Transport Technology for Nonprofits: Maximize Benefit, Address Potential Harm

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If your nonprofit transports the people you serve, it's time to step up your knowledge of technology.

The array of tools marketed to help organizations transport people safely and efficiently exploded in recent years. Options range from telematics to vehicle sensors, cameras, interactive dashboards, and autonomous technologies such as parking assistance. Advances in electric vehicles and fuel efficiency provide new opportunities to make your fleet greener.

But to determine what options are right for your organization, you'll need to consider much more than cost. New technologies raise concerns about privacy, cybersecurity, equity, and much more. As your nonprofit evaluates its transportation options, here are some things to think about on the technology front.

Vehicle Technology: What's on the Market

If your nonprofit has shopped for new vehicles in recent years, you've likely encountered the term telematics. The term combines two sciences—telecommunication, or exchanging information through telephone lines or wireless connections, and "informatics," computer system processing to store and retrieve data. Telematics allows organizations to receive and examine data about their vehicles, with the aim of making their systems more efficient.

Telematic systems center on mobile devices that transmit data from the field to a server. The data typically includes GPS location information and other details from a vehicle's diagnostic system. Nonprofits might expect to pay $25 to $45 per vehicle per month for a fleet management system that includes these features.

Organizations can use telematics data to observe driver performance and coach drivers on safe driving behaviors. Nonprofits can also identify areas of potential waste in their fleet, such as drivers idling in traffic, and revise route plans to maximize efficiency. They could monitor vehicle health and adjust their preventive maintenance plans. Nonprofits could tap into telematics to help drivers avoid bad weather and traffic jams, or sync the information with payroll systems to eliminate manual hour entry by drivers.

Your organization might not be the only one that seeks telematics data on your fleet. Insurance companies increasingly use telematics to evaluate risk in driver behavior as a data point for underwriting. Telematics data

could also be used to determine fault after an accident.

A telematics system typically consists of many pieces. Vehicle sensors measure changes in your vehicle's experience, from temperature and lighting to sound, pressure, and movement. Sensors can connect with other devices to communicate that data to the cloud, where dashboards and online management systems can access the information. The sensors can alert drivers to mechanical issues with vehicles, or track movement or the opening of doors to guard against vehicle theft, according to Samsung.

Monitoring vehicle performance has the potential to make fleet maintenance more efficient and predictable. Systems can provide reminders for preventive maintenance or alert organizations to an issue before a dashboard warning light would typically do so.

Telematics also brings a variety of options for parking assistance. Commonly available options now range from steering for the driver to completely taking over parking when the driver steps out of the vehicle, according to J.D. Power. A common option handles steering when a driver parallel parks. The driver uses the accelerator and brake pedals to move the car and shift gears. This type of technology can also find a properly sized space for your vehicle. In some cases, the technology offers the driver assistance to exit a parking space.

Some systems take full control of a vehicle for both parallel and perpendicular parking, while the driver activates the technology and remains alert to take control if necessary. Other systems let the driver remotely operate parking assistance technology while standing outside the vehicle. These systems can help navigate the bumps of parking, but they typically take time to operate, which can cause delays. And J.D. Power notes that if the car hits an obstacle, another vehicle, or a pedestrian, the vehicle owner will be liable for damages, not the automaker or the technology provider.

Many telematics systems integrate backup cameras and dash cams. Backup cameras (often called rearview cameras), mounted on the outside rear of a vehicle, record the road behind a driver. Typically used with an in-cab monitor, they can help drivers see objects or people when moving in reverse, and the cameras' footage can be used to gather information after a "fender bender" or rear-end accident. Dash cams, installed in the cab of a vehicle, record footage of the road ahead or activity inside the cab.

You're probably already thinking about the safety, security, and ethical considerations these technologies raise. We'll return to this important subject, but first let's explore how advances in electric vehicles and fuel efficiency are impacting fleet management.

Plugging In: What You Need to Know About Electric Vehicles

By 2030, electric cars will represent 60 percent of vehicles sold in the United States, China, and the European Union, according to the International Energy Agency. As electric cars and hybrid gas-electric vehicles grow in popularity, they bring fleet managers new opportunities and challenges.

Your nonprofit will incur much lower fuel costs if you purchase electric or hybrid vehicles, and may be able to take advantage of electric vehicle incentives. EVs have fewer moving parts that can break down. But battery technology comes with its own costs and logistical considerations. Here are some things the U.S. Department of Energy recommends considering as you evaluate whether to purchase electric, hybrid, or gas-powered vehicles for your fleet.

- How far will your nonprofit drive its vehicles?

Will vehicles mostly be driven on highways, or in stop-and-go city traffic? A battery-powered electric vehicle may be ideal for drives of 100 to 300 miles a day, with the option to plug in at night. Electric vehicles could exceed that mileage range if they have additional charging options during idle periods. Otherwise, a hybrid vehicle could be a better option.

- What environmental factors must your vehicles stand up to?

Will they be driven in extreme cold or heat for parts of the year? What terrain will they have to cover—mountainous areas, unpaved roads?

- How much heating and cooling use do you expect for your vehicles?

How much would that draw down a vehicle battery? Will you need optional auxiliary power or heating and cooling units that run on diesel or another fuel?

- What kinds of electric vehicle charging options exist on the typical routes your vehicles will travel, and how much do they cost?
- What is the dealer's battery replacement policy? How much will batteries likely cost, and how will battery disposal be handled?
- Are enough of the vehicles available to meet your needs? What vehicle maintenance and support options exist, and can the vehicles be serviced locally?
- Will your organization need to invest in charging equipment?
- Could your organization take advantage of federal, state, or local incentives for purchasing electric vehicles?

Fleet management for electric and hybrid vehicles brings new considerations around telematics. Charging electric and hybrid vehicles takes time, and it's important to consider how to avoid long waits for your vehicles at charging stations. Remote monitoring of battery charge status and charging history can help with this. You may also want to monitor how batteries are being charged, to ensure charging methods don't degrade battery life. Keep a close eye on vehicle mileage to help you understand how variables like weather and altitude affect your electric vehicle's charging range.

Experts urge fleet managers who use electric vehicles to choose a telematics platform that's versatile and works independently of your hardware. If your fleet includes different brands of electric or hybrid vehicles, or hardware from different manufacturers, select a telematics platform that's not tied to any hardware manufacturer. Forbes recommends seeking a platform that has an "uptime" of more than 99.5 percent to indicate performance reliability.

Ethical Concerns with Vehicle Technologies

Artificial intelligence helps power many of the advances in vehicle technology. Machines or processes that use AI respond to input similarly to the way humans would. AI systems can learn and adapt based on the information they gather, according to the Brookings Institution.

When most of us consider the ethical implications of artificial intelligence in vehicle technology, we might think about scenarios like this one posed by UNESCO: "Imagine an autonomous car with broken brakes going at full speed towards a grandmother and a child. By deviating a little, one can be saved. This time, it is not a human driver who is going to make the decision, but the car's algorithm. Who would you choose, the grandmother or the child? Do you think there is only one right answer?"

Nonprofits don't yet have the option to purchase fully autonomous cars. But they can purchase park assist technologies that take some of the decision-making of driving out of the vehicle operator's hands, presenting new safeguards and very real new safety concerns.

And nonprofits have many options to purchase technologies that use algorithms to monitor human behavior, like what a driver does in the cab of a vehicle, how long they stop, or how they brake. Dash cam footage could help exonerate a driver who was racially profiled and unfairly accused of causing an accident. Dash cam footage could also be used to find a reason to fire a driver—a reason that's not equally applied to drivers of other races, genders, or abilities.

As you introduce more technology into your nonprofit's vehicles, you introduce new ways to keep your staff and the people you transport safe. You also increase the risk of violating an individual's privacy, introduce new distractions on the dashboard of your vehicle or in the cab, and give cyberhackers more access portals. You introduce more tools—algorithms—that make decisions that may be based on biased data and could discriminate against marginalized individuals and groups.

Here are some ethical questions posed by Automotive World that can help you evaluate your nonprofit's vehicle technology options.

    - How do the systems you're evaluating collect data?

How diverse are their data sources and how relevant are they to the context in which they are being deployed?

How do systems use the data? Where do they store it? Who can see it? How does it benefit drivers, passengers, and the organization? Who could this data harm and how?

- Can you limit the data your nonprofit collects?

Could you collect only statistics, without gathering any personal information or identifiable data? Can you avoid sending data to the cloud? Can you ensure videos that don't involve accident footage aren't archived?

Other strategies to set ethical boundaries around the use of artificial intelligence in your fleet:

- Ask vendors what safeguards they have in place to guard against cyberbreaches of their technology.

Consider whether the safeguards match the sensitivity level of the data the vendors' systems would collect and store.

- Ask yourself: What pain point do you want AI to help solve in your fleet management?

Choose one and monitor it closely before expanding your use of AI. Beth Kanter, co-author of The Smart Nonprofit: Staying Human-Centered in an Automated World, shared this strategy on a recent webinar. Kanter urged nonprofits to consider: Where is that place in your organization where you don't have enough time to do something important? How could artificial intelligence address it? What should the machines do? What should the people do? What safeguards will you put in place to minimize harm? Focus on that one potential use of AI and test it with clear boundaries before you go any further.

- How can you ensure that no technology is used or deployed in your organization without human oversight?

Humans should carefully evaluate any use of AI in your organization before, during, and after implementation, and they should have clearly defined goals for doing so.

Go Beyond the Binary

In just the past few months, the conversation around artificial intelligence and its risks has exploded. Many enthusiasts tout AI as a way to eliminate boring but necessary tasks that distract organizations and people from what really matters. Skeptics focus on AI's very real capacity to do harm. To be responsible consumers of vehicle technology, your organization will need to do its research and think through the benefits, problems, concerns, and opportunities AI poses for your nonprofit's vehicle operations.

At nonprofit technology organization NTEN's annual conference in April, Dr. Safiya Umoja Noble, faculty director of the University of California at Los Angeles Center for Race and Digital Justice, urged the audience to go beyond the typical analysis that artificial intelligence is a tool that can be used for good or evil.

Technology is a social, economic, and political practice, Dr. Noble said. When we understand that, we can ask different questions about technology. That, she said, can help us understand what we gain and lose from current technology practices, and how we need them to change.

Nonprofits may feel an urgent need to invest in the latest automotive technology for their organizations, fearing that even what's on the market now will be obsolete in no time. But we urge you to apply the same type of analysis to telematics and other uses of transportation technology that you would in launching a new program. Who could benefit and how can you maximize those benefits? Where might your organization's use of vehicle technology cause harm? How can you avoid or mitigate that harm? What potential challenges is your organization equipped to navigate and which ones are beyond your scope?

Responsibly deployed technology can keep your nonprofit and the people you serve safer. It can make your organization more environmentally responsible and more informed. That takes time, thought, and care. Don't skimp on it—and don't rush into investments that could harm more than help.

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