TRIFORK.

AI use cases in aviation

Big bets, big failures and use cases
that work from industry leaders

Unlocking new possibilities in operational efficiency, predictive maintenance, customer experience, and safety

AI in aviation, key figures

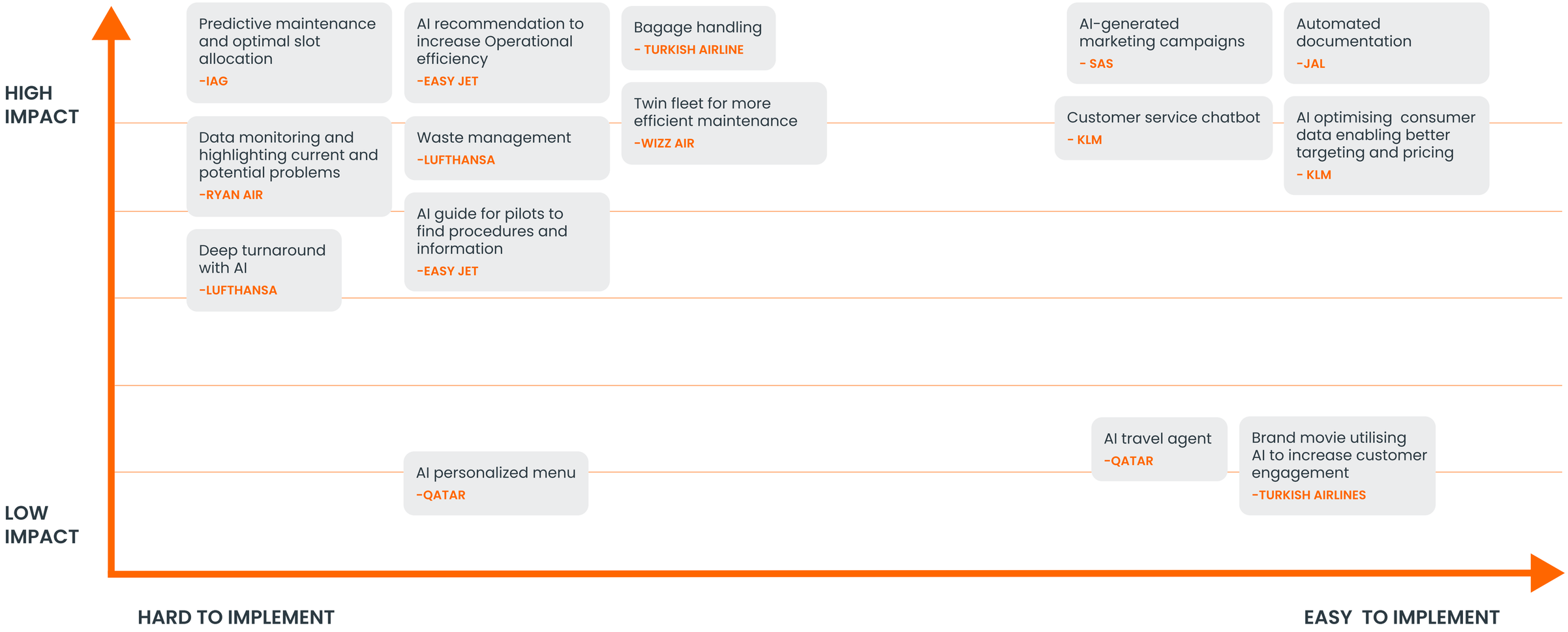
$7.4B

AI market in aviation (2025)

70–85%

AI project failure rate across industries

Overview of AI use cases in the aviation industry



Trifork has analyzed leading AI use cases in the aviation industry and classified them according to their **potential impact** and **implementation complexity**

“AI is accelerating aviation, driving new levels of efficiency, performance, and innovation across operations and passenger experience. The hard part isn’t experimenting, it’s making it real and that’s where industry use cases offer powerful inspiration.”

Kristian Dollerup

CCO Trifork Aviation


AEROFLOT
S.ESENIN

Big bets

These use cases are classified as "big bets" due to their potential to significantly improve core operations. They offer high impact but require strong data foundations and modern, integrated systems to succeed.

Predictive maintenance and optimal slot allocation

TECHNOLOGY

AI-powered predictive maintenance using machine learning and sensor analytics

COMPANY

International Airlines Group (IAG)

PHASE

Pilot / Early implementation

Challenge

IAG faced rising operational costs and disruptions due to unpredictable maintenance issues across its fleet. Reliability was hindered by reactive maintenance schedules, prolonged aircraft downtime, and inefficiencies that undercut narrow industry margins.

Solution

To tackle this, IAG developed its own AI-driven predictive maintenance system. Built internally, this tool analyzes aircraft sensor data to forecast maintenance needs before faults occur, enabling proactive planning and intervention. Furthermore the AI chooses the slot that minimises ground time across a 700-aircraft portfolio.

Impact

Significant reduction in unscheduled maintenance, fewer flight delays, improved aircraft availability, and potential cost savings in the millions.

IAG INTERNATIONAL AIRLINES GROUP

AI recommendation to increase operational efficiency

TECHNOLOGY

AI-powered operations management using machine learning and real-time data analytics

COMPANY

EasyJet

PHASE

Active implementation across operations

Challenge

EasyJet faced growing complexity in managing over 2,000 flights daily, often across congested airspace and unpredictable weather conditions. These challenges led to delays, inefficient resourcing, and customer dissatisfaction due to last-minute operational decisions.

Solution

EasyJet has integrated advanced AI algorithms into its daily operations, using machine learning and real-time data to support decision-making. The system can simulate millions of operational scenarios in seconds, optimizing crew allocation, aircraft deployment, and recovery planning in the event of disruptions. By leveraging generative AI, the airline can make more agile, data-driven decisions that reduce manual workload and improve response times.

Impact

Fewer flight delays, faster disruption recovery, improved crew utilization, and enhanced operational resilience.

Deep turnaround with AI

TECHNOLOGY

AI-powered turnaround monitoring using intelligent edge computing and computer vision for real-time task tracking and alerts

COMPANY

Lufthansa

PHASE

Advanced implementation / Industry deployment

Challenge

Aircraft turnaround the interval from landing to pushback is a critical bottleneck in aviation. Complex, multi-step ground operations (catering, cleaning, fueling, disembarkation) often go untracked or rely on manual reporting, leading to delays, higher costs, and reduced punctuality and profitability.

Solution

Lufthansa's DeepTurnaround employs decentralised AI processing and AI-powered computer vision within airport premises to monitor ground operations in real time. Cameras placed strategically track progress of tasks, and intelligent edge devices minimise latency for rapid decision-making. The system ingests visual data, timestamps key events, and flags potential delays via immediate alerts. A user-friendly dashboard facilitates task oversight and enables post-operation analysis to drive continuous improvement.

Impact

Fewer turnaround delays, faster real-time response, improved coordination across ground services, and elevated on-time performance.

Lufthansa

Data monitoring and highlighting current and potential problems

TECHNOLOGY

Generative AI–powered tools for boosting employee productivity and automating customer support, built on scalable cloud AI and contact center solutions

COMPANY

Ryanair

PHASE

Active implementation at enterprise scale

Challenge

As Europe’s largest airline, Ryanair operates 3,300 daily flights, a scale that introduced major challenges in maintaining high-quality employee workflows and delivering responsive customer service. Manual processes and fragmented tools hindered productivity and made consistent customer experiences difficult to sustain.

Solution

Ryanair deployed a generative AI platform across both employee and customer-facing operations. An AI-enhanced internal app streamlined tasks and boosted day-to-day productivity for staff. On the customer side, automated, AI-driven support interactions were introduced, reducing pressure on service teams and improving response times.

Impact

Increased employee productivity, reduced customer service response time, enhanced customer satisfaction, and scalable operational efficiency across 3,300 daily flights.

RYANAIR

Bagage handling

TECHNOLOGY

AI-powered visual baggage recognition using photo-based identification, data analytics, and dimension analysis to enable tagless tracking, space optimization, and predictive forecasting.

COMPANY

Turkish Airlines

PHASE

Early implementation / Strategic investment phase

Challenge

Traditional baggage handling has lagged behind in digital transformation, relying on physical bag tags and manual reconciliation. This results in misplaced baggage, inefficient staffing, wasted cargo space, and high operational costs, especially when tags are lost or unreadable.

Solution

Turkish Airlines is embracing AI-based photo recognition to modernize baggage handling. Each bag is visually scanned to extract characteristics such as size, color, texture, and wear marks, and matched to the passenger. This visual data supports: forecasting, tagless tracking, space optimisation, Real-time bag visibility and fraud reduction.

Impact

Fewer lost bags, reduced reliance on physical tags, improved cargo utilization, lower CO2 emissions, and increased ancillary revenue from smarter baggage operations.

TURKISH AIRLINES

Twin fleet for more efficient maintenance

TECHNOLOGY

AI-powered digital twin platform for predictive and scenario-based maintenance planning, using real-time data, simulation modeling, and machine learning

COMPANY

Wizz Air

PHASE

Active implementation across current and incoming fleet

Challenge

As one of Europe’s fastest-growing ultra-low-cost carriers, Wizz Air operates a large and expanding Airbus fleet with high daily utilization. Traditional maintenance planning methods, based on static intervals and reactive workflows, could not scale efficiently with the airline’s ambitious growth. This posed risks of higher turnaround times, unplanned downtime, and inefficiencies in resource allocation.

Solution

Wizz Air implemented an AI-powered digital twin to create virtual replicas of its aircraft and components. The platform leverages real-time and historical data to forecast maintenance needs, simulate fleet development scenarios, optimize labor and hangar utilization, and integrate new aircraft with minimal disruption. It also enables scenario-based planning to manage operational shocks, such as unexpected failures or regulatory changes.

Impact

Reduced turnaround times, improved aircraft availability, and lower maintenance costs.

Waste management

TECHNOLOGY

AI-driven visual recognition and machine learning systems for inflight food waste analysis and optimization

COMPANY

Lufthansa

PHASE

Active implementation and scaling across multiple airlines

Challenge

The airline industry faces significant food waste due to overproduction, inaccurate demand forecasting, and inefficient meal loading. Traditional methods often lead to excessive provisioning, resulting in unnecessary waste and increased carbon emissions.

Solution

Lufthansa uses AI-powered systems like the "Tray Tracker" to scan returned meal trays and analyze consumption patterns. This data, combined with flight and passenger info, helps optimize meal portions and loading. The approach reduces overproduction and food waste, with machine learning models also forecasting demand more accurately.

Impact

Reduced food waste, optimized meal provisioning, and decreased carbon emissions.

Lufthansa

AI guide for pilots to find procedures and information

TECHNOLOGY

Generative AI-powered virtual assistant (“Jetstream”) providing instant access to operational procedures, policies, and critical information from comprehensive manuals

COMPANY

EasyJet

PHASE

Active deployment and expansion

Challenge

Pilots and crew face challenges in quickly accessing vast amounts of operational documentation and procedures during time-sensitive situations, impacting decision-making and operational efficiency.

Solution

easyJet developed Jetstream, an in-house generative AI tool that allows pilots and crew to instantly retrieve relevant information from eight operational manuals totaling around 3,000 pages. This AI assistant enhances real-time problem-solving and operational decisions. The tool is integrated within easyJet’s broader AI ecosystem.

Impact

Faster problem-solving, fewer delays, and smoother operations.

easyJet


UNITED

Quick wins

These use cases are considered "quick wins" as they offer high impact with relatively easy implementation. They can be deployed rapidly, require minimal system changes, and deliver immediate value to operations and customer experience.

Automated documentation

TECHNOLOGY

Generative AI report assistant (JAL-AI Report) using a small language model (SLM) for offline inflight documentation and translation

COMPANY

Japan Airlines (JAL)

PHASE

Pilot / Proof-of-concept

Challenge

Cabin crew must document unexpected onboard events such as medical issues or delays for follow-up by ground staff. Writing these handover reports is time-consuming, sometimes taking up to an hour, reducing time available for passenger service.

Solution

JAL is developing the JAL-AI Report, an offline-capable generative AI tool that allows cabin attendants to create reports using brief inputs such as checkboxes and keywords. The tool can instantly summarize, complete, and translate reports, even in low-connectivity environments, enhancing efficiency, ensuring completeness, and improving consistency in inflight incident documentation.

Impact

Report writing time cut by up to two-thirds, freeing crew for passenger care and improving report quality and consistency.

JAPAN AIRLINES

AI-generated marketing campaigns

TECHNOLOGY

AI-generated visual content for marketing, using generative AI art tools and models

COMPANY

Scandinavian Airlines (SAS)

PHASE

First-time implementation

Challenge

SAS aimed to create a high-impact, visually engaging marketing campaign to promote travel to Malmö and Copenhagen during a major cultural event, while standing out in a crowded summer travel market.

Solution

SAS launched its first AI-generated marketing campaign in collaboration with Swedish AI artist Stephanie Löwenstein. The campaign featured AI-created visuals of virtual passengers, displayed across digital platforms, airports, and public spaces in Malmö and Copenhagen. The creative approach was designed to celebrate the region and reinforce SAS's brand as a modern, innovative carrier connecting Europe to Scandinavia.

Impact

Faster creative development, strong visual engagement, and increased brand visibility during a high-traffic travel period.

AI optimising consumer data enabling better targeting and pricing

TECHNOLOGY

AI-driven personalization, dynamic pricing, and predictive analytics for marketing optimization

COMPANY

KLM Royal Dutch Airlines

PHASE

Active implementation and continuous development

Challenge

To remain competitive and relevant in a fast-changing aviation market, KLM needed to deliver highly personalized, timely marketing while optimizing pricing and campaign performance across diverse customer segments.

Solution

KLM uses AI to analyze booking history, browsing behavior, and real-time market data to tailor promotions, recommend destinations, and adjust pricing dynamically. Their conversational AI assistant, BlueBot, enhances customer engagement with natural, brand-aligned interactions, while predictive analytics help forecast demand and guide campaign strategy.

Impact

Higher conversion rates, improved customer engagement, optimized pricing, and stronger brand loyalty through hyper-personalized, data-driven marketing.

Customer service chatbot

TECHNOLOGY

Generative AI-powered chatbot using deep learning, trained on historical customer interactions

COMPANY

KLM Royal Dutch Airlines

PHASE

Scaled implementation

Challenge

With over 130,000 weekly social media mentions, KLM's customer service team faced high volumes of repetitive inquiries, straining response capacity and reducing service quality.

Solution

KLM deployed a generative AI chatbot trained on 60,000 past customer-agent interactions. Initially used to assist agents by suggesting responses, the system advanced to autonomously handle over half of common inquiries across platforms like Facebook Messenger and WhatsApp. This shift allowed human agents to focus on more complex cases while ensuring consistent, brand-aligned communication.

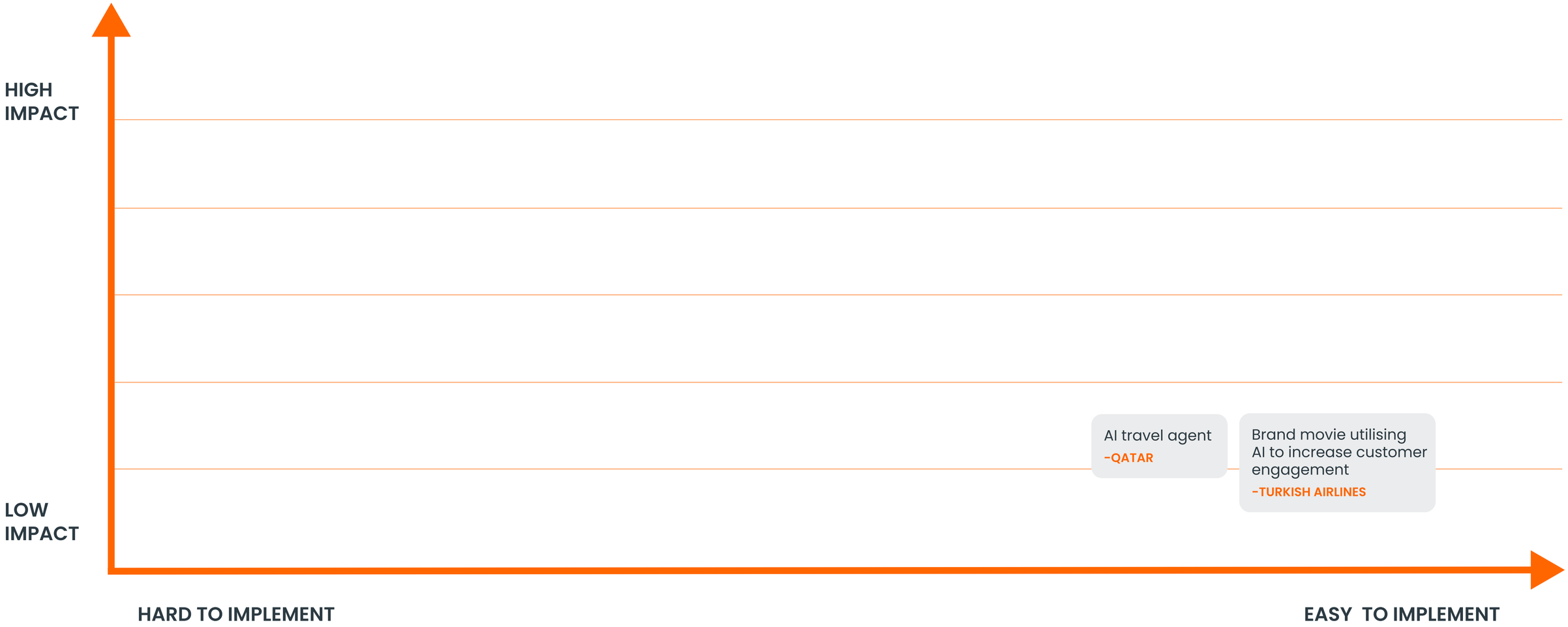
Impact

Over 50% of inquiries automated, 40% increase in Messenger engagement, and higher customer satisfaction through faster, scalable service.


A11
swissport
TARA
533 kg
MAX 2,0
lomma

Tactical opportunities

These use cases are easy to implement with minimal disruption to existing systems, but offer limited impact on core operations. They are valuable for experimentation, brand building, or enhancing customer touchpoints.



AI travel agent

TECHNOLOGY

Generative AI-powered virtual assistant (“Sama”), emotionally-aware AI recommendation engine, AI-driven menu advisor

COMPANY

Qatar Airways

PHASE

Live deployment (launched at Web Summit Qatar 2025)

Challenge

Travel booking remains fragmented, impersonal, and time-consuming. Qatar Airways aimed to reimagine this process with a seamless, human-like AI experience while integrating personalisation into every stage of the customer journey.

Solution

Qatar Airways launched Sama, a generative AI travel assistant that guides users through booking via voice or chat, offering real-time, personalised itineraries and support. Integrated with tools like Dream Destination (emotion-based suggestions) and AI Menu (personalised meal choices), the system enhances every stage of the travel journey.

Impact

Sama simplifies bookings, boosts engagement, and delivers a more personalised, human-like travel experience, positioning Qatar Airways as a leader in AI-driven customer service.

QATAR AIRWAYS القطرية

Brand movie utilising AI to increase customer engagement

TECHNOLOGY

AI-driven neurotechnology data visualization, EEG and biometric data integration, generative AI-powered immersive digital art

COMPANY

Turkish Airlines

PHASE

Live deployment (launched at Art Basel 2025 and Cannes Lions 2025)

Challenge

Conveying the deep emotional and sensory impact of travel in a way that resonates authentically with audiences and elevates customer engagement beyond traditional advertising. Turkish Airlines aimed to reimagine storytelling through the fusion of art, science, and AI to deepen human connection and highlight the transformative power of travel.

Solution

Turkish Airlines partnered with artist Refik Anadol to create Inner Portrait, an AI-driven project that captures travelers' brainwaves and biometric data during their journeys. Advanced AI transforms this data into immersive digital artworks, showcasing the emotional impact of travel through a unique fusion of art and technology.

Impact

Inner Portrait strengthened Turkish Airlines' brand by creating a unique, emotional connection through AI-powered storytelling, showcasing the airline as a leader in innovation.

TURKISH AIRLINES

UNITED
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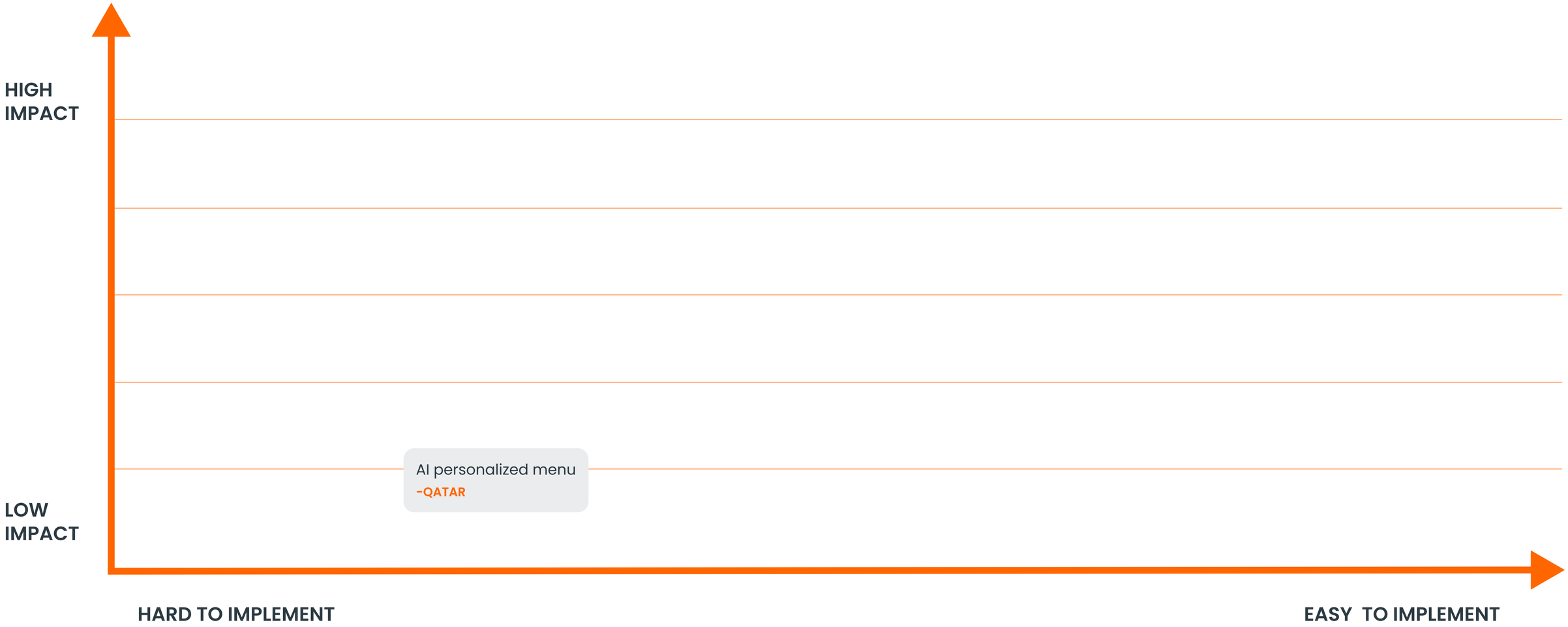
787-9

Money pits

These use cases often involve high cost and complexity, with limited return on investment or unclear operational value. They can drain resources without delivering meaningful impact if not carefully scoped or aligned with business needs.



AI personalized menu

TECHNOLOGY

AI-powered personalized menu recommendations

COMPANY

Qatar Airways

PHASE

Live deployment

Challenge

Enhancing the in-flight dining experience by making meal selection more personalized and convenient for Business Class passengers.

Solution

Qatar Airways introduced AI Menu Recommendations, enabling Business Class travelers to explore the onboard menu via the Qatar Airways app before their flight. Powered by the Sama AI assistant, passengers receive tailored meal suggestions, including chef's specials and dietary options like.

Impact

The initiative increased passenger engagement and satisfaction by delivering personalized meal options, boosting the overall in-flight experience.

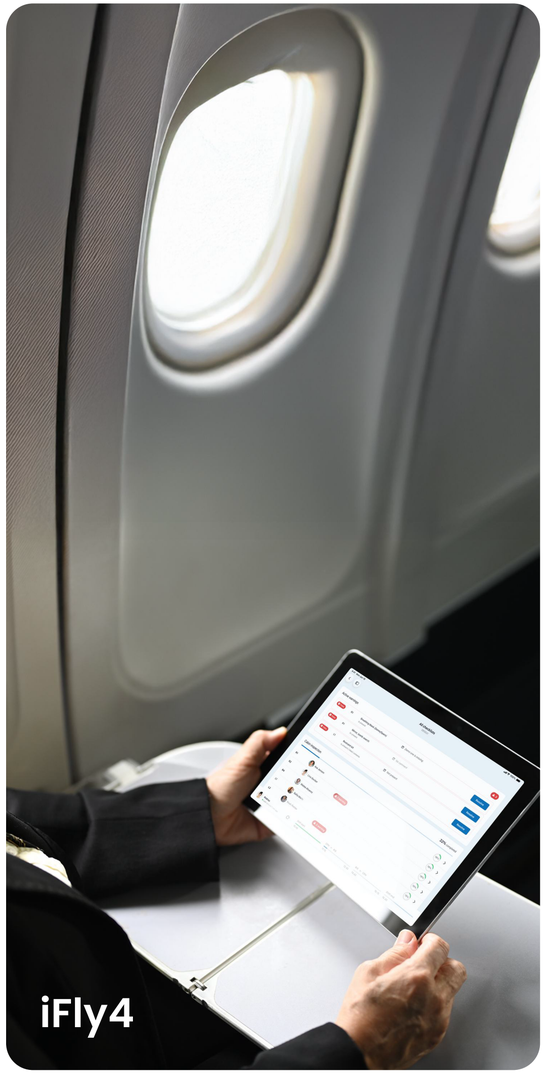
QATAR AIRWAYS القطرية

If you're looking to enhance your company's use of AI, identify high-impact use cases, or simply get inspired by what's possible in your industry, book a 30-minute session with one of our AI experts, or reach out to us directly at trifork.com/aviation/

CORAX

Corax AI

Spatial computing



iFly4

More than **15 years** working with airlines and airports

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