**INTRODUCTION**

**Airline reservation systems** (**ARS**) are systems that allow an airline to sell their inventory (seats). It contains information on schedules and fares and contains a database of reservations (or passenger name records) and of tickets issued (if applicable). ARSs are part of passenger service systems (PSS), which are applications supporting the direct contact with the passenger.

ARS eventually evolved into the computer reservations system (CRS). A computer reservation system is used for the reservations of a particular airline and interfaces with a global distribution system (GDS) which supports travel agencies and other distribution channels in making reservations for most major airlines in a single system

Airline reservation systems incorporate airline schedules, fare tariffs, passenger reservations and ticket records. An airline's direct distribution works within their own reservation system, as well as pushing out information to the GDS. The second type of direct distribution channel are consumers who use the internet or mobile applications to make their own reservations. Travel agencies and other indirect distribution channels access the same GDS as those accessed by the airline reservation systems, and all messaging is transmitted by a standardized messaging system that functions on two types of messaging that transmit on SITA's high level network (HLN). These messaging types are called Type A [usually EDIFACT format] for real time interactive communication and Type B [TTY] for informational and booking type of messages. Message construction standards set by IATA and ICAO, are global, and apply to more than air transportation. Since airline reservation systems are business critical applications, and they are functionally quite complex, the operation of an in-house airline reservation system is relatively expensive.

## Inventory management:

In the airline industry, available seats are commonly referred to as inventory. The inventory of an airline is generally classified into service classes (e.g. economy, premium economy, business or first class) and any number of fare classes, to which different prices and booking conditions may apply. Fare classes are complicated and vary from airline to airline, often indicated by a one letter code. The meaning of these codes are not often known by the passenger, but conveys information to airline staff, for example they may indicate that a ticket was fully paid, or discounted or purchased through a loyalty scheme, etc. Some seats may not be available for open sale, but reserved for example for connecting flight or loyalty scheme passengers. Overbooking is also a common practice, and is an exception to inventory management principles. One of the core functions of inventory management is inventory control. Inventory control monitors how many seats are available in the different fare classes, and by opening and closing individual fare classes for sale.

**Availability display and reservation (PNR):**

Users access an airline’s inventory through an availability display. It contains all offered flights for a particular city-pair with their available seats in the different booking classes. This display contains flights which are operated by the airline itself as well as code share flights which are operated in co-operation with another airline. If the city pair is not one on which the airline offers service, it may display a connection using its own flights or display the flights of other airlines. The availability of seats of other airlines is updated through standard industry interfaces. Depending on the type of co-operation, it supports access to the last seat (last seat availability) in real-time. Reservations for individual passengers or groups are stored in a so-called passenger name record (PNR). Among other data, the PNR contains personal information such as name, contact information or special services requests (SSRs) e.g. for a vegetarian meal, as well as the flights (segments) and issued tickets. Some reservation systems also allow to store customer data in profiles to avoid data re-entry each time a new reservation is made for a known passenger. In addition, most systems have interfaces to CRM systems or customer loyalty applications (aka frequent traveller systems). Before a flight departs, the so-called passenger name list (PNL) is handed over to the departure control system that is used to check-in passengers and baggage. Reservation data such as the number of booked passengers and special service requests is also transferred to flight operations systems, crew management and catering systems. Once a flight has departed, the reservation system is updated with a list of the checked-in passengers (e.g. passengers who had a reservation but did not check in (no shows) and passengers who checked in, but did not have a reservation (go shows)). Finally, data needed for revenue accounting and reporting is handed over to administrative systems.

## History:

Until the 1950s, airline reservations used manual systems at centralized reservation centers, which consisted of groups of people in a room with physical cards that represented inventory, in this case, seats on airplanes. In the late 1950s, American Airlines wanted a system that would allow real-time access to flight details in all of its offices, and the integration and automation of its booking and ticketing processes. It introduced an electronic reservations system, Magnetronic Reservisor, in 1952. In 1964, it developed the Sabre (Semi-Automated Business Research Environment). Sabre's breakthrough was its ability to keep inventory correct in real time, accessible to agents around the world.

The deregulation of the airline industry, in the Airline Deregulation Act, meant that airlines, which had previously operated under government-set fares ensuring airlines at least broke even, now needed to improve efficiency to compete in a free market. In this deregulated environment, the ARS and its descendants became vital to the travel industry.





 

  





