

WHITEPAPER
TECHNICAL PAPER



Decreasing Driver Distraction:

What to Look for in Mobile Computing Technologies to Improve Safety



Decreasing Driver Distraction

There is no lack of evidence to suggest that driver distraction is the leading cause of accidents. But when managing a fleet of drivers, minimizing in-vehicle distractions is challenging, especially considering the vehicle is essentially the driver's office.

When picking the right in-vehicle computer for your fleet, selecting one that minimizes driver interaction when the vehicle is in motion is as significant a consideration as choosing one that improves fleet efficiency

The cost of driver distraction A recent study by the National Highway Traffic Safety Administration (NHTSA) and the Virginia Tech Transportation Institute (VTTI) revealed that 80 percent of crashes and 65 percent of near-crashes involve some form of driver distraction occurring within three seconds before the vehicle crash.ⁱ

Fleet drivers multitasking while driving is on the rise, spurred by the technology devices placed in their vehicles. In terms of the safety risk, one study revealed that drivers who engage in mobile texting spend about 400-percent more time taking their eyes off the road and are 70-percent less likely to stay in their lane.ⁱⁱ

Because of the preventable nature of these accidents, fleet managers rank driver safety among their top two challenges after the cost of fuel.ⁱⁱⁱ Not only is the potential loss of life a motivating factor, but so is the high cost of avoidable accidents. The industry average cost to repair a fleet vehicle involved in an accident is \$1,848. When other accident costs are included, such as loss of vehicle use, liability, workers' compensation, and other indirect expenses, the total cost exceeds \$10,000 per incident.^{iv}



\$10,000+
Cost of one fleet
vehicle accident

^AIncrease the Risk of Accidents

This table reveals which in-vehicle tasks are shown to increase the risk of involvement in a safety-critical event.^v

Task	Odds Ratio
Text messaging on cell phone	23.2 to 1
Interacting with/looking at dispatching device	9.9 to 1
Writing on pad, notebook, etc.	9.0 to 1
Using calculator	8.2 to 1
Looking at map	7.0 to 1
Dialing cell phone	5.9 to 1
Reading book, newspaper, paperwork, etc.	4.0 to 1

Minimizing The Risk

While it is impossible to eliminate driver distractions completely, it is important to minimize them wherever possible because educating drivers on the risks associated with in-vehicle distractions only goes so far. Consider this: a new study reported in the National Safety Council's Journal of Safety Research suggests drivers tend to overestimate their driving skills and underestimate their distraction caused by other activities while they drive.^{vi} More often than not it is too tempting to take a phone call or read a text message while driving since drivers do not believe it will negatively affect their driving abilities.

It is also important to recognize that the strain put on today's drivers by tight deadlines and a myriad of in-vehicle devices only increases their temptation to multitask while behind the wheel. As the VTTI study found, "each new technology aid placed into a vehicle puts an incremental burden on the driver, requiring that driver to monitor and respond to the tool."^{vii}

However, this is not to say that mobile computing devices don't have a place in the vehicle. Onboard computers provide an instant connection between drivers and dispatch, giving them real-time access to job details and schedule changes without having to take phone calls to write down information.

Job information from logon to logoff can be electronically captured, eliminating paperwork and data entry. Engine and vehicle data can be collected to improve maintenance and safety. Plus, mobile computers can provide precise navigational prompts so job sites or pickup locations are quickly found.

So what should one look for in a mobile computer to improve fleet efficiency without sacrificing safety? Here are some guidelines:

Limited Functionality When in Motion

Look for mobile computers with parameters that can be custom-changed. These in-vehicle computers can be customized so the screen is only visible when the vehicle has stopped and messaging capabilities are suspended when the vehicle is in motion. For example, some mobile computers can be set with a blocker such as a clock, map or blank screen to prevent access to the application while driving. In addition to these blockers is the option of displaying other important pieces of information, such as priority messages.

Look also for computers that offer quick keys, giving drivers a shortcut while maintaining functionality. For example, a Request to Talk (RTT) button lets drivers indicate that they need to talk to dispatch with minimum interaction with the device.

Always ensure that a chosen computer allows the suspension of all functionality if so preferred. By limiting driver interaction with the device while the vehicle is in motion, a major form of driver distraction is removed.

Ease-of-Use

Commercial mobile devices, such as smartphones, are lightweight and portable, but their small buttons make it difficult for fleet drivers to quickly send messages. Their small screens make it hard to view navigational maps or easily glance at trips and route changes without excessive scrolling.

Instead, choose a mobile computer intended for fleet use and designed for ease-of-use. These computers take into account limited vehicle real-estate, while still being large enough for easy viewing and data entry.

Look also for computers with touch screens that accommodate different lighting conditions, such as sun glare and night viewing, so that drivers can see the screen at a glance.

Customizable Navigation Prompts

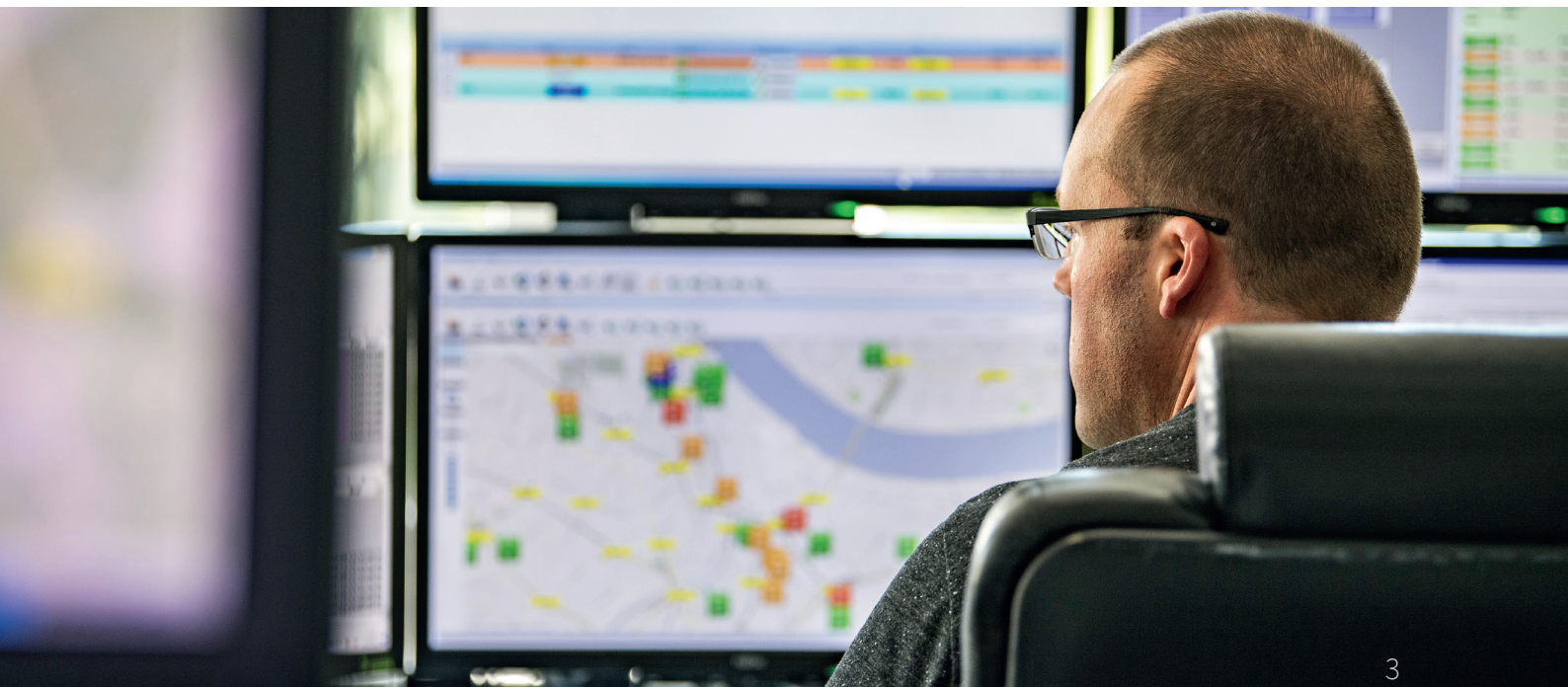
While limiting interaction with in-vehicle computers is important when the vehicle is in motion, there are times when support from the computer is necessary when driving, such as drivers needing navigational help.

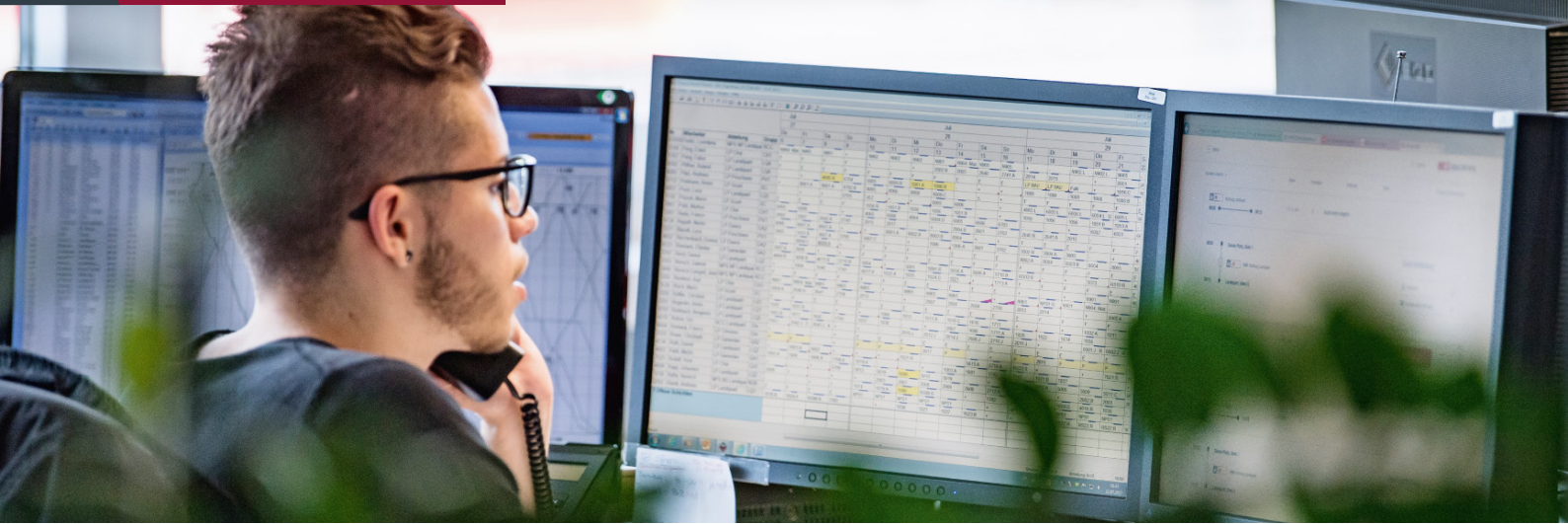
Look for mobile computers that let drivers access turn-by-turn audio prompts when the vehicle is in motion, or give drivers the ability to view an onscreen map but disable other interaction. This ensures drivers aren't trying to follow a paper map while moving, and helps them reach their destination quickly and safely.

Consolidating Job Tasks

Traditionally, fleet drivers have had to juggle a cell phone for voice and text messaging, a paper map for navigation, and a clipboard to record job details. Making these in-vehicle tasks available on a single, pre-set computing device reduces onboard distractions.

Drivers no longer rummage around for their map book or fill in details from the last job en route to the next. Job details are electronically time-stamped, captured and sent to head office when they occur, and trip changes are automatically received from dispatch. As a result, the in-vehicle environment is cleaner and less distracting.





Integrated Voice Calling

The majority of driver distraction issues in the media today are related to the improper use of cellular and smart phones.

Choose a mobile computer that offers completely integrated voice communications, eliminating the need to provide drivers with cell phones. This feature mimics a cell phone, but allows full control of cellular capabilities—from texting and calling to receiving calls—when the vehicle is in motion. Limits can also be set on who drivers are able to call.

Removing cell phones from vehicles ensures drivers adhere to corporate policy as well as legislation regarding the safe use of cell phones while driving.

Safety Considerations Beyond Driver Distraction

When looking to improve the overall safety of fleet operations, minimizing driver distraction is only part of the picture. The right mobile computer can take an organization to higher levels of both efficiency and safety. Areas to focus on include:

Speed & Idling Monitoring

Monitor driver behavior for instances of excessive speed and unnecessary idling to reduce accident risk and minimize fuel consumption. Also, by streamlining fleet maintenance programs, drivers can be warned about safety concerns on their vehicles, such as loose equipment. Historical data can also assist in the event of an accident to determine cause and prevent future accidents.

Integrated GPS

Mobile computers equipped with GPS allow dispatch and managers to see the exact location of their vehicles for faster dispatch, better fleet organization, and improved safety. If there is an accident or medical emergency onboard, drivers simply hit an emergency button on the computer and dispatch can send help to the vehicle's precise location.

Engine Diagnostics & Data Collection

Look for in-vehicle computers that track a wide range of vehicle information such as on-board diagnostic (OBDII) data, which includes diagnostic trouble codes, fuel consumption, RPM, and oil temperatures. This gives the ability to collect real-time engine data from a fleet at all times, allowing for automated safety checks, such as seatbelt use. Also, streamlined fleet maintenance programs better preempts and manages accident-influencing vehicle problems.



1 in 3
Number of road crashes
involving
a vehicle being driven
for work^{viii}

Conclusion

While technologies in the vehicle open up a world of productivity to fleet-based organizations, it is important to keep fleet drivers, and those sharing the road with them, safe by using the right technologies.

Choosing an easy-to-view, in-vehicle computer that minimizes driver interaction when the vehicle is in motion not only has the potential to save lives, but also to save company money and downtime. A mobile computer that goes beyond this to capture vehicle information and track the vehicle's precise location can further safety efforts while improving operational efficiencies.



Trapeze's rugged in-vehicle solution

Mobile computer, TrapezeRanger, is specifically designed for the fleet vehicle environment, and has a lifespan of more than seven years. This fixed-mount compact computer meets MIL STD 810F and IP 54 tests for vibration, shock and water ingress, making it fully rugged. It can also handle temperature extremes. Ranger's durable touch screen, In-Vehicle Navigation, and wireless voice/cell phone capabilities give Field Workers the tools they need to easily navigate to their next job and stay in touch with the office.

An integrated 16-channel GPS receiver and wireless modem provides real-time status and location information for fleet vehicle tracking. Connected to the vehicle, Ranger collects and reports on real-time vehicle diagnostic data and driver behaviors.

Running on Ranger is the Trapeze Mobility Platform, a sophisticated suite of tailored software applications that have been tried and tested. Mobility automates workorder management by electronically capturing things like login times and job completion details.

Ranger is designed and manufactured by Trapeze, an over 20-year veteran in fleet management solutions.

Trapeze takes care of the complexities of system implementation by integrating all your system components, from networks and software programs, to hardware and third-party products so you can start generating ROI faster. Some of Trapeze's clients have been using their rugged devices for over 10 years without needed replacement.

Sources

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Trapeze Group works with public transport agencies and their communities to develop and deliver smarter, more effective public transport solutions. For more than 25 years we have been *Here for the Journey*, evolving with our customers around the world to help them move people from point A to Z and everywhere in between.

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