A SOURCESPEED TRAVEL WHITE PAPER

It's your data - free it from your GDS
The challenge of extracting value from Reservations and Ticket data

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Executive Summary

As airlines struggle for every last dollar of additional revenue, cost reduction, and loss-avoidance, there is one core resource needed to capitalize on these opportunities: relevant and timely data.

PNR and Ticket data is full of information that is invaluable for driving customer and operational processes, and Business Intelligence analysis. Unfortunately, Global Distribution Systems (GDSs) are not designed to allow the addition of automation, or the discovery and analysis of structured data. In fact, most of your PNR data is unstructured while it resides in the GDS.

It is clear that externalizing the data from your Customer Reservation System (CRS) or GDS will allow your airline to provide better customer service, cross-sell and up-sell more successfully, increase revenue per transaction, reduce your costs of sales, and react to disruptions in your network.

The challenges to unlocking your data efficiently are easy to spot and common across carriers:

- Accessing the data in real time or near real time

- Reliably interpreting and structuring the data

- Avoiding multiple hits to the GDS for the same data by different systems

- Enhancing the data with related information from other systems

- Distributing the data to the destination systems and processes

- Re-injecting data into the CRS/GDS to confirm external actions

- Taking actions within the CRS/GDS based on the output of the destination systems

- Being Fully Auditable

- Doing all of the above reliably and at low overall cost

To address all of these issues in the most cost effective manner, GDS data access should be addressed as a single, coordinated project. The result of which is the installation and configuration of a GDS Integration Hub.

A fully-realized GDS Integration Hub
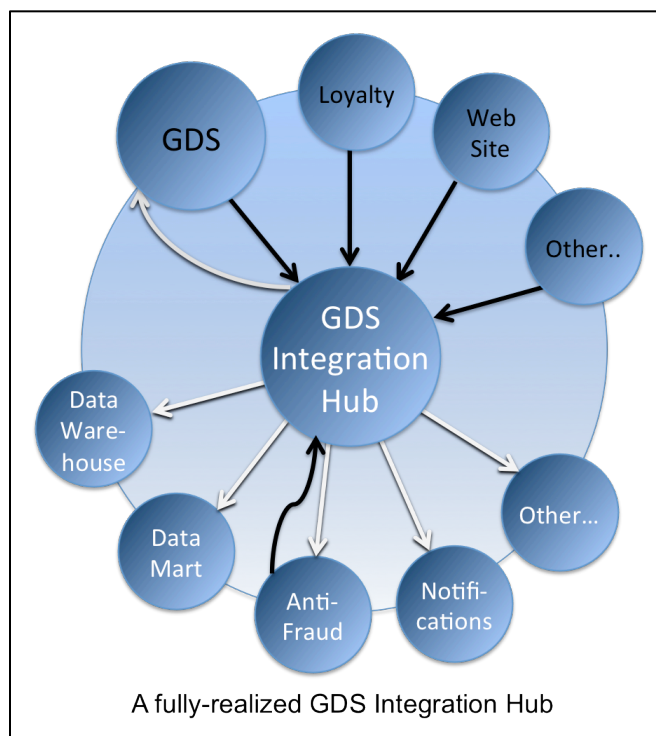
The benefits of migrating to a GDS Integration hub are substantial:

- Greatly reduced GDS Transaction Costs

- Centralized management of data schemas and processing rules

- Single location for audits – including PCI and Sarbanes-Oxley

- Reduced duplication of coding effort

- Reduced duplication of maintenance effort

- Single version of "truth" – i.e. all systems have a common view of "true" value of a given data element

Sourcespeed has spent years refining the structure, performance, maintainability, and speed of installation of our version of the GDS Integration Hub, Velocity. Installed and running at three large airlines, we are not aware of any other product on the market that comes close to its level of maturity, scope and reliability.

Accessing Data

Accessing data in real time or near real time is the first challenge. There are two approaches that can be used, and the decision between the two is based on the initial investment and the extent of data usage.

The most efficient approach, used when the system is going to serve many systems is to configure your GDS to provide you with a feed of the data as it changes. These feeds (e.g. SHARES P2, Sabre Data Stream, etc.) provide partially structured data in real time as changes are made to PNRs and Tickets. Because of this, these feeds can be used to support any process or analysis by simply filtering the data desired. An upside of this approach is that it can reduce your GDS transaction charges. A downside is the upfront setup cost charged by your GDS.

The second approach is to pull the data from within the CRS/GDS using a combination of standard and custom queues, as well as other data lists within the GDS, such as flight lists, passenger lists, etc., and combining that with pulling other PNR or Ticket details when needed. This method works best when you have a limited number of specific processes that require input data from the GDS as the upfront cost can be lower. While the GDS transactions charges are not reduced to the same extent as when using a data feed, consolidation of the data pulls should still reduce the overall ongoing costs.

Interpreting and Structuring the Data

The second challenge in liberating your data is in translating the data into something usable to store in a data mart or to trigger events based on reference values or changes in a given value.

PNR data is notoriously inconsistent and unstructured. The original PNR design had structured locations for very little data - primarily just what was needed to match a person to a seat on a plane on the correct date. Beyond the structured data, the OSI and catchall Remarks sections added instructions to communicate between various service providers, document extra transaction data, note approvals, etc.

As air travel became more complex, more information was needed to travel along with the reservation. Over time, each airline added more and more data in the unstructured Remarks section, each in their own way, but typically using internally consistent key words or formats.

The key to unlocking the full value of the data is being able to structure as much of the data coming from the PNR as possible. When data arrives from a GDS data feed, some of the data is already structured, and only the remarks, OSIs, etc. need to be interpreted. When the data is pulled from a raw connection to the GDS, the task is larger since all sections of the PNR must be interpreted and structured. Web service access lies somewhere in between the two in complexity.

The only successful approach to interpreting all the data in a PNR is to use a high-performance parsing engine with pattern matching and a travel-specific data model. This approach allows you to recognize the specific patterns and keywords that your CRS and Call Center apps use for your airline, and allows you to adjust them as new unstructured data is added.

The Sourcespeed Velocity Integration Hub has well developed parsing patterns that recognize and interpret 90% of the PNR data out of the box. Only airline-specific remark parsing remains to be implemented upon installation.

Avoiding Multiple GDS Transactions

Almost every airline suffers from the problem of duplication of data access. Over time, new projects are designed and built that require data from the GDS. Each time, due to changes in development platforms, lack of documentation, or development in different departments, the data pull from the GDS is designed and implemented in isolation.

Over time, multiple applications will be pulling the same or similar data. As each transaction incurs charges from the GDS, duplication of data pulls equals a drag on your operating budget.

The only solution is to centralize all data requests via a single integration hub. For data already available in the hub, all that is required is adding the new system to the consumers of the data. Not only does this reduce transaction costs, but it also reduces overall development and maintenance costs by eliminating the duplication of effort created by each project developer writing their own data access code. Consolidating data access also increases system-wide reliability by removing redundant code.

Sourcespeed Velocity supports multiple destinations for the structured data and multiple communication protocols. Each destination can be configured to receive a different subset of the processed data using easily configured filter rule logic.

Enhancing the data with additional data from other systems

A GDS Integration Hub is not restricted to passing on the data from the GDS alone. Its usefulness is multiplied when it can reach out to other systems to enhance the PNR or Ticket data with data only available in other systems.

Web-site shopping behavior and ancillary purchase data, Frequent Flyer history, or even data available in the GDS accessed by making additional requests, when correlated with a PNR, provides a version of a "Super PNR" update via the GDS Integration Hub.

The enhanced data can again be used by multiple systems without each having to access the external systems data and assemble that data themselves. This brings an additional layer of advantages in development and maintenance costs that the primary data from the PNR and Ticket provide.

The Velocity Integration Hub includes connectors to either pull or receive a push from other systems for relevant data. The Hub also includes correlation logic to combine the data and hold transactions while waiting for related incoming data.

Distributing the Data

Most airlines have a variety of systems requiring GDS data, and their needs vary in access and timeliness. Some systems will require that the most recent data be pushed to it as soon as it is available. Other systems will only need to access the based on ad hoc or scheduled requests.

A well-designed GDS Integration Hub takes this into account by providing data in a variety of forms and schedules. Data can be provided to off-line data warehouses or on-line data marts, pushed to systems based on trigger logic using web services, SOAP, SFTP, etc. or in response to inbound requests using the same selection of protocols.

Beyond the mechanics of providing the data, the GDS Integration Hub should contain sophisticated logic to provide the right data to the right systems. Since PNR and Ticket data covers many aspects of the travel documentation, there is a huge amount of structured data available after processing. Most systems, other than data warehouses, are only interested in a small part of that data, and typically, only when that data changes. The Integration Hub needs to contain rules to trigger data updates for each system, and must retain reference data to recognize changes in the data. Some of these rules will need to be complex, such as triggering an update based on a combination of data states and changes in other data (ex. send an update when a certain SSR is added to a flight in the next 24 hours).

Centrally locating the rules for processing the data in a GDS Integration Hub prevents duplication of coding efforts, reduces the overall hardware resources needed, and allows for greater control over sources and uses of data to aid in PCI compliance, Sarbanes-Oxley audits, and single point updates when formats or business rules change.

To ease implementation and maintenance, Velocity was constructed with a data filter and processing stage that is implemented using straightforward and easily editable configuration files.

Re-injecting Data

Data is valuable outside of the GDS, but for some processes, it is necessary to get new data created by the external systems back into the GDS.

Codeshare partners, airport support vendors such as caterers, Travel Agencies, and other entities are key to providing a high-level of service throughout the network. Unfortunately, they do not all share access to the airline-owned external systems that are increasingly used to determine levels of service, communicate changes, and provide other key information. Even if they were granted access to these systems, they would not have the resources available to create connections to every carrier's systems.

Additionally, as an airline moves toward fully implementing the Integration Hub concept, some systems will lag in connecting to the Hub. This may be due to budgetary or resource constraints, or because the system is in its sunset phase with no more upgrades being cost-effective.

These vendors and systems access the information needed to provide their portion of the service directly from the GDS and will for the foreseeable future. That means that services that are newly enabled in external systems must provide some information back in to the PNR.

Unlike accessing data from the GDS, updating the GDS with new information will be more diverse in method and scope. There is still a case to be made for centralizing these updates in the GDS Integration Hub. By creating simplified interfaces that are published for the external systems to use, there are reductions in redundant coding that can be achieved. In addition, centralization creates a single point where updates to GDS Web Services, command-level IPs and LNIATAs, and other common interface components can be updated once, rather that communicating the changes to all the external systems and managing the complex project of arranging updates, tests and certification for all of the various systems.

Taking Actions in the GDS

Simply adding back data into the PNR is valuable, but often there are decisions made in the external systems that need to drive processes within the GDS themselves. Automating this through the GDS Integration Hub takes advantage of the existing infrastructure and adds additional value to implementing the hub.

For most instances, the simple act of queue-placing a PNR to a GDS queue is all that is needed to take action in the GDS. At other times, such as with Anti-Fraud System analysis results, direct action on a PNR such as removing a ticketing entry or no-valuing a ticket is needed. If the external system is monitoring booing curves, then the output of that system can even be used to trigger updates to inventory in a given fare class.

By running the action back through the GDS Integration Hub, all interactions with the GDS can be grouped in one system and updated more easily. This leaves the external system to do only what it was designed for, such as Anti-Fraud, upgrade determination, revenue management, etc.

Ensuring Full Auditability

Whether you use a GDS Integration Hub or multiple smaller systems, the value is undermined if you cannot absolutely determine that the data was received from the GDS and delivered to the end systems. For data that cannot be parsed or delivered, there has to be tracking that allows error processing to take place, either automated or manual.

Audit capability should show all records received into the system, all requests outbound for data, internal parsing and conversion of the data, connections inbound and outbound to the receiving systems, and actions taken within the GDS. All failures should be tracked with a high degree of detail (i.e. failure to connect to a system, versus rejection by a receiving system), and intermediate states should be observable.

A high degree of audit tracking allows for a smoother implementation of the initial system, and detects any faults introduced as changes are made in the future. It also supports internal audit processes and Sarbanes-Oxley requirements.

Monitoring built upon the audit points in the hub is also highly desirable. By having the system monitoring tied into the audit counts, system failures and slowdowns can be immediately detected and resolved. A good monitoring design also allows detection of faults in the source and receiving systems as well.

The Velocity GDS Integration Hub was designed with an integral audit framework in anticipation of these requirements. Monitoring hooks were also added to support modern monitoring and alerting systems so the system is supportable without additional development.

Doing it all Inexpensively

As in all airline processes, cost is a tightly monitored measure of project success. In a time of ever shrinking IT budgets, the relative worth of employing a GDS Integration Hub will be viewed by its project cost, even before the overall system-wide cost reduction and revenue enhancement opportunities are evaluated.

Starting from scratch and having internal resources develop a hub from the ground up is a common thought. This approach is based on the belief that there are no available systems that can be easily installed in an airline environment, due to the specific domain of airlines, and the specific systems of the airline pondering the investment.

Internal development can work, though there are numerous pitfalls along the way. Issues of data latency, duplication, correlation, system redundancy, scalability, etc. must all be addressed. And some of the issues will not be apparent until high volume load testing begins. Additionally, projects such as this must gain buy-in from multiple system owners, who will all have input the specifications. Finally, developing the technology from scratch is a relatively large project, requiring many resources in a budget-strapped department.

Using a generic integration technology from one of the large vendors is also tempting at first. Though the lack of airline domain frameworks will leave the bulk of the development to either internal IT resources or consultants from the integration product company. In the end, there may be time saved, but costs are likely to be higher.

The preferred approach is to use a GDS Integration Hub like our own Velocity – which has been designed from the start to handle the integration needs of the airline industry.

Having solved all of the above issues in multiple implementations, the Velocity Integration Hub product is already robust and highly reliable. Issues of multiple simultaneous updates, poor data quality, multiple tiered locations where a given data element may reside, etc., have been addressed so that the input stream is efficient. An internal parsing engine that is designed to locate and parse 90% of the standard data elements of a PNR or Ticket reduces the implementation task to configuring the airline-specific elements from OSI and Remarks sections. Correlation code that is configurable to pull or receive data from web sites and loyalty systems is already in place.

In short, all of the generic airline data issues have already been built into the Velocity system. This results in an extremely short installation, configuration, and test period to begin providing your first systems with data.

About Sourcespeed

Sourcespeed has built a reputation as a reliable technology partner for airlines and travel-related companies, specializing in revenue generating projects. Our high-performance airline products - Velocity Integration Hub, Velocity CRS and the Sourcespeed Integration System - extract and process data from reservation systems for use in anti-fraud, data warehouses, and more. Sourcespeed enhances your capabilities by offering automation of GDS processes, a CRS, ancillary sales modules, and mobile solutions.

About Sourcespeed Velocity

Sourcespeed Velocity is a high-performance, lightweight GDS Integration Hub that was designed for the unique environment of airline operations. Built over 7 years and used at 5 different airlines, Velocity solves the airline's need to get data in and out of the GDS, process that data for other airline systems, and act directly upon PNRs, Tickets and Queues within the GDS using its native command structure.

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