



Digital airport management for smooth aircraft movements

Beijing Airport equipped to state-of-the-art standards

Reference project:



“Beijing Daxing Airport sets new air traffic digitization standards.”

Edgar Ziller, Head of Airport Management, T-Systems

Air passenger numbers are growing worldwide – and so, too, in China. Beijing Airport, internationally known as Beijing Capital International Airport, no longer has the capacity to handle the increasing air traffic. Therefore, following an international design competition, construction work began in 2014 to create a new airport, Beijing Daxing International Airport. Located just under 50 kilometers south of Beijing’s downtown area, in the Daxing district, one of the world’s largest civil aviation airports was built in only five years. Not only does the megaproject meet the highest architectural design standards, it is also equipped with state-of-the-art technology to overcome the challenges of the years ahead. The German digital service provider T-Systems was tasked with programming the digital airport management system and tailored its self-developed Airport Software to the Chinese airport’s specific needs within 24 months.

At a glance

The version of T-Systems’ airport management system used at Beijing Daxing Airport is tailor-made to suit the operator’s exact requirements. It is designed to manage, once all airport expansions are completed, flight operations on a scale in line with the following parameters:

Size:

- Terminal area of 700,000 sqm
- Six runways
- 345 parking positions along the building and on the apron, plus 186 boarding gates
- 422 check-in desks
- 117 security checkpoints
- 3,000 flight information display boards
- 50 gangways
- 63 baggage carousels

Capacity:

- 100 million passengers/year
- 880,000 aircraft movements/year (2,200 flights/day)
- 186 take-offs and landings/hour

Main components of the airport management system supplied by T-Systems:

- Airport Operational Database (AODB)
- Resource Management System (RMS)
- Airport Collaborative Decision Making (A-CDM)
- Enterprise Service Bus (ESB)

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Reference in detail

The challenge

100 million passengers, 880,000 aircraft movements, six runways, and a high-speed rail service: the new Beijing Airport is set to become the largest in the world within a few years. It is located at a geographical hub of the People's Republic and serves a wider area of more than 200 million people, who can reach the airport from 28 major cities within three hours. The number of visitors to the airport is expected to grow over time. In view of this steady increase in the use of the transport hub, the software that manages airport operations must be sufficiently flexible to respond to the changes over the coming months until Beijing Daxing has become the largest airport in the world.

The solution

Passengers, flight times, aircraft width, and many other factors – an airport is a highly complex ecosystem whose operational efficiency depends on reliable information and sound decision-making. T-Systems' self-developed airport management system is a fully integrated end-to-end solution for digital airport management that takes account of the complexity of day-to-day airport operations through modular technical components. Based on real-time data, it maps all flight-relevant activities, enabling better decision-making and efficient collaboration between all parties involved in flight operations. Accordingly, the system plays an important role in optimizing flight handling processes and providing reliable information to passengers and staff, and, as a result, ensures flight punctuality.

The following are the main components of the airport management system supplied by T-Systems:

- **Airport Operational Database (AODB)**
The AODB is the technical IT backbone of the management system. Similar to a database, it collects all flight-relevant data required for planning and management – from the number of baggage items through to physical aircraft data. All components of the interconnected system can access this database.
- **Resource Management System (RMS)**
Based on the data provided by the AODB, the RMS module automatically allocates the parking position, gate, check-in, and baggage reclaim for each flight. This allows aircraft, passengers, and baggage to be handled smoothly and efficiently.
- **Flight Information Display System (FIDS)**
More than 3,000 display boards are used at Beijing Daxing. Based on the FIDS, they provide passengers and handling staff with all the information they need in real-time.
- **Airport Collaborative Decision Making (A-CDM)**
The collaboration tool A-CDM is the communications platform for all individuals and bodies involved in airport operations: air traffic control, airlines, ground handling, traffic managers, and service staff. Based on real-time data, it offers summarized views of the status of operational activities, simplifying the decision-making process and contributing to the improvement of airport efficiency.
- **Enterprise Service Bus (ESB)**
The ESB is responsible for interconnecting all the components supplied by T-Systems and ensures the seamless integration of the systems of all external stakeholders involved in flight operations. It is therefore an essential requirement for implementing the collaboration efforts of the A-CDM portal. More than 5,000 rules are stored in it, which contribute to the optimized short-, medium-, and long-term planning of resources.

Customer benefits

T-Systems' airport management systems (AMS) is already in use at more than 40 airports worldwide. The software is optimally tailored to the operational management of air traffic and can be expanded in a flexible manner based on needs. The AMS analyzes, processes, and visualizes all flight-relevant data of an airport, and ensures the smooth running of aircraft movements and ground handling processes. The solution is implemented in a highly secure on-premise server environment.



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