

Digital Service Platform for Transportation Hubs

DETAILS

SECTOR | Transport

STAGE | Operations and Maintenance

TECHNOLOGIES | Digital technologies, 5G

SUMMARY

Digital service platform integrating the latest digital and communication technologies such as cloud computing, 5G, big data and the Internet of Things can effectively improve the operation and management efficiency of transport hubs such as airports, harness economic, social and governance (ESG) benefits, and enhance the security and quality of services. The digital service platform can be established on the basis of cloud computing platform, featuring high efficiency of computing resources utilization, dynamic response and flexible configuration. 5G mobile communication is featured by low latency, good security and large device connection capacity, which can improve communication efficiency and reduce costs. Indoor positioning technology can identify the floor and area where the user is standing, and provide real-time and accurate indoor positioning services by integrating indoor navigation map into mobile devices and on-site service equipment. Virtual reality technology can give full play to the terminal performance ability of augmented reality and realize user interaction experience. The digital service platform based on the above technology can realize the "One ID" service mode advocated by the International Air Transport Association (IATA) through connection with various functional systems including the departure information system, security check information system, flight integration system, information acquisition equipment and display screen in the transportation hub and other systems, as well as the connection with the user mobile terminal. With pre-authorization authentication and use of biometrics, passengers can realize paperless customs clearance, and have access to diversified services like real-time transportation information around a transportation hub, boarding, navigation services, translation services, business, marketing etc., significantly improving travel efficiency and experience. At the same time, the digital service platform can monitor the operation of key service nodes through the information acquisition equipment in the field, thus effectively improving the management level and security of traffic hubs. Through the establishment of digital service platform, Beijing Daxing International Airport has achieved positive results in improving airport management and service.

VALUE CREATED

Improving efficiency and reducing costs:

- Micro-service architecture built on cloud platform can realize virtual dynamic allocation of underlying computing resources and high-availability mode of operation, which can effectively reduce the construction and operation cost of fixed servers.
- Mobile-assisted Apps enable online ticket purchase, check-in, seat assignment and custom procedures. Automation and digitalization increases access to self-service. According to the data by the Shenzhen

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Airport, check-in waiting time was reduced by 15% and self-serviced baggage check-in increased by 30%.

- Digital platforms can help improve security check and enhance security assurance, over 30% of passenger risks can be identified by digital platforms.
- Radio Frequency Identification (RFID) technology enables travellers to track real-time baggage location through mobile Apps. The RFID boasts a baggage identification accuracy of 99.5%, according to user data recorded by the Beijing Daxing International Airport.
- One ID model can recognize and verify users' identities through data matching process. According to statistics of the Beijing Daxing International Airport, this technology helps significantly expedite screening at the security gates, with each processing device handling 260 people per hour.
- Indoor positioning technology is deployed to fast-track travelling, improve commercial resources allocation, save labour costs, improve service assurance and commercial operation efficiency. Real-time positioning can also provide smart parking, real-time parking lot inquiry, among other value-added services.

Enhancing economic, social and environmental value:

- Online self-service and electronic boarding card provides paperless service to passengers and increases their green awareness.
- Passengers can enjoy seamless service in their traveling and be spared of repeated ID recognition. They can use Apps to check in, which reduces queuing time and allows spare time and improve overall travel experience.
- Automation can increase efficiency and save labors in identity certificate processing, provide customized service, optimize airport space utilization efficiency and improve its operation capacity and financial revenues.
- Information digitalization improves security at transportation infrastructure. Enhanced data connectivity and robust identity check prevent cross-border travel with false identity, and will help reduce cross-border criminal activities.
- Internet-enabled service is easier to be supervised by the public and delivers better service quality.

POLICY TOOLS AND LEVERS

Building institutions:

Guidelines on Catalogue of New Technologies for Airport was released by the Civil Aircraft Agency of China in August 2018, where 25 new technologies under 5 categories are featured as new technologies and will be rolled out across airports of different sizes in a phased and orderly manner, so as to improve construction, management, security and service delivery of airports across China. A "trial and error" mechanism is in place to encourage proactive uptake of new technologies in airport construction, operation and management

Legislation and regulation:

Privacy protection legislation. In China's newly enacted Civil Code in May 2020, individuals' rights to privacy and personal data protection was clearly enshrined. It is provided that data collectors have the obligation to protect an individual's personal information and cannot obtain, disclose or conduct transactions of such data without consent.

Future enabled workforce:

Staff training must keep abreast of technology advancement and function upgrade. According to the Beijing Daxing International Airport, it hosts over 100,000 hours of on-the-job training for its staff, covering vocational training and management training.

Funding and financing:

Financial support such as investment subsidy can be provided to projects that promote the application of defined new technologies.

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RISKS AND MITIGATIONS

Technology Maturity

Customized service requires advanced data sorting and algorithms. As airports at different countries and cities differ in terms of design, passengers diversify in travelling pattern. More data analysis is needed to work out viable solutions. Hence, it is important to embed data-based service capacity at the outset of service ecosystem development, and ensure that data is constantly enriched and updated throughout the course of operation and management while improving data analysis capacity.

Privacy Protection

Digital platform needs access to user identity and biometric information. It is therefore important to ensure users are fully aware of their information to be provided. Hence, before services are provided, questions like how the personal data will be used and its storage duration must be fully explained to users, and explicit expression of consent by users should be obtained. To this end, legislation and legal guarantee must be in place to protect personal information is only used when necessary and with approval, and prevent any leakage or abuse of such information.

EXAMPLES

One ID scheme, Beijing Daxing International Airport, weblink:

<https://daxing-pkx-airport.com>

5G application, Shen Zhen International Airport, weblink: <http://www.szairport.com/szairportyw/>