TAIS Airline Solution

I. Overview

TAIS Airline solution is a **Passenger Service System (PSS)**. Systems of this class provide a carrier with means for certain commercial operations — booking, ticketing and other kinds of passenger services prior to departure.

TAIS Airline Solution targets the traditional business model but also meets the requirements of low-cost and charter carriers, offering them efficient business management instruments.

TAIS Airline Solution is deeply integrated in the global civil aviation IT ecosystem and interacts with almost all types of systems associated with the carrier's commercial activities. Such systems include, among many others: World leading Global Distribution Systems (GDS), interline and code-share agreement partner carrier PSS, accounting and income management systems, DCS in departure airports.

TAIS Airline Solution features allow to support carriers with total turnover up to 10–15 million passengers per year.

TAIS Airline Solution is hosted on the TAIS server cluster located in the "STACK Telecom" data center, Moscow, Russia. The cluster has significant reserve capacity and is highly scalable.

The TAIS cluster system availability over the last few years was on or above 0.998. Furthermore, TAIS bears the legal responsibility towards its clients for the quality of service (i.e. outsourcing, software support and bug fixing, consulting services) as stated in the Service Level Agreement (SLA).

TAIS Airline Solution includes three main systems:

TAIS CRS — booking and sales;

TAIS DCS — departure control;

TAIS TravelShop — e-commerce platform.

An important element of the Russian civil aviation market, a separate system called **TAIS SIG**, is also described in this document.

II. TAIS CRS

1. Overview

TAIS CRS is a fully-featured mature Central Reservation System. It is constantly refined and enhanced. At various times it was used by the leading carriers in Russia, including carriers who were the first to introduce e-tickets, the first to master the low cost model and many others.

Being a Distribution System, TAIS CRS has its own IATA code 1M and the accounting code 538.

Currently, the largest user of TAIS CRS is the AtlasGlobal (KK), Turkey, and its subsidiaries. The total number of resources in the system is approaching 3 million passengers per year.

TAIS CRS and TAIS Airline Solution clients benefit from all the distribution channels that are present on the global aviation market, including:

I.   Direct sales channels for agents who have signed a contract with the carrier:
  a. Traditional text agent platform.
  b. The new graphical agent platform. *Under development, estimated release date the 4th quarter, 2016.*
  c. Carrier's website.
  d. The carrier's call center for customer care over the phone.
  e. Universal software interface TAIS CRS API that allows connections to various customer apps, including websites of direct agents.

II. Block sales on charter flights:
  a. With the help of automatic tour operator passenger list processing;
  b. Via the new graphical platform for the tour operator. *Under development, launch planned for June 2016.*

III. Sales via GDS, including such distribution systems as Amadeus, Sabre, Galileo, Apollo, Worldspan, TravelSky, Sirena-Travel.

IV. Interline sales via PSS interaction.

There are about 100 direct interaction channels with interline partners available for users of TAIS Airline Solution.

2. Features

TAIS CRS includes the following modules:
1. Schedule
   The schedule can be managed both manually from the airline's inventory management graphical platform, and automatically from the standard aviation data sources. In turn, the system automatically updates the carrier's schedule in the global information systems: OAG and Innovata.

2. Inventory
   The inventory management platform provides tools to manage booking classes and subclasses, overbooking, waiting lists, allotments, seat maps.

3. Fares and Pricing
   The fare database (fares, fare rules and restrictions, routes, airport taxes, carrier's taxes etc.) is supported according to the international ATPCO specifications. A modern branded fare

management technology is implemented as well. A dedicated airline's fare management graphical platform is available, along with the automatic import from ATPCO, IATA and Russian STC.

4. Search tools
Availability and Best Fare Search are supported, with branded fares display.

5. Reservation
The system supports PNRs with up to 16 segments. PNRs can be altered, cancelled or split. Passenger transfer on flight change is supported. User can provide detailed passenger information. Group PNRs are supported as well. The platform can display seat maps along with seats available. Automatic and manual PNR pricing options are available.

A PNR can be created either as a result of a request from direct sales channels or from GDS and PSS. The IATA recommendations as well as standard means of data exchange based on EDIFACT and AIRIMP languages are implemented.

6. Detailed agent actions record is kept automatically.
7. ET / EMD
Our own database of electronic tickets (ET) and electronic miscellaneous documents (EMD) is the foundation for TAIS electronic documentation system. EMD allows carriers to develop online ancillary service sales both on the carrier's website and via the agent platform. TAIS and AtlasGlobal plan to start actively using EMDs in Q2 2016.

8. Ancillary Services
TAIS CRS includes a fully-featured ancillary services inventory system, an aspect of the most advanced PSS systems. Ancillary services are seamlessly integrated with the regular search, booking and ticketing features. It is possible to flexibly manage ancillary services on a flight, dividing them into groups and applying restrictions for the allowed service units in each group depending on flight, data or class.

9. Reporting
Reports can be presented in two ways — either as a ready-made report document or as a relational database, a mirror of the online DB. The relational DB allows the carrier's analysts to get online information about current sales and other immediate data.

TAIS CRS is integrated with the following third-party Revenue Management Systems (RMS) and Revenue Accounting Systems (RAS): RMS — ProfitLine/Yield O&D, airRM; RAS — SOFI, ASIA Next, SIRAX, ARACS, BIRACS.

3. TAIS CRS Features: A Perspective

1. The Intellectual Graphical Agent Platform

The intellectual graphical agent platform (AGIT) is being developed to replace the current traditional text platform used with the TAIS CRS.

An agent platform is the main tool used for all passenger service operations: flight search, PNR creation (initiation of a booking order with all passenger information), and, finally, ticket issue. In the old-style text platforms, the agent has to know and remember many complex scenarios that can occur during booking and ticket issue. This complicates the agency personnel training and makes such specialists quite expensive.

This is the reason why the shift from text to graphical platforms is so widespread. The graphical agent platform development, however, usually stops after providing convenient means to input requests along with clear and readable visual representation of responses.

Intellect is the unique selling point of the new TAIS graphical platform. The platform will be able to direct the agent towards the solution of a problem, and to hint at the solution itself, that is, to help the agent to form the correct command. The new platform is envisioned and developed by the TAIS experts to make the input easier, the response more readable and, most important, to allow the agent to use the whole range of the system features without additional training.

The AGIT launch is planned for the 4th quarter 2016.

2. Charter Flights Support

Charter flights impose special requirements for flight and schedule management tools. A charter carrier needs simpler procedures for new flight creation, mass changes in the current schedule and redistribution of block sales between the flight charterers.

The second important requirement for the PSS is the existence of a simplified graphical platform for tour operators. A number of convenient tools for passenger list management are one of the distinctive features of such platform.

There are two major directions in TAIS CRS development. One of them is creation of efficient tools for charter flights management. The second one is dedicated to the tour operator graphical platform development. The estimated launch date for the graphical platform is June 2016.

3. TAIS CRS for airline alliance members

This project is to be started after all technical requirements and detailed technological specifications are negotiated with the customer's specialists. It entails the development of the new carrier's technological process management graphical platform.

III. TAIS DCS

1. Overview

TAIS Departure Control System (DCS) is designed for passenger handling at airports and provides functions for the passenger check-in and the registration of checked-in passengers while boarding.

TAIS DCS can be used both as a part of the TAIS Airline Solution to manage the departures of carriers at departure airports, and as an in-house DCS of an airport or a ground handler.

TAIS DCS is integrated in the global civil aviation IT ecosystem; it has its own range of SITA addresses.

TAIS DCS is used in many Russian and foreign airports. The largest are Vnukovo, Yemelyanovo (Krasnoyarsk), Yakutsk, Manas (Bishkek), Zhuliany (Kyiv), Minsk, Otopeni (Bucharest).

TAIS bids for a tender opened by Sheremetyevo for the airport DCS. The odds are good that TAIS will win this tender. We are actively improving the system according to the airport requirements.

TAIS DCS supports workstations of airline supervisor, airport supervisor, check-in agent and boarding agent. All workstations have a convenient graphical interface available in two languages, Russian and English.

The workstations are SITA CUTE certified and support peripheral hardware of many manufacturers.

2. Features

1. Automated and manual schedule management.
2. Passenger and cargo loading management.
3. Automated or manual management of baggage allowance and fares.
4. Message generation and processing (PNL, ADL, ETL, PFS, PTM and others).
5. Check-in for passengers with e-tickets and direct access to the e-tickets server in TAIS CRS.
6. Through check-in is supported in all airports that use TAIS DCS. Through check-in with third-party DCS is planned to be implemented by the 3rd quarter 2016.
7. Class upgrade/downgrade.
8. Personal passenger information interchange with state security agencies of the arrival countries (APIS, including Russian Federation's EGIS).
9. Web check-in.
10. Integration with the automated weight balance system WB-Garantia.

IV. TAIS TravelShop

1. Overview

TAIS TravelShop is an e-commerce module for the carrier's or agent's websites.

TAIS TravelShop allows its clients to create a modern online Selling Point as a part of the website, where a passenger can buy tickets.

This module can be used in three ways:
a. As an integrated solution for users of TAIS Airline Solution.

   In this case TAIS TravelShop is connected directly to TAIS CRS as part of TAIS Airline Solution.
b. As a standalone solution for carriers that use other PSS.
   In this case the module is connected to the booking system as part of the carrier's PSS (SITA Gabriel, Sirena-Travel / Leonardo, Amadeus Althea and others).
c. As a part of the agent's website.
   In this case TAIS provides TAIS TravelShop with access to any of the booking systems, operating on the Russian Market: Amadeus, Galileo, Sabre, Sirena-Travel, SITA Gabriel, Navitaire, TAIS CRS.

Some of the largest TAIS TravelShop users are the UTair airline and the Biletix.ru agency.

TAIS TravelShop as a part of the UTair website increased the volume of online sales from 10–15% to 32% in the period from September 2015 to March 2016. It was possible thanks to high website usability, flexible fare handling, and also because the website was connected to meta-search engines, which led to a sharp influx of new users.

The Biletix.ru website became one of the leading online traders on the market. With the help of TAIS specialists it introduces more and more new solutions that attract customers.

2. Features

1. Usability. The TAIS TravelShop Selling Point is simple and friendly to airline customers. It minimizes the number of steps a passenger must make to choose flights and buy tickets.
2. Comfortable shopping (searching and choosing the optimal fare):
    a. Best fare search for certain dates or a range of dates. The range can be set to ±3 days or ±7 days.
    b. Listing direct and connection flights, including interline connections.
3. Fare policy management
    a. Flexible fare grouping according to carrier's commercial requirements (MINI/MIDI/MAXI, Saver/Flex/Business etc.), the so called "branded fares".
    b. Setting agent fees for different conditions, for example, for various corporate users or agents.
    c. Fare rules display.
    d. Fare calculation in different currencies.
4. Selling both to individual clients (B2C mode) and to corporate users, including agents (B2B mode).

    The difference between the two modes is in the way the payments are proceeded.
    a. In the B2C mode the payments are made directly by the customer using a bank card or with the help of other payment systems.
    b. B2C implies cashless payments. Also, the company admitted to online ticket sale has a limited budget that its employees can spend on ticketing.

5. Customer database

TAIS TravelShop provides customers with a web-page that has all the personal information, and helps to check their current orders and the history of past flights. The personal information can be used for personal data autocompletion during order placement.

6. Loyalty program management

The TAIS TravelShop loyalty program (FFP) management has the following features:
   a. Any number of loyalty programs is supported.
   b. Flexible bonus awarding system.
   c. Automatic bonus awarding basing on the system's information about previous flights.
   d. Automated program enrollment when opening a personal account.

7. Complimentary services
Complimentary services can be provided by the airline itself or by third-party vendors. For example, TAIS TravelShop is integrated with the "AlphaStrakhovanie" system, allowing a passenger to select and purchase an insurance policy along with the tickets. A complimentary service is selected after the booking and paid for along with the ticket.

8. B2C Payment Methods:
   a. Internet payment: payment cards, e-currency.
   b. Cash: cash-stands, ATMs, retail chains etc.
   c. Built-in payment methods: personal accounts, vouchers etc.
   d. Loyalty program points.

The customer is presented with a payment dialog after the flight is selected and passenger information is entered. Several payment options can be presented to the customer. Each option can be configured with a separate discount or surcharge.

9. Ticketing, refunds and exchange
The ticket is issued after successful booking and payment. The itinerary receipt is then sent to the customer's e-mail. The itinerary receipt template can be customized. Standard template is also available.

The airline customer can refund or exchange the ticket directly on the website. This attracts new customers and reduces the load on the airline call-center.

10. Order database.
The administrator can manage orders and review e-commerce analytics in the TAIS TravelShop Backoffice.

11. Meta-search engines.
TAIS TravelShop supports meta-search engines (Skyscanner, Aviasales, Momondo and others). Integration of a website with a meta-search engine radically increases online sales.

12. Web check-in is supported.
The Tais TravelShop supports desktop and mobile browsers.

V. SIG

1. Overview

TAIS SIG is a system with two main roles: (a) avia-content integrator and (b) search engine.

SIG is an unique system on the Russian avia-market. It is able to compete with the leading analogs, for example, the one developed by Google.

2. SIG as an avia-content integrator

In the avia-content integrator mode SIG provides access to all reservation systems available on the Russian market for agency website e-commerce modules (fig. 1).
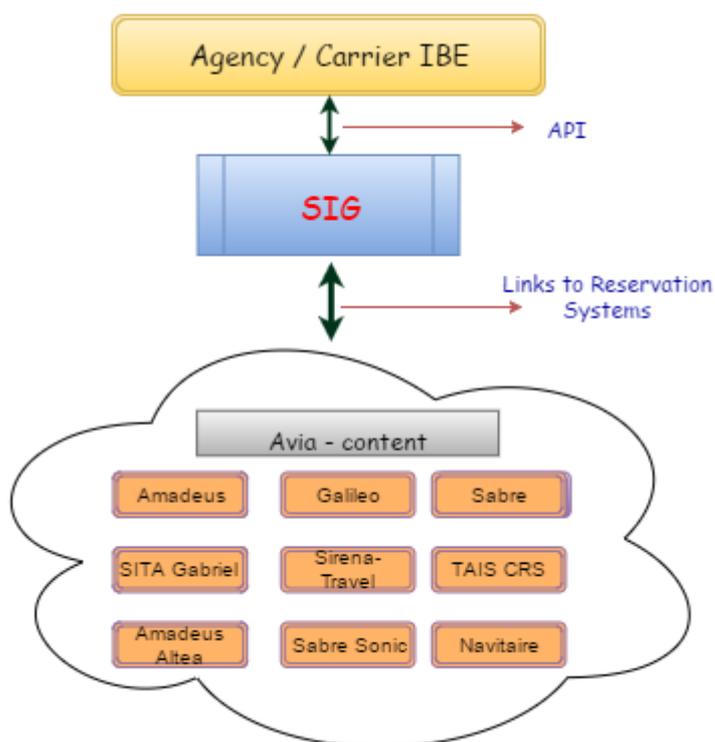

Fig. 1. SIG as an avia-content integrator.

SIG provides website developers with a convenient Application Program Interface (API SIG), abstracting individual reservation system program interfaces. API SIG supports the widest possible range of shopping, booking and ticketing calls — enough to allow creation of a fully-functional e-commerce (EC) module.

This solution is used by many leading Russian online-agencies. For example, resources of carriers S7 (PSS SITA Gabriel) and Pobeda (Navitaire) are now available to the agent market members through SIG, noticeably reducing agent expenses and carrier GDS fees.

3. SIG as a search engine

SIG is posed to solve one of the most painful problems on the aviation online sales market — rate limiting the reservation system search queries. The primary cause of this problem is a protective pricing model, used by reservation systems as a guard against a large volume of search queries. For example, Aeroflot had to license TAIS SIG to limit the volume of search queries to its PSS Sabre.

The problem can be measured qualitatively by using the L2B (look to book) metric — the number of search queries per booking.

To solve the problem, SIG takes over the handling of the search query stream, keeping L2B reasonably low even when connected to metasearch engines. This is achieved as follows:

SIG supports two reservation system access modes: external search and internal search. In the external search mode SIG serves only as a broker and an integrator, redirecting search queries to the target reservation system, and forwarding back the response. In the internal search mode, SIG pre-processes search queries and, whenever possible, generates the response itself. This mode drastically reduces the load on the reservation system as well as the search query response time.

It is possible to use SIG as a search engine thanks to the internal search mode.

Fig. 2 illustrates in a simplified manner the internal architecture of SIG.

The Application Processor dispatches queries, received from the EC module, redirecting them to services by type.
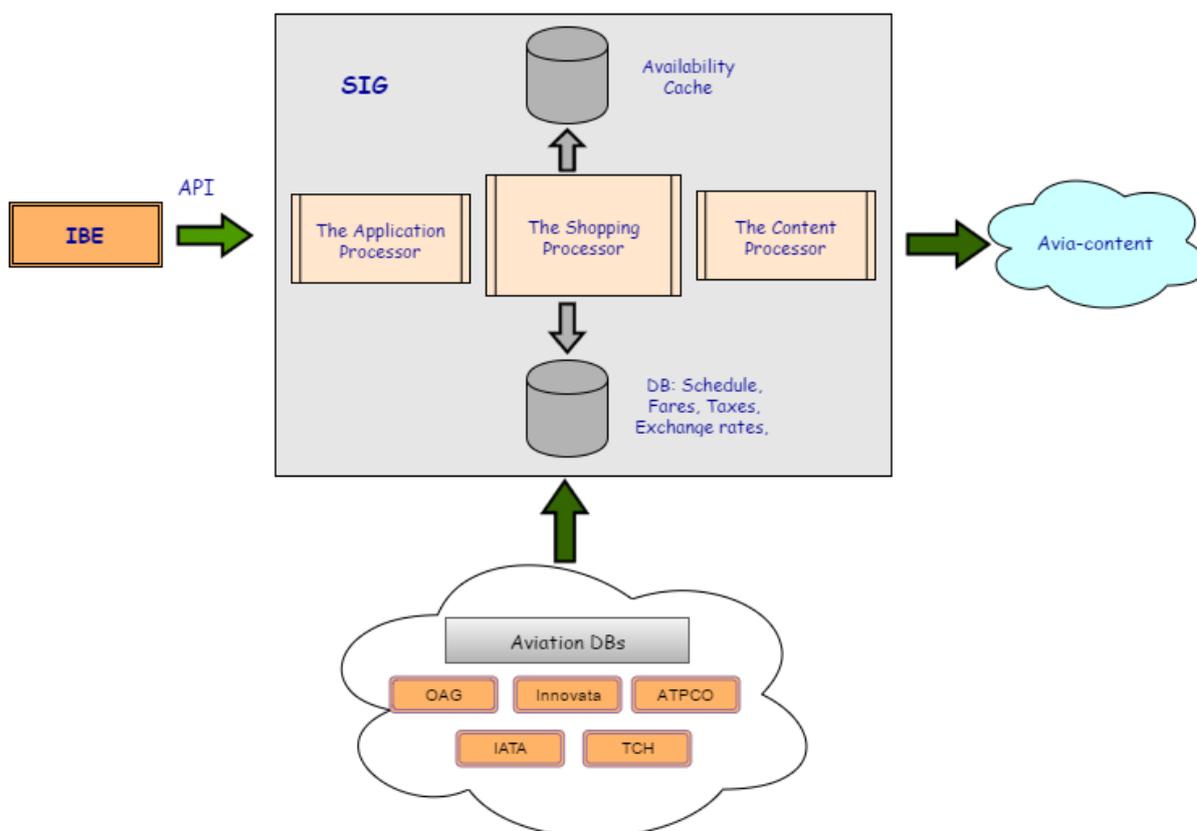
Fig. 2. SIG as a search engine.

Search queries, identified by the Application Processor, are redirected to the Shopping Processor.

The Shopping Processor has access to the information necessary to generate a response. On one hand, it is the database with world schedule, fares, airport taxes, exchange rates and other information from the aviation information systems like OAG, Innovata, ATPCO, IATA, as well as the Russian STC, a member of TCH.

On the other hand, it is the availability cache with the relevant information. The information is kept relevant by the large volume of queries (up to 10 mln. daily) and, of course, by our unique cache refresh algorithm.

The Connector Processor facilitates access to the information from the reservation system (avia-content).

SIG is a well-established highly-effective search machine. In this aspect SIG is used by the largest Russian carriers, Aeroflot and UTair, as well as the leading players on the Russian online travel services market, biletix.ru, svyaznoy.travel, onetwotrip.com, portbilet.ru and others.

In peak days SIG is handling over **10 million queries** daily.