Digital keyless vehicle access and its fleet applications

The value of keyless technology for fleets of all sizes and compositions

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Introduction

Fleet managers face a raft of challenges in order to safely, affordably and efficiently manage their vehicles. Whether 50 or 5,000 vehicles, and from public car sharing services to logistics fleets, many of these challenges are shared, such as the need to improve fleet utilisation, reduce capital expenditure and control vehicle access.

Meanwhile, a range of governmental and societal pressures are accelerating a transition away from a one driver, one car model of ownership, towards a smart mobility model of car sharing and motorpooling. This is advancing the growth of public car sharing services as well as a transition from standard corporate car fleets towards shared motorpools. Certain new business tools are required to enable the
shared ownership model to work.

Digital keyless vehicle access is one of these business tools, as well as providing a solution to a number of the most common fleet management challenges. With this technology, fleet managers can transition from physical key management to remote control, gaining the power to unlock workflows by distributing digital keys, controlling access, and immobilising vehicles automatically.

This white paper considers the benefits that digital keyless vehicle access technology (keyless technology) can offer to fleet managers across a range of industries, from logistics to vehicle rental and public car sharing services, and looks at how Ridecell's technology in combination with Geotab's open telematics platform counters their specific fleet challenges.

The benefits of digital keyless vehicle access for fleet managers

Digital keyless vehicle access represents the future of fleet vehicle access, saving administrative time and costs surrounding the management of physical keys, improving vehicle utilisation and enabling managers to effectively right-size their fleets to reduce overall total cost of ownership (TCO).

The solution provides secure and keyless vehicle access, which enables fleet managers to issue digital keys automatically to drivers and any necessary support personnel, with a variety of access methods from Near Field Communication (NFC) fobs to a smartphone app.

Before the engine will start, both driver verification and authentication are required. This fully-automated security feature can prevent vehicle restarts and trigger immobilisation remotely, even if the driver has the key. And with automated workflows, vehicle states can be changed programmatically.

The fleet management team benefits from the ability to grant and revoke access in real-time to any vehicle within the fleet. Management can prevent unauthorised vehicle access and define precise driving hours, with the ability to automatically limit access by time and day. And in the remote case of theft or unauthorised access, authorities can be notified instantly.

Building from these foundations, fleet managers then have the ability to unify digital vehicle control of the fleet using OEM-built connectivity and aftermarket telematics, giving even greater functionality, workflow automation, and control.

How Ridecell's keyless technology works

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Ridecell's keyless technology gives businesses of all sizes and compositions the ability to go keyless, enabling mobile devices to store, authenticate and use a digital key to access any designated vehicle within the fleet.

The solution is fully scalable and hardware agnostic, integrating NFC technology with the Geotab GO device. This enables contactless communication between a smartphone or an assigned NFC fob and a vehicle, identifying the drivers that are operating every vehicle in a fleet in real-time.

Managers can create rules, reports, and exceptions on the MyGeotab™ fleet management platform, based on individual drivers or vehicles. The MyGeotab platform provides a central location from which the entire fleet can be simply secured and managed.

The keyless solution consists of three parts; a Geotab GO9 vehicle tracking device which is fitted into the vehicle's OBD II port, the IOX-Keyless and the NFC reader. The installation process is quick and simple, and the solution is compatible with all vehicles that use key fobs, including electric, hybrid, light-, medium- and heavy-duty vehicles.

IOX-Keyless accommodates a variety of customer requirements, including:

- Additional CAN bus connections to the vehicle
- Immobilisation relays to further secure the vehicle
- Bluetooth connectivity for vehicle access out of cellular connectivity

In a corporate use case, a digital key is created and issued over the air when a driver starts their shift or designated use period, and is terminated when this authorised time period comes to an end. For rentals and public car sharing, the digital key is created when the customer creates the reservation or a scheduled reservation is converted to a live rental, and is then terminated when the customer ends their rental period.

The keyless motorpool solution can be set to immobilise the vehicle five minutes after the engine is turned off, locking the doors at the same time. An additional configuration will initiate an over-the-air lock command to a vehicle if the engine has been detected to be off for a configurable length of time, ensuring the vehicle is nearly always locked and immobilised when no driver is present.

Circumventing mobile data connectivity issues that could otherwise create vehicle access challenges, a vehicle can be accessed over Bluetooth Low Energy (BLE) even when completely offline and out of connectivity.

The fleet manager gains improved security and access control, being able to remotely lock and unlock vehicles through the web application. When a vehicle is locked, the soldered key fob is powered down, preventing the vehicle from starting without a powered key fob.

Fleet specific use cases for digital keyless vehicle access

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Corporate and government motorpooling

Fleet challenges: improving vehicle utilisation and reducing environmental impacts

Most employees don't utilise a vehicle 24 hours a day and 365 days a year, and as such, corporate car fleets generally suffer from considerable underutilisation. The practice of providing each employee with their own car is largely outdated, wasting valuable capital that can be maximised elsewhere and increasing the overall TCO of the fleet.

Both governments and large corporations are under pressure to reduce the environmental impact of their operations and their carbon footprint. Since the fleet is often one of the greatest sources of Scope 1 greenhouse gas emissions (those that the organisation produces as a direct result of their business), it is an important area for attention and one where quick wins can be most easily noted.

Running more vehicles in a fleet results in greater lifecycle carbon emissions and environmental impacts, even if the total miles travelled remains the same. This is because vehicles have a considerable impact on the environment through their construction, and to a lesser extent through their eventual disposal. On average, 23% of a standard petrol vehicle's lifecycle CO_2 emissions are produced during manufacture, and this figure is as high as 46% for electric vehicles.[1]

By providing a pool of vehicles to their employees rather than one for each employee in turn, fleet managers can do more, without adding resources. Keyless technology allows for simple management and control of these shared fleet vehicles. Utilisation can be significantly improved, increasing efficiency and lowering operating costs as you right-size your fleet to your real transport requirements.

Users can be provided with scheduled or on-demand reservation options, while fleet managers benefit from increased security, with real-time knowledge of the location and status of all fleet vehicles, and automatic vehicle locking when they are parked at a designated area.

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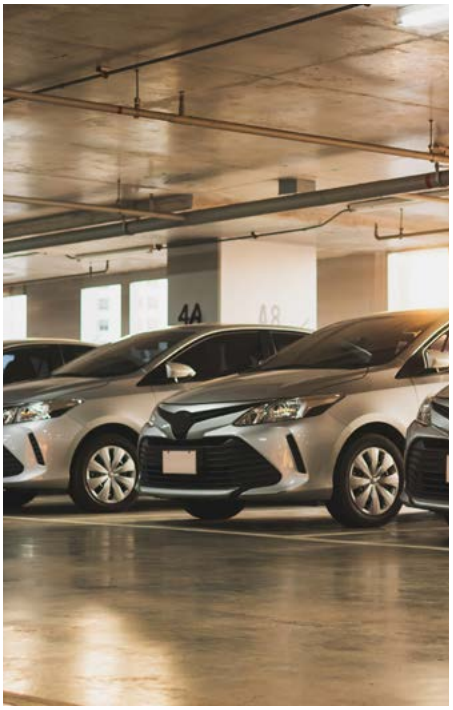

[1]Lifecycle emissions from cars - Zemo Partnership and Low Carbon Vehicle Partnership, 1 August 2018 file:///Users/admin/Downloads/MC-P-11-15a+Lifecycle+emissions+report.pdf

Logistics fleets

Fleet challenges: managing physical keys and ascertaining driver identities

Physical keys are challenging to manage. Keys are commonly lost or misplaced, leading to unnecessary vehicle downtime and falls in service levels. They can be stolen, locked inside a vehicle, or informally handed onto a driver who hasn't been assigned to the vehicle. These inefficiencies and mismanagement events cause the loss of valuable time and money, and present challenges for complete managerial control.

When a driver needs access to a vehicle out of operational office hours, physical key management is harder still, often resulting in practices that are inefficient and insecure. The same challenges present themselves when a fleet is spread across multiple locations.

Key safes require high security control levels, and carry the risk that by granting access to the entire key safe, drivers are granted access to all the keys within it.

As physical keys can be easily passed between individuals, fleet managers can find they are unable to confidently know who is driving each vehicle at any point in time. This can result in issues such as drivers operating vehicles with an expired or revoked licence or insurance, or managers mis-tracking driver behaviour and assigning driving violations and warnings to the wrong driver.

All of these challenges can be circumvented with Ridecell's keyless technology. Drivers benefit from easy access to whichever vehicle they are assigned to, regardless of its location or the shift start time with the allocation of digital keys. Meanwhile, the fleet manager gains complete oversight as to who is driving each vehicle at any moment in time. This is imperative for accurate driver behaviour monitoring, and for accurate reconciliation of drivers to traffic violation offences. Driver-based reporting can be pulled, even when drivers are regularly assigned to different vehicles, so that managers can track this data with 100% accuracy. When integrated with driver screening and verification, vehicle access can be granted or revoked automatically to ensure the legal compliance of the fleet.

Fleet managers also benefit from greater safety and security with digital immobilisation in the event of a damaged or stolen vehicle.

Rental fleets

Fleet challenges: optimising user convenience and revenue

Rental fleets are under constant pressure to provide greater flexibility to their customers. The optimum scenario would provide the fleet manager with greater security, while giving users a self-serve rental experience.

Users often require their rental periods to start out of standard office hours, including at weekends and public holidays. To provide this service with rental agents is both expensive and inefficient.

Ridecell's keyless technology allows for the increased flexibility that the rental market increasingly needs, enabling user access at any time of the day and night. The entire rental process including rental agreements, keys, licence and credit checks is digitised so that it can be completed online or via a smartphone app, without the need for a rental agent.

For on-demand rentals, a digital key is created when the customer creates the reservation, and is then terminated when they end their rental.

For scheduled rentals, a digital key is created when the scheduled reservation is converted to a live rental, and is then automatically terminated when the customer ends their rental period.

Many rental companies require that the user returns their vehicle with a full tank of fuel. The user's compliance can be checked at the end of each rental period, with fuel level information sent automatically to the system. This enables necessary charges to be automatically applied to any account in the instance of non-compliance.

Keyless technology also helps to strengthen rental fleet security. If a rental vehicle goes missing or an account is put on hold, the vehicle can be remotely and automatically disabled and access can be revoked.

For rental fleets with a diverse range of vehicles, Ridecell's keyless technology is compatible with all vehicles that use key fobs, including electric, hybrid, light-, medium- and heavy-duty vehicles.

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Public car sharing

Fleet challenges: Boost operational efficiency and fleet utilisation while providing superior customer service

Cars are used on average for just one hour per day, with the majority of urban car trips being driver-only.[2] Meanwhile, the UN projects that by 2050 about 68% of the world will be urbanised.[3] Societal and legislative pressures are necessarily building to counter the resulting increase in congestion and emissions, with cities worldwide under pressure to establish plans to improve urban air quality and reduce pollution.

Addressing the overwhelming growth in personal car transport requirements in metropolitan areas, public car sharing is enjoying unprecedented growth. Underpinning this service is the need to provide access to a pool of vehicles to a pool of users without the need for physical keys. Keyless technology has been a vital business tool to enable this functionality.

Public car sharing services need to provide their users with greater flexibility and a self-serve rental experience that works 24 hours a day and 365 days a year, while also guaranteeing vehicle security.

Ridecell's keyless technology enables car sharing customers to access a vehicle at any time of the day and night. The entire rental process including rental agreements, keys, licence and credit checks is digitised so that it can be completed online or via a smartphone app. It supports both station-based and free-floating car sharing operations. Circumventing mobile data connectivity issues that could otherwise create vehicle access challenges, a vehicle can be accessed over Bluetooth Low Energy (BLE) even when completely offline and out of connectivity.

For on-demand rentals, a digital key is created when the customer creates the reservation, and is then terminated when they end their rental.

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If users are required to return their vehicle with a full tank of fuel, compliance can be checked at the end of each rental period, with fuel level information sent automatically to the system. This enables necessary charges to be automatically applied to any account in the instance of non-compliance.

If a vehicle goes missing or an account is put on hold, it can be remotely and automatically disabled, with access instantly revoked.

For car sharing fleets with a diverse range of vehicles, Ridecell's keyless technology is hardware agnostic and compatible with all vehicles that use key fobs, including electric, hybrid, light-, medium- and heavy-duty vehicles.

[2] The Carsharing Telematics Market, Berg Insight, 2021 https://media.berginsight.com/2021/02/08131304/bi-carsharing3-ps.pdf

[3] United Nations Department of Economic and Social Affairs, 16 May 2018 https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html

Three steps for efficient digital keyless vehicle access management for car sharing and rental services

1 Streamline the user experience

- Offer multiple reservation options:
    - Schedule via mobile app
    - Schedule via the web
- Operate in real-time: Make vehicles automatically available after cancellations
- Control services access: Have admins scheduling on behalf of the team members
- Offer users multiple access methods:
    - RFID Cards
    - NFC
    - Smartphone app
- Provide vehicle access even when there is no mobile data connection

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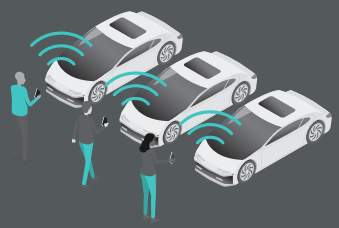

2 Improve vehicle utilisation

- Enable various usage models and flexible use
    - Make the fleet better utilised by offering a choice of:
        - Scheduled reservations
        - On-demand rentals
    - Dedicate vehicles for each method or allow for both using the same vehicles
    - Define multiple stations, choose to allow which rental vehicles can be:
        - Free-floating
        - Station-based
- Optimise vehicle usage by analysing the generated vehicle data
- Make vehicles available for both businesses and private use
    - Let the end user switch between different profile types with the use of Personal mode

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3 Increase efficiency and reduce costs:

- Use the available data to manage your operations
    - Utilisation and vehicle status data to determine optimum fleet size
- Use driver behaviour data to improve fuel efficiency
- Use vehicle data to maintain your fleet:
    - Mileage
    - Engine codes
    - Predictive maintenance
- Automate workflows using business rules and digital integration, so that the fleet control system prioritises, manages, and resolves alerts and tasks on its own

Conclusion

Fleet managers across all industries and of all sizes and compositions share a number of common challenges. These include the need to improve fleet utilisation, reduce capital expenditures and control vehicle access.

Ridecell's keyless technology can address these challenges and more, saving administrative time and costs surrounding the management of physical keys, improving vehicle utilisation and enabling managers to effectively right-size their fleets to reduce overall total cost of ownership.

Fleets become safer and more compliant thanks to automatic controls that prevent vehicles being driven when damaged, or if the driver has a revoked licence or insurance. Equally, if a rental expires, accounts are unpaid or vehicles are lost or stolen, then the user immediately loses their access rights and the vehicle is disabled.

From a driver management perspective, keyless technology eliminates the pains of managing physical keys and drivers using a vehicle they have not been assigned to, making driver safety monitoring 100% accurate, even when they are regularly assigned to different vehicles.

And by providing access to a vehicle over BLE even when it is completely offline, Ridecell's keyless technology overcomes vehicle access challenges related to a lack of mobile data connectivity.

When integrated with Ridecell's workflow automation tools, fleet managers can gain access to the insights, automation, and control to transform their business, including:

- **A central source for all data** including vehicle, driver and maintenance
- **Actionable workflow automation triggers** based on the data received
- **'Self acting' fleet control** using business rules and digital integration to prioritise, manage, and resolve alerts and tasks automatically

By digitising vehicle access and turning data into automated actions, fleet managers can get even more value out of their fleets of connected vehicles and fleet management systems. This enables operations to be transformed, benefiting from a fleet control system that automatically resolves issues from start to finish.

To learn more, visit https://ridecell.com/.

About Ridecell

Ridecell Inc. is leading the way in the digital transformation of fleet businesses and operations. Ridecell's IoT-driven automation and mobility platform helps businesses modernise and monetise their fleets by combining data insights with digital vehicle control to turn today's manual processes into automated workflows. The result is unmatched levels of efficiency and control for shared services, motorpool, rental, and logistic fleets.

Today Ridecell powers some of the most successful fleet businesses in cities across Europe and North America, including Gig Car Share from AAA. Ridecell is headquartered in San Francisco, California with offices in Madrid, Paris, Berlin, and Pune, India.

To learn more, please visit https://ridecell.com/.