TBS

A Totalmobile Company

How technology and intelligent public transport is transforming the Transport sector

In this eBook, TBS's Steve Reynolds, Executive Director and Strategic Advisor, comments on the Transport sector today, the challenges it faces and how technology can help overcome these challenges to drive efficiencies and deliver transformational outcomes.

Content Structure

Introduction:
A sector facing many changes

Transport is important. It's something that we use in our everyday lives which connects people and businesses and permits the economy to thrive. Transport services such as bus, rail and aviation are increasingly used more each day in order to keep up with growing demand from customers. The Department for Transport reported a huge 4.85 billion UK local bus journeys which took place in 2017/2018 and 1.71 billion UK National Rail local journeys. Consequently, the need to drive growth whilst reducing costs and delivering a quality service is imperative. Additionally, the sector is under pressure to meet compliance regulations such as KPI's while reducing the risk of imposed fines and penalties. Furthermore, they need to ensure safer facilities for staff and customers. By using key enabling technologies as a foundation for change, Transport organisations are able to develop disruptive and sustainable strategies.

In recent years, the Transport industry has undergone significant change due to technological advancements. The Department for Transport has embraced these advancements in order to help them achieve SLA's, compliance, customer satisfaction and safety, and to encourage a digitally connected market place. Innovation in the Transport industry is continuing to grow with the development of new technologies such as mobile workforce management, dynamic scheduling, wearable technology and IoT sensors. The Internet of Things (IoT) is a popular term in recent years that simply describes the connectivity of an object with the internet. These technologies provide meaningful data which ultimately drives Transport organisations to improve their services and enhance the customer journey experience.

Today, Transport organisations are being challenged to help deliver a more sustainable society to reduce their carbon footprint. They are encouraging passengers to use public transport more frequently, however because of this there is an increased requirement for technology to develop and progress. For example, in order for passengers to leave their car or bike at a station, there must be enough car or bike parking spaces. IoT sensors can be deployed to assist with capacity planning and to update passengers.

The ability to empower and engage employees with access to technology and information anytime, anywhere in order to carry out their job is now more prevalent than before. The impact of these technologies ensures staff can complete jobs on time, organisations can adhere to meeting SLA requirements and offer customers an enhanced, quality customer experience. Furthermore, the data that is generated from these technologies can enable Transport organisations to make informed business decisions to enhance operational efficiencies. Whether that's knowing how many passengers are going to be present in the station or building at one time, visibility over mobile staff or the ability to detect delays quicker or before they occur.

In our view from an expert interview with TBS's Steve Reynolds, Executive Director and Strategic Advisor, Steve comments on the current challenges the Transport sector is facing and how technology can help.

TBS's Steve Reynolds agrees:

"From the public transport sector perspective, there's a big push for sustainable transport and to encourage people to use public transport. As a result of that, people are adopting to travel via various methods of transport which means there is a growing demand that transport companies have to provide a flexible, scalable service.

Bearing in mind where we are, cost is key to supply transport. However, no one likes to see increases in pricing therefore Transport organisations have to maintain their cost base or reduce it. What has been apparent in recent contracts issued by the Department for Transport is train operating companies need to deliver an improvement in customer satisfaction and an increase in efficiency, capacity and control of costs. Additionally, hitting customer centric KPI's and also demonstrating innovation is paramount. So, effectively investing into that particular area is key.

Furthermore, Transport organisations need to make sure the stations are clean and working fit for purpose, as well as managing overcrowding and capacity. This is another area where technology can potentially help out.

Empowering and engaging employees is a very important factor not only in transport but in any type of organisation these days. An employee is an expensive attribute and you want to make sure that they're carrying out their role to the best of their ability. Organisations can do this by training staff but also by giving them the tools that they need to do their job. Certainly, we're seeing devices such as smart phones and wearables being used more and more within train and bus operating companies."

The Transport Market Landscape

The Transport industry is increasingly growing year on year with a rise in the amount of passengers using public transport across bus, rail and aviation.

According to PR News the global market landscape is expected to grow at a CAGR of 9% to nearly $9,540 billion by 2022. It states the emerging factors such as economic growth, technology and cutting carbon emissions will contribute to the growth on the Transport market going forward.

In recent years, passenger journeys have risen with The Department for Transport stating the total number for passenger journeys for bus, rail and aviation in the UK for the years 2017/2018 has seen an increase.

- 4.85 billion local bus passenger journeys in 2017/2018 which equates to 59% of all passenger journeys.
- 1.71 billion National Rail local journeys in 2017/2018 which equates to 149% increase since 1985/86.

  (Statistics reported on passenger journeys on public transport and by mode between 1985/86 to 2017/18).
- 0.27 billion passenger journeys on light rail and tram – a record level since comparable records began.
- 284 million terminal passengers (arrivals & departures in aviation) which is an increase of 6% from 2016.

Key Trends within the Transport Industry

Today, the Transport industry is rapidly changing by transforming the way services are offered by generating data from every interaction with their customers and physical assets.

This is enabled by deploying mobile applications to their customers, employees and wirelessly connected sensors to automate processes that are traditionally manual; from triggering a workforce service request, to cleaning a washroom after a pre-determined number of visits, to automatically opening up security lanes at an airport to minimise queuing. Furthermore, data from each customer interaction with their mobile app and every sensor activation, leads to the servicing of an action and subsequent generation of a report. All of this data is stored in a Cloud database which can be analysed to improve performance, provide valuable insight and derive new ways of working as part of a business's continuous improvement programme.

With that in mind, we take a look at some of the key trends within the Transport market today and discover how they are transforming processes. In our view from the expert discussion, Steve discusses his thoughts on each.

Digitalisation

Digitalisation refers to the adoption or increase in the use of digital technologies to improve processes such as capacity planning and cost efficiencies. We have in recent years seen the rise of big data, IoT and automated software systems which enable a range of improvements in areas such as connectivity, monitoring, analysing, optimising and controlling.

Transport organisations have also in recent years implemented such technologies in order to make processes more efficient and meet customer expectations and demand.

According to a report by UTIP, Digitalisation brings a host of opportunities for the public transport sector, including opportunities to increase efficiency and improve quality, lower costs, open up new revenue streams, improve the customer experience and loyalty, and explore new services.

Steve comments,

"For Transport organisations, the key is to invest in technology. Obviously, you can get so much out of investing in people and processes, however if you want to get to the next level then technology is key. What you can do with technology which you can't do with processes is completely disrupt processes by different and innovative ways of working. If you take lighting for example within a train station, it needs to be working all the time, if it isn't then that becomes a hazard. However, using technology is a good way to monitor this, you can't really have people monitoring this as the cost would be ridiculously expensive. This is an example of how digital technology can help transport organisations.

Other examples include ensuring that ticketing machines are working, waiting rooms are at suitable temperatures for the time of year and barriers are working. Each of these aspects are all things were digital can really help out. Additionally, technology can also be used to ensure trains or buses are running on time and if there is a problem then making sure that problem is escalated and reported."

Digitalisation is changing the relationship with the customer and is driving us to rethink the customer relationship in many cases. Today, public transport can connect with not only places but also with people through the use of smart phones and real time information. Self Service is becoming more prevalent within the Transport sector in order to make services to consumers more efficient and provide an enhanced customer service. The use of e-ticketing is becoming more popular than before and offers customers an efficient service when commuting. It allows users to have immediate access to booking/ purchasing tickets from their mobile device without having to stand in lengthy queues. This service enables improved customer satisfaction.

"We're now seeing train companies implementing the use of online ticketing purchases and e-ticketing through smart phones which provides a whole range of data in terms of who's using them, how they're using them and when they're using them. This is something that's really powerful.

Using a smart phone ensures if there is a problem with a service, you can let customers know in advance, for example if there is a late train arrival or departure. By using smart devices, you can improve your contact with the customer and improve the overall customer experience. From a digitisation perspective, these things are key in terms of providing exceptional customer service and satisfaction."

The impact workforce mobility has had on the Transport Sector

Workforce mobility has had a significant impact on the Transport sector. The introduction of smart phones, mobile devices and the use of wearables enables staff to record and capture information at the point of service. This makes their job easier, while improving efficiencies and communication processes. For example, if a staff member is working on a train platform, they can wear a wearable device to save them carrying a phone. This allows them to receive messages and capture information in a hands-free format.

Without a doubt, organisations who leverage a mobile workforce can take advantage of its benefits. Mobile working not only reduces cost, travel and admin time but also increases productivity, capacity and results in effective collaboration and communication. With readily access

to information on their mobile device, staff save time on administration, no longer having to complete cumbersome and time-consuming paperwork while also improving accuracy of data capture.

Furthermore, scheduling software systems help organisations make informed business decisions with the intelligent business insights it can report on. The software provides dispatchers and managers with the correct tools and interface they need to increase the efficiency of their field workforce.

Steve agrees,

"Workforce mobility is a very important aspect within the Transport sector. Using IoT organisations can monitor processes within train and bus stations. Technology can provide remedial action, it can ensure you have the right person that's in the correct location with the right skill set to undertake the work at that given time. Workforce mobility is a complimentary technology that's a necessity.

Additionally, there's a whole area of things you can look at within workforce mobility such as capacity planning. For example, if you take car parking or leaving your bike at a station then Transport organisations can place sensors on bike racks or within car parks to review if there's enough car parking or bike rack spaces available to support the number of potential customers wanting to use public transport."

IoT and Data Analytics

The Internet of Things (IoT) is a popular term in recent years that simply describes the connectivity of an object with the internet. The CAGR of IoT is estimated to rise at a percentage of 28.5%, creating a $457 billion industry by 2020.

The future of the Transport market will focus on the development of smart cities and intelligent transport. IoT sensors can detect a range of information including the amount of footfall, the number of passengers travelling on a mode of transport, whether facilities need cleaned or the departure and arrival times of trains, buses and planes.

The Transport sector can transform the way they offer their services by generating data from every interaction with their customers and physical assets. IoT within the Transport industry is certainly adapting to embracing enabled sensors to help make intelligent business decisions in real time, not only making services smarter but also safer. IoT enabled sensors placed on trains, trams and buses can monitor the amount of footfall which provides vital information on the

usage of routes but furthermore could also then impact upon future timetables and pricing structures and customer comfort.

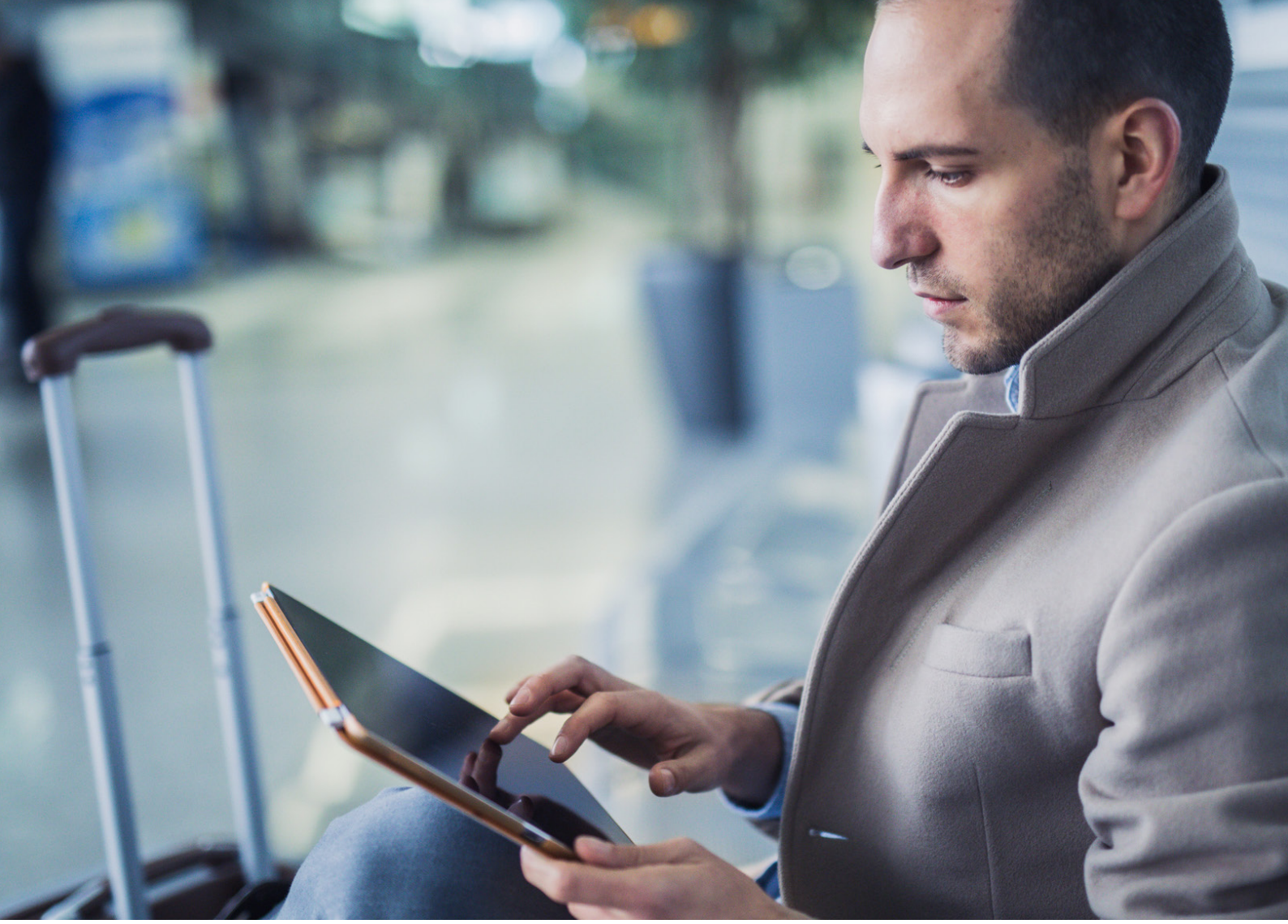
In particular, at train stations or airport terminals, IoT is able to monitor usage to ensure that cleanliness and environment compliance is adhered to such as ensuring toilets are cleaned, lifts are working, or buildings are set at the right temperature. Not only does IoT trigger a job to be created if it detects a problem, but it also allows organisations to demonstrate the steps taken to maintain standards. IoT sensors in train stations also help transport organisations deliver effective KPI's such as ensuring trains are running on time or making sure they are not overcrowded. If each of these KPI's are met, organisations can ensure an enhanced customer satisfaction experience and it enables them to be more compliant in terms of KPI breaches, reducing potential fines. This effectively generates cost efficiencies for the Transport organisation.

The use of IoT enabled sensors on bike racks detect when there is a free slot on bike racks at train and bus stations and also tracks usage. Information can then be passed to members of the public via a mobile app, as well as management responsible for the planning of racks within the train or bus stations. This enables a more effective sustainable transport system in relation to the placement of bikes, enhances customer satisfaction as customers are ensured they have access to bike rack space before boarding the train or bus, as well as enhances security. If there is any unsuspected movement of a bike, the sensors can send an alert to a mobile device making the owner aware of suspicious activity.

Steve comments,

"IoT is becoming significantly more popular within the Transport industry. It can be used in various ways such as monitoring footfall in stations to ensure that it's a safe environment for people to access and utilise. Again, using technology sensors placed on bike racks and within car parks, we can monitor people and trends within stations so we can look at footfall and occupancy and look at hotspots to see where people are gravitating to. This information is valuable in providing updated services, knowing that potentially stations need refurbishing to enable better capacity where it's needed if required.

Another example of IoT is deploying occupancy sensors on buses which enables Transport companies to ensure they are running the appropriate routes with the appropriate buses to manage the amount of capacity they need to in real time or at certain key times during the day."



By having instrumented points using IoT and bringing that back into a central database, it will provide Transport organisations with data to look at trends, provide predictive analytics and AI data to help them further improve their operational capabilities.

Going green: How Transport organisations can reduce their carbon footprint

Transport organisations today have plans in place to produce sustainable strategies and improve carbon footprint but also to encourage people to travel to stations in a more environmental way.

As previously mentioned, one of the ways around this is to provide passengers with access to car or bike parking at train stations and by encouraging people to cycle to work through cycle to work schemes, this provides a healthier, more green approach. The Department for Transport have supported more active modes of transport in their Low Carbon Transport: A Greener Future report, where they state a new £5 million programme to invest in improving storage facilities at train stations is underway. By reducing the amount of cars on our roads, there could be less congestion and pollution.

Furthermore, by providing a better customer experience it removes any frustrations and provides a better service, evidently encouraging people to use public transport more frequently.

Additionally, by removing paper processes and implementing mobile solutions, staff have all the required information they need on their mobile device. This reduces the need to carry and print hard paper copies, reducing associated printing costs.

Other initiatives identified be The Department for Transport include:

- Promoting sustainable biofuels and are working to reduce emissions from road freight
- Introduction of an agenda to reduce the carbon impact of the railways
- Introduction of technological improvements that will increase fuel efficiency and reduce environmental impacts in aviation and shipping

Steve agrees,

"We're all being encouraged to use public transport and leave our cars at home or at stations in order to reduce carbon footprint. This is where technology comes into place as we can use sensors to look at capacity planning and make sure that there are enough car parking and bike rack spaces available."

How technology is transforming the Transport sector

The introduction of innovative technology solutions is transforming how Transport organisations deliver services to the public and improve their daily operations. The introduction of cloud services now provides Transport organisations with real time information and analytics to make informed business decisions in order to improve efficiencies. Using cloud-based technology solutions provides organisations with scalable software and access anytime, anywhere.

Intelligent public transportation systems which aim to offer advanced and different modes of transport with the aim to offer users smarter, safer and more efficient routes and services. Nowadays, cities are increasingly implementing smart modes of transport to provide customers with more choices.

IoT sensors for example can detect a range of information such as whether there are delays or incidents such as snow

or ice on the runway or an issue on the train platform. Not only does IoT enabled sensors trigger a job to be created if it detects a problem, but it also allows organisations to demonstrate the steps taken to maintain standards.

Furthermore, through the use of deploying mobile devices or smart wearable technology, Transport organisations can improve communication processes and overall efficiencies. Real time generation of notifications and alerts are sent directly to platform staff via smart wearables. This helps ensure trains depart on time, reduces the risk of imposed fines and enhances the customer experience. Staff can also capture relevant information at the point of service via their mobile device, reducing manual paper work processes and therefore increasing their capacity. Intuitive mobile technology allows for the recording of signatures, photos or videos and mandates workflows to ensure compliance, at the same time managing the activities of the workforce. Scheduling field-based teams within the Transport industry ensures there is enough capacity to complete more jobs efficiently, therefore allowing more time spent delivering services while also improving communication between field-based staff.

The impact of big data and analytics will allow Transport organisations to make effective business decisions for example, airports will be able to optimise passenger flow allowing them to process larger numbers.

Steve comments on the impact technology can have on the Transport industry:

"Without cloud we couldn't do any of this, cloud is the most sensible way to store and manage this information. It offers scalability, security and flexibility to manage each type of solution and ensure it works effectively. Cloud gives us big data which is the future of decision-making processes within Transport organisations.

The introduction of wearables provides staff with a suitable digital interface into operations in areas where staff need both hands free. Take platform staff in train stations for example, they have quite a lot of equipment to carry. By giving them a smart phone, it may be one thing too many to carry but by giving them a wearable device means they don't have to hold the device in their hand, it's on their wrist. These can be used for security checks, accessing passenger information or managing required tasks such as accessing a message on a wearable which states a passenger with accessibility issues needs access to a ramp."

TBS in Transport

TBS are at the forefront of creating and delivering innovative and effective solutions for the Transport sector. Whether it's the use of wearable devices, inspections and audits, smart ticketing, or ensuring services are delivered on time, our solutions ensure services are delivered smarter and safer while maintaining standards and improving the overall customer experience.Being cloud based, our solutions are secure and scalable, ensuring efficiency of services and compliance processes are met. Within the Transport industry, our solutions include mobile working, dynamic scheduling, IoT, data analytics and self-service.

Business Benefits:

Implementing our solutions allows Transport organisations to experience transformational outcomes such as reducing operational costs, assuring compliance with standards, increasing workforce capacity and providing a quality customer experience while improving carbon footprint.

Increase workforce capacity:

Transport staff are able to deliver an efficient, effective service as they are equipped with the correct tools to do their job at the point of service. Providing staff with instant access to everything they need to carry out their job ensures a stress-free environment, reduces time consuming paper-based processes and travel time and results in an improved work / life balance. Our easy to use, solution is designed with the user in mind, they can capture signatures and information at the point of service, completing jobs right first time and so maximising their capacity. With access to information available instantly transport staff are able to concentrate their labour elsewhere.

Providing a safer, more compliant service:

Health and safety is a huge element of remaining compliant in the Transport industry. These organisations need to provide safe facilities to citizens and ensure they adhere to compliance standards in order to avoid hefty fines. Bus and rail stations can benefit from real time notifications of slips, trips and hazards on platforms in order to remain

compliant. Similarly, aviation companies will want to reduce the risk of accidents, incidents and delays such as removing snow and ice from the runway in order to remain compliant and limit the amount of downtime in order to reduce costs.

Additionally, transport businesses also need to meet KPI's in relation to train, bus and plane arrival and departure times.

Our intuitive mobile technology allows for photo, video and signature capture and mandates workflows to ensure compliance, at the same time managing the activities of the workforce. With the ability to date, time and location stamp each activity, as well as using interactive forms to record all information, your organisation can guarantee recording of data is accurate and consistent, ensuring compliance standards are met.

IoT sensors also identify how many passengers are within a transport building or on a platform or entrance, this information is also recorded and fed back via real time monitoring. Again, this information can help Transport organisations meet KPI's they are trying to achieve.

Increase operational efficiencies across your Transport organisations:

Transport organisations are faced with a growing pressure to deliver a quality, cost effective service while improving customer satisfaction. With a significant growth in passenger numbers and customers expecting to receive an exceptional service, businesses need to invest in the right technology to deliver maximum profitability. By adhering to compliance regulations and SLA's, Transport organisations can avoid accruing significant penalties, deliver a better operational service and generate improved cost efficiencies. Although many would argue the cost of passenger fares are increasing, the introduction of innovative technologies enables Transport organisations to save across all operational costs.

Providing an enhanced, quality customer experience:

By complying to regulations, ensuring transport arrives on time and improving on delays, Transport organisations enable an enhanced, consistent customer service experience. The introduction of self-service and providing a comfortable journey experience for the customer is paramount to enhancing the customer experience and providing a high standard of customer service.

Improving the environment:

With an increase in passengers using public transport, the number of C02 emissions from cars has decreased. Additionally, encouraging passengers to cycle to work or to stations encourages people to become more aware of helping to achieve an improved carbon footprint. This helps enable an environmentally friendly environment while reducing the amount of carbon emissions overall.

Customer references

We are working with some of the largest Transport companies throughout the UK including West Midlands Trains and TFL Overground. Below are a few examples of how our technology is delivering innovation and operational excellence throughout their organisation.

West Midlands Railway

West Midlands Trains have implemented IoT sensors from TBS to monitor bike rack capacity planning and monitoring as well as station instrumentation capacity planning and monitoring. This includes platform temperature, appropriate waiting rooms facilities and ensuring washrooms are clean. These sensors help them promote a sustainable method in reducing carbon footprint and an enhanced customer service by providing passengers with access to appropriate parking and safe facilities.

OVERGROUND

TFL Overground have implemented IoT sensors from TBS to help manage KPI breaches such as implementing sensors in washrooms, waiting rooms and managing platform KPI's. This ensures they comply by health and safety regulations and compliance standards in relation to passenger and staff safety.

Conclusion:
How will technology continue to progress and transform the Transport market?

Technology will continue to evolve within the Transport market. Whether it's wearables, mobile working, IoT enabled sensors to make tasks more efficient and predictive, or data analytics, businesses will need to ensure they embrace and adapt to technology changes and innovation. This will help them sustain their business and stay ahead of the competition. As the Transport market grows, so too will the requirement to receive a high standard of service from passengers, therefore the ability to offer passengers with access to efficient services remains key. Additionally, information taken from data insights will provide valuable information and help make informed business decisions.

How we can help?

TBS has been involved with many ground-breaking projects, using wearable and IoT technologies to tackle unique business challenges within the Transport industry. To find out more, please contact TBS to discuss further.

The Totalmobile Group are a leading innovator in field service management and mobile workforce software solutions. We enable our customers to maximise the potential of their mobile workforce by optimising field service management. We provide our customers with a complete solution that empowers the mobile workforce, provides organisations with a real competitive advantage and customers with a great experience. With offices in Belfast, London, Derby and Bury-St-Edmunds, the Totalmobile Group continue to grow and establish itself as the leading field service management software organisation in the UK.

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