MAKING THE PASSENGER EXPERIENCE MORE EFFICIENT, OPTIMISED AND HUMAN-CENTRED

Putting ourselves in the passengers’ shoes
Journey’s friend?
Technology will only get us so far
The human, digital connection

ATKINS
Member of the SNC-Lavalin Group
Few things are as deeply embedded in our culture as travel. Yet today, going from A to B is being fundamentally rewritten.

Technology, data and innovation are all transforming our experience and perception of travelling as passengers. Backed by the power of data, the passenger experience is becoming more efficient, optimised and human-centred. And as transport providers become increasingly aware of their passengers’ end-to-end needs, they’re revolutionising the possibilities available to them when travelling - changing the perception of travel in the process.

So what does this mean for passengers? In this magazine, we have gathered the knowledge, thoughts and perspectives of our experts, investigating how the passenger experience is changing across the entire spectrum of travel. From realising the potential of intelligent mobility, exploring the value of artificial intelligence, understanding how future mobility can help cities achieve goals for sustainability and economic growth, or developing airports that meaningfully represent their host cities, our diverse range of perspectives demonstrates the upsurge of new ideas in this topic - and how much can be gained by engaging with them.

We hope that these opinions will challenge and inspire you, aiding you in the process of designing genuinely human-centric transport solutions. And we’d love to learn from your insights: tell us what you think and help us develop our understanding of the passenger experience.
As the world around us changes, so too is the way we travel through it. Whether you move through the heart of a busy metropolitan city, or commute regularly between city, town and the countryside, intelligent mobility – data-driven technologies and opportunities from new digital services – will already have transformed your relationship with transport and mobility.

No evolution is without growing pains. The breakthrough of ride-hailing apps, such as Uber, challenge the regulatory landscape. A balance is needed to ensure that existing and new public transport services can happily co-exist and operate in a seamless and joined-up way with this disruption.

Everyone now expects low prices and ultra-convenience; organizations need to show they take issues such as passenger experience, customer centred design for safety and security seriously, while governments and public bodies need to meet environmental policy goals around air quality and congestion.

In summary, digital services, disruptive mobility options, passenger needs, health and wellbeing are at the heart of the requirements for future intelligent mobility.

The Grand Challenge
The UK Government’s Industrial Strategy plans to boost productivity by backing businesses to create good jobs and increase the earning power of people throughout the country. One of the four ‘grand challenges’ of the strategy involves tackling the future of mobility and put the UK at the forefront of the 21st century transport revolution.

Industry has been revitalised and is now supported to trial new transport innovations. Motivated leaders want to show that they’re open to embracing new technologies for the benefit of their customers and communities. The right technologies – used in the right way – offer the best chance to overcome this challenge.

“Industry has been revitalised and is now supported to trial new transport innovations”

As a result, bold new commercial models are emerging. Everything from ‘use, don’t own’ trends, to the role of private equity and car manufacturers shifting their strategic direction from product to service, represent key drivers of change. These models rely on the ‘coming together’ of unlikely business partners and the convergence of a diverse range of industry sectors. Success will rely less on the technology itself, and more on how organizations and businesses – and their people – harness the data. There’s reason for industry to be excited.

The UK Government has recently provided funding for up to four Future Mobility Zones that will significantly improve mobility for consumers, evaluating what works, and providing an exportable template to allow successful initiatives to be replicated in other areas.

The pace of technological change presents a real opportunity to reflect on how we create and prepare a transport ecosystem that embraces new technology and brings benefits to end users. It is also an opportunity to demonstrate how a transport ecosystem can work seamlessly alongside existing systems, mobility networks, regulatory frameworks and working relationships.

Louise Lawrence
Director for Intelligent Mobility (iM)
Connect without catastrophe

DEMAND FOR AN INTERCONNECTED PASSENGER EXPERIENCE IS GROWING, BUT WHAT ARE THE CYBERSECURITY RISKS AND HOW CAN WE ENSURE PASSENGERS HAVE A CONNECTED AND CYBERSECURE EXPERIENCE?

It’s a normal weekday morning. Or it would be, if your digital ecosystem hadn’t collapsed overnight. So rather than waking up on time, you wake up late, because your alarm (which, like everything else, is on your phone) isn’t working. You try to check the news but that’s down too. You try to dress without the weather report but you’ve no idea what to wear. And even though you’re late, you can’t hail a cab to work.

Twenty years ago, this level of dependence on information technology and a network of networks would have been unrecognisable. Nowadays, all the stakeholders rely on centralised data sets. So that main pipeline of data is taken offline, you potentially lose the entire matrix of information supplying many different networks. Not only would your transport apps stop working, the customer information systems the transport operators rely on could also be impacted. Relying on fewer data sources intensifies the potential problems if those data sources are compromised.

And even if you’re not dependent on it, the wave of innovation has swept away the old fashioned analogue network. So even if you’re not using Google Maps, enough of the world has moved on that it’s becoming harder to live without it. Garages don’t sell maps anymore, for instance. We are very quickly becoming wholly reliant on digital technology and the connected digital systems which makes it so useful. The benefits to our lives are inestimable. But the more dependent we become, the vaster the potential catastrophe should the network be compromised. Yet despite the growing risk, cybersecurity remains a niche issue. We’re still not taking it seriously enough.

When travelling on a train, one of the first things people tend to do is check for the WiFi signal. Passengers expect to be able to work, communicate and enjoy themselves during their journey. After all, if a bog-standard cafe can offer WiFi, why can’t a high-speed train?

Yet the adoption of WiFi offers a perfect example of how cybersecurity issues are too often swept under the carpet. Legacy trains are serviced by single networks. Having more than one network is expensive. So when you log onto a train’s WiFi network, you’re potentially being hosted on the same network that operates the train itself. Most of the time, this isn’t a problem. But for those with malicious intent, this connectivity represents opportunity. Just by hacking a train’s WiFi network, you have the potential to access the train’s vital operating systems. If enough trains were compromised, the entire country’s transport system could be severely harmed.

Of course, this doesn’t mean we shouldn’t upgrade our trains with WiFi. But it should make us think far more seriously about how we connect our systems. For most passengers, the reaction to this dystopian hypothetical isn’t ‘Why did you put WiFi on trains?’, but ‘Why did you put WiFi on the same network as the train itself?’

More and more of our devices are being connected. Having a vast, interconnected network stretching from our refrigerator to our bank account and in-flight entertainment system, the potential risks of being hacked. The integrity of the whole system depends on the security of each of its constituents. We need to design and integrate that in-flight entertainment system with the same diligence that we design the aeroplane itself.

The solution is to build in cybersecurity from the start. Designing with cybersecurity in mind allows us to develop solutions which inherently protect against these kinds of problems. By anticipating the dangers, we can create systems which are much more robust. Hiring cybersecurity experts to help shape the project is a good start, although currently they’re in short supply, but upskilling is an option. At Atkins we train engineers and project managers in cyber security theory and protocol to give our employees the skills to conduct cybersecurity risk assessments themselves. We call this built in resilience ‘Secure by design’.

Neither should you agree to any new contracts without first checking the cybersecurity assignments. Of course, you could leave the cybersecurity elements until the end of a project in order to move faster, but in the long run this is far more expensive. You can’t just re-hash a train, plane or automobile at the end to add cybersecurity.

When cybersecurity began to draw attention a decade ago, we were far less reliant on connected digital systems. The exponential growth of the past few years has transformed our relationship to our physical infrastructure. Now the potential damage of cybersecurity attacks has grown so great as to be catastrophic. It’s migrated from being a niche IT issue to something about which we must all be aware.

The good news is that if designed properly, cyber can be as safe as planes or trains. To attain this level of fail-safe design on all of our digital systems, we must rigorously assess their safety from the start. How do you maintain security after launch? How do you do patch security on a plane that has to be in the sky 16 hours a day? How do you do an antivirus update on a plane moving at 200mph? These are the complex challenges we’re trying to solve. It’s not easy, but it’s much easier if you design these abilities from the start rather than trying to add it later. Design with connectivity in mind, and then design the security enabling connectivity at the same time. As engineers, we can see the problem, and if we fix it the passengers and operators get what they want. Together, we can design robust, reliable digital infrastructure, enabling us to connect without catastrophe.

Matt Simpson
Technical Director for Cyber Resilience
Journey’s friend?

HOW PASSENGER-CENTRIC DESIGN CAN ENHANCE OUR TRANSPORT

We’ve all been there. Stranded at the back of a long queue, waiting to check in for a flight; squeezed onto a train that’s running far later than it was supposed to; or desperately trying to hail a cab in the rain.

Travelling is something we all do, and being a passenger is familiar to everyone. Yet no matter what kind of transport you take, the experience of being a passenger is often unpleasant. Delays, discomfort, and disorientation are all too common. It doesn’t have to be like this. And thanks to improvements in technology and in the ethos of transport management, things are changing for the better.

It’s worth reiterating why it’s worth being passenger-centric in the first place. After all, if transport depends on infrastructure, vehicles and engineering, doesn’t it make sense to focus on those instead? We tend to think of transport as serving the public. But that’s not the way we experience transport. The public is always made up of distinct individuals, each of whom have distinct needs. A retiree visiting their grandchildren will have different requirements than a daily commuter, who in turn will have different demands from those of schoolchildren. Unless we consider these passengers as individuals, we can’t come close to giving them what they need.

Placing the passenger at the core of the service isn’t just for customer service. It radically reshapes the whole process of travel. From implementing engineering works to making movement as frictionless as possible, starting with the passenger helps to ensure that each process is designed with real human needs in mind.

Compare this humanised approach with the all-to-often used traditional method of starting with the engineering. Better trains and infrastructure may make your journey time marginally faster. But if there are insufficient seats, no WiFi or mobile connectivity, or no ability to connect to alternative modes of transport for the ‘last mile’, for example, these improvements may be more than offset by the poor experience and ultimately drive customers away. Only by connecting with your passengers and gaining insights into their behaviours can you create a truly beneficial transport system.

“Only by connecting with your passengers and gaining insights into their behaviours can you create a truly beneficial transport system.”

So how can you gain insights about your passengers? Data-gathering gives us greater knowledge about how transport is actually being used than ever before. Whether air, rail, or road-based, transport providers must harness this data intelligently in order to develop better designs. How do passengers move about the terminal? Where do they spend the longest? What hinders their progress? Understanding these processes can point to the changes which would make a genuine difference to travellers.

But data is not the be-all and end-all to indicate how transport is being used. So much can be gained by observing passengers anonymously, preserving their privacy while gaining behavioural insights. Monitoring passenger flows in stations and terminals, for example, can yield powerful insights about how to reduce overcrowding, long queues and stress.

And data about infrastructure can be used to improve passenger experience. For instance, sensors placed to monitor the maintenance requirements of trains can be used to inform passengers of potential delays to their journey. If your intelligent infrastructure is telling you that it needs some maintenance work, you can use this information to understand the implications for the passengers and forewarn them of the impact on their journeys, giving them time to prepare and preventing nasty surprises.

Ultimately, everyone has different preferences when travelling. And what you want when cycling is different to when you’re in a cab or on an aeroplane. Regardless of such differences, having a passenger-centric mindset is the best way to ensure that these needs are always being considered. Data can be used to create a personalised service, across all modes of transport. By harnessing the insights of data, we can make all modes of transport better, and ensure that the passenger is always at the heart of the design, no matter what.

Tom Meacock
Client Director for Strategic Rail
When the topic of autonomous vehicles (AVs) or driverless cars comes up, you get a mixed bag of opinions. Some people cringe at the thought of not being in control of their vehicle or their journey. Others are excited for the day they can relinquish control in favour of a relaxed, productive morning commute. Opinions vary, but the fact is the future of mobility is changing, and it’s coming sooner than you think.

While AVs do provide significant benefits and bring technological advances, there are other aspects of smart infrastructure that, when combined, can bring bigger benefits sooner. An approach that uses all aspects of mobility—connected, autonomous, shared and electric—is called the CASE approach. Originally used in the automotive sector, CASE is a phrase that is becoming increasingly prevalent across the transportation and mobility sectors as being the optimal approach to moving to mobility.

Each aspect of CASE has its advantages. Connected vehicle technologies enable vehicles to communicate with each other and the world around them, supplying useful information to a driver or a vehicle to help make safer, better informed decisions. AVs have functionality that enables self-parking or technology to avoid collisions. Fully autonomous vehicles are computer-operated and don’t require a human driver. Shared vehicles and ridesharing, whether through personal vehicles, AVs or services, reduce congestion. Electric vehicles reduce emissions and are better for the environment.

Although each has its benefits, when we consider the possibilities in combining them and develop strategies that leverage current features and incorporate their future technological roadmaps, benefits could be realised such as safer streets, fewer personal vehicles on the road and less demand for additional parking areas or structures.

There could also be unintended consequences. What if, instead of owning a car, we used something like an autonomous Lyft or Uber service? Rather than driving your car from home to work and then parking it for the rest of the day, a shared autonomous vehicle instead picked you up, dropped you off, then went somewhere else and transported another passenger? The need for parking would certainly decrease. It may even seem like we’d have fewer cars on the road. However, there may be drawbacks, with the shared autonomous vehicle likely be traveling more miles to get you to your destination than if you were to drive yourself. Less-direct routes of travel would cause an increase in miles travelled and unless there are multiple passengers in the vehicle, the number of cars on the road would not decrease since passenger demand would remain the same.

As cities all over the world map out their strategy to prepare for the future, some have adopted the CASE approach and are thriving with innovation. While some states focus on technology and innovation to prepare for the future of mobility, other states are preparing by introducing legislation. Taking more of a ‘wait and see’ approach, they plan to put the best practices into place once they are realized. They recognize rapidly advancing technology will play a significant role, so they are developing policies that address the potential impacts of AVs, connected and shared vehicles on the road.

While it’s creating one piece of smart infrastructure, applying the CASE approach, or starting with a focus on legislation, states and municipalities are preparing for the future of mobility. They understand that how people move throughout their cities is rapidly changing. We are helping them realize that with change comes opportunities—opportunities for less congested streets, improved pedestrian and driver safety, and better preparation for future growth.

Lee Woodcock
Global Product Director for Intelligent Mobility (iM)
You’d be hard pushed to find a designer that would say they didn’t take a human-centred approach to design. We all want to create spaces that work for people. There also won’t be many designers who aren’t aware that technology is transforming the way we work.

What is often missing is a true understanding of the connection between these two elements—the human and the digital. What is the value a digital approach brings to the spaces we create for people? Is it analysis? Creating virtual environments? Interactive stakeholder engagement? Accurate monitoring of building performance? Or digital twins? For me, it is all of these things. It’s about knowing more about people and how they respond to their environments. Technology can help us understand this better. It can help us understand ourselves better.

What we should be asking ourselves is: What insight can technology give us that we don’t currently fully understand?

We explored this question in our ‘Key to the City’ proposal. As designers, we want to get people more engaged with their environment. Key to the City, an Atkins/Schréder collaboration, uses digital platforms to achieve this. The output is an app that unlocks the hidden layers of culture and history in the city, providing users with unique augmented reality experiences within the public realm.

The human, digital connection

CAROLINE PARADISE EXPLORES PEOPLE’S CONNECTION WITH TECHNOLOGY AND HOW WE CAN USE IT TO UNDERSTAND HOW PEOPLE RESPOND TO ENVIRONMENTS.

What’s interesting about the examples mentioned isn’t the technology itself, but the outcomes they achieve. As designers today, we aren’t just creating spaces, we’re shaping the way data and digital tools can improve the places we live in. We’re the piece of the puzzle that can connect the human to the digital.

They understand that how people move throughout their cities is rapidly changing. We are helping them realize that with change comes opportunities—opportunities for less congested streets, improved pedestrian and driver safety and better preparation for future growth.

This article first appeared in the New London Architecture’s New London Quarterly magazine.

Caroline Paradise
Head of Design Research
ONE OF THE BIGGEST CONSIDERATIONS FACING THE TRANSPORT INDUSTRY TODAY IS PASSENGERS’ DESIRE FOR END-TO-END JOURNEYS TAILORED SPECIFICALLY TO THEIR NEED – AND THIS IS ABOUT MORE THAN JUST CAR TRAVEL. SO, HOW CAN MOBILITY AS A SERVICE (MAAS) HELP?

For cities, MaaS offers the potential for a more responsive, optimised and cost-efficient transport network, resulting in less congestion, improved air quality and a boosted local economy.

As the importance of making heavily populated and congested towns and cities cleaner, safer and more productive places to live and work increases, so does the need to understand how we can collect and manage data on how society uses transport. Improving the availability, affordability and reliability of public transport is one of MaaS’s key strengths. Atkins led two trials to test the role of MaaS in delivering improvements to the future of mobility.

The first was a pioneering two-week trial of MaaS in Cambridge called Zume. Commuters began their journeys using on-demand car-sharing and completed them via public transport or by walking to their workplaces. The trial revealed a growing willingness among people to change how they travel to work but suggested a modal shift will only happen when appealing public transport alternatives are available.

The second built on Cambridge’s findings, and alongside Transport for Greater Manchester (TfGM), worked in collaboration with thirteen other partners (including local authorities, transport operators, service providers, plus local residents, businesses and communities) to set out, design and trial a MaaS model for the city-region – one of the first of its kind in the UK.

“A modal shift will only happen when appealing public transport alternatives are available.”

So, what do the trials have in common? Both took a very customer and human-centred approach from the outset. Rather than investing in an expensive or uncertain technological solution as a starting point for enabling MaaS, the focus was on understanding the viewpoint of the customer.

To contribute to a positive, and long-term change for transport in their city, immersive research captured rich data from participants, including in-depth interviews and ride-alongs with passengers, which provided insights into the key issues facing commuters each day. Personalized journey plans also helped change patterns and habits.

Overall, analysis shows that MaaS could be a significant tool in achieving city goals for sustainability and economic growth, as well as increasing positive perception and uptake of public transport.

MaaS’ success will depend on how successfully it can combat issues like pollution and congestion, while meeting customers’ expectations on price, safety and convenience.

Louise Lawrence
Director for Intelligent Mobility (iM)
Putting ourselves in the passengers’ shoes

A LOOK AHEAD TO THE CHANGING EXPECTATIONS OF RAILWAY PASSENGERS IN THE DIGITAL AGE AND HOW THE INDUSTRY AND THE SUPPLY CHAIN NEED TO WORK CLOSER TOGETHER TO MEET FUTURE DEMAND.

It could be said that we have disconnected with today’s passenger. Across the supply chain, the rail user and their experience must be placed at the heart of service design and delivery; a challenge faced not only by train operators, but also the rest of the sector.

To put ourselves in a passenger’s shoes, there is a need to focus on all aspects of a rail journey: from planning, arriving at a station, making the journey, and leaving a station. Such end-to-end journeys cross towns, modes of transport, cities, and do not move neatly between the network of one or another train operating company. Passengers not only require rail information and networks, but ticketing, and car parking, particularly those in rural areas or with infrequent bus services.

Our railway users expect us to embrace technology to deliver higher levels of safety, reliability, comfort and cost-effectiveness. Indeed, the biggest advances to come in customer experience are almost certainly technology-led rather than engineering driven. Alterations and upgrades to railway infrastructure are incredibly expensive, and while there is a desire to deliver a solution via infrastructural means, this does not always deliver the best outcome, nor respond to passenger and freight users’ demands.

Cross-industry learning

As key industry suppliers, we also have a duty to look, learn, and bring the best from other sectors to be deployed on the railway. Improvements in banking, retail and manufacturing can help us build an intimate customer relationship, and use data analysis to better predict demand, model scenarios and test behavioural nudges. Therefore, when we’re designing rail stations, could we have a better understanding of what passengers and staff want from their surroundings?

Should we be even more focussed on the wellbeing of those who use stations? This is where human centred design comes into the fore; putting the users at the core of the station rather than the engineers.

The medical and research world continue to issue more evidence highlighting the impact the built environment and the construction industry have on both our physical and mental wellbeing. The data collected forms a set of indicators which are used by our design teams to make informed and timely decisions that promote and embody the values of health and wellbeing. This includes building layout and plan organisation through to environmental design solutions, materials and specification of systems.

Where has this been adopted so far?

To date, this approach has been adopted with great success in the Higher Education sector to inform how we design university campuses and facilities. How do we adopt a similar approach when designing train stations, bus stations and airports?

Heathrow Biometrics

We continue to see significant investment in technology at airports to enhance the passenger experience. At Heathrow Airport, the biometric technology currently being implemented has the potential to reduce the average passenger’s journey time and simplify their passage through the infrastructure, using biometrics at every point of departure, from check-in to take-off. This end-to-end biometric solution shows how facial recognition technology can work at every point of the departing passenger’s journey. It is part of Heathrow Airport’s automation programme that, once implemented, will be the world’s largest deployment of biometrically enabled products, including bag drops and self-boarding gates.

Using this as an example, what role could biometric technology play at our railway stations? Could we see better passenger flows at peak times?

Smart Ticketing

While biometric passenger gates might be some way off, the rail industry has – to a large extent – embraced smart ‘paperless’ ticketing; with multiple advantages and potential advantages being booked travel online, passing through gates quicker, beating the queues, and supplying train companies with invaluable data, providing an insight into passenger preferences and habits.

Traditional paper tickets don’t allow us to understand what and how our customers are using the network, therefore as ticketing gets smarter, we will have a clearer idea of this, and the movement of trends so that we can start to anticipate future developments.

Conclusion

Passenger expectations are the highest they have ever been. As an industry, if we are going to fulfil the expectations of passengers in the digital age, then we need to work together to unlock the potential of technology and drive continuous improvement for passengers.

We see the future of our railways characterised by seamless end-to-end journeys, the establishment of a new norm where technology-enabled customers rely on digital platforms powered by smartphones to facilitate their journey choices. The future of rail, and all forms of transportation, will see us come together to share digital data platforms, allowing us to have a closer relationship with the passenger than ever before and to offer the kind of services they will increasingly demand.

This article first appeared in Transport Network magazine.

“...”
What does society want from a station, now and in the future? Key findings by user groups:

**Stations of the future**

**WHAT DO PEOPLE WANT FROM A STATION?**

Atkins conducted a 'stations of the future' survey during the Great Exhibition of the North in 2018. The survey reached over 5,500 people from all ages and walks of life. Their views have helped us better understand what end-users want from a station and how our designs can better respond to the way people want to travel and use stations.

**Under 20s**
- View technology as important for the future
- Want to see biometric scanners, autonomous vehicles and free wi-fi in stations
- Cost is an important factor in which mode of transport they choose
- Environment, health and wellbeing are also important factors
- 51% see leisure activities as the most important facility in a station

**Arrival**
- Easy access for people with less mobility
- Clear way in to the station for people who prefer walking
- Accommodate autonomous vehicles

**Environment**
- Prioritise features that improve air quality
- Indoor plants and gardens incorporated into designs
- Prioritise features that improve lighting
- Relaxed environments for people travelling for leisure

**Lounge**
- Play areas and game spaces for young children
- Somewhere people can pick up their packages or groceries on their way home from work
- Comfortable spaces for families to sit together
- Flexible spaces for people travelling for different reasons
- A place for commuters to work in the station while they wait
- Free wi-fi so everyone can use their phone/tablet

**Payment**
- Designs flexible to new technologies
- Digital signage
- Smart phone payments
- Biometric scanners

**Platform**
- Ensure station environments accommodate all levels of mobility
- Make it easy for everyone to move around the station
- Enable people to manage their journey on their phone
- Biometric scanners to help people board quickly
- Provide clear wayfinding so everyone knows where to go
- Provide boards with local information as well as train times

**21-64**
- Use stations for commuting and going to social events
- Most concerned with cost, reliability and speed of journey
- Wayfinding and high-quality spaces are important
- Want to be able to use current technology like smart phones, apps and contactless payment cards
- 46% say cost is the most important factor in deciding how to travel

**Over 65s**
- Use stations mostly for social purposes like going to events or meeting friends and family
- Accessibility, wayfinding and having everything in one place is important
- Want stations to be inclusive for everyone
- Want stations that are accessible
- 48% said good wayfinding is important in a station

**FREE WIFI**

**D’Yon Dowell**
PR & Communications Manager
The digital airport

DAN JONES, CLIENT DIRECTOR WITH ATKINS, SAT DOWN WITH PASSENGER TERMINAL WORLD TO TALK ABOUT DIGITAL TRANSFORMATION IN THE AIRPORT SECTOR AND A VERY EXCITING PROJECT WE’RE WORKING ON WITH HEATHROW AIRPORT.

Tell us more about the automation program you are working on at Heathrow? The automation programme will roll out new biometric services from the summer of 2019. This will be a first for the airport and will streamline the passenger journey from check-in to take-off.

What technology is involved in the project? The Atkins-developed PASS2 system, which currently manages passenger authentication through Heathrow, is at the heart of the programme. Incorporating our cutting-edge identity management technology, the system integrates all of the different technologies needed in the demonstrators. These include an identity app from partner Yoti, along with products from ICM, CEIA, Dormakaba, Rockwell Collins and Aurora AI, who provide the facial recognition cameras currently deployed at the airport. The technology will be deployed across Heathrow departures, and in future, is something we are keen to work with other airports around the world to develop in their own terminals.

What stage is the project at? As mentioned, we expect the roll-out to start from the summer of 2019. The demonstrators that we’ve run have shown that this is achievable, and also the benefits it can bring.

How has the technology improved the passenger experience and reduced journey times? Our main objective is to move to a ‘frictionless’ passenger journey, so removing the need to show boarding passes and passports. This will make a major difference to the experience of travelling through the airport. Our trials have demonstrated that it is possible.

Self-boarding gates have had a significant impact on journey times already. The initial trial measurements showed a reduced per-passenger average journey time, which supports punctual flights and a better overall passenger experience.

Who was involved in the project? As mentioned, this programme has brought together some of the aviation world’s best technology providers, including Yoti, ICM, CEIA, Dormakaba, Rockwell Collins, Aurora AI, and of course, Atkins.

Do you believe facial biometrics will be the main method for passenger identification in the future? It’s certainly looking like facial recognition has the edge on other biometrics when it comes to delivering the seamless passenger journey that is the aspiration of IATA’s One ID and NEXTT programmes.

The ‘face at a pace’ trial we have undertaken shows that we can use this technology without the need for physical interaction.

What are the main challenges standing in the way of wide-scale implementation of facial recognition technologies at airports around the world? Data protection and privacy is the biggest challenge we face. We’re already working with privacy teams and the UK ICO (Information Commissioner’s Office) to understand the requirements and build them into our thinking. The demonstrations we’ve run at Heathrow incorporate passenger consent processes to help us overcome this.

Can you tell us about any other noteworthy digital transformation projects Atkins is working on? We work closely with clients across government, industry and critical national infrastructure to make the best use of technology, and innovative ways of working, to deliver tangible, lasting and enriched outcomes for their organisation, customers and stakeholders. One great example of this is the Building Information Modelling (BIM) work we’ve been doing with HS2. We’ve helped HS2 deliver the transformational change required for BIM, including the way information is procured, managed and exchanged, both within the company and its supply chain.

Our work looked beyond the technology to the leadership, people and culture, and processes needed to deliver the outcomes HS2 desired. We hope this work will leave a BIM legacy for the UK construction industry, with application far beyond rail.

What do you believe the passenger journey through the airport will look like in 10 years’ time? And what technologies will be at the heart of the journey? I’m sure the concept of a passport will still exist in 10 years’ time! However, the need for showing it will significantly reduce. The aim is to make airport journeys as seamless as possible – we’re imagining a world where you can walk through an airport and onto your plane without breaking your stride. I do believe the biometric technology we’re deploying now is key to making this a reality.

Is there anything else you would like to add? Our knowledge and experience of the end-to-end passenger journey has enabled us to extend our work into the security search area, where we are leading trials of new CT baggage screening and body scanners in preparation for new government security regulations. We have developed a data driven trialling process, which helps assess technology offerings from a range of suppliers and leads to the recommendation of solutions at a component level. Linking this to the wider passenger journey ensures consistency and highlights opportunities to share passenger information across the touch points and to support the development of new solutions such as differentiated security screening.

This article originally appeared in Passenger Terminal World.
Technology will only get us so far

Is there a danger of valuing new technologies over stakeholder collaboration when trying to combat capacity issues at Airports?

With aviation passenger demand set to double over the next 20 years and many airports already experiencing peak time congestion, using existing assets more efficiently is an area of immediate focus. When industry leaders discuss how we will achieve this, the response is almost always – technology will solve it.

My view is that enhanced collaboration of an airport’s many stakeholders is actually the answer. Technology will only make airport businesses efficient to a certain degree; it is how the businesses work together that is often overlooked.

The airport is a unique operational environment. It requires many different organizations to work together to enable passengers to journey through it. At large hub airports, this involves hundreds of companies – Heathrow, for example, states that over 400 organizations are involved in its operations. It is hard to see many other parallels in the business world, let alone the transportation field, with this multi-agency/business complexity.

How well stakeholders operate and collaborate in this airport ecosystem will determine the experience for the passenger. Where businesses at an airport demonstrate a silo behaviour with a lack of planning and information sharing, the passenger experience will be inconsistent and ultimately frustrating.

At airports delivering consistently strong passenger service levels, it is often evidenced by more mature levels of B2B integrated working. The critical element here isn’t technology, it is how organizations work together – technology should be an enabler to make this easier.

High quality stakeholder management is key to delivering the collaboration needed for a seamless passenger experience. This requires us to listen and gather requirements on what each business and department needs to achieve in a change event. Understanding, listening, negotiating and resolving issues are the personal skills that change agents need to use in these environments.

So, what role does technology play?

With increasing digitization of the passenger journey – from biometric identity management and automated access control at the border to self-service bag drops – a huge amount of data is being captured by airlines, ground handlers and airport operators.

Ensuring continued high levels of integration across the passenger journey requires the sharing of this data and managing the stakeholders through this change process. Airports are highly regulated businesses operating to strict safety and security protocols, and sharing data requires overcoming commercial and confidential hurdles. Plus, the data needs to be cleaned up, anonymized and formatted so that it can be used by others.

The benefits technology brings aren’t being questioned here. Data analytics supports more efficient resourcing or improved use of airport assets, often managed through airport operational centres with many operational stakeholders collocated together.

Increasing automation delivers a faster service to the customer at key touchpoints, such as border control, potentially reducing dwell space. And technology enables new experiences to enhance the service to the customer or new revenue stream opportunities.

What is being questioned is whether we’re focusing so much on technology that we’re losing sight of the bigger picture: ensuring we all work together to achieve the best outcomes for the passenger.

The methods and assumptions that have long underpinned our airport designs are changing rapidly. The planning norms of the past need updating as airports demonstrate that they can use their assets to new levels of intensity and deliver greater service levels to their customers.

So instead of thinking about how many self-service kiosks or self-boarding gates in a terminal, let’s start measuring an airport’s ‘integration level’ or ‘collaboration maturity’ as the means for improving airport capacity.

This article originally appeared in Passenger Terminal Today on 7th March 2019.

Richard Hartshorn
Aviation Technical Director
Thinking big: How an airport can capture the essence of a city

DANIEL TAYLOR DISCUSSES THE TERMINAL DESIGN AT NEW ORLEANS INTERNATIONAL AIRPORT AND HOW WE WERE ABLE TO CAPTURE THE UNIQUE ASPECTS OF THE CITY AND HELP CREATE A WELCOMING, INIMITABLE AND INSPIRING FIRST IMPRESSION FOR EVERY NEW ARRIVAL.

Arriving at the airport is like entering a gateway into a new world. It’s the first place most people see when they arrive, the first place where they will breathe the air, eat the food, or meet a local.

A key challenge therefore is to ensure an airport’s design accurately captures the city it represents. Technology is integral to this process, particularly when the design is centred on incorporating unique elements that make a city memorable.

At Louis Armstrong New Orleans International Airport (MSY), a brand-new terminal was designed with the goal of immersing visitors in ‘The Big Easy’s’ culture, geography and storied history. While planners assured the terminal paid homage to New Orleans’ iconic food and music, the new design went a step further by trying to capture the city’s more subliminal features.

For example, a well-known cultural quirk about New Orleans is that it has its own directional compass. Traditional north, south, east and west is replaced by lakeside, riverside, downtown and uptown. This is because the shape of the city resembles a curve (hence another New Orleans’ nickname, The Crescent City) that makes traditional directions difficult to use. Streets bend and turn ever so gently that you can lose your sense of direction easily, creating a general disorientation that locals have come to accept.

The design of MSY’s central atrium at the terminal complex encapsulates this feeling by having several elements, such as skylights, that are purposely not in perfect symmetry to give the sense of mystery and allure that visitors feel while walking the city’s streets.

Another characteristic that terminal designers sought to emulate is the region’s unique aesthetic. In winter, morning fog will roll through thermal inversions, where cold air is trapped by a layer of warmer air, so when sunlight hits humidity, it creates a sepia-like tone. To recreate this quintessential Louisiana look, a massive glass-sealed image taken by a local photographer of live oak trees in morning fog graces the terminal’s main elevator. Printed on transparent sheets and lined on top of a silver backing, the image has a three-dimensional look that reflects light in a similar way the sun fills a foggy New Orleans morning.

It would not have been possible to incorporate these elements into the design of the New Orleans terminal without the use of advanced technologies like three-dimensional modelling and BIM technology. These tools enable designers to produce renderings and concepts quickly, which is particularly important when schedules become accelerated. Using digital renderings also has important safety benefits by allowing teams to have the clearest possible vision of how their facility will look and how it will be installed, reducing the likelihood of accidents on site.

With mid-size airports like MSY seeing increased demand from both business travellers and tourists, using technology to capture the unique aspects of a location isn’t just an excuse for architects to try out new designs or ideas. It, in fact, critical to the primary function of a city airport itself, helping create a welcoming, inimitable and inspiring first impression for every new arrival.

This article originally appeared in Passenger Terminal Today on 4th April 2019.

Daniel Taylor
Senior Architect
Urban Air Mobility - Future Flight

By 2050 it’s estimated that over 60% of the world’s population will live in urban areas. With congestion a growing issue, new and emerging technologies offer an innovative solution – taking urban transportation skyward.

From vehicle manufacturers, infrastructure and service providers to entire cities, we’re able to advise and support clients in considering the entire Urban Air Mobility (UAM) system.
Beyond engineering