Using Fleet Management to Make and Save Money

Author: William G. Wenzel, Ph.D.
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A fleet can refer to motor vehicles, aircraft, marine vessels, trains, or even groups of people—all coordinating for a common purpose. This paper will touch on the different types of fleets, with a particular emphasis on ground transportation. In doing so, this paper will capitalize on the experience of U.S. Cellular® in helping companies make and save money with fleet management solutions, while expanding the topic to provide an engaging context and strategic approach to adopting fleet management technology.

Many businesses with fleets are aware that there is technology out there that can help them manage and deploy their equipment more productively and efficiently. Yet, some business owners, fleet managers, and operations managers might not have the time to research the technology and applications in depth. Others, however, might want to learn even more than they already know. In either case, this paper will help key stakeholders make sense of the different fleet management solutions in an engaging and easily digestible manner.

First, this paper will explain the infrastructure and technology behind fleet management, and it will also highlight the many benefits of fleet management for business, including:

- Fuel savings via GPS tracking to monitor idling, speed, and other vehicle performance metrics that affect fuel consumption
- Productivity improvements with route optimization tools to ensure the fleet is deployed optimally for appointments and deliveries across the service area
- Better driver accountability with GPS tracking and geo-fencing tools to ensure drivers are taking direct routes, not using company vehicles and time for personal use, or using the vehicles in an unsafe manner
- Extending the life of a fleet vehicle with automatic repair/maintenance alerts that identify when vehicles are coming up for scheduled maintenance or are malfunctioning or out of compliance with established company policies so smaller, preventative repairs can be done before major, costly repairs are needed

Next, this paper will provide examples from numerous industries to help bring these benefits to life. Following this, we will describe the challenges of implementing and maintaining mobile fleet management programs. Finally, this paper will suggest strategies for adopting your own fleet management program, so you can capitalize on the many opportunities to make and save money for your business.
Fleet operations are critical to many businesses and require managing costs, maintaining proper service, and ensuring adequate productivity. To help achieve these goals, fleet management technology provides real-time monitoring to track a fleet’s location and status, helps reduce fuel costs by optimizing routes based on traffic and service appointments, and extends vehicle life with proactive maintenance alerts.

Fleet management technology is based on Machine-to-Machine (M2M) communication from equipment embedded in fleet vehicles to computers and mobile devices enabled by software. Technologies embedded in vehicles include Telematics, Global Positioning Systems (GPS) and Radio Frequency Identification (RFID). GPS and RFID only provide time and location data. Telematics, on the other hand, is an all-inclusive technology that often uses GPS or RFID to perform location- and time-monitoring functions. However, telematics also combines GPS or RFID with other remote vehicle diagnostics, routing, and driver productivity tools. As such, telematics provides substantially more data than GPS or RFID tracking alone, such as detailed equipment usage and health measures (e.g., usage hours, locations, fuel consumption, engine temperature, oil pressure, engine speed in rpm, torque, and engine warning lights).

Because telematics sends so much vehicle diagnostics data to users, it often transmits the data less frequently than basic GPS and RFID systems. Therefore, compared to GPS and RFID fleet management solutions, advanced telematics systems might not be as effective at real-time operations management for some fleet applications.¹

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**Key Terms**

1. **Telematics**: Provides real-time location and performance data about fleet machines via the coordination of wireless internet or satellite communications, vehicle diagnostics monitoring systems, and other devices.

2. **Global Positioning Systems (GPS)**: Provides real-time spatiotemporal data about fleet machines via satellite transmissions.

3. **Radio Frequency Identification (RFID)**: Provides real-time location data about fleet machines via a dedicated infrastructure of receivers.

Source: Said, Nicoletti, & Perez-Hernandez (2014)¹
On the front-end, user interfaces on Smartphones and Tablets provide different features that present large amounts of data in easily interpretable and interactive formats. For example, Actsoft’s Comet Tracker system presents users with detailed live maps, adjustable geo-fences that track visits to specific locations, fuel purchase reports, and service reminders.²

On the back-end, complex algorithms drive data collection and interpretation of real-time diagnostics, such as route optimization. UPS provides a stellar example of this kind of sophisticated route optimization with its On-Road Integrated Optimization Navigation (ORION) system. It combines data from customers, drivers, and vehicles to reduce the miles driven on delivery routes. The ORION system took 10 years to develop, but the company expects to reduce the distance driven on its routes by 100 million miles per year, saving substantial time and money. With its advanced routing system, UPS expects to reduce CO2 emissions by 100,000 metric tons, saving 10 million gallons of fuel, and $300 million dollars per year.³

Improvements in data transfer and storage capacities bolster the rise in computing power for fleet management technology. As 4G technology, Wi-Fi hotspots, and real-time cloud computing continue to proliferate, the potential for enhancements to fleet management technology also spreads. These advancements have exciting implications for businesses of all kind.

A remarkable amount of computing power underlies the variety of connected solutions that contribute to successful fleet management.
For businesses that manage fleets, equipment is one of the primary, controllable, operational cost drivers. In order to optimize equipment spending and make timely and meaningful strategic decisions, businesses must measure fleet usage. A key component of comprehensive fleet management is an integrated and connected fleet management technology program.

“In the U.S. alone, more than 12 million fleet vehicles hit the road every day.”

There are many benefits of connected fleet management systems for business. Those benefits include:

Vehicle maintenance and safety

“Optimizing maintenance and repair practices can lead to a 10-20% reduction in maintenance expenses, and result in immediate cost savings for your agency.”

Fleet management systems contribute to substantially less vehicle downtime by providing managers more information to create better preventative, predictive, and breakdown maintenance strategies. These systems also help improve fuel economy by 4% - 10% by keeping managers informed about when to inflate tires, get oil changes, and swap out worn parts. At the same time, fleet owners are able to get the most out of warranties by scheduling warranty maintenance issues in a timely manner before warranties have lapsed. All of these maintenance benefits ultimately lead to higher resale value of fleet vehicles. They also allow fleet managers to better meet industry and government regulations for safety and emissions. Finally, well-maintained equipment is safer for drivers to operate, so employees are happier and more productive knowing they can do their job effectively without worrying.

Efficient operations

One of the biggest benefits of fleet management technology is real-time route optimization. Real-time routing lets companies make more deliveries or complete more jobs per driver per day. Route optimization also contributes to increased fuel economy of fleets by making drivers more accountable for reducing speed and decreasing idling time.

In addition to saving your company money, the efficient operation of fleets can have a positive impact on the environment. It is no secret that fleets contribute substantially to global air pollution from fuel emissions, so stakeholders should decide on management practices that minimize the negative effects of their fleet on the environment. Additional benefits of efficient operations include automating the management of assets and protecting inventory. These advances allow companies to save on administrative paperwork and office support.

Fuel Economy Statistics

- A company spends an average of 20 cents more per gallon of gas for every 5 miles per hour a vehicle drives over the speed limit.
- Excessive speeding may decrease fuel economy by up to 20%.
- An hour of idling equals approximately 25 miles of driving.
- Small fleets of 25 vehicles can save nearly 600 gallons of fuel a year by reducing their idling time by just 15 minutes a day.
- With comprehensive fleet management, your agency can quickly realize an 8-12 percent improvement in fuel economy.
Staff management
An important feature of fleet management systems is the ability to track driver performance and improve driving behavior.\(^7\) As a side effect of safe driving, companies can lower insurance costs.\(^{14}\) Tracking driver behavior also decreases the likelihood of fuel theft.\(^7\)

Dynamic labor reassignment is another benefit of fleet management systems. In a warehouse, this might mean allocating lift truck drivers to where they are needed.\(^5\) This could also mean reassigning the appointments of service technicians in the field for any number of reasons, including an increased number of jobs added to the schedule or a technician calling out sick.

Customer service
Each of these benefits contributes to reliable scheduling and speedy pickups/deliveries, which is convenient for customers.\(^{12}\) Plus, when companies save money, it is sometimes possible for them to pass along a portion of those savings to their customers. In total, better service and lower prices increases the likelihood of getting new customers and winning repeat business.

Big picture economics
Fleet management technologies offer some companies opportunities to conduct streamlined analyses of location-based demand as well as figure out ways to simplify their overall distribution networks.\(^{16}\) With these specialized tactics, organizations can do a better job of forecasting future demand and optimizing supply. When combining these supply and demand benefits, a company puts itself in the position to make and save more money.
Fleet Management Case Studies

In this section, we take a glimpse into key industries that have benefited from adopting fleet management technology. There are many possible applications of fleet management systems to make and save money, and we highlight a few in these industries to represent the overall potential.

Transportation

Commercial vehicles transport people on roads, railways, waterways, and airways. Fleet managers in the transportation industry can benefit from technology systems in many different situations. Here are examples of a few of those benefits related to ground and air travel.

Ground

A Texas-based “demand response” transportation company needed an all-in-one device that would track mileage, monitor driver behavior, and provide maintenance reports and reminders. They had many vehicles on the road, and customers depended on their services to get to jobs, go shopping, go to the doctor, visit friends, and perform many other daily tasks and activities. Therefore, it was essential that all the vehicles were well maintained and driven safely. The company also wanted to prevent drivers from exploiting vehicles for personal use.

To solve their need, the company adopted Actsoft's Comet Fleet software. The solution enabled them to ensure safe driving of well-maintained vehicles, driver accountability, and operational efficiency. For example, they were able to easily identify the locations of all their fleet vehicles, review idle and stop times, speed up dispatching, and improve time and location accuracy of pickups and drop-offs.

Since adopting the new technology, the company has increased efficiency by 50% and saved hundreds of dollars each month.10
Another way fleet technology can help a company is with tire maintenance. Tire maintenance of trucks and trailers is one of the most important jobs of a fleet manager. Fleet management technology can help keep track of tire pressure, rotation and alignment maintenance scheduling, as well as speed, which contribute to overall tire health.

Driver safety training is another important benefit for transportation companies. Telematics has the potential to isolate which current drivers need special attention and training by assessing their driving skills. In addition, the same kind of analysis could be used to assess potential hires to see if he or she would be an asset to the company as a driver.

Alternative fuel options have become more realistic because of fleet management systems. Fleets that include alternative fuel vehicles used to have to stay close to dispatch, so drivers could find appropriate fueling stations. However, due to the proliferation of these fleet management systems, long-distance routing and fueling stops can be planned in advance of a journey. Thus, drivers can be confident that they will be able to re-fuel their alternative fuel vehicles when on long trips.

Air

Many of the benefits we have been discussing for ground vehicles holds true for aircraft. In particular, the mechanical functioning of engines is of utmost importance. With telematics, data such as gas path, vibration, and oil parameters can be used in real-time to rank engines and plan appropriate maintenance schedules. Gas path parameters reflect changes in engine performance in core components, such as compressor, combustion chamber, and turbine; vibration parameters indicate sudden changes in the state of an engine due to corrosion, worn seals, dirt build-up, as well as many other issues that would warrant maintenance; oil parameters tell a lot about the health of engines. Additional possibilities for analysis include the rate of oil consumption, oil debris analysis, and oil quality, which allow engineers to assess and detect any potentially abnormal situations. Each of these factors contributes to maintaining a more productive fleet of aircraft, with less downtime, and a greater number of safe trips between repairs.
The baking industry has benefited from implementing fleet management technologies. The baking industry has experienced pressure to create a greater number of SKUs to fill new demand for healthier options. In addition, the industry has seen pressure from decreased shelf space in grocery stores and the need to make more frequent smaller deliveries of fresh products. Fleet management systems help to coordinate these frequent deliveries so that customers are happy. Bakeries use route optimization to help plan deliveries, improve delivery efficiency, and save on fuel costs. At the same time, some systems are capable of sending real-time estimated time of arrival (ETA) updates to customers. The ETA estimates enhance efficiency even further by ensuring that customers are ready to offload deliveries in a timely manner, wasting less time for drivers. Bakeries can also use electronic proof of delivery (POD) forms to streamline record keeping.

Whereas bakeries usually deliver to other businesses, FreshDirect delivers groceries directly to customers at home in the New York metropolitan area. Due to the implementation of real-time driver monitoring, FreshDirect reduced unsafe driving, such as harsh braking, excessive acceleration, and speeding by 98%. They have also been able to ensure food safety and quality by effectively monitoring the refrigeration temperature in their trucks in real time.

Rental fleets (e.g., cars and construction vehicles) pose particularly challenging problems for fleet managers. Users of rental fleet vehicles often do not feel accountable for their driving behavior. However, telematics fleet management systems allow fleet managers to assess in real time how vehicles are being used. The systems track whether a vehicle is being used within the agreed upon locations and for the agreed upon purposes. These systems also help prevent vehicle thefts. Finally, rental fleet managers are able to maximize vehicle uptime by getting a clear picture of usage, as well as detailed measurement of various vehicle functions. Each of these features of fleet management systems for rental fleets improves the bottom line.
Home Healthcare

The U.S. Department of Veterans Affairs (VA) operates the largest integrated healthcare system in the country, and their available services include home healthcare visits. To aid such a large healthcare system, the VA manages an extensive fleet of vehicles. According to the VA’s 2015 fleet management and budget report, the organization is expanding their use of telematics solutions to all appropriate vehicles in the fleet. The report cites previous successes with telematics solutions that have collected vehicle data, provided valuable feedback to drivers, and effectively monitored usage. Presumably, these benefits help the VA maintain their fleet, save money, increase safety, and improve their support for veterans.

Agriculture

Tractors are the status symbol of the agricultural industry. Fleet management technology can be applied to tractors in the same ways it can be used for other types of fleets. For example, on-board diagnostics provide functional data about the health of tractors and other farm equipment. It also allows farmers to better allocate their available equipment to different land work. When planning how to most effectively allocate farm equipment for the various jobs that need to get done, fleet management technology for agriculture is able to factor in the capabilities of fleets that include a variety of different equipment. For example, it accounts for turning radius, speed, tank capacity, and the paths of crops. Taken together, these factors help optimize routing for various farming functions (e.g., plowing and spray treatments).

Field Services (e.g., HVAC, Electricians, Landscapers, Delivery Services, Snow Removal Services, and so on)

Field services companies can benefit greatly from adopting a fleet management solution. They can reap almost every money-making and cost-saving reward these technologies have to offer. For example, they rely heavily on fitting as many jobs into a technicians shift as possible, so route optimization is advantageous for efficient dispatching. In addition, companies are able to monitor driver behavior and idling of service vehicles in order to minimize fuel waste and save money.
Challenges of Using Fleet Management Technology

Although the previous case studies demonstrated the potential benefits of adopting fleet management solutions for business, the benefits do not come without challenges. When a company considers implementing a new fleet management program, they must overcome these issues to maximize the benefits that fleet management has to offer.

Privacy
A major concern by fleet managers and drivers is that fleet management technology is used to spy on them. However, this is not necessarily true. Fleet management technologies empower drivers to perform better with real-time feedback based on speeding, idling, and hard breaking. This allows drivers to change their behavior on the spot, without the intervention of their employers. Further, on-board systems monitor vehicle issues to ensure that vehicles are properly maintained and functioning safely.

Cost
Price is always a concern when implementing new technologies. However, fleet management technologies provide so many potential opportunities for a substantial return on investment that companies should consider the long-term cost of not adopting a fleet management solution.

Technological Issues
Fleet management systems are capable of providing many different kinds of data. Therefore, companies run the risk of experiencing information overload. They must also maneuver the integration of these new solutions with old software.

Organizational Issues
In order to adopt new fleet management systems, companies must contend with several organizational issues, including top executive support, reorganization of company structures, team member responsibilities, and workflows. They must also train employees and learn to collaborate with specialized consultants that can help successfully introduce new fleet management systems.

Execution Issues
Implementing new technology always involves execution challenges that must be addressed. Keep reading for suggestions on how to successfully adopt a fleet management system for your business.
The theory of fleet management for business begins with a company making the decision between building their own fleet and outsourcing their transportation requirements. When outsourcing, a company can choose between “...many small-size carriers...a few mid-size carriers or logistic service providers...and a single big-size logistic service provider.”

There are advantages and disadvantages to each method that extend beyond the scope of this paper but, no matter which option a company chooses, they must consider the role of fleet management technology in making and saving money. If a company chooses to build their own fleet, they should equip that fleet with the latest fleet management technology to help them make and save money. Telematics systems can be built-in by vehicle manufacturers or provided as after-market additions. If a company chooses to outsource their transportation needs, they should be careful to select a carrier that uses the latest technology and passes along any potential savings to their customers.

When choosing a fleet management system, you must carefully consider your specific goals. If you desire detailed information about the internal functioning of your fleet machines, as well as location and direction information, then your best solution will probably be telematics. Those systems can be supplied by manufacturers of the equipment or added by third-party vendors. If you would prefer only more basic updates about traffic patterns and the likes, then you might be more inclined to choose a leaner GPS locating system.

Although connected fleet management technologies are capable of extracting many different kinds of data, like travel speed, ETA to next destination, job progress, time on site, and driving events, it is of utmost importance to derive meaning from that information. Data must be integrated into specific tactics that will improve the fleet management process. For example, a company might use driving data to enhance employee-training initiatives.

To help you adopt a fleet management solution for your business, consider several strategic approaches that we have outlined on the following pages.

Data must be integrated into specific tactics that will improve the fleet management process.
A. The National Surface Transportation Safety Center for Excellence (NSTSCE) suggests:

1. Think about how you will integrate the solution within your business operations. For example, you must ask yourself what kind of help you will need to implement your solution. Are you more concerned with mapping and routing or maintaining your fleet? What specific fleet management capabilities are you most interested in using?
   - Location-based data: instant or real-time vehicle location, vehicle routing or tracking, route or incident mapping, turn-by-turn directions.
   - Safety data: acceleration rates, harsh braking, speeding, lane tracking, camera recording, geo-fencing.
   - Diagnostics data: maintenance alerts, vehicle code alerts, eco-driving alerts, fuel usage, CO2 emissions management.
   - Communication features: in-vehicle messaging, two-way messaging, e-mail or SMS alerts, other communication-related reporting like the tracking of stops through an input system.
   - Interactivity: draws upon social media content for mapping (e.g., status updates, navigation to a location or photo found online).

2. Determine how you would like to use the solutions. Consider whether you have any specialized business needs, if you want mobile access to reports and alerts, if you want to communicate with drivers, and what type of staffing solution integration you expect. You should test out different options and find the one that is most comfortable for you.

3. Consider the location of your business activities, so you can choose the right provider that will meet your needs.

Source: National Surface Transportation Safety Center for Excellence (NSTSCE) (2012)

B. Actsoft highlights factors to consider in building a return on investment (ROI) model and provides a calculator to help companies see their reduced costs and increased revenue associated with adopting an effective fleet management solution.

The ROI factors that you should consider include:

1. Overtime: You save with less overtime each day.
2. Mileage: You save with fewer off-route miles driven per day.
3. Data Entry: You save when your back office spends fewer hours each day entering data.
4. Scheduling: You save on hours spent scheduling.
5. Efficiency-driven Revenue: You make more money when employees can do extra jobs each day.
6. Total Potential Savings: This is the sum of all your savings, plus additional revenue from higher employee productivity. It adds up!

C. Simply put, you should absolutely build your ROI model to understand how your investment will contribute to the bottom line, find a vendor that will tailor a solution that's right for your fleet, and invest in good hardware.
Fleet management technology involves highly advanced computing that generates extensive amounts of data, which businesses can use to help make and save money. To help companies make and save money, fleet technologies provides key stakeholders with different opportunities to improve operations, maintain vehicles, enhance safety and driver performance, manage and train staff, serve customers, and analyze the big economic picture in their area.

To illustrate those benefits, this paper described a variety of real and hypothetical case studies in the industries of transportation, retail, healthcare, agriculture, and field services. Many of the solutions described in these case studies can be applied to other industries, as well. While the case-study applications were all success stories, fleet solutions do not come without several challenges. Therefore, this work touched on some issues that companies might face when implementing fleet management technologies.

However, if organizations plan accordingly, they should be able to overcome these challenges to take full advantage of the opportunities offered by fleet management systems. To help in that process of successful implementation, this paper provided a number of concrete strategies for adopting the right fleet management system for your business. This paper will help you can turn these strategies, along with a deeper understanding of fleet management technology, into effective action that will allow you to achieve your goals of making and saving money by optimizing the potential of your fleet.

Conclusion
References


References


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