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Operational Agility and Seamless CX:
A Global Top 10 Airline's Data Modernization Story

Background

With air travel rebounding and competition intensifying, a global top 10 airline in Asia-Pacific seized the opportunity to modernize both customer experience and operational agility. Faced with rising service expectations, volatile travel patterns, and the high cost of operating a global fleet, the airline needed to deliver faster, more personalized service – while improving how it coordinated aircraft, crew, and customer touchpoints in real time.

To achieve this, the airline deployed Denodo's Logical Data Management platform, creating a unified virtual data layer across its booking, loyalty, operations, maintenance, and crew scheduling systems. This now serves as the foundation for a real-time Customer Experience (CX) and Operations platform – empowering staff, digital channels, and control teams with fast, consistent, and governed data access.

Challenges

- **Siloed Systems Impacting Customer Experience and Operations**. Passenger bookings, loyalty data, flight schedules, maintenance records, and crew assignments resided in disparate systems with limited synchronization – making it difficult to deliver consistent service or unified views across channels, particularly through the customer-facing and staff mobile apps where real-time visibility is critical.

- **Real-Time Decisions Blocked by Delayed Data Access**. Operational teams couldn't act fast during disruptions – rescheduling, reassigning crew, or rerouting aircraft – due to latency in data availability from existing ETL pipelines.

- **High Cost of Building New Services Due to Data Duplication and Integration.** Teams created redundant data marts and pipelines, increasing maintenance costs and slowing delivery.

- **Inflexible Architecture Slowing Innovation**. Tightly coupled systems made it slow and costly to launch new digital services – each required backend changes and hardcoded data integrations.

- **Complexity in Scaling Aircraft and Crew Efficiency**. Coordinating rotations, crew, and maintenance across a global network required timely, integrated data. But latency between systems limited real-time adjustments – making it harder to manage disruptions, optimize assets, or avoid cascading delays.

Solution

The airline implemented Denodo's logical data management platform as a unified access layer across all key systems — enabling cross-functional teams to access live data without physically moving or duplicating it. This allowed the airline to centralize logic, expose reusable APIs, and enable real-time services for passengers, agents, flight crews, and controllers.

- **Unified Access Across Booking, Ops, Loyalty, and Maintenance.** Denodo integrated live data from the passenger service system (PSS), crew systems, loyalty platform, maintenance logs, and ops control into a single virtual layer.

- **Smart Caching & Query Optimization.** In-memory caching and query pushdown techniques ensure fast response times even under high load — critical for boarding, bag tracking, and upgrade workflows.

- **Central API & Microservices Layer.** Denodo powers the backend for apps used by agents, call centers, crew, and customers — exposing virtualized data through secure, governed APIs.

- **Semantic Layer & Metadata Governance.** Denodo's unified semantic layer ensures consistent definitions across all customer and staff-facing apps — improving data trust, governance, and enabling faster service delivery.
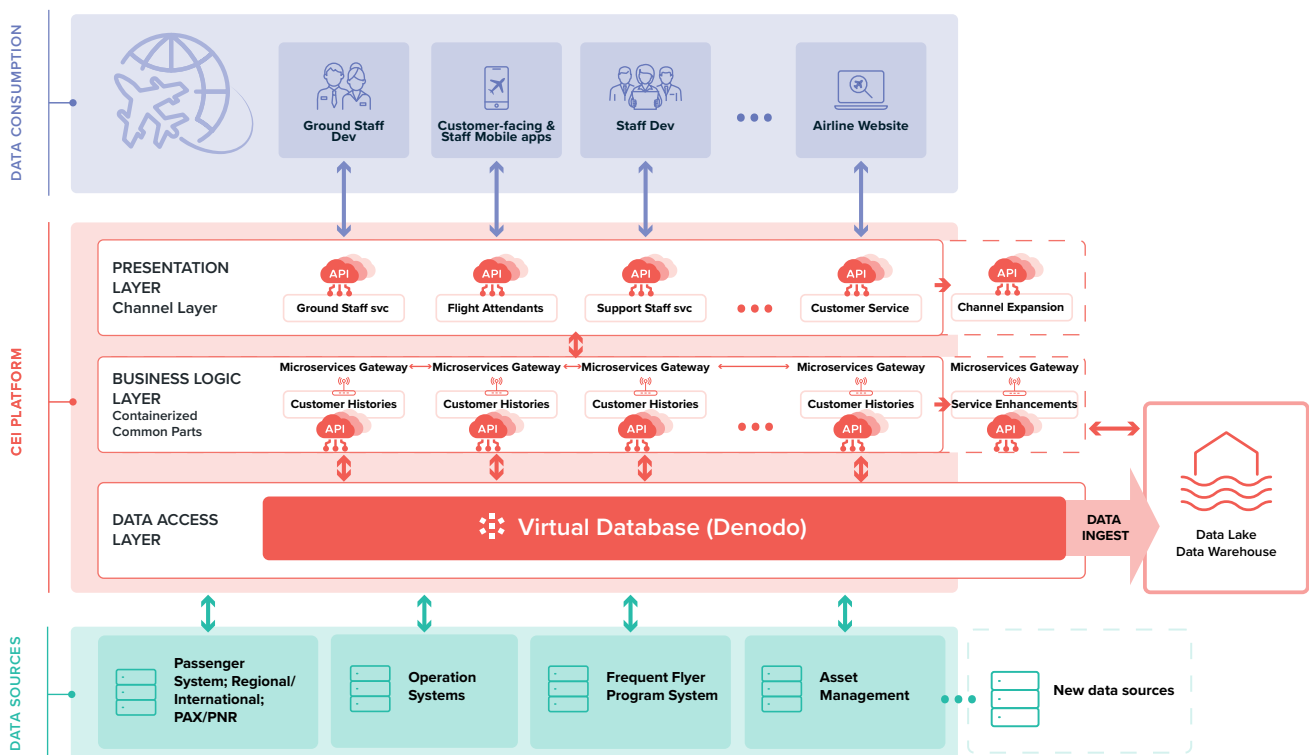
Benefits

- **Faster, Personalized Customer Experience with a Customer 360 View**. Staff, support tools, and the airline's customer-facing and staff mobile apps access complete passenger context instantly — improving recovery time, consistency, and satisfaction across all channels. These apps, along with the airline's website, now deliver real-time, unified information — ensuring users see accurate flight updates, loyalty status, and personalized offers, all in one place.

- **Real-Time Operational Decision-Making**. Ops controllers and crew planners act faster during disruptions with integrated views of flights, crew, passengers, and aircraft readiness.

- **30–40% Reduction in Data Duplication**. Redundant data marts and sync jobs were eliminated — lowering infrastructure costs and reducing maintenance workload.

- **Accelerated Delivery of Digital Services**. Crew apps and passenger tools roll out faster via reusable APIs and virtual views. The Denodo Platform handles **20,000+** API calls per second, ensuring scalable performance during peak operations.

- **Improved Aircraft and Crew Utilization**. Optimized aircraft rotations and crew assignments boost asset uptime and reduce the cost of delays and rework.

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