

# OpenPSS

## An open approach to create a New Generation Airline Reservation System

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## 1. Situation today

For most airlines a Passenger Service System (PSS) comprising of Inventory Management (Res), Departure Control (DCS) and Distribution has become a commodity. It is seen by most airlines as an area with little room for differentiation due to industry standards and restrictions and the domination of a few big players dictating the processes and standards. Furthermore most airlines have outsourced the airport/ground processes (mainly check-in) to third parties (Ground Handlers) that had to standardise systems and processes to be able to cost effectively serve many different airlines.

Distribution mostly done through General Distribution Systems (GDS) is dominated by mainly 3 major players controlling a large part of the market and are also the dominant players for the Res hosting.

Even though direct distribution (Internet etc.) has become an important distribution channel and is today still the fastest growing channel, the importance of GDS' has only reduced insignificantly as they literally "own" the access to tour operators and travel agencies.

In particular two of these dominant players - Amadeus in Europe and Sabre in the US - have been very successful in the past 10-20 years to attract a large number of airlines to "outsource" a large part of their PSS functionality to them.

This was primarily driven by cost and the alliance requirements to sit on the same reservation platform and to be able to share inventories and schedules across the alliance. Many airlines however still run their own in-house PSSs that in most of the cases are very old systems originating from mainly the same 2 sources (Unisys and IBM) based on legacy mainframe technology, which poses a significant cost and technology obsolescence risk.

We have seen a number of attempts by airlines and IT companies over the last 10 years to develop a new generation PSS to be able to mitigate the technology obsolescence risk and get rid of the PSS legacy.

Most of these attempts miserably failed for several reasons (i.e. Unisys Aircore, IBS iRes, ITA with Air Canada etc.) and some projects are still ongoing (i.e. SITA Horizon). The legacy PSS core that has been developed some 50 years back, based on IBM's Transaction Processing Facility (TPF) still represents the core of most PSSs operated today and nobody so far was able to crack the challenge to fully replace them with a new generation PSS.

Whoever will be successful in doing this will write a piece of IT history and will have contributed to a system that may well last another 50 years.

HP who recently acquired EDS has announced that they will develop a new generation PSS for their main customer American Airlines (AA).

The estimated investment required to build a new generation PSS to be able to serve a full service network airline is about \$150m.

Most airlines will never be able to afford to invest such amount in developing a new generation PSS nor do they have the necessary skills and resources to do so and therefore are left with only one option: to outsource to one of the 2 dominant service providers, Amadeus or Sabre.

Besides some niche players (SITA, Mercator, Travelport) and the providers for Low Cost Carriers (LCC) such as Navitaire, TikSystems, Radixx etc. who don't support the requirements of most full service airlines, there is literally no alternative available in the market.

This leads to a very dangerous dependency of a big part of the airline industry from a basically only 2 key players: Sabre and Amadeus.

While airlines struggle to survive in times of difficult economic climate, and often require state aid to bail them out, the 2 major GDS/PSS providers that are by majority owned by venture capitalist firms, write healthy profits.

A new entrant has entered the market, with Google acquiring ITA, however their strategy around the acquisition is not known at this point. This might be their entry into the overall PSS market or most likely just a way to simplify and integrate "travel search" into their search engine.

That these profits are generated at the cost of airlines, travel agencies and the end consumer is obvious.

Amadeus went public in April 2010 and generated \$1.7 billion by floating a part of the company, valuating the company at \$4.9 billion.

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## **2. Recommendation: an Open Source PSS (OpenPSS)**

The industry deserves and is in desperate need of an alternative to the 2 main suppliers Sabre and Amadeus.

Every initiative – be it SITA's Horizon or any other consortium – will at best result in one more provider to "rip off" airlines as they will have to earn back their \$150m investment.

It is not expected that any independent software company will ever be able to successfully develop a new generation PSS as it lacks travel and transportation domain knowledge, as seen with Unisys and IBS.

The almost unlimited access to airline and travel domain business specialists is a key success factor for such an endeavour.

Since a single airline or even a consortium of airlines or an airline alliance will not be able to fund such an amount to develop a new generation PSS, the industry runs the risk of being at the mercy of profit driven providers owned by venture capitalists or the public.

The core functionality of what comprises a PSS is seen as a commodity to most airlines. Therefore, there will be no compelling business case for any airline to invest a huge amount in such a project.

Fortunately, in today's networked economy there is an attractive alternative available to tap into the vast knowledge and experience of skilled software engineers around the world and to create commodity type software as seen with Linux, Apache, MySQL etc. using the Open Source model.

We would like to explore the possibility to create an Open Source PSS (OpenPSS) as a fully open initiative using the Open Source Community to develop the system.

The airline industry is a highly popular industry and – as we believe - would attract a large number of the Open Source Community to contribute. Also, a number of people out there directly consume airline services when they travel and hence would feel a level of alignment to make a difference to it.

We believe we can motivate one of the largest, fastest growing and most successful international airlines in the world and one of the niche players, but highly innovative and successful IT providers in the travel and transportation industry, to become sponsors for this initiative and ensuring the access to the required business domain knowledge.

OpenPSS will enable airlines to break their dependencies from GDS and chose their own proffered hosting partner for the PSS.

OpenPSS would completely change the rules and business models of the airline IT industry and the dominant players will have to re-invent themselves to be able to survive. The fact that the TPF based PSSs have been around for some 50 years and so far, nobody even managed to crack the technical challenge to replace the legacy TPF core with a new technology one, shows the dimension of the challenge.

This however means, that everyone who will contribute to OpenPSS to be a success, will have contributed to writing a new chapter in the IT history with a system that may well survive another 50 years.

By having the OpenSource Community develop and enhance OpenPSS, new functionality and industry standards will become available to participating airlines very quickly reducing the airlines' cost to operate and maintain a PSS.

Today's providers of PSS services will have to rethink their business models and build new ones with value added services around the commodity core.

Airlines will be able to freely adapt OpenPSS, to participate in the OpenPSS community to further develop and enhance it or to simply sponsor the OpenPSS community.

Airlines can decide to operate their own instance of OpenPSS in-house, buy a hosted service from one of the suppliers offering OpenPSS as a hosted service (ASP or SaaS) or ask their own preferred hosting partner to operate it for them.

This will ensure that airlines will get real value for the money they spend on PSS and suppliers who made a good living from the revenues they generated from airlines and travel agency with commodity services will have to ensure they have a value proposition that adds value to the industry to survive.

We also believe that this initiative will launch a new paradigm in the open source world. The ability for the open source communities to not only challenge large incumbent players in the platform space (IBM, Microsoft – for operating systems, web servers etc.) but also extend their reach to challenge the world of application systems providers in the vertical industry space. It has the potential to launch a new wave of open source development and growth in all sorts of specialist IT application development domains be it aviation, banking etc. Entry and domination of this space of IT development may be the next big leap for the open source movement, with our OpenPSS being the catalyst for it. We will be able to make available to the Open Source Community concepts and a high level architectural blue print that was developed as part of an earlier initiative to develop a new generation PSS by airline that did not move forward as initially planned.

We would invite other interested parties, such as airlines, software vendors, outsourcing providers, universities etc. to join the OpenPSS initiative.

OpenPSS would have to focus on first developing the core Airline Reservations and Inventory Management functionality.

In a second step Departure Control (DCS) can be developed

The OpenPSS concept can be extended in scope to cover distribution functionality in a later stage, removing the dependency from the GDSs.

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### **3. Challenges/Questions**

We are seeking support to set up such an OpenSource initiative to develop OpenPSS.

We have never sponsored an Open Source initiative and need help on how to set up such a project.

- How does one set up such a large-scale Open Source initiative and how do we get one of the Open Source evangelists to champion the initiative?
- How do we control the initiative to ensure a successful PSS results from it?
- Where do we start – share the specifications/design blueprints and then get the community to start the development or construct a core module, make that open source and then ask the community to develop further, or any other starting point?
- Who should we ask to join the OpenPSS initiative and how do participating commercial companies (i.e. airlines, IT suppliers etc.) best contribute to it?
- How does a participating airline build a competitive edge around the commodity core to ensure it maintains a competitive advantage?
- Is there a critical mass of community members, partners required to launch such an Open Source initiative?
- What is the architecture which will ensure sustenance of this initiative? How do we prevent an initial burst of activity followed by a slow decline in interest?
- Do we set-up a separate platform for enabling this initiative (such as Fedora by Redhat or use existing open source platforms such as sourceforge to launch the initiative)?