



AIRLINE PASSENGER SERVICE SYSTEMS  
SUMMARY 2019

# THE MARKET FOR AIRLINE PASSENGER SERVICE SYSTEMS 2019

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# INTRODUCTION

This is the tenth edition of T2RL's report on the market for airline Passenger Services Systems (PSS). The first edition was prepared and distributed in September 2009. It has subsequently been updated annually, making use of the most recently available data on the world's airlines and systems providers.

Over the last ten years there have been substantial changes in the way that airlines and vendors think and talk about PSS. These have been driven by changes in the underlying industry and the development of technology.

In 2009 there was a clear division between traditional airlines and the upstart Low Cost Carriers but in 2019 the lines between them have blurred

significantly. This evolution has been reflected in the evolution of the IT systems that serve them. Some of the things that we measured in 2009 are no longer really significant. Distinctions that we drew then may now be seen as trivial. Technologies that were dominant have moved to the background while others that were nascent have come to dominate. This report represents the most far-reaching revision of our analysis of this market since the very first one.



# EXECUTIVE SUMMARY

Like the previous year, 2018 was a year of relative stability in the landscape of airline PSS provision. Among 188 airlines in the top three tiers only seven migrated their PSS provision, representing around 75 million PBs in a total market of well over four billion. It appears that for the largest airlines at least, a period of intense activity has come to an end. For the remainder of 2019 and through 2020 the only significant change expected is the delayed adoption of Amadeus Altea by Air Canada.

Despite this appearance of peace breaking out there has still been activity. The airline industry continues to grow strongly and most PSS vendors are seeing annual growth of the order of 6-7% in volumes of passengers processed. With few exceptions volume growth translates into revenue growth and in general marginal costs do not increase at the same rate so profitability for vendors is also improving.

Within this overall happy picture there are some casualties. Several traditional PSS vendors are not sharing in the benign conditions. Mercator has abandoned the PSS market altogether as its owners prepare it for sale by concentrating on its strengths in financial processing for the industry. DXC Technology will be down to a single customer for SHARES after Copa completes its move to a new vendor. That customer is United Airlines, which supplies over a hundred and fifty million PBs, so there is little chance of the business closing completely but a vendor with only a single user is a very different proposition to a thriving multi-host community. Finally, the SITA PSS business is still shrinking, although not as rapidly as

in previous years. SITA has learned the hard lessons that Hewlett-Packard was taught at American Airlines and Google learned at Air Canada. Building a new-technology PSS from the ground up is harder, more time-consuming and more expensive than anyone can ever know unless they have actually done it.

Below the top tiers the battle to supply the 862 airlines that board fewer than three million passengers has been rather more intense. While only a handful of vendors can realistically support top-tier airlines, there are more than forty of them scrapping it out for the smaller airline market. More than forty tier four airlines switched providers in 2018 and the first part of 2019.

Also in 2018 the tide of technology updates continued to sweep through the industry. Many smaller vendors have based their technology on cloud architecture but the big news in that respect is Sabre's five-year project to move out of the Tulsa data centre and into the cloud. It is too soon to assess the success of that project but if Sabre pulls it off it will be a significant source of cost advantage for the foreseeable future.



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Another technology story, but one with strong commercial overtones is the adoption of NDC and ONE Order. T2RL covers this development in its quarterly reports available at [www.t2rl.net](http://www.t2rl.net), so it is not featured at length here. However this year may finally go down as the one in which NDC became commercially important. The IATA 2020 leader board has generated interest and every week seems to bring a new story of a significant implementation. At the time of writing the latest hot news is that TravelSky has started to sell United Airlines inventory using NDC dialogues. Along with other announcements from Amadeus, Travelport and Sabre this reinforces the view that T2RL has long held that the GDSs are completely critical to the adoption of NDC. We do not believe that all 21 airlines on the leader board will reach the 20% target by the end of next year but with good will and good cooperation from the GDSs and travel agents some of them will.

NDC adoption, along with its companion standard ONE Order, the development of true dynamic pricing, personalisation of offers and the rise and rise of mobile technology all illustrate that “classic” capabilities in PSS are no longer sufficient to serve the modern airline. PSS architectures have changed enormously since the first edition of this report a decade ago and

this year we have taken the opportunity to identify those changes. In the next section we describe the contemporary PSS architecture and its role within the wider airline IT landscape. This is a moving target and the current state of the art description can always be found in the Applications section of our subscriber web site.

## 10 years on

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## THE CHANGING ARCHITECTURES OF PASSENGER SERVICES

Since the first edition of this report in September 2009 Travel Technology Research has tracked the changes of functionality, technology and market power in the field of passenger services systems. We have published a number of updates to the report and in recent years we have revised it on an annual basis. All of the reports have followed the same pattern and have examined the same basic set up functional building blocks that make up a PSS. For this tenth anniversary edition of the report we believe that it is time to build a ground-up view of the PSS landscape that reflects the changing architectures that we see in 2019. By architectures we are not only referring to Information Technology platforms such as proprietary mainframe versus open systems versus cloud. We have also observed that the functionality delivered in support of airline commercial activities has changed in the ways that it is built and assembled such that older modes of thinking about PSS are no longer sufficient. This report will reflect the new reality of commercial systems provision.

### The Ground State in 2009

In the PSS report published in 2009 we defined a basic functional architecture consisting of Inventory, Reservations, Fare Quote, DCS and Internet Booking Engine. We also considered a marketplace in which airlines fell fairly neatly into the categories of Full Service or Low Cost carriers although we had already recognised that the boundaries between these categories were beginning to blur. The term Hybrid Airline had started to be used and T2RL was the first organisation to classify airlines into the various categories on the basis of objective criteria.

Ten years ago most Full Service airlines used a PSS based on mainframe technology, whether operated in a dedicated data centre like airlines including JAL, ANA, Air Canada, Singapore Airlines and Cathay Pacific, or using a software service provided by companies such as Amadeus and Sabre. The one component that used more modern technologies, including open systems, was the Internet Booking Engine. This was partly because IBEs were often developed by young companies with no mainframe expertise and partly because many of the tools and techniques needed to facilitate direct to consumer interactions were readily available in the open systems world. Fare quotation for these airlines was based on IATA and ATPCO standards and delivered as a service by a small number of mainframe-based providers.

The LCC world by contrast typically used software as a service provided by Navitaire and a number of smaller competitors. Navitaire itself had recently completed the migration of its services from a proprietary platform by Hewlett-Packard to an architecture based on Microsoft's .NET standards. Most of its competitors used open systems standards. Unlike the mainframes used by full service airlines many of these systems were able to connect directly to the Internet for consumer sales. LCCs had simple pricing structures which could be managed within the PSS and so had no need of services from the traditional pricing providers. However we had already begun to see the emergence of a new generation of pricing systems such as those developed by ITA Software and Vayant. These were primarily geared to the hyper competitive direct selling market, initially in the USA and later the wider world.



## PSS Architectures in 2019

In 2019 the PSS architecture has evolved greatly both in terms of the technology deployed and the organisation of functional areas. There has also been significant convergence between the systems serving traditional airlines and their LCC competitors. New types of functionality have been added, whether in the core systems or in specific modules interfacing to them. Some of these new functional areas are advanced revenue management and dynamic pricing, packaging, self-service applications in both sales and delivery and so-called “big data” exploitation supporting all aspects of the business. Some of the biggest and most advanced airlines have supported IATA’s initiatives NDC and ONE Order and are now talking in terms of “Offer and Order Management” as the basis of their passenger services requirements.

### Functionality

The functional architecture of airline commercial systems has moved from being primarily concerned with operations to being much more driven by the needs of sales and marketing. The old PSSs were born in the days of airline regulation when governments controlled most aspects of the provision of airline service. As a result, PSS functions were about efficiently presenting agents with information on the availability and price of seats and then collecting necessary information and payments including issuing tickets. The modern airline is concerned with creating innovative products, pricing them such that revenue is maximised and promoting them across multiple distribution channels. This requires a much more modular approach to functionality than before. It also requires management of large volumes of customer data.

Channel management has become a very active area for the most sophisticated airlines. Ten years ago the main selling channels, in different proportions according to the airlines’ business models, were directly connected airline employees in call centres and ticket offices, travel agents connecting via a Global Distribution System (GDS) and consumers connecting to an Internet Booking Engine (IBE). Each channel was managed as a separate entity and there was little crossover between them. In 2019 the picture has changed considerably and airlines are trying to take an omni-channel approach. A customer may shop on the Web but have their booking made by a travel agent or book over the phone and then update their information using a “Manage My Booking” function in the IBE. This requires an architectural separation between the back-end processes of inventory and booking management and the front ends that connect to agents, GDSs and the Web.

### Technology

In 2009 around 80% of all airline PSS requirements were served by systems that depended significantly on mainframe computers. That is not to say that there had been no technology innovation. In fact many functions had been moved to external systems using newer technologies, but the core PNR database resided in a mainframe environment for four fifths of all airline bookings. The last decade has seen more and more functionality shifted away from the mainframe to more modular architectures, with a major landmark being Amadeus’s announcement that it had taken the last mainframes out of its data centre in 2017. As a result of this and the changing fortunes of other mainframe-based vendors only around 40% of PNRs today are managed in mainframes.



This headline figure doesn't tell the whole story though. While Amadeus has moved to replace mainframes with a multi-layer technology stack based on open systems, its biggest competitor Sabre has gone a step further and has pushed large amounts of its functionality into the Cloud.

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Already in 2009 the move away from airline in-house development was well under way. Although around 20% of bookings were managed in airlines' data centres this was well down from the levels of the 20th century and several large airlines were already contracted to move from in-house provision to a vendor service. Amadeus was the largest beneficiary of this change. In 2019 the proportion of bookings managed in-house has halved to around 10%. As a consequence of this change the industry's IT development resource has largely shifted from airlines to vendors. The vendors themselves have switched significant parts of their development to outsourcers, often offshore, especially in India.

This trend has gone partially into reverse in the most recent years due to the near-universal deployment of Applications Programming Interfaces (APIs) by vendors of PSSs. This has allowed airlines with sufficient resources to develop point applications that can call on functionality from the PSS to deliver unique capabilities that provide competitive advantage. As the technology matures with components and tools becoming more widely available, the resource threshold for this kind of development is getting progressively lower. This should mean that the ability to deploy such mix and match applications is available to smaller and smaller airlines over time. In principle it should also be possible to deploy applications developed in other industry sectors but so far there has been little evidence for this taking place.

An important subset of the move to API-based connectivity is the development of the NDC and ONE Order standards by IATA. Although progress has been slower than many expected when NDC was first announced in 2012 the last year or so has finally seen the beginnings of large-scale adoption. If this trend continues it will herald a shift in the load on IT systems from the GDS to the PSS. Under NDC the airline is responsible for creating priced offers to the travel trade rather than the GDS. For vendors like Amadeus and Sabre which have interests in both, this will represent a realignment of costs and revenues. For companies that only offer PSS it may be more of a challenge unless they are able to command a substantial pricing premium for supporting NDC.



## BETTER information for better DECISIONS

The full version of this report examines the major changes that the airline Passenger Service Systems market has seen over the last few years, as well as comparing the market share of the major vendors and the addressable market over the next ten years.

Some of the vendors included in the full report include Amadeus, Sabre, Navitaire, Radixx, IBS, Sirena, WorldTicket, TTI, KIU Systems, IntelSys, ISA, mercator, Hitit, Unisys, SITA, DXC and TravelSky.

[Contact us to find out more.](#)

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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](http://www.t2rl.com).