LTIMindtree

The Aviation Technology Trends Radar Report 2025

Executive Summary

A primary research-led tech roadmap for aviation executives

#FutureFasterTogether

Foreword

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Dear Readers,

I am very excited to present our first Aviation Technology Trends Radar Report 2025, which outlines the near-term and horizon opportunities for the airline industry.

The aviation industry is undergoing a paradigm shift fuelled by hyper-personalization in customer experiences, disruptions in airline operations, and the need for sustainability. Adapting to these evolving trends is driving innovation in technology, experiences, and sustainable aviation.

Technology is transforming the travel industry by enabling airlines to deliver hyper-personalized experiences. With streamlined inventory integration and standards like New Distribution Capability (NDC), airlines can craft tailored itineraries and bundled offers that exceed passenger expectations. Generative AI further enhances personalization by powering intelligent solutions, including conversational booking assistants, immersive chatbots, personalized in-flight experiences, and even dynamic pricing models. These innovations are reshaping travel, ensuring every aspect is thoughtfully designed around individual preferences and needs.

There is a surge in global air travel, presenting airlines with opportunities to review their technological strategies. Innovation can play a pivotal role in elevating customer experience, responding to growing competition and meeting shareholder expectations. This is a prime opportunity for airline companies to reevaluate their technology strategies in alignment with business objectives, all while maintaining cost-effectiveness.

Efforts to make aviation more sustainable are gaining momentum, such as the International Air Transport Association's (IATA) 'Fly Net Zero by 2050' policy and airline and energy companies investing in Sustainable Aviation Fuel (SAF). These are clear signs of how the industry is coming together to reduce its environmental impact.

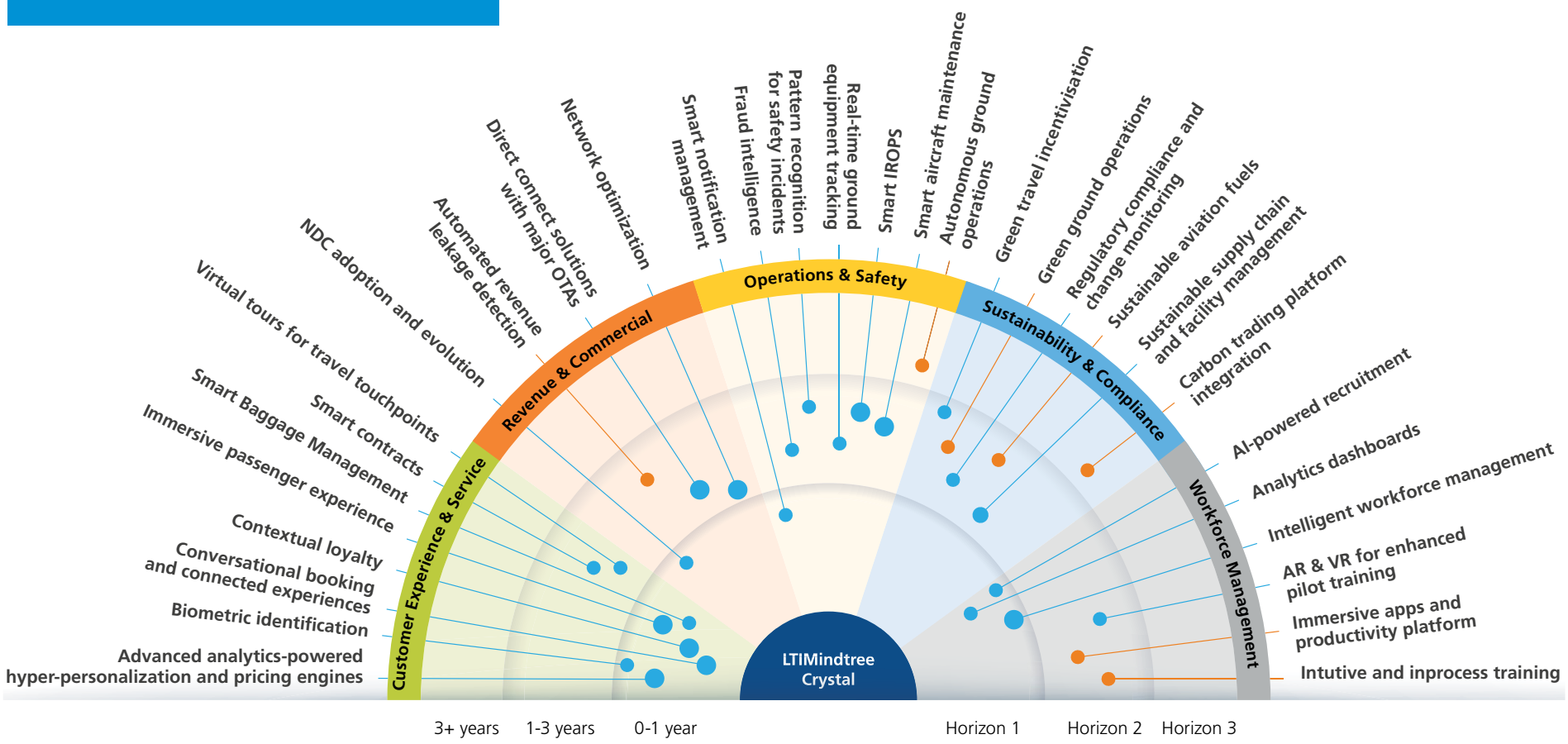
LTIMindtree's aviation experts actively track these advancements, empowering airlines to address customer needs while providing disruption-proof flight operations. For instance, real-time data exchange between aircraft and ground operations enhances process optimization through predictive maintenance, flight monitoring, and improved route planning. This transformation is not merely about futuristic apps but involves modernizing legacy systems with cloud-based microservices. Towards this, LTIMindtree has enabled many airline clients to adopt advanced analytics and cloud technology, leading to greater operational efficiencies.

We are thrilled to introduce the inaugural Aviation Technology Trends Radar Report 2025, a comprehensive resource highlighting both near-term and future opportunities in the airline industry. Our heartfelt gratitude goes to our clients and partners for their invaluable contributions to this effort.

Happy reading!

Table of Contents

Aviation Technology Trends Radar



Rating

Adoption Phase

Emerging | Improving | Mature

Market Potential

Low | Medium | High

Rating Scale (Appendix)

Rating Parameters	Scale	Interpretation
Horizon (Distance)	0 year 1 year 3 years 3+ years	**Horizon 1 (0-1Year) –** Relevant industry players are scaling the trend use cases. **Horizon 2 (1-3Years) –** Relevant industry players have started incubating the trend to assess the potential risk implications and benefits. **Horizon 3 (3+Years) –** Emerging technologies in research with potential for transformational change.
Market Potential (Size)	Low Medium High	Market potential indicates the expected revenue opportunity from the technology trend.

Rating Parameters	Scale	Interpretation
Adoption Phase (Color)	Emerging Improving Mature	**Emerging –** Technology Trend is at its initial stages of adoption, with innovators and early adopters exploring its potential. **Improving –** Technology adoption is increasing, and it has proven to have the potential to improve efficiency and effectiveness. **Mature –** Technology has achieved widespread acceptance and usage among the general population or targeted audience.

Rating Scale (Appendix)

Smart IROPS

Why is it a game-changer?

Smart Irregular Operations (IROPS) management fundamentally transforms the aviation industry by significantly improving both passenger experience and operational efficiency during disruptions. By utilizing real-time data and predictive analytics, it optimizes resource allocation, reduces delays, and minimizes costs. Enhanced communication between airlines, airports, and passengers ensures timely updates and effective service recovery. This proactive strategy markedly increases reliability and customer satisfaction, making it an essential innovation for the existing aviation industry.

Opportunities

The growing importance of passenger management during disruptions has driven significant advancements in IROPS solutions. Key innovations, such as AI-powered chatbots, smart baggage management, and re-accommodation systems, provide exceptional customer support with minimal staffing. These solutions not only enhance service but also deliver substantial cost savings and enable real-time operations.

A baggage management system was engineered for a leading multinational IT and telecommunications provider in the air transport industry. It handles peak loads of 15 million messages daily and 377 transactions per second. The solution reduced mishandled bags by 20%, saving USD 1.8 million annually. It also improved operational resilience and customer service.

Service recovery can be optimized by leveraging AI-powered chatbots and re-accommodation platforms to provide the best flight recommendations. These systems consider factors such as load, overbooking limits, passenger itineraries and preferences, and customer value while minimizing costs and revenue loss for the airline. The system efficiently handles multiple 'REs' such as reforecast, reschedule, reroute, rebook, re-accommodate, re-accept, and report—enabling rapid responses and recovery across all customer touchpoints. Additionally, the re-accommodation platform allows airlines to control recommendations through business rules, with options for authorized personnel to override manually.

For a leading Low-Cost Carrier (LCC) based in the Middle East, a re-accommodation solution managed 100 million passengers within a 2–4-hour window, handling a peak transaction volume of over 14,500 pax-O&D requests in a single day. Customers have control over choosing their preferred alternative flight at any touchpoint and confirming their selection. Meanwhile, airline staff can focus on more complex re-accommodation cases. The solution also automates the issuance of service vouchers, ensuring compliance with airline policies.

Conversational Booking and Connected Experiences

Why is it a game-changer?

The rise of conversational AI in airlines is leading to AI voice agents addressing customer concerns in real time, optimizing the online flight booking process. McKinsey predicts that conversational AI for airlines will transform customer service, and become essential for seamless bookings.[1] Recent reports predict that digital travel sales will reach USD 817.5 billion by 2025,[2] reflecting the growing reliance on digital platforms for booking and managing travel experiences. Leading AI platforms enable customers to effortlessly search for flights and access real-time assistance throughout their journey. They provide flight status updates, baggage information, and personalized recommendations, enhancing satisfaction and loyalty.

Opportunities

AI is transforming travel by enhancing efficiency, personalization, and connected experiences. It is extensively employed to evaluate user preferences, previous travel experiences, and self-service capabilities.

LTIMindtree's Voicing AI platform exemplifies this innovation, offering personalized recommendations and voice-based assistance to enhance the travel experience. Key technologies like decision intelligence, predictive analytics, and hyper-personalization optimize services and promotions. The aviation industry increasingly adopts conversational AI for seamless, connected, and passenger-centric experiences.

Conversational AI can analyze passenger data to recommend personalized flights and tailor flight packages with exclusive deals. It can guide passengers through airports, offering real-time directions and visual overlays on mobile devices. Passengers receive notifications about delays, gate changes, or weather disruptions, along with rebooking assistance. Additionally, chatbots handle check-ins, document verification, and boarding passes while also suggesting preferred seating or in-flight meal options.

Immersive Passenger Experience

Why is it a game-changer?

Satellite-based Wi-Fi provides reliable in-flight internet, allowing passengers to access diverse content on personal devices and in-seat screens. This hybrid model enhances ancillary revenue, targeted advertising, and passenger experience. AI and ML personalize content recommendations, while AR offers interactive flight and destination information. Passengers can shop in virtual environments using VR headsets, with extensive e-shopping catalogs available onboard. Orders are delivered in-flight or at the destination.

The 'Genie On the Go' solution by LTIMindtree is an integrated, easy-to-plug solution designed for enterprise applications. This solution enables customers to engage, shop, apply loyalty points, make payments, and arrange deliveries seamlessly while on the go. It facilitates the meaningful use of loyalty points across multiple brands, enabling quick and secure payment options. This comprehensive and convenient solution aims to enhance passenger satisfaction and streamline operations for airlines, making it a valuable tool for the aviation industry.

Opportunities

The transformation of in-flight entertainment is inspiring, reflecting continuous technological advancements. High-definition screens have significantly enhanced passengers' experiences.

Airline spending is shifting from Gen X and Baby Boomers to Millennials and Gen Z, who will dominate spending by 2035.[3] To capture this growing market, airlines must strategically innovate to align with the evolving preferences of these younger, digitally native cohorts.[4] New features include live online shopping with duty-free prices, virtual tours, interactive games, 360-degree videos, and VR activities. AR overlays provide real-time flight information. Sensors track passengers' physiological responses to offer tailored experiences, like stress-based relaxation programs. Projection mapping on cabin walls creates dynamic visuals, enabling interaction with the surroundings through gestures or touch. This is opening new revenue streams and boosting passenger satisfaction.

Studies show that 86% of customers are willing to pay more for a better travel experience, highlighting the importance of investing in customer-centric innovations.[5]

Advanced Analytics-powered Hyper-personalization and Pricing Engines

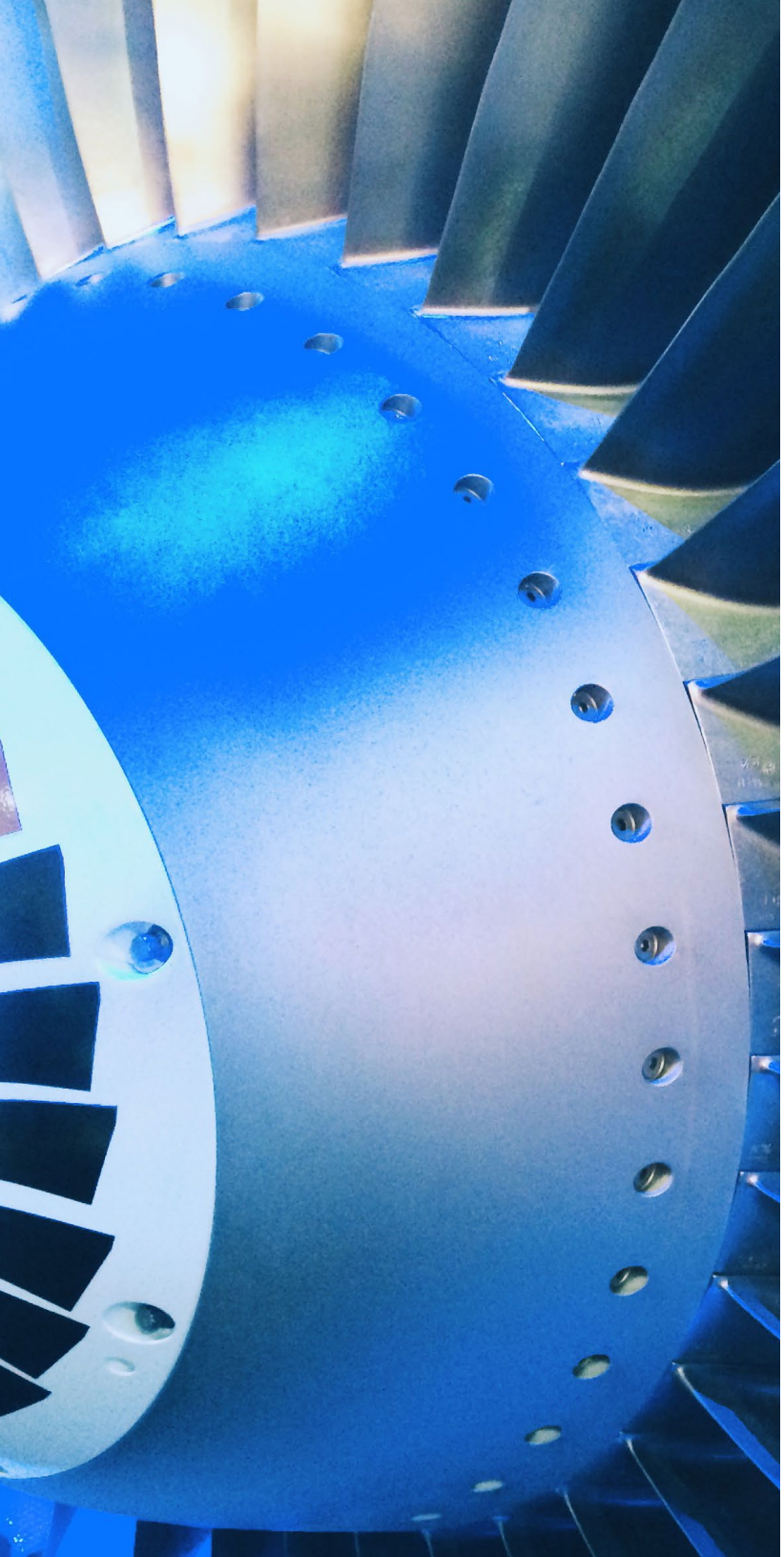
Why is it a game-changer?

AI-powered hyper-personalization is transforming the aviation industry by significantly improving both passenger experience and operational efficiency. The global aviation analytics market size was valued at USD 2.5 billion in 2022 and is estimated to reach USD 4.7 billion by 2027, growing at a CAGR of 13% during the forecast period.[6] By analyzing data to understand individual preferences, AI facilitates personalized services such as customized travel recommendations, tailored in-flight entertainment, and individualized offers for hotels and activities. Additionally, AI enables airlines to implement dynamic pricing strategies by adjusting ticket prices based on demand, booking patterns, and other relevant factors. This approach helps airlines maximize revenue while providing passengers with competitive pricing.

Opportunities

AI-driven advanced analytics and hyper-personalization in the aviation industry facilitate real-time personalized recommendations, boosting customer loyalty. This technology also enables dynamic pricing, which increases airline profit margins. Additionally, dynamic pricing models can be fine-tuned to maximize occupancy and optimize revenue across different customer segments, offering special deals during off-peak times and premium pricing during high-demand periods.

A leading European airline developed a predictive analytics solution that incorporates price elasticity, enabling dynamic fare pricing to achieve maximum occupancy and optimal yield. The Big Data Analytics Framework (BDAF) leverages advanced data analytics techniques to enhance the accuracy and reliability of forecasts. This solution has delivered significant business value, including a 10x increase in revenue, optimized fares for over 100 million flyers, and processes approximately 220 million BDAF calculations daily. Additionally, it ensures NDC (New Distribution Capability) readiness, independent of booking classes.



Sustainable Aviation Fuels

Why is it a game-changer?

Sustainable aviation fuels (SAFs) are essential for reducing the aviation industry's carbon footprint and achieving ambitious climate targets. They are the only feasible solution for mid to long-haul flights, which contribute to over 70% of aviation CO2 emissions. Advances in biofuel conversion and power-to-liquid synthesis technologies are accelerating progress, while policy support and industry collaborations are further promoting the widespread adoption of SAFs.

Eurolife FFH, a leading Greek insurance group, has partnered with Thomas Cook India and LTIMindtree to utilize their Green Carpet platform for monitoring and managing global business travel emissions. Green Carpet is a SaaS-based solution that seamlessly captures, monitors, and reports business travel emissions in line with Global ESG Reporting standards. The platform provides real-time insights into Scope 3 emissions, enabling organizations to significantly reduce their Environmental, Social, and Governance (ESG) reporting expenses.

Opportunities

Sustainable aviation fuel accounts for less than 1% of global jet fuel use. Achieving net-zero aviation requires alternative technologies like hydrogen aircraft and high-density batteries despite scalability challenges. Governments and investors are funding projects to reduce aviation's carbon footprint, while collaborations among airlines, fuel producers, and tech companies to play a crucial role. Airports are investing in SAF infrastructure, creating opportunities for infrastructure companies. The industry aims for 10% SAF by 2030, while IATA predicts that 65% of total aviation fuel requirements will be met by SAF by 2050.[7] Competitive pricing and a clear roadmap are crucial for SAF's growth.

Immersive Apps and Productivity Platforms for the Workforce

Why is it a game-changer?

Virtual reality (VR) is transforming aviation training by providing intuitive, immersive, and realistic simulations for pilots, cabin crew, and ground staff. These VR simulators create highly accurate environments where trainees can practice maneuvers, emergency procedures, and navigation without the associated risks and costs of actual aircraft. This safe, controlled setting allows trainees to learn from their mistakes effectively. Furthermore, customizable VR scenarios replicate real-world situations, thereby enhancing crisis management skills and overall training effectiveness.

Opportunities

The future of aviation training technology promises significant advancements, including personalized learning paths, immersive environments, collaborative training, AR integration, and enhanced data protection for trainees. AI-driven adaptive learning algorithms will customize training to individual needs, enhancing skill acquisition and crisis management. However, challenges persist, such as the need for regulatory bodies to establish standards for VR-based training programs to ensure consistency and safety. As VR training becomes more personalized, safeguarding trainee data and preventing unauthorized access will be crucial. This trend can be extended further to smart customer operations that can be reimagined by leveraging a design-thinking approach that focuses on customer interaction at every touchpoint. For example, long queues at car rental stations can make the airport experience less enjoyable.

LTIMindtree partnered with a leading car rental company to streamline the rental process, reducing traveler wait times. This improvement led to a 40% reduction in operating costs, a 10-point increase in NPS, and a 25% boost in CSAT.

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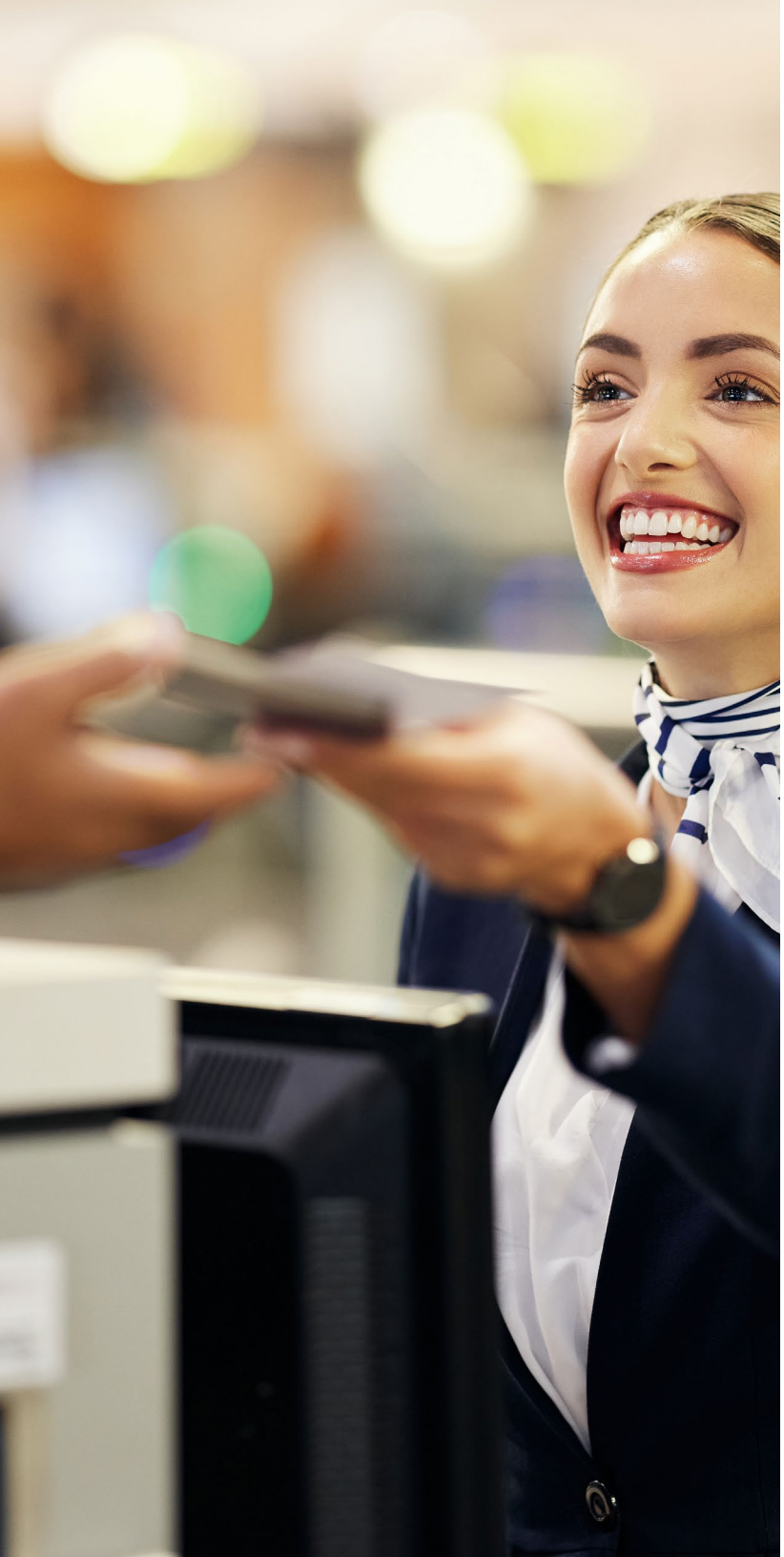

The LTIMindtree Travel, Transport & Hospitality Practice

In this segment, LTIMindtree is driving their clients from ‘post-pandemic recovery’ to ‘fast-track growth’ with innovative technology solutions. These solutions have been successfully implemented by some of the world’s largest and fastest-growing companies. This includes airlines, hotels, car rentals, travel technology, travel management, logistics, and real estate companies to accelerate revenue growth and optimize costs.

We develop modern mobile and web applications, enable digital marketing and sales, provide actionable insights to enhance customer experience and loyalty. Additionally, we improve employee productivity, modernize legacy infrastructure and applications by leveraging hyperscale clouds, and help accelerate sustainability initiatives. With 20+ years of experience working with marquee brands in the travel industry, we are helping deliver seamless and connected digital experiences for the travelers of the future. For more information, kindly visit https://www.ltimindtree.com/industries/travel-transport-and-hospitality/

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About LTIMindtree Crystal

LTIMindtree Crystal brings technologies trends to cross-industry enterprises. It presents exciting opportunities in terms of foresight to future-ready businesses keen to make faster and smarter decisions on existing and emerging technology trends. The LTIMindtree Crystal is an output of rigorous research by our team of next-gen technology experts and meticulously rated by our Technology council across asset of parameters.

We hope you enjoyed reading The Aviation Tech Radar Report 2025 – Executive Summary.

Please reach out to crystal@ltimindtree.com for any queries.

Getting to the

future. faster.

Together.

LTIMindtree is a global technology consulting and digital solutions company that enables enterprises across industries to reimagine business models, accelerate innovation, and maximize growth by harnessing digital technologies. As a digital transformation partner to more than 700 clients, LTIMindtree brings extensive domain and technology expertise to help drive superior competitive differentiation, customer experiences, and business outcomes in a converging world. Powered by 86,000+ talented and entrepreneurial professionals across more than 40 countries, LTIMindtree — a Larsen & Toubro Group company — solves the most complex business challenges and delivers transformation at scale. For more information, please visit https://www.ltimindtree.com/.