Bell Integration
Ambitious Transformation

CASE STUDY

Transforming public transport hubs with advanced 5G connectivity

Real-time data, smart IoT sensors and analytics enable operators to improve passenger safety and journey experience while boosting station operations

Bell Integration helps Briteyellow initiate a connected data platform that enhances public safety, unlocks new passenger experiences and delivers powerful operational insights for train and bus operators in the West Midlands.

Background

Improving passenger experiences and safety

When Transport for West Midlands and West Midlands trains wanted to understand how new technologies could provide deeper insights into passenger journeys and enhance how they guide and support people with special assistance needs to travel safely and with confidence, they turned to Briteyellow – a visionary digital innovation company that helps organisations to propel their vision forward.

Part of the pioneering West Midlands 5G partnershipn (WM5G), whose connectivity technologies are powering ground-changing projects in the healthcare and transport sectors, Briteyellow's smart wayfinding applications and monitoring sensors would enable transport operators to better monitor passenger flows and guide people more effectively through indoor spaces.

"We were asked to run an initial project covering three train stations and one bus station in the West Midlands. Utilising a mixture of high definition video cameras, mobile 5G and bespoke IoT sensors, our platform would provide the realtime analytics and intelligence operators need to optimise passenger movement and deliver personalised accessibility support for travellers with a disability," explains Fredi Nonyelu, Founder and CEO of Brightyellow.

"To deliver all anticipated outcomes, including the deep data insights that enable operators to understand how their station spaces are used by travellers, we needed to initiate tailored infrastructures at each location that could support an array of highly integrated applications and real-time data flows."

In collaboration with its consortium partners – O2, the University of Birmingham and Bell Integration – Brightyellow needed to ensure its Connected Transport project delivered on a number of levels.

With the right network and IoT placement, Brightyellow would be able to provide transport operators with granular real-time offsite and onsite anonymised travel information together with unified data sets that could be integratedwith existing working practices at each site to enhance operations.

Briteyellow's smart wayfinding applications and monitoring sensors would enable transport operators to better monitor passenger flows and guide people more effectively through indoor spaces.

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The requirement

Initiating a 5G infrastructure

Designing a high performance 5G infrastructure that could deliver the end-to-end data capture and intelligence that Brightyellow's solutions could leverage was mission critical to the success of the project.

Ensuring 5G coverage was optimised at all stations was the first foundational requirement. With the right mobile coverage, O2's network based anonymised data could be constantly captured and integrated into Brightyellow's platform to deliver detailed insights on where passengers have come from, and where they are travelling to.

Bullet-proof in-building coverage would also be vital for providing connectivity for Brightyellow's movement tracking and counting sensors that deliver an in-depth picture of how people use railway and bus stations.

Finally, the infrastructure would enable the data flows utilised by Brightyellow's augmented reality passenger guidance app and wearable tech which provides wayfinding and journey assistance services for all – including the disabled.

"Transport nodes like stations are complex and challenging environments featuring multiple points of passenger ingress and egress, alongside concourses, ticketing areas, food and retailing outlets and more. Each site required around 50 or more sensors and HD cameras to capture the end-to-end data we needed to deliver real-time operational insights," explains Fredi.

If everything was to operate as intended, the 5G infrastructure and connectivity network needed to have the capacity to handle large data volumes together with in-built resilience to ensure zero service failures or data 'blackouts'.

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The solution

Architecting for success

Responsible for ensuring that the right infrastructure was in place to support a variety of smart applications, Bell Integration first embarked on undertaking detailed site surveys at each designated bus and railway station. This enabled all consortium partners to assess the current state of play with regard to existing 5G coverage, including signal strength and weak spots.

The next step was to design an indoor and outdoor network architectures to facilitate real-time information pulls from a variety of technologies and support the rapid exchange of high volumes of data at speed.

Having mapped the individual designs for each station, Bell specified, purchased and installed the 5G and data network infrastructure at each location. Ensuring that in each instance, 5G connectivity was boosted for a variety of use cases. These ranged from the application of real-time analytics for operators, to the delivery of enhanced in-person wayfinding for passengers.

“Responsible for putting in place the core IT upon which all our smart solutions could operate, Bell handled everything from implementing cabinets, 5G routers and servers to implementing data backhaul from our devices and providing recommendations on the ideal placement for our sensors,” says Fredi.

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The outcomes

Making travel more connected

The transport project demonstrated how operators could optimise the travel experience for travellers. Having digitalised stations, Briteyellow's connected passenger guidance system provides in-depth travel insights and assistance for travellers. Today, passengers can take advantage of an augmented reality and virtual reality guidance app and other wearable tech to plan their journeys, find their way around buildings and respond to alerts. The app has proved especially useful for those with sight or hearing impairments.

"Operators have a duty of care responsibility that includes making their services and facilities more accessible and safe for users, and especially for vulnerable passengers who need additional information or assistance. We've demonstrated how, by harnessing 5G technologies and video data, they can deliver a better customer experience and offer micro guidance within stations," explains Fredi.

Alongside improving passenger safety and confidence when navigating station spaces and undertaking stress-free journey planning, station operators can now use real-time data to analyse passenger status and crowd density.

"Passenger flows and movement data and metrics are delivered in the form of dashboards and heatmaps, enabling operational management teams to make better real-time decisions about staffing levels and forecast when periods of high demand means staff rosters need to be tweaked," confirms Fredi.

The detailed data insights demonstrated how each station had very different usage profiles. Which meant decisions around cleaning cycles could be exactly tailored to the individual peak travel times experienced by each station, and that staffing could be right sized to match demand.

The data also highlighted where passengers linger and their average wait times. Giving operators more informed insights on where best sites for retail and food and beverage concessions as well as a deeper understanding of how passengers move around the West Midlands transport network. It has also enabled operators to review their security procedures to ensure public safety can be maintained at all stations during operating hours.

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Why Bell Integration?

Responsible for building an end-to-end IoT infrastructure that enabled Briteyellow to deliver a fully managed and secure solution that provides a variety of real-time insights and services for station operators, Bell Integration's network enables

Briteyellow to capture multiple data types. Using this data, Briteyellow is able to deliver customer-facing wayfinding services and provide deep insights into passenger behaviour patterns.

"Bell's technical know-how was vital for designing and implementing the backbone IT infrastructure our solution leverages. But that's not all. They are really good at customer engagement and were an ideal partner when it came to providing the support we needed to hit the ground running," says Fredi.

"The success of this project demonstrates just how applicable this type of powerful solution is for a variety of high density settings. From stadiums to cruise ships and public transport hubs, we've shown how operators can initiate smart indoor spaces that attract customers. Alongside providing greater duty of care and accessibility for users, operators are able to better monitor their assets and resources and refine how they do business to generate new revenue," continues Fredi.

"I'm excited about what the future holds going forward. I believe that there's much more we can do together when it comes to delivering the highly connected IoT services today's businesses need."

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About Bell Integration

Bell Integration is a global technology leader that partners with customers to create lasting, ambitious digital transformation.

We are our customer's accelerator – orchestrating the right partners, systems, and ideas to create measurable impact.

Bell Integration brings over 30 years of trust, expertise, and innovation to the table, evolving from an independent UK-based business to a global powerhouse.

With talented teams operating across continents, we support the full IT life cycle from strategic consulting to project design and delivery.

See how Bell Integration can help your business succeed. Please contact us on marketing@bell-integration.com or visit www.bell-integration.com.

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