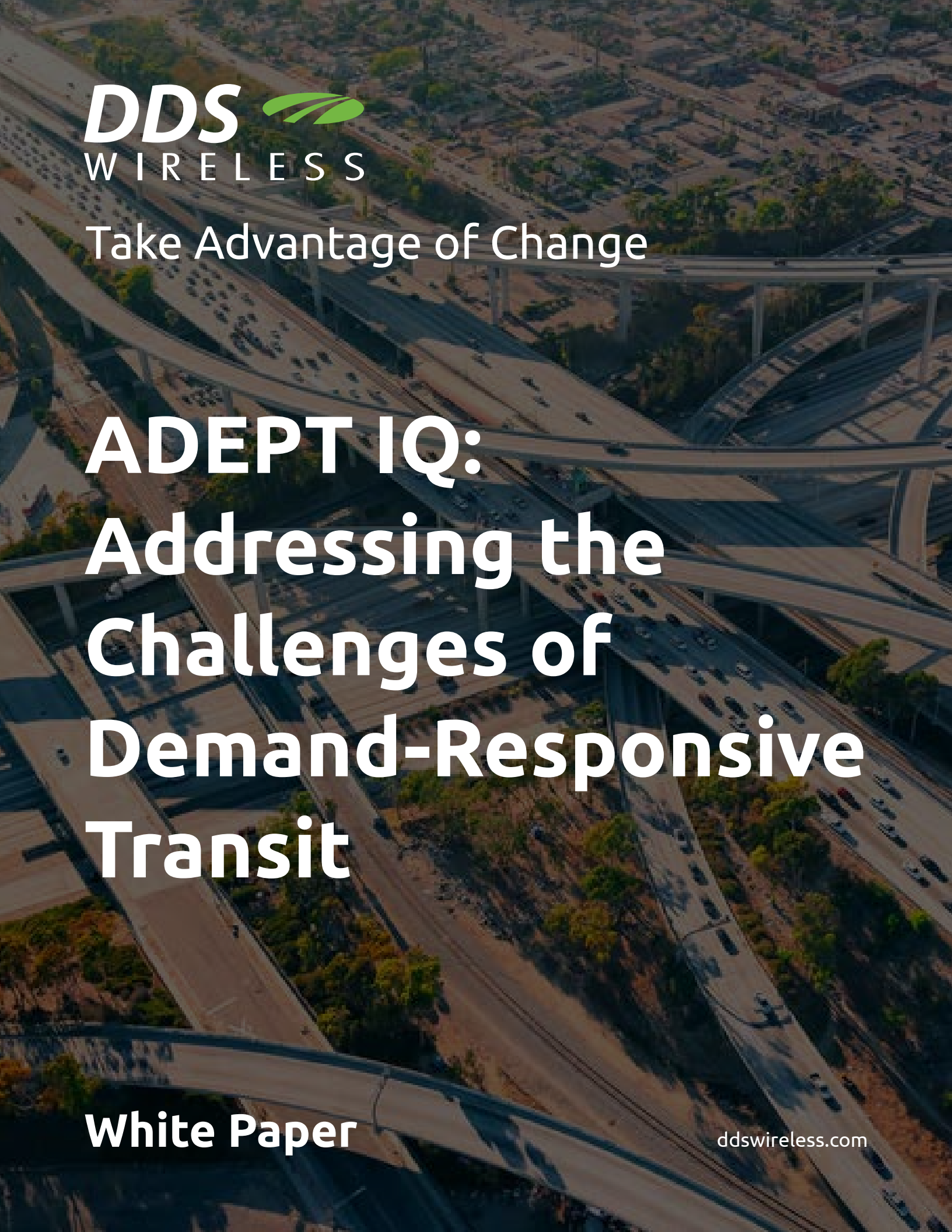

DDS WIRELESS

Take Advantage of Change

ADEPT IQ: Addressing the Challenges of Demand-Responsive Transit

White Paper

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Rising Demand

Transit is changing. With increased consumer demands, higher expectations for technology, rising costs, stagnant budgets and a widening playing field thanks to alternative mobility options like ride hailing, transit agencies face a challenging time. And agencies providing demand-responsive services are experiencing some of the biggest challenges in terms of rising costs per trip and providing an optimal passenger experience.

To address these challenges, DDS Wireless has introduced ADEPT IQ, a scheduling and dispatch system designed to solve the unique problems faced by paratransit and demand-responsive transit (DRT) providers operating in a modern context. Using real-time data, cloud-based infrastructure, integration with outside agencies and more, ADEPT IQ can help transit agencies achieve that ultimate transit brass ring: increasing the number of trips per day on a set budget while offering efficient service to an evolving ridership.

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Public Transit is On the Move

The world of public transit, and mobility as a whole, is set to experience profound changes, the likes of which have not been seen since the introduction of the automobile. New technologies, such as the autonomous vehicle and transit apps, as well as societal shifts in both the way we move and our anticipated passenger experiences, are set to revolutionize the way that transportation is provided. Transit agencies need to stay on top of these changes and be ready to respond if they hope to remain relevant and provide the level of service their passengers expect. DDS Wireless aims to ensure your agency is able to provide more of the best to your passengers while rising to the challenge of a new transportation landscape.

ADEPT IQ Helps You Keep Pace

ADEPT IQ was built to help transit agencies respond to the challenges associated with modern transit. Here, we lay out how ADEPT IQ is structured to help today's transit providers address five main hurdles in the transportation landscape. Whether your organization is struggling to meet rising technology expectations or maintain flexibility in the face of real-time changes and disruptions, the right dispatch software solution will allow you to improve day-of-service performance, leverage real-time and historical data to optimize routes and plan for the future of your business.

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The First Hurdle: Increased Demand

Societal shifts have changed the way the people travel. While independence and effective transportation have not always been offered to people living with disabilities, governments and agencies are mandated to provide equitable, diverse opportunities for people of all abilities. People living with disabilities are right in demanding uninhibited access to transportation, and are supported by the Americans with Disabilities Act (ADA)[1]: these are passengers not willing to forego careers, socializing and everyday activities due to substandard service. As urban centers experience population booms[2] and the number of passengers with disabilities increases, paratransit agencies can expect to see passengers asking for the best in their transit experiences.

The population is also aging, which is putting more demands on demand-responsive transit. In the United States alone, the number of adults aged 65 and over is projected to more than double by the year 2060[3]. Seniors are also staying active for longer, and those with driving limitations require specialized transportation in the form of DRT to keep up with their busy lifestyles.

1 https://www.ada.gov/2010_regs.htm
2 https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html
3 https://www.prb.org/aging-unitedstates-fact-sheet/

The Solution: Efficient Trip Planning and Capacity Forecasting

ADEPT IQ is equipped to enable DRT agencies to meet the rising demand for transportation head on, while maintaining—or even lowering—costs.

In the short term, ADEPT IQ can meet increasing demand for transit by collecting data and employing efficient scheduling strategies. For example, the system can take into account agency strategies such as logical pickup and drop-off order and travel direction, which prevents backtracking. By using this logic-based approach, trips per hour will rise and ride time will decline, allowing agencies to meet a higher number of ride requests without needing to add extra vehicles or drivers. Eligibility-based booking is another approach to increase efficiency, ensuring that only eligible passengers are receiving the service.

Over the long term, ADEPT IQ can help transit agencies plan for the continuing influx of transit users. Built-in capacity planning looks at trends and patterns that are occurring day-to-day and recommends optimization based on the local agency's unique goals and scenarios. This capacity includes the evaluation of current contracts to determine which vehicles to use and when to open new routes, analyzing historical data and trends to determine where new demand will arise and more.

Overall, ADEPT IQ is equipped to respond to changing demands using strategic and cost-saving solutions.

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The Second Hurdle: Higher Expectations for Technology

Today's transit customer expects convenience at their fingertips. Where in the past, paper schedules and unspecified waits were seen as common features of a transit journey, new forms of transportation are emerging to disrupt this paradigm. Apps that track buses in real time, plan multi-modal trips and book available car share vehicles are the norm. Solutions like Transit, Google Maps and Whim have set the standard of putting intuitive mobility in the passengers' hands, and paratransit passengers should not be an exception when it comes to the demand for technology-based, convenient tools to get from point A to point B.

The Solution: Passenger Apps and Integrated Mapping

Because of the growing availability of responsive apps and software, paratransit passengers are more likely to expect equally seamless experiences from their transportation provider. ADEPT IQ can bring your DRT offering into alignment with what is already happening in the technology space by offering timely, cutting-edge updates to your existing systems.

One example of such a tool is ADEPT IQ's passenger-facing self-service app. The app empowers passengers to manage their own transit using an intuitive interface. Users have the ability to view trips, vehicle locations, estimated time of arrival and the number of stops before their pickup or drop-off. Passengers can also book new trips, cancel existing ones, add comments on their trip and rate their experience. The app is fully customizable by the transit agency, giving you the ability to increase or scale back the level of control that passengers have depending on the needs of your organization. The app also reduces pressure on call centers and dispatchers who manually respond to ride bookings; calls are handled by the system, allowing more trips per day at a lower cost. Passengers have come to expect convenient and accessible transit, and that is exactly what ADEPT IQ's user-facing app provides.

Another important component of ADEPT IQ is the use of integrated mapping. The map presents real-time data, including traffic and other delays, so that passengers know exactly what to expect. This component is also used by both dispatchers and drivers so that everyone shares a common view, reducing communication challenges and improving decision making. Putting more information the passenger's hands, in an accessible and easy-to-use manner, is an ideal solution to meeting changing expectations.

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The Third Hurdle: Complex Trips and Dedicated Fleets

While passengers taking traditional forms of transit expect to leverage a variety of modes and fleets during their daily commutes, paratransit passengers often have access to one option: their DRT agency. Demand-responsive transit providers are responsible for making the arrangements to move their passengers effectively from point A to B to C. If multi-modality exists for passengers with disabilities, it's often at the discretion of their DRT agency. Add to this the fact that most paratransit providers have a finite fleet of specialized vehicles, and the challenge for agencies becomes apparent: it takes only a surge in ridership or a complication in a planned route for demand-responsive transit to verge on max capacity.

The Solution: Custom Integration

Part of the solution for overtaxed DRT agencies may lie in a recent transit phenomenon: the emergence of ridesharing. In major metropolitan areas, nearly a quarter of residents report utilizing ridesharing services like Uber[4] and Lyft, while cities like New York have seen ride hailing explode to over 15 million trips per month in

4 https://itspubs.ucdavis.edu/wp-content/themes/ucdavis/pubs/download_pdf.php?id=2752

the space of five years[5]. While much has been made on the rise of ridesharing and its impact on taxis and transit, ADEPT IQ does not shy away from addressing the potential this type of transit has for paratransit providers. Instead, ADEPT IQ leverages it.

Demand-responsive transit agencies are increasingly looking to ridesharing as a way to improve their own service, and reduce costs[6]. ADEPT IQ goes a step further and allows these alternative service providers to be integrated into the same dispatch system. ADEPT IQ integrates with major taxi and rideshare providers (e.g. Verifone, CMT, Uber and Lyft). Transit agencies also have the opportunity to integrate smaller local providers, depending on the needs of their passengers. In some cases, transit agencies may even send a passenger to a fixed-route bus for all, or a portion, of their trip, depending on the passenger's eligibility. When scheduling trips, ADEPT IQ can take into account these external providers and create schedules that benefit both passengers and agencies.

In cities where ridesharing is available, it's likely your passengers are already familiar with the opportunities the service provides its customers. In situations where a rideshare vehicle can complete a paratransit journey, DRT providers stand to save both money and time, and ADEPT IQ aims to offer flexibility to agencies by leaving the door to partnerships open.

5 https://www.recode.net/2018/3/15/17126058/uber-lyft-taxis-new-york-city-rides
6 https://www.forbes.com/sites/jeffmcmahon/2018/09/06/5-ways-city-transit-agencies-have-found-to-exploit-uber-and-lyft/#4fce27717eee

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The Fourth Hurdle: Increased Costs

Transit agencies are struggling to meet new consumer demands with cost-effective solutions. Costs are going up for demand-response service, which is expensive to provide: the price tag to fund paratransit has doubled over the past 20 years[7]. And demand-responsive service is already more expensive for agencies out of the gate: a 2016 study published by the U.S. Department of Transportation places traditional transit costs as low $2.46 per passenger to provide for heavy rail, while DRT costs $43.79 per passenger[8]. And agency budgets are not always rising quickly enough to match the uptick in passengers accessing DRT services.

The Solution: Scalable Software and Schedule Optimization

The specter of rising costs is a hard one to banish, but a flexible approach to dispatch software can give budget-conscious transit agencies a real return on investment.

As a cloud-based solution, ADEPT IQ is highly customizable and does not require on-premise infrastructure to operate. It offers agencies business continuity through

7 https://busride.com/bridging-the-gap-paratransit-costs-demand-response-and-transportation-network-companies/
8 https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/ntd/66011/2016-ntst.pdf

background processes: as a hosted software, ADEPT IQ provides automatic and seamless updates, relieving the maintenance burden from IT teams and lowering costs. The software is structured to make the transition from past solutions frictionless and straightforward, and the system is easy to deploy. Rather than running a dispatch solution that is siloed and inefficient, ADEPT IQ allows you to connect your various support capabilities into one cost-saving bundle.

Schedule optimization is another way that ADEPT IQ is capable of reducing costs. The ability to adapt to agency-specific objectives, in combination with pattern analysis (group trips, common pickups and drop-offs) and real-time data (e.g. traffic congestion) provides a highly-tailored schedule for each agency. A schedule that responds to both local conditions and agency needs stands to boost efficiency, increasing trips-per-day and reducing denials. Given that much of these optimizations can be performed without high levels of user input, transit agencies can expect to keep their overhead as low as possible.

Many of ADEPT IQ's processes are automated, which will also reduce operational costs. This reduces the strain on resources and allows staff to focus on other tasks, only intervening when and if necessary.

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The Fifth Hurdle: Real-Time Flexibility

For many service providers, real-time changes—like congestion or construction—are on the rise. The number of cars registered to American drivers hit a record high of 264 million in 2016[9], and the number of cars worldwide is expected to double—reaching the 2 billion mark—by 2040[10]. Weather and last-minute schedule changes also contribute to delays on already crowded roads.

These disruptions are particularly felt by paratransit passengers, where the planned route for a day can easily be derailed by a closed bridge or unexpected weather event. As customers of traditional transit become accustomed to up-to-the-minute notifications on vehicle location and the ability to reschedule rideshares, DRT agencies have a challenge ahead to effectively accommodate real-time changes for paratransit passengers.

9 https://www.forbes.com/sites/jimhenry/2016/11/26/millions-more-cars-on-the-road-and-not-just-for-thanksgiving/#99f946d66ef1
10 https://www.weforum.org/agenda/2016/04/the-number-of-cars-worldwide-is-set-to-double-by-2040

The Solution: Increased Visibility

How can transit agencies overcome issues that are beyond their control, like congestion or bad weather?

The key to responding to real-time changes—and increasing scheduling efficiency as a result—is real-time data. Today, ADEPT IQ is capable of integrating live traffic data and vehicle GPS location, so the system is immediately aware of when and where problems are occurring. The program employs continuous monitoring of the system and can provide early warnings when a route is in danger of falling behind. ADEPT IQ can even recommend solutions based on the available resources, and, if authorized, take corrective action without human input. ADEPT IQ is capable of integrating with other sources of real-time data, including weather reports and local events. The overall result will be an increase in day-of productivity, as well as a decrease in average trip costs due to lost time and resources.

Real-time traffic updates are another strategy to address last-minute changes. ADEPT IQ displays real-time traffic congestion on a map that is available to all users, so that everyone from passengers to drivers to transit agency employees have visibility into the state of the roads. The software also automatically recalculates planned routes based on real-time traffic, which helps keep routes running on time and improves agencies' On Time Performance numbers. This responsive technology reduces communication delays and gives everyone access to the same data, freeing all passengers and team members to respond quickly when a problem occurs.

Whether in the face of rising costs or real-time changes, ADEPT IQ is equipped to ensure transit agencies can consistently provide more trips per day on a constant budget. It will come as no surprise to today's transit providers that optimizing routes and meeting passenger expectations via scalable software is the future of effective transportation management.

Moving Forward with ADEPT IQ

The present is challenging enough for demand-responsive transit agencies, and more industry disruptions are coming. The fast-approaching autonomous vehicle is touted as either the solution to all traffic woes or a potential source of increased congestion[11]. The idea of free transit is quickly gaining traction in Europe and will bring forward new operational and financial challenges[12]. Other technological marvels such as the Hyperloop[13] and flying cars[14] are also on the more distant horizon.

To equip your transportation agency to face the challenges of both the present and the future, we recommend ADEPT IQ as the next generation of dispatch software. A hosted solution that solves service delays with real-time data, provides computer-aided dispatch recommendations and offers an enhanced passenger experience, the software is equipped to help demand response and other forms of transit to increase productivity and decrease costs. Most importantly, ADEPT IQ is designed to be adaptable and ever-evolving, meaning it can respond to specific agency needs in the present and the unforeseen hurdles of years to come. DDS will continue to monitor changes in the transit space, even those that seem far-fetched, and will use this information to modify our existing tools and create new solutions for today's transit providers.

For more on how ADEPT IQ can take your dispatch from siloed to seamless, contact us for a complimentary demo. Transit change is happening fast; we're here to help.

11 https://ddswireless.com/blog/self-driving-cars-are-here-how-can-we-keep-roads-safe/
12 https://ddswireless.com/blog/europe-is-looking-to-make-public-transport-free-where-would-that-leave-taxi-companies/
13 https://ddswireless.com/blog/how-will-a-hyperloop-system-affect-the-taxi-industry/
14 https://ddswireless.com/blog/flying-taxis-is-the-taxi-industry-about-to-take-to-the-skies/

About DDS Wireless

DDS Wireless Inc. is number one in real-time scheduling and dispatch software. As the only fleet management solutions provider in the world that also provides hardware, we're the industry experts in on-demand people movement. DDS has years of experience in operating on a global scale. We are headquartered in Richmond, Canada and have regional offices in Seattle, Sweden, Finland and the UK. We also have sales, support and technical personnel employed across the globe in Canada, the U.S. and Europe.

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