Airlines and Airports Digital Services 2024 Market Insights™

Employing AI and intelligent automation to enhance customer experience

February 2024

Table of contents

About the Airlines and Airports Digital Services 2024 Market Insights

1. The airlines and airport industry is adapting to increasing customer expectations of on-time departures and arrivals despite disruptions caused by adverse weather conditions. Enterprises in the industry are investing in AI-based services and platforms to predict and proactively prepare for such events to provide a seamless passenger experience.

2. High attrition rates characterize the airline and airport industry. Enterprises have taken several initiatives to grapple with this issue, including leveraging AR/VR/XR technology to create opportunities for upskilling and training pilots, cabin crew, and other employees. They are also leveraging automation to carry out mundane and repetitive tasks so employees can focus on more creative and simulating deliverables.

3. Avasant's ongoing interactions with industry leaders indicate that airlines and airport firms are also focusing on integrating sustainability into core business operations in response to stringent regulatory requirements and customers' affinity toward sustainability-centered firms.

4. The *Airlines and Airports Digital Services 2024 Market Insights* report can help enterprises craft a robust strategy based on industry outlook, best practices, and digital transformation. This report also highlights key market trends and Avasant's viewpoint on the direction of the industry over the next 12 to 18 months.

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Executive summary

Defining airline and airport digital services scope

The report's scope focuses on digital services delivered to enterprise customers across the below-listed industry segments.

Sub-industries	Description	Enterprise examples
Airlines	▪ The airline industry includes airlines that transport passengers both domestically and internationally. It encompasses passenger-related services across all phases of a flight. It also includes on-ground service and fleet management for day-to-day operations.	UNITED, QATAR AIRWAYS, SWISS, JAL, Emirates, AIR CANADA, Lufthansa
Airports	▪ The airport industry includes businesses that operate international, national, or civil airports. ▪ It includes aeronautical and non-aeronautical operation and maintenance of airports and runways, air traffic control, aircraft refueling, taxi, parking, hanger space rental, baggage, and cargo handling services businesses.	CHANGI airport group, Heathrow, DUBAIRPORTS, LAX, DELHI INDIRA GANDHI INTERNATIONAL AIRPORT, daxing PKXairport

Digital services definition: Digital services accelerate digital transformation using emerging technologies, including AI and analytics, blockchain, cloud, cybersecurity, intelligent automation, IoT, AR/VR, and omniverse/metaverse across the airlines and airports value chain. The offerings of service providers assessed in this study are advisory and consulting, proof of concept development, build and test, implementation, system integration, and development and maintenance.

We will assess the offerings of service providers across the below value chain components.

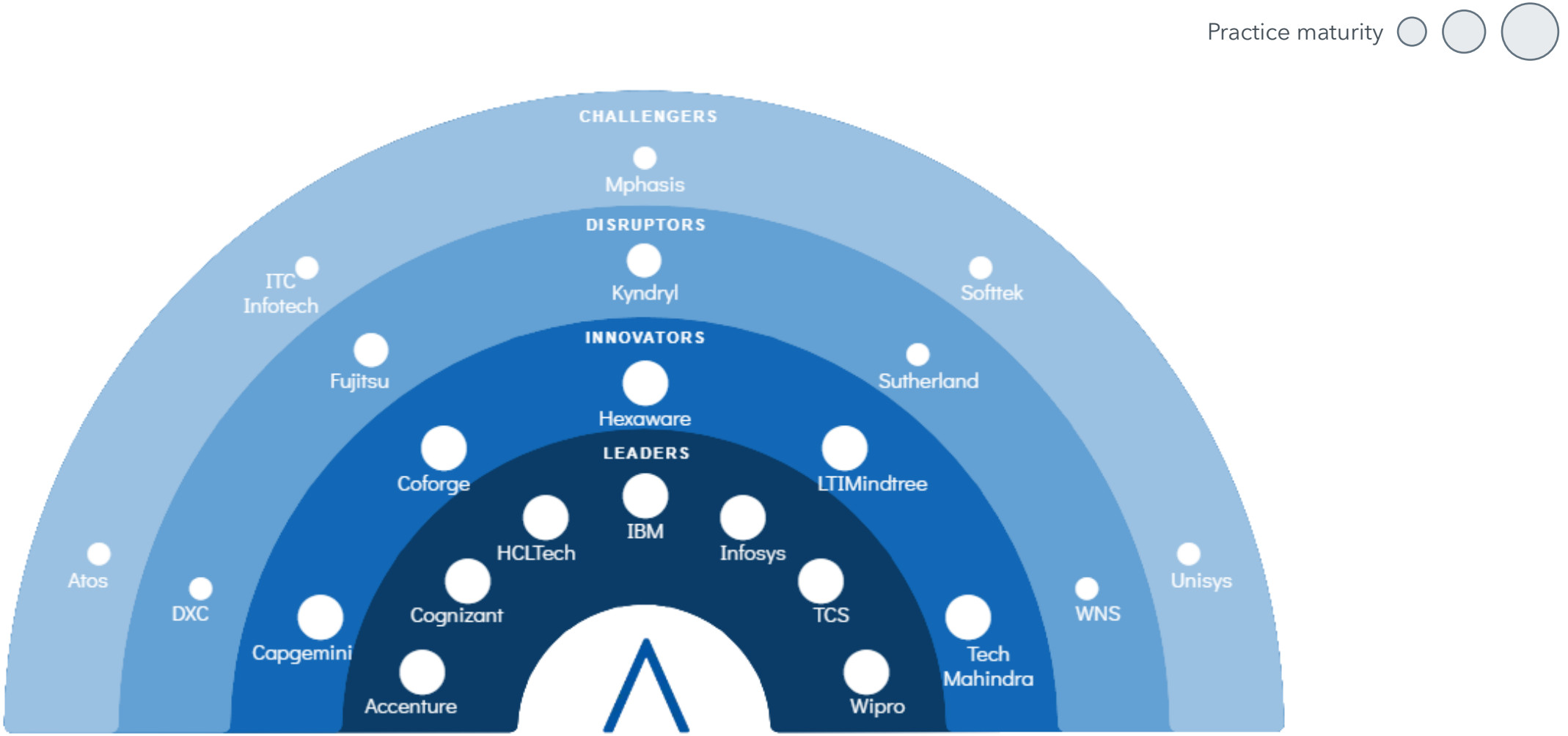
Pre-travel customer experience → **Post-travel customer experience** → **Airline operations** → **Airport operations** → **Property operations** → **Marketing & sales** → **On-ground service operations**

Executive summary

Key drivers	Enterprise response
Increasing customer expectations of on-time arrivals and departures despite weather disruptions and operational delays	Due to increased customer demand for seamless and predictable passenger journeys, airlines and airport firms rely on digital technologies to bolster the customer experience. • Airlines and airport firms are utilizing AI algorithms to analyze global weather data and previous flight operations data to predict and subsequently prevent flight delays.
Increasing focus on automating mundane tasks to free up staff bandwidth for more creative tasks	Airlines and airport clients are focusing on automating several of their repetitive and mundane tasks to allow their staff to focus on more creative deliverables and improve employee and customer experience. • They are leveraging emerging technologies, including automation in processes such as flight management systems, check-in systems, and baggage handling.
Need for optimizing central business processes to unlock operational efficiency	Airlines and airport clients are undertaking a transformative shift by consolidating their IT systems, modernizing legacy architecture, and cloudification. • Leveraging agile, cloud-based platforms enables firms to unlock operational efficiency in key business processes by acting as the backbone for countless IoT-enabled devices scattered across airlines and airports.
Lack of skilled aviation professionals and high attrition rates in the industry	A lack of skilled aviation professionals and high attrition rates characterize the airline and airport industry. • Airlines and airport enterprises are embracing emerging technologies such as AR/VR/XR for use cases such as pilot training, simulation, and cabin crew training. These also enable firms to provide opportunities for employee upskilling, which helps grapple with high attrition rates pertinent to the industry.
Increasing regulatory requirements and customer preference toward sustainable firms	Regulators and stakeholder pressures are compelling airlines and airport firms to focus on making mandatory climate-related disclosures and integrating sustainability into core business operations. • Airlines and airport firms are focusing on optimizing flight routes, reducing onboard weight, and increasing the adoption of sustainable aviation firms to reduce their carbon emissions and expedite the journey toward net zero.

Source: Avasant Research

Avasant recognizes 22 top-tier service providers supporting the airlines and airport industry in digital transformation



Note: Please refer to Avasant's *Airlines and Airports Digital Services 2024 RadarView* for detailed insights on service providers and supply-side trends.

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Demand-side trends

Airlines and airport firms are leveraging AI to enhance passenger experience

The International Air Transport Association (IATA) predicts that in 2024 air passenger traffic will recover to the 2019 level. Airlines and airport firms are preparing for this demand surge to reduce customer agitation due to weather, climate-related, and operational delays.

Utilizing AI-enabled weather and climate security platforms

Azul

Azul Airlines, a Brazil-based airline, leverages Tomorrow.io's weather intelligence platform to receive automated alerts and insights on volatile weather conditions and create plans for upholding passenger experience.

Leveraging AI to enable quicker decision-making

Lufthansa

Lufthansa Airlines uses Google Cloud tools, including BigQuery, Spanner, and Vertex AI, to run a set of applications, called Operations Decision Support Suite, to analyze weather and other variables for quicker decision-making.

Utilizing AI to expedite the security screening process

CHANGI airport singapore

Changi Airport utilizes AI/ML to identify patterns and anomalies and detect prohibited objects, enabling the airport to expedite the security process and enhance passenger experience.

Ensuring smooth operations during bad weather

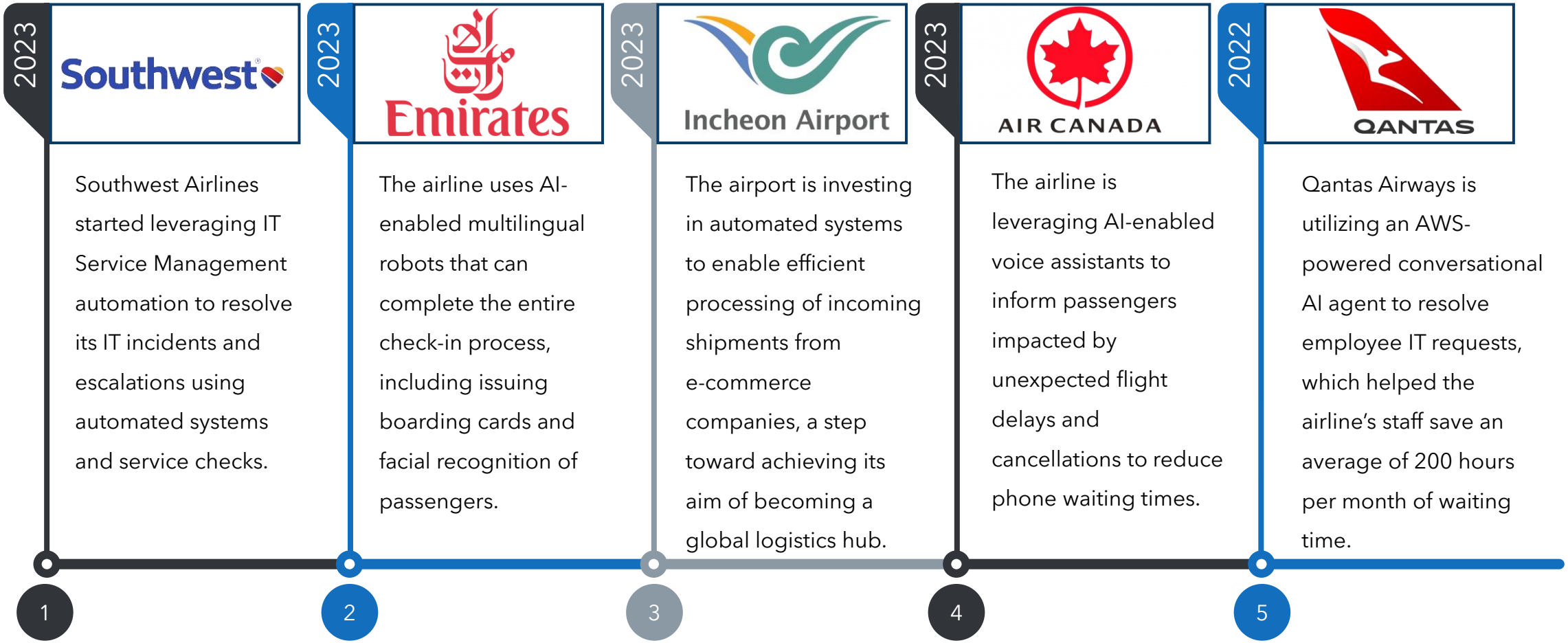
DELTA

Delta Airlines leverages an AI-enabled solution that can build a comprehensive simulation of its operations and suggest the best ways to handle adverse weather conditions.

Sources: Avasant Research

Airlines and airport firms are leveraging emerging technologies to automate mundane and repetitive tasks

Leveraging emerging technologies helps these firms free up staff bandwidth for more creative tasks and provide a more streamlined customer experience



Sources: Avasant Research

Airlines and airport firms are migrating to the cloud to unlock operational efficiency across key business processes

American Airlines migrated its critical applications to IBM Cloud to achieve faster development and release of new applications and enhance operational reliability and productivity.

It migrated its data from on-premises systems to the Snowflake cloud and has more than 50 feeds of data related to internal processes, such as crew tracking, available in Snowflake to enhance operational efficiency.

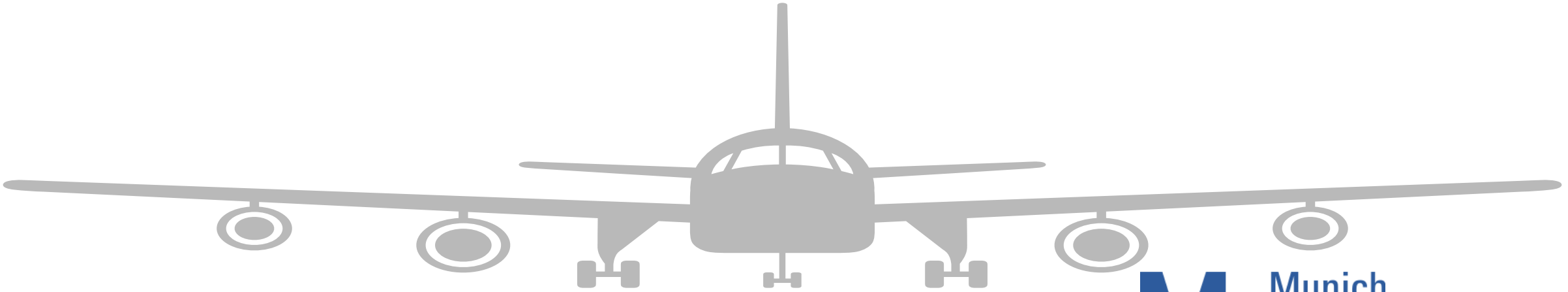
It leveraged Oracle Fusion Cloud Applications to modernize and automate its finance, HR, revenue, service, and asset management functions to improve decision-making and operational efficiency.

Southwest leverages AWS' automatic scaling capabilities to process multiple real-time fare searches on its website and mobile application during peak traffic periods.

United Airlines partnered with AWS to leverage its ML, IoT, analytics, and security capabilities to optimize business operations such as customer service, baggage routing, and flight scheduling.

Sources: Avasant Research

Airlines and airport firms are utilizing AR/VR/XR technologies for pilot training, simulation, and cabin crew upskilling



AIR FRANCE KLM

The airlines use virtual training applications to train pilots for flying Embraer 175 and 190 aircraft for the firm's Cityhopper subsidiary. It has also conducted training for maintenance engineers using Microsoft HoloLens.

JAL JAPAN AIRLINES

The airline uses VR technology for upskilling its aircraft mechanics. The simulation programs aid in enabling a better understanding of the engine run-up technique for mechanics and maintenance engineers.

M Munich Airport

The airport is leveraging Innoactive's VR technology to upskill its employees in processes such as equipment checks and plane supervision and augment employee engagement and experience.

Leveraging emerging technologies, including AR/VR/XR, for training and upskilling pilots and cabin crew also aids airlines and airport firms in enhancing the employee experience and navigating through high attrition rates pertinent to this industry.

Sources: Avasant Research

Regulatory requirements and stakeholder pressure are compelling airlines and airport firms to integrate ESG in business operations

In October 2021, the IATA passed a resolution committing to achieve net-zero carbon emissions from its member airlines by 2050. Airports are also facing regulatory pressure to adopt ESG as a way of doing business, highlighted by examples such as the Airport Authorities of India asking Indian airports to achieve 100% usage of green energy for operational purposes by 2024.

Copenhagen Airports CPH	Copenhagen Airports, in December 2023, announced plans to leverage data from airport operations to identify opportunities for optimizing energy consumption and reducing emissions.
Schiphol Amsterdam Airport	Schiphol Amsterdam Airport leverages emerging technologies, including IoT and digital twins, to optimize heating and cooling processes and make airport operations more sustainable.
Singapore Airlines	Singapore Airlines started leveraging SITA's digital inflight prescriptive analytics tool, OptiClimb, to optimize fuel consumption and reduce carbon emissions in October 2022
Lufthansa	Lufthansa partnered with Google Cloud to leverage AI-enabled insights for more efficient aircraft deployment and to reduce CO2 emissions.

Undertaking ESG initiatives also helps airlines and airport firms attract customers, employees, and investors who show affinity toward sustainability-conscious firms.

Sources: Avasant Research

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Infosys profile

Infosys: RadarView profile

Infosys

AVASANT RADARVIEW™ LEADER Airlines and Airports Digital Services 2024

Practice maturity ★★★★★

Investments & innovation ★★★★★

Partner ecosystem ★★★★

Delivers a next-gen tailored solution leveraging emerging technologies such as generative AI and the metaverse.

Practice overview

- Practice size: 3,000
- Active clients: 65+
- Delivery highlights: 147 delivery centers

>$100M	20%–40%
Revenue from the A&A segment, FY 2023	Digital revenue share from A&A, FY 2023

Industry-specific solutions/offerings

BagRunner Dispatcher	A solution to efficiently manage baggage transfers for short flight connections
Airport Queue Times Optimization	A suite of solutions to analyze security checkpoint wait times and optimize passenger flow patterns
Integrated Fleet Planner	A solution to view ground handling activities in real time to avoid bottlenecks and enhance efficiency
Security and Lost Bag Scanner	A solution that helps scan the contents of luggage for security purposes to mitigate risks

Sample clients

- A Canada-based airline
- A Hong Kong-based airline
- A Mexico-based airline
- A Middle East airport
- A Panama-based airline
- A Singapore airport
- A UK-based airport
- A US-based airline
- A US-headquartered airline

Partnerships/alliances

atpco	Codeveloped New Distribution Capability Exchange solutions to enhance airline retailing and offers
Palantir	Partnered to accelerate digital transformation for the A&A clients
aws	Leveraged its platform to enable cloud migration projects for A&A clients
IBM	Partnered to deliver solutions using tools and accelerators to reduce time to market
ASAPP	Partnered to implement contact center automation solutions for its A&A clients
CISCO	Provided security and automation solutions for data centers to A&A clients
Google Cloud	Helped A&A clients develop generative AI solutions using Google AI tools
AIRBUS	Used its Skywise platform to monitor and analyze aircraft health and provide maintenance services

Service line coverage

- Pre-travel customer experience
- Post-travel customer experience
- **Airline operations**
- Airport operations
- Property operations
- Marketing and sales
- On-ground services

Darker color indicates higher industry concentration:

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Infosys: RadarView profile

Case studies

Client	Capability	Summary	Business impact
A Middle East airport	• Cloud • Intelligent automation	• The client wanted to establish a digital framework for staffing, systems integration, and application development and maintenance. • Infosys leveraged ServiceNow to introduce a management dashboard and mobility solution and automate operational tasks. The solution provided service request management, orchestration, and catalog management. It also modernized its data center by migrating it to a modular one and implementing Splunk-based smart report features.	• Improved employee productivity • Reduced costs via automation and operation efficiency
A Canada-based airline	• AI and analytics • Cloud	• The client wanted to enhance its retailing capabilities by adopting the industry-standard International Air Transport Association (IATA) New Distribution Capability (NDC) program. • Infosys used the AWS platform to implement the NDC Exchange solution. This enabled the client to present its offerings for booking services using the IATA NDC standard and allowed external sales channels to access these services directly.	• Improved API performance and translation time • Improved operational efficiency
A US-headquartered airline	• Intelligent automation	• The client wanted to minimize flight delays and optimize operational efficiency by streamlining airport flight operations. • Infosys developed a mobile application with automation tools and a user interface to improve load planning accuracy. The app facilitated real-time updates on flight events and proactive alerts to departure managers, ensuring on-time departures and efficient baggage loading onto the aircraft.	• Reduced operational costs • Enhanced customer experience through on-time flight departures
A US-based airline	• Cloud • Intelligent automation	• The client required a reliable source of truth to provide insights into its enterprise data warehouse. • Infosys utilized ServiceNow to create a universal data cleansing utility, ensuring project data integrity. Automated dataset validation was implemented for accuracy, and a real-time health monitoring dashboard was introduced for tracking the enterprise data warehouse's status and performance.	• Improved data integrity across projects • Increased data insights for providing better passenger services

Infosys: RadarView profile

Analyst insights

Practice maturity

★★★★★

- With over two decades of experience, Infosys has deep domain expertise in the A&A industry. It spans key value chains such as operations, marketing and commercial, passenger engagement, and IT services. For example, it developed Cortex, a customer service AI platform, to improve net promoter scores, reduce customer wait times, and provide customer care agents with contextual information during calls.
- Many A&A clients are adopting a cloud-first approach to modernize their legacy business applications and enhance operational efficiency. Infosys supports this transformation with Infosys Cobalt Airline Cloud, a cloud-based model office solution that assists various stakeholders, including passengers, station managers, ground staff, and airport authorities.
- To broaden its capabilities in its ESG practice, Infosys is engaging with A&A clients to codevelop solutions for achieving net-zero sustainability. For example, it is currently helping a Central American airline to reduce its carbon footprint. Additionally, it has proofs of concept with cloud-enabled capabilities, such as route optimization with emission circulation, ground movement emission, baseline, and subsequent integrated reporting for carbon emissions.

Investments and innovation

★★★★★

- To expand its offering portfolio and leverage emerging technologies, it launched a startup engagement program, The Infosys Innovation Network, which collaborates with select startups to bring in certified and ready-to-use ideas, technology, and offerings in different industries, including the A&A industry. Additionally, it operates the Infosys Center for Emerging Technology Solutions to identify and develop digital capabilities in optimizing airline, airport, and back-office operations using AI/ML, blockchain, AR/VR, and deep learning technologies.
- To strengthen its digital, brand-building capabilities, it acquired oddity in April 2022. The acquisition will enhance Infosys's abilities in providing in-house production services, which include AR/VR and e-commerce, and creating a metaverse-ready setup for branding experiences tailored to A&A clients.

Partner ecosystem

★★★★

- Infosys has a diverse, industry-specific partnership ecosystem to deliver digital transformation projects for A&A clients. For instance, it partnered with ATPCO to deliver an NDC exchange solution to enhance airline retailing. It has partnered with Airbus to leverage its Skywise platform to monitor and analyze aircraft health and provide the needed assistance, and it partnered with ASAPP to automate its contact center operations to address customer grievances quickly.
- It partners with key cloud providers to deliver next-gen solutions for A&A clients. For example, it partnered with Google to deliver generative AI applications leveraging Infosys Topaz offerings and Google's generative AI solutions for different industries, including A&A.
- It partners with Sabre to modernize the top Global Distribution System to Google Cloud, enabling travel agencies to access product inventory and rates.

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Appendix:
About RadarView

Airlines and Airports Digital Services 2024 RadarView assesses providers across three critical dimensions

Practice maturity	• This dimension evaluates the type, market acceptance, and quality of offerings in the airline and airport space. It also assesses the strength of the overall practice with respect to its size, certified employees, embedded expertise in emerging technologies, and value chain coverage. • The width and depth of the client base, practice revenues, the use of proprietary/outsourced tools and platforms, and future strategy are important factors that contribute to this dimension.
Investments and innovation	• This dimension measures the strategic direction of investments and resultant innovations in the offerings and commercial model and how these align with the future direction of the industry. • The overall strategic investments, both organic and inorganic, in capability and growth, technology development, and human capital development, along with the innovations that the service provider develops, are critical aspects of this dimension.
Partner ecosystem	• This dimension assesses the nature of the provider's partnerships and ecosystem engagement. It evaluates the partnerships' objective (codevelopment or co-innovation) and the provider's engagement with technology solutions or product providers, startup communities, and domain associations. • The kind of joint development programs around offerings, go-to-market approaches, the overall depth of partnerships, and their leverage to deliver superior value to clients are this dimension's important aspects.

Research methodology and coverage

Avasant has based its analysis on several sources:

Public disclosures	Publicly available information from sources such as Securities and Exchange Commission filings, annual reports, quarterly earnings calls, and executive interviews and statements
Market interactions	Discussions with enterprise executives leading digital initiatives and influencing service provider selection and engagement
Provider inputs	Inputs collected through the service provider capability decks and structured briefings from November 2023 to December 2023

Of the 39 service providers assessed, the following are the final 22 featured in the Airlines and Airports Digital Services 2024 RadarView:

accenture, Atos, Capgemini, Coforge, cognizant, DXC TECHNOLOGY, FUJITSU, HCLTech, HEXAWARE, IBM, Infosys, ITC INFOTECH Business-friendly Solutions, kyndryl, LTIMindtree, Mphasis The Next Applied, WNS, Softtek, SUTHERLAND, TCS TATA CONSULTANCY SERVICES, TECH mahindra, unisys, wipro

Note: Assessments for Accenture, Atos, Capgemini, Cognizant, Fujitsu, Hexaware, ITC Infotech, Mphasis, Softtek, TCS, Unisys, Wipro, and WNS were conducted based on public disclosures and market interactions only.

Reading the RadarView

Avasant has recognized service providers in four classifications:

Leaders show consistent excellence across all key dimensions of the RadarView assessment (practice maturity, investments and innovation, and partner ecosystem) and have had a superior impact on the market as a whole. These service providers have shown true creativity and innovation and have established trends and best practices for the industry. They have proven their commitment to the industry and are recognized as thought leaders, setting the standard for the rest of the industry to follow. Leaders display a superior quality of execution and a reliable depth and breadth across verticals.

Innovators show a penchant for reinventing concepts and avenues, changing the very nature of how things are done from the ground up. Unlike leaders, innovators have chosen to dominate in a few select areas or industries and distinguish themselves through superior innovation. These radicals are always hungry to create pioneering advancements in the industry and are actively sought after as trailblazers, redefining the rules of the game.

Disruptors enjoy inverting established norms and developing novel approaches that invigorate the industry. These service providers choose to have a razor-sharp focus on a few specific areas and address those at a high level of granularity and commitment, which results in tectonic shifts. While disruptors might not have the consistent depth and breadth across many verticals like leaders or the innovation capabilities of innovators, they exhibit superior capabilities in their areas of focus.

Challengers strive to break the mold and develop groundbreaking techniques, technologies, and methodologies on their way to establishing a unique position. While they may not have the scale of the service providers in other categories, challengers are eager and nimble and use their high speed of execution to great effect as they scale heights in the industry. Challengers have a track record of delivering quality projects for their most demanding Global 2000 clients. In select areas and industries, challengers might have capabilities that match or exceed those of the providers in other categories.

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