

Baggage Reconciliation System
PSIairport/BRS from
PSI Logistics GmbH

No baggage without passenger

Safety comes first

Background

To comply with ICAO Annex 17, every airline has to ensure that no piece of luggage is transported by air without the corresponding passenger being on board the same aircraft. This regulation, to which there are very few exceptions, is the basis for all baggage reconciliation systems. There are, however, various ways of achieving compliance. The most common approach is to do it manually. In this case each item of luggage is tagged whilst being loaded on board, maybe using „Bingo Sheets“. The other part of the baggage tags,

which are bar-coded, are stuck onto a sheet and compared to a list of the passengers on board. If luggage is identified without a corresponding passenger on board, it then has to be found and unloaded.

Depending on the position of the luggage this can take a lot of time since this system has no information about the location of the luggage i.e. which container or zone it is in.

For this reason the manual approach is time consuming and error prone - unloading luggage from an aircraft prior to departure is a regular cause of delays and of course, related costs.

For this reason automatic systems are increasingly being used.

Automatic systems

Automatic baggage reconciliation systems are typically used if the check-in desk is already computerised and linked to the airport systems. On checking-in a passenger's luggage will be tagged with a bar-coded tag generated by the system, the counterpart tag being normally stuck onto the boarding card. The BRS then receives loading permission from the check-in desk with certain information about each piece of luggage. This information is sent by the airlines host system (DCS, Departure Control System) in accordance with IATA RP 1745 (BSM, Baggage Source Message) to the BRS. Subject to the capabilities of the BRS in use, it is then possible to scan each item of luggage on loading. Using a hand scanner it is possible to record where each piece of luggage is located, into which transport container it has been put and into which position in the hold. The time of loading is also recorded. At the departure gate the system checks each passenger as he/she boards. If there is a piece of luggage without a corresponding passenger on board, a Baggage Unload Message (BUM) is sent to the BRS, which can locate the luggage precisely using the data collected while loading. Should a



Automatic systems – base for optimised baggage load processes

20 / 20 Vision with PSIAirport/BRS

The use of modern technology makes it possible

search for a baggage item reveal that the bag was not loaded; the BRS internally adjusts the scanned data, and instructs that the loading permission for that bag is now denied.

*Automatic systems - base
for worldwide track and
trace*

PSIAirport/BRS - PSI Logistics' solution

PSI Logistics has developed a Baggage Reconciliation System which has all of the functions described above. But in addition, PSIAirport/BRS has many other features which enable higher efficiency and security in handling of baggage and passengers at the airports in which it is already in use.

System Requirements

In order to implement PSIAirport/BRS there are certain pre-requisites that the airport systems must fulfil:

- Each item of baggage must be unambiguously identified with a barcode (or RFID-Transponder) tag in order that they can be scanned during the loading process. These tags are normally printed during the check-in-process by the host system of the operating airline. Alternatively, a local system can be used for printing. For example the printing module of PSIAirport/DCS, PSI Logistics' Departure Control System. This module
- prints the baggage tags and sends the corresponding baggage information to the connected systems (e.g. Baggage Handling Systems, Baggage Reconciliation Systems). Although barcode identification is in widespread use today RFID-Technology is also beginning to emerge as an alternative. Depending upon which technology is used, the appropriate reading-devices for the BRS need to be provided.
- As well as the identification code some additional information about each baggage item must be sent to the BRS. Typically this is done by the host-systems of the operating airlines in accordance with IATA RP 1745. Alternatively this can also be done by local systems (see above).
- Current information about the flight plan must be supplied to the BRS. To correctly assign the scanned baggage items to their out-



Structure of PSIAirport/BRS

Integration into existing IT-Infrastructure

bound flights, there should be an interface to a flight plan management system. Alternatively, the flight plan can be created and maintained by PSI Logistics' Flight Plan Management System, PSIAirport/FPMS.

In addition PSIAirport/BRS supports various interfaces and connections as required by individual customers.

Structure

The core-system of PSIAirport/BRS consists of one server for the data management, at least one client PC for administration /user interface and one or more reading devices such as handheld scanners. Connection of peripheral devices like tag-printer, printer for

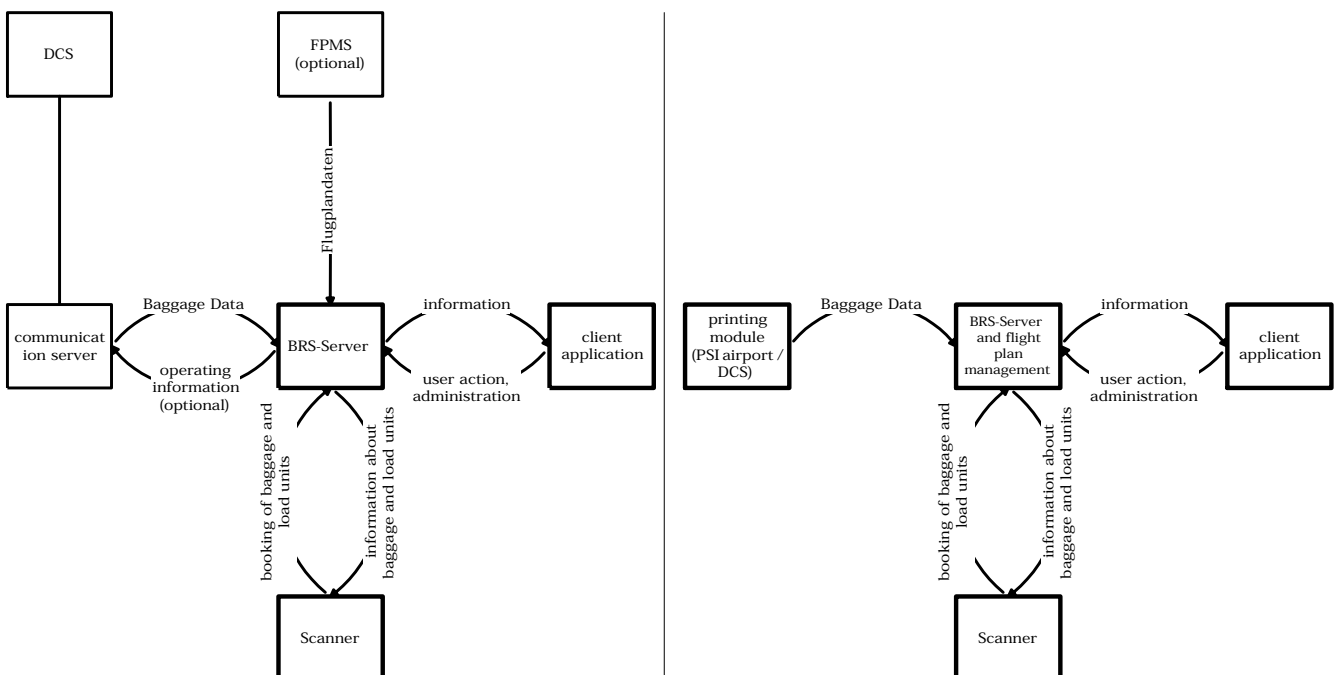
lists and documents is also provided for. High availability systems (Clusters) can also be used as the database server as well as a simple personal computer. This depends only on the amount of data and number of devices connected to the PSIAirport/BRS. The following operating systems are recommended and tested:

- Windows 2000, 2003 (Server and advanced server)
- Several Unix-derivations

Basic functions:

The main basic functions of PSIAirport/BRS are as follows:

- Administration of users
- Processing of baggage information



Overview of cooperating systems (integrated in an existing IT infrastructure or standalone)

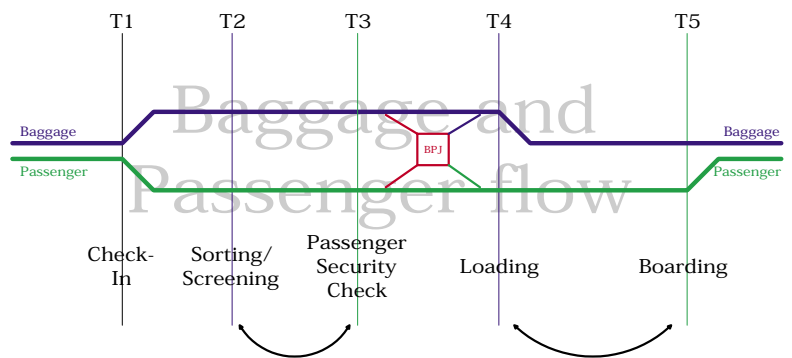
Basic functions of PSairport/BRS

according to IATA Recommended Practise 1745 (BSM, BUM, etc.)

- Management of loading devices (ULD, container etc.)
- Administration of location
- Booking of loading and unloading (per baggage, per flight or per load device)
- Visualisation and Printing of information about baggage, flights or load devices
- Sending of Baggage Process Messages (BPM) according to IATA-Standard to the connected host-system of the operating airlines
- Printing of special labels for the identification of load devices
- Visualisation of information on the scanning devices and on the Client-PC about baggage items, loading devices and flights.

Processes

Typical passenger and baggage flow based on the involved system components:



Visual monitoring of the flow of baggage and passengers

	Function	Typical system	Alternatively
T1	Printing of baggage tags and sending information to PSairport/BRS	Departure Control System (DCS)	PSairport/DCS
T2	Sortation and Hold Baggage Screening (HBS)	Baggage Handling System (PSairport/BHS)	
T3	Security control		
T4	Record of loading of every baggage item	PSairport/BHS PSairport/BRS	
T5	Record of passenger boarding	Departure Control System (DCS)	PSairport/DCS

Various additional functions

Optimised combination

Handheld scanner with display

Depending upon individual requirements it may be necessary to use scanners with bigger displays and also with keyboards. Obviously more information can be displayed on bigger displays and special functions requiring keyed data input is easier with the help of a keyboard. Scanning devices are typically connected via radio frequency or WLAN.

Client Application

Administrative and operator activities are supported by the client application. For example:

- Administration of users
- Administration of the handheld devices
- Administration of airports, airlines and flights in the database
- Management of load devices and containers
- Assignment of flights / load devices to single handheld devices as the base for the loading (scanning) process
- Printing of barcodes, lists and manifests
- Information screens and statistics

Display Management

It is sometimes helpful for the operators to have additional special displays in the baggage transportation/sortation system hall. Information about current flights or the reconciliation status can be shown here. PSIairport/FIDS can be used in this context. The information can be shown on most kinds of displays (LED-technology, TFT, CRT etc.) either time-driven (automatically) or event-driven (manually). The displays can be assigned to special locations, for example the chutes at the sorter. The connection to the displays can be done via an existing network or a special network can be installed by PSI Logistics.



Flexibility and Connectivity

Interfaces to third-party-systems for better process transparency and security

Integration of automatic baggage handling systems and baggage sorter

The installation of PS*lairport*/BRS together with an automatic baggage handling system, such as PS*lairport*/BHS, provides several additional advantages. On the one hand, the baggage handling system can take into account the requirements of the reconciliation (e.g. no baggage sortation without a loading permission) and on the other hand the BRS is able to verify the correctness of the baggage sortation. In both ways this leads to more security and better process efficiency. The interface for PS*lairport*/BHS is a standard. Other baggage handling systems can be connected via various standard-protocols.

Integration of screening devices (100% HBS)

Most modern baggage handling systems are installed with integrated X-Ray-Devices for baggage screening. With the help of an interface between the IT-System of a 100% HBS and PS*lairport*/BRS, the screening result of every baggage item can be taken into account during the loading process. This again improves security and safety of the flight.

Interfaces

Using standard protocols, PS*lairport*/BRS provides several interfaces. Depending upon the individual requirements, connection to the following airport systems is recommended:

- SITA/DCS
- Local DCS
- Flight Plan Management (FPMS)
- 100% HBS
- IT-System component of baggage handling system

Beside this PS*lairport*/BRS can connect to other third-party products.

Services

All service levels typically required at airports are provided by PSI Logistics. Service level agreements can be arranged individually from the shortest reaction time of 30 minutes (24 hours a day, 7 days a week).

24/7 around the clock support by PSI Logistics GmbH

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