Managing Reservation / Ticketing data

Airline reservation and ticketing is a very complicated process, but its ever changing nature makes it furthermore. Complexity gets further increased to meet two contradicting objectives of enhancing customer experience and reducing operating costs. Airline reservation systems depend on multiple factors during ticketing/reservation process like available inventory (seats available), airline schedules, exchange rates, codeshare, partner ecosystem and tax rates. All these factors influence flight pricing, which makes the reservation process further complicated.

On the other hand, customers are looking for simplified e-ticketing/reservation process, which is a significant driver in customer experience and customer satisfaction.

Hence, managing reservation/ticketing data is essential for customer experience and better planning of a complicated process due to heterogeneous sources and interfacing it with multiple global distributions. With 30 M tickets reservation every year, IGT brings an extensive experience in managing reservation and corresponding data sets.

Building a robust data management

Key challenges that exist within airlines is managing data for decision-making and future planning. This data serves as a core to the entire airline operations and is used for critical business operations, planning and decision making.

Airlines usually deal with multiple partners, providers and provider systems to manage data for operations. This data is generally maintained in airlines internal, or partner provided reservation systems. Often this data is exposed and communicated with GDS systems to distribute their inventories. Ticketing data and corresponding settlement data is often shared with ARC or BSP IATA systems for exchanges with third parties and travel agencies. Also, airlines deal with ATPCO for publishing different kinds of fares associated with their inventories to best realize and execute revenue maximization strategies. Airlines also need to maintain and exchange this data with either internal or partner provided revenue accounting systems. These data exchanges with revenue accounting system provide airlines ability to understand sector-specific revenue performance and partner or codeshare carrier's revenue share for each realized ticket.

Therefore, it becomes imperative for airlines to have robust data management around the reservation and ticketing data. The essential data management asks are two folds:

- Manage and maintain this data to support operations and have it accurately available across the enterprise

- Have this data available for deep data insights to craft strategic decisions including route planning, pricing strategies, inventory planning etc.

Below are the principal challenges and requirements such data management systems need to address
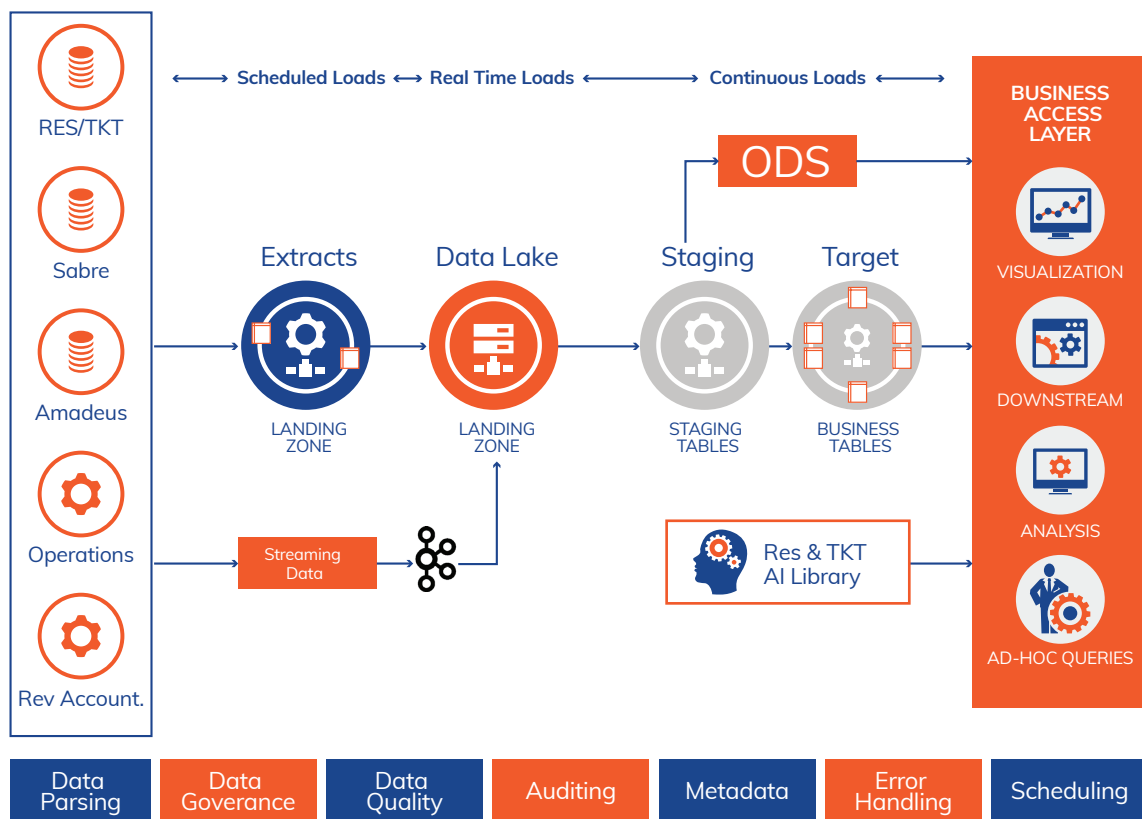
- Real time integration with GDS systems

- Real time integration with revenue accounting system

- Integration with IATA BSP data

- Integration with ATPCO data

- Influx volume of the PNR data

- Real time data parsing of PNR and ticket data

- Storage and archival of PNR and ticketing data

- Maintaining the face of the PNR/ticket (current active record) for consumption

- Facilitate easy retrieval to other airline downstream systems

- Speed of change. PNR, ticketing data goes through several changes until the journey is closed

- Ability to understand the change (PNR and ticket changes) over the course of the PNR updates

- Ability to ingest and interpret different proprietary data formats for PNR and ticket data

- Ability to consolidate and organize data with other organizational data points to bring holistic view of the enterprise

- Ability to detect anomalies in the incoming data and flag data for quality issues

- Ability to selfheal the workflows in case of exceptions to ensure timely data delivery

- Ability to certify data accuracy as big and critical business decisions depend on this data and corresponding analysis

MANAGING RESERVATION / TICKETING DATA

Our Framework

With over two-decade long experience working with reservations and ticketing systems and corresponding data ecosystems, IGT has developed a tailored data management framework to get the maximum value out of this essential data asset of airlines. IGT has developed industry-specific airline PNR and Ticketing Data Management reference architecture and framework. This is a **two-fold solution framework** addressing two critical aspects of the reservation and ticketing data management, **operations and strategic insights**. This framework is instrumental in success for many of our airline customers.

RES and TKT Data Mgmt.
Solution Framework Reference Architecture

Scheduled Loads ⟷ Real Time Loads ⟷ Continuous Loads ⟷

RES/TKT

Sabre

Amadeus

Operations

Rev Account.

Extracts
LANDING ZONE

Data Lake
LANDING ZONE

ODS

Staging
STAGING TABLES

Target
BUSINESS TABLES

Streaming Data

Res & TKT AI Library

BUSINESS ACCESS LAYER

VISUALIZATION

DOWNSTREAM

ANALYSIS

AD-HOC QUERIES

Data Parsing	Data Goverance	Data Quality	Auditing	Metadata	Error Handling	Scheduling

As part of this framework we have a real time operational PNR and ticketing data store and a reservation and ticketing analytics data warehouse or analytical store. This framework has all the necessary ingredients for an airline to manage and leverage the most important data asset of the airline, i.e., PNR and ticket data.

Reference PNR and Ticketing Airline Operational Data Model

This model essentially is custom designed to address all the operational data elements of PNR and tickets. This model complies fully with leading GDS PNR and ticketing data specifications including Sabre and Amadeus. GDSs provide very exhaustive list of data elements of the PNR which not only includes air itinerary details and passenger details, but also has details around hotel, car rental and cruise booking. All of these details are very vital for airline operations and corresponding insights, as they provide intelligence on passenger behavior and demand. The Operational data store powered by this data model serves as the heart of all airline's PNR and ticketing operational needs. All the enterprise systems subscribe to this store to look for latest and most accurate information relating to PNR and tickets for their immediate operational data needs.

Reference PNR and Ticketing Airline Analytical Model

This industry-specific airline analytical data model caters to an airline's data and intelligence needs. It provides airlines with an ability to understand passenger buying patterns, behavior, demand and operational and airline's overall revenue performance. The data model is equipped with 50+ reservation and ticketing KPIs to answer to the critical questions around passenger demand, pricing strategy and its impact, route performance. Airline gets the ability to understand all these KPIs across all the significant viewpoints including sector, route, station, market, time period, aircraft type, travel class, partners, travel agencies, loyalty tiers and many more.

Integration Framework

The integration framework is equipped with all the data quality, auditing, exception handling, error processing, data archival, scheduling, and workflow orchestration needs, which are essential to managing this enormous data traffic from internal and external systems about PNR and ticket data. The framework is powered with IGT proprietary PNR, ticketing, fare data parsing to understand and assemble PNR and ticket data to make sense for business.

Reporting Repository

IGT has developed over 100 pre-built analysis on top of the reservation and ticketing data. These reports are powered by the reference airline PNR analytical model, which are plug and play with the data model and deliver the most significant insights into airline reservation and ticketing data. These reports allow airlines to measure all key reservation and ticketing KPIs including total reservations, revenue, book load factors etc. These analyses are correlated with other airline operational data to inspect critical patterns and trends emerging, like the impact of social buzz on reservations by class or correlation of flight delays of specific sectors with the passenger demand.

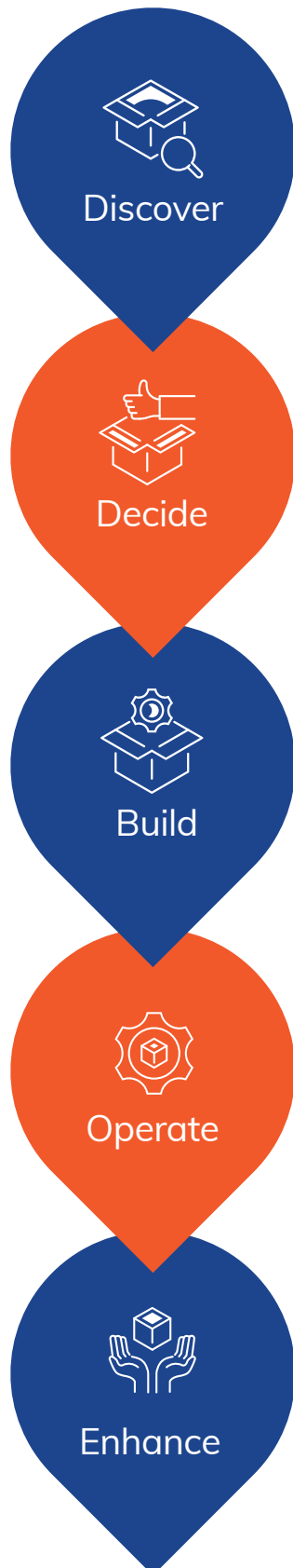## AI and ML Reservation and Ticketing Airline Data Library

Extensive set of AI algorithms bundled with reservation and ticketing data use cases deliver the key business advantage to airlines over competition and provides airlines with the ability to look into the future. These libraries through complex data analysis and understanding of historical reservation data and machine learning techniques, allow airlines to understand passenger demand, passenger pricing sensitivity, passenger personalization, upsell/cross-sell potential, campaign return on investment possibilities etc.

To deliver actionable intelligence

IGT has developed an optimum approach to implement and drive these data management systems for reservation and ticketing data. This is the best suit for the airlines to quickly create a data ecosystem which is best suited to deliver operational information and deliver actionable intelligence using the reservation data.

Way Forward

Discover

As part of this phase, we study the airline's entire data ecosystems, identify all the reservation and ticketing data generator sources, and document the downstream system's needs and use cases that need to be delivered from this unified data solution. Here we also analyze and highlight the gaps in the available data and the business goals. We also detail all the message exchange that needs to happen internally and externally relating to the reservation and ticketing data. The discovery also includes identifying data formats, incremental avg, Daily/hourly data volume, data quality, historical data volume, mode of data delivery and data entities from each source/data provider.

Decide

Using IGT's reference reservation and ticketing data management solution, in this phase, IGT recommends the best set of technology that will fit well with the airline's existing ecosystem. IGT carries significant experience in modern technologies and has developed various implementations of reservations and ticketing solutions in AWS, GCP, Azure or on-premise solutions. IGT uses native eco system's technology set to maximize the return on investment for the airlines.

Build

Once the technology selection is agreed, the source data interfaces are defined, and business use cases are recommended and approved. IGT builds the solution using the pre available reference data models of the operational and analytical stores. IGT has developed several proprietary tools and accelerators for data integrations including workflow framework, error processing framework, ticket and reservation data quality validation framework, ticket fare and fare ladder parsers, BI and AI library repository to name a few. IGT uses these frameworks and tools to expedite the entire build process and deliver the quality reservation and ticketing operational and analytical data solutions. With IGT implementations of the reservation and ticketing data, functional and analytical stores, airlines gain 60% reduced implementation time and 50% lower costs.

Operate

With the delivered solution, it is very important that such a solution is adopted well throughout the entire enterprise. IGT crafts business function-specific business goals and on-boards critical business functions like planning, marketing, scheduling, sales, revenue management and flight and ground operations on the reservation and ticketing data management solutions. Each business function is guided on the insights and value that reservation and ticketing data solution brings for them and how best this data can be analyzed and actioned.

Enhance

With the fully developed reservation and ticketing operational and analytical data solution available with the airline's business functions, continuous data enhancement and enrichment are driven. This involves adding additional external data points that enhance the total understanding of this data and its impact on the airline and its customers. This typically involves data around weather, local airport data, employee data, aircraft related data, social media data, macro-economic data etc.

What's in it for Airlines?

With our proprietary reservation and ticketing data framework for airlines, combining this data with other airline data points, airlines gain maximum insights from the data and are able to draft and execute business strategies like new route planning, pricing optimization, targeted campaigns, airlines partner contracting, revenue leakage saving plans, fraud detection and prevention, simulate disruption and network resilience, private fare design, new service design and curate operational performance improvement plans. The framework provides a significant advantage to airlines and helps them stay ahead of the competition. The framework delivers below benefits to airlines:

- Organized and consolidated airline reservation and ticketing data
- Automated integrations with leading GDS and airline systems
- Passenger booking Insights
- Ticketing data trends
- Single source of truth on airline reservation data
- Advanced booking load factor
- Anticipated passenger load factor
- True passenger demand
- Passenger demand and pricing correlation

- New sector potential simulation
- Partner revenue intelligence
- Fraud prevention
- Loyalty program optimization
- Seat and capacity optimization
- Channel optimization
- Route performance discovery
- Full visibility of network
- Schedule optimization
- Passenger behavior insight

Why IGT Solutions?

Committed to simplify complex customer interactions while delivering a seamless experience, IGT provides integrated BPM, Technology and Digital Services & Solutions for clients across industries for over 20 years.

Managing highly differentiated customer experience for 75+ marquee brands globally.

Employs more than 13,500 customer experience and technology specialists in 5 continents, has 19 state-of-the-art delivery centers, and worldwide operational presence.

✉ mktg@igtsolutions.com

🌐 www.igtsolutions.com