sub-scores for each critical event?

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 areas to improve. 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 to other drivers and other "gamification" features are now common.

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| 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 | Current driver scores and sub-scores, if applicable? |
| Y | N | Driver 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 (DTC)? |
| | | Does the app have any other gamification features, such as: |
| Y | N | Score comparison 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 that 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

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| 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

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

Management Displays and Reports

Are web pages set up to easily display the following data?

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| Y | N | Vehicle location and status. Clicking on vehicle will provide additional info, including links to past trips. |
| Y | N | Intuitive display of data flow of information? |
| Y | N | Driver/vehicle rankings: can you quickly identify drivers/vehicles with poor safety performance? |
| Y | N | Team rankings and performance easily compared? |
| 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 Displays and Reports

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.

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| 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 only receive maintenance alerts, or a terminal manager only gets alerts for vehicles assigned to their terminal. |
| Y | N | Can alert values be adjusted? For example, selecting 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 cam, ELDs, time cards, non-vehicle asset tracking, etc.):

Key advantages of this system:

Key disadvantages of this system:

Overall Evaluation (One-to-Ten scale): _____