

The Intelligent Airport: Why AI Engagement Is Now Core Infrastructure

Strategic Infrastructure for
Accessibility, Intelligence and
Operational Resilience



Executive Summary

Airports are no longer simply transport interchanges; they are dense, emotionally charged environments operating at the intersection of physical infrastructure, digital systems and human vulnerability. Passenger volumes continue to rise. Accessibility demand is growing as populations age. Disruption events including weather, airspace closure or operational bottlenecks, are increasing in frequency and visibility. Meanwhile, staffing elasticity remains constrained and cost pressures continue to intensify.

In this context, AI-powered Digital Assistants should be understood not as customer service enhancements, but as strategic infrastructure. They form part of the core operating model for inclusive engagement, real-time intelligence and elastic capacity.



The strategic question is no longer whether AI engagement tools are viable. The question is how deeply they are embedded into operational intelligence, inclusion strategy and long-term competitiveness.

The significance of this shift extends way beyond staff-time savings. Digital Assistants are reshaping how airports understand passenger anxiety, accessibility, disruption resilience and the broader

human experience of travel. They are generating real-time intelligence on passenger behaviour while providing a discreet and always-on interface for passenger and staff support.

The lesson emerging from early adopters is clear: successful deployment requires technical ambition combined with humility about lived experience. Technology expertise and capability alone is insufficient. Deploying an off-the-shelf AI chatbot, no matter how well it's trained, just isn't going to cut-it. Real, meaningful impact occurs at the intersection of feasibility, viability, and far more crucially, at the intersection of good solution design and sector expertise.

It is clear that today's Digital Assistants are just the first step on a journey towards a smarter, more inclusive and automated passenger experience.

A real-life example where Digital Assistants are evolving and making a significant impact is Hello Lamp Post's innovative "Hello Airport" Digital Team Member. Hello Airport is not "just another AI chatbot", it's designed to behave more like an on-the-ground, operational team member embedded in the physical environment and designed to support people in the moment, in that exact location. It's cleverly positioned as smart staff augmentation, not just simple FAQ automation. Over the past year, Hello Airport has supported, on average, 180k passenger conversations worldwide, engaged 161k unique passengers in their chosen language; all without the need for any manual staff intervention. In operational terms, this has equated to approximately 2,626 staff days diverted from repetitive query handling toward higher-value human interactions.

Airports that treat AI engagement as strategic infrastructure rather than tactical experimentation are beginning to move from reactive service models to intelligent, inclusive and adaptive operations. Where are you on this journey?

The Connected Transport Reality: Complexity Meets Human Experience

We now live in a world that is physically, socially and digitally interconnected with all of this happening at an unprecedented scale. Transport infrastructure sits at the centre of that connectedness. Yet for many passengers, particularly those with accessibility needs, that connectivity can feel fragile.

Environments such as busy terminals, crowded concourses or unpredictable boarding processes can be both inconvenient and disabling. Research across rail and airport environments consistently highlights that a proportion of the population avoids public transport entirely, not always because access is impossible, but because uncertainty and stress make the journey feel unmanageable.

Airports are uniquely intense versions of this problem. They combine time pressure, security protocols, multilingual navigation, retail complexity and colossal geographical footprint. For passengers with reduced mobility (PRM), sensory

sensitivity or heightened anxiety, the cumulative effect can be overwhelming.

This is not solely a passenger experience, moral or even compliance issue. It is an operational and economic one. When passengers cannot travel confidently, demand is suppressed. When uncertainty dominates, staff workloads increase. When disruption occurs, the fragility of service channels is exposed.

AI Digital Team Members operate precisely at this intersection, providing certainty where ambiguity exists, information where stress accumulates, and scalability where human capacity is finite.

From Query Handling To Behavioural Insight

Global usage data generated from Hello Airport, a state-of-the-art digital team member reveals important behavioural patterns.

These demonstrate some fundamental truths. Most passenger demand is repetitive and informational. Queries such as gate location, flight status or wayfinding consume frontline time without requiring specialist judgement. Automating these interactions creates increased capacity elsewhere. Second, the density of general open-ended questions indicates something more subtle in that passengers often do not know which category their problem fits into. They seek reassurance as much as instruction.

The cumulative 282k messages exchanged across 180k passenger conversations indicate that interactions are rarely single-touch. Passengers engage in multi-step exchanges, clarifying and refining their needs. This reflects increasing comfort with conversational AI interfaces across demographics, including older passengers, contrary



CASE STUDY 1:

Cincinnati/Northern Kentucky International Airport

"The airport assistant has become a valuable part of how we support passengers at CVG. It has helped us respond more efficiently, remain accessible, and gain deeper insights into what matters most to our travelers - all without placing additional pressure on our teams. More than just a tool for answering questions, it's helped us evolve the way we deliver effective customer service."

- Brian Cobb, Chief Innovation Officer,
Cincinnati/Northern Kentucky
International Airport

375+

Staff days saved /
year

21,000+

Passengers
supported / year

25,000+

Queries diverted
from customer
teams



Aiding smooth navigation
through the airport,
buses and parking

to earlier assumptions that QR-code accessed or AI systems would skew exclusively younger.

From an operational perspective, the anticipated 375 staff days saved represent measurable efficiency. However, the strategic value lies beyond deflection as every interaction generates structured insight.

Historically, airports relied on call centre logs, periodic surveys and anecdotal frontline reports. Digital Team Members provide continuous, structured intelligence and most importantly, real-time insights into the day-to-day operation of the airport.

Today, the smartest Digital Team Members bring location specificity and contextual awareness that allows airports to gain instant visibility into confusion points, sentiment patterns, accessibility demand and emerging disruption signals. This transforms passenger service from reactive response to continuous intelligence.



Accessibility As Strategic Infrastructure, Not Compliance

In the United Kingdom alone, 14 million people live with some form of disability. Many conditions are non-visible, including neurodiversity, anxiety disorders and cognitive impairments. Airports represent some of the most cognitively demanding public environments in modern society.

Accessibility is therefore not only a compliance obligation. It is a growth strategy. When passengers feel uncertain or overwhelmed, demand is suppressed. When journeys feel manageable and predictable, demand expands.



Accessibility innovation often begins with compliance obligations but delivers broader transformation when treated strategically.

At airports such as Glasgow, annual PRM demand exceeds 120k assists across all channels and continues to rise. However, many passengers who would benefit from support do not formally register for it. They may prefer discreet guidance or feel uncertain about eligibility.

CASE STUDY 2: Glasgow Airport: Accessibility at Scale

“The technological advancements we’re seeing today in areas such as artificial intelligence and augmented reality could play a key role in how we improve these vital services and further enhance the customer experience.”

- Ronald Leitch, Interim Chief Operating Officer, AGS Airports

80

Staff days saved / year

10,000+

Passenger messages

4,000+

Passengers supported / year

-50%

Queries needing manual intervention

33.8%

Increase in passenger feedback

86%

Satisfaction rate with digital tools

100%

Queries resolved with instant response

CASE STUDY 3: Birmingham Airport; Digital Elasticity

“Connected Personal Experiences (CPE) is a key milestone in our mission to lead in customer experience and tech-driven services. By integrating AI-ready technologies and omnichannel communication, we aim to create memorable, personalised moments that enhance every journey. Whether it’s a family-friendly check-in, sensory rooms for neurodiverse passengers, or AI-powered recommendations, our goal is to ensure every passenger feels supported from arrival to departure.”

- Stuart Haseley-Nejrup, Head of
Customer Strategy, Birmingham Airport

2,000+

Staff days saved /
year

138,000

Queries diverted
from customer
teams

125,000

Passengers
supported / year



Integrated within
connected personal
experiences programme

AI Digital Team Members provide discreet, multilingual and always-on support. They offer a new channel that is available everywhere across the airport meaning passengers can seek assistance or information wherever they are, rather than depending on staff or PRM desks. They allow passengers to rehearse journeys, clarify assistance options privately and reduce psychological friction before and during travel. Digital Team Members offer a psychologically safer interface without entering a queue or initiating a public conversation. The psychological dimension is critical. As accessibility practitioners frequently observe, the stress and uncertainty associated with travel can exceed the physical difficulty itself.



For airports, the implication is clear. Accessibility-led AI deployment is not a niche use case. It is a strategic lever for improving confidence, expanding demand and reducing operational strain simultaneously.

Disruption Resilience And Elastic Capacity

Managing disruption is becoming a reality of modern aviation operations. Weather volatility, operational bottlenecks and geopolitical instability create sudden spikes in passenger demand for information.

Human staffing models cannot scale instantly. AI systems can. Digital Team Members act as elastic infrastructure, absorbing query surges, reducing physical congestion and protecting frontline teams from overload.

Operational resilience is where Digital Team Members demonstrate additional value. During severe weather events at Birmingham Airport, passenger queries increased by 500%. Over a three-day period, more than 6,700 questions were handled digitally, saving approximately 782 staff hours, equivalent to 97 working days if managed manually.



Importantly, the types of queries during disruption are often urgent but informational: reopening times, rebooking procedures, parking extensions, overnight accommodation guidance. Providing immediate responses reduces anxiety and prevents physical crowding at desks.

As climate volatility and geopolitical disruption increase, resilience capability will become a core performance indicator for airport operators.

CASE STUDY 4:

Atlantic City International Airport

“As a small team with limited staff capacity for customer support, Hello Airport has allowed us to reach and support more passengers than ever, while actually saving staff time and resources. Providing 24/7, multilingual access to information is helping to greatly improve the passenger experience at Atlantic City Airport.”

- Timothy Kroll, Airport Director

149+

Staff days saved / year

9,000+

Queries diverted from customer teams

10,000+

Passengers supported / year



24/7 Multi-lingual access introduced

Integration, Ecosystems and the Holistic Journey

Passengers experience airports as a single journey. Operationally, airports are fragmented ecosystems of airlines, security, retail operators, parking providers and assistance contractors managed in silos.

Digital Team Members operate as integration layers. By connecting real-time flight data, parking systems and assistance workflows, they present a unified interface even where backend systems remain distributed.

The strategic trajectory is clear. Airports should be moving from reactive question handling toward anticipatory guidance powered by predictive analytics and behavioural insight.

For example, if a passenger's flight is confirmed on time and they arrive at their gate early, the assistant could proactively suggest nearby coffee shops or bookstores, while also drawing on live data such as security wait times, check-in and customs queues, baggage claim updates, real-time parking availability, shuttle tracking, onward travel schedules, weather alerts, and even live data showing which retail and food outlets are open. This multi-level integration turns fragmented operational systems into a single, intelligent, revenue-generating passenger experience.

More advanced deployments are moving toward predictive analytics, identifying crowding pinch points, signalling equipment outages and informing dynamic routing. The strategic direction is clearly moving from reactive Q&A toward anticipatory guidance and real-time insights.



The Commercial and Strategic Case

From a financial perspective, ~2,626 staff days saved per annum across just four airport deployments represent tangible productivity gains. Yet the commercial case extends beyond staff-time savings and efficiencies.

The UK accessibility market alone represents approximately 20% of the population, growing both in size and wealth as demographics shift. Failure to serve this market effectively constrains growth. Inclusive design, when executed well, expands demand rather than merely redistributing it.

Airports deploying AI engagement infrastructure are beginning to demonstrate viability through measurable satisfaction improvements, resilience performance during disruption and adoption across age groups.



How to select your Digital Team Member

- ▶ **Operational Integration** - Seamless integration with live flight APIs, parking systems, PRM workflows and existing airport data infrastructure.
- ▶ **Scalability and Elastic Capacity** - Proven ability to handle disruption spikes and high query volumes without degradation in response speed or accuracy.
- ▶ **Accessibility by Design** - TTrue native multilingual support, discreet assistance pathways and evidence of co-design with neurodiverse and PRM users
- ▶ **Location-Specific Guidance** - Ability to deliver terminal maps and navigation, gate information, retail locations and context-aware support based on exactly where the passenger is in their journey.
- ▶ **Actionable Intelligence** - Structured analytics that provide real-time insight into passenger sentiment, confusion points and operational pressure areas.
- ▶ **Measurable ROI and Adoption** - Demonstrated staff time savings, query diversion rates, satisfaction improvements and cross-demographic usage data.

Conclusion

AI Digital Assistants in airports are entering a phase of strategic maturation and evolution into even smarter Digital Team Members. What began as digital signage, journey augmentation or customer service automation is evolving into core digital infrastructure. Digital Team Members are the “virtual front door” to an improved airport experience.

The evidence indicates meaningful operational impact, tens of thousands more passenger conversations supported, thousands of staff hours reallocated, and clear patterns of behavioural adoption. More importantly, Digital Team Members are addressing the deeper challenge of the psychological and informational complexity of modern travel.

The most successful deployments share common characteristics. They are ambitious in technological scope but humble in recognising limits of

expertise. They engage directly with diverse users. They balance feasibility, desirability and viability. They treat accessibility not as compliance but as opportunity.

Airports operate at the nexus of connectivity. To thrive in an increasingly complex and volatile environment, they must innovate intelligently. AI-powered engagement systems provide not only replacement for human service, but a stabilising and amplifying layer that strengthens it.

In the coming years, the competitive differentiator will not be whether an airport has a basic Digital Assistant but how deeply that Assistant is integrated into operational intelligence, inclusion strategy and resilience planning. Digital assistants will become invaluable Digital Team Members rather than today's simple FAQ responders.

The transition from reactive service to intelligent, inclusive infrastructure is already underway.

