

# Research on the New Mode of Civil Aviation Intelligent Security Inspection

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**Abstract:** Early airports were very simple to operate. However, the current airport security inspection has gradually achieved semi-automatic. However, the degree of automation is not high. Airport security is still a lot of work in the stage of manual operation, which has a great risk to the construction of smart airport. First of all, this paper analyzes the significance of airport intelligent security. Then, this paper constructs the framework of airport intelligent security inspection. Finally, some suggestions are put forward.

## 1. Introduction

Civil aviation intelligent security inspection can relieve the pressure of civil aviation transportation, which will greatly improve the passenger experience. Therefore, more and more new technologies have been gradually applied to civil aviation security inspection. The call of barrier free one-stop security self-service channel has also become an important part of the airport construction, which will truly realize the classified management of passengers. In order to ensure the safety of aircraft customers, the airport will carry out strict security procedures, which will seriously affect the operational efficiency of the airport. Therefore, civil aviation security inspection must meet the needs of passengers' reliable and fast departure service. Therefore, the airport has gradually applied a variety of security inspection modes, such as high-speed computed tomography (CT), security self-service channel, smart airport, "u-airport", check point of future, etc., which will greatly improve the security inspection efficiency of the airport.

## 2. Significance of Civil Aviation Intelligent Security Inspection

Security check is one of the most important tasks in civil aviation airport. However, security inspection will seriously affect the operation efficiency of the airport, which goes against the fundamental purpose of airport operation profit. Smart security can rapidly improve the efficiency of the airport, which has the following important significance, as shown in Figure 1.



Figure 1: Significance of civil aviation intelligent security inspection

## 2.1 Improve civil aviation flight safety

Aviation security is an important part of social public security, which is a social public security work. Through the civil aviation safety inspection, the airport can effectively prevent hijacking, bombing, illegal interference in flight safety events. Therefore, civil aviation security inspection is an important part of civil aviation air defense security work. The level of civil aviation security inspection will affect national security, which is mandatory and professional. Intelligent security check can check passengers' luggage more accurately, which will improve the accuracy of the check. Therefore, airport intelligent security inspection will improve civil aviation flight safety.

## 2.2 Reduce human error in inspection

Through the case of aircraft accident, the mistake of manual security inspection is an important factor. By analyzing the operation data of the security inspection site, we can collect the probability of human error factors. However, smart security can quantify human error preparation. Through intelligent security check, we can lay a foundation for predicting human reliability. Intelligent security inspection can improve the accuracy of security inspection, which will reduce human inspection errors.

## 2.3 Premise of smart airport construction

Smart airport is the highest level of airport. Airport intelligence should be based on a-cdm, supported by big data, cloud computing, mobile Internet and Internet of things, so as to realize airport automation. People are no longer directly involved in the operation of the smart airport. Human's role is to monitor the work of the system, and intervene when the system breaks down to restore the normal operation of the system. Therefore, smart security is the premise of smart airport construction, which is the first step of smart airport.

## 3. Overall Framework of Security Inspection at Inspection Station

The system adopts layered architecture design, which is divided into display layer, application layer, data layer and regulatory standard as shown in Figure 2.

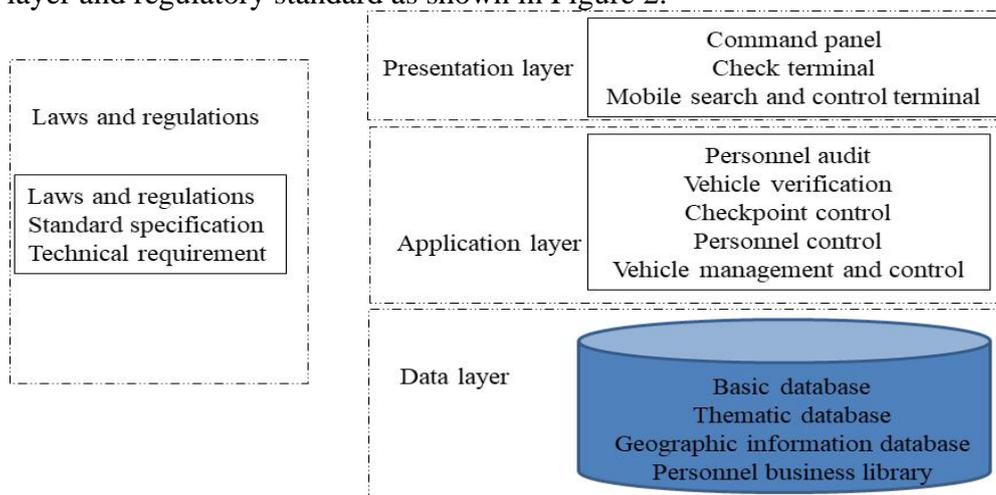


Figure 2: Overall framework of security inspection at inspection station

## 4. Measures for Intelligent Security Inspection of Civil Aviation

### 4.1 Establish passenger information integration and exchange mechanism

The airport can divide the passenger information into two parts. The first part is the passenger information before entering the civil aviation system, which needs to rely on the anti-terrorism

information and the personnel information base information of the Ministry of public security to predict. The other part is the passenger information of buying air ticket to take the civil aviation flight, which occurs in the civil aviation system, such as ticket information, trip (including frequency) information, security information, seat preference, etc. The airport should form its own passenger information integration and exchange mechanism, which can carry out passenger information comparison and detection. The mechanism of passenger information integration and exchange needs a lot of data information, which at the same time has the loophole of infringing customer's private information. At present, the Civil Aviation Administration has promulgated such documents as the civil aviation passenger reservation and departure data public security network exchange specification, civil aviation security information exchange specification, civil aviation security related information sharing management measures, civil aviation security information management regulations, etc. These laws and regulations provide legal protection for information exchange and sharing mechanism. At present, the integration of airport security check, ticket purchase and reservation information is still in constant improvement, which has an important support for the collection of flight passenger information in China. Through the combination of the two parts of information, civil aviation can obtain the basic information of customers, which will provide the first layer of screening for airport intelligent security. Therefore, by establishing the integration and exchange mechanism of the two parts of information, we can form a graded security inspection mechanism of passenger behavior dominated by information, which will greatly help the aviation security.

#### **4.2 Establish passenger behavior detection indicators and risk classification system**

When people enter the process of civil aviation transportation system, we should judge whether customers have typical behavior characteristics endangering aviation safety, which is an important basis for security classification. Therefore, the airport needs to establish a database of behavior characteristics endangering aviation safety, which must meet the airport passenger behavior detection indicators, such as age, gender, address, nationality, insurance, travel time, one-way ticket, time to buy ticket, place to buy ticket, type of certificate, travel and luggage, aviation credit, etc. According to the test indicators, the airport should establish a risk classification system, which can divide passengers into three levels, such as high-risk, low-risk and medium-risk passengers. Through the real-time comparison of high-risk passenger data and high-risk passenger data, the airport intelligent security inspection system will push the early warning data to the staff, which will form a dynamic service dispatch system. It can be said that this dynamic service dispatch system is the rudiment of passenger classification and security inspection classification. Finally, the airport must establish procedures for handling high-risk passengers. Through passenger behavior, intelligent security system will identify high-risk passengers, and airport staff will conduct strict security inspection. Therefore, the intelligent security system must establish passenger behavior detection indicators and risk classification system.

#### **Conclusions**

At present, China's civil aviation security system is still classified based on passenger behavior. Intelligent security inspection system is not only the maturity of CT equipment, face recognition, network integration and other technologies, which needs to carry out classified management of passengers from the perspective of management. Through the protection of laws and regulations, the airport can realize the convenient classified security inspection mode for ordinary passengers.

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