LTIMindtree

Whitepaper

Empowering Travel Businesses Through Data Product Foundations

The Data Products' Way of Business

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Executive summary

The tourism industry, valued at USD 726 billion in 2025, is rapidly evolving. With artificial intelligence (AI) and digital transformation at its core, organizations are reimagining how they operate, collaborate, and serve travelers. This whitepaper explores how data products—modular, outcome-driven data assets, can help tourism enterprises build unified ecosystems that enhance customer experience, improve operational efficiency, and unlock new revenue streams. It offers valuable guidance for business leaders, data strategists, and IT professionals navigating today's data-driven economy. The paper also outlines existing challenges, the potential of data-driven thinking, and approaches to leading this transformation.

Introduction

The tourism industry is among the most technologically progressive. From AI-powered personalization to immersive digital experiences, it has embraced innovation to meet the changing expectations of travelers. Partnerships among airlines, online travel agencies (OTAs), hotels, car rentals, and financial institutions work together to deliver seamless travel experiences. This is illustrated in the figure below.

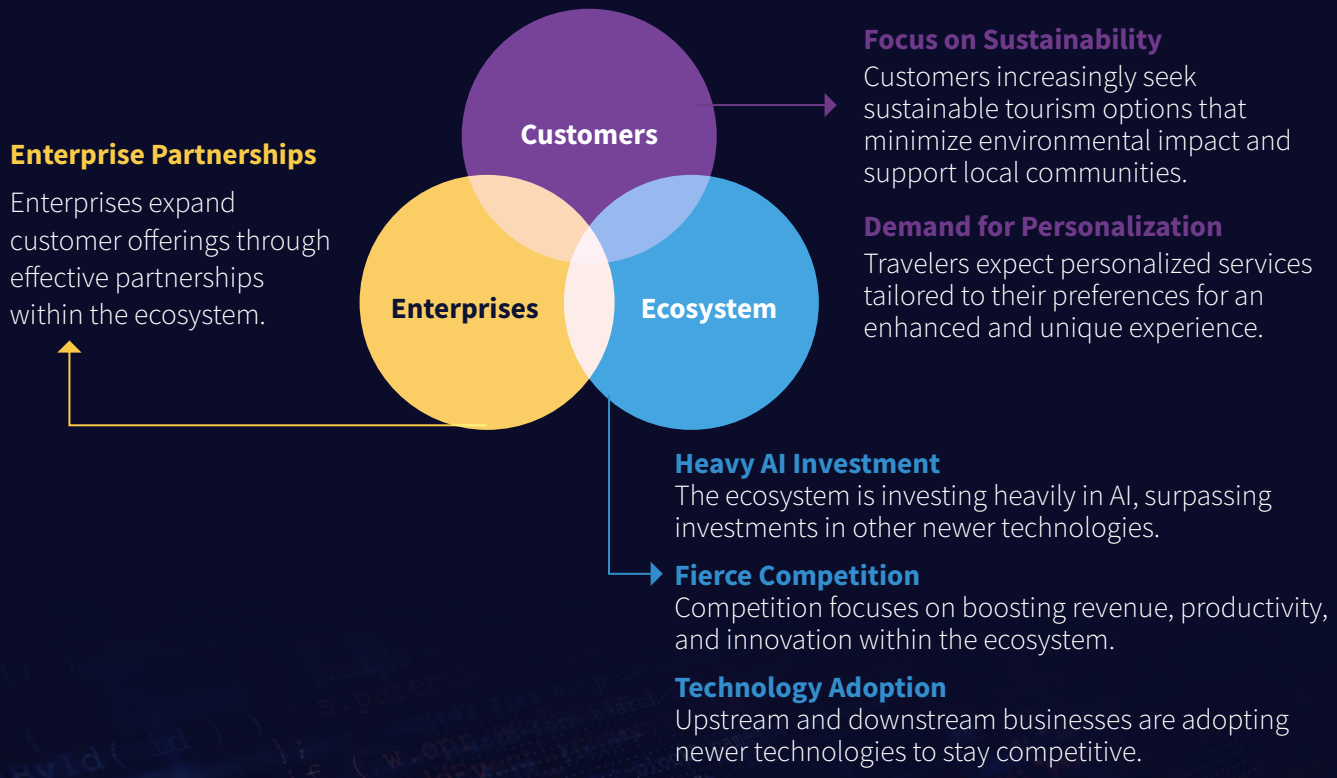

Figure 1: Key parties in the tourism industry today

These partnerships, however, often emphasize commission sharing and revenue growth instead of focusing on truly understanding and serving the customer. The future lies in moving beyond transactional relationships to create a unified ecosystem that:

- Provides seamless and comfortable experiences
- Understands traveler intent and behavior
- Anticipates needs and delivers proactive support

This transformation requires adopting a data products mindset, where data is treated as a product with defined consumers, outcomes, and lifecycle. The traveler's journey across the ecosystem is key to shaping how this interconnected system must function.

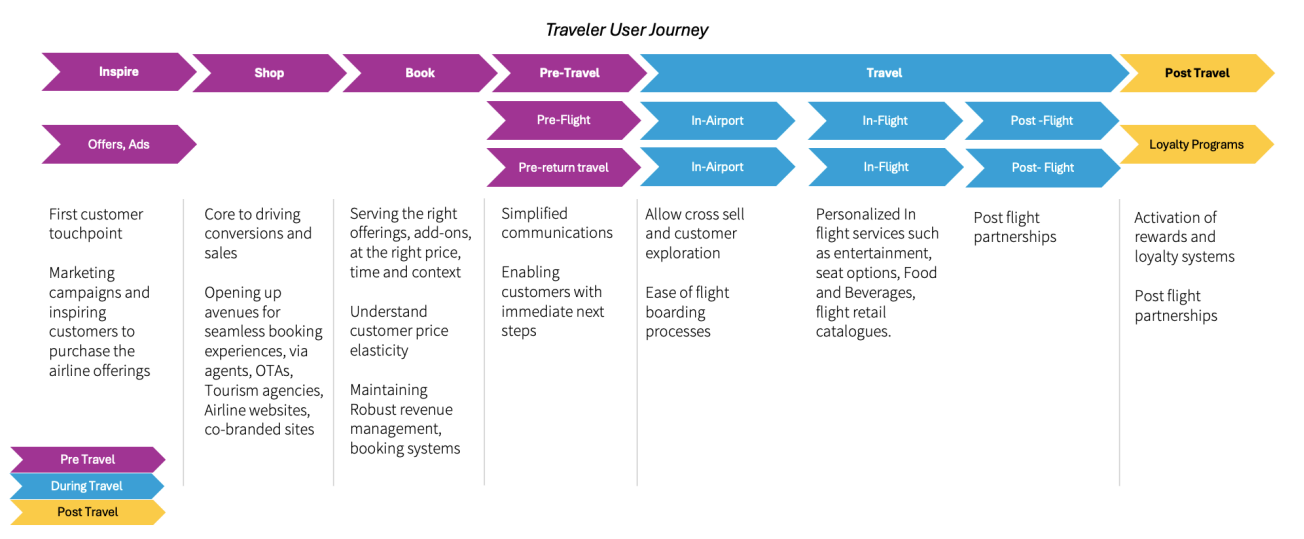

Figure 2: Traveler user journey

Challenges

Despite advances in technology, tourism enterprises continue to face several challenges:

1. **Fragmented data ecosystems:** Information is spread across internal systems and partner platforms, making it difficult to build a unified view of the customer.

2. **Reactive decision-making:** Many systems are designed primarily for reporting rather than real-time action. CXOs lack the ability to respond quickly to emerging trends or issues.

3. **Siloed knowledge:** Insights remain distributed across departments and partners, creating distorted understanding and missed opportunities.
4. **Manual processes:** Critical workflows still rely on human intervention, slowing down operations and reducing agility.
5. **Limited impact attribution:** Enterprises struggle to connect actions to outcomes, making it difficult to measure return on investment (ROI) or optimize strategies.

Brief solution outline

Adopting a product-centric approach redefines how businesses derive value from their data by treating it as a reusable, trustworthy asset.

Data products

- Are self-describing and discoverable: They enable users to easily search for and understand information with minimal friction.
- Foster distributed ownership: Domain experts oversee data quality and usage, ensuring both context and accuracy.
- Deliver interoperable, business-focused solutions: They address specific business challenges and provide measurable value.

In the context of driving transformation in the tourism industry, they help to:

- Unify data ecosystems across partners
- Derive real-time insights and automate processes powered by AI
- Incorporate continuous feedback loops for ongoing improvement
- Provide end-to-end visibility into customer journeys and operational impact

This product-driven approach transforms fragmented systems into intelligent, interconnected platforms that deliver measurable results. The following section explores this concept in more depth.

Detailed solution

A. The data products way of thinking

Data products are modular, reusable, and outcome-driven. They enable:

- Cross-enterprise collaboration by enhancing privacy of first-party data through technologies such as data clean rooms.
- AI-driven decision-making across customer touchpoints.
- Automated workflows that shorten turnaround time and improve productivity.

This is illustrated in the figure below.

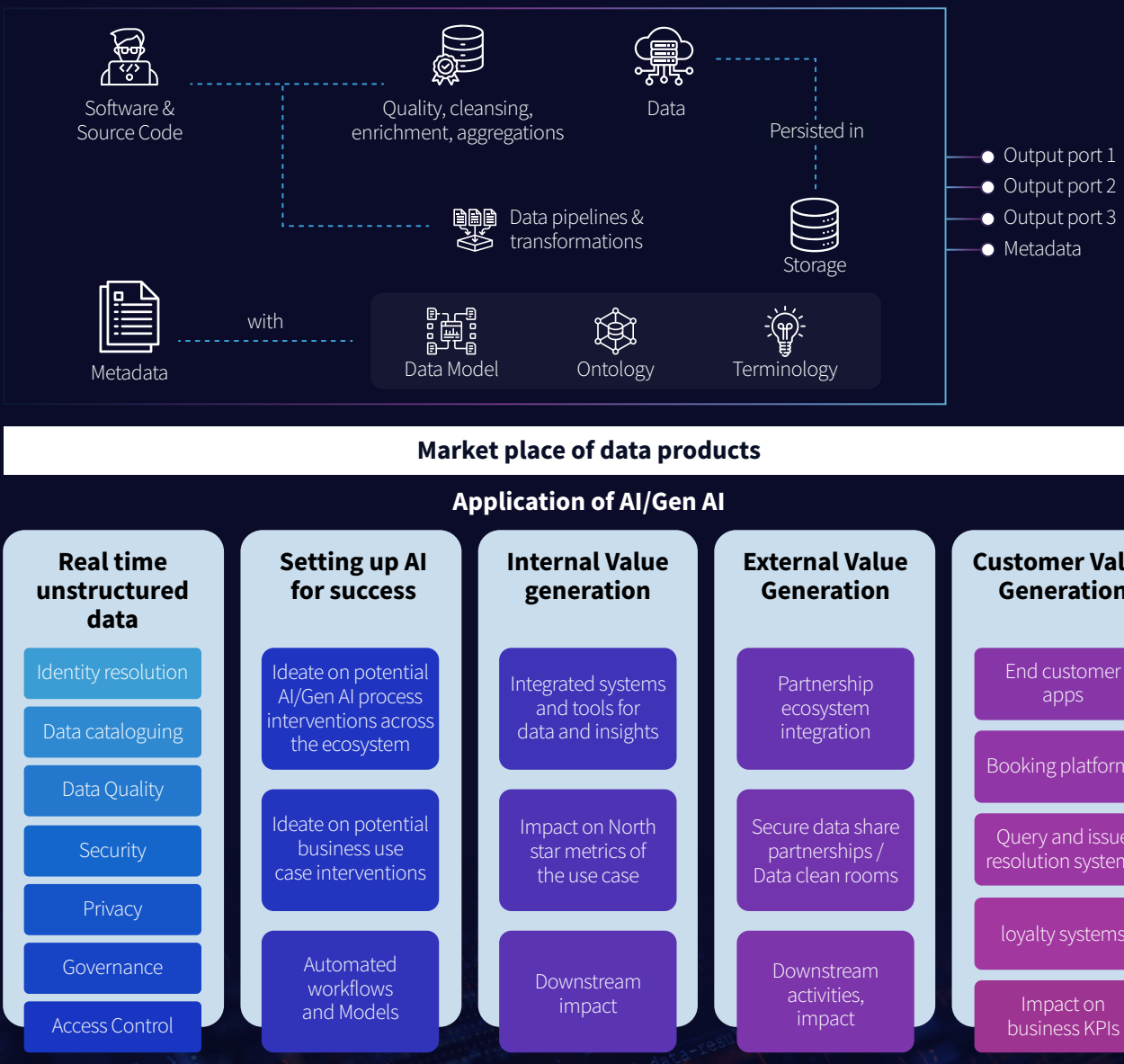

Figure 3: Data to outcomes

Domain-based data curated into products can be published in a marketplace where users can find and consume them through different means such as APIs, dashboards, or conversational interfaces. Domain-aligned data products can be combined into cross-domain products, each capable of scaling independently.

When curated datasets are enriched, the application of AI can generate higher-order data products. These enhanced products can then be published back into the marketplace, with lineage clearly traced across all contributing data products.

In the next section, we will delve into enterprise capabilities for firms in the tourism industry and explain how the framework will apply specifically in this industry.

B. Enterprise capability today

Organizations in the tourism industry have made considerable progress in adopting digital technologies. Most airlines, OTAs, and hospitality providers now employ advanced customer relationship management (CRM) systems, data warehouses, and analytics platforms. These solutions provide visibility into customer behavior, operational metrics, and financial performance.

Despite these advancements, many enterprises still fall short of achieving real-time, interconnected decision-making. Current landscapes are marked by fragmented systems that fail to communicate effectively. CXOs receive dashboards and reports, but these are retrospective and often lack actionable insights.

The absence of unified data flow from source to insight to action results in delayed decisions and missed opportunities. In addition, manual interventions remain common, creating bottlenecks and reducing agility.

C. What can enterprises do to bridge the gap

To close this gap, enterprises must treat data as a strategic asset and transform raw data into products that serve specific business outcomes. The process begins with identifying key data sources—internal, partner, and external—and creating unified datasets through extract, transform, and load (ETL) pipelines. These datasets can then be published in a marketplace as data products.

Data Product Framework

Embed security & access needs into early product requirements

Product Thinking

Data is no longer a byproduct of systems — it's a product with consumers, value, and a lifecycle.

- Define the business problem
- Identify target personas
- Establish clear value outcomes

Assign accountable owners for data access rights and responsibility

Domain Ownership

Data should be created, owned, and maintained by the business domains that understand it best.

- Assign data product owners
- Encourage federated governance
- Enable cross-functional teams

Standardize access roles, classification levels & audit trails

Standardized Product Design

Every data product follows a blueprint for consistency and usability

- Product catalog & metadata
- Input sources & lineage
- Quality & freshness SLAs
- Access policies & controls
- Versioning & change history

Implement fine-grained access controls (RBAC/ABAC) & secure APIs

Platform Enablement

A modern platform must support decentralized product creation and centralized governance.

- Data Catalogs and Marketplace
- CI/CD pipelines for data
- Unified access layer (API/SQL)
- Observability and monitoring
- Governance-as-code and policy enforcement

Monitor for access violations, data drift, and unauthorized use

Lifecycle

Data Products are living assets — not static reports or tables.

- Ideation: Identify business need
- Design: Blueprint and ownership
- Build: Pipelines, validation, interfaces
- Launch: Publish and onboard users
- Measure: Track usage, feedback, ROI
- Iterate: Evolve features based on demand

Figure 4: Data product framework

D. Creating a data product that enables unified travel ecosystems

Building a data product begins with reimagining the user journey. Key stakeholders across the partner ecosystem-travelers, airline staff, hotel managers, OTA agents must be mapped along with their activities and data needs.

For instance, predicting airline delays, data from flight schedules, crew availability, weather conditions, and partner bookings must be integrated. Data engineering teams create ETL workflows that automate ingestion, transformation, and storage. These workflows build datasets that serve the primary use case and also enable new insights.

AI and machine learning (ML) models can then be developed to forecast delays, recommend actions, and automate responses. AI agents may be deployed to handle tasks such as rebooking, customer notifications, and compensation. These agents improve turnaround time, increase productivity, and better traveler satisfaction.

For long-term sustainability, governance, security, privacy, and monitoring must be embedded throughout the ecosystem.

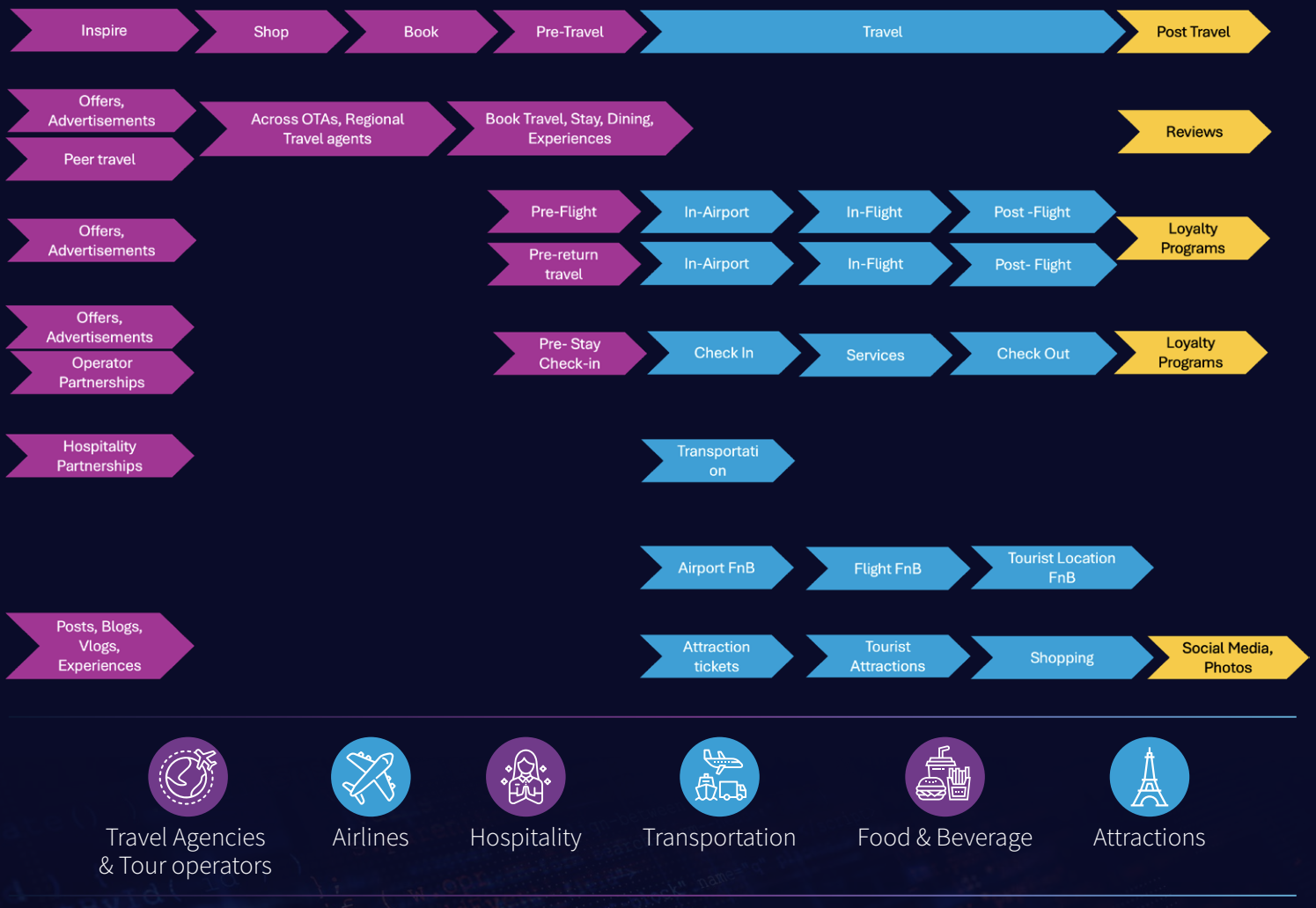

Figure 5: Travel user journey

The user journey must be evaluated from both backend and frontend perspectives. Backend processes include data flow, model execution, and feedback loops. Frontend experiences focus on real-time updates, seamless interactions, and personalized services.

E. Downstream monetization of data products

Data products can be monetized through marketplaces and API integrations. Once a data product is built, it can be offered to partners and third parties via APIs. For example, a delay prediction API can be consumed by OTAs, hotels, and car rentals to adjust their operations and enhance customer experience.

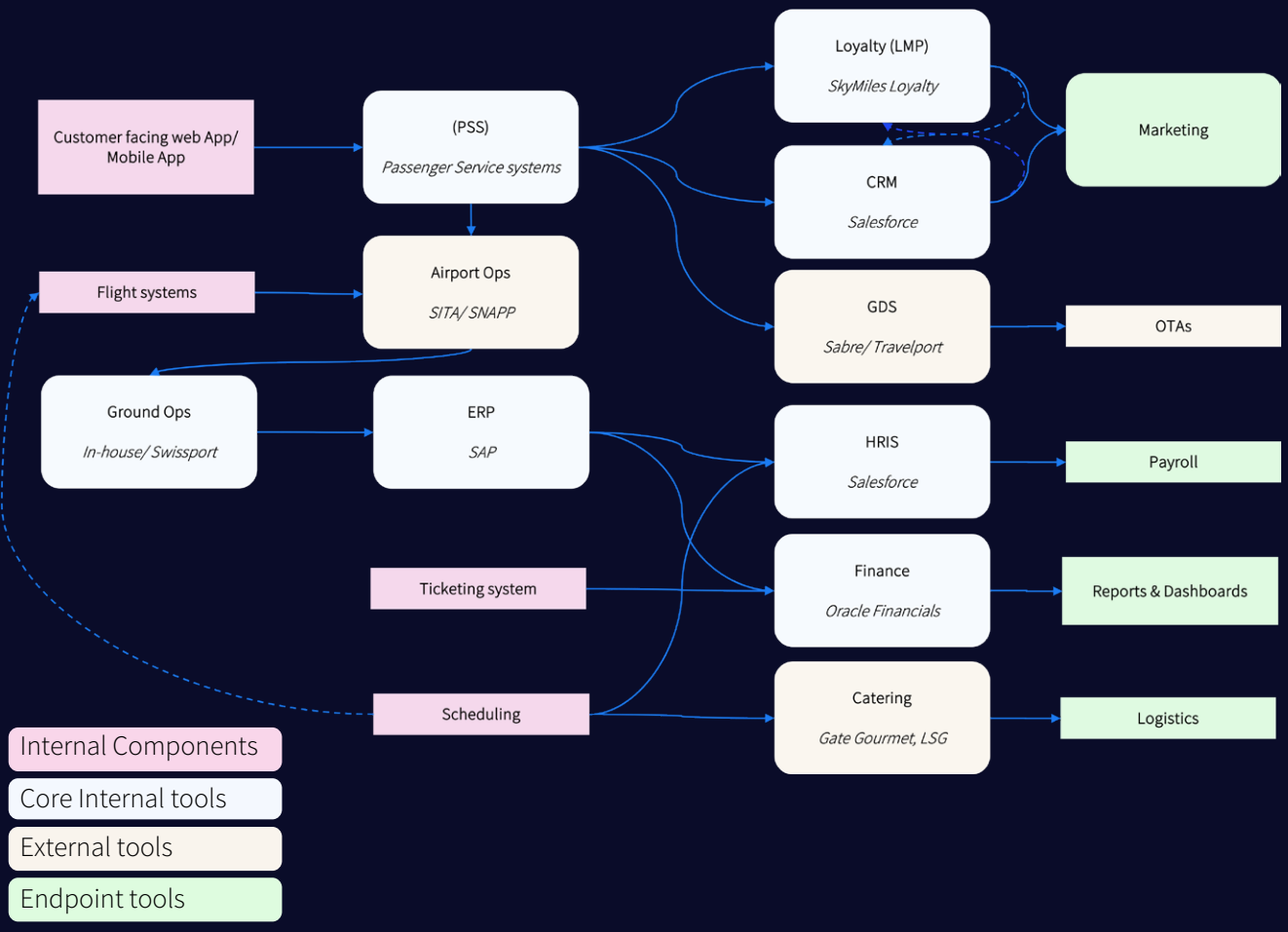

Figure 6: Airline internal ecosystem

Monetization also requires measuring the impact of data products on key performance indicators (KPIs). These metrics include cost efficiency, productivity, revenue growth, customer satisfaction, repeat bookings, and brand loyalty. By linking data products to tangible outcomes, enterprises can demonstrate ROI and attract further investment.

Data products can also be bundled into solutions and offered as services. For instance, a travel optimization suite may combine delay prediction, dynamic pricing, and customer segmentation. These bundled offerings can be sold to partners or leveraged internally to drive performance.

Expanding the ecosystem

The ecosystem can be expanded by adding new data sources and use cases. Beginning with delay prediction, enterprises can integrate customer 360 views, loyalty program analytics, revenue management, pricing optimization, and crew management.

Each use case must be connected to a north star metric that reflects customer impact. For example, crew management may seem operational, but mismanaged crews can often cause delays, dissatisfaction, and weakened brand loyalty. By aligning all use cases to customer outcomes, enterprises can build a cohesive and intelligent ecosystem.

New data sources such as IoT sensors, mobile app interactions, and social media can further enrich insights. The ecosystem must remain scalable, flexible, and secure to accommodate both growth and innovation.

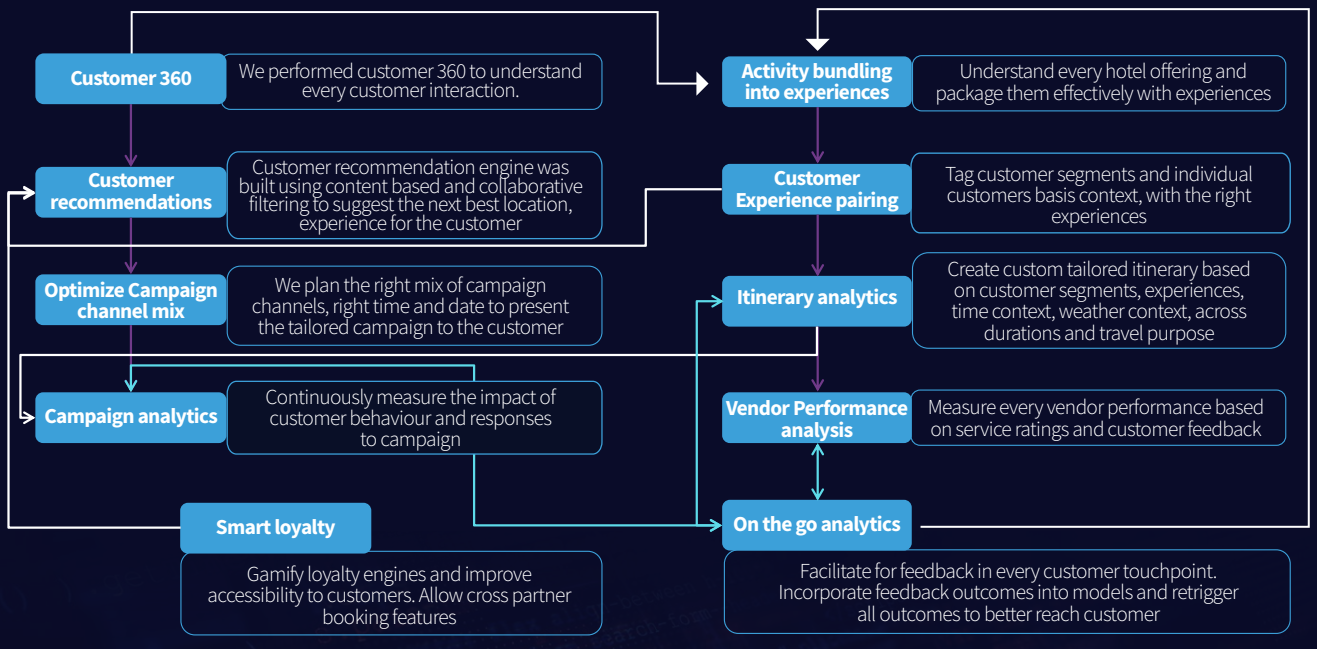

Figure 7: Decision flow

How to make the ecosystem intelligent

Building intelligence into the ecosystem requires deep domain expertise and strategic alignment. Methodologies such as Lean, Six Sigma, and strategic frameworks must be integrated into data product development. These practices ensure that processes remain efficient, business-aligned, and continuously improved.

Intelligence also depends on embedding AI across every layer of the ecosystem. From data ingestion to decision-making, AI should be used to automate, optimize, and personalize. Feedback loops must be established to capture outcomes, refine models, and drive ongoing improvement.

Organizations such as LTIMindtree are uniquely positioned to guide this transformation. With expertise spanning data, business, and technology, the company provides end-to-end solutions that deliver measurable value. Proven implementations, highly skilled teams, and strategic partnerships make LTIMindtree an ideal collaborator for building intelligent ecosystems.

Use case: Airline delay prediction

The data products approach to building a unified travel ecosystem can be illustrated through the use case of airline delay prediction. Here, an airline enterprise initiates the journey by leveraging data to forecast delays.

1. Data sources

- **Internal:** Flight schedules, crew rosters, maintenance logs
- **Partner:** Hotel availability, car rental bookings, OTA data
- **External:** Weather, air traffic, social media sentiment

Figure 8: Data sources

2. Data convergence

- **Business:** Agreements on shared KPIs and data exchange
- **Technical:** Data clean rooms, APIs, ETL pipelines, data ingestion tools

3. Engineering and modeling

- ETL workflows create unified datasets
- ML models predict delays and recommend actions
- AI agents automate rebooking, notifications, and compensation

4. Governance and security

- Data governance frameworks safeguard privacy, compliance, and reliability
- Monitoring systems track performance and anomalies

5. User journey mapping

- **Backend:** Data flow, model execution, feedback loops
- **Frontend:** Traveler receives proactive updates, seamless rebooking, and personalized offers

The chart below illustrates how delay prediction outcomes influence internal airline ecosystem.

Figure 9: Impact on internal systems

For this to occur, the data products architecture enables integration of datasets and the flow of decisions into downstream tools. These tools, in turn, allow real-time adjustments that improve operational efficiency and elevate customer experience.

The following chart expands this perspective, showing how ecosystems can extend into partner systems to create a holistic customer touchpoint experience.

GDS

- Realtime Inventory updates
- Seat occupancy, On time flight performance, booking preference of customer, customer mindshare, wallet share

OTAs

- Realtime Inventory updates, advanced bookings,
- Occupancy updates
- Occupancy rates

Car Rentals

- Customer communication on expected delays,
- Expecting cancellations, pick up time changes etc. partnership commissions
- additional revenue
- CSAT
- Fleet management, inc. in revenue

Hotels

- Customer communication on expected delays,
- Expecting cancellations, check in time changes etc. Requesting spa/ packed food/ services owing to delays/ advancements, Cab bookings, ancillary services offered
- awareness, personalization.
- efficient room occupancy, operations , additional bookings, partnership commissions, predict additional room requirements
- CSAT, staff productivity, room readiness TAT, ancillary revenue increase

Concierge, Airport Duty free shops

- Ancillary services offered, proactive readiness of ancillary services like airport transfers, food, sim cards, currency conversions etc.
- ideal flight timings
- Incremental revenue, footfall

Banks, Co-branded cards

- Predict flight bookings with miles accumulation, discounts, vouchers with partners
- Increased wallet share of transactions, better miles to ticket cost conversions, combined bookings across partners
- Improved synergies with partner ecosystem

Tourist Agents

- Adjusted schedules, dynamic itinerary updates
- itinerary disruption impact,Øideal flight timings
- tourism timing/ schedules

Figure 10- Impact on external systems

A simple delay prediction analysis can also significantly improve airport ground operations.

Airport operations: Gate changes	Airport Operations: Baggage Belt Changes	Lounge partners	FnB arrangements
• Reduction in last min gate changes • reduction in missed flights by passengers due to last minute gate changes	• Reduction in last min baggage belt changes	• Intimate passenger head count between expected hours • Allocate dedicated lounge spaces, more heads in the reception area to handle traffic	• Downstream prediction on reduction/ increase in food purchases. • Communicate to customers on pre-booking, cancel pre-bookings to avoid cancellations
Impact	**Impact**	**Impact**	**Impact**
• Reduction in last min gate changes • reduction in missed flights by passengers due to last minute gate changes • Customer satisfaction, decrease in expected lost baggage issues • Gate changes, • delayed gate issuance, • impact on connecting flight delays/ missed flights	• Reduction in last min baggage belt changes • Lowered lost baggage, missed baggage transfer cases	• Partnership commissions, CSAT • customer turnback, lounge capacity, food stockouts	• Cost savings, • reduction in wastage/ spillage/ spoilage • stockout rate, revenue loss, spoilage, over stocking, excess weight on craft

Figure 11: Impact on airport systems

Conclusion

The tourism industry stands on the verge of a data-driven revolution. By adopting data products, enterprises can shift from reactive operations to intelligent ecosystems that provide superior customer experiences and measurable business outcomes. The transition from fragmented systems to unified platforms is not only a technological change—it is a strategic imperative.

Citations

1. *Tourism Market Size & Share, Growth Analysis 2025-2037,* Research Nester, 2025: https://www.researchnester.com/reports/tourism-industry-market/109

2. *15 Tourism Market Trends For 2025,* World Tourism Organization, 2025: https://www.world-tourism.org/tmt/

3. *Tourism Market Size, Share & Outlook 2025 to 2035,* Future Market Insights, April 2025: https://www.futuremarketinsights.com/reports/tourism-market

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Akshaya has over 10 years of experience in Consulting, Solutioning, Sales Enablement, and GTM strategy for B2B SaaS products. Her expertise in connecting business problems to technical requirements drive superior solutioning concepts and outcomes. She aims at value delivery for clients and focuses on alleviating business problems in enterprises. She brings a wide spectrum of technical and business knowledge, from data science to sales processes, and can devise go-to-market strategies that adeptly position B2B tech products to success in new markets and domains.

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