DATA ACCESSIBILITY IN THE AIRLINE INDUSTRY
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Over the last couple of decades, the entire airline industry has been going through a paradigm shift: As air travel became an ever-more easily accessible commodity, airlines had to rethink what their roles should be beyond simply being an operator of airplanes lest they themselves become easily replaced commodities in this age of Ubers and AirBnBs. And just like the airlines, passenger service systems also need to re-evaluate their place beyond keeping inventories and issuing tickets.
Looking at how far our industry has come and more importantly, where things are heading, there is a very strong argument for a PSS that not only keeps up with the latest developments but also actively seeks to become an enabler and force multiplier for airlines. It would in turn allow those airlines to quickly adapt to changing dynamics and effortlessly grow their business any way they see fit. All of this necessitates a level of openness and interoperability that is sorely lacking in the traditional PSS offerings so far. IATA has been making some real progress towards this goal with their NDC push and other follow-up initiatives such as One Order. But Hitit has been a proponent of de-intermediation even before NDC began to stir things up in the recent years: Our core philosophy has always been opening up every single feature and every bit of data we have at our disposal to our airline clients to do with as they wish. For two decades we have been working to go beyond the traditional paradigms of the day and to create not just another reservation system, but a true value-add platform that can act as the solid foundation of a dynamic and flexible business superstructure. And we are happy to see the rest of the industry starting to catch up with our way of thinking.

Another emergent issue within this new paradigm is the ever growing importance of, and reliance on data. Airlines have always been a treasure trove of valuable customer data and our industry as a whole is still in the process of figuring out the full extent of the possibilities. We hope you will find it useful and benefit from it to harness the growth opportunities this new golden age of data offers.
In response to the increasing adoption of these new use cases, traditional PSS have largely assumed their old role of gatekeepers: By hoarding and jealously guarding data and not playing well with others, traditional PSS are denying airlines the use of a very valuable resource that essentially belongs to the airline in the first place. It has a profound impact not only on the first party applications an airline might want to come up with such as personalized service for their passengers, but also hampers their ability to expand into third party ecosystems. This could very well go beyond mere commercials as the entire travel industry slowly but surely moves in a data-driven direction: Looking at upcoming initiatives like IATA’s One ID with its mandate of ever closer integration, Hitit is proud to already have the systems in place which allow airlines to seamlessly share their data through blockchain with their partners even today.

As part of our vision of being not just another PSS provider but a proper technology partner for airlines, we have teamed up with the like-minded industry experts at T2RL to prepare this report on the importance of data accessibility in the airline industry. We hope you will find it useful and benefit from it to harness the growth opportunities this new golden age of data offers.

Yours sincerely,

Nur Gokman
CEO, Hitit
The data and analysis in this report is derived from T2RL’s extensive research and experience of working with airlines and vendors on the application of information technology to real airline IT challenges.

This report focuses on the current opportunities and challenges faced by airlines in the need to make better use of the data they acquire from passengers and the need to be able to access and use this data readily and easily.
EXECUTIVE SUMMARY

Airlines are unique as an entity in that they are the principal first-party data creator in the air travel industry and the amount of data points per passenger being created, stored and managed by the airline has increased and is continuing to increase dramatically.

However, many airlines are just realising the potential of the data they store and are only beginning to take control of it and leverage how they use it to generate revenue.
While many companies have emerged in the past years focusing on data analytics and data mining, it still needs to be pointed out that the majority of airline passenger data is currently stored in the PSS. Additionally, in order to take full advantage of this data and execute a fluid approach to distribution strategies, such as implementing initiatives like NDC, data essentially needs to be free flowing from the airline’s PSS system to other points of sale and service delivery.

The PSS is generally the system of record for five main datatypes:

1) Inventory data – mainly taken from the Inventory system and closely coupled with the Reservation system. Inventory data represents the inventory of seats an airline has for sale or has reserved.

2) Availability data – mainly taken from the Reservation system is a view of the airline’s Inventory provided in response to a specific request. Inventory controls may be applied to manage availability to, for example, restrict availability for particular points of sale, or allow over sales. Availability is the most requested data from an airline.

3) Fare data – taken from the Fare Quote system for network carriers. Many airlines use their PSS vendor to provide their system here but there are also smaller vendors available on the market. This tells the requester how much a certain available seat/class bucket is currently being sold for.

4) Ticketing data – stored within the Ticketing system, mainly used by network carriers. This tells the requester what reservations have actually been paid for and therefore actually sold.

5) Passenger flown data – taken from the Departure Control system. This data can differ from booking and ticketing data as it takes into account those passengers that actually made it onto the flight, thus taking into account no-shows and staff standbys.

Airlines therefore need to have open access to the data stored within their PSS.
Since the 1990s airlines have been outsourcing their PSS. Currently, the majority of global airline data is stored amongst the three major PSS systems in the world (Amadeus, Sabre and Travelsky), which together hold over 70% of global passenger data (source: T2RL.net, October 2017).

At the same time, airlines have seen their look-to-book ratios increase dramatically, with some airlines now seeing average look-to-book ratios of between 300:1 and 500:1, driven by high-volume, third-party consumers such as OTAs, GDSs and metasearchers. Many airlines state that this has more than doubled in the last few years. This is not taking into account inspirational shopping requests, which in certain cases have been reported to drive look-to-book ratios of 1,000:1. When looking at their own airline.com site, however, airlines state that their look-to-book ratios are much lower, on average between 40:1 and 50:1. This difference in look-to-book ratios has somewhat skewed the airline’s perception in believing that their airline.com site is a more efficient point of sale. However, other criteria such as total revenue spend per search, marketing spend and customer behaviour (shopping via an OTA but doing the actual booking on the airline.com) also need to be taken into account. These availability transactions/data feeds often have a cost associated with them charged by the PSS provider. T2RL believe that airlines need to undertake a thorough Distribution Efficiency Analysis (DEA) when assessing the efficiency of their different distribution channels and strategy moving forward.

Airlines are under increasing pressure to ensure that they retain control of, and derive maximum value from, the data they create but host within third-party environments. PSS providers, as the hosts of this data and suppliers of the transactional engines that act upon it, have a pivotal role to play to make sure their airline customers are able to effectively leverage their data as an asset.

Aligned incentives, reinforced with good contracts are key in establishing a good partnership between the airline and its PSS provider and are essential in ensuring that all parties are working together toward shared goals.

T2RL believe it is important for airlines to fully understand the implications of their PSS contract with regards to access to data, costs of transactions -data feeds and web services- and thresholds which are in place.
Whereas T2RL believe that outsourcing IT is a given within the industry to create efficiencies and to drive innovation, it is imperative that airlines focus the procurement of IT services around their business and distribution strategy, and fully understand the contracts they are signing with IT vendors to ensure that they are resilient and future-proof for opportunities which will inevitably arise with regards to data.
WHAT DATA?

In general, data can be defined into three main categories:

1) First-Party Data – Unique data created by the airline, collected from sources such as the airline website/mobile app., PNR data and inventory demand data.

First-Party Data is the most ‘trustworthy’ of sources as the airline should (in theory!) have complete control over how this data is collected, managed and stored. As the official ‘owner’ of this data, airlines should also have complete control on how this data is used. This data is also of utmost value to the airline as it contains information about their own passengers or those that have expressed a direct interest in becoming one.
2) Second-Party Data – Collected by partners (e.g., GDSs, TAs, other travel partners) which can be exchanged or sold to the airline e.g., BIDT and MIDT data sold from the GDS to the airline. Or hotel data exchanged with the airline and vice versa for mutual benefit.

The use of Second-Party Data in the industry is evolving with companies such as Journera and Adara facilitating links between other partners in the travel journey to share and make better use of airline and hotel/car rental/airport data, etc. The mutual benefits of this data present a huge opportunity in attracting otherwise untapped customer segments.

3) Third-Party Data – Common data collected and bought from external sources.

Third-party data can be seen as contextual information for an airline, supplied by data collection companies such as T2RL. It can help airlines to get an image of the marketplace in which they operate and provide intelligence to benchmark themselves against other airlines and industry practices.

Airlines have access to hundreds of data points for their passengers, some of these include;

- Search history
- Purchase history
- Checked luggage
- PNR Data (Passenger contact details, flight booking details, SSRs)
- Departure & Arrival date and time
- Destination & Departure city
- In-flight sales/duty free spend
- In-flight food choices
- Ancillary sales
- Hotel, rental car connections
- Number of travellers flown with
- Miles used
- Payments used

Management of these data points has potential value, not only to airlines but other entities in the industry such as travel agencies, IT vendors, metasearchers and OTAs who also wish to sell a more targeted offer to their customers.
### Data Evolution and Airline IT Outsourcing

**1990s**
- Birth of the World Web
- Google founded in 1998
- BIDT/MIDT data common
- Airlines start realising potential of direct booking data
- First large airline alliances formed

**2000s**
- "Search" data becomes available to airlines
- Digital marketing
- Airline Loyalty programmes takeoff
- Creation of Ancillary Data

**2010s**
- Automation of customer experience; kiosks, bagdrop, bag-tagging, onboard wifi
- Airlines start to use their data for targeted offers
- Data analytic tools/data analysis become more popular
- Introduction of NDC and ONE Order

**2020s and beyond**
- Big Data in the industry
- Dynamic Pricing/Personalisation
- Data Partnerships within and outside the industry
- Tighter data control/legislations
- Growth of mobile/Geo-location data
- Machine learning/All
- Payment data
- Google?

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**Evolution of Data in the Airline Industry**

- In 2006, PSS In-house mainframe makes up 22% of global passengers boarded
- Airlines start to outsource other IT components such as DCS and IBE

**Outsourcing of IT in the Airline Industry**

- Direct web bookings now make up 32.71% of global airline bookings, overtaking the GDS
- Transaction volumes and look-to-book ratios explode
- In 2016, PSS In-house mainframe market share now stands at 12.05% of global passengers boarded.

- Many more points of sale available than 30 years ago - Web, Mobile, Onboard, GDS, Direct-connect, etc. Estimated PSS In-house mainframe market share is 7.10% (assumes outsourcing of JAL, AC and TK)
- Data 'control' becomes key issue faced by the industry

Source: T2RL.net
With the growth of the internet and technology in general, airlines have been able to generate a lot more first-party data and have subsequently increased the amount of data points they hold for each passenger dramatically. The opportunities linked to this for future revenue generation are endless. At the same time, during the past 30 years, airlines have been consistently outsourcing their PSS and IT systems from In-House mainframe systems to external vendors such as Amadeus, Sabre and Hitit.

First-Party Data is the most ‘trust-worthy’ of sources as the airline should (in theory!) have complete control over how this data is collected, managed and stored. As the official ‘owner’ of this data, airlines should also have complete control on how this data is used. This data is also of utmost value to the airline as it contains information about their own passengers or those that have expressed a direct interest in becoming one.

1990s

In the late 1990s, airlines started to see the first effects of direct bookings via the internet and the potential that this data may have on future opportunities for revenue generation. A lot of airlines were already using data collected by their GDSs in terms of Marketing and Billing Information (MIDT and BIDT) to gain insight into their GDS-powered points of sale and routes sold. Around the same time, airlines were looking into gaining efficiencies with respect to their IT portfolio, and the migration of BA and Qantas from their proprietary systems onto the Amadeus Reservation and Inventory system in 1999 was one of the major milestones demonstrating this.

2000s

In the 2000s, airlines started to experiment with different search criteria, adding calendar displays for +/-3-day search, monthly searches and some airlines even started offering ‘inspirational shopping’ requests. These search requests gave the airline a multitude of additional data points enabling better insight into their customers’ behaviour and what they were searching for.

Digital marketing also entered the airline industry with email campaigns, SEO and SEM becoming the norm. Airline Loyalty programmes started to take off and with that the creation of data points around frequent flyer status, giving airlines a first taste of ‘Customer Value’ scores and tailoring products for different customer segments.

The biggest development in the industry in terms of data creation was the unbundling of airline sales offers and the additional opportunities that ancillary data created for the industry as a whole.
The sale of extra bags, seats and lounge access amongst a varied set of other products has helped airlines to gain further understanding into their customers and packaging/bundling products to suit these different segments.

By 2006, PSS In-house mainframe only processed 22% of global passengers boarded as airlines continued to outsource their proprietary systems. Airlines also started to outsource other IT components such as Departure Control and Internet Booking Engines and we started to see a whole new set of vendors enter the marketplace to meet these needs.

2010s

By 2010, according to T2RL data, direct web bookings had grown to 32.71% of global airline bookings, overtaking the GDS which stood at 31.04%. Mobile bookings made up around 2% of global bookings, adding new data for the airline to exploit such as geolocation and potentially contacts and photos stored on the traveller’s phone.

As more technology developments came into play and customers began to accept self-service, airlines began to take advantage of the efficiencies gained in automating the customer experience; airport kiosks, bagdrop, bag-tagging and chatbots are now common and offer more opportunity for the airline to track customer behaviour. Airlines also began using data to segment and better target offers, through taking contextual or situational data from the search query to tailor the results offered to the customer. Typically, this is used to prioritise upsell and cross-sell services segmenting for business or leisure travellers. Flexibility and convenience options are naturally attractive to business travellers. Whilst leisure travellers are generally more price sensitive and are more likely to book destination related services.

Sophisticated data analytics tools are becoming increasingly popular with the introduction of specialised vendors in this area such as Planitas and Triometrics, who focus on helping the airline better understand their bookings and improve revenue.

In 2012, IATA introduced NDC in order to help airlines (mainly network carriers) standardise the way their products were being offered through their indirect channels.

This aims to enable airlines to gain better insight into shopping requests and customer data being generated via travel agencies and other third parties which they would not normally see. IATA’s ONE Order initiative also aims to help airlines streamline their order management and ticketing data (E-tickets, EMDs), which in theory should no longer be needed.
At the same time, transaction volumes and look-to-book ratios have increased dramatically as OTAs and metasearchers grow and customer behaviour adapts to shopping online.

PSS In-house mainframe market share now stands at 12.05% of global passengers boarded in 2016 after significant in-house de-migrations including Singapore Airlines, Korean Air and Cathay Pacific.

2020s and Beyond
During the 2020s and years to come, T2RL predict that the market for in-house PSS systems will continue to decline as airlines see the potential in gaining efficiencies from outsourcing IT. With the in-house de-migrations of Japan Airlines and subsidiaries planned for end of 2017, Air Canada planned for 2019 and Turkish yet to announce a decision around their chosen vendor, this will take PSS In-house mainframe market share down to around 7% of global passengers boarded in 2020.

Airlines will also see the adoption of many more points of sale and will need to manage the data from and to these accordingly. As on-board Wi-Fi becomes the norm, on-board selling and especially mobile will be the most important point of sale for the future.

In fact, mobile has blurred the notion of a point of sale almost to extinction. The “point” is now opportunity, timing and context rather than a fixed location. This will also lead to the increase in payment data as more bookings and other sales will be made on mobile devices, via credit card and other alternative methods of payment.

Although there has been increasing hype around ‘Big Data’ in the 2010s, the next decade will see the airline industry starting to derive real benefit from the maturing of its investments in this area. Increasing use of data and real-time analytics “in channel” will allow airlines to explore Dynamic Pricing and Personalised Offers, including ancillaries, within the shopping process. While many airlines will still take time to invest in these processes, increased traction of techniques such as Machine Learning may also accelerate developments in offer optimisation.

Google is a big question mark for many at the moment, in terms of friend or foe, and airlines will need to watch their progress in the industry closely in the years to come.

Data Partnerships within and outside the industry will become prevalent as airlines start to use the sale of their data as an additional ancillary.
Although with this, the issue of data control and security will become a more common issue as governmental bodies begin to impose tighter regulations around customers’ data and how this is used.

This will also require an airline to form long-term trusting partnerships with their PSS providers and their other IT vendors to ensure they are both abiding by security legislations.
CURRENT INDUSTRY DEVELOPMENTS

Data as an additional Revenue Stream

The collection, management and storage of an airline’s unique first-party data has value in itself, to other companies, not only in the travel industry but also in other verticals. Companies like Adara are facilitating this need and are now providing airlines with an additional ancillary revenue stream generated from their data sold to third parties, mainly for use within marketing and advertisements. Journera are another company who are building a platform to enable cross-vertical data exchange built around the entire traveller journey.
The main question that arises from an airline’s point of view is, who actually owns my passenger data?

Airlines have also been using their frequent flyer programme memberships to take advantage of the customer data they hold and partnering with like-minded organisations who also see value in this data such as credit card companies, department stores and hoteliers. As this evolves, we can see not only further use of second-party data within the industry itself with the formation of partnerships and exchanges, but also an increase in vertical industry exchanges.

Is it me or is it my PSS provider where the data is stored. The answer to this question may differ depending on who the airline is using as their PSS provider and the specific terms of their contract. This data is also not as ‘free’ as is often claimed. There are costs to the airline associated with creating, maintaining, and utilising data, often charged by the PSS.

Personalisation

While much of the media focus relating to personalisation, particularly within the context of IATA’s NDC project, has been around ‘personalised pricing’, the more immediate opportunities relate to cross-sell and upsell merchandising, aiming to take into account granular customer data to show the most appropriate and relevant airline product offers.

To a certain extent, airlines already control which of their products are being offered and to whom. Shopping, traffic and some customer data are being used to do this via direct channels. In terms of indirect channels, larger airlines have been investing heavily in revenue management systems using techniques such as O&D point of sale pricing and forecasting data and tools.

Airlines commonly quote the success of online retailer, Amazon, and strive to have a similar intuitive website that will understand their customers in the same way as the Amazon site, with customer behaviour, reviews and past purchase history being taken into account for ‘personalised recommendations’ that are being shown. However, airlines are selling a much more complicated product that cannot be compared to a simple catalogue item. As an example, for a standard 330-day advance purchase window, there are over 50,000 date combinations for a simple return flight between two cities. With multiple flights per day and different classes of service, the combinations can run into millions.

When offering and retailing personalised product offers, airlines also have the added complexity in that the delivery of these products is generally being done at 40,000 feet, meaning additional implications for Operations IT management and the execution and management of customer expectations by the crew.
Although figures proposed by IATA were some $60Bn additional revenue that airlines could see generated from the ‘personalisation of offers’. T2RL believe that it is difficult to see such an enormous amount of additional revenue entering the value chain solely from this. Although there is clearly opportunity here, 35% of what consumers purchase on Amazon come from product recommendations based on data algorithms.

Airlines also need to think of the knock-on effects this will have on the availability requests to their PSS provider as well as operations delivery and costs associated with the integration and upgrade of operational IT systems.
Dynamic Pricing
The idea of dynamically priced availability of personalised offers is to enable the airline to generate ‘real-time’ pricing calculated without the need to file predetermined fares within different booking classes (e.g. F, J and Y). Booking classes are traditionally used by airlines to control their inventory at different price points and associate different fare rules (benefits or restrictions) to these different price points/booking classes.

The main opportunity to an airline to move towards a ‘real-time’ personalised pricing strategy, is that they are able to respond instantly to their market conditions and adapt an offer or price based on data showing who it is that has made the search request, and are therefore (in theory) able to generate the best incremental revenue for the airline. According to a survey taken at the latest T2RL New Generation of Airline Passenger Service Systems conference in London in October, 69% of the audience felt that personalised pricing would be widespread in the industry by 2025.

This will not come without its challenges and will require substantial investment from an airline, not only in terms of IT infrastructure to enable the ‘real-time’ calling of availability and prices but also in terms of internal revenue management and accounting processes. It is still unclear if the outlay will outweigh the additional revenue expected from offering a more personalised price.

In a report released by The Office of Fair Trading in May 2013 entitled, ‘The Economics of Online Personalised Pricing’, found that, “personalised pricing where there are at least two competing firms is often not harmful to consumers, and can be beneficial.”.

In other words, personalised pricing in a competitive environment can actually mean cheaper prices for customers as a whole.
DATA-DRIVEN ISSUES FOR AIRLINES

Explosion of Transaction Volumes

Airlines first came across the issue of growing transaction volumes when they introduced calendar search in the late 2000s. The answer to this, used by many in the industry, was to set up a cache to shield the PSS from the sheer volume of availability transactions. With increasing customer expectations for instant accuracy, the use of a cache is becoming somewhat obsolete as airlines are expected to refresh these frequently to continuously bring the most up-to-date and relevant data possible to the customer. At the same time, average look-to-book ratios have increased to between 300:1 and 500:1, driven by the increase in Online Travel Agency penetration as well as the emergence of metasearchers. “Look-to-book ratios were double digits, then triple digits heading to four-digit numbers now,” stated John Chapman, Sales and Business Development APAC, Sabre at the T2RL Technology & Innovation in Airline Distribution conference in May 2017.

Also, with developments in NDC, ONE Order and dynamic pricing,
where direct connects are more prevalent and where each passenger is quoted an individual price according to data held on them, airlines will need to think carefully about the amount of transactions that they intend to process and what effects this will have on the costs of their PSS.

Real-time availability inevitably has a cost implication. “80-90% of transaction volumes are based on edifact standards, mainly availability requests, which poses the biggest risk to airlines but also the biggest opportunity,” stated Cindy Falschlehner, GM Consumer Travel, Travel & Transportation, DXC Technology at the recent T2RL New Generation of Airline Passenger Service Systems conference in London in October 2017.

One way around this is for airlines to selectively use the GDS as shielding as opposed to directly connecting to an Online Travel Agency. Some vendors have also been releasing products to reduce the amount the PSS is hit for Inventory data, with PROS working on their Availability Server product with Swiss and HP, and DXC recently releasing their Availability Calculator.

Airlines need to be cognisant of the contractual terms agreed with their PSS and shopping providers in order to understand the implications to their retailing transaction costs.

**Integration**

In order for an airline to execute a fluid approach to leveraging their rich data, open integration amongst their IT systems is key.

“Best of breed” approaches to technology procurement are needed to give airlines flexibility and are opening up access to the PSS. However, commercial and contractual challenges are harder to solve.

External applications and third-party availability processing could lead to a “dumbing down” of the inventory functionality of the PSS to a simple commodity set of counters for class and or subclass. This could lead to an architecture that depends more heavily on external availability processors as mentioned above (PROS, DXC, et al.). The implications of this are that certain PSS providers are likely to resist by making the integration of third-party availability processors both more expensive, given their messaging intensity, and obviously much less compelling by providing competitive functionality that delivers similar outcomes (e.g. Amadeus’ Airline Cloud Availability).

Another scenario being explored by certain airlines at the moment is the implementation of an Integration Platform or Agility Platform that sits as a layer on top of the PSS. Amongst other goals, the launch of such a platform aims to help airlines deliver more and better data to more locations and systems in shorter timeframes.
Data Protection and Regulation
In recent years governmental bodies have been enforcing tighter restrictions around data privacy and protection. One such example is the General Data Protection Regulation, a new set of European laws, which will affect all global companies holding data related to European citizens, set to come into play on 25th May 2018. These regulations will require stricter governance over how companies communicate, interact and store prospect and customer data.

Moreover, if airlines have European personal data in their databases that are not GDPR compliant, they will simply not be able to use it or hold this data for any longer than is absolutely necessary. Failure to comply with GDPR can result in fines of up to 4% of their global annual turnover.

In particular, airlines will also need to be aware of the security and privacy measures that their IT providers have in place to ensure they are also compliant.

Nevertheless, there are still opportunities in leveraging data as long as companies play by the rules.

Customers are often willing to trade data for convenience as long they trust that the data will be kept safe and they feel informed of how it will be used.
There has been much talk recently about the possible future obsolescence of the PSS. The focus on offer and order management and on much more agile shopping environments has reinvigorated interest in integrating rich retailing platforms on top of the PSS. As these retail platforms start to become the master systems of record for the offer, the order and the customer, there is a danger that the PSS as we know it will be further diminished and commoditised, if not erased altogether in some airline business models and architectures. As it stands, eliminating the PSS is certainly not something which is technically, contractually or commercially viable for most airlines, given that most have spent the last 20 years moving from in-house PSS systems to outsourcing these to specialist IT PSS providers.

Instead, T2RL believe we will see the growth of adoption of Agility Platforms within the industry. These act as a middle layer between back-end systems such as the PSS, CRM system, etc. and other front-end interfaces such as the airline’s retailing platform. Benefits of this include enabling an airline to overcome the challenges of integration, data silos and the desynchronisation of different data sources, to allow for easy, real-time access to data from all front-end touchpoints. Having an Agility Platform also gives the airline room for easy integration of other data sources for the future, which will inevitably arise.

For more details on the Agility Platform please see T2RL’s paper: *The T2RL Agility Platform (TAP).*
Travel Technology Research Ltd, trading as T2RL is an independent research and consulting company that specialises in the market place for airline IT systems. Based on data gathered and analysed since the year 2000 it has defined and tracked classifications of airlines and their IT providers.

Its research is used by airlines to enable them to make informed choices of systems and vendors and by the vendors to help them develop products that best meet the current and future needs of the airline industry. For further information, visit our website at www.t2rl.com
SOURCES

All T2RL data used within this report has been taken from: www.t2rl.net

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