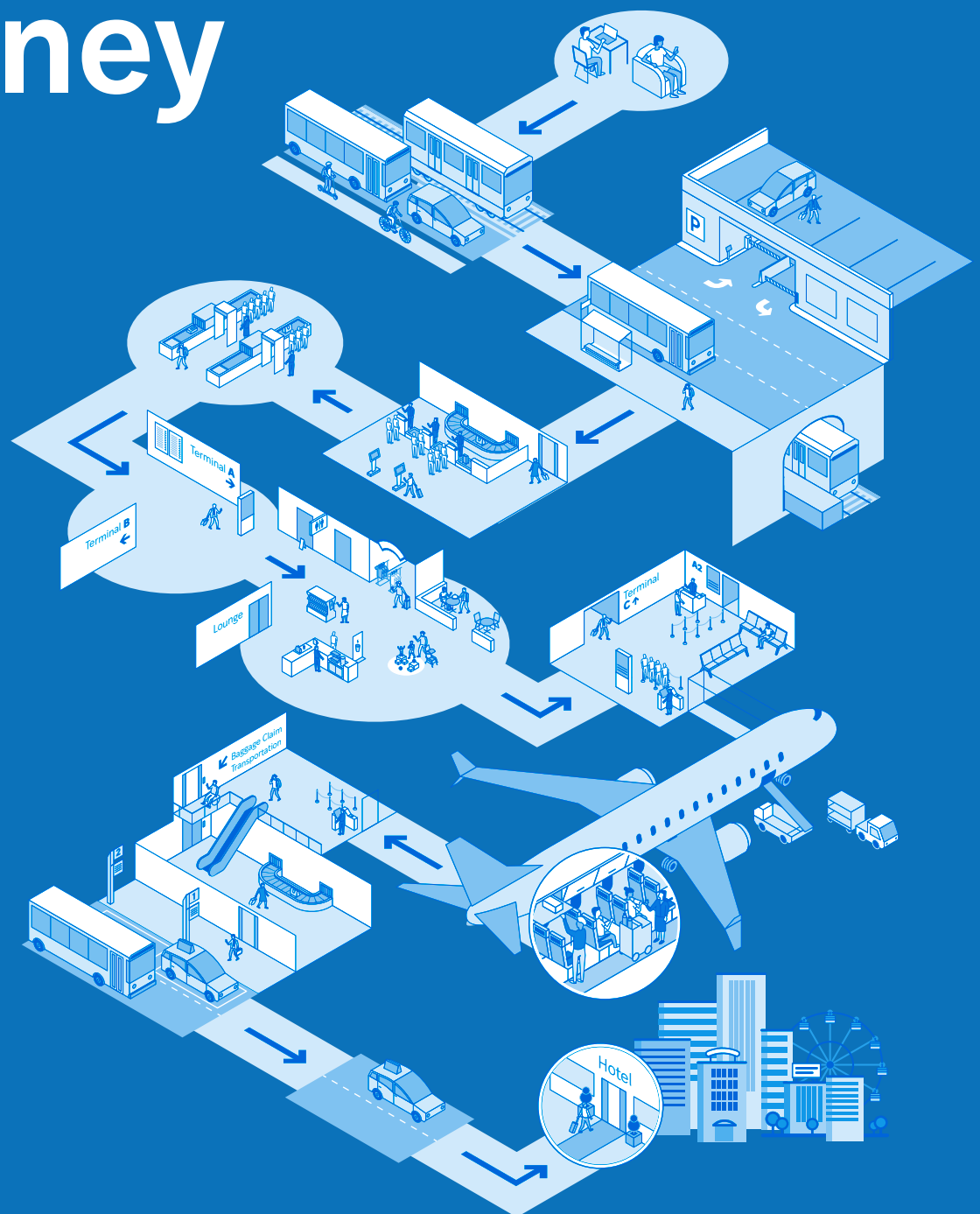




LANDRUM & BROWN LAB

Rethinking the Passenger Journey



OCTOBER 2025

Executive Summary

The next evolution of airport design will be driven by the seamless integration of physical and digital infrastructure. Physical improvements such as terminal modernization and enhanced amenities remain essential to comfort and capacity, but without a unified digital layer, the passenger journey will continue to feel fragmented and unpredictable. A human-centered digital ecosystem can amplify the value of these investments, creating a consistent, confident, and inclusive experience across all airports. For planners and operators, this shift redefines the work: designing adaptive, data-informed environments that respond in real time, bridge institutional silos, and transform every facility and touchpoint into part of a scalable, intelligent network that improves both passenger experience and operational performance.



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What is the L&B LAB?

The L&B LAB is Landrum & Brown’s research and development unit. Its mission is to harness decades of industry knowledge and expertise to develop innovative solutions that advance our clients’ goals and contribute to global thought leadership. In addition to our biannual thought leadership releases, the L&B LAB drives internal research and development projects. This whitepaper is the result of these efforts, bringing together interdisciplinary teams to address complex issues and develop innovative ideas and solutions.

Introduction

For many passengers, the air travel journey begins long before they reach the airport, and stressful uncertainties start just as early. Is there a flight that will get me to my destination before my meeting? Should I drive, use an Uber or take public transit? Will traffic delay the ride to the airport? Is the parking garage full? How long will the TSA line be? Which terminal is the flight in? What gate, has it changed? Is the flight delayed or on time? Will there be time for a good meal before boarding? These questions play on repeat along the passenger journey, creating a fragmented experience where travelers must piece together information from multiple sources, often in real time, and often with incomplete or conflicting data. This can be overwhelming when flying alone, and even more so with a family.

Despite decades of investment, the passenger journey remains disconnected, shaped by independent systems that vary widely among airlines, airports, security agencies, and ground transportation providers. Each stakeholder manages its own technologies, creating platforms or interfaces to serve customers and different functions, and every airport presents a different interface, process, or expectation. For the traveler, this patchwork of touchpoints creates friction and leads to anxiety about uncertainty at every step. For airports, those stressors translate into missed retail opportunities, negative passenger sentiment, and operational inefficiencies that ripple across their facilities.

While airports have focused on physical improvements, such as ground transportation centers, upgraded concourses, improved signage, and expanded amenities, these enhancements are constrained to individual locations. A redesigned terminal may benefit passengers at one airport, but it has no bearing on their experience at the next. This approach fails to address the core challenge of modern air travel: the journey spans multiple jurisdictions, systems, and operators. Without a unified, cross-network strategy, even the most advanced facilities cannot deliver a coherent, end-to-end passenger experience.

And while many people claim to have a “favorite” airport, that preference is often less about quality and more about familiarity. Most travelers feel most

“While many people claim to have a “favorite” airport, that preference is often less about quality and more about familiarity. Most travelers feel most confident at their home airport, not because it is objectively better, but because they know how to navigate it.”

confident at their home airport, not because it is objectively better, but because they know how to navigate it. They understand the route and traffic conditions to get there, the parking layout, the fastest security checkpoint, the terminal and gate configuration, and which food options are nearby. The successful repetition of this process lessens uncertainties and provides a sense of control that lowers stress and makes the experience feel manageable.

But that comfort vanishes the moment a traveler lands somewhere new, which could be as close as the adjacent state. A different layout. A different check-in process. A different mobile app. A different set of signs, transit options, security protocols, or amenities. Even basic expectations, like how to find your gate or where to get help, change from airport to airport. Passengers with limited mobility or special needs find that airports offer varying levels of additional services to meet their needs, causing inconsistency in the travel experience and uncertainty about what level of support will be available at each location. This requires re-learning and reinforces stress, particularly for travelers navigating multiple airports in one trip.

This inconsistency affects everyone, from business travelers and families to non-native speakers, including passengers with mobility, sensory, or other special needs. Each new airport resets the traveler’s sense of orientation and increases the likelihood of confusion, missed connections, or unplanned delays. Instead of a coherent end-to-end journey, passengers are left to navigate a patchwork of disconnected experiences, each designed independently and rarely working together seamlessly.

Mapping the Passenger Journey

To identify opportunities to improve the passenger experience, it is essential to understand the full end-to-end journey, from pre-trip planning at home through every step at the airport and concluding with post-trip travel feedback. This journey includes key touchpoints such as:

- At-Home and Pre-Trip Planning
- Transportation to the Airport
- Arrival and Terminal Entry, including parking and curbside drop-off)
- Check-In And Bag Drop
- Security Screening
- Terminal Circulation and Dwell Time
- Airport Retail, Dining Services, Restrooms, and Amenities
- Holdroom and Boarding Areas
- Connecting Flights
- In-Flight Experience
- Arrival: Baggage Claim and Ground Transportation
- Post-Trip Final Mile
- Lodging and Attractions (including hotel check-in and transportation to attractions)

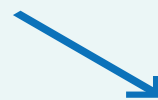
At each touchpoint, passengers must navigate a range of procedures and interact with various digital or physical tools, from airline websites and mobile apps to signage and in-person assistance.

According to the 2024 IATA Global Passenger Survey, 32% of global passengers desire to access all travel information from a single place pre-travel. For the multi-airport system, 68% of passengers select their departure airport based on location. A 2024 Ipsos travel survey found that 71% of U.S. passengers visit one or more airline apps or websites to research travel options.

Passenger Types

All passengers move through the same touchpoints, but they individually experience them in different ways. Priorities, confidence levels, and personal circumstances shape how stressful or seamless the journey feels.

Building on the framework developed by Joe Barden, the lead of L&B's Terminal Planning group, passengers can be understood as three behavioral types:



Campers, who head directly to their gate or lounge and minimize interaction;



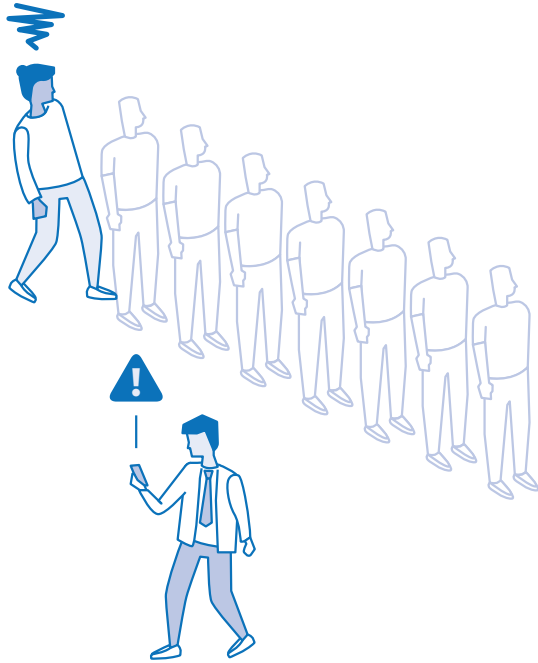
Roamers, who balance efficiency with stops for food, retail, or brief moments of comfort; and



Explorers, who actively seek out amenities and unique terminal experiences.

These profiles highlight common patterns, but they intersect with other factors such as mobility limitations, sensory and/or cognitive needs, language and cultural backgrounds, and digital literacy. Recognizing both behavioral profiles and these layered accessibility considerations allows airports to design journeys that are more inclusive, predictable, and confidence-building for all travelers.

Passenger surveys and observational data from authoritative sources, including IATA GPS and ACL's Airport Service Quality (ASQ) program, consistently highlight measurable gaps and stress points. Unpredictable wait times, inconsistent information, confusing wayfinding, and limited real-time updates frequently drive spikes in anxiety and uncertainty. Specifically:



- **54%** of respondents cited excessively long queue wait times as a key frustration¹
- Providing more real-time information was identified by **63%** of passengers as the key to improving their experience during travel disruptions²
- Flight status (**82%**), baggage information and wait time for delivery (**49%**), wait time at security/ boarder control (**46%**) are the top three interactive data needed (IATA GPS 2018).

These stress points cluster around high-stakes stages of travel, including security screening, gate changes, connecting flights, and baggage claim, where gaps in timely, accurate information can directly result in missed connections or avoidable delays.

As noted earlier, passenger experiences vary widely based on individual profiles, including differences in language proficiency, digital literacy, mobility or sensory needs, travel purpose such as business versus leisure, and familiarity with specific airports. Travelers with limited proficiency in the local language or with disabilities frequently face greater barriers, while business travelers may prioritize efficiency and real-time alerts. For passengers with mobility or sensory challenges, the consistency and clarity of wayfinding, the accessibility of facilities, and the availability of assistance services are especially critical to a smooth journey. Designing solutions that recognize this diversity is essential to creating experiences that serve all users equitably.

Collectively, these patterns of stress and diversity highlight the need for a unified, personalized digital infrastructure that delivers consistent, real-time, context-aware guidance while learning from its users' patterns, preferences, and decisions. A connected digital framework can transform this disjointed journey into an intuitive, inclusive, and confident experience that supports travelers from planning through final arrival.

While no two airports will ever look the same, the experience of getting from home to gate can be consistent. A unified digital layer, designed around the traveler rather than the institution, offers the potential to connect disparate systems and deliver real-time, personalized guidance throughout the journey.

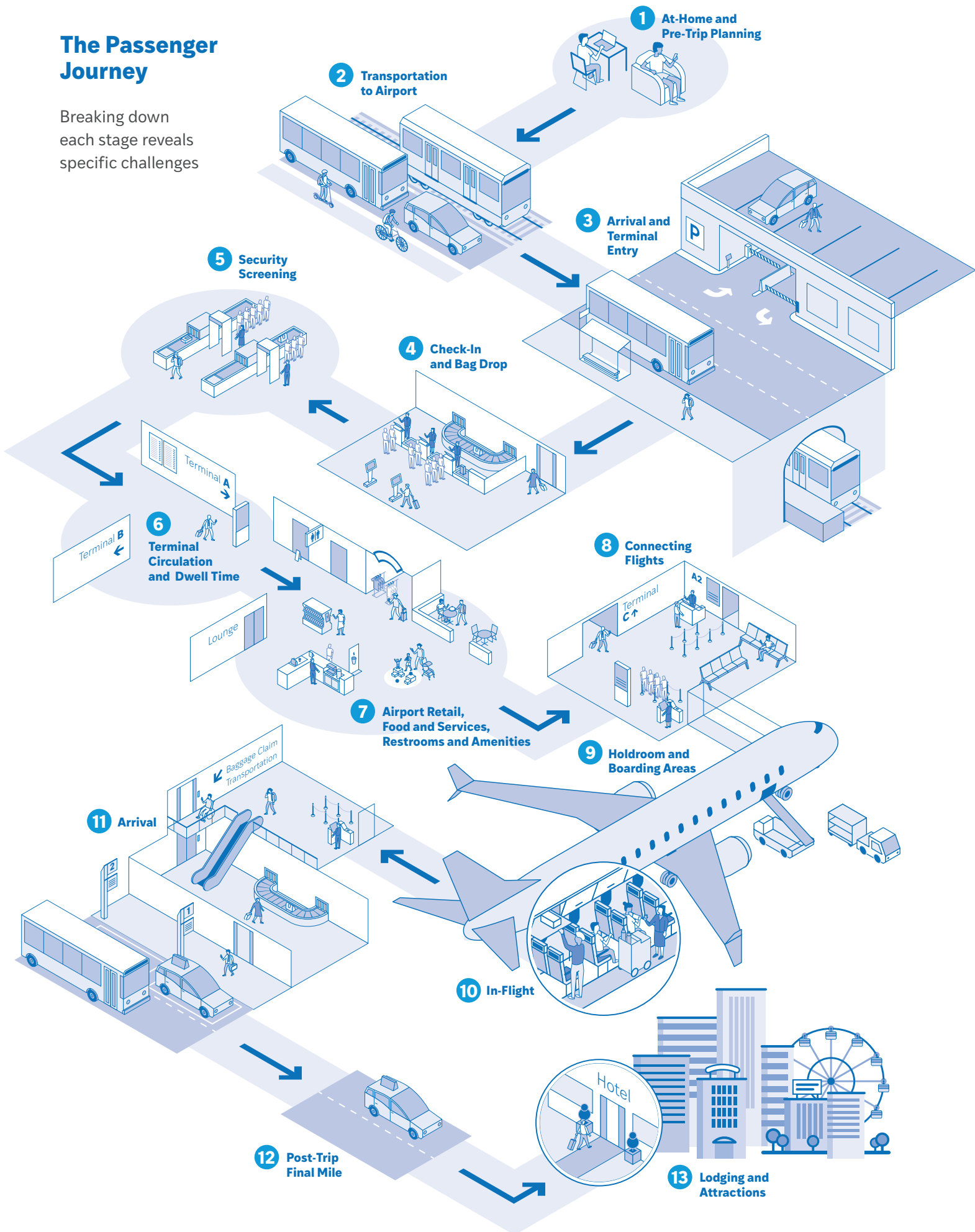
Just as rideshare apps or digital maps make navigating unfamiliar cities intuitive, a shared digital platform can help passengers feel confident no matter where they fly. Physical improvements lay the foundation for a great passenger experience, but digital solutions can unify and amplify those efforts. To truly improve the passenger journey, we need a scalable, human-centered digital infrastructure that creates a seamless, predictable, and inclusive experience at every airport, on every trip.

¹ (2024, June 13). *Boosting passenger experience drives 80% of travelers to spend more at the airport*. Aerocloud. Retrieved July 22, 2025, from <https://aerocloudsystems.com/resource-hub/destination-airport-the-runway-to-revenue-growth-report-press-release/>

² (2017, October 24). *Passengers want technology to give them more control over their travel experience*. IATA. Retrieved July 22, 2025, from <https://www.iata.org/en/pressroom/pressroom-archive/2017-press-releases/2017-10-24-02/>

The Passenger Journey

Breaking down each stage reveals specific challenges



- 1 At-Home and Pre-Trip Planning:** Passengers use airline and third-party websites or apps to review and select destinations, book flights, review policies, and manage itineraries. Confusion over fare options, baggage rules, and limited visibility into airport conditions such as parking availability or security wait times can increase anxiety. Many travelers experience information overload, and language barriers further complicate the planning process.
- 2 Transportation to the Airport:** Travelers rely on a mix of private vehicles, rental cars, rideshares, taxis, hotel shuttles, public transit, and emerging micromobility options such as e-bikes and scooters. Real-time information is often unavailable or incomplete, and those unfamiliar with the area may struggle with traffic conditions, transit service schedules and routing, shuttle logistics, rental car locations or curbside procedures. These uncertainties are often more pronounced for passengers with mobility challenges or limited local knowledge.
- 3 Arrival and Terminal Entry:** Parking and curbside areas are frequently marked by inconsistent signage, limited guidance, and unclear drop-off procedures. Transit stations and drop-off areas also typically lack signage and might not be as accessible to the terminal as other modes. Travelers can become disoriented or frustrated, especially when navigating crowded curbside zones or unfamiliar terminal layouts.
- 4 Check-In and Bag Drop:** This step varies significantly by airline and airport, ranging from staffed counters to automated kiosks. Lines can be long, and self-service systems are not always intuitive. Travelers may face challenges understanding baggage policies and fees or using unfamiliar equipment, particularly if they are new to the process or have limited digital proficiency.
- 5 Security Screening:** Wait times fluctuate widely and procedures can differ by airport. Travelers often receive little information in advance about what to expect. For families, non-native speakers, or those requiring assistance, this stage can be especially stressful and disorienting.
- 6 Terminal Circulation and Dwell Time:** Once past security, passengers navigate terminals with varying degrees of clarity. Wayfinding systems are inconsistent, terminal congestion is common, and digital signage may not always be helpful or available.
- 7 Airport Retail, Dining Services, Restrooms and Amenities:** Retail, concessions, and amenities offer a critical opportunity to delight travelers, but only when they are easy to find, reliable, and accessible. Uneven distribution of dining, retail, and rest areas makes them difficult to access within limited dwell times, while overcrowded or overstimulating zones reduce comfort and discourage use.
- 8 Connecting Flights:** Transferring between gates or terminals often requires travelers to interpret unfamiliar signage and navigate unclear routes. Gate changes may not be well communicated, and transitions between domestic and international areas can involve additional security or customs procedures. These issues add anxiety and time pressure, particularly when connections are tight.
- 9 Holdroom and Boarding Areas:** Boarding processes differ by airline and gate, often resulting in crowding, confusion, and limited communication. Announcements can be missed in noisy environments, and accommodations for those who need assistance may not be clear or consistently applied.
- 10 In-Flight Experience:** While onboard, passengers often have minimal updates about their next steps, such as connecting flights or ground transportation options. Language barriers and inconsistent access to accessible in-flight services can further complicate the experience.
- 11 Arrival - Baggage Claim and Ground Transportation:** Upon landing, travelers face uncertain baggage wait times, limited directional signage, and difficulty locating transportation options. Delays and confusion are common, especially for those unfamiliar with the airport layout or local mobility services.
- 12 Post-Trip Final Mile:** Reaching the final destination can be difficult due to poor integration between airport systems, rental car operators and local transit or mobility apps. Travelers may be left without clear information about available transportation options or onward connections.
- 13 Lodging and Attractions:** After luggage is retrieved and ground transportation is established, travelers generally stay with friends and family or at hotels. The hotel check-in process can be lengthy and tiresome, especially after a long flight. Selecting attractions can create additional stress related to purchasing tickets and arranging transportation.

Assessing the Digital Landscape

The passenger journey is marked by uncertainty, exacerbated by inconsistent experiences across airports and travel stages. This fragmentation is mirrored in the digital tools currently available. While valuable, these tools largely operate in isolated silos managed by different stakeholders. This limits their ability to provide a seamless, personalized, and inclusive travel experience.



Airline Apps: Carriers offer robust apps focused on flight services, booking, check-in, boarding passes, flight alerts, and loyalty programs. However, these apps seldom extend functionality beyond airline-specific touch-points. Gaps remain in terminal navigation, security, and ground transportation. This narrow focus contributes to fragmentation and heightens traveler uncertainty when transitioning between providers.



Airport Apps: Airports offer apps focused on terminal-specific functions such as wayfinding, parking, security wait times, and amenities. While these tools enhance situational awareness within a single airport, they rarely connect with airline or other government systems (i.e. TSA). This lack of integration prevents consistent information sharing and limits the personalized guidance travelers need across multiple airports.



Rental Car Company Apps: Airports in the United States rely on rental cars to serve many of their customer's last-mile connections. Most larger airports also operate consolidated rental car facilities (ConRAC) where all rental car companies are co-located under one roof, providing shuttle or APM service directly to the terminal complex. Each company has their own app to allow customers to book their vehicle and manage their reservations. However, in many cases these apps do not contain real-time information about the airport rental car facility, adding to the fragmentation of the experience.

“Taken together, the current digital landscape illustrates a siloed ecosystem of specialized apps and platforms.”



Government and Security Agency Tools:

Standalone apps like TSA's MyTSA, and CBP's Mobile Passport Control provide focused services related to security screening and border control. Their lack of integration into broader digital ecosystems forces travelers to navigate disconnected interfaces during high-stress phases such as security checkpoints and customs. Enhancing interoperability is essential to creating a frictionless, predictable journey that addresses anxiety hotspots.



Third-Party and Mobility Apps: Platforms such as Uber, Lyft, Turo (carshare) and public transit planners solve first- and last-mile challenges but operate independently from airline and airport systems. This fragmentation forces passengers to juggle multiple apps to coordinate travel logistics and undermines clarity and confidence, especially for those with lower digital literacy or accessibility needs.



Emerging Initiatives and Cross-Industry Lessons:

Efforts such as IATA's One ID, ACI's digital transformation, NEXTT innovations, and Airport Collaborative Decision Making (A-CDM) frameworks show the aviation industry's recognition of fragmentation and need for collaborative, interoperable solutions. Lessons from hospitality, rideshare, theme parks, and smart cities highlight the value of unified, personalized, and transparent digital platforms that adapt to diverse user needs at scale.



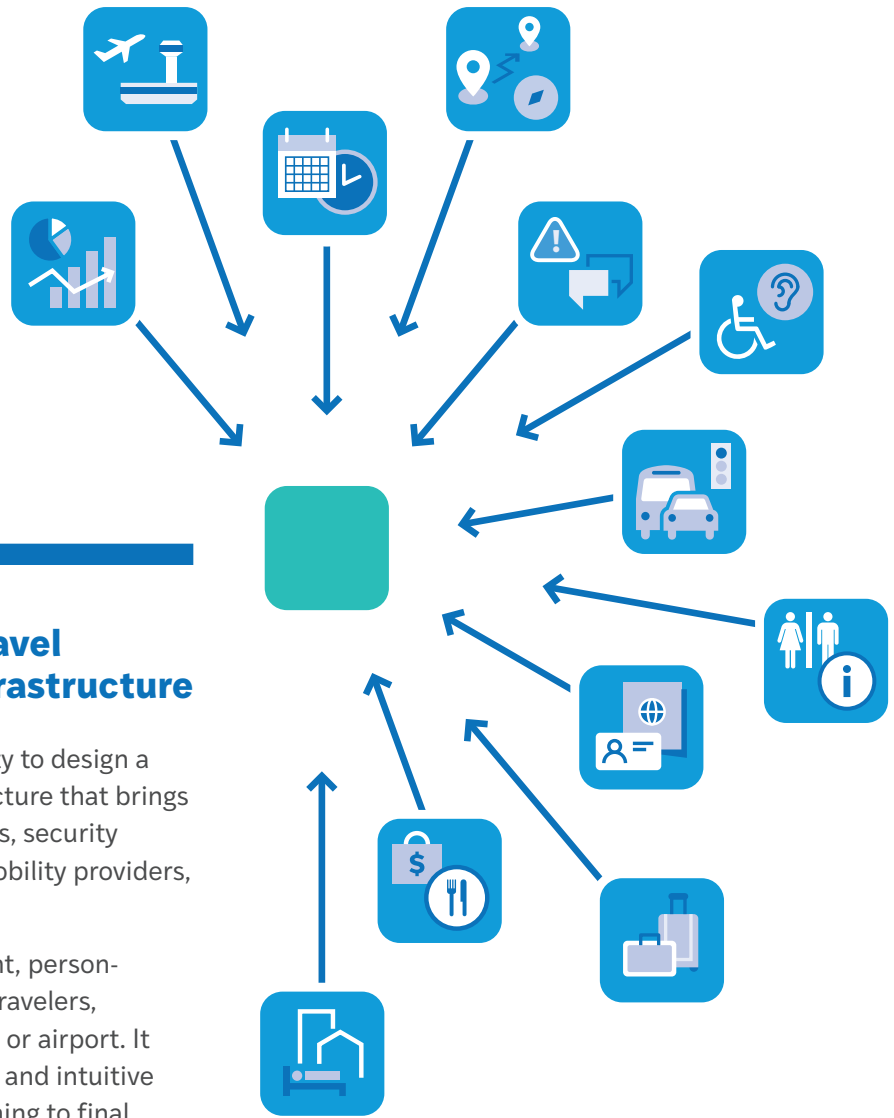
Lodging Apps: Although many hotel chains are moving towards self-check-ins and keyless room entry, some hotels continue the conventional check-in process which can be lengthy and frustrating, especially for the tired traveler.

Taken together, the current digital landscape illustrates a siloed ecosystem of specialized apps and platforms. They excel within their domains but fail to connect seamlessly across the full passenger journey. This siloed environment perpetuates inconsistent traveler experiences and amplifies uncertainty and anxiety, especially for diverse passenger profiles with varying needs and familiarity levels.

Seamless, Personalized Travel Through Shared Digital Infrastructure

This platform would provide a consistent, personalized, and inclusive experience for all travelers, regardless of origin, destination, airline, or airport. It would offer clear, real-time information and intuitive guidance at every stage, from trip planning to final arrival, while bridging gaps between previously siloed systems. By learning from traveler behavior, preferences, and patterns, the platform could continuously improve recommendations and guidance, helping passengers navigate complex travel experiences with confidence, reducing anxiety, and making each journey more predictable and enjoyable. By integrating these functions into a single, user-centered interface, a unified digital layer transforms a fragmented ecosystem into a cohesive, end-to-end passenger experience.

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User Interface: Consistent and Predictable

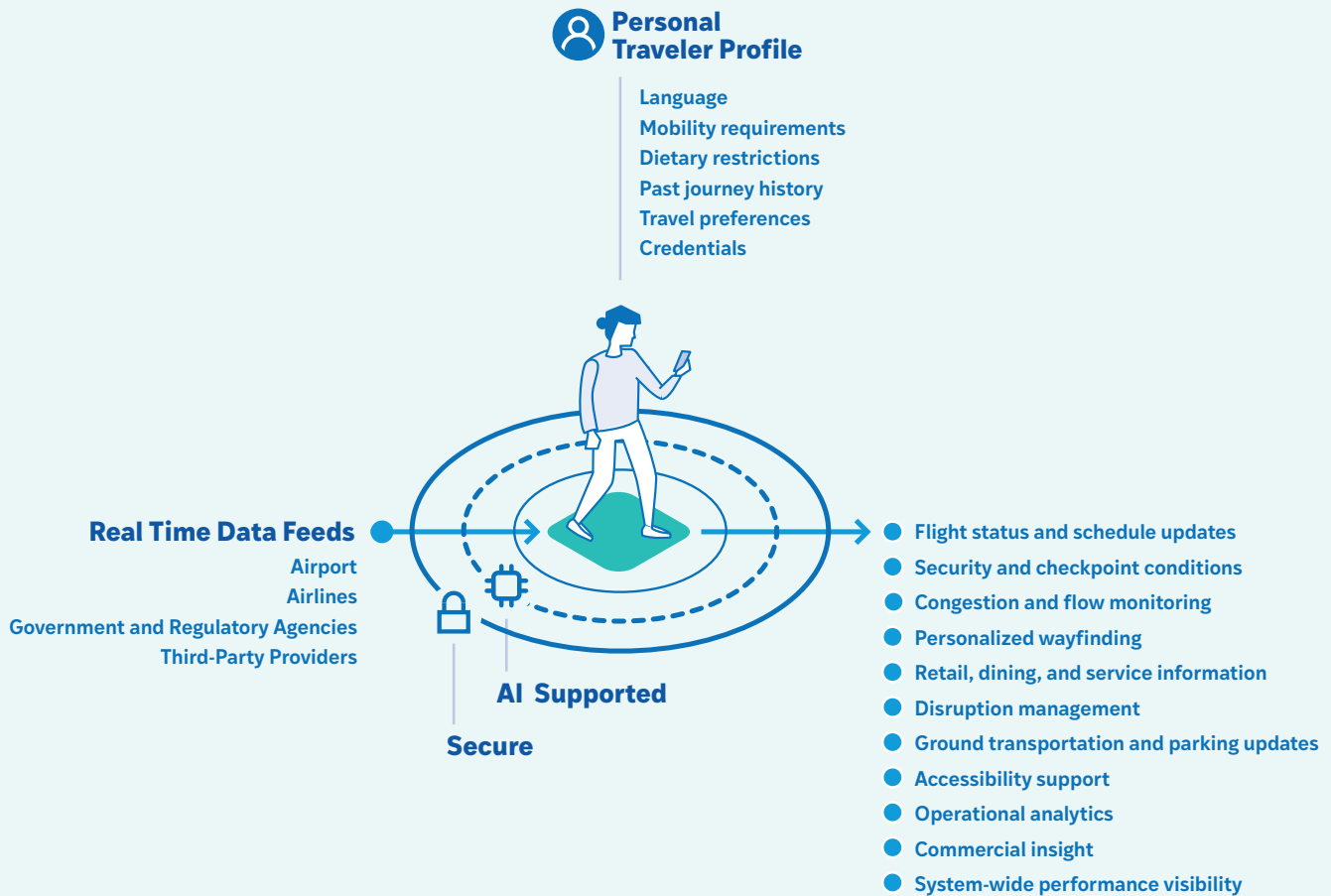
At the heart of this concept is a common user interface designed with universal standards to ensure familiarity and ease of use across all journey touchpoints. The interface would follow a modular design approach, allowing each airport or airline to customize features according to local needs without sacrificing overall consistency. This balance supports traveler confidence by reducing cognitive load and avoiding confusion caused by dissimilar apps or platforms at each stop.

It would guide passengers through every phase of their journey, including:

- **At-Home and Pre-Trip Planning:** Consolidated trip planning tools integrating flight booking, pre-arrival instructions, passenger credentials, and ground transportation options.
- **Transportation to the Airport:** Real-time updates on the fastest route, ground transport, parking and rental car availability, payment options, and curbside drop-off, with multimodal options based on traveler preferences.



- **Arrival and Terminal Entry:** Interactive wayfinding with contextual alerts for parking zones, drop-off points, and entry procedures, with ongoing notifications about next steps and actions.
- **Check-In and Bag Drop:** Streamlined digital check-in with queue updates, airline ticketing locations, and integrated baggage tracking.
- **Security Screening:** Real-time wait times, security reservations, and dynamic notifications to help passengers allocate time efficiently and reduce anxiety.
- **Terminal Circulation and Dwell Time:** Personalized navigation to gates, concessions, restrooms, and amenities, including accessibility features tailored to passengers with additional needs such as mobility, sensory, cognitive, communication, or hidden disabilities.
- **Holdroom and Boarding:** Virtual holdroom with real-time video feeds, boarding notifications, gate changes, and crowd density indicators to optimize passenger flow.
- **Connecting Flights:** Coordinated alerts and routing assistance for smooth transfers between terminals or concourses.
- **In-Flight Experience:** Integration with in-flight services, offering connections to post-flight ground transport and arrival updates.
- **Arrival: Baggage Claim and Ground Transportation:** Baggage status, real-time directions to ground transportation, and assistance for travelers with special requirements.
- **Post-Trip Final Mile:** Last-mile navigation, ride-share coordination, and feedback submission.
- **Lodging and Attractions:** Streamlined digital check-in with room key access, plus integration with local attractions and transportation.



Real-Time, Context-Aware, and Personalized Experience

The platform's capabilities are amplified by real-time, context-aware technologies. By processing live data feeds, it delivers timely updates on flight status, security wait times, gate changes, and congestion alerts. Notifications are location- and itinerary-specific, guiding a passenger to a nearby restroom, alerting them to a gate change minutes before boarding, or suggesting alternate routes through the terminal to avoid crowds.

Central to this approach would be personal traveler profiles, which securely store preferences such as language, mobility requirements, dietary restrictions, and past journey history. Leveraging Artificial Intelligence (AI), these profiles could evolve from traveler behavior, providing adaptive recommendations and personalized alternatives. From notification preferences to accessibility accommodations, the platform would anticipate traveler needs, creating a consistently seamless, confident, and stress-free journey.

Physical Transformation Through Digital Design

A cohesive digital ecosystem reshapes how airport terminals are planned, organized, and operated. Realizing this system would require targeted physical improvements throughout the airport, especially its primary passenger facility, the terminal, because the digital ecosystem acts as a disruptor to traditional spatial planning. By leveraging real-time insights from the digital platform, terminals can optimize passenger flow, improve operational efficiency, and enhance the placement and timing of services throughout the facility. Integrating physical design with digital capabilities creates opportunities to improve operational efficiency, generate new revenue streams, and deliver a more intuitive, comfortable, and stress-reducing passenger experience.

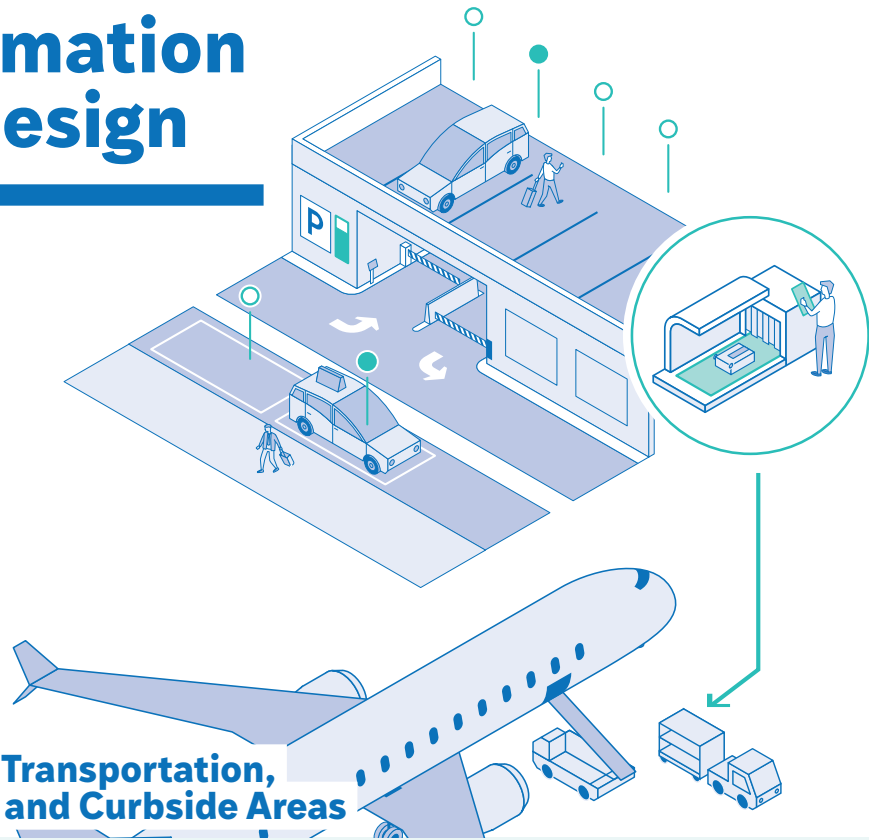
Each stage of the passenger journey requires targeted interventions that integrate digital layers with the layout and operations of the terminal:

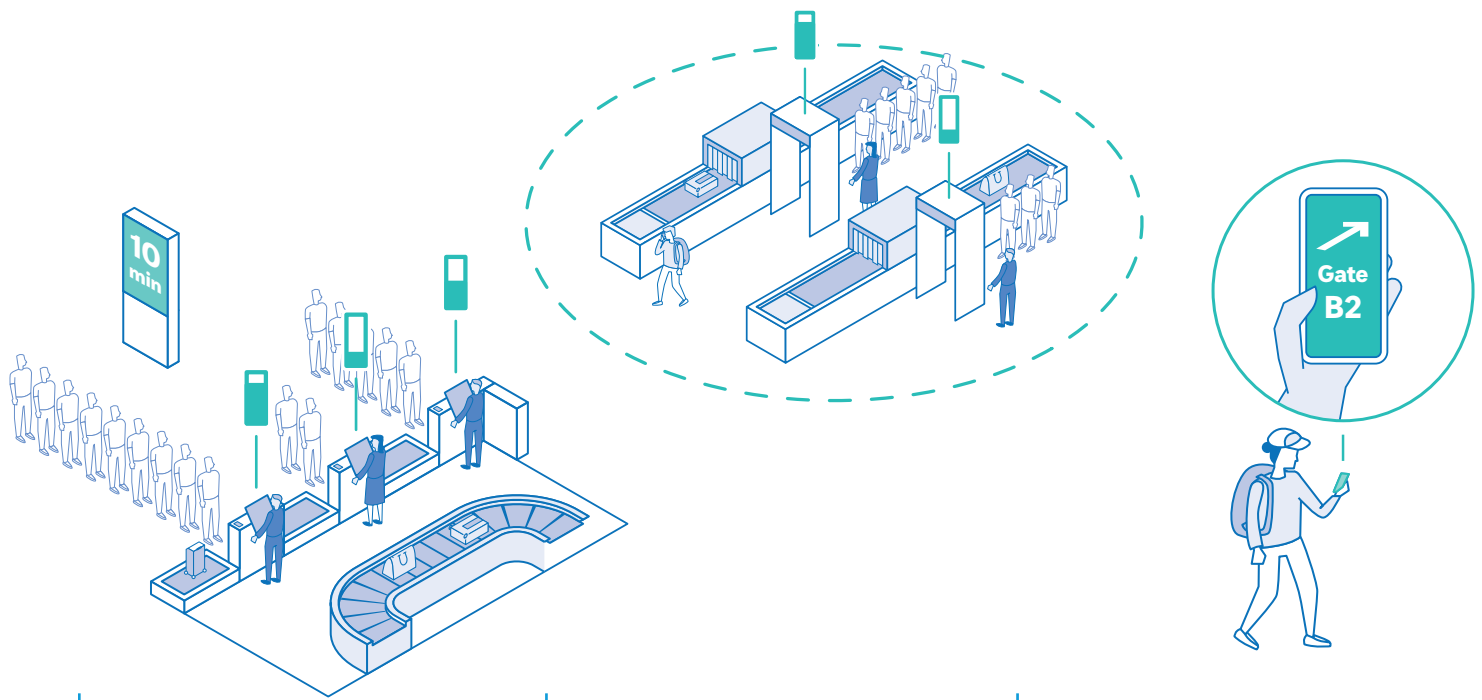
Ground Transportation, Parking and Curbside Areas

Digital Integration: Sensors, cameras, and beacons detect real-time parking availability, curbside occupancy, and traffic flow, feeding this data to the passenger platform and operational dashboards. Integration with remote bag drop locations (in parking garages, ConRACs, Ground Transportation Centers, or other off-terminal sites) allows passengers to see availability, drop bags before reaching the terminal, and track them digitally.

Physical Modifications: Dynamic digital signage for parking and curbside zones; dedicated lanes for app-guided pick-ups/drop-offs; flexible curbside layouts that adjust for peak demand. Remote bag drop includes new baggage rights-of-way, induction points, and secure transport pathways to move luggage efficiently from garages, ConRACs or GTCs to the main terminal.

Impact: Reduces passenger stress, improves traffic circulation, enables dynamic management of arriving and departing vehicles, supports efficient baggage operations, and informs staffing and security deployment.





Check-In and Bag Drop

Digital Integration: Queue monitoring via cameras and sensors; notifications for kiosk/counter availability; predictive analytics for peak times.

Physical Modifications: Modular counters and flexible queuing systems; common-use check-in areas with digital screens showing wait times and directions.

Impact: Shortens wait times, reduces crowding, allows staff to respond dynamically to real-time passenger distribution, and improves overall terminal throughput.

Security Screening

Digital Integration: Cameras, sensors, and AI-enabled analytics provide real-time lane status, wait times, and passenger flow insights.

Physical Modifications: Reconfigurable lanes and dynamic queue layouts; integrated digital signage for lane assignments; beacons to monitor density.

Impact: Minimizes congestion, reduces stress, increases throughput, and allows dynamic allocation of staff to match demand peaks.

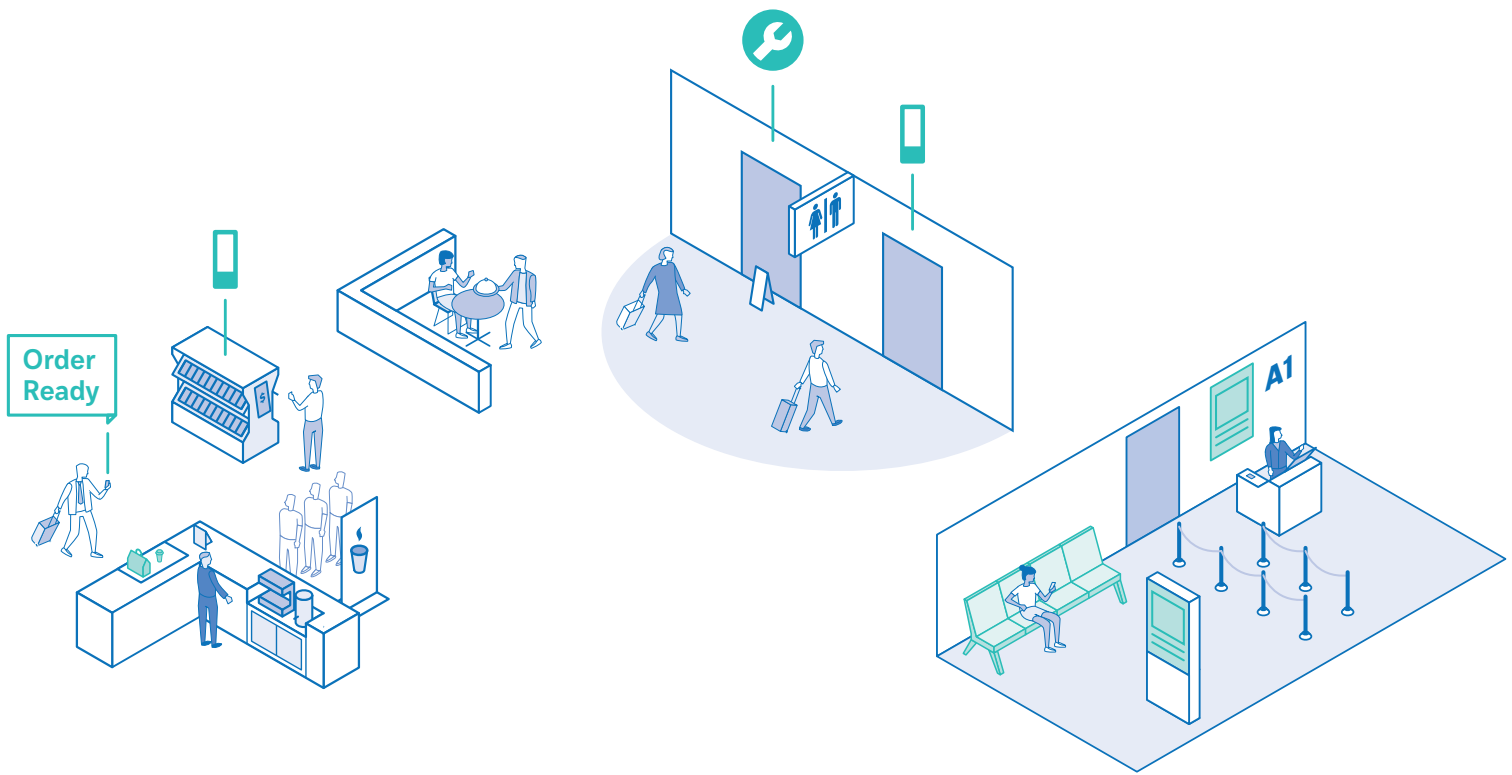
Terminal Circulation and Dwell Areas

Digital Integration: Wayfinding (augmented reality), congestion alerts, and amenity notifications delivered via apps; occupancy monitoring with sensors and cameras.

Physical Modifications: Modular seating, optimized circulation paths, and centralized zones for retail and entertainment; adaptive routing informed by real-time data.

Impact: Balances passenger distribution, reduces navigational stress, enhances retail engagement, and guides staff deployment.

“By leveraging real-time insights from the digital platform, terminals can optimize passenger flow, improve operational efficiency, and enhance the placement and timing of services throughout the facility.”



Concessions

Digital Integration: Real-time monitoring of queue lengths, inventory, and service times; app-based pre-ordering, alerts for promotions, and personalized recommendations based on passenger profiles and dwell time.

Physical Modifications: Flexible and modular concession layouts that can expand or contract based on predicted passenger flow; strategically placed counters or kiosks informed by digital traffic data; adaptive seating areas nearby for convenience.

Impact: Reduces wait times and crowding, enhances passenger satisfaction and dwell experience, drives incremental revenue through targeted promotions, and allows operational staff to allocate resources dynamically across concession points.

Restrooms

Digital Integration: Sensors monitor occupancy, cleanliness, and maintenance status in real time; notifications can be pushed to passengers via apps about availability, wait times, or maintenance alerts.

Physical Modifications: Flexible restroom layouts with clear signage; additional or adaptive facilities in high-traffic areas informed by real-time usage patterns; integration of accessibility features like tactile guides, ramps, and gender-inclusive options.

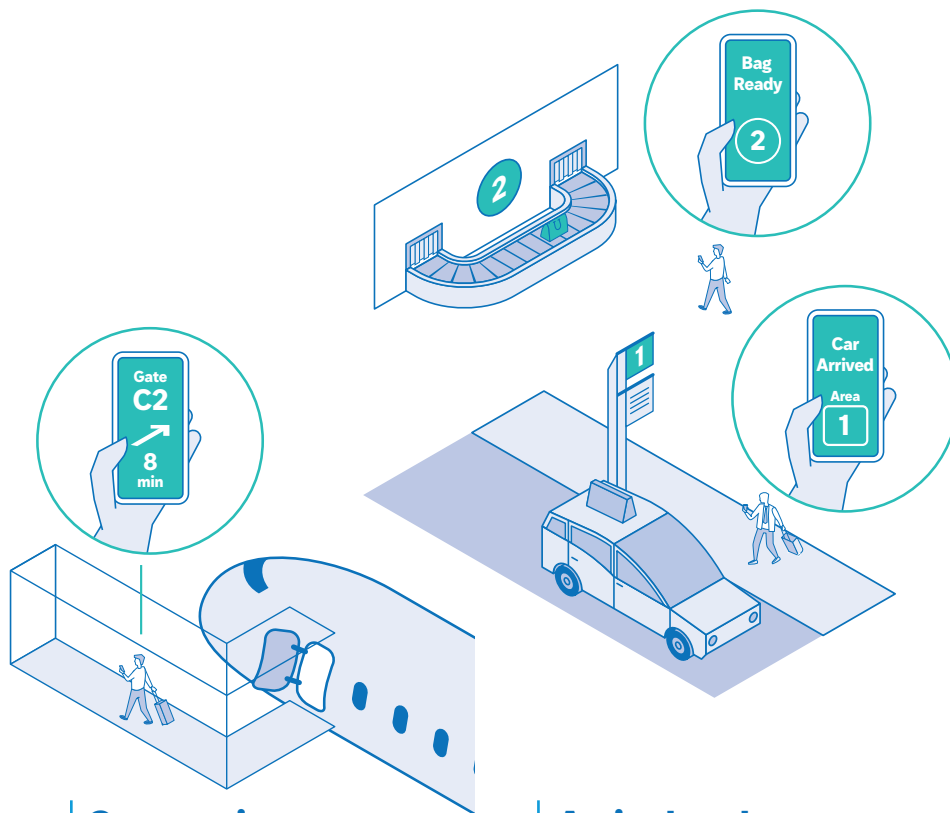
Impact: Reduces congestion and stress by guiding passengers to available facilities, ensures equitable access for passengers with mobility or sensory needs, supports maintenance staffing efficiency, and improves overall passenger experience.

Holdrooms and Boarding

Digital Integration: Notifications for boarding times, gate changes, and crowding; virtual holdrooms broadcasting information.

Physical Modifications: Flexible seating and standing arrangements; centralized lounges or entertainment areas; reduced holdroom footprints enabled by digital guidance.

Impact: Reduces crowding, allows repurposing of space for amenities, increases passenger engagement, and informs staff deployment.

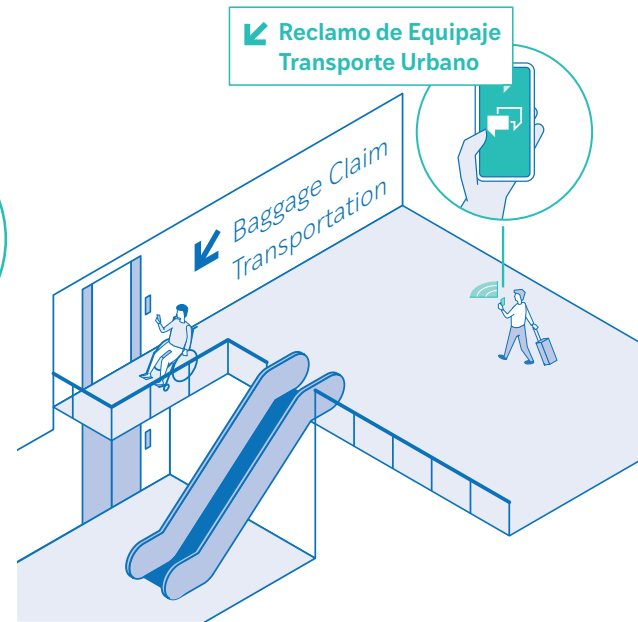


Connecting Flights

Digital Integration: Real-time gate assignments, walking distances, and predictive transfer time alerts.

Physical Modifications: Clear signage, optimized concourse pathways, dynamic routing indicators responding to real-time conditions.

Impact: Reduces missed connections, eases transfer anxiety, and helps staff manage passenger flow efficiently.



Arrival and Baggage Claim

Digital Integration: Real-time baggage status, carousel assignments, and ground transport updates via sensors and passenger apps.

Physical Modifications: Digital signage for baggage and transport coordination; optimized circulation from carousels to exits, rideshare zones, and transit connections.

Impact: Smooths onward travel, reduces congestion, and allows staff allocation based on real-time passenger flow.

Accessibility

Digital Integration: Personalized navigation, real-time translation, and mobility assistance notifications including screen reader compatibility, voice-command interaction, adjustable text size/contrast, and haptic feedback for alerts.

Physical Modifications: Ramps, elevators, tactile paths, and sensory-friendly rooms guided by digital cues; staff support stations equipped with digital tools, visual paging and captioned announcements, induction loops for hearing aids, and designated quiet or low-stimulation areas.

Impact: Ensures equitable access for all passengers, reduces stress for travelers with special needs, and provides actionable operational insights, while promoting universal design that benefits all travelers (for example, families, elderly, or non-native speakers).

Supporting Diverse Passenger Types

A unified digital platform enables airports to provide equitable and personalized experiences tailored to the needs of all passengers. Beyond meeting regulatory requirements for accessibility, digital infrastructure can adapt in real time to support varying mobility, sensory, language, and behavioral profiles, ensuring that every traveler can navigate the terminal with confidence and ease. By anticipating both practical and emotional needs, airports can reduce stress, increase satisfaction, and create a sense of control throughout the journey, while also generating actionable insights that optimize revenue and operations across the terminal.



“Features such as app-guided routing to elevators, ramps, tactile paths, and sensory-friendly spaces reduce uncertainty and make the journey more predictable and inclusive.”

Mobility and Sensory Needs

Passengers with mobility challenges, visual or hearing impairments, or other special requirements often face additional stress navigating complex terminals. User-friendly digital guidance, integrated with wayfinding, alerts, and staff support can direct travelers along accessible routes, notify them of potential obstacles or congestion, and provide real-time assistance when needed to help them reach their final destination.

Features such as app-guided routing to elevators, ramps, tactile paths, and sensory-friendly spaces reduce uncertainty and make the journey more predictable and inclusive. Adaptive notifications can also be adjusted based on passenger profiles, providing guidance that anticipates delays or crowding, ensuring that accessibility needs are proactively met. Beyond passenger benefits, understanding mobility patterns enables airports to allocate staff and resources efficiently, positioning attendants, cleaning crews, or maintenance teams where they are most needed. These features would establish a universal program to assist travelers with diverse needs and would function similarly to the Hidden Disabilities Sunflower program,³ but with consistent adoption across all airports nationwide.

³ Hidden Disabilities Sunflower program is used at many airports around the world to discreetly signal a passenger may need additional assistance in a number of areas throughout the terminal facilities. Staff are trained to approach and assist, where necessary so passengers with additional challenges or disabilities have what they need.

Integrating Passenger Behavior Typologies with Accessibility and Operational Intelligence

Digital infrastructure can also address the preferences of different traveler types, improving satisfaction, operational efficiency, and commercial performance.



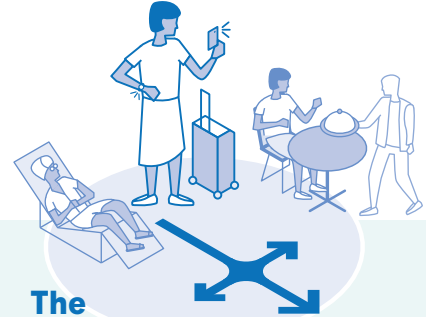
The Camper

Prefers direct, efficient access to lounges or gates with minimal interaction. Digital tools can provide real-time queue information, highlight nearby self-service amenities, and suggest optimized paths to private spaces, reducing stress and supporting rapid transit through the terminal. For this type, AI-driven notifications can predict bottlenecks and reroute quickly, while app-based alerts minimize unnecessary stops or distractions. Optimizing Camper flow also frees up space and staff resources, allowing concessions and retail areas to focus on higher-engagement zones



The Roamer

Seeks a balance between efficiency and exploration, often enjoying concessions or amenities along the way. The digital ecosystem can guide Roamers to available dining, retail, or wellness opportunities, offer touchless transactions, and alert them to congestion or wait times to maintain a smooth flow. Insights into Roamer behavior can inform terminal layout, retail placement, and staffing, helping airports increase dwell-time engagement, boost revenue, and maintain smooth circulation.



The Explorer

Enjoys engaging deeply with terminal experiences, from art installations to curated retail and wellness offerings. Digital tools can recommend personalized points of interest, highlight seasonal or localized experiences, enable reservations for services/experiences, and provide navigation support to maximize exploration while minimizing anxiety over missed flights or connections. By analyzing Explorer preferences, airports can dynamically adjust signage, promotions, amenities, and staffing, creating immersive experiences without disrupting efficiency for other traveler types, while simultaneously capturing new revenue opportunities.

Combining accessibility, behavioral, and cultural insights allows airports to create truly inclusive, stress-reducing experiences. For example, a Roamer with limited mobility or a non-native-speaking Explorer benefits from optimized routing, real-time translation, and adaptive notifications that respond to both physical and cognitive needs. These personalized insights also inform operational decisions, helping airport management deploy staff effectively, optimize retail placement, activate amenities strategically, and

improve space utilization. In doing so, the unified platform not only enhances the passenger experience but also aligns operational efficiency with revenue generation, creating a coherent, predictable, and confidence-building journey for every traveler.

Implementation, Towards Reality

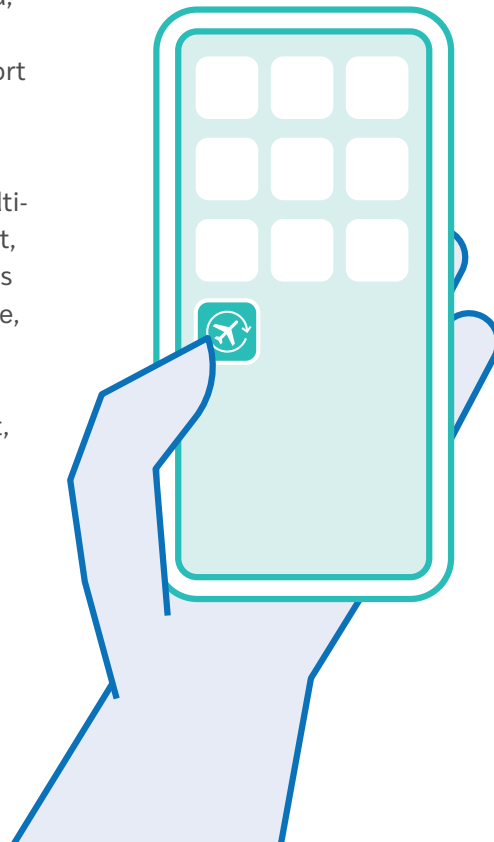
Realizing a truly unified digital passenger experience requires a phased and collaborative approach across airlines, airports, government agencies, mobility providers, and technology partners. Early efforts should focus on pilot programs at select airports, testing interoperability, real-time updates, and personalized guidance while gathering feedback to refine the system.

Governance and collaboration are critical. Stakeholders need clear roles, shared objectives, and formal agreements on how data is securely managed and shared, balancing transparency, privacy, and regulatory compliance. Challenges may arise around data ownership, access rights, and integration across competing systems, which will require negotiation to ensure each participant retains control over its own sensitive information while contributing to a cohesive, interoperable digital interface.

The platform should be built on open, modular standards to allow integration with existing systems while giving each stakeholder control over their own data. Accessibility and inclusivity must be prioritized, ensuring travelers of all abilities and language backgrounds can navigate the journey confidently. Support may include trained staff or digital tools to assist passengers with complex needs.

Over time, the platform can expand to integrate multi-modal trip planning, predictive journey management, and advanced features while maintaining continuous user feedback loops. By taking a structured, inclusive, and adaptable approach, the industry can deliver a predictable, equitable, and personalized journey for every passenger, transforming travel into a coherent, stress-reducing experience.

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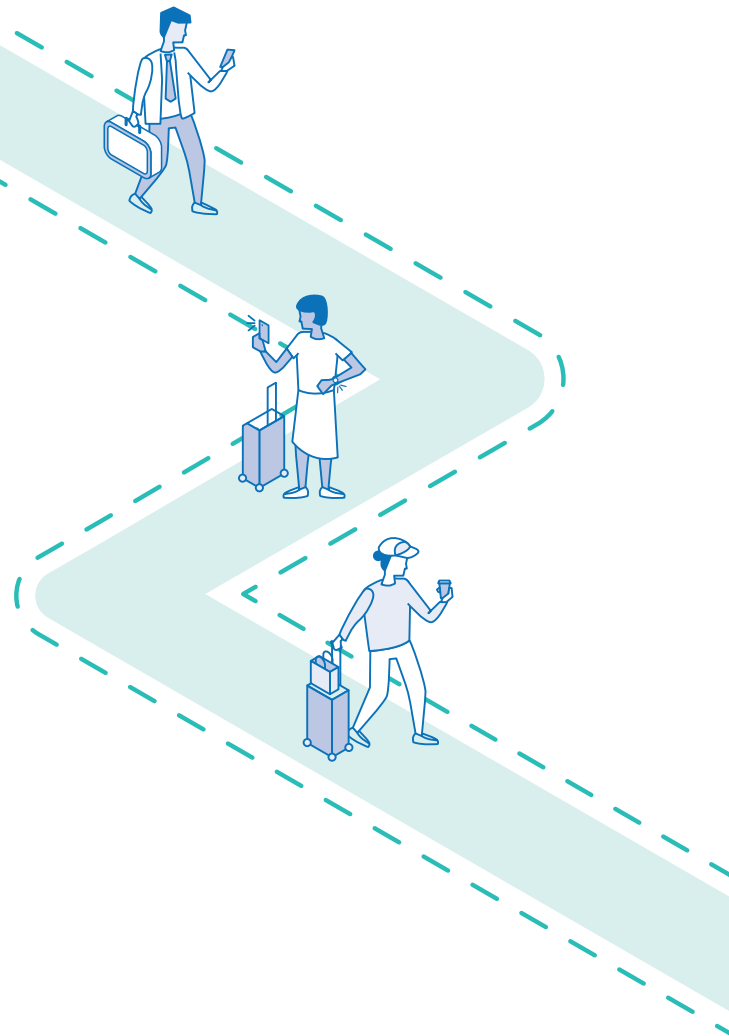
Guiding the Path Forward

The passenger journey remains disconnected and unpredictable, with inconsistencies across airports, airlines, and agencies creating stress and uncertainty at every stage, from pre-trip planning to final arrival. While investments in physical terminals, signage, and amenities improve localized experiences, they cannot address the systemic challenges inherent in a complex, multi-airport journey.

A unified digital infrastructure offers a scalable, human-centered solution. Digital infrastructure has the potential to transform the passenger experience into an adaptive, data-driven ecosystem, guiding every passenger seamlessly from home to final destination. By providing real-time, context-aware, and personalized guidance, airports can support all passenger profiles, including those with mobility or sensory needs, limited digital literacy, or varying behavioral preferences. This digital layer transforms the journey from fragmented and stressful to intuitive, predictable, and inclusive, connecting home, airport, and onward travel without interruption.

Digital integration also opens new opportunities within the airport, especially at the terminal. Real-time insights on passenger flow, dwell time, and congestion allow airports to optimize the use of physical space, improving circulation, reducing bottlenecks, and enhancing safety. Concessions, amenities, and lounges can be dynamically positioned and activated based on passenger patterns, creating more efficient

“By combining inclusive, personalized digital experiences with optimized operations, airports can deliver a seamless, confident, and enjoyable journey for every traveler while unlocking operational efficiencies and commercial opportunities.”



operations while increasing revenue potential. Flexible spaces, guided by app-based navigation, support both efficiency-minded passengers and those seeking richer experiences, enabling airports to balance operational performance with elevated service offerings.

Ultimately, a strategic focus on digital infrastructure allows airports to rethink both the fuller passenger journey and the airport itself. By combining inclusive, personalized digital experiences with optimized operations, airports can deliver a seamless, confident, and enjoyable journey for every traveler while unlocking operational efficiencies and commercial opportunities. This approach ensures that airports remain competitive, resilient, and capable of meeting the evolving expectations of current and future passengers.



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