



Asia-Pacific  
Economic Cooperation

Advancing  
Free Trade for Asia-Pacific  
Prosperity

# Application of New Technologies in Civil Aviation Security of China

23 04 2018 – Seoul

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Asia-Pacific  
Economic Cooperation

-  **Introduction**
-  **Technological Innovation**
-  **Aviation Security in the Future**
-  **International Cooperation**



# Introduction

## Pressure and Challenges Facing China's Civil Aviation Security

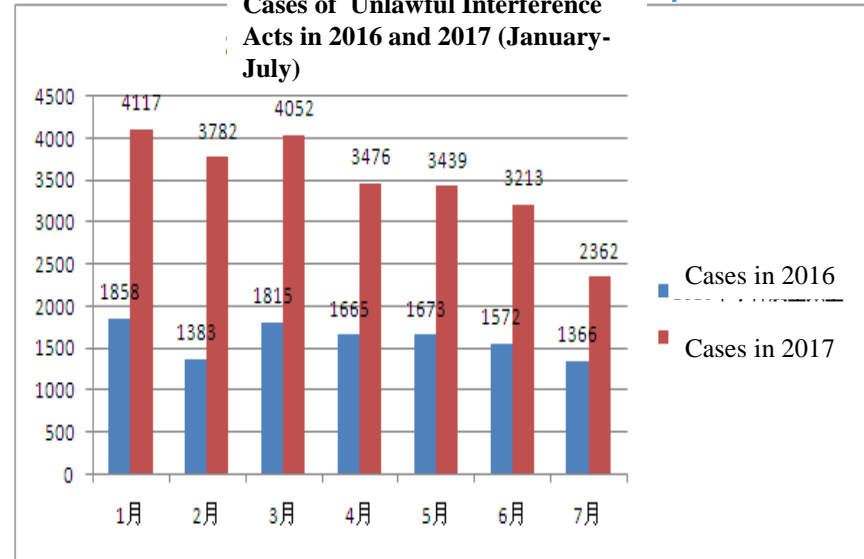
Chinese civil aviation industry has developed rapidly in recent years. In 2016, the total transport turnover reached 108.31 billion ton-km. At the same time, aviation security is facing mounting pressures and challenges.

**Figure 1 Total Civil Aviation Transport turnover 2012-2016**

100 M Ton Kilometers



**Cases of Unlawful Interference Acts in 2016 and 2017 (January-July)**





# Introduction

## CAAC Actively Participates in International Civil Aviation Security Issues and Makes Its Contributions

CAAC has always followed ICAO's SARPs, and kept improving its own standards in light of its reality, such as:

- Participating in GAsEP;

- Revision of Annex 17 and modifying domestic regulations accordingly;

- Passing ICAO's USAP-CMA audits;

- Participating in ICAO panel meetings, Working group meetings and offering input.

Besides, CAAC, based on Chinese practical conditions and the requirements of Doc 8973, has kept improving its security measures by means of technological innovation, and has formed our own standards in various aspects according China's domestic conditions, many of which are higher than those required in Doc 8973.



# Introduction

## The Application of New Technologies in Civil Aviation Security

- CAAC, with the concept of “technological innovation facilitates civil aviation security”, keeps exploring technological innovation and application, and has successfully applied technologies such as facial recognition, data mining, internet of things sensing into security work and developed multiple application systems, which have achieved good results in risk assessment, hazard and dangerous source recognition, real-time dynamic monitoring and supervision, aviation crime prevention, emergency response in the air, etc.

## Technological Application Systems

- Landside Security Video Monitoring System
- Passenger Risk Classification and Early-Warning System
- Dynamic Staff Management System
- Flight Risk Assessment System
- Cargo Security Management System
- Aviation Crime Information Analysis System

### Good Results Achieved:

- The ability of risk assessment enhanced
- The ability of hazard and dangerous sources recognition enhanced
- Real-time dynamic supervision conducted
- Aviation crimes effectively prevented
- .....

## Case Introduction

- Case 1: Landside monitoring
- Case 2: Real-time screening of high-risk passengers
  - In the links of booking and security screening
- Case 3: Dynamic staff management
- Case 4: Facilitation and efficiency gained
- Case 5: Cracking down on aviation crimes
  - In-flight thefts and drug trafficking by air

## Case 1

### Airport Public Area Monitoring

#### Entrance to the terminal building——

Self-service clearance equipment are used to identify persons entering the terminal building.



The intelligent robots can automatically patrol and intelligently monitor the areas, reduce the cost of security officers, and improve the efficiency of security work.

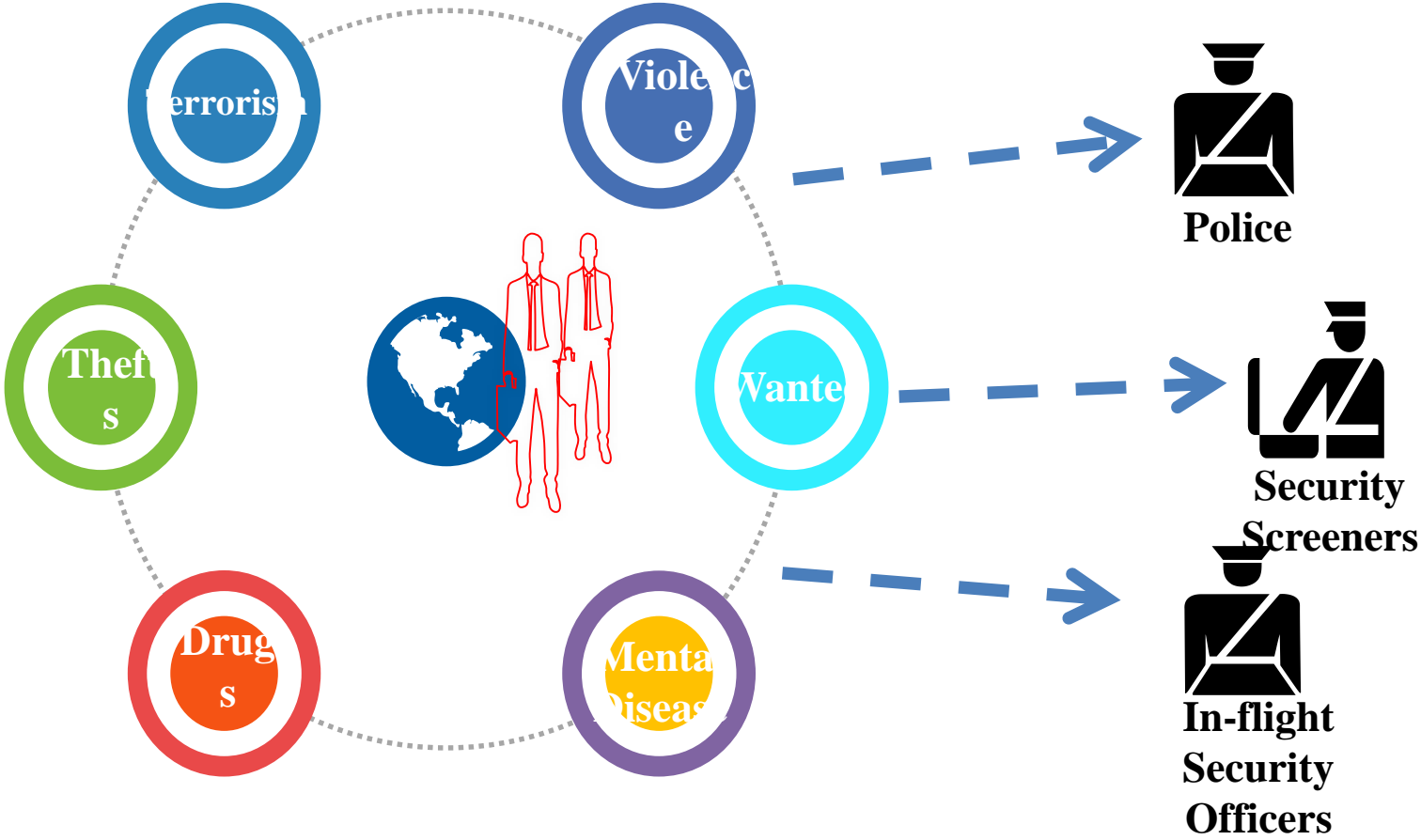


# 2 Technological Innovation

## Case 2 Real-time screening of high-risk passengers

### In Booking:

By means of intelligent analysis, data mining and modeling, high-risk passengers can be alerted in advance, and police, security screeners and in-flight security officers can be coordinated and mobilized.



## Case

## 2

## Real-time screening of high-risk passengers

## In security screening:

The application of facial recognition technology can significantly reduce the errors of man eye recognition, ensure the consistency of passengers, their documents and tickets, and carry out real-time special screening measures on high-risk passengers.

For example, at Shenzhen Airport, since facial recognition technology was used, 701 persons who fraudulently used others' documents or used counterfeit documents were seized, and 158 persons wanted by the police were hunted down and captured.



**Initial Stage** Various high-risk persons can be identified by means of background check, such as people with criminal records and mental disorders.



旅客乘机临时身份证明自助办理设备

**人员信息**

<p><b>现场照片</b></p> <p>公民身份号码: 422422197512050856            航班号: H67750            手机号: 13699062568            办证理由: 证件未带            办理时间: 2017-07-28 20:17:30</p>	<p><b>身份证照片</b></p> <p>姓名: 王吉谱      性别: 男            出生日期: 19751205      民族:            公民身份号码: 422422197512050856            地址: 湖北黄冈松滋市刘家场镇高河大道38号11街25号</p>
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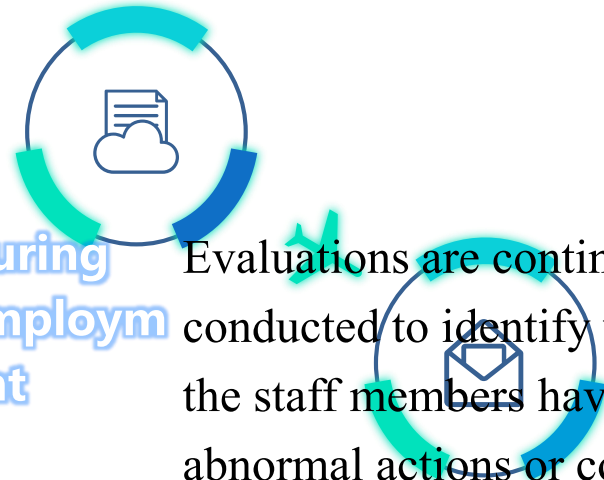
状态	对比源	状态	对比源
✓通过	1:1人像比对	✓通过	深圳市戒毒所人员基本信息库
✓通过	广东省涉毒人员信息库	✓通过	广东省吸毒人员信息库
✓通过	深圳市收教所人员基本信息库	✓通过	全国违法犯罪案件信息库
✓通过	人员看守所人员基本信息库	✗未通过	全国在逃人员库 <a href="#">查看</a>
✓通过	人员拘留所人员基本信息库		

海融科技

**During employment**

Evaluations are continuously conducted to identify whether the staff members have any abnormal actions or conditions, such as mental diseases, drug-use and criminal acts, etc.



## Case 4

## Facilitation & Efficiency

The application of automatic verification device at screening points reduces the labor of manual verification, simplify procedures , and improve service quality while ensuring the safety of passengers.



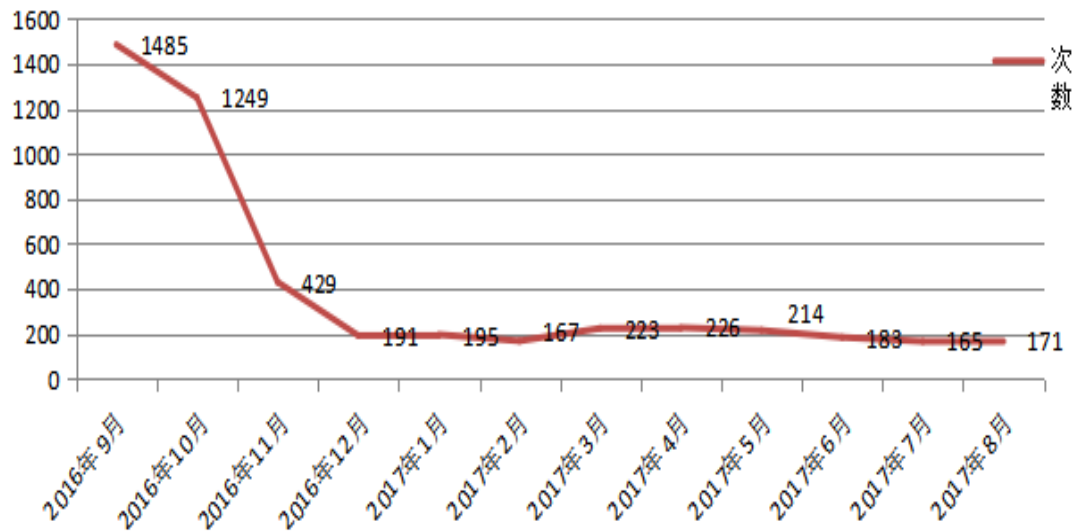
## Case 5

### Cracking down on Aviation Crimes

#### Cracking down in-flight thefts:

Big data analysis has been successfully applied in cracking down in-flight thefts, which has helped effectively identify high-risk persons onboard, deploy in-flight security staff in advance, spot and handle criminal acts quickly. Currently the cases of in-flight thefts on domestic flights keeps at a historic low level, and there have been no theft cases reported for several consecutive months .

Tendency Chart of the Number of Key Suspects Who Booked Tickets since 2016



## Case 5

### Cracking down Aviation Crimes

## Cracking down drug trafficking by air:

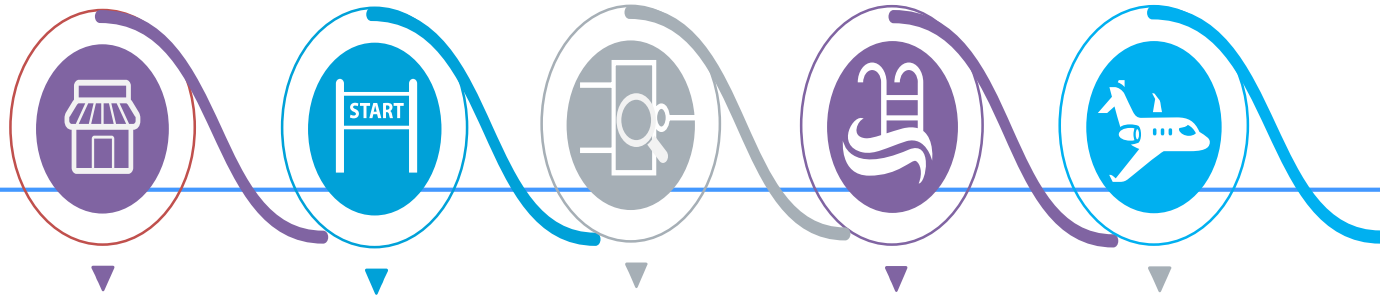
Big data analysis has been successfully applied in cracking down on drug trafficking by air, which has helped effectively identify the persons who covertly carry drugs in their bodies or luggage, made arrangements in advance, and achieved good results.



- 79 days since the operation launched (up to Sept. 6, 2017)
- 150 suspects were successfully captured
- 64532.1 grams of drugs seized
- 2 suspects were captured on average per day
- 817 grams of drugs were seized on average per day

“Anticipation, pre-analysis, early warning and prevention” across the Process

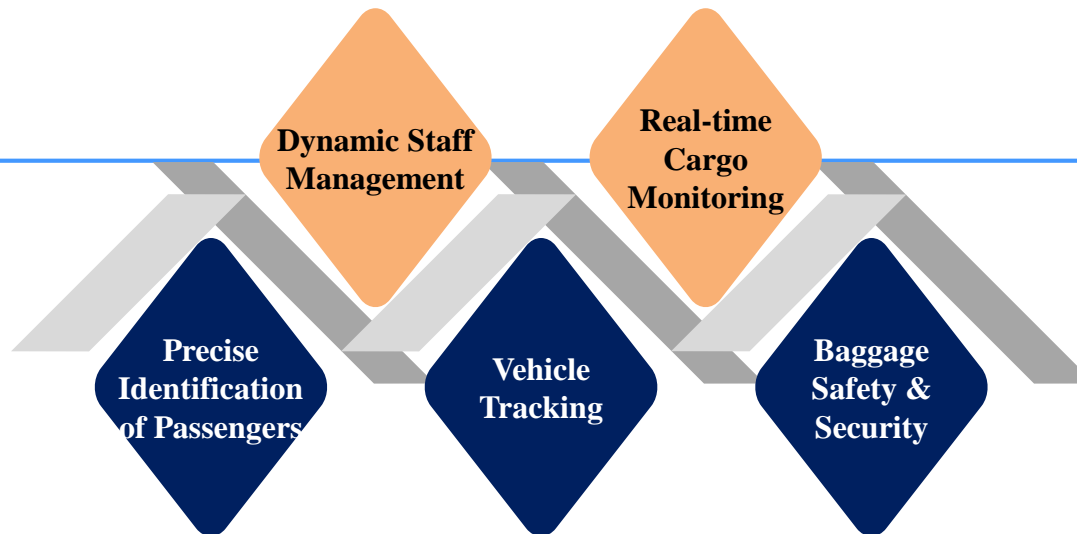
Civil aviation security in the future will effectively identify high-risk persons across the process of booking tickets, entering the airport, check-in, security screening, boarding, and embarking on the plane, get to know their real-time conditions and actions, try to identify abnormal conditions in advance, take the initiative to prevent risks and conduct appropriate and targeted measures, so as to realize intelligent management and control during the whole process.



Screening key persons	Identify risks at entrance and exit of the terminal building	Focus on suspicious persons and make hierarchical examinations	Verification of passengers and their tickets when boarding	In-flight monitoring & quick response
When they book tickets				

**“Anticipation, pre-analysis, early warning and prevention” in all aspects**

Civil aviation security in the future will make full use of the sensing technology of internet of things, mobilize police resources, monitor the real-time conditions of passengers, staff, vehicles, cargo and luggage at the airport in an intelligent, efficient and precise way, identify potential risks, and make optimal deployment of security resources.



## Strengthening International Exchanges and Cooperation

China stands ready to enhance cooperation with ICAO in aviation security, participate in international and regional cooperation and various work programs, participate in ICAO AVSECP and audits, share China's experience with ICAO and member states in the aspects of work methods, technical programs, best practices and new technology application, for our common endeavor of global aviation security improvement.

Meanwhile, China hopes to collaborate with partners in cracking down aviation crimes, sharing information concerning high-risk passengers and typical cases, and jointly preventing various threats.

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